Ministry for the Environment
Manatū Mō Te Taiao

Users' Guide

National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

April 2012

New Zealand Government

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Terms used in the regulations

activity	a. For a current or proposed activity: one of the activities described in regulation 5 of the NES (*subdivision, land-use change, soil disturbance, soil sampling or removing fuel storage systems*) to which the NES applies. Examples of these activities are provided in Section 2.1 of this Users' Guide. b. For a hazardous activity: an activity listed in the HAIL that triggers application of the NES. Information on the HAIL is contained in Section 2.1.1, Section 3 and Appendix B of this Users' Guide.
applicable standard	The numerical value that is applicable for the current or intended land use. It is the concentration of a contaminant in soil, usually expressed as a weight of contaminant per weight of soil (eg, mg/kg), at or below which exposure to soil is acceptable for people.
background concentration	Naturally occurring ambient concentrations of the element in the area local to the land. See Section 2.1.1 of this Users' Guide for further discussion of the term.
current edition	Defined in regulation 3 of the NES as: the edition that has legal effect when the edition is being used. The current edition of documents that are referenced in the NES should be sourced from the Ministry for the Environment website: www.mfe.govt.nz.
detailed site investigation	Defined in regulation 3 of the NES as: an investigation that— (a) is done by a suitably qualified and experienced practitioner; and (b) is done in accordance with the current edition of Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis of Soils, Wellington, Ministry for the Environment; and (c) is reported on in accordance with the current edition of Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand, Wellington, Ministry for the Environment; and (d) results in a report that is certified by the practitioner. A detailed site investigation involves intrusive techniques to collect field data and soil samples for analytical testing to determine the concentrations of contaminants of concern.

fuel storage system	Defined in regulation 3 of the NES as: a system in which at least one of the following is underground: (a) a storage tank for aviation kerosene, diesel, kerosene, lubricating oil, or petroleum (b) the whole of the tank's ancillary equipment (c) part of the tank's ancillary equipment.
guideline value	Referred to in regulation 7(3)(a) and 7(4) of the NES as: Soil contaminant concentration derived on a site-specific basis according to the *Methodology*, or a numerical value selected in accordance with the hierarchy described in the *Contaminated Land Management Guideline No.2 – Hierarchy and Application in New Zealand of Environmental Guideline Values*. Once the appropriate value is selected for the land under the NES, this becomes the applicable standard. See Section 1.3.2 of this Users' Guide for further discussion of the term.
HAIL	Defined in regulation 3 of the NES as: The current edition of the Hazardous Activities and Industries List, Wellington, Ministry for the Environment. The HAIL is contained in Appendix C of this Users' Guide, accompanied by a table that lists contaminants that are most likely used in each activity or industry.
land use	Defined in regulation 7 of the NES as: (a) the current use, if the activity the person wants to do is (i) to remove a fuel storage system from the piece of land or replace a fuel storage system in or on the piece of land (ii) to sample the soil of the piece of land (iii) to disturb the soil of the piece of land (b) the intended use, if the activity the person wants to do is (i) to subdivide land (ii) to change the use of the piece of land.
Methodology	Defined in regulation 7 of the NES as: the current edition of the Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health, Wellington, Ministry for the Environment. See Section 3.2 of this User's Guide for further discussion on the *Methodology* document.
person	Defined in regulation 3 of the NES as: The person referred to in regulation 5(1)(a). This is the person who wants to do one of the activities described in the NES on land to which the NES applies.

preliminary site investigation	Defined in regulation 3 of the NES as: an investigation that— (a) is done by a suitably qualified and experienced practitioner; and (b) is reported on in accordance with the current edition of Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand, Wellington, Ministry for the Environment; and (c) results in a report that is certified by the practitioner. A preliminary site investigation (PSI) is often referred to as a desktop study because it doesn't usually involve sampling and analysis of the soil. The main objectives of a PSI are to gather information about a piece of land to determine whether it may potentially be contaminated, to assess the suitability of the land for its current or intended land use, and to design a detailed site investigation (if required). See Section 2.1.1 of this Users' Guide for further information on PSIs.
priority contaminant	Defined in regulation 7 of the NES as: a contaminant for which the Methodology derives a soil contaminant standard. There are 12 priority soil contaminants: arsenic, boron, cadmium, chromium, copper, lead, mercury, benzo(a)pyrene, DDT, dieldrin, PCP, and dioxin (including dioxin-like PCBs).
production land	Defined in section 2 of Resource Management Act 1991, as (a) Means any land and auxiliary buildings used for the production (but not processing) of primary products (including agricultural, pastoral, horticultural, and forestry products): (b) Does not include land or auxiliary buildings used or associated with prospecting, exploration, or mining for minerals... and **production** has a corresponding meaning:
soil contaminant standard (SCS)	Regulation 7 of the NES defines: **Priority contaminant** means a contaminant for which the Methodology derives a soil contaminant standard. Referred to in regulation 7(2) and 7(3)(b) of the NES. Numerical value for a soil contaminant that has regulatory status under the NES. There are SCSs for 12 priority contaminants for five land uses, shown in tables B2 and B3 in Appendix B of this Users' Guide.
suitably qualified and experienced practitioner	Guidance on what is expected of a 'suitably qualified and experienced practitioner' is given in Section 2.1.1. This term is not defined in the NES.

1 Introduction

1.1 Purpose of this document

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (referred to herein as the NES) were gazetted on 13 October 2011 through an Order in Council by the Governor General under the authority of the Acts and Regulations Publication Act 1989. The regulations took effect on 1 January 2012.

Each territorial and unitary authority implements this NES in accordance with their section 31 functions under the Resource Management Act 1991 (RMA) relating to contaminated land, specifically section 31(b)(iia) "the prevention or mitigation of any adverse effects of the development, subdivision, or use of contaminated land".

This guide explains the regulations and provides guidance on implementing the NES. It is designed primarily for staff from city and district councils and unitary authorities. The Ministry is currently developing an information leaflet for landowners and developers, which will be published on the Ministry website.

This guide does not have any legal status. A complete copy of the NES regulations is attached as Appendix A or can be viewed on the New Zealand legislation website.

If you need further assistance or information, please:

email: standards@mfe.govt.nz
or write to: Resource Management Tools, Ministry for the Environment, PO Box 10362, Wellington 6143.

Further information about the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health is available on the Ministry for the Environment website at: http://www.mfe.govt.nz/laws/standards/contaminants-in-soil/.

1.2 Why the NES was developed

New Zealand has a legacy of soil contamination that is mainly associated with past practices involving storage and use of hazardous substances, and disposal of hazardous wastes. Common past activities and industries that have led to the creation of contaminated sites in New Zealand are:

- the manufacture and use of pesticides
- the production of gas and coal products
- the production, storage and use of petroleum products
- mining
- timber treatment
- sheep-dipping.

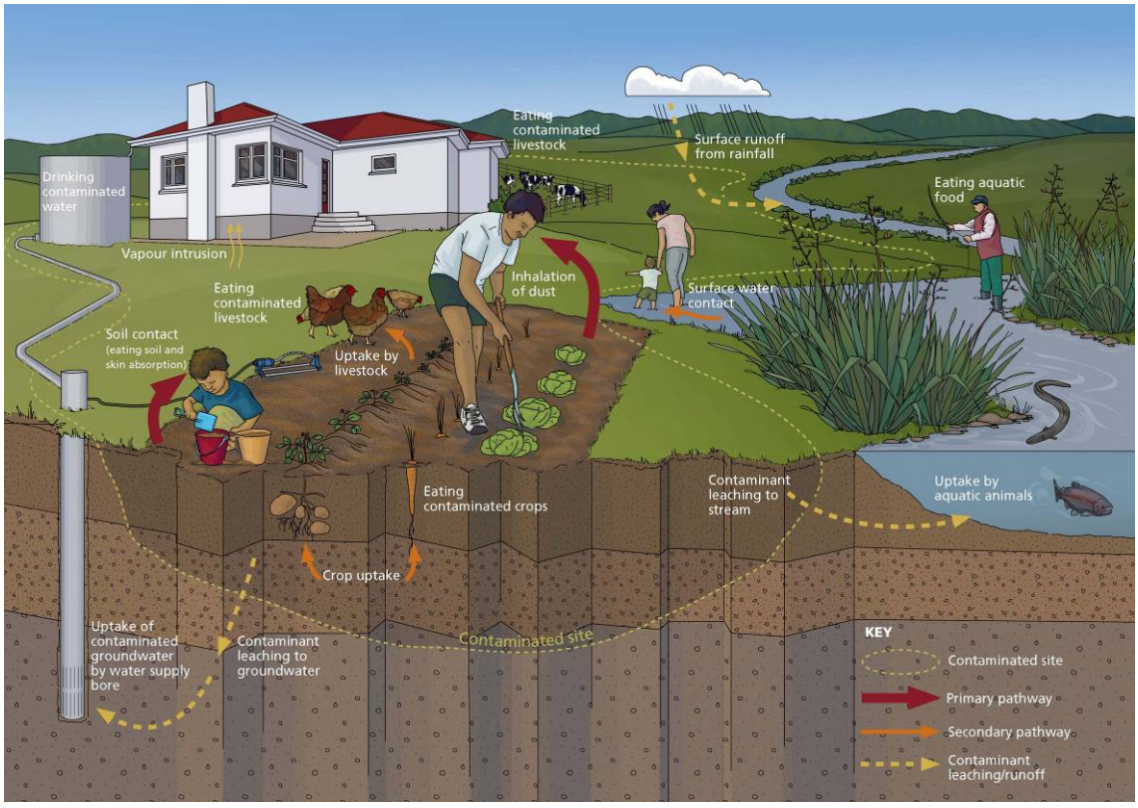
The contaminants in soil left by these activities and industries include:

- pesticides (such as DDT, DDD, dieldrin)
- metals (such arsenic, chromium, copper, lead and mercury)
- hydrocarbon compounds.

Contaminants are a problem when they are at a concentration and a place where they have, or are reasonably likely to have, an adverse effect on human health and the environment. Contaminants pose a greater risk where they are near buildings, people, water bodies and important habitats, and when they are in soil in which food is grown.

Contamination is not always limited to a specific site. Hazardous substances may seep through the soil into groundwater, or be carried to nearby land and waterways in rainwater and attached to dust. Hazardous gases can also pollute air. The different pathways by which humans can be exposed to contaminants in soil are shown in figure 1.

Figure 1: Pathways by which contaminants in soil can affect human health



1.2.1 A need for uniform controls

Identifying land contamination and ensuring the effects are controlled is the responsibility of regional councils and territorial authorities under sections 30 and 31 of the RMA respectively, which were amended in 2005. Section 30 introduced a new function for regional councils, "the investigation of land for the purposes of identifying and monitoring contaminated land" (section 30(1)(ca)). For territorial authorities, Section 31 introduced a requirement for "the prevention or mitigation of any adverse effects of the development, subdivision, or use of contaminated land" (section 31(1)(b)(iia)).

In 2007, a Ministry for the Environment review of contaminated land provisions in district plans showed plans had wide variations in controls and that most did not reflect the 2005 amendments. The process employed by many city and district councils to identify, assess and clean up or contain contaminants was *ad hoc* and varied across the country. This was of concern, particularly at the time of development of land, as the land tenure system depends on the public having confidence that land information is properly administered, and that potential risks are identified if known. Adequate and consistent controls are necessary when land potentially affected by contaminants in soil is developed, subdivided or when its land use changes.

At the time of sale, the liability for the land is normally transferred to the new owner. Potential buyers often request a land information memorandum (LIM) and/or property file from the territorial authority to find out what information is held about the property, including the likely presence of hazardous substances or contaminants.

1.2.2 A need for consistent standards

Numerical values for levels of contaminants that are protective of human health, and the methods used to derive them, are important tools in assessing contaminated land. Without these values, practitioners are not able to consistently assess the effects of contaminants in soil on human health.

Previously, New Zealand practitioners have relied on a mixture of national and international guidelines to select numerical values for decision-making. However, these guidelines use different methods for deriving numerical values and not all are appropriate for use in the New Zealand context.

1.2.3 Summary

The policy objective of the NES is to ensure land affected by contaminants in soil is appropriately identified and assessed when soil disturbance and/or land development activities take place and, if necessary, remediated or the contaminants contained to make the land safe for human use. The NES enables the safe use of affected land by:

- establishing regulations for five activities that ensure district planning controls relevant to assessing and managing public health risks from contaminants in soil are appropriate and nationally consistent
- establishing soil contaminant standards protective of human health and requiring their use when decisions are made under the NES
- ensuring best practice and consistent reporting on land affected or potentially affected by contaminants is applied that enables efficient information gathering and consistent decision-making.

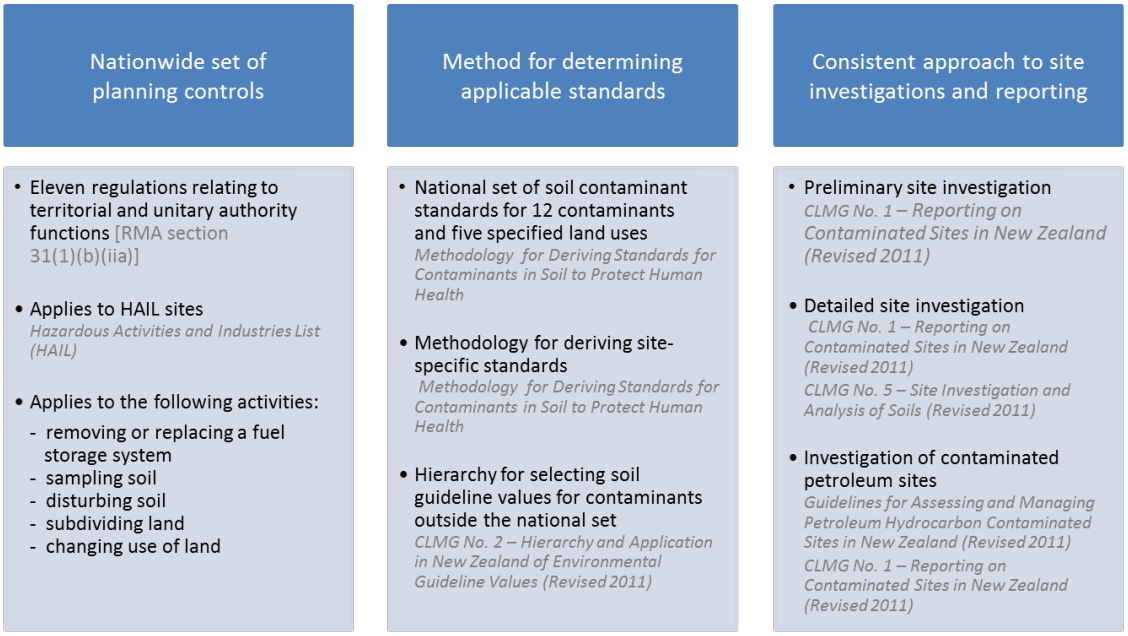
Further information on the development of the NES, including the discussion document produced as part of the consultation process, is available on the Ministry for the Environment website at: www.mfe.govt.nz/laws/standards/contaminants-in-soil/.

1.3 What the NES contains

The three key pillars of the NES are shown in figure 2 and described in the following sections:

- A nationwide set of planning controls that direct the requirement for consent or otherwise for activities on contaminated or potentially contaminated land
- A mandated method for determining applicable standards for contaminants in soil, including a national set of soil contaminant standards for 12 priority contaminants and five common land uses
- A nationwide approach to site investigations and reporting by mandating the use of best practice guidelines for investigating and reporting on contaminated or potentially contaminated land.

Figure 2: Key pillars of the NES



Note: Publications shown in italics are referenced in the NES regulations.

1.3.1 A nationwide set of planning controls

The NES achieves its policy objective through a mix of allowing (permitting) and controlling (through resource consents) certain activities on land affected or potentially affected by soil contaminants.

Under the regulations, land is considered to be actually or potentially contaminated if an activity or industry on the Hazardous Activities or Industries List (HAIL) has been, is, or is more likely than not to have been, undertaken on that land. The HAIL is included in Appendix C, along with a list of the hazardous substances typically associated with each activity or industry. A more detailed description of the HAIL and the methods for establishing whether land is contaminated is in Section 2.1 of this Users' Guide.

The controls imposed by the NES include:

1. Permitted activity status (no resource consent required) for removing or replacing underground fuel storage systems and affected soil (provided certain requirements are met).
2. Permitted activity status (no resource consent required) for sampling soil and for small-scale soil disturbances, including subsurface investigations (provided certain requirements are met).
3. Permitted activity status (no resource consent required) for subdividing land or for land-use changes where it is highly unlikely there is a risk to human health from soil contaminants for the intended land use (provided certain requirements are met).
4. Controlled activity status (resource consent required) for activities that are unable to meet the permitted activity requirements, and where soil contamination does not exceed the applicable numerical standard for the land use or intended land use.
5. Restricted discretionary activity status (resource consent required) for activities that are unable to meet the permitted or controlled activity requirements, and where soil contamination exceeds the applicable numerical standard for the land use or intended land use.
6. Discretionary activity status (resource consent required) for any activities that do not meet the requirements for a permitted, controlled or restricted discretionary activity.

More detailed descriptions of the different activities and their classifications are in Section 2 of this Users' Guide.

1.3.2 A mandated method for determining applicable standards

The NES mandates the methods for setting applicable numerical standards for contaminants in soil that are protective of human health. Applicable standards for 12 contaminants (called "priority contaminants" in regulation 7(2) of the NES) were derived and must be used if the land use fits within the particular exposure scenario. The NES does not require testing for the entire set of priority contaminants on every piece of land, only for those contaminants that are likely to be found because of the historical land use.

The 12 priority contaminants are: arsenic, boron, cadmium, chromium, copper, lead, mercury, benzo(a)pyrene, DDT, dieldrin, PCP and dioxin (including dioxin-like PCBs), and the five land use scenarios are: rural/lifestyle block, residential, high-density residential, parks/recreational, commercial/industrial outdoor worker (unpaved). Detailed descriptions of the land-use scenarios and soil contaminant standards are in Appendix B.

For contaminants that are not priority contaminants and/or for land uses that fall outside the five standard land-use exposure scenarios, the NES mandates the approach to be taken to select the applicable standard for the soil. In this case, either a site-specific soil guideline value can be derived (in accordance with the *Methodology*), or a guideline value can be chosen from national and international literature in accordance with the following document:

> *Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011)* (referred to in the Users' Guide as *CLMG No.2*)

Soil contaminant standards (SCSs) are contaminant concentrations in soil at or below which people's exposure to soil is judged to be acceptable because any adverse effects on human health are likely to be minor. They were calculated by estimating the level of exposure (or intake) of contaminant that a person may receive in a typical setting, in comparison to the acceptable level of intake for that contaminant. Intake rates vary, depending on the exposure pathways by which people can come into contact with soil, which varies depending on the land use. The greater the amount of contact that a person may have with contaminated soil, the greater the exposure, and therefore the acceptable soil concentration will be lower. Thus, allowable soil concentrations (or SCSs) vary with land use.

SCSs are not promoted as desirable soil quality criteria nor are they levels up to which contamination may be allowed to occur. Further, because they are calculated based on the human health effects of the contaminant only, they do not necessarily provide protection for the natural environment (such as soil invertebrates and plants), nor are they aligned with Food Safety Authority standards for commercially grown foods.

Technical details of the derivation of the 12 priority contaminants are given in the following document, which is incorporated by reference into the NES:

> *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health* (MFE, 2011) (referred to in this Users' Guide as the *Methodology*).

The *Methodology* also describes how to undertake site-specific derivations of numerical values for exposure scenarios or contaminants outside the national set of 12 priority contaminants.

Soil contaminant standards (SCSs) perform two functions:

- *Health-based trigger values* – SCSs represent a human health risk threshold above which:
  - the effects on human health may be unacceptable over time
  - further assessment of a site is required to be undertaken.
- *Remediation targets* – where contamination is above the SCS, then the SCS represents the maximum target concentrations of contaminants at or beneath which the land can again be considered "safe for human use" and the risk to people is considered to be acceptable.

Further information on the *Methodology*, which is incorporated by reference into the NES, is contained in Section 3.2 of this Users' Guide. Section 2.3 contains more information on selecting an applicable standard for soil under the NES.

Clarification of terms used in the NES:

Soil contaminant standard – specifically refers to those numerical values that have regulatory status under the NES. There are SCSs for 12 priority contaminants for five land uses.

Guideline values – soil contaminant concentrations that are derived on a site-specific basis according to the *Methodology*, or soil guideline values selected in accordance with the hierarchy described in *CLMG No.2*. Once the appropriate value is derived or selected for the site under the NES, this becomes the applicable standard for the site.

1.3.3 A nationwide approach to site investigations and reporting

The NES mandates good practice guidelines for investigating and reporting on contaminated sites. The documents, all of which are published by the Ministry for the Environment and available on the Ministry website, are:

- *Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand (Revised 2011)* (referred to in this Users' Guide as *CLMG No.1)*
- *Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in new Zealand of Environmental Guideline Values (Revised 2011)* (referred to in this Users' Guide as *CLMG No.2*)
- *Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis of Soils (Revised 2011)* (referred to in this Users' Guide as *CLMG No.5*)
- *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011)* (referred to in this Users' Guide as the *Petroleum Guidelines*).

For further information on these guidelines refer to Section 3 of this Users' Guide.

1.4 When the NES applies

The NES applies to assessing and managing the actual or potential adverse effects of contaminants in soil on human health from five activities: subdivision, land-use change, soil disturbance, soil sampling, and removing fuel storage systems.

To protect human health

The focus of the NES is to protect human health. The NES **does not** apply to assessing or managing the actual or potential adverse effects of contaminants on other receptors including:

- the on-site and off-site ecology
- the on-site and off-site effects on surface water
- the effect of contaminants discharged to water – including sources of human drinking water
- amenity values.

Councils (regional and unitary councils, city and district councils) may impose additional controls under the RMA to address any potential or actual effects on these receptors or other matters they have control over.

To land potentially or actually affected by contaminants

The NES only applies to land that is potentially or actually affected by contaminants because of its historical and/or current use and the types of activities previously undertaken on it (see Section 2.1.1 of this Users' Guide).

If the land that is potentially or actually affected by contaminants is production land, the regulations **do not** apply to:

a. soil sampling or soil disturbance (except on parts of production land used for residential purposes)

b. subdivision or change of use (except where that would result in production land being used for a different purpose, eg, for residential land use).

Existing uses and consents

Existing uses are not affected by the regulations. The NES only applies if you intend to do one of these five activities – removing or replacing a fuel storage system, sampling the soil, disturbing the soil, subdividing land, and changing the use of the land – as defined in regulation 5 of the NES.

Land that has been remediated before the NES came into force does not need to be reassessed unless someone wants to undertake one of the five activities. At that time, all requirements of the NES apply, including the requirement to establish an applicable standard for the land if the activity cannot meet the relevant permitted activity requirements.

A land-use consent or subdivision consent granted before 1 January 2012 will prevail over the NES. If an application for consent has been lodged, and a decision on whether to notify it was made before 1 January 2012, then the consent prevails over the NES (RMA s43B(5)). Notwithstanding this, if an activity covered by the NES occurs after 1 January 2012 on HAIL land for which a consent for another activity has been granted, then the NES requirements must be met. The most common example of this situation is where a subdivision consent has been granted and the land remains production land but is later developed in a way that means the land stops being production land. In this case, the NES will apply at the time the land is developed regardless of any rights under the district plan.

Existing consent holders can ask for a review or change of consent conditions if the consent conditions are more onerous than the standards in the NES. This could occur for example, if a consent has been granted (but the works not yet completed), which sets a lower (more stringent) soil contaminant concentration for the protection of human health than the NES would require.

The regulations **do not** apply to soil disturbance, if that land is already regulated under 33(9) or 36 of the Resource Management (National Environmental Standard for Electricity Transmission Activities) Regulations 2009.

2 Overview of the regulations

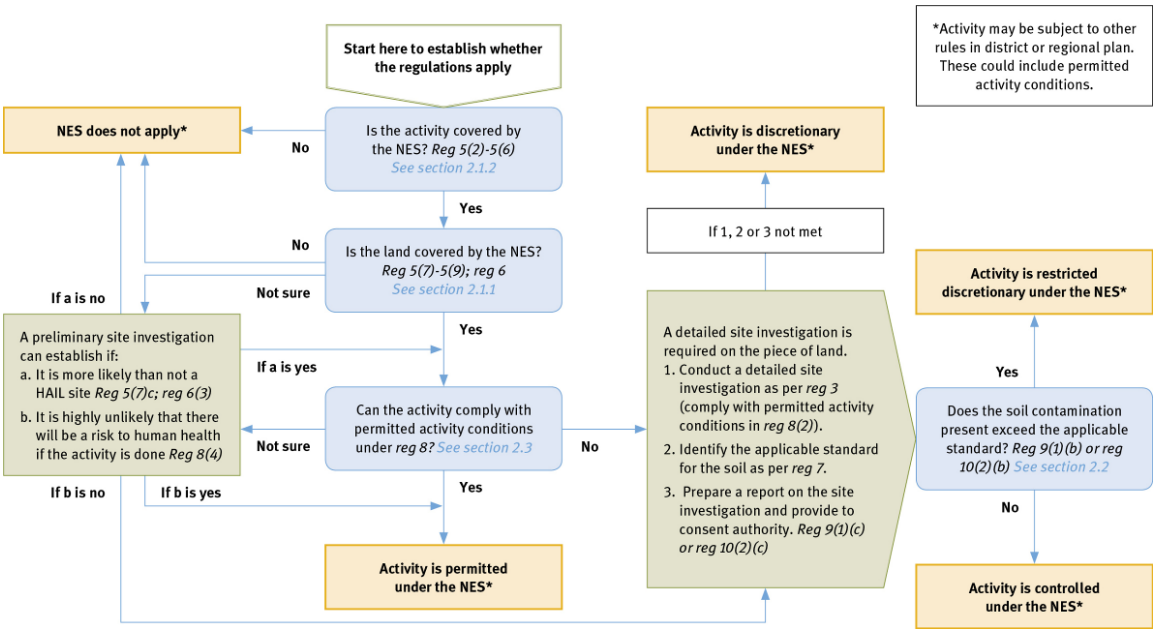
The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health is a set of regulations for five specified activities on pieces of land where there is a potential that soil is contaminated in such a way as to be a risk to human health. The activities are:

1. Removing or replacing all, or part of, a fuel storage system
2. Sampling the soil
3. Disturbing the soil
4. Subdividing the land
5. Changing the land use.

Activities that are considered to have a low potential for adverse effects on human health have permitted activity status and no consent is required under the NES, provided the activities meet the requirements set in the regulations. Where activities cannot meet the permitted activity requirements, resource consent is required, either as a controlled, restricted discretionary or discretionary activity. The consent status depends on the potential health risks, information and management requirements. A copy of the regulations is contained in Appendix A of this Users' Guide.

Figure 3 shows the decision process for determining whether resource consent is required under the NES.

Figure 3: Determining resource consent requirements under the NES



2.1 Do the regulations apply?

Regulation 5 defines the land and the activities controlled by the NES. Figure 3 shows two questions need to be answered to establish if the regulations apply: "Is the land on which the activity is proposed to occur covered by the NES?" and "Is the proposed activity covered by the NES?"

2.1.1 Is the land covered by the NES?

The NES applies to any "piece of land" on which an activity or industry described in the current edition of the Hazardous Activities and Industries List (HAIL) is being undertaken, has been undertaken or is ***more likely than not*** to have been undertaken (see regulation 5(7)).

The land-use history is therefore the trigger for determining whether the land is covered by the NES. The HAIL, published by the Ministry for the Environment, lists the industries and activities that typically use or store hazardous substances. The HAIL is incorporated into the NES by reference and may be updated by notice in the Gazette (see Section 3 of this Users' Guide). A copy of the HAIL is contained in Appendix C.

The HAIL includes some activities that may occur or may have occurred on production land such as farms and orchards, for example, bulk storage or use of persistent pesticides, livestock dips, or wood preservation. Production land can cover large areas but the NES only applies to the piece of land on which the HAIL activity is occurring or is more likely than not to have occurred. Regulation 5(8) further restricts how the NES applies to production land (see Section 2.1.2 of this Users' Guide).

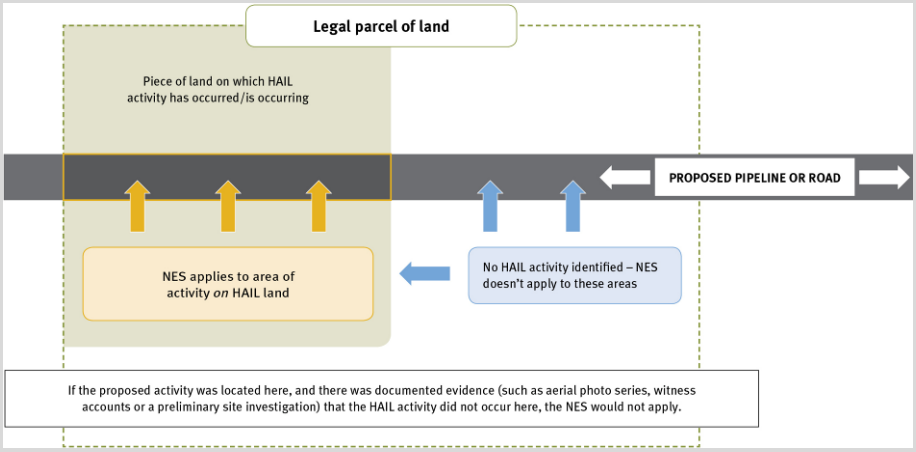
Why the NES refers to a "piece of land"

The NES applies to the piece of land on which hazardous activities are being, have been, or are more likely than not to have been undertaken, rather than the whole property parcel. If the hazardous activity occurred on only part of the property parcel, then that is the piece of land to which the NES applies. If the precise location of the hazardous activity is not known, then the NES will apply to the piece of the land where it is more likely than not to have occurred. In some cases, the entire property parcel may need to be assessed if any part of the property parcel could have been the location for the hazardous activity.

If the proposed activity is on, or intersects with, a piece of land that currently has, or has had, a HAIL activity on it, then the NES applies. The area required to be investigated is that area covered by the proposed activity (not the entire area that the HAIL activity may have occurred on). It is the applicant's responsibility to ensure enough information is gathered to enable decisions to be made, which will usually mean understanding the context for the area of immediate interest.

Figure 4: Schematic example of how to establish the area to which the NES applies

Example: Activity (soil disturbance) to build a road or trench for a pipeline crossing a piece of land within a larger parcel of land on which a HAIL activity is occurring or has occurred in the past.



Where there is uncertainty over whether an activity or industry described in the HAIL has occurred, then a key decision to be made is whether the activity or industry is ***more likely than not*** to have occurred. "More likely than not" is the legal test for balance of probabilities that is the standard of proof in a civil (non-criminal) court, and essentially means that there is more than a 50 per cent likelihood of a hazardous activity or industry having occurred. For a piece of land to be excluded from the requirements of the NES, a person proposing to undertake an activity would therefore be required to prove the converse – that the likelihood of the hazardous activity or industry occurring on the piece of land was less than 50 per cent. This will be a matter of judgment to be agreed on a case-by-case basis, by landowners and the council.

Methods of establishing if land is potentially contaminated

Regulation 6 sets out the two methods to be used to establish whether the land has had hazardous activities or industries conducted on it, and therefore can be called "a piece of land". The two methods are:

- **By reviewing information about the land that is held and is accessible by the relevant territorial or unitary authority.** Such a review must include information held on property files, resource consent databases, dangerous goods files, or information the territorial authority has available to it from the relevant regional council, for example, on a land-use register for contaminated land.

  Note: While some territorial authorities may still store older files on dangerous goods, new information is collected by the Environmental Protection Authority (EPA) under the Hazardous Substances and New Organisms Act 1996, and can be accessed by the council through the EPA's databases (eg, Test Certificate Register).

- **By conducting a preliminary site investigation (PSI).** A PSI is defined in the regulations as an investigation undertaken by a suitably qualified and experienced practitioner in accordance with *CLMG No.1*. The objective is to determine whether or not an activity or industry listed on the HAIL is, has been, or might have been undertaken on the piece of land. Information about the history of land use is not always easy to find, and when it does

exist, it may not always be certain. A PSI will include a review of the information held by or available to the territorial authority, but this will only be one component of the information sought. Other information sources would likely include:

- interviews with site owners, personnel and neighbours
- a review of past environmental investigation reports prepared on the site
- certificates of title
- a review of historical society records, and any relevant literature relating to the site
- the layout of current and historical facilities, and site drainage plans
- photographic records, including current and historic aerial photos.

This type of investigation is commonly referred to as a desktop study because it doesn't usually involve actual sampling and analysis of the soil. A report of this investigation must be prepared in accordance with *CLMG No.1*.

The NES allows the person who wants to do the activities to choose whichever method is appropriate to the situation. That person is responsible for meeting all the costs involved in acquiring the information about the land (Regulation 6). If the council has no information about the land, the person can choose to rely on that lack of information. Ideally, the method undertaken to determine if the land is potentially contaminated should be appropriate to the nature of the proposed activity, the level of certainty and availability of information about the past use of the land, the contaminants present (or potentially present), and the potential risk posed.

If no preliminary site investigation has been undertaken and there is no indication of a previous HAIL activity (or the potential for it) in the council records then the regulations don't apply, because regulation 5(5) and 5(6) refer to the "piece of land" as described in subclause (7) – HAIL land.

In the case that the current use (eg, farm) indicates a HAIL activity or industry is or could have been taken place, but the council holds no information about that activity or industry, the council could adopt some precautionary measures in their application procedures. Some examples are given in Section 6 under good practice.

A PSI (as defined in regulation 3) is not required if a person wants to undertake soil sampling, soil disturbance, or remove or replace a fuel storage system, as a permitted activity.

A PSI is required if a person wants to subdivide or change land use as a permitted activity, and the PSI must be certified by a "suitably qualified and experienced practitioner".

If the activity cannot comply with the permitted activity requirements, then a consent application must be submitted. For the application to be considered as either a controlled or restricted discretionary activity, the NES requires that a detailed site investigation (DSI) be submitted with the application. Best practice, as described in *CLMG No.5*, is that a DSI should be designed based on the information gathered in a PSI, which includes the development of a conceptual site model. Completing the steps in a PSI is inherent in undertaking a thorough DSI in accordance with *CLMG No.5*.

In practice, the most thorough PSIs are often required where:

- there is little available historic information and information is required to design a targeted detailed site investigation, or

- where the landowner wishes to certify that an activity or industry from the HAIL is **not** more likely than not to have occurred on the piece of land, to demonstrate to the territorial authority that the NES does not apply, or
- that a detailed site investigation is not warranted for subdividing or changing the land use, because it is highly unlikely that there will be a risk to people if the activity is done.

However, in some cases, it may be easily confirmed that an activity or industry from the HAIL did occur, and this may give clear direction to the design of a subsequent detailed site investigation. In these cases, the information held by the territorial authority in its own files (as well as the information available to it from the regional council), may be all that is required.

Further information about the scope and objectives of PSIs and DSIs is contained in *CLMG No.1* and *CLMG No.5* (see Sections 3.4 and 3.6 of this Users' Guide). An overview is contained in Appendix D.

If it can be demonstrated, in a PSI, that any contaminants present on the land are at, or below, relevant background concentrations, then the NES does not apply (regulation 5(9)). That is, owners of such land are not required to obtain a resource consent or to comply with the permitted activity regulations. This may incentivise landowners to remediate contaminated land to a high standard, to preclude the need for additional investigations later, if a change to more sensitive activities is proposed or intended on the land.

Background concentrations

Background concentrations are naturally occurring ambient concentrations in the area local to the land.

National data on background concentrations of contaminants in soil is limited. In developing the soil contaminant standards, the Ministry for the Environment has created a national background topsoil dataset for arsenic and cadmium, which contains data from soils thought not to have been affected by anthropogenic activities (see Appendix 6 of the *Methodology*). Some regions have published background concentration data. See section 5.2.1 of *CLMG No.2*.

For other locations and contaminants the natural background concentration may be derived by analysing soil samples taken from the local/regional area in accordance with Section 3.6.5 of *CLMG No.5*.

Suitably qualified and experienced practitioner

Who is a "suitably qualified and experienced practitioner"?

The NES requires that a suitably qualified and experienced practitioner certify preliminary and detailed site investigation reports. The NES does not define what a "suitably qualified and experienced practitioner" is. The council has the discretion to decide who it considers is suitably qualified to prepare reports and, depending on their purpose, the reports may not always require the same kind of expertise. The following interpretation is intended as a guide only.

The person is independent, applies good professional practice, and reports against contaminated land and industry guidelines. Environmental practitioners are not expected to act alone across the large number of disciplines required to deal with contaminated land issues. For example, someone may be suitably qualified to locate and identify sheep-dip sites but has no experience in locating explosives. The practitioner is essentially an expert in some specific and relevant fields and experienced in drawing together multidisciplinary inputs and drawing conclusions about site contamination.

A suitably qualified and experienced practitioner would need to be willing to certify (by signature) that the content of the report complies with good practice and professional standards, and to stand by the conclusions of the report. For example, a person certifying a report should be someone who could ultimately stand in the Environment Court and provide expert testimony, and whose experience and qualifications stand up to Court scrutiny.

Guidance on the qualifications that could be expected of a suitably qualified and experienced practitioner is set out below:

1. A person who undertakes a preliminary site investigation should have relevant experience relating to possible hazardous activities or industries. In addition, the person should be qualified to make an independent assessment of the likelihood of the site having become contaminated and assess the risk to human health for the proposed land use.
2. A person who is qualified to undertake a detailed site investigation (supervised) should have at least tertiary education in environmental science or engineering or a related field with 1 or more years of professional experience in environmental investigations and risk assessment or is an investigation manager as described below.
3. An investigation manager should have tertiary education (as above) and at least 5 years or more of related experience (as above).
4. The person certifying the report on behalf of their company would be expected to be a senior or principal scientist/engineer with a relevant tertiary education and with at least 10 years of related experience.

Ideally the certifier would belong to a recognised professional body that assesses and certifies environmental professionals in competency criteria of training, experience, professional conduct and ethical behaviour – membership of industry associations such as WasteMINZ (Waste Management Institute of New Zealand) or ALGA (Australasian Land & Groundwater Association Inc.) alone do not qualify. There is currently no accreditation or auditing scheme for contaminated sites practitioners in New Zealand; however, existing professional bodies that certify New Zealand-based professionals include:

- the Institution of Professional Engineers New Zealand (IPENZ) – see www.ipenz.org.nz
- the Certified Environmental Practitioner (CEnvP) scheme run by the Environment Institute of Australia and New Zealand (EIANZ) – see www.cenvp.org.

The requirement for being “suitably qualified and experienced” would apply to those members certified by those organisations with demonstrated contaminated land experience.

Councils may also want to develop their own list of 'approved practitioners' considered suitable to certify the required reports or to undertake internal peer reviews of reports submitted under the NES. Guidance criteria that can be used to compile these lists include:

- tertiary education in fields such as environmental science and engineering
- track record
- on-going professional training
- quality assurance programmes that are regularly audited
- professional indemnity insurance.

While the applicant decides who to appoint for an investigation, councils may opt to only accept PSI and DSI reports from authors whose qualifications and experience meet their criteria.

2.1.2 Is the proposed activity covered by the NES?

After establishing that the piece of land is covered by the NES, the consent planner checks if the proposed activity or activities are covered by regulations 5(2)–5(6). The activities triggering the NES are summarised below.

1. **Removal or replacement of an underground fuel storage system and associated soil.** This activity includes removing or replacing all or any part of an underground storage system that has been used to store fuels (including lube oils, diesel, kerosene, petrol and aviation kerosene) as well as any sampling, soil disturbance, investigation, remediation or management associated with system removal or replacement. It is not restricted to fully-underground facilities. The definition of fuel storage system in the NES encompasses any storage system where either the tank or the ancillary equipment are underground, and therefore includes systems where the tank is above-ground but the dispensing lines, for example, are underground. Fuel storage systems are common throughout New Zealand, at service stations, truck stops, factories, oil terminals and storage depots, and on farms.

   Examples of activities to which the NES applies: removal of underground tanks and/or pipes at a service station; replacement of underground tanks used at a factory; removal of an underground diesel tank and/or pipework on a farm.

   *Example of an activity that is **not** covered by the NES: Removal of subsurface foundations for an above-ground storage tank that had an above-ground dispenser and pipework; removal of an LPG tank.*

2. **Soil sampling.** This activity includes any sampling of soil undertaken as part of either a preliminary or detailed site investigation to determine the presence and extent of any soil contamination. Typically, soil samples are collected using activities such as drilling, test pitting and trenching, which may result in soil disturbance (an activity in itself). However, such activities are generally small in scale and of short duration. Disturbing or testing soils for other reasons would be covered to the extent applicable by the next rule, relating to soil disturbance.

   For production land, regulation 5(8)(b) of the NES limits the application of the NES to soil sampling conducted on the piece of land that is or will be under residential buildings, used for a farmhouse garden (as this may be used to grow fruit and vegetables for the residents),

or in the immediate vicinity of existing or proposed residential buildings. This is because these are the locations where residents are most likely to come into contact with the soil or with contaminants from the soil.

Examples of soil sampling activities to which the NES applies: investigation on HAIL land using an excavator to dig test pits; borehole drilling investigation of a site; collection of soil samples using a hand auger for any land for the purpose of a detailed site investigation.

*Example of a soil sampling activity that is **not** covered by the NES: Sampling of pasture soil for agricultural/productivity quality.*

3. **Soil disturbance.** This activity includes any disturbance of soil such as levelling, trenching, scraping and excavating that occurs on actually or potentially contaminated land. It does **not** include soil disturbance associated with the activity of removing or replacing a fuel storage system.

   As for soil sampling, in the case of production land, the NES only applies to disturbance of a piece of land in the immediate vicinity of existing or proposed residential buildings, or proposed farmhouse garden areas. Regulation 5(4)(b) excludes from the NES any soil disturbance that takes place on a piece of land subject to the Resource Management (National Environmental Standard for Electricity Transmission Activities) Regulations 2009 to avoid overlap with those regulations. Those regulations require Transpower to obtain a resource consent for any earthworks relating to an existing transmission line on land that is actually or potentially contaminated. For more information see: http://www.mfe.govt.nz/laws/standards/electricity-transmission.html

   Examples of soil disturbance activities to which the NES applies: *digging for foundations on HAIL land; excavating soil to construct a retaining wall in an area previously used to store hazardous substances; excavating contaminated soil following a surface spill of fuel; soil disturbance for sampling such as soil bores for geotechnical assessments; earthworks on HAIL land for the purposes of establishing a new electricity transmission line; installation of a underground fuel storage system on a piece of HAIL land that previously did not have any such system.*

   Examples of soil disturbance activities that are **not** covered by the NES: *excavation of a silage pit on a farm in an area where a livestock dip was formerly located; excavation and removal of a former bulk fertiliser bin, where the land is returning to pasture; excavations for extending an existing farmhouse, where the house has not been built on HAIL land; excavation for the purpose of repairing an existing electricity transmission line; importation of clean fill (where the deposition method does not disturb the underlying soil), recontouring production land to facilitate cultivation.*

4. **Subdivision of land.** Any subdivision of land that is actually or potentially contaminated by an activity or industry described on the HAIL is covered by the NES. Either a preliminary site investigation report (in support of a permitted activity under regulation 8(4)) or a detailed site investigation report (in support of a resource consent application) will need to be prepared and submitted for **each** of the resulting land parcels that contain a "piece of land". The NES applies to the piece of land on which hazardous activities are being, have been, or are more likely than not to have been undertaken, so in some cases, all of the land parcels that result from a subdivision may be subject to the NES, even if there is no change in land use.

   The only exception to this is production land that is subdivided but does not stop being production land. In this case, a newly created land parcel may continue to be used for

production purposes without triggering any requirement for investigation under the NES. Similarly, the NES does not apply to the remaining part of the original farm so long as it does not stop being production land.

> **Note:** The future use of land after a subdivision is not always known or the new owner may decide on a different building and/or building platform to that described in the subdivision application. If this occurs, the resulting change in land use or footprint location would be identified through either a variation to the subdivision consent or through an application for a building consent. The council will need to inform the landowner of NES requirements when it becomes aware of the change in land use, regardless of whether a "Section 37 compliance certificate" is required (s.37 Building Act 2004).

Examples of subdivision activities to which the NES applies: *Subdivision of an orchard into a number of smaller blocks, each with potential for new residences to be built; subdivision of an industrial site identified on the HAIL, regardless of whether the land use for either resulting land parcels is changing or not (this enables a PSI to be put on the title for future owners of the site).*

Example of a subdivision activity that is **not** covered by the NES: *Subdivision of a farm into multiple blocks of production land (even if the district plan permits future residences built on the resulting lots. Here the NES would rely on councils noticing later changes in land use).*

5. **Change in land use**. Change of land use can occur without any change of zoning or subdivision. This activity is defined separately in the NES, and captures any change in land use that occurs on a piece of land and that is reasonably likely to harm human health as defined in regulation 5(6).

   The key decider as to whether a land-use change falls under the NES is therefore whether, under the intended land use, the exposure to soil is ***reasonably likely*** to harm human health. This needs to be carefully evaluated for the specific situation, and may be interpreted within the purpose and context of this regulation as a serious or real and substantial risk. It requires the council officer to exercise a measure of common sense to not apply the NES, if there is no real risk associated with the proposed land-use change.

   It could also cover a situation where there may be an unacceptable risk from the current land use (the NES does not apply to on-going use), but the NES is triggered by a change in land use that poses the same risk, which is unacceptable. For production land, the NES is triggered if there is a land use change **and** the land ceases to be used for production land.

   Examples of change in land use to which the NES applies: *Change in land use of a former orchard into a lifestyle property with a residence; redevelopment of a former service station site into a commercial business; redevelopment of a closed landfill as a public park; establishment of a community garden on a former service station site.*

   Example of change in land use that is **not** covered by the NES: *Change from an orchard to a dairy farm; change from a commercial printing plant to a retail outlet where all soil surfaces are sealed and remain sealed.*

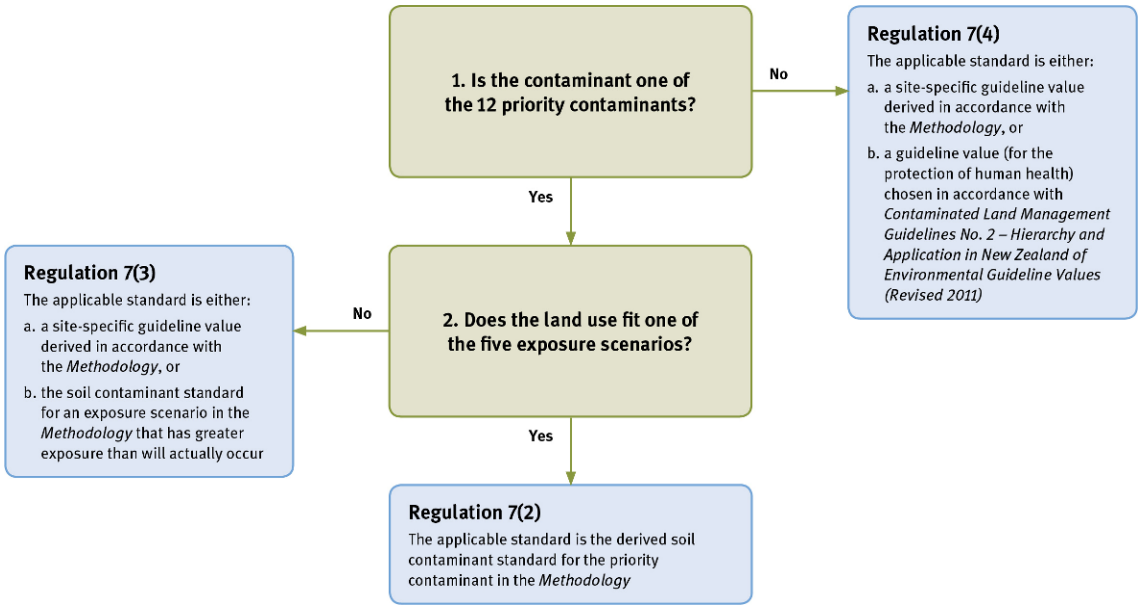
2.2 How to determine applicable standards for contaminants in soil

Regulation 7 of the NES sets out the methods for establishing the applicable numerical standard for contaminants in soil. Applicable standards are contaminant concentrations in soil at or below which human exposure to soil is judged to be acceptable because any adverse effects on human health are likely to be minor.

When an activity will not meet the requirements for a permitted activity, a consent is required and there must be a detailed site investigation (undertaken in accordance with *CLMG No.5*). The detailed site investigation must demonstrate that the piece of land is appropriate for the current land use (if the activity being undertaken is disturbing the soil) or the intended land use (if the activity being undertaken is to subdivide the land or change the use of the piece of land) by assessing the concentrations present in soil against the applicable standard for the land.

Regulation 7 sets out how to establish the applicable standard, and this is shown in figure 5.

Figure 5: Determining applicable standard for soil contaminants under the NES



Given the large number of potential contaminants and land uses, it is not practical to derive a soil contaminant standard (SCS) for every combination of contaminant and land use. Regulation 7(2) requires that the applicable standards for 12 priority contaminants are those set in the *Methodology* (see Appendix B). Regulations 7(3) and 7(4) prescribe the method by which soil guideline values (SGVs) are to be derived or selected for other contaminants and land uses.

For contaminants other than the 12 priority contaminants, and/or land uses other than the five standard scenarios, there is a choice about how to establish the applicable standard. The choice will come down to practicalities and a cost-benefit assessment made by the landowner, for example, whether to spend time developing a site-specific SGV, or to accept a more conservative land-use scenario with the associated SCSs, which may require more management or remediation of the site.

Note: Applicable standards only need to be developed for the **contaminants of concern for the piece of land, given the activities and industries that have occurred** and the objectives of the detailed site investigation (DSI) (which are described in *CLMG No.5*). The sampling and analysis plan prepared for a DSI will set out which contaminants to test for. There is no need to test for a priority contaminant if it is not a contaminant of concern for the piece of land.

For more information on establishing applicable standards see the *Methodology* and *CLMG No.2*. Further information on both of these documents is contained in Section 3 of this Users' Guide.

2.3 Permitted activities

A permitted activity does not require a resource consent provided the activity complies with the standards, terms or conditions specified in the regulations.

If both the proposed activity and the piece of land in question comply with the definitions in regulation 5, then the NES applies. The next step is to determine whether the activity can comply with the permitted activity requirements under regulation 8. These are described in this section of the Users' Guide.

2.3.1 Removing or replacing a fuel storage system as a permitted activity

Regulation 8(1) allows the removal or replacement of any underground components (such as the tank and pipelines) of fuel storage systems and associated subsurface soil sampling and soil removal, provided the requirements are met.

There will be occasions where a replacement tank (or ancillary equipment) is not installed in the same excavation from which the original tank or equipment was removed. In this situation, the replacement parts can still be considered part of the original fuel storage system. By comparison, installation of a new underground fuel storage system on a piece of land which previously has not had a fuel storage system present may be more appropriately assessed as a soil disturbance activity. In some cases, judgment will be required to agree which is the more appropriate category for the activity. Whichever activity is selected, the activity should not be subject to both permitted activity regulations.

To be undertaken as a permitted activity, the NES requires:

a. that the removal, investigation, remediation, validation and management processes be conducted in accordance with the current edition of the *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand* (often referred to as the *Petroleum Guidelines* or the *Oil Industry Guidelines*)

b. notification to the relevant council before beginning the activity (up to one month and no less than one week before the activity begins), including advice on the intended soil disposal location

c. a report of the findings of the site investigations to be submitted to the council (within three months of completing the activity)

d. disposal of removed soil at a facility authorised to receive such material

and sets limits on

e. the volume of soil disturbance (30 m^3 for each tank in the system)

f. the volume of soil that can be taken away (30 m^3 for each tank in the system)

g. the duration of the activity (no more than 2 months).

Information on the contents of the *Petroleum Guidelines* is in Section 3 of this Users' Guide. For this activity, the key sections in the Guidelines are Module 3 – Site Assessment; Module 4 – Tier 1 Soil Assessment Criteria; and Module 7 – Site Management. Module 7 is particularly relevant as it presents guidance on managing environmental issues during underground fuel system removal and replacement activities.

An important decider as to whether the activity can proceed as permitted will be the volume of soil that is disturbed and is able to be taken away. Regulations 8(1)(d) and (e) set a limit of 30 m^3 of soil for each tank in the system for both disturbance and removal. For clarification the following guidance is given.

- Soil is not defined in the NES so it has its ordinary meaning and means the native substrate. Soil does not include bedding material associated with the tank and/or ancillary equipment, any concrete/steel, that form the tank pit, or any associated hardstanding.
- Bedding material is not soil and therefore does not contribute to the disturbance or removal threshold. Bedding material is a granular material, often pea gravel which is placed in a tank pit to seat the tank *in situ*. Note: If bedding material is contaminated it should also be removed to a facility consented to receive such waste, in accordance with the guidance in Section 7.3.1.2 of the Petroleum Guidelines (which regulation 8(1)(a) references).
- In determining the volume of soil disturbance, the *in-situ* volume of natural soil should be measured.
- The limits on disturbance and removal are not additive, so if any one of these clauses is breached, the rule is breached. That is, up to 30 m^3 of soil can be disturbed as a permitted activity, and all of this soil can be taken away. If more than 30 m^3 of soil is disturbed, then the volume threshold for disturbance as a permitted activity is exceeded, and a consent is required.

The 30 m^3 limits on soil disturbance and removal apply to each tank in the fuel storage system. This is not a site allowance, aggregated across the total number of tanks on a site, but is calculated according the number of tanks in the system that is being removed. The following are examples of application.

- A leak in a pipe beneath a dispenser requires removal and replacement of the dispenser and the leaking pipe. The dispenser may service a number of tanks; however, the leaky pipe is connected to only one tank, therefore up to 30 m^3 of soil can be disturbed as a permitted activity.

- Two tanks are to be removed from a tank pit containing three tanks that are all part of the same fuel storage system, as defined in the NES. Up to 60 m^3 of soil can be disturbed as a permitted activity.
- A large tank that is divided into smaller compartments, for example, containing different fuel products is considered to be one tank for the purposes of the NES. This is because, if it were to be removed, it could only be removed as a single item.
- Underground has its ordinary meaning, so an above ground fuel storage tank contained in an underground concrete vault for example, is not considered to be underground if no part of the pipework is underground. (In that case, removal of the concrete vault or foundations would be considered a soil disturbance activity under the NES).

As noted above and in Section 2.1.2, soil disturbance that occurs in the course of removing or replacing fuel storage systems is not subject to other permitted activity regulations, in particular regulation 8(3), but may be subject to other controls as provided for under the relevant district and regional plans, for example, controls on noise, earthworks and groundwater monitoring wells.

Case studies 3 and 4 in Section 5 of this Users' Guide describe typical situations of tank removal activities.

2.3.2 Sampling soil as a permitted activity

Regulation 8(2) permits soil sampling, which is defined in regulation 5(3) as sampling to "determine whether or not it is contaminated, and if it is, the amount and kind of contamination". The objective of this regulation is to allow the taking of soil samples to determine the presence, extent and nature of any contamination, including the relatively small-scale and temporary activities necessary to obtain samples, such as drilling, trenching and test-pitting. Permitting this activity enables the collection of information on the land's actual or potential contamination for a more accurate assessment of risk.

To be undertaken as a permitted activity, the NES requires that:

a. controls be put in place to minimise human contact with the soil during the sampling – including the people undertaking the sampling and people on the property or neighbouring properties

b. the soil be reinstated to an erosion resistant state within a month of completing the sampling

c. soil is only removed from the land as samples for the purpose of laboratory analysis

d. if there is a structure in place designed to contain contaminants, then the integrity of the structure must not be compromised. Examples of such structures include lined compounds in oil storage terminals, lined sludge ponds, or capped areas containing contaminated soil. Sampling of or through these structures can take place, but the sampling method needs to ensure there is no possibility of contaminants being mobilised and the structure's integrity must be reinstated at conclusion of the sampling.

Any adverse effects from sampling activities are considered likely to be minor and can be managed by putting in place controls on the site to eliminate or minimise human contact with possible contaminants in soil. The controls required for soil sampling activities under the NES are restricted to those related to human health. The controls must minimise the potential

exposure of workers involved in the investigation, as well as people working or living on the land under investigation or on neighbouring properties.

Under New Zealand legislation, when a site is known to be contaminated there is an onus on the employer to be aware of the potential hazard. The Health and Safety in Employment Act 1992 protects the safety of individual workers and requires the employer (and individuals) to take steps to identify and eliminate, isolate or minimise hazards. Carried out properly, this will reduce the exposure of workers carrying out the investigation to acceptable limits. Controls should also be put in place to minimise mobilisation of contaminants (for example, in dust or water) to prevent people living or working on or adjacent to the site being exposed to the contaminants.

Sampling and associated activities may be subject to other controls under the relevant district and regional plans, such as controls on noise, earthworks and groundwater monitoring wells.

Case study 1 in Section 5 gives an example of a soil sampling activity.

2.3.3 Disturbing soil as a permitted activity

Regulation 8(3) allows for relatively small-scale soil disturbance that may occur on land that is not associated with either soil sampling or removing or replacing fuel systems.

The NES requires:

a. that controls be put in place to minimise people's contact with the soil during the disturbance works – including the people undertaking the disturbance works and any people on neighbouring properties who might come into contact with contaminants moving off-site (for example, in dust or water)

b. that the soil be reinstated to an erosion resistant state within one month of completing the sampling or subsurface works

c. that, if there is a structure in place designed to contain contaminants, then the integrity of the structure must not be compromised

d. disposal of removed soil at a facility authorised to receive such waste

and sets limits on the:

e. volume of soil disturbance (no more than 25 m^3 (*in-situ* volume) per 500 m^2 of land)

f. volume of soil removed (up to a total limit of 5 m^3 (*in-situ* volume) per 500 m^2 of land per year, not including soil removed as samples for laboratory analysis) – provided that the soil is disposed of at a facility authorised to receive such material

g. duration of the soil disturbance (no longer than 2 months).

This allows small-scale activities such as minor landscaping, foundation excavations, and replacement of underground services to occur without the need for resource consent. The disturbance and removal of such volumes is generally a low risk activity, provided the requirements around controlling exposure and disposal are met. Landowners should work with contractors to ensure unauthorised dumping of potentially contaminated soil does not occur.

The limits are set relative to the land area where the land area is the piece of land being investigated because of its history of hazardous activities, not the total land parcel. For example,

if excavation works are required on a large commercial site, in an area that was formerly used for chemical storage, then the volume of soil permitted to be disturbed must be calculated relative to the area of that piece of land (ie, 25 m^3 (in-situ volume) per 500 m^2 of the piece of land per year). But if the "piece of land" is very large, for example a closed landfill of 2000 m^2, the threshold of 25 m^3 per 500 m^2 means that up to 100 m^3 may be disturbed per year. Of the volume disturbed, up to 5 m^3 of soil per 500 m^2 of land can also be removed and taken away from the site, but only to a facility authorised to receive the soil.

The limit on the removal of soil is a limit on the total of all soil arising from all disturbances within a year. This is to prevent a person removing large quantities of contaminated soils through a number of small soil movements. A year is not defined in the NES, so a person could remove this amount on two consecutive days, with each day considered as occurring in consecutive years.

As for soil sampling, the controls required for soil disturbance activities under the NES are restricted to those related to human health. The soil disturbance activities may be subject to controls to reduce other effects (such as environmental effects) through regional or district rules (for example, controls on earthworks to reduce water and sediment run-off).

Case study 2 in Section 5 gives examples of how to apply the NES to different soil disturbance activities.

2.3.3 Subdividing land or changing land use as a permitted activity

Regulation 8(4) allows land-use change or subdivision of a piece of land where it can be demonstrated it is ***highly unlikely*** that there will be a risk to human health given the intended activity. Highly unlikely should be interpreted in a plain English way to mean a high probability that there is no serious or real and substantial risk.

To meet the requirements of a permitted activity, a preliminary site investigation (PSI) must be provided to the council before the change of use begins or before subdivision proceeds under the relevant district rule. A PSI would need to be submitted for each of the resulting land parcels of a subdivision that contain a piece of land on which hazardous activities are being, have been, or are more likely than not to have been undertaken.

A PSI is defined in regulation 3 as an investigation that is completed in accordance with the current edition of *CLMG No.1* and certified by a "suitably qualified and experienced practitioner" (see also Section 2.1.1 of this Users' Guide). The purpose of such a report is to establish land-use history, and make a preliminary assessment of the likely contaminants and potential exposure pathways (a site conceptual model). Regulation 8(4)(b) also requires the provision of a relevant site plan within the report. The site plan should clearly identify the location of the piece of land and, if available, indicate the likely layout of the new buildings or structures on the site in relation to any potential soil contamination.

In this case, to meet the requirements for permitted activity, the investigation report would make an assessment as to the potential for people who will use the land to be exposed to contaminants, and whether it is likely that such exposure would present a risk to their health. It is important to note that, in this case, the regulations do not require soil sampling to be undertaken, nor for applicable standards to be identified. Rather a qualitative assessment can be made, based on the likely nature of any contamination and the exposure pathways by which

existing or future occupants of the land may be exposed to the soil. Case study 5 in Section 5 of this Users' Guide, is an example of this situation.

This permitted activity allows the use, development or subdivision of a piece of land where contaminants, even if present, are highly unlikely to present a risk to human health. To comply with the regulation the council must be satisfied that the person who certified the report is a suitably qualified and experienced practitioner and that the report has been completed in accordance with *CLMG No.1*.

Provided this condition is met, no resource consent will be required for these activities under the NES. The re-development or subdivision may be subject to additional controls as required by the relevant district and regional rules.

2.4 Activities requiring consent

Regulations 8(5) and 8(6) require that, if an activity cannot meet the requirements for a permitted activity, a resource consent will be required.

For an application to be considered as a controlled or a restricted discretionary activity, the consent authority must receive a detailed site investigation report on the land. The report must identify the applicable standard for soil contamination for the land (where the applicable standard is derived in accordance with the regulations, see figure 3 and Section 2.2 of this Users' Guide). If the detailed investigation shows that the soil contamination does not exceed the applicable standard for the land, then the activity must be considered as a controlled activity. If the detailed investigation shows that the soil contamination does exceed the applicable standard for the land, then the activity must be considered as a restricted discretionary activity.

A detailed site investigation is defined in the regulations as an investigation that is completed and certified by a suitably qualified and experienced practitioner in accordance with the current editions of both *CLMG No.1* and *CLMG No.5*. A detailed site investigation involves sampling, which should be conducted in accordance with the permitted activity requirements; otherwise a resource consent would be required for that as well.

2.4.1 Controlled activities

An application can be considered as a controlled activity under regulation 9 if it cannot meet the requirements of a permitted activity, and if a detailed investigation shows that the soil contamination does not exceed the applicable standard for the current or intended land use. Because the land meets the applicable standard for the land use, the risk from contaminants on the land is considered acceptable.

A resource consent is required for a controlled activity. The consent authority must grant the consent, unless it has insufficient information, and can only impose conditions on the consent about matters over which control is reserved under the NES. Controlled activity applications under the NES are not notified.

Regulation 9 groups the activities into two categories for the purpose of specifying the matters over which the consent authority has control.

If the activities are removing or replacing fuel storage systems, sampling soil, or disturbing soil, a council can control the earthworks being undertaken, including:

a. the adequacy of the detailed site investigation, including site sampling, laboratory analysis, and risk assessment (based on the guidance in *CLMG No.5*)

b. how the activity must be managed, monitored and reported, which may include the requirement for a site management plan to be in place for the duration of the works

c. the transport, disposal and tracking of soil and other materials taken away in the course of the activity to ensure the soil goes to an appropriate disposal facility, and there is no risk to people during the transportation of the soil (for example, from spills or dust emissions)

d. the timing and nature of the review of the conditions in the resource consent

e. the duration of the resource consent.

If the activity is subdividing or changing land use, the council can only exercise control over the adequacy of the detailed site investigation. Because the land meets the applicable standard for its proposed use, there is no need to manage the activity. Consents for land use and subdivision do not have a fixed term.

To comply with the regulation, the council must be satisfied that the person who certified the detailed site investigation report is a suitably qualified and experienced practitioner and that the report has been completed in accordance with *CLMG No.1 and CLMG No.5*.

Case studies 2 (Variation B), 3 (Variation C), 5 and 7 (Variation B) in Section 5 of this Users' Guide, contain examples of these activities.

2.4.2 Restricted discretionary activities

An application can be assessed as a restricted discretionary activity under regulation 10 if it does not meet the requirements of a permitted activity, and if a detailed investigation shows the soil contamination exceeds the applicable standard for the current or intended land use. The applicant must decide what to do to make the land safe for the current or intended land use. There are two options:

1. remediate (clean up) the land to reduce the concentration of the contaminants to an acceptable level

2. manage the land to prevent exposure of people to the contaminants.

Resource consent is required for both these options.

Resource consent is required for a restricted discretionary activity. The consent authority may decline the consent, or grant it subject to conditions, but these can only apply to matters for which it has discretion.

If the site is to be remediated so the soil meets the applicable standard, the land use will be considered acceptable without ongoing restrictions. The resource consent will therefore specify the applicable standard to be met by the remediation, and the controls that must be put in place during the remediation activity to protect people's health during the remedial works.

A landowner may elect not to remediate the land, for example, because the additional expense is not justified or if management controls can be implemented to ensure the risk to people is acceptable. Management controls could include containment of the contamination or behavioural controls that restrict the behaviour of occupants or residents of the land so exposure is minimised. In this case, the resource consent can specify how the applicable standard is to be met and maintained in the future, and may require restrictions to be put in place on activities that can take place on the land.

For some sites, a combination of remediation and management controls is the most appropriate form of risk management.

Regulation 10(3) sets out the matters over which the council has discretion when assessing and granting the application.

a. The adequacy of the detailed site investigation, including site sampling, laboratory analysis, and risk assessment (based on the guidance in *CLMG No.5*).

b. The suitability of the piece of land for the proposed activity, given the amount and kind of soil contamination.

c. The approach to the remediation or ongoing management of the piece of land, including:

    i. the remediation or management methods to address the risk posed by the contaminants to human health

    ii. the timing of the remediation

    iii. the standard of the remediation on completion – both the applicable standard that must be met and the method of validating (confirming) that the standard has been met (based on the guidance on site validation contained in *CLMG No.1*)

    iv. the mitigation methods to address the risk posed by the contaminants to human health

    v. the mitigation measures for the piece of land, including the frequency and location of monitoring specified contaminants.

d. The adequacy of the site management plan or the site validation report or both, as applicable (based on the guidance contained in *CLMG No.1*).

e. The tracking, transport and disposal of soil and other materials taken away from the piece of land, to ensure the soil goes to an appropriate disposal facility, and there is no risk to people during the transportation of the soil (for example, from spills or dust emissions).

f. The requirement for and conditions of a financial bond for example.

g. The timing and nature of the review of the conditions in the resource consent.

h. The duration of the resource consent.

Case study 9 in Section 5 of this Users' Guide, is an example of this situation.

2.4.3 Discretionary activities

If an activity cannot meet the requirements for a permitted activity, and if a detailed site investigation is not provided, the activity will be assessed as a discretionary activity under regulation 11.

The consent authority has full discretion over the assessment and granting of an application of a discretionary activity, subject to the requirements set out in section 104 of the RMA.

Case studies 4 and 6 (Variation B) in Section 5 of this Users' Guide provide examples of where a landowner applies for discretionary activity consent.

3 Material incorporated by reference

Under section 43G of the Resource Management Act 1991 (RMA), methods or requirements may be incorporated into a National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health by referring to external documents. The benefit of this is that NES is not too unwieldy and the external documents can be updated regularly without going through a public process. The Minister may change material incorporated by reference at any time by publishing a notice in the Gazette (see Schedule 1AA).

The NES incorporates six documents, all of which have been reviewed and updated to ensure consistency with the NES. The key aspects and applicability of each document are summarised in the following sections, along with the recent changes to the documents. It is recommended that users ensure they are using the current editions, which are available on the Ministry for the Environment website: www.mfe.govt.nz.

3.1 HAIL

Document: Hazardous Activities and Industries List (HAIL)

Web address: http://www.mfe.govt.nz/issues/hazardous/contaminated/hazardous-activities-industries-list.html

Use in the NES: The HAIL is defined in regulation 3 ***Interpretation*** and referred to in Regulation 5 ***Application*** of the NES. The NES refers to the HAIL list as a way to identify the land use to which the NES applies. Under the regulations, a piece of land is considered to be actually or potentially contaminated if an activity or industry in the HAIL has been, is, or is more likely than not to have been undertaken on that land.

Background and key features: The HAIL is a list of industries and activities which typically use or store hazardous substances that could cause contamination if these substances escaped from safe storage, were disposed of on the site, or were lost to the environment through their use.

The fact that an activity or industry appears on the list does not necessarily mean that hazardous substances were used or stored on all sites used by that activity or industry, or that a site of this sort will necessarily have contaminant substances present in the soil at levels that are hazardous to human health. The list merely indicates those activities and industries that are more likely to use or store hazardous substances, as a means of identifying pieces of land to which the NES applies.

In applying the list, it must be remembered that the activity may only have occupied a small part of the site, and therefore the NES only applies to that piece of land.

2011 changes: The HAIL was originally published in a Ministry guideline document in 2003 and was based at that time on a list first published in 1999. It was updated in 2011 to remove ambiguities and introduce new categories under which the different hazardous activities and industries are sorted. As the list may be added to from time to time, users should always check the latest version.

Appendix C includes the HAIL and an additional table that shows how the categories have changed from the old to the 2011 version, and includes information on the typical contaminants associated with the individual HAIL activities and industries.

3.2 Methodology document

Document: *Methodology for Deriving Soil Guideline Values Protective of Human Health* (Ministry for the Environment, 2011)

Web address: http://www.mfe.govt.nz/publications/hazardous/deriving-standards-for-contaminants-in-soil/index.html

Use in the NES: Defined in and referred to in regulation 7 ***Standards*** of the NES. The *Methodology* provides a national method for deriving soil guideline values (SGVs) for the protection of human health and a list of mandatory soil contaminant standards to protect human health ($SCSs_{(health)}$) for common land-use scenarios.

Key features: The *Methodology* is a technical report that introduces and sets out the risk-based methodology the Ministry has adopted as government policy for deriving $SCSs_{(health)}$. $SCSs_{(health)}$ are derived for five generic land-use exposure scenarios and 12 priority contaminants that are of primary concern in New Zealand (see Appendix B of this Users' Guide).

The 12 priority contaminants are:

- seven elements – arsenic, boron, cadmium, chromium (in trivalent and hexavalent forms), copper, inorganic lead, and inorganic mercury
- five organic compounds, or groups of compounds – benzo(a)pyrene (to represent the carcinogenic polycyclic aromatic hydrocarbons); DDT (as the sum of DDT and its metabolites DDD and DDE); dieldrin (or aldrin or the sum of aldrin and dieldrin); pentachlorophenol; and dioxin (including tetrachlorodibenzo-*p*-dioxin (to represent dioxin mixtures) and dioxin-like polychlorinated biphenyls).

The five standard land-use exposure scenarios are:

- rural/lifestyle block
- residential
- high-density residential
- parks/recreational
- commercial/industrial.

In addition to the five standard scenarios, some additional residential sub-scenarios have been derived for illustrative purposes. The additional residential scenarios are for proportions of home-grown produce other than the standard 10 and 25 per cent. The additional derivations show the effect on the derivations for zero and 50 per cent home-grown produce and may be used where site-specific derivation of SGVs is warranted.

Section 9 of the *Methodology* contains an explanation of the methodology for the development of site-specific SGVs. Once the appropriate value is derived under the methodology, this becomes the applicable standard for the piece of land.

3.3 Petroleum Guidelines

Document: *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand* (Revised 2011) (Ministry for the Environment, 2011)

Web address: http://www.mfe.govt.nz/publications/hazardous/oil-guide-jun99/index.html

Use in the NES: Referred to in regulation 8(1)(a) ***Permitted activities – Removing or replacing fuel storage system***. The *Petroleum Guidelines* provide guidance specifically for sites potentially contaminated with petroleum hydrocarbons. The NES requires that permitted activities associated with removing or replacing underground fuel storage systems be conducted in accordance with the guidelines.

Background and key features: These guidelines, commonly referred to as the Oil Industry Guidelines, were developed jointly by the oil industry and regulatory authorities to provide consistent and suitable methods of site investigation, contamination assessment, risk assessment, modelling, and site management. The guidelines focus on sites that have stored, handled or distributed petroleum products. The guidelines comprise seven modules:

- **Module 1: Risk-based approach to site assessment and management** presents an overview of the risk-based approach to assessing contaminated sites.
- **Module 2: Hydrocarbon contamination fundamentals** provides background about the physical and chemical attributes of petroleum hydrocarbon contamination.
- **Module 3: Site assessment** gives guidance on suitable methods of site investigation, including sampling programme design, sampling techniques, and quality assurance.
- **Module 4: Tier 1 soil acceptance criteria** contains soil guideline values for petroleum contaminants. The criteria for benzo(a)pyrene have been superseded by the soil contaminant standards derived in the *Methodology*, but the criteria for other contaminants, including volatile compounds, may still be selected as soil guideline values, in accordance with regulation 7(4) and the hierarchy contained in *CLMG No.2*.

  Note: The SCS and soil acceptance criteria are not applicable standards when the piece of land will continue to be used as a petroleum handling facility. In this case, exposure to petroleum hydrocarbons must be managed in accordance with occupational health and safety legislation. A maintenance excavation scenario is included, which is not one of the standard scenarios in the *Methodology*.

- **Module 5: Tier 1 groundwater acceptance criteria** applies the health and environmental risk assessment principles outlined in Module 4 to groundwater.
- **Module 6: Development of site-specific acceptance criteria** outlines procedures for developing Tier 2 and 3 site-specific acceptance criteria.
- **Module 7: Site management** provides an overview of the options available for site control, management and remediation of petroleum hydrocarbon contaminated sites and the basis for choosing various options.

2011 changes: Module 7 was updated in 2011 and presents guidance on managing environmental issues during underground storage tank and underground petroleum equipment removal and replacement, including:

- petroleum storage and dispensing equipment removal and replacement
- soil removal and management

- soil benchmarking
- liquid management
- air quality management
- dust management.

3.4 CLMG No.1 – Reporting

Document: *Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand (Revised 2011)* (Ministry for the Environment, 2011)

Web address: http://www.mfe.govt.nz/publications/hazardous/contaminated-land-mgmt-guidelines/index.html

Use in the NES: Regulation 3 ***Interpretation*** of the NES requires preliminary site investigations and detailed site investigations to be prepared in accordance with this guideline.

Background and key features: This guideline was the first in the Contaminated Land Management Guidelines series produced by the Ministry. The purpose of the guideline is to ensure consistency of reporting on the investigation, assessment and remediation of contaminated sites in New Zealand.

Five reporting stages, which track the site investigation process from inception through to remediation or long-term management, are described:

- preliminary site investigation report (PSI)
- detailed site investigation report (DSI)
- site remedial action plan
- site validation report
- ongoing monitoring and management plan.

Figure 7 in Appendix D illustrates the five reporting stages and how they fit within the framework of the NES.

CLMG No.1 prescribes the minimum requirements for the contents of each report and contains checklists covering these five reporting stages. The checklists should be used by persons reviewing reports (as well as those preparing the reports) to ensure sufficient and appropriate information has been provided to enable review and action by regulators, landowners and other interested parties. Report stages may be presented separately, as is often the case with complex sites, or they can be combined. The listings are indicative rather than directive and are provided to help achieve a uniform approach to reporting. The main checklist is not appropriate for reports prepared following the removal of petroleum underground storage tanks, and for this reason a separate checklist on this topic is provided.

2011 changes: This guideline was originally published by the Ministry in April 2001. A third edition was published in 2011 to update references within the guideline and to include reference to the NES. The third edition adopts the phrase preliminary site investigation report (rather than preliminary site inspection report), because this is the terminology used in the NES.

3.5 CLMG No.2 – Hierarchy and Application of Guideline Values

Document: *Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011)* (Ministry for the Environment, 2011)

Web address: http://www.mfe.govt.nz/publications/hazardous/contaminated-land-mgmt-guidelines-no2/index.html

Use in the NES: Regulation 7(4) ***Standards*** of the NES requires that this guideline be used to establish the applicable standard for the piece of land if the contaminant of concern is not a priority contaminant or when the assessor chooses not to derive a site-specific value using the *Methodology*.

Background and key features: This guideline was developed to ensure the consistent selection and application of the environmental guideline values used in contaminated site assessments in New Zealand. It outlines the reference documents containing guideline values, including those most commonly used by contaminated site practitioners in New Zealand, and provides background information on the guideline values contained in each reference document. The document establishes a hierarchy of environmental guideline values that are to be used **if there is no appropriate soil contaminant standard – and if the assessor chooses not to derive a value using the *Methodology***. In these cases, *CLMG No.2* establishes a hierarchy which determines the order in which guideline values contained in various reference documents should be used in a contaminated site assessment. The hierarchy is:

1. New Zealand documents that derive risk-based guideline values
2. rest-of-the-world documents that derive risk-based guideline values
3. New Zealand documents that derive threshold values
4. rest-of-the-world documents that derive threshold values.

The Environmental Guideline Value (EGV) database has been developed as a companion to this guideline. The EGV database contains the guideline values provided in the reference documents discussed in *CLMG No.2*. The database maintains the hierarchy established in this document and is intended to provide a quick and user-friendly reference to the guideline values.

The database should be used with care because reference documents are revised and superseded by the various regulatory agencies that publish them. Although these reference documents may change over time, the hierarchy itself will not change.

2011 changes: *CLMG No.2* was originally published by the Ministry in 2003. The guideline was updated in 2011 to update references within the document and to include reference to the NES.

3.6 CLMG No.5 – Site Investigation and Analysis of Soils

Document: *Contaminated Land Management Guidelines No.5 – Site Investigation and Analysis of Soils (Revised 2011)* (Ministry for the Environment, 2011)

Web address: http://www.mfe.govt.nz/publications/hazardous/contaminated-land-mgmt-guidelines-no5/index.html

Use in the NES: Regulation 3 ***Interpretation*** of the NES requires detailed site investigations to be undertaken in accordance with this guideline.

Background and key features: This guideline describes best practice for the sampling and analysis of soils, gives guidance on the interpretation of the data obtained, and contains best practice for site remediation and management. This guideline promotes a nationally consistent approach to investigating and assessing contaminated land and analysing soil samples. The guideline provides:

- best practice that should be followed for the sampling and analysis of soils on sites where contaminants are present or suspected
- guidance on the principles governing the interpretation of the data obtained.

The guideline is primarily concerned with soil sampling of soils containing metals, and volatile and semi-volatile organic compounds, although the same general principles could equally apply for investigating other media such as air, groundwater or surface waters impacted by contaminants. It does not provide information on collection techniques for other environmental media, such as soil gas, groundwater, surface water and sediments, although these may also be integral to a detailed site investigation.

2011 changes: *CLMG No.5* was originally published by the Ministry in 2004. It has been updated in 2011, with updates to references within the document and to include reference to the NES.

3.7 Guideline documents – not incorporated by reference

Contaminated Land Management Guidelines series (CLMG)
CLMG No. 3 Risk Screening System (Ministry for the Environment, 2004) Provides a system for doing a desktop risk screening of contaminated land. The HAIL list was originally contained in Appendix 4 of this document. CLMG No. 4 Classification and Information Management Protocols (Ministry for the Environment, 2006) Provides a consistent method for local government registers and the release of information through relevant legislation (eg, land information memoranda through the Local Government Official Information and Meetings Act 1987 and project information memoranda through the Building Act). Promotes a practical, nationally consistent framework to assist local authorities investigate and monitor contaminated land and manage the effects of land use. The guideline also promotes best practice among local authorities for identifying and classifying sites, and for providing information to landowners and other interested parties. Not intended to provide a precise recipe for creating a particular type or form of database for storing information on land contamination. Rather, it provides an overall information management strategy that, together with a set of categories and procedures, can be applied to achieve consistency between local authorities.
Industry-specific guidelines
The following guidelines contain general guidance on specific activities and industries, and numerical soil guideline values for selected chemicals. The general guidance is still relevant; however, soil guideline values for priority contaminants have been superseded by the soil contaminant standards. Criteria for non-priority contaminants may still be used in accordance with regulation 7(4) and the hierarchy contained in *CLMG No.2*. Health and Environmental Guidelines for Selected Timber Treatment Chemicals (Ministry for the Environment and Ministry of Health, 1997) Guidelines for Assessing and Managing Contaminated Gasworks Sites in New Zealand (Ministry for the Environment, 1997) Identifying, Investigating and Managing Risks Associated with Former Sheep-dip Sites: A Guide for Local Authorities (Ministry for the Environment, 2006)

4. How the NES relates to other statutory requirements

4.1 Resource Management Act 1991

4.1.1 Roles and responsibilities of district and regional councils

The Resource Management Act 1991 (RMA) prescribes the functions of local government for the management of natural and physical resources under that Act. Functions relating to contaminated land are:

- **regional councils**:
  - the investigation of land for the purposes of identifying and monitoring contaminated land (s.30(1)(ca))
  - the control of the use of land for the purpose of the maintenance and enhancement of the quality of water in water bodies and coastal water (s. 30 (1)(c)(ii))
  - the control of discharges of contaminants into or onto land, air, or water and discharges of water into water (s. 30 (1)(f))
- **district and city councils**:
  - the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of ... the prevention or mitigation of any adverse effects of the development, subdivision, or use of contaminated land (s.31(1)(b)(iia)).

This means:

- Regional councils are responsible for managing all discharges to the environment. Regional rules can either allow these discharges as permitted activities or require consent. Regional councils can also investigate contaminated land. Many regional councils have assembled available information about contaminated land onto a database, including land known to have been used by hazardous industries or hazardous activities.
- District and city councils control how land is used. District rules can require resource consents for specified land uses and for subdivisions.

When a regional or district plan adopts a rule that requires a resource consent for a specified activity, the council must assess any applications for that activity in accordance with the requirements of the RMA (s.104). This includes "having regard to any actual and potential effects on the environment" which includes "Ecosystems and their constituent parts, including people and communities" (s.2).

The purpose of this NES is to "protect human health" and the matters controlled in the NES relate only to the protection of human health.

The different roles of the councils mean they will need to work together to manage contaminated sites in their respective jurisdictions, and if regional councils have the most up-to-date information about the area where the piece of land is located, then it is desirable that they make this available to the territorial authority (see the requirements of regulation 6(1)).

It is up to the councils how they manage the flow of information between them but a single regional GIS database with access provided to territorial authority consent officers may be the most efficient. This could then be updated with reports from preliminary and detailed site investigations, land-use registers, soil monitoring results etc.

Contaminated Land Management Guidelines: No. 4 – Classification and Information Management Protocols (2006) promotes a nationally consistent classification system and procedures for the recording and reporting on the land status.

4.1.2 How will the NES affect regional plans?

This NES does not apply to any functions of regional councils and so does not affect rules in regional plans (NES regulation 4(b)).

4.1.3 District rules and the NES

This NES does not say that a district rule can be more stringent than the NES and so all regulations in this NES prevail over any district rule that applies to assessing and managing contaminants in soil to protect human health (RMA s.43B(1)).

A district rule cannot be more lenient than any NES (RMA s.43B (3)). If the district rule is more lenient, the NES prevails.

A district rule can permit an activity that is permitted by the NES, but the rule can only restrict effects that are not dealt with in the NES (RMA s.43A(5) – see below).

> (5) If a national environmental standard allows an activity and states that a resource consent is not required for the activity, or states that an activity is a permitted activity, the following provisions apply to plans and proposed plans:
>
> (a) a plan or proposed plan may state that the activity is a permitted activity on the terms or conditions specified in the plan; and
>
> (b) the terms or conditions specified in the plan **may deal only with effects of the activity that are different from those dealt with in the terms or conditions specified in the standard**; and
>
> (c) if a plan's terms or conditions deal with effects of the activity that are the same as those dealt with in the terms or conditions specified in the standard, the terms or conditions in the standard prevail.

All district plans have rules regulating subdivision and land use. Those district rules will continue to have effect in as far as they apply to controlling effects **other than** assessing and managing contaminants in soil to protect human health. This is because those effects are outside the scope of the application of the NES.

The NES does not contain any policy guidance. Councils must assess any consent applications under the NES in accordance with the requirements of section 104 of the RMA.

When considering an application for a resource consent required by regulation 9, regulation 10, or regulation 11, the consent authority must have regard to any relevant provisions in the district plan or proposed district plan, and the regional policy statement or proposed regional policy statement (RMA s 104).

In regulation 9, the NES has reserved control over specified matters. This means that provisions in the district plan or regional policy statement will only be relevant if they relate specifically to those matters. Conditions may only be imposed for matters over which the NES has reserved control (RMA s.104A).

In regulation 10, the NES has restricted its discretion to certain matters. As with regulation 9, provisions in the district plan or regional policy statement will only be relevant if they relate specifically to those matters. If granted, conditions may only be imposed on the consent for matters within the discretion of regulation 10 and the application can only be declined in relation to these matters.

In regulation 11, there is no restriction on the discretion of the assessment of the activity, or the conditions that may be imposed – the consent authority must have regard to any relevant matter as directed in section 104 of the RMA.

The assessment of applications, and granting or declining of the resource consent, will relate only to the activity as described in the NES, and only insofar as that activity relates to assessing and managing contaminants in soil to protect human health. The district plan may have district rules that require a resource consent to subdivide the piece of land, or to change the land use, which deal with effects on, for example, amenity or traffic. The requirements of those rules will still apply.

4.1.4 Removal of plan rules that duplicate or conflict with the NES

The NES does not specify how it affects rules made before the NES came into force and so section 44A(3) of the RMA does not apply.

If a district rule (permitted activity) deals with assessing and managing contaminants in soil to protect human health and duplicates or is in conflict with the NES, the territorial authority must amend the plan to remove the duplication or conflict without using Schedule 1 (RMA s.44A(4)).

In every other case of duplication or conflict, the territorial authority must amend the plan to remove the duplication or conflict without using Schedule 1 (RMA s.44A(5)).

A rule is deemed to conflict with a standard's provision if:

- the plan rule is more restrictive than the standard's provision, or
- a plan rule is more lenient than the standard's provision.

Where a district plan does not contain rules that address contaminated land provisions to the extent addressed by the regulations, the council may amend its plan to include references to the NES (for example, where better alignment of a rule with the NES may be appropriate) without having to use the Schedule 1 process.

In relation to the regulations, sections 44A(7) and (8) of the RMA require that:

> (7) Every local authority and consent authority must observe national environmental standards.
>
> (8) Every local authority and consent authority must enforce the observance of national environmental standards to the extent to which their powers enable them to do so.

Any council that does not undertake the requirements in the regulations, or fails, without good reason, to address the issue of enforcement, will be considered to be failing to meet its responsibilities under the RMA.

4.1.5 How will the NES affect existing resource consents?

Resource consents continue to have effect if they were granted before 1 January 2012 – the day this NES came into force.

4.1.6 Existing-use rights

Existing-use rights will apply to activities established as permitted activities under the NES in the same way as they do to activities established as permitted activities under district plan rules.

Existing-use certificates can still be sought under section 139A (Certificates of Compliance) of the RMA. The existing use rights provisions in sections 10 and 10B apply to activities that were lawfully established before the NES came into force. Sections 10 and 10B apply to existing activities as if the Standard were a rule in a plan that had become operative (RMA s. 43B(9)).Note the provisions of section 10A and 20A(2) are not relevant to the NES.

4.1.7 Designations

Section 43D of the RMA prescribes the relationship between an NES and designations. The existing designation takes precedence unless it lapses or is altered to an extent that the conditions of the NES are relevant. However, there are specific instances where that is not the case, for example if an outline plan is required but has not been completed when the NES came into force (see section 43D and section 176A of the RMA).

4.2 Building Act 2004

The building of houses and other buildings is controlled by the Building Act 2004. It applies to the construction of new buildings as well as the alteration and demolition of existing buildings.

All new building work in New Zealand must comply with the Building Code. It is a performance-based code, which means it states how a building and its components must perform as opposed to describing how the building must be designed and constructed.

New Zealand's main systems for governing building work (collectively known as 'building controls') are the Building Act 2004, the Building Regulations 1992, and the Building Code, which is the First Schedule to the Building Regulations. Specifically Clause F1 – Hazardous Agents on Site of the Building Code addresses the requirements for buildings to be constructed to avoid the likelihood of people within the building being adversely affected by hazardous agents or contaminants on the site. Clause F1 of the Building Code[1] also recommends the site history is considered before a building consent application is submitted to ensure the provisions of the Clause are met.

[1] Building Regulations 1992. Schedule 1. New Zealand Building Code Clause F1 Hazardous Agents on Site. Ref. Figure 1. Pg12.

Building plans and specifications are assessed by building consent authorities to ensure they comply with the Building Code before a building consent is issued. The requirements of section 37 of the Building Act 2004 (see below) will apply if soil contamination will or may materially affect the building work.

> 37. Territorial authority must issue certificate if resource consent required
>
> (1) This section applies if a territorial authority considers that—
>
> (a) a resource consent under the Resource Management Act 1991 has not yet been obtained; and
>
> (b) the resource consent will or may materially affect building work to which a project information memorandum or an application for a building consent relates.
>
> (2) The territorial authority must issue a certificate, in the prescribed form, to the effect that until the resource consent has been obtained—
>
> (a) no building work may proceed; or
>
> (b) building work may only proceed to the extent stated in the certificate.
>
> (3) The certificate must be—
>
> (a) attached to the project information memorandum; or
>
> (b) if no project information memorandum has been applied for, provided to the building consent authority.

The associated process is a project information memorandum (PIM) where RMA and infrastructure issues are checked. This process falls outside the Building Act functions carried out by building consents officers and is usually carried out by a PIM officer or similar.

5 Case studies

Case study 1 – Soil sampling as a permitted activity

The owner of a large industrial site is considering subdividing and redeveloping the land for residential purposes. The landowner knows the site is on the regional council's land-use register and knows that a number of activities listed on the HAIL have occurred on the land in the past. Also, a capped area containing contaminated soil from a previous activity is recorded on the council register. Both the land and the proposed subdivision activity are therefore subject to the NES.

The landowner knows that the subdivision will not meet the test of a permitted activity, because it cannot be demonstrated that it is highly unlikely that there will be a risk to human health given the intended land use. The landowner therefore decides to undertake a staged site investigation. A consultant is commissioned to undertake a preliminary site investigation (in accordance with *CLMG No.1*) to gather information about historic site activities and their location on the site. Based on the information gathered, a conceptual model of the site, identifying possible contaminants and potential exposure pathways, is developed. The consultant uses this model to design a detailed site investigation in accordance with the guidance contained in *CLMG No.5*.

The consultant determines that a mixture of soil samples and groundwater samples are required. Soil samples are to be collected from both open test pits, using an excavator, and from soil bores drilled using a drilling rig. The drilling rig will also be used to install groundwater monitoring wells.

The consultant determines that the investigation can be completed in accordance with the permitted activity requirements in the NES for soil sampling (regulation 8(2)) by implementing the following regime:

1. Site management: Throughout the investigation, management controls will be put in place to minimise the potential for contaminants in soil to be mobilised so human exposure is minimised. Management controls include those required to ensure the health and safety of workers conducting the investigation works, and controls to minimise the movement of contaminants off-site, where neighbours could be affected. For example, measures could be taken to control run-off from exposed soils from rainfall; if test pitting is occurring during summer, the use of sprinklers to suppress dust may be appropriate.

   For more guidance on ways to protect the health and safety of workers, refer to the Department of Labour's Health and Safety Guidelines on the Cleanup of Contaminated Sites (1994):
   http://www.osh.dol.govt.nz/order/catalogue/pdf/cleanupguide.pdf.

2. Completion: Within one month of completing the sampling, the soil will be reinstated to erosion resistant state. In this case, the test pits will be reinstated to ground level and any soil stockpiles will be placed away from stormwater flow paths and shaped to reduce sediment run-off.

3. Sampling of the capped area can be conducted, provided the sampling method ensures there is no possibility of contaminants being mobilised and the cap's integrity must not be compromised as a result of the sampling.
4. Soil will not be removed from the site, except as samples for laboratory analysis.

   No consent is therefore required under the NES for the sampling; however, consent may be required independently of the NES for installing and sampling groundwater wells, under the relevant regional plan.

Following the investigation, the consultant prepares a single report containing information gained during the preliminary site investigation and the results of the detailed site investigation. In the report, the results of chemical analysis of the soils sampled are compared with the applicable soil contaminant standards for the intended land use. The report informs the landowner whether the land meets the standard for the intended land use, or whether the site poses an unacceptable risk to human health, which requires remedial action. The report will ultimately be used to support a consent application for the subdivision activity.

The landowner must include the detailed site investigation report as part of the documentation for a resource consent application. The NES does **not** require the landowner to give the council a copy of the sampling results, if the sampling is not on HAIL land, or is not done as a prerequisite for an activity under the NES provided the sampling complies with the permitted activity requirements. However, he or she may wish to provide the report to the council, thereby creating a record that may facilitate the assessment of future activities on the piece of land.

Case study 2 – Soil disturbance

A landowner decides to undertake some earthworks at the rear of a property. The earthworks will take place in an area of around 100 m^2 and involve digging out a bank, installing retaining walls, and recontouring the area to create a flat unsealed area where equipment will be stored. The volume of the soil being disturbed for the recontouring is 50 m^3 and around 10 m^3 of the soil needs to be removed from the site. After the earthworks the land is to remain unsealed.

The property is listed on the regional council's land-use register as being potentially contaminated because there was an underground diesel storage tank on the site and the land is thought to have been occupied by a motor vehicle workshop in the past.

Variation A (NES not applicable): The landowner commissions a practitioner to undertake a preliminary site investigation to gather information about historic site activities to determine if the underground diesel storage tank and the motor vehicle workshop were situated within the piece of land where the earthworks are to take place. Property records are searched and a site plan of the workshop is found that clearly shows that the workshop and the storage tank were located on the other side of the property, some distance from the proposed earthworks. Checks on other historic site activities on that piece of land show no record of hazardous activities being undertaken in the area of the proposed earthworks.

The practitioner includes all relevant information in a preliminary site investigation report and concludes that it is unlikely that any HAIL activities were carried out in the proposed work area at the back of the site. The landowner supplies the report to the council to confirm that the NES does not apply to the proposed disturbance. The landowner may wish to obtain a certificate of

compliance from the council for the work, or for any future activities they may want to undertake on that land.

Variation B (controlled activity): A preliminary site investigation report on the property is held on council records and shows that the piece of land where the earthworks are to take place was occupied in the past by the motor vehicle workshop. The land is therefore subject to the requirements of the NES. If the earthworks cannot comply with the permitted activity requirements (regulation 8(3)) a resource consent will be required.

In this case, the extent of the earthworks exceed the permitted activity thresholds for soil disturbance in the NES as, over a piece of land 100 m^2 in area, the volume of the soil being disturbed for the recontouring is more than 5 m^3 (given that the permitted ratio of soil disturbance is 25 m^3 per 500 m^2 of land) and soil to be removed from the site is more than 1 m^3 (given that the permitted soil removal ratio is 5 m^3 per 500 m^2 of land). Therefore, a resource consent application will be required.

The landowner elects to proceed with a detailed site investigation and commissions a consultant to undertake the investigation. Based on the existing preliminary site investigation report and on the landowner's knowledge of the site over a long period of ownership, the consultant designs an appropriate site investigation involving a small number of test pits and surface samples to be collected using a hand auger. The site investigation is designed and conducted using the guidance in *CLMG No.5*, and is based on a conceptual model of the site. The scale of both the conceptual model and the site investigation is appropriate to the site, the contaminants of concern, and the potential risk posed by the proposed soil disturbance.

The soil investigation complies with the requirements for a permitted activity (regulation 8(2)), and upon completion the consultant prepares a detailed site investigation report. In the report, the results of chemical analysis of the soils sampled are compared with the applicable soil contaminant standards for the intended land use (commercial/industrial land use). The investigation determines that the concentrations of contaminants in soil are less than the applicable standard, therefore the consent for the soil disturbance activity can proceed as a controlled activity.

As required by regulation 9(1)(c) the landowner provides the investigation report to the territorial authority (TA) along with an application for a controlled activity resource consent under the NES.

> It would be good practice for the landowner to submit any other resource consent applications that may be required for the activity at the same time, so the council has a total picture of the activity, and can be consistent in the controls applied.

In reviewing the application for the controlled activity under the NES, the TA can only consider (see regulation 9(2) for more detail):

- the adequacy of the detailed site investigation
- how the soil disturbance activity must be managed, including the transport and disposal of soil removed from the land
- the timing and nature of the review of the conditions in the resource consent
- the duration of the resource consent.

In this case, the TA refers to the guidance in Section 2.2 of *CLMG No.1* and the report checklist contained in *CLMG No.1* and considers that the report provided sufficiently characterises the nature and extent of the contamination, and the risk posed by the contaminants. The TA grants consent for the controlled activity under the NES, subject to two conditions: (1) that a site management plan for the earthworks be approved by the TA before works begin and (2) that the soil disposal facility be approved by the TA.

> The detailed site investigation report should be placed on the property file and the territorial authority should advise the regional council.

Case study 3 – Removing a fuel storage system as a permitted or a controlled activity

A single 5000 litre diesel underground storage tank (UST) and associated pipework and dispenser are to be removed and replaced with an above-ground system. The oil company (which owns the system) has no evidence of a spill or a leak occurring and therefore expects the excavation required will be less than the *in-situ* volume threshold for soil disturbance of 30 m^3 (set in regulation 8(1)(b)(iii)). It is therefore likely that the activity can comply with all of the permitted activity requirements and the oil company does not need to apply for consent to remove the fuel storage system under the NES (although there may be other notification or consent requirements in the relevant regional plan).

Variation A (permitted activity): To comply with the permitted activity requirements (regulation 8(1)), the fuel system removal must be carried out in accordance with the current edition of the *Petroleum Guidelines*. A typical sequence of events will be:

1. **Notification:** The territorial authority (TA) must be notified of the location and intended date of the works by the oil company (or their representative). For a permitted activity, notification must be within one month of the activity, but no later than one week before the fuel system removal is scheduled. The TA must also be notified of the intended facility (site name and address) at which soil is to be disposed of, which must be a facility authorised to receive the soil that is being disposed of. (Note: In some cases, more than one facility may be named, or it may be decided that no soil is to be removed from the site in which case this should be explained in the notification.)

   > It is recommended that TAs identify a person to receive these notifications by email. Ideally, the person's name and contact details (or an email address for correspondence) should be available on the council website. It is also recommended that TAs acknowledge receipt of the information.

2. **Tank removal and sampling:** Fuel systems are generally removed by a fuel services contractor who will also be responsible for implementing site management controls during the works to minimise any potential environmental impacts from the works (described in Module 7 of the *Petroleum Guidelines*).

   In this case study, the tank and associated bedding material, along with pipelines and a dispenser, are removed. A small amount of soil is disturbed during the works, less than

the 30 m^3 threshold for a permitted activity on a system containing only one tank, but no soil is required to be removed from the site. The bedding material is disposed of at an appropriate disposal facility, in accordance with the guidance in the *Petroleum Guidelines.*

Samples of the remaining soil and (if required) of the soil removed will usually be collected by a consultant on behalf of the oil company to benchmark soil. Soil samples are collected and analysed in accordance with guidance provided in Modules 3 and 7 of the *Petroleum Guidelines*.

The system was able to be removed, soil benchmark samples taken, and based on the results the excavation was reinstated within the two month time limit set in the regulations.

3. **Submission of report:** Following receipt of the soil benchmark sample results, the consultant prepares a report of the investigation. The form of the report should be generally in accordance with the Report form for the removal and replacement of underground storage tanks and underground equipment provided in *CLMG No.1*. To meet the requirements of a permitted activity, a copy of this report must be submitted to the TA within three months of completion of the activity which practically means, within three months of taking the final soil benchmarking samples. This allows adequate time for the samples to be analysed and the report to be prepared.

Once received the territorial authority should place a copy of the report for the removal and replacement of petroleum underground storage tanks and underground equipment (UST removal report) on the property files and notify the relevant regional council.

Variation B (permitted activity): In a variation to case study 3A, when the soil benchmarking results are received from the laboratory, it was found that hydrocarbon contaminated soil was present in the soil beneath the dispenser. The oil company returned to the site to remove around 3 m^3 of contaminated soil, which was disposed of at an approved disposal facility. This activity was undertaken within two months of the original system removal works, and therefore re-notification of the TA was not required. The excavation was benchmarked by the consultant and the sample results were included in the UST removal report. The report was submitted within three months of the additional excavation works.

Variation C (controlled activity): During the removal of the fuel storage system described in this case study, it became apparent that there was significant hydrocarbon contamination present in the soil and the extent of excavation required may exceed the threshold for a permitted activity (30 m^3 volume of soil for the single tank system described in this case study (regulation 8(1)(d)). Under the NES, consent will therefore be required.

The oil company will need to make a decision as to how to proceed – whether to hold the excavation open and apply for a consent to extend the excavation, or whether to fill in the excavation temporarily, reinstate the ground, and apply for consent. The course of action taken will depend on commercial and logistical matters such as location, availability of contractors, ability of disposal facility to take additional soil, and the requirements of the landowner.

Under the NES, controlled and restricted discretionary activities can only occur when a detailed site investigation has been conducted on the land in accordance with *CLMG No.5*. In this case, the oil company elects to proceed with a detailed site investigation to delineate the extent of the contamination, and determine the volume of impacted soil that may need to be removed.

If there is suspicion of a contamination issue underground, the applicant is advised to apply for a consent in advance of starting any earthworks. This would avoid the situation of halting work while consent is sought. This example is covered in case study 4.

The sampling investigation is designed using the guidance in *CLMG No.5*. Soil samples are taken (as a permitted activity), the applicable standard for the land identified (as described in Section 2.3 of this Users' Guide), and a detailed site investigation report is prepared in accordance with *CLMG No.1*.

The investigation identifies the volume of soil to be removed (which exceeds the permitted activity threshold for soil disturbance of 30 m^3 per tank in the system) and confirms that the remaining soil on the site will meet the applicable standard for the land use. Thus, the soil disturbance activity is a controlled activity. The oil company provides the investigation report to the TA along with an application for controlled activity resource consent for soil disturbance (along with any other notifications or consents required for the activities being undertaken). As a controlled activity, the consent must be granted.

In reviewing the application for the controlled activity under the NES the TA must consider (regulation 9(2)):

a. the adequacy of the detailed site investigation
b. how the soil disturbance activity must be managed, monitored and reported on
c. the transport and disposal of soil removed from the land
d. the timing and nature of the review of the conditions in the resource consent
e. the duration of the resource consent.

In this case, the TA refers to the guidance in Section 2.2 of *CLMG No.1* and the report checklist contained in *CLMG No.1* and considers that the investigation report provided by the oil company sufficiently characterises the nature and extent of the contamination, and the risk posed by the contaminants. The TA grants consent for the controlled activity under the NES, subject to the following conditions:

1. that a site management plan for the earthworks be approved by the TA before works begin
2. that the soil is disposed at an approved facility and receipts for soil disposal be submitted to the TA with the validation report
3. that a site validation report, prepared in accordance with the report form for a UST removal report (as per *CLMG No.1*) be submitted to the TA within three months of completion of the works.

The TA places a copy of the detailed site investigation report and the validation report on the property file and advises the regional council.

Case study 4 – Removing a fuel storage system as a discretionary activity

An active service station contains three old tanks that the service station owner (as the fuel system owner) wishes to replace to meet modern standards. Available information indicates that fuel losses may have occurred.

In this situation, a detailed site investigation is best conducted during the actual tank removal process for the following reasons:

- The site is an operating service station and the owner does not wish to close the business for the time required to undertake and report on a detailed site investigation. (Also, it is not standard practice to undertake detailed investigations close to live fuel systems, due to the risks of breaching the system).
- The forecourt canopy limits the ability to use drilling or excavators to take soil samples under the forecourt.
- The location of any historic fuel losses is unknown, and therefore a specific area is not able to be targeted in an investigation.

Based on past experience, it is highly likely that the soil excavation required will exceed the limit of 90 m^3 (the total volume of soil permitted to be disturbed or removed for a three tank system without consent). Given the issues expected, the service station owner elects to take a conservative approach and apply for consent (as a discretionary activity) under the NES, so they can proceed with the investigation and soil removal without interruption should the limit for a permitted activity be exceeded.

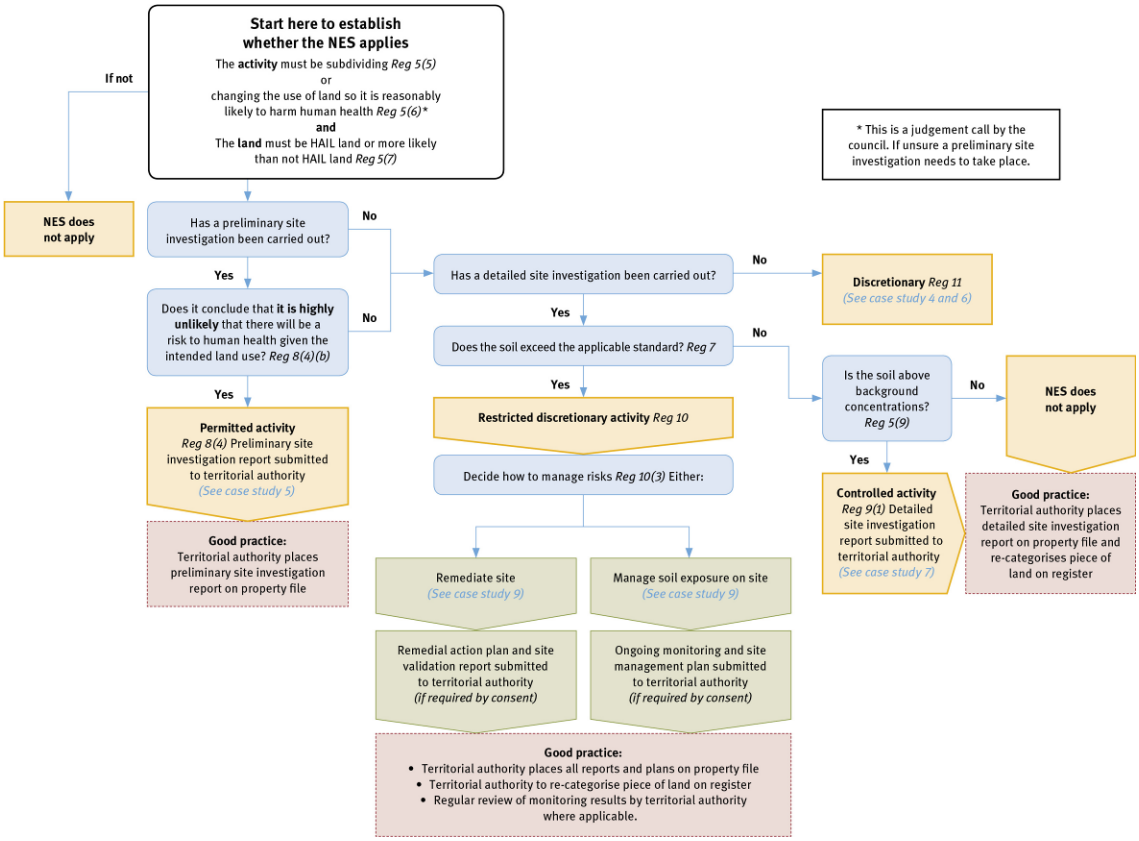
While the TA has unlimited discretion regarding the controls applied to discretionary activities, it is recommended that the council impose controls similar to those contained in the NES for permitted and controlled activities on fuel storage systems. For example, conditions on the consent could include the following:

- The removal of the fuel storage system and associated soil benchmarking must be managed, monitored and reported on in accordance with the *Petroleum Guidelines.*
- A removal report (prepared generally in accordance with the report form contained in *CLMG No.1*) must be submitted to the TA at conclusion of the soil removal and tank replacement, within three months of completion of the activity.
- Controls on transport and disposal of soil must be in place, including the requirement that the soil be disposed of at an authorised facility, and receipts for soil disposal be submitted with the UST removal report.
- Requirements for notification of progress on the excavation, and a limit on the duration of the consent.

In this case study, the three tanks were removed along with 200 m^3 of impacted soil from the tank pit and from beneath the forecourt. At the conclusion of the activity a copy of the UST removal report is supplied to the TA to be placed on the property files.

Activities involving subdivision and change of land use are addressed separately in the regulations and have different reporting and consent requirements than the other activities under the NES. Figure 6 sets these out in detail and provides a reference to the case studies that follow.

Figure 6: Reporting and consent requirements for activities involving subdivision or change of land use



Case study 5 – Subdivision of industrial land

The owner of a parcel of industrial land identified on the HAIL decides to subdivide the land to sell one of the resulting land parcels. The land is zoned industrial and has been used for a range of horticultural and agricultural service industries. The land contains a sealed yard area and an area of bare land that was used to store equipment and rubbish over a long period of time. The landowner decides to subdivide the land into two lots:

- Lot 1 – containing the sealed area and buildings. The landowner intends to retain ownership of this lot and continue with the existing use.
- Lot 2 – containing the unsealed, vacant land.

The first step is to determine whether the land is land to which the NES applies. In this case, a number of activities listed on the HAIL are known to have occurred across the whole land parcel in the past. However, their exact locations were never recorded on council records. As the NES applies to a piece of land on which hazardous activities are being, have been or more likely than not have been undertaken, then the NES applies to both lots.

The next step is to determine whether the activity is covered by the NES. In this case the activity is subdivision and as the land that is being subdivided is HAIL land, then the activity is covered by the NES (as per regulation 5(5)).

The subdivision can proceed as a permitted activity under the NES, if the requirements of regulation 8(4) are met, or a consent will be required.

To proceed as a permitted activity, the landowner would need to supply the TA with a preliminary site investigation (PSI) that states that it is highly unlikely that there will be a risk to human health if the subdivision goes ahead.

The landowner commissions a practitioner to undertake a thorough preliminary site investigation of the whole land parcel, in accordance with *CLMG No.1*. The consultant considers the nature of the historic activities undertaken and their associated potential for contamination in this instance, along with the current land use. The consultant prepares a report that documents the results of the investigation, and concludes that, while it is highly unlikely that there will be a risk to the health of current/future occupants of Lot 1 (sealed yard area and buildings with concrete floors eliminates any potential for contact with soil), this conclusion cannot be made for Lot 2, due to the unsealed nature and the uncertain future use of the site.

The landowner therefore elects to undertake a detailed site investigation of Lot 2. The practitioner designs an appropriate site investigation using the guidance in *CLMG No.5*. The scale of both the conceptual model and the site investigation is appropriate to the site, the contaminants of concern, and the potential risk posed from the proposed soil disturbance.

The soil investigation complies with the requirements for a permitted activity (regulation 8(2)), and upon completion the consultant prepares a detailed site investigation report. In the report, the results of chemical analysis of the soil sampled are compared with the applicable soil contaminant standards for the commercial/industrial land-use scenario. The investigation determines that the concentrations of contaminants in soil on Lot 2 are less than the applicable standards, therefore the consent for the subdivision can proceed as a controlled activity.

The landowner provides both the PSI (which finds that Lot 1 meets the requirements for a permitted activity) including a site plan and the DSI (which finds that Lot 2 meets the applicable standard for the current land use) to the territorial authority (TA) along with an application for a resource consent to be processed as a controlled activity under the NES.

Case study 6 – Change of land use with associated soil disturbance as a permitted or discretionary activity

A land parcel located in an industrial and commercial area has been used for a variety of activities over a long period, the most recent being the storage of used chemical drums and miscellaneous industrial equipment. The landowner decides to build a warehouse and office building on the land. The warehouse, together with a sealed carpark area at the front of the property, will almost completely cover the land; the only soil area left exposed will be a small strip of land behind the warehouse. Earthworks are required to level the site and dig foundations for the new warehouse and boundary fence.

The landowner lodges a building consent application for the construction of the warehouse. The building consent officer receives the application and identifies that the land is likely to have been used for hazardous activities and that the NES applies to the piece of land. The building

consent officer issues a certificate under s.37 of the Building Act, stating that the building work cannot proceed until consent has been obtained under the NES.

The landowner reviews the council records to determine the status of his piece of land and if the intended activities trigger the NES. The landowner discovers that a number of hazardous activities described in the HAIL have been undertaken on the land over the site's long industrial history, and determines that the proposed soil disturbance and the land-use change are the proposed activities that may be controlled by the NES.

Variation A (permitted activity) – In this variation of the case study, the volume of soil to be disturbed during the warehouse construction is less than 25 m^3 per 500 m^2 of the piece of land. No soil is required to be removed from the site. The landowner determines that the soil disturbance activities can therefore proceed as a permitted activity if the requirements of regulation 8(3) are met.

When considering the proposed land use, the landowner considers that, even if contaminants are present in the soil as a result of historic activities, future occupants will not come into contact with the soil as it will be covered by buildings or the sealed car park area. The landowner must satisfy the council planner that changing the use of the piece of land is not reasonably likely to harm human health and is therefore by definition (regulation 5(6)) not a change in use.

The subdivision is therefore permitted and no consent is required under the NES.

The preliminary site investigation (PSI) should be placed on the relevant property file and the TA should advise the regional council. To provide certainty, the landowner may also obtain a certificate of compliance from the TA under the NES. The certificate of compliance can be provided in support of the building consent application.

Variation B (discretionary activity) – In this variation of the case study, the site needs to be levelled to provide a level building platform for construction of the new building. In this case, the volume of soil to be removed will exceed the permitted activity threshold (of 5 m^3 of soil per 500 m^2 of land). Therefore, the activity can only be undertaken if it is granted consent.

Under the NES, controlled and restricted discretionary activities can only be granted when a detailed site investigation has been conducted on the land. In this case, the landowner decides not to conduct a detailed site investigation of the underlying soil (for the reasons described in variation A. The landowner therefore applies for a resource consent from the territorial authority, for a discretionary activity.

The TA has unlimited discretion regarding the controls applied to discretionary activities. However, when considering the overall objective of the NES the territorial authority should consider the following when assessing the application:

- the nature and extent of the potential contamination, that it has been sufficiently characterised, and the risk posed by contaminants to health and safety have been adequately assessed
- the method proposed to address the risk from the immediate activity (soil disturbance)
- the method proposed to ensure the land is safe for its intended use (commercial land use).

If the council chooses to grant consent, it is recommended they impose controls similar to those contained in the NES that are designed to control similar permitted and controlled activities. For example:

- A report should be submitted by the landowner (similar to the PSI required under regulation 8(4) and described in variation A), that confirms that it is highly unlikely that there will be a risk to human health arising from the intended land use.
- Controls should be placed on the soil disturbance, to minimise the potential for effects during the soil disturbance, similar to those that may be imposed for a controlled soil disturbance activity (see case study 2). Controls should be placed on the transport, disposal and tracking of soil removed from the site to ensure the soil is disposed of at an approved facility, and the receipts for soil disposal submitted to the TA.
- Controls should be placed on the duration of the soil disturbance activities.

All reports received by the council should be placed on the relevant property file and provided to the regional council. The consent should be provided to the building consent officer, as required by the s.37 certificate.

Case study 7 – Subdivision of production land and land-use change

A large farm is to be subdivided to create two smaller farms, both on separate titles. An activity listed on the HAIL, a sheep-dip, is known to have been present on the original farm property. The newly created property will remain in use as production land with a new residence and garden to be constructed in a flat paddock close to a road and former yards area.

The NES will apply to the piece of land on which the new residence (farmhouse) is to be constructed, the immediate vicinity of the residence (generally the farmhouse garden/lawn areas), and the area where a vegetable garden is intended to be located, **if this piece of land is "more likely than not"** to have contained the sheep-dip.

There is no requirement under the NES to investigate the rest of the newly subdivided property, as it will continue to be used for production land. Similarly, there is no requirement under the NES to investigate the original farm or residence, as these land uses are not changing.

The first step in the process is to determine whether the sheep-dip is more likely than not to have been located where the new residence is proposed to be located. To do this, the applicant should conduct a preliminary site investigation (PSI), in accordance with *CLMG No.1*. Information held by the territorial authority should be reviewed, although in cases such as these, there is often good information on the previous land use and potential contamination issues to be gained from current and past landowners and/or neighbours. The applicant could also consult general guidance on identifying former sheep-dip sites, such as that contained in the Ministry for the Environment's *Sheep-Dip Guidelines*.

Variation A (NES not applicable): In this variation of the case study, the location of the former sheep-dip is well known and documented evidence is available that demonstrates that the sheep-dip was not on the piece of land intended to be used for a new residence and garden area. In this case, the NES will not apply to the activity.

It is recommended that the landowner provide this information to the TA so the location of the sheep-dip can be recorded on the relevant property file, and this information is available for future reference.

Variation B – controlled activity: In this variation, no conclusive information was available as to the likely location of the sheep-dip. Given the location of the proposed residence on flat land near former yards, the PSI is unable to conclude that the sheep-dip is not "more likely than not" to have been located on the piece of land. Thus the NES applies to the piece of land.

The next step is to determine if the activity can comply with permitted activity requirements of regulation 8(4). For a subdivision and a change in land use (from production land to residential) the requirement for a permitted activity is that it is "highly unlikely that there will be a risk to human health if the activity is done to the piece of land". Given the potential presence of sheep-dip contaminants on the land, the activity cannot meet permitted activity requirements. Consent will be required for the subdivision and land-use change, and a detailed site investigation will need to be undertaken to determine whether the activity is a controlled or a restricted discretionary activity.

Detailed site investigation is only required for the piece of land used for residence and garden as the remainder of the property will continue to be used for production purposes. The sampling investigation is designed using the guidance in *CLMG No.5*, soil samples are taken (as permitted activity), the applicable standard for the land identified (as described in Section 2.2 of this Users' Guide), and a detailed site investigation report is prepared in accordance with *CLMG No.1*.

The investigation finds that the concentrations of sheep-dip contaminants (eg, arsenic, DDT, dieldrin and lindane) in soil are less than the applicable standards; therefore, the subdivision activity is a controlled activity. The landowner (and subdivision applicant) provides the investigation report to the TA along with an application for a resource consent for subdivision and change of land use under the NES. The application for consent for the subdivision (under the district plan) may also be submitted at the same time.

In reviewing the application for the controlled activity under the NES, the TA can only consider the adequacy of the detailed site investigation (regulation 9(4)), and must be assured that the nature and extent of the potential contamination has been sufficiently characterised and the risk posed by contaminants to health and safety has been adequately assessed. In this case, the TA refers to the guidance and report checklist contained in *CLMG No.1* as well as to the *Sheep-Dip Guidelines* for information, and considers that the report is adequate.

As a controlled activity, the consent must be granted.

The TA places a copy of the detailed site investigation report on the property file and advises the regional council.

Case study 8 – Land-use change where the NES is not applicable

A piece of land is retired from farming for conservation purposes (eg, placed under covenant), fenced, and planted in native plants. The piece of land includes part of an airstrip and location of former bulk fertiliser bins that were used to supply topdressing aircraft. As these activities are listed on the HAIL, the NES applies to the piece of land.

The next step is to determine whether the activity of changing the use of the piece of land is covered by the NES. As described in Section 2.1.2 of this Users' Guide, the key decision to be made is whether, under the intended land use, the exposure to soil is reasonably likely to harm human health. In this case, the activity is **not** reasonably likely to harm human health (because the land will be covered in plants and will not be used by people), so according to regulation 5(6) the NES is not applicable.

Case study 9 – Subdivision and land-use change as a restricted discretionary activity

The large former industrial site described in case study 1 is to be subdivided and developed into a number of small residential lots. The landowner commissions staged preliminary and detailed site investigations as described in case study 1. The results of the investigations indicate that the soils on the site exceed the applicable standard for the intended land use; therefore, the activity will require consent to proceed as a restricted discretionary activity under the NES.

The landowner elects to remediate part of the site by excavating and removing some contaminated soil, so the remaining soil meets the applicable standard. However, in one part of the site it is considered more appropriate to leave the contamination in place and to implement on-going management measures to ensure residents are not exposed to the contaminants. The risk management will comprise installation of a geotextile marker layer over the contaminated soil overlain by a covering cap of clean soil, along with a management plan to control subsequent excavation activities in that area of the site. The landowner lodges a consent application for the subdivision and change in land use.

> The landowner must supply the detailed site investigation report with the consent application. Ideally, the landowner should also supply a remedial action plan and ongoing management plan (both of which are described in *CLMG No.1*) along with the consent application, if required by the TA. Alternatively, the TA may make provision of these reports a condition of the consent.

In reviewing the application for consent under the NES the TA must consider the matters over which discretion is restricted according to regulation 10(3)(a) to (h).

In this case, the TA refers to the guidance and report checklist contained in *CLMG No.1* and considers that the investigation report sufficiently characterises the nature and extent of the contamination, and the risk mitigation and management measures proposed. The TA grants consent for the activity under the NES, subject to several conditions:

1. that a site management plan for the earthworks be approved by the TA before works begin

2. that the soil disposal facility be approved by the TA and receipts retained by the landowner for review (if required)
3. that samples of the remaining soil be taken for validation purposes, including the cap, and supplied to the TA in a site validation report at the completion of the remediation
4. that the ongoing site management report be approved by the TA before the subdivision consent is granted.

A suitably qualified and experienced practitioner should undertake or supervise the remediation on behalf of the landowner and prepare a validation report that states that the soil meets the applicable standard.

When the remediation is complete, the subdivision consent may be processed and the TA puts the reports on the relevant property file(s) and advises the regional council. The piece of land now has to be assigned a different category in the register (eg, change from 'contaminated land' to 'land-use information – investigated and remediated').

6 Good practice for councils

This section provides examples of good practices councils can adopt to help implement the NES.

6.1 Sharing knowledge and experience

Territorial authority planning, subdivision, and building consent staff are required to consider the NES when development applications are received. Therefore, promoting and sharing good practice amongst territorial authorities in incorporating the NES in routine checking procedures will help with its successful implementation. Sharing contaminated sites knowledge and expertise between territorial authorities and their regional councils will also be beneficial. Agreed communication protocols and possibly funding arrangements between the different agencies are important so channels of communication and responsibilities are clearly defined.

The following are examples of how expert knowledge and experience may be shared.

- Establishing a forum for staff in territorial authorities and regional councils that meets regularly to share ideas, knowledge and information on contaminated land to improve relationships and increase the contaminated land knowledge base within councils.

> The *Waikato Contaminated Land Liaison Group* is an example of collaboration and cooperation between councils in one region. This forum was initiated in 2008 by the Waikato Regional Council and comprises council staff from environmental health and services, policy and planning, land hazard, LIM, pollution control and contaminated land.
>
> Letters were written to the CEO of each council outlining the changing landscape of contaminated land issues, the benefits of a collaborative approach, and requesting their support and endorsement of the group.
>
> The group meets around four times each year for a full day to discuss topical issues, contaminated land policies, formulate group submissions, manage relationships and information sharing between the authorities, discuss case studies, share best practice experiences, and listen to guest speakers on specialist contaminated land subjects.

- Setting up a shared online folder for NES implementation tools to complement this section of the Users' Guide from a council perspective. Territorial authorities could upload items useful to the wider group, including application forms, checklists, flowcharts, FAQs, threshold/trigger tables, good examples, and webpage information.
- Identifying staff with experience in contaminated site investigations and assessment within councils (either regional or territorial) and encouraging/enabling them to provide a mentoring or review role. For example, skilled regional council staff could review investigation reports that are submitted to territorial authorities under the NES.
- Inviting external practitioners on a regular basis to submit qualification packages with CVs and proof of education, training and experience to be included on a list of 'approved practitioners' held by the council that meet the criteria of "suitably qualified and experienced".

- Staff training units within or between councils to upskill and update council officers in implementing and administering the NES. For example, Auckland Council has initiated such targeted training.
- Supporting staff to become members of relevant professional and industry bodies and to attend relevant conferences, workshops and seminars. Examples of professional and industry bodies include WasteMINZ (Waste Management Institute of New Zealand), EIANZ (Environment Institute of Australia and New Zealand), and ALGA (Australasian Land and Groundwater Association).
- Establishing job-share or cost sharing arrangements between territorial authorities. For example, a number of councils in one region could fund a staff member to provide a dedicated resource to the NES implementation.

6.2 Information and database management

The NES places the onus on territorial authorities to provide up-to-date information about land, so a person can determine whether or not the NES is applicable. Access to external information and capturing and managing information internally is therefore an important component to successfully implementing the NES.

The information available to territorial authorities should also include regional council and Environmental Protection Authority (EPA) records that relate to HAIL sites. Therefore, establishing procedures and protocols for information exchange will be critical to achieving this requirement under the NES.

The NES also requires some persons or applicants to provide PSI and DSI reports to the territorial authority about pieces of land. These reports should be retained and be readily available for future reference.

The following are examples of good practice for information and database management.

- Holding information about a piece of land in one central database so there is a single repository for all information about the contamination status of a piece of land. Ideally, such a database would be GIS-based to ensure information is readily accessible when property boundaries may have changed. A GIS database could also be used to flag sites where contaminants are known or considered likely to have migrated across property boundaries.

A good example is the *open data sharing initiative* between Greater Wellington Regional Council and the territorial authorities in its region.

Greater Wellington has compiled information about sites in its region with a land-use history of where hazardous activities or industries are taking place or have taken place. This information is held on a digital register called the SLUR (selected land use register). Querying the register has involved a search either by Greater Wellington or by a territorial authority through a secure web link referred to as the TA Extranet. The register is associated with a GIS (Geographical Information System) layer which until December 2011 was posted as a zipped shapefile of SLUR spatial information to the TA Extranet website on a quarterly basis.

Now Greater Wellington has developed a GIS layer for its website that offers user options from browse only to intranet deployment through ESRI ArcGIS Server technology. It displays different layers to select and provides public access to its SLUR dataset. This means anyone can now check whether a specific land parcel in the Wellington region is on SLUR; whether it has been verified as having had a hazardous activity or industry carried out or not, what that activity was, whether contamination has been confirmed, and if the land is remediated or managed. The public website can be viewed at http://mapping.gw.govt.nz/gwrc/.

In addition, the territorial authorities can view the property names and site history for SLUR sites and can access this data through a secure password user account. Dynamic integration exists between GIS and SLUR databases based on common Site ID. The integrated data is updated on a daily basis allowing territorial authorities to access and retrieve the most-up-to-date information directly.

Greater Wellington reports great time savings in looking up information in response to public requests, as in many cases the information publically available on the website is sufficient for most enquirers.

- Establishing internal communication procedures or protocols between building consent and resource consent officers to pick up land-use changes that fall under the NES. This is particularly relevant, where a building consent applicant decides not to get a project information memorandum (PIM). Therefore, it is good practice that territorial authorities routinely carry out a development check which encompasses the PIM matters.
- Establishing communication protocols between agencies that clearly set out roles and responsibilities, particularly arrangements for database access between agencies and the responsibility for retention of records and updating of information.
- Recording all investigation reports received on a piece of land on the property file. This includes PSIs, DSIs and additional reports generated as a result of the exercise of a consent (such as a site validation report, ongoing monitoring and management plans and reports). These should also be supplied to the regional council where a relevant land-use database exists.

A good example for taking initiative to screen and update relevant council information is Kapiti Coast District Council. This Council is undertaking an inventory of in-house files, employing a retired dangerous goods officer to review contaminated land information stored in council archives and files. Relevant material is scanned and the information forwarded to the regional council to complement the database. This ensures all information held at the district council is duplicated in the master database with the bonus of easier access and more effective search functionality.

- Signing an operational agreement with the EPA to gain access to the EPA Test Certificate Register. Each council chief executive and their delegates have a statutory right of access to this register being an "approved person" under the Hazardous Substances and New Organisms (HSNO) Act. The register is a secure website, administered and maintained by the EPA, which contains all test certificates issued by test certifiers under the HSNO Act, for example, test certificates for hazardous substance locations, stationary containers and approved handlers.

- Gathering current and historical information on HAIL sites and recording the information on the property file. For example, in Tasman, Otago and Wellington investigations into the locations of potential sheep-dip sites have been undertaken.

> Tasman District Council took a proactive approach to identify old sheep-dips before they get included in the urban sprawl and lifestyle blocks. Awareness amongst farmers was raised through newspaper articles about why and how the Council tries to locate old dips. This brought forward 'historians', who remembered, with the help of old maps, where the dips were. Other valuable sources of information were stock agents, and Federated Farmers.
>
> The Council contacted the landowners and offered them free soil testing for arsenic using a hand held XRF as an incentive to be part of the project. Most agreed and were interested to watch the XRF investigation, which shows immediate results and leads to good discussion. The cost per farm with 10 or more sites, including travel, is about $500.
>
> This exercise gave staff experience with sheep-dips, and gave landowners practical advice on cheap solutions such as how to farm around the old sheep-dip sites and how to stop having livestock in the sites. The four sheep-dip fact sheets (on Envirolink website) were well received.
>
> The investigation reports to Council do not include any landowner names, but they do go on the Council register and into LIMs.
>
> Another initiative Tasman District Council is undertaking is scanning a 1963 land-use map (National Resources Survey – Nelson Region, by Ministry of Works) and marking the sheep farming areas. This sheep farming layer is then overlaid on the current map, which automatically becomes a record for an unconfirmed HAIL site. The Council can then justifiably ask about HAIL activities such as sheep-dips when a NES triggering activity is being proposed.

- Checking current and historical aerial photos where the current use (eg, farming) indicates a HAIL activity or industry is or could have been taken place, but the land is not listed on the council register. This will provide the most-up-to-date information to establish if the NES should apply. Historical aerial photos are often held by the regional council, or other common sources such as NZ Aerial Mapping.

- Including specific questions in the subdivision and change in land-use application forms to be better able to determine if the NES applies. For example, for a farm, is/was there persistent pesticide bulk storage or use, are there livestock dips, storage tanks for fuel, chemicals or liquid waste, waste disposal sites and where are/where they located?) See also Section 6.4, example 1 for general questions that can be included into application forms.

6.3 Interactions with landowners

Landowners also play an important role in achieving successful implementation of the NES. Clearly communicating to landowners the requirements of the NES is important to ensure a 'no surprises' approach.

The following are examples of good practice councils could adopt when interacting with landowners.

- Informing landowners about the NES by having information available in the council offices or by sending information to landowners on their database. A leaflet for landowners with practical information on the NES will be available on the Ministry for the Environment website.
- Including prompts about the NES in information used by council staff when receiving queries from the public about subdivision and other activities covered by the NES. In particular, upon receiving any queries about subdivision, the territorial authority should alert landowners that the NES may apply. Ideally, if information is requested by a member of the public from the council property database, information about the NES and about the contamination status of the land should also be supplied where a relevant land-use database exists. This information should also be provided on a LIM. Section 6.4 provides examples of prompts or information that could be used by councils.
- Providing council contact details to landowners so notifications required by the NES can be easily provided. For example, a number of permitted activities under the NES have specific reporting requirements (eg, dates for fuel system removal and replacement activities, and notifications of soil disposal). A contact method, such as an email address, should be provided on documents and council websites. Good practice would be for a nominated staff member(s) to check notifications regularly, acknowledge receipt of information, and/or determine if a response or follow-up is needed.
- Having a tracking system so contaminated soil is disposed of at a facility authorised to receive soil of that kind rather than being illegally dumped. Working with contractors is especially relevant to avoid the risk of landowners contaminating other areas under the permitted activity threshold for disturbing soil, where a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year, but there is no notification requirement under the NES.
- Developing relationships with relevant agencies or industry bodies, to streamline and standardise consent procedures for common activities.

6.4 Supporting templates

Example 1:
Recommended wording for prompts in resource consent, building consent, or project information memorandum (PIM) application forms

Is an activity described on the HAIL currently being undertaken on the piece of land to which this application applies?	Yes ☐ No ☐
Has an activity described on the HAIL ever been undertaken on the piece of land to which this application applies?	Yes ☐ No ☐
Is it more likely than not that an activity described on the HAIL is being or has been undertaken on the piece of land to which this application applies?	Yes ☐ No ☐
If 'Yes' to any of the above, then the NES for Assessing and Managing Contaminants in Soil to Protect Human Health may apply. Check the five activities to which the NES applies:	
Is the activity you propose to undertake removing or replacing a fuel storage system or parts of it?	Yes ☐ No ☐

Is the activity you propose to undertake sampling soil?	Yes ☐ No ☐
Is the activity you propose to undertake disturbing soil?	Yes ☐ No ☐
Is the activity you propose to undertake subdividing land?	Yes ☐ No ☐
Is the activity you propose to undertake changing the use of the land?	Yes ☐ No ☐
If also 'Yes' to any of the above activities, then the NES for Assessing and Managing Contaminants in Soil to Protect Human Health is likely to apply.	

Example 2:
Figure 7: Summary of permitted activity requirements

Removing/replacing fuel storage system
Regulation 8(1)

- In accordance with oil industry guidelines
- Territorial authority is notified – where and when activity is to be undertaken, where soil is disposed of
- Territorial authority is notified between 1 and 4 weeks before activity
- Soil disturbed or removed is less than 30 m^3 per tank
- Soil taken to authorised facility
- Activity duration is less than 2 months
- Investigation results to territorial authority within 3 months

Sampling soil
Regulation 8(2)

- Controls to minimise exposure are in place and effective, until soil is reinstated
- Soil is reinstated to erosion-resistant state within 1 month
- Soil remains on-site (except samples for lab testing)
- Integrity of soil containing structures are not compromised

Disturbing soil
Regulation 8(3)

- Controls to minimise exposure in place and effective, until soil is reinstated
- Soil reinstated to erosion-resistant state within 1 month
- Soil disturbed is less than 25 m^3 per 500 m^2
- Soil removed is less than 5 m^3 per 500 m^2 per year (not including samples for lab testing)
- Soil taken to authorised facility
- Activity duration less than 2 months
- Integrity of soil containing structures are not compromised

Subdividing or changing use
Regulation 8(4)

- A preliminary site investigation exists
- Report states risk to human health is highly unlikely
- Report includes a relevant site plan
- Consent authority has the report and plan

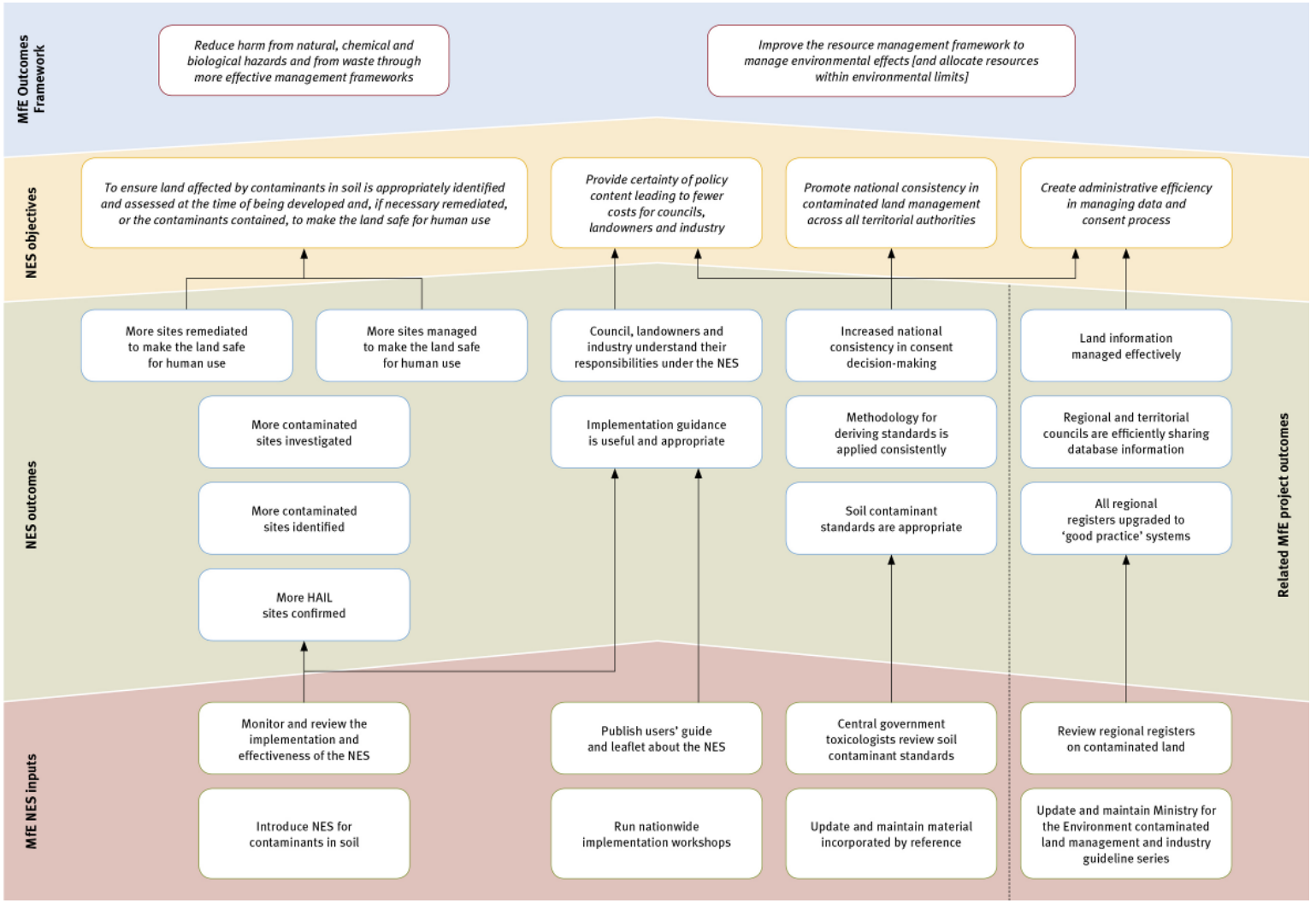
7 Monitoring and evaluation of the NES

The Ministry for the Environment and councils have a responsibility to monitor the implementation and effectiveness of the Resource Management Act 1991 (RMA). For the Ministry, this means to also assess the regulations made under the Act such as national environmental standards. The information in this section is provided to give a better understanding of what outcomes and objectives the Ministry aims to achieve through the NES and how that links to the type of data the Ministry may need to collect to measure if the NES is successful.

Measuring expected outcomes

First of all the Ministry wants to find out if the NES has been successfully implemented and administered by territorial authorities, that is, the NES requirements are put in practice as intended. Once implemented, the Ministry wants to evaluate if the NES is successful (ie, effective) in delivering its outcomes and policy objectives. In other words, has the NES lead to less people exposed to harmful contaminants in soil than would have been without the NES, while delivering net benefits to the council and community? The following diagram shows the relationships between NES outcomes and objectives and how they fit within the wider Ministry for the Environment policy framework.

Figure 8: NES outcomes and objectives within the wider Ministry for the Environment policy framework



Monitoring and evaluation requirements

Evaluation draws on information to assess whether the NES is achieving the intended results. Hence, monitoring information is essential for effective evaluation. Monitoring is the regular observation and recording of activities and outputs following the implementation of a policy. Monitoring data can be used to help decide whether the regulation is tracking as expected or whether it needs to be tweaked to improve its delivery. Interim data can be used to get a picture of overall trends, and will be published on the Ministry for the Environment website.

A full evaluation is intended to be undertaken within five years that will assess:

- trends established (as published in the annual web reports)
- whether intermediate outcomes of the NES have been achieved, eg, more national consistency in council decision-making
- whether additional support is needed from central government to improve the implementation and effectiveness of the NES
- if a review of the regulations is necessary to better achieve its purpose
- if a review of the policy is desirable to expand its scope (eg, including environmental values).

A mix of qualitative and quantitative information will be used for monitoring and evaluation. A large proportion of this information will come from requests to local government, but it is likely that some information will also be sourced from other affected parties such as the petroleum industry. Where possible, the Ministry will coordinate its requests to regional councils and territorial authorities for NES monitoring data with other administrative data requests. Ministry for the Environment captures RMA monitoring information in a number of ways including the Biennial Survey of Local Authorities and state of the environment monitoring. The qualitative or one-off data requirements will be collected through surveys or focus groups.

For the purpose of this Users' Guide, the Ministry has developed a preliminary monitoring and evaluation plan that sets out what the indicators of a successful outcome are, what data is likely to be needed and who holds this data, the method and frequency that could be used to collect the data, and ways of setting the collected data into context with available baseline information. This is meant to help councils determine early in the implementation process what type of data to collect and how it could be provided to the Ministry for future monitoring. The monitoring plan is not yet finalised – the Ministry is keen to work with councils on pragmatic solutions for how to best capture the data. The outcomes, indicators and preliminary monitoring plan for the NES are summarised in the table below.

Table 1: Outcomes, indicators and preliminary monitoring plan

Short-term outcome	Indicator of success	Preliminary monitoring plan
1. Implementation guidance useful and appropriate	Positive feedback on workshops and guidance. Councils, landowners and industry understand what the NES requires of them.	Immediate feedback on the Ministry's workshops and Users' Guide. Survey of council staff and industry on implementation (after first year).
Intermediate outcomes	**Indicator of success**	**Preliminary monitoring plan**
2. More HAIL sites confirmed	Increase in the number of sites confirmed as HAIL through council initiative. Increase in the number of HAIL sites confirmed by PSIs submitted by landowners.	Request to regional councils to provide annual data on total number of HAIL sites confirmed. Request to territorial authorities to provide annual data on number of PSIs received confirming HAIL sites.
3. More HAIL sites investigated	Increase in HAIL sites investigated – both for permitted activities (tank pulls, PSI stating risk highly unlikely) and where consent is required (DSI).	Request to territorial authorities to provide annual data on number of tank pull reports, PSIs and DSIs they received.
4. More contaminated sites identified	Increase in total number of contaminated sites (above applicable standard) identified through a DSI	Request to regional councils to provide annual data on numbers of sites contaminated, sites remediated, sites managed, and sites recorded in error. Request to territorial authorities to provide annual data on number of consents requiring remediation or management.
5. More contaminated sites under management	Increase in sites managed – can be assessed by number of consents requiring management.	
6. More contaminated sites remediated	Increase in sites remediated – can be assessed by number of consents requiring remediation in relation to previous year.	
7. Soil contaminant standards appropriate	Central government toxicologists keep values up to date with science. Central government toxicologists may develop or review new soil contaminant standards as required by policy.	Qualitative assessment by central government toxicologists convened by the Ministry for the Environment on demand. Alternatively, 10-yearly review of existing standards.
8. Methodology for deriving standards applied consistently	Comparisons of DSI reports received by various councils align with good practice guidelines and show consistent application.	Review of number of reports rejected or peer-reviewed due to poor quality. Qualitative assessment and comparison of representative sample of reports.
9. Increased national consistency in consent decision-making	Comparisons of consents from various councils show consistency.	Qualitative assessment and comparison of representative samples of consents.
10. Better sharing of contaminated land information and expertise	Increase of formal working relationships and best practice initiatives to share information and expertise between regional councils and territorial authorities.	Survey of territorial authorities and regional council staff – qualitative assessment on good practice data exchange and sharing of expertise.
11. All councils have 'good practice' registers to manage contaminated land information	All regional and unitary authorities have access to registers that comply with Contaminated Land Management Guidelines 4 (and with any subsequent revisions of these guidelines).	Survey of territorial authority and regional council staff – qualitative assessment regarding system upgrades and accessibility to up-to-date information.
Long-term outcomes	**Indicator of success**	**Preliminary monitoring plan**
12. Net economic benefits	Reduction in plan change costs, plan submission costs, dispute costs, public health costs, and contamination response costs.	Cost survey of territorial authorities, industries, and other relevant agencies.
13. Decrease in the number of people exposed to harmful contaminants	An estimate of the amount of people that were not exposed to harmful contaminants due to the NES (based on the assumptions of the cost-benefit analysis).	Five-yearly data request from territorial authorities that pre-NES did not have any plan rules or processes to assess contaminants in soil to provide number of restricted discretionary or discretionary resource consents triggered by NES.

The Ministry has a wider 'Monitoring and Review' project (MRP) underway. The project will establish a national monitoring framework to coordinate and manage the collection and sharing of nationally consistent and comparable information on the implementation and effectiveness of the RMA. MRP will explore the systems used by councils to collect information, identifying opportunities to improve information flows, including sharing best practices and processes across councils to build better systems where needed. MRP will provide greater certainty for councils on what, when and how information will be collected and used for monitoring RMA performance. A Steering Group and Technical Council Monitoring Group, which includes council officers from a range of councils, have been established to shape and inform the project as it evolves.

The Ministry's intention is that monitoring required for the NES will be incorporated into that framework progressively from the later part of 2012, but there may be some one-off information requests to local government in the interim.

Appendix A: Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

2011/361

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

Jerry Mateparae, Governor-General

Order in Council

At Wellington this 10th day of October 2011

Present:
His Excellency the Governor-General in Council

Pursuant to section 43 of the Resource Management Act 1991, His Excellency the Governor-General, acting on the advice and with the consent of the Executive Council, and on the recommendation of the Minister for the Environment given in accordance with section 44 of the Act, makes the following regulations.

Contents

Regulations

1 Title

These regulations are the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

2 Commencement

These regulations come into force on 1 January 2012.

3 Interpretation

In these regulations,—

Act means the Resource Management Act 1991

current edition means the edition that has legal effect when the edition is being used

detailed site investigation means an investigation that—

(a) is done by a suitably qualified and experienced practitioner; and

(b) is done in accordance with the current edition of *Contaminated Land Management Guidelines No. 5–Site Investigation and Analysis of Soils*, Wellington, Ministry for the Environment; and

(c) is reported on in accordance with the current edition of *Contaminated Land Management Guidelines No. 1–Reporting on Contaminated Sites in New Zealand*, Wellington, Ministry for the Environment; and

(d) results in a report that is certified by the practitioner

fuel storage system means a system in which at least 1 of the following is underground:

(a) a storage tank for aviation kerosene, diesel, kerosene, lubricating oil, or petroleum:

(b) the whole of the tank's ancillary equipment:
(c) part of the tank's ancillary equipment

HAIL means the current edition of the *Hazardous Activities and Industries List*, Wellington, Ministry for the Environment

person means the person referred to in regulation 5(1)(a)

preliminary site investigation means an investigation that—

(a) is done by a suitably qualified and experienced practitioner; and
(b) is reported on in accordance with the current edition of *Contaminated Land Management Guidelines No. 1–Reporting on Contaminated Sites in New Zealand*, Wellington, Ministry for the Environment; and
(c) results in a report that is certified by the practitioner.

4 Relationship of regulations with territorial authority and regional council functions

These regulations—

(a) deal with territorial authority functions under section 31 of the Act:
(b) do not deal with regional council functions under section 30 of the Act.

5 Application

(1) These regulations—

(a) apply when a person wants to do an activity described in any of subclauses (2) to (6) on a piece of land described in subclause (7) or (8):
(b) do not apply when a person wants to do an activity described in any of subclauses (2) to (6) on a piece of land described in subclause (9).

Activities

(2) An activity is removing a fuel storage system from the piece of land or replacing a fuel storage system in or on the piece of land, which means—

(a) doing any of the following:
(i) removing or replacing the whole system:
(ii) removing or replacing an underground part of the system:

(iii) taking away or putting back soil associated with the removal or replacement of the system or the part:

(b) doing any of the following for purposes associated with removing or replacing the whole system or part of the system:

(i) sampling the soil of the piece of land:

(ii) investigating the piece of land:

(iii) remediating the piece of land:

(iv) validating the piece of land:

(v) managing the piece of land.

(3) An activity is sampling the soil of the piece of land, which means sampling it to determine whether or not it is contaminated and, if it is, the amount and kind of contamination.

(4) An activity is disturbing the soil of the piece of land, which—

(a) means disturbing the soil of the piece of land for a particular purpose:

(b) does not include disturbing the soil of the piece of land, whatever the purpose, if the land is land to which regulation 33(9) or 36 of the Resource Management (National Environmental Standard for Electricity Transmission Activities) Regulations 2009 applies.

(5) An activity is subdividing land, which means subdividing land—

(a) that has boundaries that are identical with the boundaries of the piece of land; or

(b) that has all the piece of land within its boundaries; or

(c) that has part of the piece of land within its boundaries.

(6) An activity is changing the use of the piece of land, which means changing it to a use that, because the land is as described in subclause (7), is reasonably likely to harm human health.

Land covered

(7) The piece of land is a piece of land that is described by 1 of the following:

(a) an activity or industry described in the *HAIL* is being undertaken on it:

(b) an activity or industry described in the *HAIL* has been undertaken on it:

(c) it is more likely than not that an activity or industry described in the *HAIL* is being or has been undertaken on it.

(8) If a piece of land described in subclause (7) is production land, these regulations apply if the person wants to—

(a) remove a fuel storage system from the piece of land or replace a fuel storage system in or on the piece of land:

(b) sample or disturb—

(i) soil under existing residential buildings on the piece of land:

(ii) soil used for the farmhouse garden or other residential purposes in the immediate vicinity of existing residential buildings:

(iii) soil that would be under proposed residential buildings on the piece of land:

(iv) soil that would be used for the farmhouse garden or other residential purposes in the immediate vicinity of proposed residential buildings:

(c) subdivide land in a way that causes the piece of land to stop being production land:

(d) change the use of the piece of land in a way that causes the piece of land to stop being production land.

Land not covered

(9) These regulations do not apply to a piece of land described in subclause (7) or (8) about which a detailed site investigation exists that demonstrates that any contaminants in or on the piece of land are at, or below, background concentrations.

6 Methods

(1) Subclauses (2) and (3) prescribe the only 2 methods that the person may use for establishing whether or not a piece of land is as described in regulation 5(7).

(2) One method is by using information that is the most up-to-date information about the area where the piece of land is located that the territorial authority—

(a) holds on its dangerous goods files, property files, or resource consent database or relevant registers; or

(b) has available to it from the regional council.

(3) The other method is by relying on the report of a preliminary site investigation—

(a) stating that an activity or industry described in the *HAIL* is, or is not, being undertaken on the piece of land; or

(b) stating that an activity or industry described in the *HAIL* has, or has not, been undertaken on the piece of land; or

(c) stating the likelihood of an activity or industry described in the *HAIL* being undertaken, or having been undertaken, on the piece of land.

(4) The person must—

(a) choose which of the 2 methods to use; and

(b) meet all the costs involved in using the method that the person has chosen.

7 Standards

(1) In this regulation,—

land use means—

(a) the current use, if the activity the person wants to do is—

(i) to remove a fuel storage system from the piece of land or replace a fuel storage system in or on the piece of land:

(ii) to sample the soil of the piece of land:

(iii) to disturb the soil of the piece of land:

(b) the intended use, if the activity the person wants to do is—

(i) to subdivide land:

(ii) to change the use of the piece of land

Methodology means the current edition of the *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*, Wellington, Ministry for the Environment

priority contaminant means a contaminant for which the *Methodology* derives a soil contaminant standard.

(2) If the contaminant of concern is a priority contaminant and the land use fits within an exposure scenario adopted in the *Methodology*, the applicable standard is the soil contaminant standard for the priority contaminant.

(3) If the contaminant of concern is a priority contaminant and the land use does not fit within an exposure scenario adopted in the *Methodology*, the applicable standard is whichever of the following is more appropriate in the circumstances:

(a) the guideline value derived in accordance with the methods and guidance on site-specific risk assessment provided in the *Methodology*:

(b) the soil contaminant standard for the priority contaminant of the exposure scenario adopted in the *Methodology* with greater assumed exposure than the actual exposure.

(4) If the contaminant of concern is not a priority contaminant, the applicable standard is whichever of the following is more appropriate in the circumstances:

(a) the guideline value derived in accordance with the methods and guidance on site-specific risk assessment provided in the *Methodology*:

(b) a guideline value for the protection of human health that is chosen in accordance with the current edition of *Contaminated Land Management Guidelines No. 2–Hierarchy and Application in New Zealand of Environmental Guideline Values*, Wellington, Ministry for the Environment.

8 Permitted activities

Removing or replacing fuel storage system

(1) Removing or replacing a fuel storage system is a permitted activity while the following requirements are met:

(a) the activity must be done in accordance with the current edition of *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*, Wellington, Ministry for the Environment:

(b) the territorial authority of the district where the system is located must be notified of—

(i) the place where the activity is to be done:

(ii) the dates on which it is intended that the activity begin and end:

(iii) the facility at which it is intended that soil taken away in the course of the activity be disposed of:

(c) notification under paragraph (b) must be done no sooner than 1 month and no later than 1 week before the activity begins:

(d) the volume of soil disturbed must be no more than 30 m^3 for each tank in the system:

(e) the volume of soil taken away in the course of the activity must be no more than 30 m^3 for each tank in the system:

(f) soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:

(g) the duration of the activity must be no longer than 2 months:

(h) the results of the investigation of the piece of land required by the guidelines described in paragraph (a) must be reported to the territorial authority within 3 months after the activity ends.

Sampling soil

(2) Sampling the soil of the piece of land is a permitted activity while the following requirements are met:

(a) controls to minimise the exposure of humans to mobilised contaminants must—

(i) be in place when the activity begins:

(ii) be effective while the activity is done:

(iii) be effective until the soil is reinstated to an erosion-resistant state:

(b) the soil must be reinstated to an erosion-resistant state within 1 month after the end of the course of sampling for which the activity was done:

(c) soil must not be taken away in the course of the activity except as samples taken for the purpose of laboratory analysis:

(d) the integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.

Disturbing soil

(3) Disturbing the soil of the piece of land is a permitted activity while the following requirements are met:

(a) controls to minimise the exposure of humans to mobilised contaminants must—
  (i) be in place when the activity begins:
  (ii) be effective while the activity is done:
  (iii) be effective until the soil is reinstated to an erosion-resistant state:
(b) the soil must be reinstated to an erosion-resistant state within 1 month after the serving of the purpose for which the activity was done:
(c) the volume of the disturbance of the soil of the piece of land must be no more than 25 m^3 per 500 m^2:
(d) soil must not be taken away in the course of the activity, except that,—
  (i) for the purpose of laboratory analysis, any amount of soil may be taken away as samples:
  (ii) for all other purposes combined, a maximum of 5 m^3 per 500 m^2 of soil may be taken away per year:
(e) soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:
(f) the duration of the activity must be no longer than 2 months:
(g) the integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.

Subdividing or changing use

(4) Subdividing land or changing the use of the piece of land is a permitted activity while the following requirements are met:
(a) a preliminary site investigation of the land or piece of land must exist:
(b) the report on the preliminary site investigation must state that it is highly unlikely that there will be a risk to human health if the activity is done to the piece of land:
(c) the report must be accompanied by a relevant site plan to which the report is referenced:
(d) the consent authority must have the report and the plan.

Consequence if requirement not met

(5) If a requirement described in any of subclauses (1) to (3) is not met, the activity is a controlled activity under regulation 9 while it meets the requirements in regulation 9(1).

(6) If a requirement described in subclause (4) is not met, the activity is a controlled activity under regulation 9 while it meets the requirements in regulation 9(3).

9 Controlled activities

Removing or replacing fuel storage system, sampling soil, or disturbing soil

(1) If a requirement described in any of regulation 8(1) to (3) is not met, the activity is a controlled activity while the following requirements are met:

- (a) a detailed site investigation of the piece of land must exist:
- (b) the report on the detailed site investigation must state that the soil contamination does not exceed the applicable standard in regulation 7:
- (c) the consent authority must have the report:
- (d) conditions arising from the application of subclause (2), if there are any, must be complied with.

(2) The matters over which control is reserved are as follows:

- (a) the adequacy of the detailed site investigation, including—
  - (i) site sampling:
  - (ii) laboratory analysis:
  - (iii) risk assessment:
- (b) how the activity must be—
  - (i) managed, which may include the requirement of a site management plan:
  - (ii) monitored:
  - (iii) reported on:
- (c) the transport, disposal, and tracking of soil and other materials taken away in the course of the activity:
- (d) the timing and nature of the review of the conditions in the resource consent:
- (e) the duration of the resource consent.

Subdividing or changing use

(3) If a requirement described in regulation 8(4) is not met, the activity is a controlled activity while the following requirements are met:

(a) a detailed site investigation of the piece of land must exist:

(b) the report on the detailed site investigation must state that the soil contamination does not exceed the applicable standard in regulation 7:

(c) the consent authority must have the report:

(d) conditions arising from the application of subclause (4), if there are any, must be complied with.

(4) The matter over which control is reserved is the adequacy of the detailed site investigation, including—

(a) site sampling:

(b) laboratory analysis:

(c) risk assessment.

No public notification of application for resource consent

(5) The consent authority must not give public notification of an application for a resource consent to do any of the activities.

Consequence if requirement not met

(6) If a requirement described in this regulation is not met, the activity is a restricted discretionary activity under regulation 10 while it meets the requirements in regulation 10(2).

10 Restricted discretionary activities

(1) This regulation applies to an activity described in any of regulation 5(2) to (6) on a piece of land described in regulation 5(7) or (8) that is not a permitted activity or a controlled activity.

(2) The activity is a restricted discretionary activity while the following requirements are met:

(a) a detailed site investigation of the piece of land must exist:

(b) the report on the detailed site investigation must state that the soil contamination exceeds the applicable standard in regulation 7:

(c) the consent authority must have the report:

(d) conditions arising from the application of subclause (3), if there are any, must be complied with.

(3) The matters over which discretion is restricted are as follows:

(a) the adequacy of the detailed site investigation, including—

(i) site sampling:

(ii) laboratory analysis:

(iii) risk assessment:

(b) the suitability of the piece of land for the proposed activity, given the amount and kind of soil contamination:

(c) the approach to the remediation or ongoing management of the piece of land, including—

(i) the remediation or management methods to address the risk posed by the contaminants to human health:

(ii) the timing of the remediation:

(iii) the standard of the remediation on completion:

(iv) the mitigation methods to address the risk posed by the contaminants to human health:

(v) the mitigation measures for the piece of land, including the frequency and location of monitoring of specified contaminants:

(d) the adequacy of the site management plan or the site validation report or both, as applicable:

(e) the transport, disposal, and tracking of soil and other materials taken away in the course of the activity:

(f) the requirement for and conditions of a financial bond:

(g) the timing and nature of the review of the conditions in the resource consent:

(h) the duration of the resource consent.

Consequence if requirement not met

(4) If a requirement described in this regulation is not met, the activity is a discretionary activity under regulation 11.

11 Discretionary activities

(1) This regulation applies to an activity described in any of regulation 5(2) to (6) on a piece of land described in regulation 5(7) or (8) that is not a permitted activity, controlled activity, or restricted discretionary activity.

(2) The activity is a discretionary activity.

Rebecca Kitteridge,
Clerk of the Executive Council.

Explanatory note

This note is not part of the regulations, but is intended to indicate their general effect.

These regulations provide a national environmental standard for activities on pieces of land whose soil may be contaminated in such a way as to be a risk to human health. The activities are removing or replacing a fuel storage system, sampling the soil, disturbing the soil, subdividing land, and changing the use of the piece of land. The activities are classed as permitted activities, controlled activities, restricted discretionary activities, or discretionary activities.

The current editions of documents incorporated by reference are available on the Ministry for the Environment's website.

The regulations come into force on 1 January 2012.

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These regulations are administered by the Ministry for the Environment.

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Published under the authority of the New Zealand Government—2011

Appendix B: Soil contaminant standards

The five standard land-use scenarios for which soil contamination standards (SCSs) have been derived are contained in Table B1. A summary of the SCSs is presented in Tables B2 and B3. More detailed versions of these tables are contained in Section 7 of the *Methodology*, in which additional residential sub-scenarios have also been derived.

Table B1: Land-use scenarios

Scenario	Description
Rural / lifestyle block	Rural residential land use, including home-grown produce consumption (25 per cent). Applicable to the residential vicinity of farm houses for protection of farming families, but not the productive parts of agricultural land. Note: Consumption of eggs, milk and meat from animals raised on site is excluded. Produce consumption is limited to home-grown vegetables. Sites for which consumption of home-grown eggs, milk or meat is important will need to be evaluated on a site-specific basis.
Residential	Standard residential lot, for single dwelling sites with gardens, including home-grown produce consumption (10 per cent).
High-density residential	Urban residential with limited soil contact, including small ornamental gardens but no vegetable garden (no home-grown produce consumption); applicable to urban townhouses, flats and ground-floor apartments with small ornamental gardens, but not high-rise apartments.
Parks / recreational	Public and private green areas and reserves used for active sports and recreation. This scenario is intended to cover playing fields and suburban reserves where children play frequently. It can also reasonably cover secondary school playing fields but not primary school playing fields.
Commercial / industrial outdoor worker (unpaved)	Commercial / industrial site with varying degrees of exposed soil. Exposure of outdoor workers to near-surface soil during routine maintenance and gardening activities with occasional excavation as part of maintaining subsurface utilities (ie, a caretaker or site maintenance personnel). Also conservatively applicable to outdoor workers on a largely unpaved site.

Table B2: Soil contaminant standards for health ($SCSs_{(health)}$) for inorganic substances

	Arsenic	Boron	Cadmium (pH 5)[1]	Chromium		Copper	Inorganic lead	Inorganic mercury
				III	VI			
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Rural residential / lifestyle block 25% produce	17	>10,000	0.8	>10,000	290	>10,000	160	200
Residential 10% produce	20	>10,000	3	>10,000	460	>10,000	210	310
High-density residential	45	>10,000	230	>10,000	1,500	>10,000	500	1,000
Recreation	80	>10,000	400	>10,000	2,700	>10,000	880	1,800
Commercial / industrial outdoor worker (unpaved)	70	>10,000	1,300	>10,000	6,300	>10,000	3,300	4,200

Notes: All concentrations refer to dry weight (ie, mg/kg dry weight).

[1] Default value is for soil that is pH 5. Concentrations increase with increasing pH (see *Methodology*).

Table B3: Soil contaminant standards for health ($SCSs_{(health)}$) for organic compounds

Scenario	BaP[1]	DDT	Dieldrin[2]	PCP	Dioxin	
					TCDD	Dioxin-like PCBs
	mg/kg TEQ	mg/kg	mg/kg	mg/kg	µg/kg TEQ	µg/kg TEQ
Rural residential / lifestyle block 25% produce	6	45	1.1	55	0.12	0.09
Residential 10% produce	10	70	2.6	55	0.15	0.12
High-density residential	24	240	45	110	0.35	0.33
Recreation	40	400	70	150	0.6	0.52
Commercial / industrial outdoor worker (unpaved)	35	1,000	160	360	1.4	1.2

Notes: All concentrations refer to dry weight (ie, mg/kg dry weight or µg/kg dry weight).

[1] For benzo(a)pyrene, the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene and indeno(1,2,3-cd) pyrene), multiplied by their respective potency equivalency factors (see table 40 of the *Methodology*).

[2] The SCS is applicable to either dieldrin or aldrin separately, or to the sum of aldrin and dielrin if both are involved.

TEQ = Toxic equivalency, an indication of the toxicity of a mixture of compounds.

For dioxins and dioxin-like PCBs the total toxicity is assessed as a toxic equivalency (TEQ) to 2,3,7,8-TCDD using toxic equivalency factors (TEF). The TEQ is defined as the sum of the products of the concentration of each compound multiplied by the value of its TEF (see table 46 of the *Methodology*).

Appendix C: Hazardous Activities and Industries List (HAIL)

Current at date of publication of this Users' Guide. Please refer to the Ministry for the Environment website for a current version.

A Chemical manufacture, application and bulk storage

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application
2. Chemical manufacture, formulation or bulk storage
3. Commercial analytical laboratory sites
4. Corrosives including formulation or bulk storage
5. Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents
6. Fertiliser manufacture or bulk storage
7. Gasworks including the manufacture of gas from coal or oil feedstocks
8. Livestock dip or spray race operations
9. Paint manufacture or formulation (excluding retail paint stores)
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
11. Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application
12. Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides
13. Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground
14. Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges
15. Printing including commercial printing using metal type, inks, dyes, or solvents (excluding photocopy shops)
16. Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products
17. Storage tanks or drums for fuel, chemicals or liquid waste
18. Wood treatment or preservation including the commercial use of antisapstain chemicals during milling, or bulk storage of treated timber outside

Appendix C: Hazardous Activities and Industries List (HAIL)

Current at date of publication of this Users' Guide. Please refer to the Ministry for the Environment website for a current version.

A Chemical manufacture, application and bulk storage

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application
2. Chemical manufacture, formulation or bulk storage
3. Commercial analytical laboratory sites
4. Corrosives including formulation or bulk storage
5. Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents
6. Fertiliser manufacture or bulk storage
7. Gasworks including the manufacture of gas from coal or oil feedstocks
8. Livestock dip or spray race operations
9. Paint manufacture or formulation (excluding retail paint stores)
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
11. Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application
12. Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides
13. Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground
14. Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges
15. Printing including commercial printing using metal type, inks, dyes, or solvents (excluding photocopy shops)
16. Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products
17. Storage tanks or drums for fuel, chemicals or liquid waste
18. Wood treatment or preservation including the commercial use of antisapstain chemicals during milling, or bulk storage of treated timber outside

B Electrical and electronic works, power generation and transmission

1. Batteries including the commercial assembling, disassembling, manufacturing or recycling of batteries (but excluding retail battery stores)
2. Electrical transformers including the manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment
3. Electronics including the commercial manufacturing, reconditioning or recycling of computers, televisions and other electronic devices
4. Power stations, substations or switchyards

C Explosives and ordinances production, storage and use

1. Explosive or ordinance production, maintenance, dismantling, disposal, bulk storage or repackaging
2. Gun clubs or rifle ranges, including clay targets clubs that use lead munitions outdoors
3. Training areas set aside exclusively or primarily for the detonation of explosive ammunition

D Metal extraction, refining and reprocessing, storage and use

1. Abrasive blasting including abrasive blast cleaning (excluding cleaning carried out in fully enclosed booths) or the disposal of abrasive blasting material
2. Foundry operations including the commercial production of metal products by injecting or pouring molten metal into moulds
3. Metal treatment or coating including polishing, anodising, galvanising, pickling, electroplating, or heat treatment or finishing using cyanide compounds,
4. Metalliferous ore processing including the chemical or physical extraction of metals, including smelting, refining, fusing or refining metals
5. Engineering workshops with metal fabrication

E Mineral extraction, refining and reprocessing, storage and use

1. Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition
2. Asphalt or bitumen manufacture or bulk storage (excluding single-use sites used by a mobile asphalt plant)
3. Cement or lime manufacture using a kiln including the storage of wastes from the manufacturing process
4. Commercial concrete manufacture or commercial cement storage
5. Coal or coke yards
6. Hydrocarbon exploration or production including well sites or flare pits
7. Mining industries (excluding gravel extraction) including exposure of faces or release of groundwater containing hazardous contaminants, or the storage of hazardous wastes including waste dumps or dam tailings

F Vehicle refuelling, service and repair

1. Airports including fuel storage, workshops, washdown areas, or fire practice areas
2. Brake lining manufacturers, repairers or recyclers
3. Engine reconditioning workshops
4. Motor vehicle workshops
5. Port activities including dry docks or marine vessel maintenance facilities
6. Railway yards including goods-handling yards, workshops, refuelling facilities or maintenance areas
7. Service stations including retail or commercial refuelling facilities
8. Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances

G Cemeteries and waste recycling, treatment and disposal

1. Cemeteries
2. Drum or tank reconditioning or recycling
3. Landfill sites
4. Scrap yards including automotive dismantling, wrecking or scrap metal yards
5. Waste disposal to land (excluding where biosolids have been used as soil conditioners)
6. Waste recycling or waste or wastewater treatment

H Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment

I Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment

Hazardous Activities and Industries List (HAIL) with hazardous substances

The table below lists hazardous substances that are typically associated with a specific activity or industry. A suitably qualified and experienced practitioner should be consulted when determining the suite of chemicals to be analysed for a detailed site investigation.

Activity or industry	Hazardous substances
Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application	Arsenic, lead, copper; wide range of organic agrichemicals including organochlorine pesticides, organophosphate pesticides, herbicides, fungicides, carbamates, and synthetic pyrethroids; compounds may be mixed with diesel before spraying
Chemical manufacture, formulation or bulk storage	Wide range of organic and inorganic compounds
Commercial analytical laboratory sites	Wide range of organic and inorganic compounds including solvents, acids, metals, and mercury
Corrosives including formulation or bulk storage	Mercury, sulphuric, phosphoric, hydrochloric and nitric acids, sodium and calcium hydroxide, ammonia and ammonium hydroxide
Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents	Volatile hydrocarbons including trichloroethylene 1,1,1-trichloroethane tetrachlorothene (also known as PCE), and carbon tetrachloride
Fertiliser manufacture or bulk storage	Calcium phosphate, calcium sulphate, copper chloride, sulphur, sulphuric and phosphoric acid, molybdenum, selenium, iron, cadmium, nitrates, and ammonia
Gasworks including the manufacture of gas from coal or oil feedstocks	Polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylenes (BTEX), phenolics, metals (particularly arsenic, lead, copper, chromium), boron, cyanide compounds, sulphides and sulphates, thiocyanates, ammonia, nitrates, and coke
Livestock dip or spray race operations	Arsenic, organochlorines (eg, aldrin, dieldrin, DDT, lindane) and organophosphates, carbamates, and synthetic pyrethroids
Paint manufacture or formulation (excluding retail paint stores)	Solvents, resins, metals including arsenic, cadmium, copper, nickel, lead, zinc, and mercury
Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds	Arsenic, lead, copper, mercury; wide range of organic compounds including acidic herbicides, organophosphates, and organochlorines (eg, endosulfan on golf and bowling greens)
Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application	Arsenic, cyanide, strychnine, mercury, phosphorus, 1080, organochlorines and organophosphates, carbamates, synthetic pyrethroids, and other commercial preparations
Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides	Wide range of insecticides, herbicides and fungicides, including arsenic, lead, mercury, copper, tin, chromium, organochlorines, organonitrogens, organophosphates, acid herbicides, and carbamates. Dioxin may be present as an impurity
Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground	Hydrocarbons including BTEX, PAHs, and solvents; lead and other metals, particularly if waste oil handled
Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges	Wide range of chemicals and solvents

Activity or industry	Hazardous substances
Printing including commercial printing using metal type, inks, dyes, or solvents (excluding photocopy shops)	Solvents, acids, alkalis, and metals
Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products	Chromium (including hexavalent Cr), manganese, copper, ammonia, nitrite, sulphides, acids, sodium hydroxide, lime, formaldehyde, solvents, cyanide, detergents, pesticides, and bleaching agents (eg, hydrogen peroxide)
Storage tanks or drums for fuel, chemicals or liquid waste	Wide range of chemicals (organic and inorganic), and biological hazards
Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside	Pentachlorophenol (PCP), copper, arsenic, chromium, boron, PAHs, phenolics (creosote), antisapstain, organochlorine pesticides, fungicides, and tributyltin (TBT)
Batteries including the commercial assembling, disassembling, manufacturing or recycling of batteries (but excluding retail battery stores)	Metals (lead, mercury, zinc, cadmium, nickel, antimony, silver, and manganese), and sulphuric acid
Electrical transformers including the manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment	Polychlorinated biphenyls (PCBs), hydrocarbons, copper, tin, lead, and mercury
Electronics including the commercial manufacturing, reconditioning or recycling of computers, televisions and other electronic devices	Metals (eg, copper, tin, lead, mercury, cadmium, nickel, silver, zinc, and beryllium), solvents, and PCBs
Power stations, substations or switchyards	PCBs, asbestos, metals including boron, arsenic (in fly ash), water treatment chemicals (thermal stations), and hydrocarbons (eg, diesel in generators)
Explosive or ordinance production, maintenance, dismantling, disposal, bulk storage or re-packaging	Acetone, nitric and sulphuric acid, ammonium nitrate, PCP, nitroglycerine, lead, mercury, copper, aluminium, silver, sodium hydroxide, and explosives; fuel oils, solvents and metals (associated with workshops)
Gun clubs or rifle ranges, including clay targets clubs that use lead munitions outdoors	Metals (lead, antimony, copper, zinc, tin, and nickel)
Training areas set aside exclusively or primarily for the detonation of explosive ammunition	Explosives, lead, copper, arsenic, antimony (firing ranges), and hydrocarbon storage
Abrasive blasting including abrasive blast cleaning (excluding cleaning carried out in fully enclosed booths) or the disposal of abrasive blasting material.	Metals (iron, lead, chromium, aluminium, zinc). Dependent on material being removed and substrate
Foundry operations including the commercial production of metal products by injecting or pouring molten metal into moulds	Metals, particularly iron, aluminium, lead, zinc, copper, tin, nickel, chromium and oxides, chlorides, fluorides and sulphates of these, acids, coke, and fuel oils
Metal treatment or coating including polishing, anodising, galvanising, pickling, electroplating, or heat treatment or finishing using cyanide compounds	Metals (zinc, aluminium, cadmium, chromium, lead, copper, and tin), acids (sulphuric, nitric, hydrochloric, and phosphoric), cyanide; flourine and barium (from Al processing)
Metalliferous ore processing including the chemical or physical extraction of metals, including smelting, refining, fusing or refining metals	Metals and associated oxides, fluorides and chlorides; cyanide compounds
Engineering workshops with metal fabrication	Metals and oxides of iron, nickel, copper, chromium, magnesium and manganese; range of organic compounds used for cleaning including BTEX, solvents
Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition	Asbestos
Asphalt or bitumen manufacture or bulk storage (excluding single-use sites used by a mobile asphalt plant)	Petroleum hydrocarbons and PAHs
Cement or lime manufacture using a kiln including the storage of wastes from the manufacturing process	Lime, calcium hydroxide, alkalis; boron and arsenic in fly ash

Activity or industry	Hazardous substances
Commercial concrete manufacture or commercial cement storage	Cement, calcium hydroxide, alkalis, and ammonia
Coal or coke yards	Hydrocarbons (particularly PAHs), boron, and arsenic
Hydrocarbon exploration or production including well sites or flare pits	Hydrocarbons including PAHs, metals (barium, cadmium, zinc, mercury, lead), and vanadium
Mining industries (excluding gravel extraction) including exposure of faces or release of groundwater containing hazardous contaminants, or the storage of hazardous wastes including waste dumps or dam tailings	Arsenic, mercury, cyanides, sulphides, and metals and hydrocarbons associated with fuel storage
Airports including fuel storage, workshops, washdown areas, or fire practice areas	Petroleum hydrocarbons including lube oils; metals and PAHs in fire practice areas, potential for dioxins in fire practice areas
Brake lining manufacturers, repairers or recyclers	Asbestos and copper
Engine reconditioning workshops	Hydrocarbons including solvents, and metals contained in waste oil
Motor vehicle workshops	Hydrocarbons including PAHs, solvents, and metals contained in waste oil
Port activities including dry docks or marine vessel maintenance facilities	Metals, paint residues (tin, and lead), tributyltin (TBT), and hydrocarbons associated with fuel storage
Railway yards including goods-handling yards, workshops, refuelling facilities or maintenance areas	Hydrocarbons including PAHs, solvents, creosote/phenols, and metals
Service stations including retail or commercial refuelling facilities	Petroleum hydrocarbons (BTEX, PAHs) and lead
Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances	Wide variety of chemicals, dependent on products being transported
Cemeteries	Nitrates, lead, mercury, formaldehyde, and biological hazards
Drum or tank reconditioning or recycling	Wide range of chemicals from drums; hydrocarbons used to wash drums
Landfill sites	Dependent on original waste composition, wide range of hydrocarbons and metals, organic acids, landfill gas, and ammonia
Scrap yards including automotive dismantling, wrecking or scrap metal yards	Metals, petroleum hydrocarbons (particularly lube oils), solvents used for cleaning, and PCBs
Waste disposal to land (excluding where biosolids have been used as soil conditioners)	Depends on type of waste – biological hazards (bacteria, viruses), metals, PAHs, semi- volatile organic compounds, and solvents
Waste recycling or waste or wastewater treatment	Depends on type of waste – biological hazards (bacteria, viruses), metals, PAHs, semi- volatile organic compounds, and solvents.
Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment	Dependent on contaminants associated with adjacent property
Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment	Dependent on contaminants associated with spill

The New Zealand Institute of Chemistry (NZIC) has published a series of articles on many industries in New Zealand at http://www.nzic.org.nz/ChemProcesses/chem_processes.html. These articles provide a good chemical background for many of the industries listed on the HAIL.

Appendix D: Reporting on contaminated sites under the NES

A number of the key building blocks for implementing the NES are the reports described in *CLMG No.1* and *CLMG No.5*. These are summarised here, and shown in Figure 9.

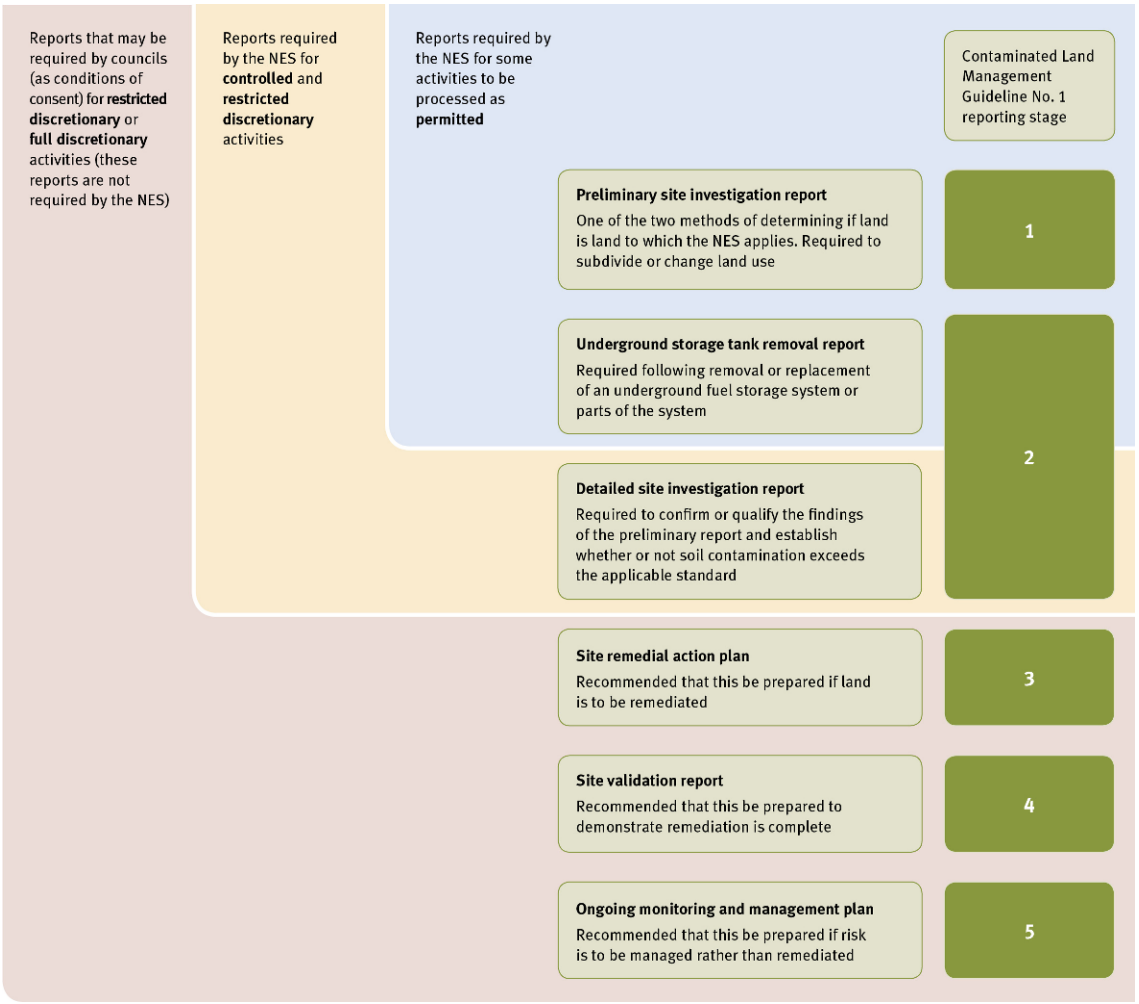
Preliminary site investigation: The main objective of the preliminary site investigation (PSI) is to provide background information in support of a decision regarding the suitability of a site for its current or intended land use, and whether a detailed site investigation is required. It involves gathering and compiling information on the present and past uses of the site to identify the nature of potential contaminants, their likely location and significance, and potential pathways for migration within the site or off-site to form the initial conceptual site model. Ideally, the PSI involves a preliminary site inspection (a walk-over), but does not usually involve soil sampling.

Conceptual site model: A conceptual site model is a system diagram identifying contaminant sources, routes of exposure (pathways), and the receptors that are affected by contaminants moving along those pathways. The conceptual site model, which should be developed as part of the preliminary site investigation, and before undertaking a detailed site investigation, identifies the zones of the site with different contamination characteristics (eg, whether contaminants in the soil are likely to be on the surface or at depth, distributed over an entire area or in localised 'hot spots'). Exposure pathways and receptors should be identified for both current and future uses of the site (where appropriate). The model should be used to design the detailed site investigation and may be updated if new information is gathered during the subsequent investigation phases.

Detailed site investigation: A detailed site investigation involves intrusive techniques to collect field data and soil samples for analytical testing to determine the concentrations of contaminants of concern. Soil samples should be analysed for contaminants identified on the basis of the preliminary site study and/or preliminary site inspection. Samples may initially be analysed for a broad screen of contaminants which, based on experience, have typically been found on similar sites.

Before undertaking the physical works of the detailed site investigation, the potential hazards at the site should be assessed and appropriate health and safety precautions taken. Any authorisation required (such as resource consents) should be obtained before work begins.

Figure 9: Reporting stages for activities under the NES



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