



Ministry for the
Environment
Manatū Mō Te Taiao

Working Towards a Comprehensive Policy Framework for Managing Contaminated Land in New Zealand

Report on Submissions

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Executive summary

This document is a summary of the feedback provided on the Ministry for the Environment discussion paper *Working Towards a Comprehensive Policy Framework for Managing Contaminated Land in New Zealand*. The discussion paper presented:

- an overview of the policy measures that make up New Zealand’s existing contaminated land policy framework
- an assessment of the framework to identify gaps and possible solutions
- a proposed Ministry work programme drawing on the solutions identified.

The submissions showed a close degree of alignment with the discussion document. Submitters strongly supported the proposed key elements of a comprehensive policy framework and the proposed work programme, and their respective priorities.

Submitters were especially supportive of the high-priority opportunities for:

- developing a national guideline and national environmental standard (hereafter referred to as *standards*), providing human health-based soil levels derived using a New Zealand risk-based methodology.
- continuing to seek additional funding for the Contaminated Sites Remediation Fund (hereafter referred to as *the Fund*) to enable it to contribute to larger remediation projects.

The main themes from the submissions are summarised below.

National environmental standards

Submitters want a standard to reduce the current confusion and uncertainty over the most appropriate value or method to assess hazardous substances in or on land. Most submitters expect the standard to include:

- numerical soil contaminant levels to be used as trigger levels in a tiered, risk-based assessment
- ecological and human health levels
- supporting methods (for deriving and assessing soil contaminant levels).

Nationally consistent land-use and subdivision rules for contaminated land were the most commonly suggested other issues to which a standard could be applied.

Capability and capacity

Capability and capacity relate to the resources and expertise that are available for managing contaminated land. They directly affect the quality of outcomes and even whether contaminated land is addressed at all.

Consultation confirmed that the capability and capacity of local government is one of the biggest barriers to the effective management of land. The resources and level of expertise devoted to contaminated land functions within councils were reported by many submitters to be variable. In general, submitters considered that councils in the main population centres have a good level of awareness and are often well resourced. Regional and district plans will usually

have specific contaminated land rules that place controls on activities, including subdivision and land-use change. Outside the main population centres – with some exceptions – submitters reported that capability and capacity decline. Regional councils, while mostly having a reasonable awareness of the issue, devote relatively small staff and financial resources. District council awareness is more variable.

In part, this variability between councils can be explained by the:

- limited resources/expertise available
- uncertainty over roles
- low priority given by a council to contaminated land compared to other issues (eg, roading, wastewater).

To help overcome this barrier, most submitters wanted increased clarity on roles and responsibilities, additional resources, and more training and education.

There was less agreement over whether there is a lack of capability within the consulting community. Comments from consultants suggest that, like councils, the main urban areas are reasonably well serviced by capable and experienced consultants, with capability quickly declining outside of these centres. Feedback from workshops held in less populous regions confirmed that the appropriate expertise is often not locally available. Training and education were seen by submitters as an important capability builder within the consulting community.

Roles and responsibilities

Many submitters (and workshop participants) considered that there is significant uncertainty among the main agencies (district and city councils, regional councils, public health agencies) about how they should work together and what their roles should be. This uncertainty was thought to lead to disagreement between agencies, roles not being undertaken, and a lack of resources and expertise being devoted to the councils' contaminated land functions.

Submitters considered this uncertainty is caused by:

- the inability of councils to require clean-up of contamination that occurred historically, before the Resource Management Act 1991 (RMA)
- variable awareness of the new RMA functions, especially among district and city councils
- the lack of clarity and strength of the RMA contaminated land functions (they are not a duty)
- the number of agencies involved.

RMA definitions and controls

Consultation suggests that uncertain RMA definitions and interpretations are contributing to variable practice and disagreement among councils and practitioners.

Many stakeholders report difficulty interpreting the definition of contaminated land, specifically, what “a significant adverse environmental effect” is and what is “reasonably likely”. Because there is no standard, no case law nor specific guidance, councils and practitioners are likely to have different and sometimes conflicting understanding of the definitions. Different understanding of the definition by councils is also likely to affect the

accuracy of national information collected on the number of contaminated sites (see ‘Identifying sites and information gathering’ below).

Many councils manage the effects of historically contaminated land on groundwater through discharge consents issued under section 15 of the RMA. Often referred to as passive discharge consents, they usually contain conditions requiring the consent holder to monitor and manage the effects of groundwater plumes. Although these consents are seen as important for requiring effects on the environment to be controlled and/or managed, there is uncertainty over their legality due to their “passive” nature.

Workshop and submission feedback shows that many councils, especially district and city councils, have a low level of awareness of their contaminated land functions. Some councils, while aware of them, may be choosing not to resource them sufficiently due to competing demands. Many submitters considered that these awareness and resourcing issues are related to the voluntary nature of the *function*, and that these issues would be largely resolved if it was changed to a mandatory *duty*.

Some regional councils also consider that their functions are unclear and could be interpreted to commit regional councils to monitoring contaminated land in all situations.

Liability

Liability is managed under the RMA by the requirement to avoid, remedy or mitigate any adverse effects on the environment. However, there is no clear liability for pre-1991 sites. Generally, in these cases the buyer of the land becomes liable by default for any contaminants present on the land (*caveat emptor*, or buyer beware).

The degree to which this issue is posing a barrier to the clean-up of contaminated land is unclear, although feedback from submitters suggests that the barriers are associated with the:

- difficulty holding polluters responsible for pre-1991, or even post-1991, contamination
- ease with which polluters can transfer liability to innocent landowners
- lack of any certainty over liability, which reduces the likelihood that sites will be identified and remediated.

Submitters favoured a retrospective hierarchical and/or a polluter-pays regime. In the absence of a historical liability regime, submitters supported an expanded and modified Fund.

Use of guidelines

There are many contaminated land guidelines that aim to help their users to assess and manage contaminants on land. However, feedback from many submitters suggests that their use is either incorrect or inconsistent. This inconsistency was felt to be caused by:

- a lack of knowledge about how to apply the guidelines, or lack of awareness of the guidelines
- the voluntary nature of guidelines
- some of the older guidelines containing errors and not using consistent terminology or methodologies
- the guidelines’ coverage of common soil contaminant levels being incomplete.

Other than revising the guidelines, many submitters suggested that all the guidelines be condensed into one overarching guideline containing a consistent methodology for derivation and a complete suite of common contaminant criteria.

A wide range of new guidance was suggested by submitters. The most commonly requested was guidance on cost-effective remediation options, and guidance on the roles and responsibilities of agencies and how they could best work together.

Identifying sites and gathering information

Regional councils have a function under the RMA to investigate land for the purposes of identifying and monitoring contaminated land. Many regional councils report that the main barrier to fulfilling this function is the difficulty gathering information and identifying the location of sites. Regional council submitters identified three main causes of these difficulties:

- the costs and resources required to actively identify and investigate sites
- landowners/occupiers are not compelled to report land contamination to councils – there is no incentive for landowners to come forward, and the threat of liability is a strong motive for landowners to avoid reporting sites, or even actively hiding sites
- a decreasing awareness of the exact location of sites as the original landowners/occupiers sell or retire – this is especially a problem for establishing the location of the large number of historical sheep-dip sites.

Submitters agreed that collecting national information is important to monitor progress and inform policy development. Submitters also agreed that it was important to first improve how councils identify, collect and manage information.

Managing information

Councils have clear responsibilities through the Local Government and Official Information and Meetings Act 1987, the RMA 1991 and the Building Act 2004 to record and report hazardous substances in or on land. However, feedback from many submitters suggests that the accurate and consistent recording and reporting of this information is being hampered by:

- poor communication between regional councils and district and city council databases
- in some cases, the lack of an adequate land information database
- an overly cautious approach by some councils to reporting information, due to fear of alarming landowners or potential landowners.

Submitters supported developing a model database and resources, and amending legislation to require landowners to report hazardous substances on their land.

Remediating sites

Many submitters considered remediation is hindered by lack of information on techniques, the relative expense of remediating land, and a strong public preference for removing contaminated soil from sites and disposing of it in landfills.

Variable disposal controls between regions and overly restrictive controls were also considered by submitters to be a barrier to remediation. Some considered that cleanfill definitions are too

variable between regions and overly restrictive, resulting in large volumes of slightly contaminated soil being sent to landfill. Landfill waste acceptance criteria are often criticised for being inconsistent with contaminated guideline criteria. For example, landfill waste acceptance criteria are often more restrictive than contaminated land guideline trigger values for sensitive land uses.

Submitters also considered that the Contaminated Sites Remediation Fund needs to be expanded because it is too small to be able to deal with large projects. For example, there are individual sites that would by themselves completely use the available funding for the next three years. Some councils have also suggested that the funding be available to help councils identify potentially contaminated sites (eg, sheep dips).

Understanding soil contamination from common practices

Councils have been focused primarily on identifying land contaminated by industrial and commercial activities, and have put less effort into identifying and characterising land contaminated by common practices and activities.

Common contaminants (eg, PAHs¹, lead and arsenic) in towns and cities from diverse sources (eg, roading, cars, fires, paint, pesticides and herbicides) can accumulate in soils to levels that can have significant effects. The distribution and range of concentrations of these contaminants is not well understood. However, it is known that in certain situations these contaminants can collect in soil to levels that may need to be managed. For example, lead from lead-based paint can collect in soils around old houses, arsenic can collect in domestic gardens from the overzealous use of weed killers, and PAHs may collect in soils near main roads, or from backyard burning.

Widespread farming and horticultural practices, including the use of fertilisers, agrichemicals and timber treatment preservatives (eg, treated vineyard posts), can result in contaminants collecting in soil to elevated levels. Farming practices such as fertiliser spreading and chemical sprays can result in levels of contaminants (eg, cadmium, arsenic) slowly building up in soils.

Guidance on ecological impacts

The RMA defines contaminated land as land that “has, or is reasonably likely to have, significant adverse effects on the environment”. The *environment* includes ecosystems, people and communities, natural and physical resources, and amenity values. There are many guidelines on how to assess the effects of soil contaminants on human health and on water environments. However, submitters noted that there is very little guidance on how to assess the significance of effects on the terrestrial ecology. They consider that this lack is causing inconsistency between councils setting soil contaminant thresholds to protect ecosystems and those choosing to protect human health only.

¹ Polycyclic aromatic hydrocarbons

1 Introduction

1.1 Background

In November 2006 the Ministry for the Environment published a discussion paper titled *Working Towards a Comprehensive Policy Framework for Managing Contaminated Land in New Zealand*. The document formed the basis for discussion with stakeholders, and comprised:

- an overview of all the policy measures that make up New Zealand's existing contaminated land policy framework
- an assessment of the framework to identify gaps and possible solutions
- a proposed Ministry work programme drawing on the solutions identified.

Submissions were sought and workshops held to inform and confirm the Ministry's contaminated work programme.

During the submission period 320 people participated in 13 workshops held throughout the country. These workshops aimed to prompt submissions on the paper and facilitate discussion about contaminated land issues. Participants represented local authorities, health agencies, industry, consultants, the community, professional groups and iwi authorities.

The closing date for submissions was 5.00 pm on Friday 28 February 2007.

1.2 Purpose

This document presents a summary of the submissions received and an overview of the workshop feedback. **Section 2** breaks down submissions by source and summarises the main themes. **Sections 3 to 11** analyse the responses to questions asked in the discussion document, and **Section 12** summarises specific feedback made to issues other than those covered by the discussion paper questions. Finally, **Section 13** overviews the feedback from the series of workshops.

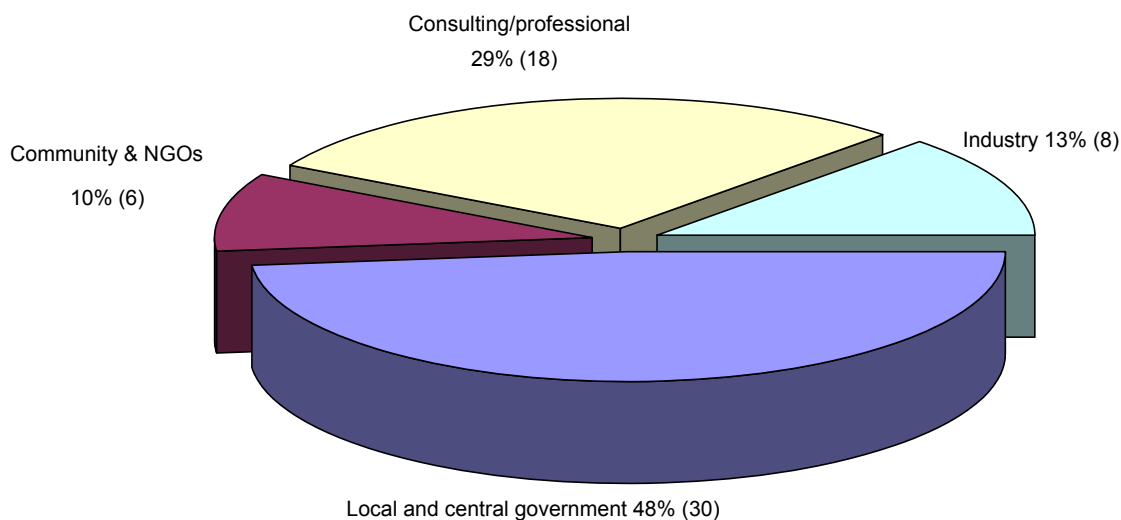
In addition to the narrative description of submissions, tables have been used throughout the report to summarise the main comments made by the submitters. The submitter ID number can be cross-referenced to the index of submitters in Appendix A. A narrative summary is also included at the start of each chapter.

2 Overview of submissions

2.1 Summary of submissions

A total of 62 submissions were received. Figure 1 presents a summary of submissions, by source category.

Figure 1: Breakdown of submissions, by source



Submissions from government accounted for almost half (48%) of all submissions, and came from three main sources:

- local government – regional (11), territorial (8) and unitary (2) authorities
- central government (7)
- public health agencies (2).

The consulting/professional group made up the next largest group (29%). Submissions from this sector came from two main sources:

- consultants (16)
- Crown research institutes (2).

Main themes

The general themes identified during the analysis of submissions and the submitter responses to these themes are presented in Table 1 below. The main themes generally relate to the

discussion paper questions, although other themes have been introduced where submitters have responded on matters not covered by the discussion document questions.

Table 1: General themes and submitter response rate

Key theme	Sub themes	% Response
Overview	Key elements	44
	Priorities	74
National environmental standards (NES)	Appropriateness	74
	Content and function	74
	Use of soil contaminant values	50
	Ecological and/or human health	63
Roles and responsibilities	Other issues that an NES could be applied to	34
	Awareness	56
	Working together	60
Guidance	Improvements	58
	Revision of guidelines	39
Liability	Further guidelines	48
	Significance of the issue	45
	Liability considered the best fit	47
Accreditation	Modifications to the Fund	61
	Necessary component	53
Capability	Additional benefits	15
	Capability in local government	50
National information	Capability in the consulting community	34
	Collection and reporting of national information	53
	Support of Contaminated Land Management Guideline (CLMG) No. 4	39
Miscellaneous	Additional research areas	35
Additional opportunities	Identification and reporting of sites	27
	Prevention of contamination and the Hazardous Substances and New Organisms Act (HSNO)	19
	WasteTRACK	16
	Cleanfill and landfill controls	15
	Contaminated land definition	13

Note: Those sub themes with the highest rates have been **bolded** where the rate is over 60%.

3 Key elements and work priorities

Most submitters agreed with the ideal key elements of a comprehensive policy framework. Submissions also showed a strong level of support for the proposed priorities of the work programme opportunities. All of the proposed high-priority opportunities were especially strongly supported.

3.1 Key elements

Discussion point 1

Are these the ideal key elements for a New Zealand contaminated land framework?

Of the 27 submitters (44%) who responded to this discussion point, almost all (24) agreed with the elements identified in Table 1 of the discussion paper. Three submitters partially agreed, suggesting additional key elements or mostly minor modifications to the elements.

Table 2: Response to key elements, by submitter ID

Key elements	Submitter ID
Agreed with key elements	4, 8, 9, 15, 18, 19, 20, 22, 24, 27, 28, 30, 31, 32, 40, 42, 44, 45, 46, 47, 48, 49, 52, 53, 60
Partially agreed, with modifications	29, 58, 61

3.2 Priorities

Discussion point 3

Are the priorities that have been assigned to each opportunity appropriate? If not, what are more appropriate priorities?

Forty-six submitters (74%) responded to this discussion point. Table 3 shows the degree of alignment to the suggested Ministry for the Environment priorities.

Table 3: Submitter and Ministry priorities for identified opportunities for change

Opportunities	Ministry priority	Submitter priority		
		High	Medium	Low
Produce nationally consistent methods for deriving health-based soil contaminant levels	High	37	0	0
Produce a standard (for human health) that defines management actions	High	32	1	2
Increase the size of or modify the Fund	High	27	1	3
Provide added certainty with a standard	High	26	0	1
Produce guidance on the management of contaminated land information	Medium	1	25	1
Establish a collection of national information on contaminated land	Medium	4	24	3
Require tracking of contaminated soil and waste using WasteTRACK	Medium	4	23	4
Investigate options for addressing liability barriers	Medium	12	19	1
Provide guidance on how agencies establish working relationships	Medium	11	15	0
Provide new guidance	Low	2	1	22
Review and revise existing guidance	Low	6	0	22
Investigate establishing a scheme of accredited auditors	Low	4	2	21
Investigate training for practitioners	Low	6	5	19
Produce a standard (ecological) that defines management actions	Low	11	3	18
Produce nationally consistent methods for deriving ecologically-based soil contaminant levels	Low	15	6	14

Note: Dark-shaded cells with **bold** numbers indicate the highest number of submitters.

Submitter responses generally showed a strong level of consensus with the Ministry-assigned priorities. All proposed high-priority opportunities were very strongly supported.

Four proposed initiatives showed a weaker alignment:

- produce nationally consistent methods for deriving ecologically-based soil contaminant levels – submitters were split between those who agreed with the Ministry and gave this initiative a low priority (14) and those who considered it a high priority (15)
- produce a standard (ecological) that defines management actions – a significant number (11) of submitters considered this opportunity to be a high priority in contrast to the majority of submitters (18), who agreed with the suggested low priority
- provide guidance on how agencies establish working relationships – although the majority of respondents (15) agreed with the medium priority given, a significant number (11) considered this initiative more urgent
- investigate options for addressing liability barriers – although the majority of respondents (12) agreed with the medium priority given, a significant number (19) considered this initiative more urgent than stated.

4 National environmental standards

The vast majority of submitters partially agreed or conditionally agreed that a guideline progressing to a standard is the most appropriate way to develop nationally consistent soil contaminant levels.

When asked about the content and function of a standard, most submitters suggested that it should at least contain a method for deriving soil contaminant values, and/or a tier-based assessment. Most of these submitters suggested a standard should contain both methods and numbers. There was also a strong level of consensus that if a standard contains numerical soil contaminant levels, they should be used as a “trigger level in a tiered risk-based assessment”. The use of soil contaminant levels as absolute thresholds was not favoured, and was advocated by only one submitter.

When asked if the guideline and standard criteria should include ecological as well as human health criteria, the majority wanted both criteria included. A smaller proportion advocated for a health-first or a health-only approach.

Other than a numerical or methodological standard, providing nationally consistent contaminated land rules was the most commonly suggested issue to which a standard could be applied.

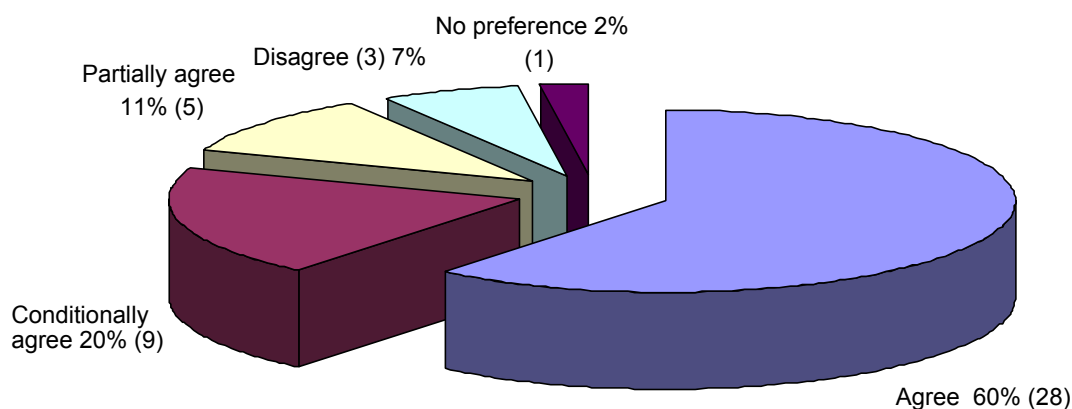
4.1 Appropriateness

Discussion point 4

Is a national guideline progressing to a standard the most appropriate way to develop nationally consistent soil contaminant levels?

The majority of submitters (74%) responded to this discussion point. Figure 2 provides a breakdown of the responses.

Figure 2: Responses to “Is a national guideline progressing to a standard the most appropriate way to develop nationally consistent soil contaminant levels?”



Twenty-eight submitters agreed that a national guideline progressing to a standard is the most appropriate way to develop nationally consistent soil contaminant levels. Fourteen submitters (31%) conditionally or partially agreed with the discussion point and three (7%) disagreed.

Those submitters who agreed considered that a standard would:

- provide more certainty to the sector
- reduce variability in practice
- reduce confusion over the classification of contaminated land
- provide a clear benchmark for practice
- result in benefits far outweighing the costs.

Of those who conditionally agreed, conditions related to the quality of the guidance, the process for developing/deriving guidance, and the intended function of the soil contaminant values. Submitters who partially agreed were generally in favour of developing a national guideline, but were more reserved about the need for a standard, questioning its value over that of a national guideline.

The three respondents who disagreed were mostly concerned about inflexibility and the over-simplification of a standard approach. One also questioned the need for more contaminated land guidance, and felt that the existing guidance is sufficient.

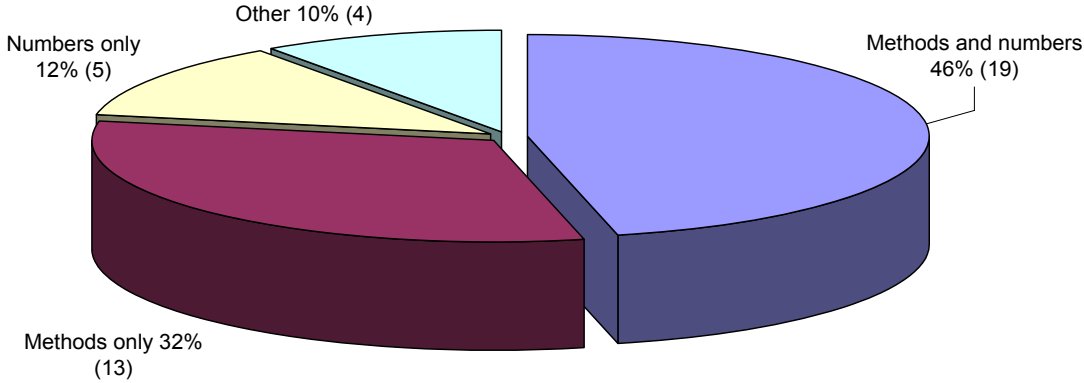
4.2 Content and function

Discussion point 5

If a standard is considered appropriate, what should the standard contain (numerical values, methods, etc), and what should its function be?

The majority (74%) of submitters responded to this discussion point. Figure 3 provides a breakdown of the responses.

Figure 3: Responses to “If a standard is considered appropriate, what should the standard contain, and what should its function be?”



The most common suggestion (46%) was that a standard should contain both methods and numbers. These submitters favoured a numerical trigger value supported by methods for derivation, methods for assessment, or both (see below).

Many (32%) felt the standard should contain methods only. It was argued that this would provide the greatest flexibility for site-specific assessment while providing a consistent derivation or assessment framework.

Of all the submitters who suggested a method:

- most wanted a method for deriving soil contaminant values (eg, setting tolerable daily intakes, mean daily intakes, acceptable level of risk, exposure parameters)
- others wanted a method for a tiered assessment of land (eg, how to derive site-specific values, such as assessing exposure pathways using site-specific information)
- others wanted methods to identify, record investigate, manage, remediate and report (eg, incorporating Contaminated Land Management Guidelines (CLMG) numbers 1–5).

Some submitters (12%) considered that using numbers only provided the greatest certainty, or more certainty than a method. One noted that the method for deriving the numbers needs to be transparent as to the degree of uncertainty in their calculation.

Four submitters wanted content other than methods and numbers in a standard (see section 4.5). Two cautioned against adopting over-protective numbers and recommended contaminant-specific cost–benefit analysis to guide setting numerical numbers. They highlighted cadmium from fertiliser inputs and polycyclic aromatic hydrocarbons.

Table 4: Suggestions for what the NES should contain, by submitter ID

Suggestion	Submitter ID
Methods and numbers	8, 9, 10, 14, 19, 21, 26, 27, 28, 30, 31, 32, 35, 38, 40, 42, 46, 58, 61
Methods only	4, 11, 15, 23, 25, 45, 47, 48, 49, 53, 54, 55, 57
Numbers only	5, 29, 51, 56, 60
Other	17, 58, 35, 18

4.3 Use of soil contaminant values

Discussion point 6

If a standard for contaminated land includes soil contaminant levels, what should these levels be used for?

Thirty-one submitters (50%) responded to this discussion point. The responses were sorted into common themes, as outlined in Table 5.

Table 5: Submitter suggestions for the use of soil contaminant levels in a standard

Suggestion	No. of submissions
Trigger further investigation or tier-based assessment	15
Define contaminated land	4
Remediation criteria	4
Not as pollute-up-to levels	3
Define the land-use suitability	2
Mitigation and management criteria	1
Thresholds for widespread contamination	1
As an absolute threshold value	1
Only for changes to residential land uses	1

Just under half (15) considered that if a standard contained soil contaminant levels, they should be used as a “trigger level” in a tier-based assessment. Exceeding the level would trigger further investigation. These investigation(s) would assess exposure pathways, considering site-specific factors to determine the sites’ contaminated status. Exceeding the trigger value would not automatically define the site as being contaminated. Some considered variations on this theme, including a tiered system with a mix of targets, regulatory and non-regulatory levels.

Four submitters wanted the level to be used to define contaminated land, which suggests a threshold approach. However, two of these submitters also suggested a trigger value type of response.

Four submitters suggested that levels should be used to define acceptable remediation or clean-up criteria. Three cautioned that standard soil levels should not be used as pollute-up-to levels. One argued for threshold values over risk-based guidelines. The argument was that threshold values are quantitative (with small grey areas), whereas risk-based values are difficult for the public to understand and subject to variables.

One submitter considered that levels should only be applied to residential land uses, because land-uses changes within the agricultural sector are adequately dealt with by New Zealand Food Safety Authority. In contrast, another submitter suggested that for widespread contamination (eg, agricultural, horticultural), levels should be used as thresholds associated with the protection of soil health and productivity that determine the ongoing and future management of the land.

Table 6: Suggestions for the use of contaminant values, by submitter ID

Suggestion	Submitter ID
Trigger further investigation or tier-based assessment	8, 9, 14, 19, 20, 25, 26, 27, 28, 29, 30, 31, 35, 48, 49
Define contaminated land	8, 18, 35, 44
Remediation criteria	14, 29, 32, 58
Not as a pollute-up-to level	87, 38, 45,
Define the land-use suitability	8, 38
Mitigation and management criteria	8
Thresholds for widespread contamination	29
As an absolute threshold value	10
Only for changes to residential land uses	47

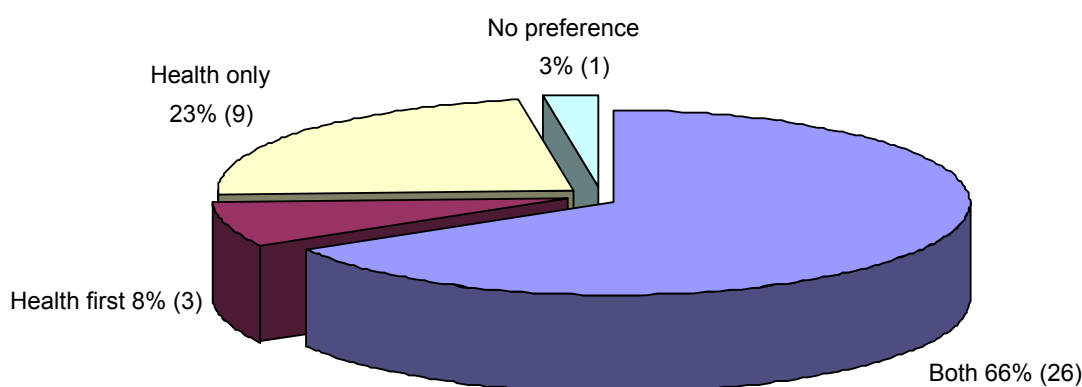
4.4 Human health and/or ecological criteria

Discussion point 7

Should the guideline and standard criteria include ecological as well as human-health criteria?

Thirty-nine submitters (63%) responded to this discussion point. Figure 4 provides a breakdown of the responses.

Figure 4: Response to “Should the guideline and standard criteria include ecological as well as human-health criteria?”



Twenty-six submitters (66%) supported incorporating both ecological and human-health criteria. Twelve preferred health, with nine (23%) preferring health only and three (8%) favouring health first. One submitter stated to have no preference.

Submitters who wanted both human health and ecological criteria (26) considered that having both would significantly reduce the existing practitioner confusion and uncertainty over what criteria to apply when assessing land. Some, while supportive of developing both criteria, acknowledged the technical and policy difficulties of deriving and applying ecological criteria; ie, “what to protect” and “where to protect” (eg, commercial/industrial/residential).

Common threads in these responses included the following:

- ecological guidance is essential to help define contaminated land and help councils to address their statutory functions
- effects on ecology need to be seen to have an equal ranking with effects on human health. A focus on human-health criteria would result in the effects on ecological receptors being given lower priority, or even being ignored by practitioners
- any ecological criteria needed to include soil criteria protective of groundwater and surface water.

Submitters who favoured health only (9) were predominantly concerned about the complexity of ecological assessment relative to human health assessment and the wide variety of factors that need to be considered. One was concerned about the possibility of unnecessarily conservative outcomes as a result of deriving and implementing ecological criteria.

Three submitters, while cautioning against deriving ecological criteria in a standard, suggested that ecological assessment could be covered by broad guidance or long-term targets. Suggestions included:

- provide guidance on when ecological receptors are important and the methodology for how they should be considered
- provide guidance on establishing ecological parameters or trigger values via a risk-based assessment methodology
- adopt long-term targets for ecological criteria.

Submitters who responded with health first (3) supported eventually deriving ecological criteria, but considered that providing human health criteria was an immediate priority.

Table 7: Suggestions for human health and/or ecological criteria, by submitter ID

Suggestion	Submitter No.
Both ecological and health	5, 6, 8, 10, 12, 14, 15, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 44, 45, 53, 56, 58, 60, 61
Health only	2, 38, 40, 42, 47, 48, 49, 51, 54
Health first	24, 32, 35
No preference	4

4.5 Other issues a standard could be applied to

Discussion points 22 and 23

To what other issues could a standard be applied to improve contaminated land management?

How would your suggested standard improve contaminated land management?

Twenty-one (34%) submitters made suggestions about what other issues a standard could be applied to. The most common suggestion (6) for a standard was to address the inconsistency of contaminated land provisions in local government plans by applying a model plan rule. While model rules for both regional and district plans were suggested as candidates, district plans were most commonly suggested. Model rules were also a common suggestion as a guideline (see section 6.2).

Submitters explained that this type of standard would:

- ensure consistent and/or comprehensive planning (by overriding conflicting rules)
- improve clarity of roles and responsibilities between district and city councils and regional councils
- improve information on contaminated land and information for prospective landowners by triggering investigations for change in land use or subdivision of HAIL (Hazardous Activities and Industries) sites.

Three submitters wanted to see the roles and responsibilities of the relevant agencies detailed in a standard to clarify the existing uncertainty and confusion about agency roles. A range of additional suggestions were given, and these are summarised in Table 8.

Table 8: Suggestions for other issues a standard could be applied to, by submitter ID

Suggestion	Submitter ID
Introduce consistency to local government planning	18, 23, 25, 27, 28, 48
Clarify local government roles and responsibilities	17, 58, 35
Support best design, process and disposal practices	4
Develop monitoring standards that track the source of contamination in an industrial area	43
Encourage on-site treatment rather than "dig and dump"	27
Address contaminated groundwater, surface water and sediment	32
Other contaminant exposure pathways (eg, groundwater, surface water, air)	29
Address localised and widespread land contamination	29
Identify and register contaminated land and establish liability	45
For biosolids	17
Penalties, emergency procedures	17
Prohibit management mechanisms reliant on dilution	30
Require councils to share contaminated land information	48

5 Roles and responsibilities

Submitters considered that awareness of new responsibilities placed on councils is highly variable. Reasons suggested for this included lack of clarity and strength in the recent RMA amendments to sections 30 and 31, combined with a lack of resources and expertise within councils.

Responses to how well the main agencies work together were mixed, with some considering that working relationships are good, while others suggested they were variable or poor. However, most considered that the main barriers to establishing good working relationships were the large number of agencies involved, combined with a lack of clarity of roles and responsibilities. Most also agreed that the main way to improve how agencies work together is to clarify the roles and responsibilities of the various agencies and describe how they should be working together.

5.1 Awareness of responsibilities

Discussion point 8

Are local authorities in your region/district aware of their new responsibilities placed on them by RMA amendments? If so, are they acting on them?

Just over half of submitters (56%) responded to this discussion point. Submitters considered that awareness of new responsibilities placed on councils was highly variable. It was generally considered that regional councils were most aware, while awareness among district and city councils ranged from very high to little or none. It was suggested that awareness among district and city councils was highest in more populated urban councils and lower within remote rural councils.

Recent amendments to the RMA were considered by some to have improved the level of awareness.

Although many councils were considered to be aware of their functions, some submitters noted that many were choosing not to act on them. Reasons for this failure to act included:

- unclear roles and responsibilities – sections 30 and 31 functions in the RMA are considered unclear and open to a wide degree of interpretation
- sections 30 and 31 functions in the RMA are not strong enough to compel councils to undertake these functions
- an underlying lack of resources and expertise within councils
- low priority given to contaminated land relative to other functions and duties.

Many submitters highlighted the effects of the variable awareness and uptake of new responsibilities, which were seen to include:

- confusion about agency roles and responsibilities

- an inconsistent approach to contaminated land management
- uncertainty in the community as to consent requirements, classification and clean-up criteria
- competitive disadvantages to industry in regions that have adopted a conservative approach.

Table 9: Perception of local authority awareness of responsibilities, by submitter ID

Awareness of responsibilities	Submitter ID.
Awareness	
Awareness and implementation is variable	4, 21, 27, 28, 29, 30, 32
They are aware of their new responsibilities	11, 18, 42, 44
Councils in the region are aware, but may not be acting on their responsibilities	23, 56, 61
RMA 2005 amendment has clarified roles and responsibilities to some extent	11, 12, 29
Effects	
Uncertainty/confusion about agency roles and responsibilities	12, 48, 53
Inconsistent approach to contaminated land management	49, 53
Uncertainty in the community as to classification and clean-up criteria	21
Competitive disadvantages between regions	4
Contributing factors	
Unclear roles and responsibilities regarding s30 and s31 functions in the RMA	4, 10, 15, 30, 40, 48, 52, 58
Low priority given to contaminated land relative to other functions and duties	48, 56, 61
S30 and s31 functions in the RMA are not strong enough to compel councils to undertake these functions	15, 27
Underlying lack of resources and expertise within councils	27, 50

5.2 Working relationships between agencies

Discussion point 9

How well do the main agencies work together on contaminated land management in your region/district?

Thirty-seven submitters (60%) responded to this discussion point, and responses were mixed. Eight submitters reported effective working relationships between regional councils and district and city councils, but these good relationships were only reported in certain situations (eg, with high-profile sites) or between specific organisations (eg, regional councils and the Ministry). The Regional Waste Officers Forum was highlighted as an effective forum for regional council communication, experience and information sharing. However, it was noted that there was no parallel forum for district and city councils.

Six submitters thought the main agencies worked together poorly, identifying examples of poor relationships contributing to:

- duplicating or overlap in functions and effort

- significant variation in regulatory controls, report assessment and information management within regions
- applying insufficient resources and expertise.

Most submitters were agreed on the barriers to establishing good working relationships. The main barriers identified were:

- the large number of agencies involved
- no clear lead agency
- lack of clarity on agency roles and responsibilities.

Table 10: Perceptions on the working relationships between agencies, by submitter ID

Working relationships between agencies	Submitter ID
How are the agencies working together?	
Variable and/or confused	12, 29, 30, 32, 48, 52
Councils work well together within the region	22, 23, 44, 61
District council works well with the regional councils	40, 58
Good between regional councils, and between regional councils and the Ministry	28
Good on high-profile sites	27
No evidence of regional councils working together	32, 45
Effects of poor relationships between agencies	
Overlap and duplication of effort and functions between councils	15, 55
District and city council record keeping is varied, resulting in confusion for landowners and consultants	58, 61
Significant variation in practice within regions (regulatory controls, report assessment, information management)	49, 58
Adds to compliance costs and time to complete projects	14
Lack of ability to easily access other agencies' databases	52
Insufficient expertise, resourcing and staffing	30
Barriers	
Lack of clarity of roles and responsibilities	16, 18, 32, 40, 61
No clear lead agency	15, 27
Large number of agencies involved	27
Lack of national communication forum for district and city councils	28

5.3 Improving how the main agencies work together

Discussion point 10

What could be done to improve the way the main agencies work together?

Thirty-six (58%) submitters responded to this discussion point, suggesting initiatives to improve the way the main agencies (central government, regional councils, district and city councils and health agencies) work together.

Most submitters (27) agreed that the best way to improve how the relevant agencies work together is by further clarifying the roles and responsibilities of the various agencies, and describing how they should be working together. Most (20) agreed that this could be achieved by developing a roles and responsibilities protocol (guidance), as proposed in the discussion document. Others (9) considered that legislative (RMA) or regulatory (standards) amendment would be more effective than guidance. These submitters contended that guidelines were not strong enough, and that adoption would continue to be patchy without the force of regulation. A common suggestion for legislative amendment was to change the sections 30 and 31 contaminated land *function to duty*.

A range of other measures were suggested by submitters to improve how the main agencies work together, including:

- increasing the training given to practitioners on contaminated land management (7)
- increasing funding and resources for local government (4)
- increasing central agency involvement and leadership on the ground (3)
- a regional and national forum to guide policy making and facilitate the sharing of expertise and resources between agencies (3)
- a national advisory/stakeholder group between central government, council, land conveyers and financiers (2).

Table 11: Suggestions for improving the way agencies work together, by submitter ID

Suggestion	Submitter ID
Clarify working relationships between agencies and between agencies and landowners – guidance	4, 8, 11, 18, 22, 24, 26, 27, 28, 34, 38, 40, 42, 46, 47, 48, 52, 53, 55, 56, 58, 59, 60, 61
Provide training	28, 29, 36, 46, 51, 56, 58
Clarify working relationships – legislative	8, 15, 28, 45, 48, 49
Clarify working relationships – standards	17, 27, 29, 28, 49
Additional funding and resources for local government	44, 27, 29, 58
Ministry for the Environment to provide greater leadership and direct involvement	11, 12, 25
Establish national forum	24, 27
Establish regional forum	24, 26
National agency/panel to provide specialist advice	12, 26
Clarify the Ministry for the Environment's role	12
Develop an auditor or accreditation system	29
Have one central organisation (eg, environmental protection agency type) rather than multiple agencies	30
Support local register/database development	61
National consistency in the tagging of land information memoranda (LIMs)	61
Comprehensive policy, nationally consistent guidance or standards relating to contaminant levels and management	29
A systematic approach to identifying contaminated sites	32

6 Guidance

When asked what guidelines need to be revised, submitters most commonly suggested the timber treatment, petroleum hydrocarbon guidelines and CLMG No. 5. However, many submitters considered that all guidelines need to be revised into one overarching guideline.

Twenty-nine further guidelines were suggested. The most common suggestions were for: remediation options, roles and responsibilities, horticultural soils, and remediation by natural attenuation.

6.1 Revision of guidelines

Discussion point 11

Which (if any) of the guidelines need to be revised?

Twenty-four submitters (39%) responded to this discussion point. Not surprisingly, the most commonly suggested guidelines for revision were some of the oldest, specifically, the *Health and Environmental Guideline for Selected Timber Treatment Chemicals* (Ministry for the Environment and Ministry of Health, 1997), and the *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand* (Ministry for the Environment, 1999). While most agreed that both of these guidelines are still technically adequate, they considered they need revision to address significant errors and a growing number of inconsistencies with later Ministry guidelines.

Six submitters thought that *Contaminated Land Management Guidelines No 5: Site Investigation and Analysis* (Ministry for the Environment, 2004) needs revision because it is inconsistent with advice in the earlier timber treatment guidelines and requires clarification to minimise user confusion over requirements for composite and representative sampling.

Five responded that *Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values* (Ministry for the Environment, 2003) needs revision, because it is too strict and does not relate to local conditions. The comment was also made that a more comprehensive set of New Zealand values needs to be derived.

Five submitters suggested that the classifications in the recently released *Contaminated Land Management Guidelines No. 4: Classification and Information Management Protocols* (Ministry for the Environment, 2006) need to be expanded. It was believed that this is necessary to promote national consistency on how councils record and report information about land.

A common theme across all submissions was the need to schedule regular reviews of the guidelines to incorporate evolving policy, methods and technologies to ensure the guidance remains useful and the Ministry's policy advice is current and consistent. Some suggested a five-yearly review period.

Others suggested that instead of revising individual documents, all existing guidelines (especially the industry guidelines) be combined into one overarching guideline. They also

recommended that all guidance containing soil contaminant values needs to be precautionary, and open and transparent about the uncertainties contained in their derivation.

Table 12: Suggestions for revising guidelines, by submitter ID

Suggestions	Submitter ID
Timber treatment guideline	3, 9, 10, 26, 27, 29, 30, 32, 47, 48, 58, 61
Petroleum guideline	3, 10, 29, 30, 32, 40, 48, 61
All guidelines	28, 42, 47, 54, 57, 58, 60
CLMG No. 5	27, 29, 32, 35, 51, 61
CLMG No. 2	14, 20, 28, 29, 57
CLMG No. 4	28, 29, 35, 51, 63
Sheep-dip guideline	10, 29, 47, 59
Gasworks guidelines	10, 29, 40
CLMG No. 1	28, 29

6.2 Further guidelines

Discussion point 12

Considering the guidance already developed, is there a need for further guidance? If so, what additional guidance should be developed?

Thirty submitters (48%) made suggestions for 29 different guidelines. The most commonly suggested (8) was guidance on remediation options (clean-up technologies and methods) to promote cost-effective *in situ* management and remediation over the currently preferred “dig and dump” option.

There was significant support (6) for developing guidance on roles and responsibilities to help the various agencies clarify their respective contaminated land roles. Many (6) also wanted model rules for district and regional plans to help address the inconsistency of contaminated land provisions in local government plans by applying a model plan rule. Model rules were also a common suggestion as a standard (see section 4.5).

Other commonly suggested guidelines included:

- identifying and managing the risks associated with the subdivision of horticultural land (5)
- remediation by natural attenuation (4)
- investigating groundwater contamination from contaminated sites (3).

All further guidelines suggested by submitters are listed in Table 13.

Table 13: Further suggestions for guidelines, by submitter ID

Suggestion	Submitters ID
Remediation options (clean-up technologies and methods)	11, 15, 19, 20, 30, 40, 42, 58
Roles and responsibilities	15, 16, 29, 40, 42, 48
Model rules for district and regional plans	23, 25, 48, 49, 53, 58
Horticultural guidelines	15, 30, 40, 42, 47
Remediation by natural attenuation	15, 32, 40, 42
Groundwater investigations and modelling	28, 29, 53,
Management of widespread diffuse source contamination	29, 57
Site-specific assessment (bio-availability considerations)	48, 49
National soil guidance	27, 44
Guideline specifically for district and city councils	15, 48
Use of predictive modelling	2
Prevention of contamination	4
Guidance on how to use guideline values	9
Waste acceptance criteria	15
Thresholds for disposal of contaminated land	15
Emergency action plan guidance	16
Community consultation	29
Market gardening	29
HAIL site identification	29
New contaminants	32
Guidance specifically for landowners	41
Orchard and chemicals	48
Waste disposal for poultry industry	55
Environmental testing, field sampling, lab testing and reporting	57
Crop-specific guideline	59
Functional guidance (rather than technical)	61
Site remediation protocols in emergency management situations	1
Diffuse groundwater discharges	32
Costs and benefits, and better information sources	21
Land banking	36
Reuse of contaminated soil (in areas that have less contact with human health)	40

7 Liability

When asked how significant a barrier the absence of a historical liability regime was, the dominant response was that it posed at least some form of barrier to the management and remediation of sites. The favoured solution was to adopt a retrospective hierarchical regime, or a polluter-pays regime. Some considered that more investigation was needed, while others were happy with the existing situation.

To compensate for the absence of a liability regime, most submitters considered that the Fund should at least be expanded. Other common suggestions were that the Fund should accept applications either directly from the public or from district and city councils, and be widened to be able to fund regional council identification and recording functions.

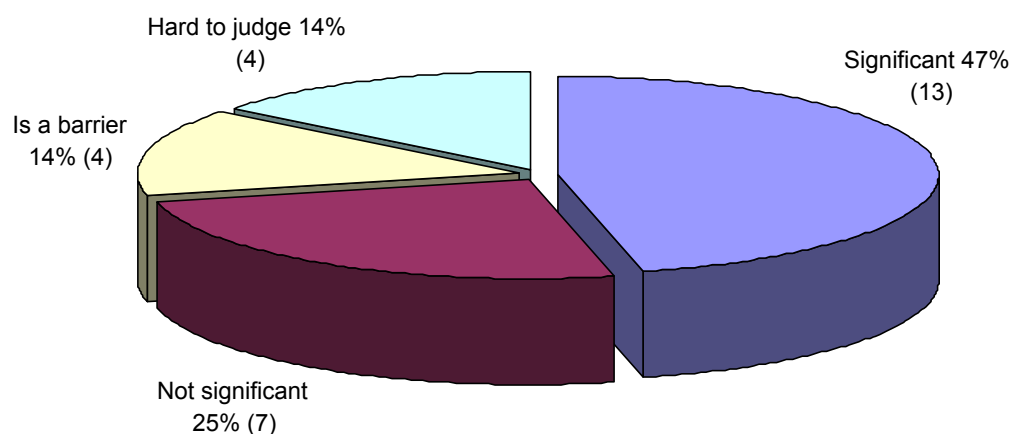
7.1 Significance of the issue

Discussion point 13

How significant a barrier is the absence of a historical liability regime?

Twenty-eight (45%) submitters responded to this discussion point. Figure 5 provides a breakdown of the responses.

Figure 5: Responses to “How significant a barrier is the absence of a historical liability regime?”



Seventeen submitters considered that the lack of a liability regime is a barrier (4) or a significant barrier (13) to the management/remediation of contaminated land. Issues identified included:

- it is difficult to hold polluters responsible for pre-1991, or even post-1991 contamination
- the ease with which polluters can transfer liability to innocent landowners

- the lack of any certainty over liability reduces the likelihood that sites will be identified and remediated.

Although many of these submitters considered this issue to be significant, many also considered that any response should be carefully considered. Suggestions included establishing the extent of the barrier, drawing on previous Ministry work, and researching international regimes.

Seven submitters considered that the absence of a historical liability regime is not significant. Some felt that the default position under the RMA, where the existing landowner is liable for pre-1991 pollution, is a pragmatic approach. Others considered that remediation is more significantly affected by the availability of money and other barriers than by liability.

Table 14: Assessments of the significance of the absence of a historical liability regime, by submitter ID

Significance	Submitter ID
Significant	4, 9, 11, 13, 23, 28, 29, 30, 54, 55, 58, 61
Not significant	18, 25, 32, 40, 42, 50, 56
Is a barrier	4, 15, 47, 52
Hard to judge	27, 44

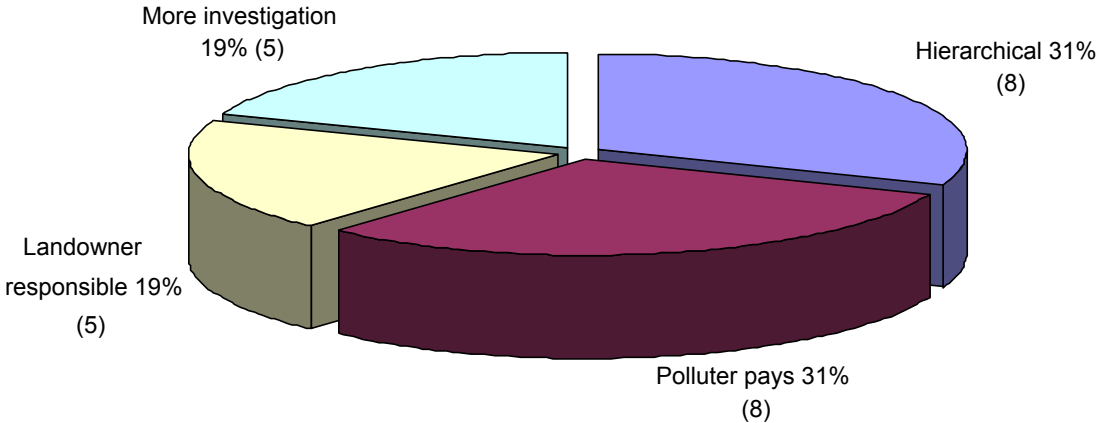
7.2 Liability considered the best fit

Discussion point 14

Which liability regime is considered the best fit?

Twenty-nine (47%) submitters responded to this discussion point. Figure 6 provides a breakdown of the responses.

Figure 6: Response to “Which liability regime is considered the best fit?”



The most favoured solution was to adopt a retrospective hierarchical regime (8) or a polluter-pays regime (8). Some recommended that the Ministry take legal action against polluters by requiring them to remediate, with some leeway given to historical activities that were Crown mandated (eg, sheep-dip sites).

Five submitters considered that liability should continue to rest with the landowner, given that the landowner benefits the most from a clean-up. Where liability or the ability of the landowner to pay is an issue, they felt that the existing Fund is an adequate mechanism to help local government and landowners to pay for remediation.

Five submitters felt that further investigation is needed and recommended reviewing a range of liability regimes.

Many of the above submitters also wanted an innocent landowner defence as part of any liability regime. A number of the submitters also commented on Crown liability. They stressed that the Crown needs to set a better example by cleaning up its portfolio of contaminated sites. Others also considered that the Crown should take responsibility for sites where the polluter cannot be found.

Table 15: Assessments of which liability regime is the best fit, by submitter ID

Liability regime	Submitter ID
Hierarchical	4, 7, 44, 45, 48, 49, 58, 60
Polluter pays	7, 8, 10, 13, 28, 30, 51, 53
Landowner responsible	14, 30, 40, 44, 51
More investigation	13, 23, 28, 32, 47

7.3 Modifications to the Fund

Discussion point 15

If no liability regime is established, what modifications (if any) would need to be made to the Contaminated Sites Remediation Fund?

Thirty-eight submitters (61%) made suggestions as to how the Fund could be modified. Most (20) considered that the Fund should be expanded, arguing that it is insufficient to the cost of remediation. One submitter suggested a “superfund” made up of a mix of public funding and industry levy.

Twelve submitters considered that the Fund should be allowed to accept applications either directly from the public (6) or from district and city councils (6) rather than the regional council being the sole gateway for applications. Six submitters suggested that the scope of the Fund should be widened to fund regional council identification and recording functions.

Specific suggestions included assisting regional councils to:

- identify the location of widespread historical activities such as sheep-dip sites
- help councils deal with community outrage over contaminated land
- set up land information databases.

Others considered there should be better management of the Fund. Recommendations included modifying the administration to make the application and decision-making process more transparent and technically robust.

Table 16: Suggestions for modifications to the Contaminated Sites Remediation Fund, by submitter ID

Suggestion	Submitter ID
Expand the Fund	7, 8, 12, 14, 23, 27, 28, 32, 35, 42, 43, 45, 46, 49, 50, 51, 52, 56, 58, 59
Accept applications directly from landowners and public	15, 30, 32, 43, 48, 58
Accept applications directly from district and city councils	11, 12, 40, 48, 49, 58
Widen the scope of the Fund	7, 50, 51, 52, 54, 59
Improve Fund communication	9, 29

8 Accreditation

Although most submitters supported an accreditation scheme in principle, over half didn't consider it a necessary component of a policy framework. Many felt it was necessary to improve the consistency and quality of investigations, reports and decision-making.

When asked how an accreditation system could be administered, a variety of options were suggested. The most common suggestion was to have the system administered by an accreditation body, such as the Institute of Professional Engineers of New Zealand.

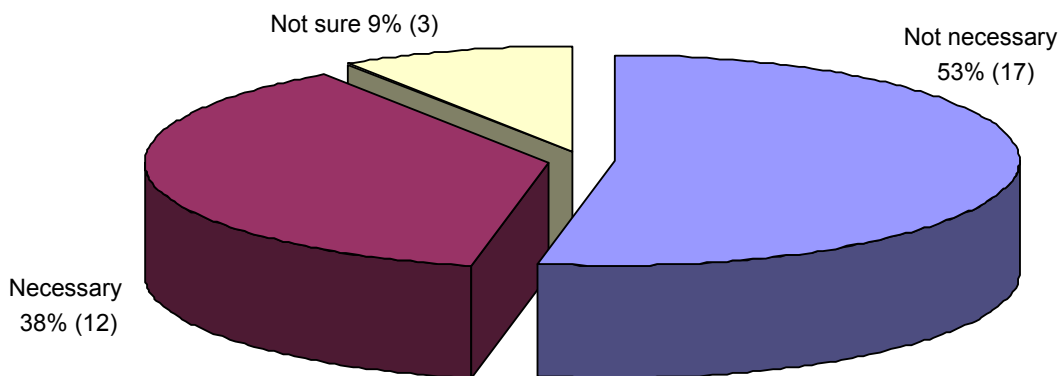
8.1 Accreditation as a necessary component

Discussion point 16

Is an accreditation system a necessary component of a contaminated land policy framework?

Thirty-two submitters (53%) responded to this point. Figure 7 shows how submitters responded.

Figure 7: Responses to “Is an accreditation system a necessary component of a contaminated land policy framework?”



Over half (17) considered that an accreditation system is not a necessary component of a contaminated land policy framework. Most of these submitters considered accreditation ideal and reasonably successful in other countries, but did not consider it to be a priority or an essential policy component. A number also foresaw various disadvantages, including:

- reducing the already scarce number of practitioners
- reliance on appropriate training being available
- a long period of transition as practitioners prove their credentials

- significant costs associated with implementing and operating the scheme.

Others recommended alternatives to accreditation, including:

- providing review expertise from a central body rather than using external consultants
- requiring formal peer review of all investigation reports
- maintaining an informal register of appropriately experienced consultants.

Twelve submitters supported the accreditation of practitioners. Some suggested that accreditation best focused on those assessing sites against standards, and diffuse and point sources of contamination. Others suggested accreditation be extended to council officers.

A number of submitters also commented on accredited auditor schemes. One supported such a scheme, but two considered it to be inappropriate, citing the negative effects of auditor schemes in Australia.

Table 17: Assessment of whether an accreditation system is necessary, by submitter ID

Assessment	Submitter ID
Do not support accreditation	4, 15, 22, 23, 25, 28, 29, 30, 31, 32, 42, 44, 47, 53, 54, 55, 58
Support accreditation for practitioners	8, 14, 18, 26, 27, 45, 48, 49, 56, 57, 60, 61
Not sure	19, 44, 55

8.2 Additional benefits and administration

Discussion point 17

If so, what additional benefits would an accreditation system bring, how could it work, and how would it be administered?

Benefits of accreditation

Nine (15%) submitters commented on the benefits of an accreditation system. The most common benefit cited was improving the consistency of investigations and reports by consultants and decision-making by regulators. Many also considered that accreditation would improve the quality of investigations, reports and decision-making by:

- enhancing the skill level of practitioners
- providing greater confidence in technical reports
- reducing the frequency of reassessment.

Other benefits suggested included:

- increasing the likelihood of consistent site assessment standards being applied
- increasing developers' confidence that they are using appropriately qualified and skilled consultants.

Table 18: Assessments of what additional benefits an accreditation scheme would bring, by submitter ID

Assessment	Submitter ID
Efficient report assessment, greater council confidence, cut down need for peer review	8, 27, 23, 28, 29
Consistency	18, 20, 48, 61

Administering an accreditation system

Eight submitters suggested a variety of options for administering an accreditation system. The most commonly suggested option was to have the system administered by an accreditation body such as the Institute of Professional Engineers of New Zealand (IPENZ). The Institute itself submitted that it would be open to this possibility.

Table 19: Suggestions for administering an accreditation system, by submitter ID

Suggestion	Submitter ID
Administered by an accreditation body such as IPENZ	30, 32, 48, 61
User pays, similar to IPENZ	27, 32
Administered by the Ministry (appointed audit team)	31, 48
International Accreditation NZ or Certified Environmental Professional	48
Based on existing accredited models (eg, RMA commissioner accreditation programme)	18
A well-administered system combined with a risk-based approach regulated by experienced bodies	31
Should be part of New Zealand Qualification Authority system	8
A list of accredited persons should be formed	8
Each council develops a register of practitioners	27
Criteria set nationally	27
Investigate international systems and experience	30
Need to steer away from the over-conservative Australian auditing system	31

9 Capability

The vast majority of submitters considered that a lack of capability in local government creates a significant barrier to the effective management of contaminated land. There was less consensus on whether there is a lack of capability within the consulting community.

A number of submitters suggested that issues of capacity and resourcing in local government were greater barriers than capability. The commonest suggestions for improving local government capability were: training, provision of funding/resources, leadership from central government, clarity of local government roles and responsibilities, guidance, and an accreditation or certification scheme for contaminated land practitioners.

There were also concerns about the variability in the quality of work from the consulting community and a shortage of skilled practitioners. The commonest suggestions for improving consultant capability included: training, an accreditation/audit scheme, and increased national leadership.

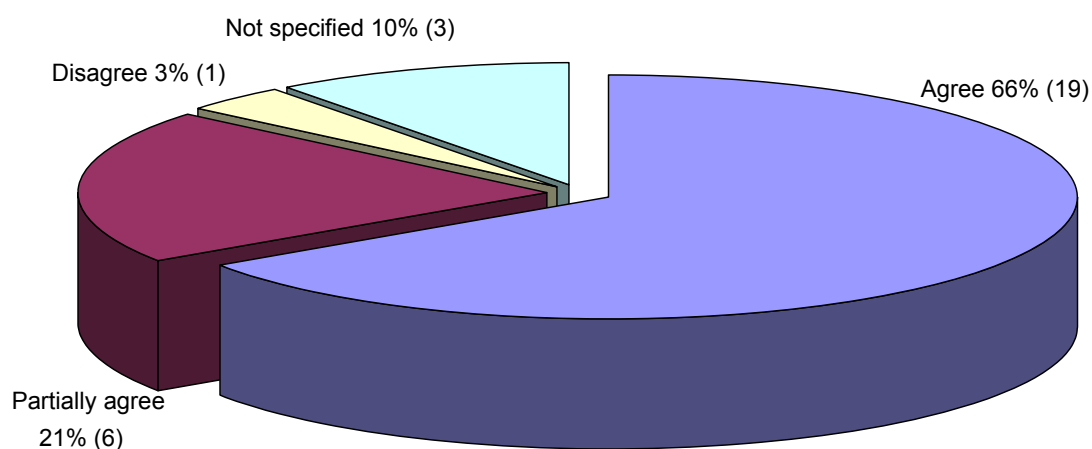
9.1 Capability in local government

Discussion point 18

Does a lack of capability in the local government form a significant barrier to the effective management of contaminated land? If so, how could capability of local government be improved?

Thirty-one (50%) submitters responded to this discussion point. Nineteen agreed that a lack of capability in local government forms a significant barrier to the effective management of contaminated land. Six submitters partially agreed with the discussion point and one disagreed. Figure 8 provides a breakdown of the responses.

Figure 8: Responses to “Does a lack of capability in the local government form a significant barrier to the effective management of contaminated land?”



Those who agreed or partially agreed suggested a range of factors for the lack of or variable local government capability, including:

- limited resources being devoted to contaminated land
- competing demands for resources within councils
- contaminated land is often not a priority for councils
- lack of experienced, qualified council staff.

Improving local government capability

Training was considered by the majority (14) to be the best way to improve local government capability. A number of suggestions for how training should be applied were made, including:

- making contaminated land issues part of wider RMA practitioner training
- training on the use of the Hazardous Activities and Industries List (HAIL) and on where to find information on contaminated land, as well as training on the appropriate control of subdivision and land use
- training in geology, hydrogeology and environmental chemistry
- training on the legislation relevant to contaminated land.

Many submitters (8) suggested that increased leadership from central government would improve local government capability. They considered that better leadership could be provided by providing a comprehensive policy framework that contains consistent methodology, supported by expert advice (eg, a centre of excellence, or policy advisory group).

Seven suggested that providing funding or resources would improve local government capability, especially in smaller councils.

A range of other measures were suggested to improve local government capability. Common suggestions included:

- clarifying roles and responsibilities via guidance or legislative amendment (6)
- measures to support and resource local government to manage land information (4)
- guidance on the acquisition, handling and transfer of information and district plans (5)
- an accreditation/auditor/certification scheme to assist in local government capability (5)
- improving links/communication between councils/practitioners and other agencies (3).

Table 20: Suggestions for improving local government capability, by submitter ID

Suggestion	Submitter ID
Provide training/education	15, 18, 20, 23, 29, 30, 42, 48, 49, 52, 53, 58, 60, 61
Provide funding/resources	24, 25, 27, 28, 29, 44, 56, 58
Leadership and comprehensive policy from central government	4, 8, 29, 44, 45, 48, 58, 61
Central agency / centre of excellence	3, 8, 10, 32, 47, 55, 61
Greater definition and guidance of local government roles and responsibilities	8, 15, 18, 40, 48, 49
Provide guidance	15, 18, 27, 49, 58
Accreditation/certification/auditor scheme	29, 26, 40, 48, 52
Develop/use appropriate tools and networks to manage information	8, 27, 52, 61
Establish an advisory group to guide Ministry policy formulation	27, 45, 61
Better communication / improved links between agencies	15, 26, 52
Contaminated land management should be tendered to qualified environmental consultants	42
Have staff dedicated only to contaminated land	31
Local government staff should be seconded to consultants for six months to gain experience	30
Succession planning within council organisations	60
Provide sufficient internal Ministry resourcing	27
Provide a strong framework in planning documents	18

9.2 Capability of the consulting community

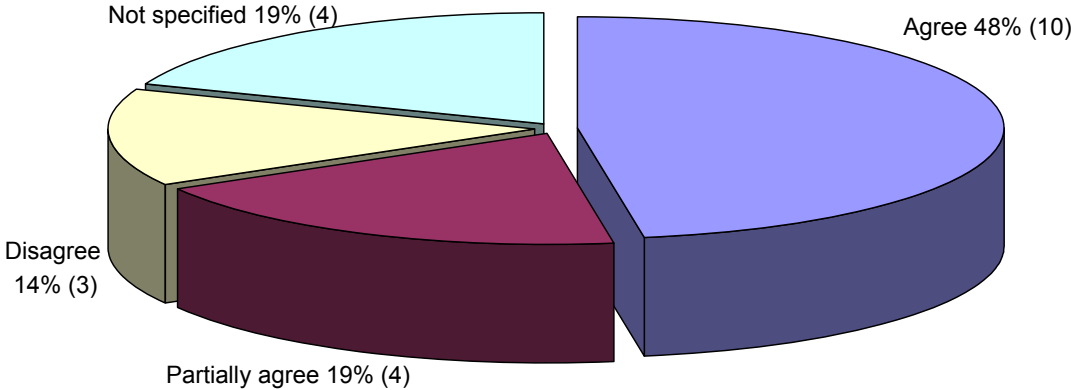
Discussion point 19

(a) Does a lack of capability in the consulting community form a significant barrier to the effective management of contaminated land? (b) If so, how could capability in this area be improved?

Twenty-one (34%) submitters responded to this discussion point. Ten agreed that a lack of capability in the consulting community forms a significant barrier to the effective management of contaminated land. Four respondents partially agreed with the discussion point and three

disagreed. Four submitters did not specifically address this question but offered suggestions as to how consultant capability could be improved. Figure 9 provides a breakdown of the responses.

Figure 9: Responses to “Does a lack of capability in the consulting community form a significant barrier to the effective management of contaminated land?”



Those who agreed or partially agreed suggested a range of factors for the lack of or variable capability, including:

- a shortage of skilled practitioners, especially in areas outside the main population centres
- lack of training opportunities for consultants, and no formal qualification for contaminated land practitioners
- shortage of staff and variable skills puts pressure on consultants, affecting time and cost.

Improving capability within the consulting community

Training/education was the most common suggestion (15) to improve capability within the consulting community. Suggestions for how training/education should be provided included:

- training, seminars and workshops by the Ministry and universities to raise awareness of legislation and the requirements of consultants in relation to the legislation
- guidance for students on subjects useful for contaminated land management careers.

Six submitters suggested that an accreditation/audit/certification scheme could improve capability. Four suggested increased leadership from central government would improve capability. It was considered that such leadership could be provided by requiring a high standard of investigation and reporting by local government, providing a comprehensive policy framework containing consistent methodology, and supported by expert advice or a centre of excellence.

Table 21: Suggestions for improving consultant capability, by submitter ID

Suggestion	Submitter ID
Provide training/education	18, 28, 30, 32, 36, 40, 46, 48, 49, 51, 53, 56, 58, 59, 60
Accreditation/audit/certification	8, 26, 29, 48, 61
National leadership	4, 18, 48, 61
Improve local government knowledge	45, 48
Support development of professional groups	32

10 National information

The majority of respondents agreed that national information on contaminated land in New Zealand should be collected and reported. However, a number raised concerns or conditions as to how this should be done.

Although submitters generally accepted the importance of gathering national information to inform policy development, some were concerned that the priority should be on gathering and/or maintaining local information first. Others suggested there should be conditions on the collection of national information.

The most common suggestion for supporting the implementation of CLMG No. 4 (Classification and Information Management Protocols) was to develop a standardised model/register. A significant number of respondents also suggested that the Ministry should provide tools and/or resources to collect/report data and assist implementation of CLMG No. 4.

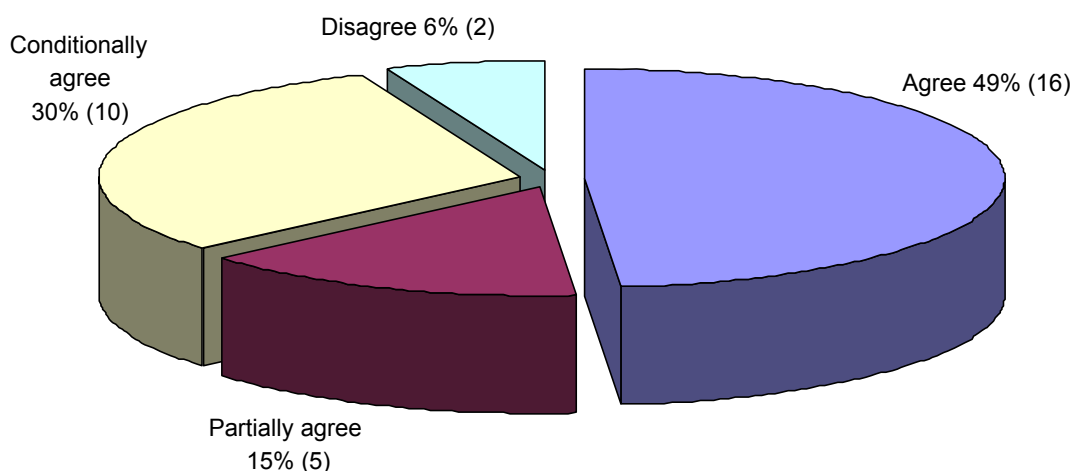
10.1 Collection and reporting

Discussion point 20

Should national information on contaminated land in New Zealand be collected and reported? If not, why not?

Thirty-three (53%) submitters responded to this discussion point. Most agreed (16), conditionally agreed (10) or partially agreed (5) that national information on contaminated land in New Zealand should be collected and reported. Two disagreed. Figure 10 provides a breakdown of the responses.

Figure 10: Responses to “Should national information on contaminated land in New Zealand be collected and reported?”



Those who agreed (16) considered that national information is important to monitor progress and enable informed policy decisions.

The most common conditions for those who conditionally agreed (10) were that the information collected must be unambiguous, transparent, accurate, reliable and without bias or it may penalise property owners unnecessarily.

Whether submitters agreed, conditionally agreed or partially agreed there was a strong consensus that for national information to be accurate and useful, local information collection and management needs to be improved.

Two submitters did not agree, due to the variability of information from regional councils and the associated data limitations.

Table 22: Responses to whether national information on contaminated land should be collected and reported, by submitter ID

Response	Submitter ID
Agreed	18, 20, 23, 27, 28, 29, 32, 38, 40, 42, 44, 45, 48, 49, 52, 61
Conditionally agreed	4, 12, 19, 22, 31, 34, 47, 55, 58, 60
Partially agreed	15, 25, 28, 51, 56
Disagreed	30, 54

10.2 Support for CLMG No. 4

Discussion point 21

How could the implementation of CLMG No. 4 be supported?

Twenty-four (39%) submitters suggested initiatives to support the implementation of CLMG No. 4. Table 23 shows a summary of the suggestions.

The most common suggestion (8) was for the provision of a model register/database that could be adopted by all councils for the collection and reporting of contaminated land. Some suggested that this could be based on the best of the existing regional council databases.

Six submitters considered that some councils should be supported by central government to set up adequate databases/registers, and to collect information on land. Other common suggestions included: providing training (4), including requirements to manage information within a standard or guidance document (2), and better promote existing guidance (2).

Table 23: Suggestions for implementing CLMG No. 4, by submitter ID

Suggestion	Submitter ID
Develop a standardised/model national register	8, 27, 29, 45, 46, 48, 49, 58
Ministry provide tools and resources for data collection and reporting	8, 15, 27, 30, 44, 58
Provide training for council staff	8, 18, 26, 28
Include in NES or overall national guidance document	18, 27
Promote existing guidance by advocacy, awareness and familiarisation activities	15, 22
Provide clarity of roles and responsibilities / central government expectations	40, 61
Disseminate information via websites	10
Guidance on how to synchronise databases and streamline access	23
Regional databases (combining territorial authority information)	23
Comprehensive central database	59
Coordination by Ministry	44

11 Additional research areas

A wide range of further research was suggested. The most common themes were protection of ecosystems, bio-availability of contaminants, and alternative cost-effective options for the remediation/management of contaminated land.

Discussion point 24

Are there any key additional research areas that should be identified?

Fifteen submitters (35%) responded to this question with suggestions for key additional research areas. Seven suggested further research on ecological sensitivity to contaminants in the New Zealand environment in soil and water. It was felt that this work is necessary to develop ecological guideline values. Two specifically suggested research on the protection of groundwater.

Seven suggested research on other options or new technologies for remediation rather than “dig and dump”. Submitters considered that this work was necessary to develop guidance promoting cost-effective *in situ* solutions over “dig and dump”.

Some (4) suggested further research, international review or consideration of the bio-availability and bio-accessibility of contaminants in soil and the environment. This work was considered necessary to develop a much needed policy on applying bio-availability within contaminated land assessments.

Some (4) suggested further research on the effects of landfill disposal of contaminated soil. Suggestions included research on the:

- effects and sustainability of disposal of contaminated land to landfills
- risks of redevelopment on or near landfills
- derivation of landfill waste acceptance criteria for a range of contaminated waste.

Table 24: Suggestions for additional research areas, by submitter ID

Suggestion	Submitter ID
Protection of ecosystems, groundwater or surface water	20, 21, 27, 28, 29, 59, 61
Alternative and new technologies to avoid “dig and dump”	4, 20, 29, 30, 58, 59, 60
Effects of landfill disposal of contaminated soil	22, 28, 49, 58
Bio-availability of contaminants in soil and the environment	8, 29, 32, 48
HAIL and activity classes	27, 44
Background levels of contaminants	8, 20
Reporting of information	40, 58
Produce consumption patterns / consumption values	27, 42
Effectiveness of current Fund arrangements (ie, funding large vs small sites)	18
Consistent methodology to assess contamination	4
Environmental and health effects of fires	16
Accidental or deliberate releases of hazardous substances or chemical warfare agents, and methods for monitoring	16
A review of how contaminated land for industrial land use is managed	42
Acceptable levels of diffuse contamination (eg, cadmium in soils from fertiliser use)	57
District plan controls	58
The likelihood of historical contamination impacting on large numbers of sensitive populations	58
Zinc-based agrichemicals and disposal methods for zinc products	59
Life-cycle risks associated with modern ectoparasitide (sheep-dip) chemicals under New Zealand environmental conditions	59

12 Additional opportunities

A wide range of additional opportunities were suggested, with the most common relating to:

- how sites are identified and information is collected and reported
- preventing land contamination and the role of the Hazardous Substances and New Organisms Act (1996)
- observations and comments on the WasteTRACK system
- cleanfill and landfill controls
- the definition of contaminated land.

12.1 Identification and reporting of sites

Seventeen submitters (27%) commented on the difficulties faced by local government in identifying, obtaining information and reporting on land. Most considered that the main barrier is a lack of duty or incentive for landowners to report information to councils.

Suggestions for improvements to how information is collected and reported included:

- requiring mandatory reporting of contaminated land or hazardous substances by owners (7)
- prioritising HAIL list activities, to help councils to prioritise their work programmes (5)
- amending the Local Government and Official Information and Meetings Act 1987 (LGOIMA) to enable all HAIL sites to be identified on land information memoranda (LIMs), because the current interpretation of “the likely presence of contaminants” by some councils is considered to be restricting the inclusion of HAIL information on LIMs (2)
- ensuring there are nationally consistent registers/systems for collecting and reporting information publicly (2)
- providing incentives to landowners to identify sites (1).

Table 25: Suggestions for improving the identification and reporting of sites, by submitter ID

Suggestion	Submitter ID
Investigate and/or require mandatory reporting	15, 27, 28, 29, 45, 58, 61
Develop a more equitable approach than HAIL	4, 6, 14, 44, 47
Revise the LGOIMA to enable all HAIL sites to be identified on LIMs	28, 29
Prioritise contaminated sites according to risk	17, 59
Establish nationally consistent registers/systems for disseminating info publicly	10, 61
Allow access to Environmental Risk Management Authority (ERMA)'s test certificates database to identify HAIL sites	29
Provide incentives for owners and workers to identify sites	60

12.2 Prevention of contamination and HSNO

The discussion document did not signal any changes associated with the *prevention of contamination*. In response, 12 submitters (19%) commented that the existing Hazardous Substances and New Organisms Act 1996 (HSNO) and RMA regime were still allowing land to be contaminated by hazardous substances. Submitters suggested improving how the HSNO and the RMA are implemented and enforced, and the links between the acts and their administering agencies (Ministry for the Environment, Environmental Risk Management Authority – ERMA). These are summarised in Table 26 below.

Table 26: Suggestions for improving the management of the prevention of contamination, by submitter ID

Suggestion	Submitter ID
EEL and TEL should be set/mandatory when granting approvals	28, 35, 51
Better controls to prevent contamination	3, 44
Develop a stronger working relationship between the Ministry and ERMA	27, 44
ERMA and HSNO need to be adequately resourced	51
Improve emergency service access to ERMA's test certifier database	16
Clarify the relationship between HSNO and the RMA	58
Establish a hazardous substance life cycle management regime	10
Better link to HSNO controls	27
HSNO should be reviewed	12
Clarify HSNO provisions for hazardous substance storage	29
Make HSNO code of practices consistent with other legislation	28
Promote extended producer responsibility programmes for hazardous substances	29
Investigate/identify current barriers to prevention and enforcement	8
Develop measures to prevent contamination of land	58
Support the Ministry addressing waste oil	29

Notes: EEL = environmental exposure limit; TEL = toxic exposure limit

12.3 WasteTRACK

Ten submitters (16%) commented on the WasteTRACK system. Although most considered that a tracking system is useful to prevent fly tipping, they made a number of observations and criticisms of the WasteTRACK system, including:

- it is only able to be used for sites identified on council records, or for activities that require consent
- it discourages remediation by increasing the cost and effort required
- it is a barrier to on-site treatment and innovative methodologies.

Table 27: Observations and comments on WasteTRACK, by submitter ID

WasteTRACK	Submitter ID
Observations and comments	6, 8, 20, 22, 23, 28, 40, 42, 44, 54, 60

12.4 Cleanfill and landfill controls

Nine submitters (15%) provided comments, observations and suggestions on landfill and cleanfill disposal controls. Submitters suggested that cleanfill definitions vary between regions and are over-restrictive, resulting in large volumes of slightly contaminated soil being sent to landfill. Landfill waste acceptance criteria were also criticised for not being aligned with contaminated guideline criteria.

Solutions included providing cost-effective disposal options, including relaxing cleanfill controls and land banking for later use within less sensitive land uses.

Table 28: Observations and comments on cleanfill and landfill controls, by submitter ID

Comment	Submitter ID
Clarify cleanfill definition and establish better controls	25, 26, 37, 49, 58
Permit and promote the management of soils by land banking and reuse within less sensitive land-use classes	5, 36, 37
There is concern over the high costs of disposing of lightly contaminated soil	58
Review the variability in landfill waste acceptance criteria	19
Develop cost-effective disposal options for contaminated soil	59
Develop a fact sheet to identify risks from contaminated material in cleanfill sites	59
Proposed waste levy will significantly add to land development cost	37

12.5 Contaminated land definition

Eight (13%) submitters considered that the current RMA definition of contaminated land provides too much room for interpretation. This has led to uncertain and inconsistent application by local government and practitioners. Submitters also highlighted that there are inconsistent definitions across legislation (specifically the LGOIMA and the HSNO Act). Solutions suggested included legislative amendment and new legislation specific to contaminated land.

Table 29: Suggestions for improving the definition of contaminated land, by submitter ID

Suggestion	Submitter ID
Provide more clarity on the RMA definition of contaminated land	4, 6, 29, 30, 51, 53, 55, 62
Align terminology and definitions across legislation (eg, HSNO and LGOIMA)	16, 59

12.6 Other opportunities

Submitters identified a wide array of other opportunities to improve contaminated land management. Where apparent, these have been grouped according to common themes.

Agricultural (diffuse) contamination

Four submitters (6%) highlighted concern over increasing agrichemical residues in soil from common agricultural and horticultural practices. While all considered that the continued use of agrichemicals (eg, fertilisers: copper, chrome and arsenic sprays) is fundamental to the viability of the primary sector, they considered that there needs to be better management and monitoring of this issue. Suggestions included:

- clarifying the relationship between agricultural land and the management of contaminated land
- implementing a comprehensive national management regime to sustainably manage productive activities (eg, education, tier-based guidance system, permitted activity rules, NES, research)
- considering additional measures to prevent agricultural land from becoming classified as contaminated as a result of changing to a more sensitive land use
- developing a pan-industry contaminated site property evaluation checklist and information support package to alert land managers to potential risks from chemical residues
- encouraging the fertiliser and farming industries to initiate an education and awareness programme to show land managers practical ways of managing cadmium in soils and food
- compiling a national soil inventory, combining existing data from councils with new information collected using consistent sampling and analytical methods.

Table 30: Suggestions for managing agricultural contamination, by submitter ID

Suggestion	Submitter ID
Develop a front-end management regime to sustainably manage productive activities	27
Establish pan-industry contaminated site property evaluation checklist and information support package	59
Undertake a fertiliser and farming industry awareness campaign	59
Address diffuse contamination (cadmium; fluorine; copper, chromium and arsenic) at a national level	29
Compile a national soil inventory	27
Consider how to prevent agricultural land from becoming classified as contaminated as a result of changing to a more sensitive land use	20
Clarify the relationship between the management of contaminated land vs agricultural land	20

Agrichemical collection programme

Four submitters commented on the agrichemical collection programme. Although they all supported the programme, they also made a number of observations and suggestions for improvement, including:

- the volume collected is only the tip of the iceberg, and it will need continued and increased funding to meet government Stockholm Convention obligations
- primary industry should combine to undertake a national rural polychlorinated biphenyls (PCBs) retrieval, and pharmaceutical and personal care pollutants should also be targeted for retrieval.

Table 31: Suggestions for the agrichemical collection programme, by submitter ID

Suggestion	Submitter ID
Support continued and expanded agrichemical collection	28, 29, 50, 59
Expand programme to collect other hazardous substances	59

Community understanding

In addition to measures suggested to improve the capability of local government and consultants (see section 9), submitters suggested education and communication campaigns within the community to raise awareness of contaminated land issues. Suggested target groups for education and communication included investors, developers, lawyers and landowners.

Table 32: Suggestions for raising community awareness, by submitter ID

Suggestion	Submitter ID
Awareness raising with investor/landowner parties driving land-use change	2, 27
Increase “buyer beware” information at a national level	18
Community education of risk assessment	60

National policy statement

Three submitters called for the development of a national policy statement to create cohesion, forward progression and national consistency. Submitters suggested using Figure 1 of the discussion document as a starting point for developing objectives.

Table 33: Suggestions for a national policy statement, by submitter ID

Suggestion	Submitter ID
Develop a national policy statement to formalise broad goals and objectives	10, 25, 61

Waste Strategy

Table 34: Suggestions for the New Zealand Waste Strategy, by submitter ID

Suggestion	Submitter ID
Update and expand the NZ Waste Strategy to incorporate a contaminated land policy framework	15, 27, 29
Remove contaminated sites NZ Waste Strategy targets (they are unlikely to be met)	28, 58
Ensure the framework links with other government policy documents (eg, NZ Waste Strategy targets)	34

Sheep dips

Table 35: Suggestions for managing sheep dips, by submitter ID

Suggestion	Submitter ID
Develop a standardised priority ranking “score card” system for sheep-dip sites	59
Include a standardised checklist for district plans to assess the possibility of sheep dips	59
Make provision for the preservation of significant heritage dip sites	59
Develop standard operating procedures for the decommissioning of dip sites	59

Miscellaneous

Table 36: Miscellaneous suggestions, by submitter ID

Suggestion	Submitter ID
Accommodate the beneficial use of biosolids	17, 49
Standardise the national risk assessment model	8
Review and investigate the uptake of tax incentives	27
Link environmental criteria into the tax deduction criteria	28
Monitor and review framework efficiency and effectiveness	58
Consider management of contaminated land to prevent or manage contamination of groundwater in policy and guidance	20
Promote the use of sand filters for run-off	30
Ensure policy transfers to the implementation level	31
Look at links and consistency with other initiatives	44
The framework needs to be protective of drinking-water sources	17
Undertake an investigation of industry remediation policies	19
Management of confirmed inert contaminant presence on site should relate to the current use, including contaminant security and its retention on-site	62
Remediation should be focused on "fit for purpose" rather than to the "highest level practicable" or "possible"	30
Set up a process for investigating land that has a high risk of being classed as "contaminated land"	44
The Crown being exempt from enforcement action hinders regional councils' ability to fulfil their responsibilities	29
Greater consideration should be given to links with urban design strategies	20
Undertake an expanded total diet survey to target samples of fruit and vegetables and meat from at-risk properties	59
Carry out an air quality assessment for new dwellings where they are proposed to be built on at-risk land	59
Develop a water risk assessment calculator for rural landowners to avoid unnecessary discharges of potentially hazardous substances to surface and groundwater	59
Develop protocols for ensuring children are free from elevated levels of persistent organic pollutants	59
Encourage landowners with 'at-risk' private water supplies to screen water for persistent agricultural chemicals.	59
Develop standard evaluation protocols and jurisdiction responsibilities where an existing residence may have been built over a contaminated site	59

13 Workshop overview

During the submission period 320 people participated in 13 workshops held throughout the country. These workshops aimed to prompt submissions on the discussion paper, as well as to facilitate discussion about local issues and potential solutions and raise awareness of contaminated land issues. Participants represented local authorities, health agencies, industry, consultants, the community, professional groups and iwi authorities.

Participants at each of the workshops were asked to identify and discuss:

- the main issues, challenges and difficulties in their region
- the potential solutions for overcoming these issues.

The feedback from all the workshops was recorded and collated into notes, which are available on the Ministry’s website (www.mfe.govt.nz/issues/hazardous/contaminated/index.html). These notes have been further summarised here into key workshop themes and issues. Key themes in the table have been ordered depending on the number of workshops the theme was raised in.

Table 37: Workshop key themes and issues

Key theme (No. of workshops)	Issue
Capability and capacity (13)	Variable or lack of capability and capacity within councils and consultants
Identification (12)	Difficulty identifying contaminated land
Information (10)	Lack of information on contaminated sites and inconsistent databases/registers between councils (district and city councils and regional councils)
Roles and responsibilities (10)	Uncertainty of roles and responsibilities between agencies (health agencies, regional councils, district and city councils, the Ministry etc). RMA s.30/31 functions are unclear and lack teeth
Guidelines (10)	Guidance is incorrectly and inconsistently applied by practitioners Guidelines are inconsistent, incomplete and need review
Legislation (8)	Uncertain legislative definition of contaminated land : what is a “significant adverse environmental effect” (RMA definition)? What is “reasonably likely”? Lack of legislative requirements to require the use of existing guidance Uncertain controls on passive discharges
Liability (8)	Absence of a pre-1991 liability regime and uncertainty over whether there is going to be retrospective legislation Inadequate post-1991 liability regime makes it easy for polluters to avoid liability
Community understanding (8)	Lack of understanding by the wider community of the risks and council requirements of contaminated land Concern about the diffuse contamination of agricultural and horticultural land through the existing use of fertilisers, agrichemicals and timber treatment preservatives

Remediation and disposal (7)	<p>Remediation is hindered by lack of information on techniques, the relative expense of remediation and the public preference for “dig and dump”</p> <p>Variable and overly restrictive disposal controls between regions</p> <p>The Contaminated Sites Remediation Fund is too small and its scope is too narrow</p>
Working together (7)	Variable practice and communication between agencies
Ministry for the Environment central government policy (6)	Issues with existing central government policy programmes and strategy
Diffuse sources (6)	<p>Lack of understanding of urban background levels of contaminants</p> <p>Concern about the diffuse contamination of agricultural and horticultural land through the existing use of fertilisers, agrichemicals and timber treatment preservatives</p>
Human health vs. ecosystem health (5)	Lack of guidance and unclear delineation between human health and ecosystem health is causing inconsistency between councils and practitioners
National environmental standards (4)	Concerns about the use of a national environmental standard
Inconsistent plans and variable practice (4)	<p>Variable and inconsistent district and regional plans</p> <p>Inconsistent practice by councils in how they use guidance, assess and control land</p>

Note: Numbers in brackets are the number of workshops in which this theme was raised.

Appendix A: Index of submitters

No.	Contact name	Organisation	Category
1	Martin Edghill	New Zealand Fire Service Team (CBRE-DT)	Central government
2	Ram P Sharma	Montgomery Watson Global	Professional body
3	Kevin Wood	Maunsell Limited	Professional body
4	Greg Slaughter	Holcim (New Zealand) Ltd	Industry
5	David Renouf	Individual	Individual
6	Sean Finnigan	Fraser Thomas Ltd.	Professional body
7	Jan Counter	Ellis Gould	Professional body
8	Catia Demiglio	Auckland Regional Public Health Service	Central government
9	Bill Bayfield	Environment Bay of Plenty	Regional council
10	Helen Campbell	Royal Forest & Bird Protection Society Inc. Nelson/Tasman Branch	Non-Government organisation
11	Rennae Corner	Auckland City Council	Territorial authority
12	Alison Pye	Rodney District Council	Territorial authority
13	Peter Goldsbury	Strategic Expertise Ltd.	Professional body
14	Michael Curran	Ontrack (New Zealand Railways Corporation)	Central government
15	Eugene Bowen	Local Government New Zealand	Professional body
16	Brian Davey	New Zealand Fire Service	Central government
17	Sally Garrett	Watercare Service Limited	Industry
18	Mark von Dadelszen	New Zealand Law Society	Professional body
19	Martyn O'Cain	Davis Ogilvie & Partners Ltd	Professional body
20	Jo Cavanagh	Landcare Research	Crown research institute
21	Claire Jewell	New Zealand Steel	Industry
22	Gary Bedford	Taranaki Regional Council	Regional council
23	Kirsten Forsyth	Greater Wellington Regional Council	Regional council
24	Tony Dowson	Invercargill City Council	Territorial authority
25	David Le Marquand	Burton Consultants	Professional body
26	Johan Faurie	Environmental & Earth Sciences Ltd.	Professional body
27	Vivienne Smith	Environment Waikato	Regional council
28	Nigel Clarke	Wasteminz	Professional body
29	John Talbot	Environment Canterbury	Regional council
30	Lotta Hagstrom	Babbage Consultants Ltd.	Professional body
31	Matthew Klein	ERM New Zealand Ltd.	Professional Body
32	Simon Berryman	URS New Zealand	Professional body
33	Jacqueline Molloy	New Plymouth District Council	Territorial authority
34	Kim Schmidt	New Zealand Aluminium Smelters Limited	Industry

No.	Contact name	Organisation	Category
35	Colin Gray	Marlborough District Council	Unitary authority
36	Helen Codlin	Hawke's Bay Regional Council	Regional council
37	Peter Nelson	Environmental science consultant	Professional body
38	Noel Watson	Hawke's Bay District Health Board	Central government
39	Harry Lagocki	Individual	Individual
40	Peter MacGregor	Hamilton City Council	Territorial authority
41	Barry Gilliland	Horizons Regional Council	Regional council
42	Klaus Prusas	Christchurch City Council	Territorial authority
43	Ewan Gebbie	Vector limited	Industry
44	Gretchen Johnston	Environment Southland	Regional council
45	Frances Graham	Ministry of Health	Central government
46	Stewart Webster	Public Health South	Central government
47	Ken Robertson	Horticulture New Zealand	Industry
48	Graeme Proffitt	Pattle Delamore Partners	Professional body
49	Shelley Pope	Institution of Professional Engineers New Zealand	Professional body
50	Nick Dalgety	Ministry of Agriculture and Forestry	Central government
51	Jenny Easton	Tasman District Council	Unitary authority
52	Michael Guest	Dunedin City Council	Territorial authority
53	Victoria Williams	Opus International Consultants	Professional body
54	Melissa Jessen	Federated Farmers of New Zealand	Industry
55	Nicole Bremmer	Poultry Industry Association	Industry
56	Glenn Mortimer	Northland Regional Council	Regional council
57	Greg Sneath	New Zealand Fertiliser Manufacturers' Research Association Inc (Fert Research)	Professional body
58	James Corbett	Manukau City Council	Territorial authority
59	Graham McBride	Individual	Individual
60	Gordon Jackman	Individual	Individual
61	Janine Bell	Auckland Regional Council	Regional council
62	Fraser McRae	Otago Regional Council	Regional council

Abbreviations

CLMG	Contaminated Land Management Guideline
ERMA	Environmental Risk Management Authority
EEL	environmental exposure limit
HAIL	Hazardous Activity and Industries List
HSNO	Hazardous Substances and New Organisms
IPENZ	Institution of Professional Engineers New Zealand
LGOIMA	Local Government Official Information Memorandum Act
LIM	land information memorandum
NES	national environmental standard
RMA	Resource Management Act
TEL	toxic exposure limits

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