Reclaiming Our Resources: Optimising Soil Reuse in Infrastructure and Land Development

A strategic framework for optimising soil management – Phase 1

December 2025

wasteMINZ

This report summarises the project phases completed in this phase of the soil optimisation project. It was developed by the following individuals, and would not have been possible without their time and expertise:

Project Group:

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We would like to thank the various contributors, who provided feedback during the respective consultation periods. In particular, the following individuals and groups of individuals have made substantial comments that have enhanced this document:

- Civil Contractors New Zealand
- Aggregate and Quarry Association of New Zealand members
- Te Uru Kahika — Regional and Unitary Councils Aotearoa
- New Zealand Geotechnical Society
- The Soil Optimisation Project Governance Group
- And collectively, those individuals who:
  - attended each of the targeted or general webinar sessions held during the consultation process, and
  - provided individual or collective feedback to support the consultation process.
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About WasteMINZ

The Waste Management Institute New Zealand (WasteMINZ) is the largest representative body of Aotearoa New Zealand's waste, resource recovery and contaminated land management sectors.

WasteMINZ works towards ongoing and positive development of our industry through strengthening relationships, collaboration, knowledge sharing and championing the implementation of best practice standards.

Disclaimer

Every effort has been made to ensure that this report is as comprehensive and accurate as practicable; however, WasteMINZ will not be held responsible for any action arising out of its use.

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AI tools and software have been used in the collation of foundation information during the review and compiling of this document.

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Executive Summary

Soil management practices cost infrastructure and development projects in Aotearoa New Zealand over a billion dollars every year in transportation and disposal to landfill fees alone. From a contamination risk much of this soil is usually fit for purpose in its current use and would ordinarily be fit for a similar purpose at another site, although current market conditions deem it unsuitable for design and/or implementation within the current project – for a number of reasons.

In many cases, especially for topsoil, once this material is lost to landfill it cannot be easily replaced. The cost of disposal hides the value of the lost resource, which is essential for primary production, flood mitigation, ecosystem support, human health and carbon management. In Aotearoa New Zealand, we have no mechanism to measure the cost of losing this resource and no systems to enable and encourage the reuse of these soils.

We spend at least a billion dollars a year destroying the resources essential to New Zealand's economy with no cost-benefit assessment to support this behaviour. At the same time, we manufacture around $600 million in aggregates from virgin sources every year[1].

This is the first piece of work completed in Aotearoa New Zealand to better understand the drivers of disposing surplus soil to landfill, and how we might act to reduce these volumes. To address the dearth of available information on this issue, we have consulted widely with the soil, aggregates, waste, regulatory, and civil and geotechnical engineering sectors. No voices have emerged that support the status quo.

Broadly the professional community supported the aspirational vision for soil management in New Zealand:

That soil is managed as a finite resource: its economic, physical, environmental, wellbeing, and cultural attributes are understood and valued by all, and supported and preserved as far as practical.

That Aotearoa New Zealand's operating, regulatory and planning structure includes a viable, collaborative, and robust system to enable the economic and environmental opportunities for soil to be realised. In this system:

- Soil maintains its highest value use,
- Infrastructure and development projects are designed to minimise soil disturbance, and
- If soil needs to be disturbed, it is managed in accordance with a soil management hierarchy

Essentially, creating a system where it is better and smarter to reuse soil than to landfill it.

Twenty-seven key gaps and opportunities have been identified in the current system where change would likely lead to significant reductions in resultant soil to landfill volumes. The Project Group have recommended five priority actions, which together cut across these gaps and opportunities and will reduce the acceleration of soil disposal to landfill. These actions will also identify the economic opportunities in better managing surplus soil, eliminate or modify regulations which drive soil waste, and enable better long-term management of soils. The group has prioritised these actions for impact, however, is strongly recommending a systems-approach to implementing these actions in concert to achieve the highest level of success and uptake.

[1] https://aqa.org.nz/fact-files/ accessed 4 December 2025

The Project Group note that each of the following actions will need to be supported by an education and communication campaign to ensure that all surplus soil stakeholders are aware of the action's outcomes and have the information they need to implement the changes where practical.

Priority 1A:
Undertake a national market analysis

This comprehensive analysis would enable the industry to understand the supply of- and demand for-surplus soil, and provide evidence for where incentives, investment and infrastructure are needed to support soil and aggregate reuse at both national and regional levels.

Priority 1B:
Undertake targeted interventions on existing regulations

Several regulations, standards and industry guidance documents have been identified as significant contributors to soil waste generation, or barriers to soil reuse. There is currently an opportunity to use the Government's legislative reform process to facilitate changes that would allow a wider use of surplus soils via targeted interventions to these guideline documents.

Priority 3:
Develop an 'All of Government" surplus soils management strategy and action plan

A surplus soil management strategy and action plan would establish and detail what best practice is for those who generate surplus soil from development and infrastructure projects. Soil management is fundamental to primary production, the environment, infrastructure and the nations finances. An ''All of Government" approach would provide clarity and consistency across all stakeholders and set out how to value, use and protect soil throughout Aotearoa New Zealand.

Priority 4:
Develop a National Policy Statement for Surplus Soils

A legal instrument such as an NPS will set out objectives and policies for surplus soil management at a national level. This NPS develops the direction-setting of Priority 3 and provides principles and rules that guide day-to-day decisions and consistent behaviour at regional and local government levels. This NPS would deliver regional and local authority consistency, and sustainable management of surplus soil resources throughout Aotearoa New Zealand.

Priority 5:
Develop Land Asset Management Guidance

This guidance would set out how to investigate, understand and maintain an owner's soil asset effectively. It would detail the standards needed to provide confidence to regulators and sites receiving surplus soil and identify those who should be relied upon to give advice in this area. Land development and infrastructure projects will utilise this guidance to commission more comprehensive up-front investigations which support a deeper understanding and options assessment for surplus soil management and reuse options – optimising project efficiencies and costs, and minimising resultant disposal to landfill – in a more consistent regulatory environment.

1 / Background to the Project

The 'Reclaiming Our Resources: Optimising Soil Reuse in Infrastructure and Land Development' project was initiated in response to growing recognition by the Project Group and the wider infrastructure and land development industry that surplus soil from infrastructure and development projects is increasingly being disposed of to landfill.

This issue has become measurable since the Ministry for the Environment (MfE) waste disposal levy was expanded in 2020, and the mandatory reporting system (Online Waste Levy System (OWLS)) and registration requirements for Class 2-5 landfills have resulted in increased visibility around volumes and types of soil being sent to landfill.

For several years, Aotearoa New Zealand has seen a notable increase in demand for developable land, however the surplus soil produced from land development and infrastructure projects has traditionally had limited management options beyond landfill disposal.

Since the expansion of the waste levy, data provided to MfE via the OWLS (https://environment.govt.nz/facts-and-science/waste/waste-facilities-and-disposal/) reports per-year volumes of soil disposal at:

- Approximately 2 million tonnes to Class 1,
- Between 3-4 million tonnes to Class 2-4, and
- Approximately 15 million tonnes to Class 5.

These numbers suggest that approximately 20 million tonnes of soil is disposed to solid waste fills every year in Aotearoa New Zealand.

Further to this, a 2025 New Zealand Institute of Economic Research (NZIER) report commissioned by WasteMINZ established a construction and demolition (C&D) waste baseline, which identified that soil accounts for approximately 80% of C&D waste[2].

The soils represented by these volumes are considered to largely be free from contamination at levels presenting a human and/or environmental health risk (based on their disposal to Class 3 (managed), 4 (controlled) and 5 (cleanfill) sites, and Class 1 solid waste analysis protocol (SWAP) data referring to them as 'inert'). In many cases, these materials could be reused, either as they are, or processed into construction products of varying types if the infrastructure was available to support this.

Given the large volumes involved, there are likely to be several intervention points where a substantial amount of this 'safe' soil could be diverted from landfill disposal and facilitating its successful reuse on infrastructure and development projects.

[2] NZIER. 2025. Waste, resource recovery and contaminated land management: Assessing the economic contributions of the sectors to New Zealand. NZIER report to WasteMINZ.

This project aimed to:

1. Set a **Vision** for optimising soil reuse in Aotearoa New Zealand
2. Identify the key **Gaps and Barriers** to soil reuse in the current infrastructure and land development industry, and
3. Recommend **3-5 Priority Actions** that can be explored, to move us away from the current state toward the proposed **Vision**.

The Project Group assembled to deliver this project comprised members with consulting, construction, regulatory and central government experience. They represent a range of stakeholders and have a high degree of understanding of, and experience with, the most visible challenges associated with surplus soil management.

The Project Group has been supported by several key industry bodies, which have been actively engaged throughout the discussion and consultation process. The Project Group has also been supported by WasteMINZ and a Project Governance Group comprising representatives from both WasteMINZ and MfE.

A dedicated webpage – hosted by WasteMINZ – was set up to describe alert and guide stakeholders and subscribers through the various project milestones. The webpage provided the relevant tools and materials for this audience to interact with WasteMINZ and the Project Group in order to provide their consultation and feedback during the project.

2 / Vision – Introduction

The Project Group prepared a vision for soil optimisation on land development and infrastructure projects in Aotearoa New Zealand. This vision is a forward-looking image of a future in which surplus soil is effectively managed in the civil works industry. It is aspirational and not constrained by a specific timeframe.

The vision aims to identify and promote the inherent value of soil across all its key attributes in Aotearoa New Zealand – economic, physical, environmental, wellbeing and cultural – essentially creating a system where it is better and smarter to reuse soil than to landfill it.

In developing the vision, the Project Group posed the following problem statement:

Every year, New Zealand loses billions of dollars through wasteful soil practices. Inefficient handling and disposal of this finite resource creates direct financial pressures for infrastructure projects and developers, while also imposing hidden costs on our environment – including unnecessary emissions from transport, depletion of landfill capacity, pressure on roading networks, and the irreversible loss of valuable soil materials. Without change, these practices will continue to constrain New Zealand's growth, infrastructure delivery, and resilience.

From this, the Project Group drafted an initial vision statement to address the problem and sought feedback from relevant stakeholders on its approach, content and application.

3 / Vision – Consultation

The Project Group, with support from the Project Governance Group, identified a broad range of stakeholders for consultation on the draft vision statement. The vision was shared with these stakeholders, and their feedback was requested.

The consultation period ran from 3–15 September 2025.

Several individual and collective responses were received, all generally in support of the vision and the overall project. Some key items which were considered by the Project Group and ultimately included in the final vision statement included:

- Suggested minor edits to wording, flow, and order of importance of the key soil attributes and features,
- Adding wording around encouraging sustainable on-site reuse, and
- Adding content around greater collaboration and alignment between stakeholders, i.e. developers, industry and councils.

Several respondents also provided worked examples of their experiences of being let down by a system not yet ready to encourage reuse of surplus soils.

Several respondents also included points for discussion and/or consideration regarding the logistical challenges in the application of the vision, however the Project Group considered these challenges to be related to the next step of the project, the gaps and barriers identification, rather than directly influencing the vision, so these were not included in the finalised vision, but were considered during the subsequent stage of work.

4 / Vision – Results

The final vision, as agreed by the Project Group, is as follows:

That soil is managed as a finite resource: its economic, physical, environmental, wellbeing, and cultural attributes are understood and valued by all, and supported and preserved as far as practical.

That Aotearoa New Zealand's operating, regulatory and planning structure includes a viable, collaborative, and robust system to enable the economic and environmental opportunities for soil to be realised. In this system:

- *Soil maintains its highest value use,*
- *Infrastructure and development projects are designed to minimise soil disturbance, and*
- *If soil needs to be disturbed, it is managed in accordance with a soil management hierarchy (*yet to be developed).*

Essentially, creating a system where it is better and smarter to reuse soil than to landfill it.

The vision sets out an aspiration that throughout the land development and infrastructure industry, soil will be managed (in general) as a finite resource, i.e., one that is not easily replaceable. There will be recognition that balancing each of the attributes of soil is required, as each attribute provides one or more key benefits when retained or reused. The term 'as far as practical' recognises that soil disturbance during land development and infrastructure and development projects will always be required to some degree.

The Project Group also recognises that this is a complex challenge, likely requiring multiple solutions. But ultimately, the vision is of a future where the industry has moved away from a system that defaults to surplus soil being treated as a waste, to a high functioning system that considers the holistic value of soil to our communities, environment and economy, promoting and facilitating soil reuse over landfill disposal.

5 / Gap and Barrier Analysis – Introduction

For the vision to be realised, all stakeholders across the land development and infrastructure sector will need to adjust their current practices. To identify where changes are required – or would be best focused – the Project Group completed an analysis of gaps and barriers to soil reuse in the current system.

This process involved a detailed literature review, capturing key points in a register and rationalising them into themes. The findings were presented to stakeholders during a series of webinars, with feedback sought via direct correspondence or through an online survey.

The feedback was incorporated into the overall findings, resulting in a comprehensive list of gaps and barriers.

The process and findings are set out in greater detail in the following sections and accompanying appendices.

6 / Gap and Barrier Analysis – Methodology

6.1 Literature review

A review of available literature was undertaken to support a comprehensive assessment of the relevant gaps and barriers prior to the consultation process.

Sources were selected for review with the aim of capturing the range of factors potentially contributing to the generation of excess surplus soil, the lack of on-site reuse, and its disposal to landfill.

The documents reviewed included:

- New Zealand contaminated land-related legislation and guidelines published by government regulatory agencies,
- New Zealand contaminated land-related guidance published by industry bodies and research agencies (Manaaki Whenua Landcare Research and WasteMINZ),
- New Zealand standards for relevant disciplines (development, civil engineering, earthworks, etc.),
- Reports specifically related to the issue of surplus soil generation and management both within Aotearoa New Zealand, and
- Legislation, standards, guidance, and other reports related to surplus soil generation and management from selected overseas jurisdictions (United Kingdom, Ireland, Canada, and The Netherlands).

Additional documents were added to the list to ensure relevant references were also included in the review.

The full list of reviewed literature is presented as Appendix A.

6.2 Expert opinion

The Project Group was assembled to represent a range of stakeholders while ensuring a high degree of understanding of, and experience with, the most visible challenges associated with surplus soil management.

The Project Group contains representatives from the consulting and construction sectors, and central and local government. The consultants supporting this project all have multiple projects where they have been instrumental in retaining and/or reusing tens of thousands of tonnes of soil that otherwise would have defaulted to landfill. Most Project Group members contributed to the WasteMINZ 'white paper' (2024)[3] and are current or former members of WasteMINZ Contaminated Land Management Sector Group Steering Committee. Multiple members have overseas consulting and construction industry experience.

[3] WasteMINZ. 2024. Reclaiming Resources: Optimising Soil Reuse in Infrastructure and Development

This collective expertise has allowed a thorough review of the literature to identify underlying gaps and barriers. Further, the Project Group's practical experience enhances the identification of other gaps and barriers based on a range of interpretations and uncodified practices that govern current contaminated land management in Aotearoa New Zealand.

6.3 Development of the initial gap and barrier register

The Project Group agreed that a table was the most inclusive, user-friendly, and searchable format for the initial gap and barrier register (see Appendix B). The register captured insights from the literature review, along with additional input from members based on their first-hand experience. It served as a central repository for initial findings, from which key themes of gaps and barriers were identified, refined, and later presented during the stakeholder sessions outlined in Section 6.4.

For New Zealand-based documents, Project Group members recorded key points as line items in the register. These typically highlighted gaps (e.g. 'this document does not mention or promote soil reuse'), barriers (e.g. 'Regulation 8(1)(f) of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulation 2011 (the NES-CS) requires removed material to go to an authorised facility'), positives (e.g. 'includes a soil management hierarchy promoting on-site reuse'), and other relevant details such as definitions. The number of line items varied with each document's nature, complexity, and relevance.

Each point was then tagged with one or more themes, such as 'no relevant guidance' or 'regulatory process'. Where a document suggested ways to address issues, these were also noted for future reference.

The initial list of themes that were consulted on were as follows (in no particular order of importance):

- Regulatory barriers,
- Lack of relevant guidance,
- Perception and liability issues,
- Soil definition and standards issues,
- Economic barriers,
- Site and material suitability,
- Logistical barriers,
- Technical site investigation issues, and
- Cultural engagement and considerations.

Overseas documents were reviewed slightly differently, focusing on how other countries approach soil reuse and whether they face similar challenges to Aotearoa New Zealand. These reviews were kept general and at a high-level, as identifying 'solutions' sits outside the scope of this project.

6.4 Targeted stakeholder sessions

The information in the review register was distilled into nine key themes, each with several sub-points (see Appendix C). Because these themes related to different stakeholder groups and disciplines, the Project

Group held a mix of targeted and general stakeholder sessions to test the findings, gather feedback, and confirm whether the identified gaps and barriers were accurate or missing any key elements.

The two key questions that the Project Group were seeking to answer through the consultation process were:

1. Did respondents agree with the key gaps and barriers identified? And if not, why not or what was missing?

2. How would respondents rank these key gaps and barriers themes from most to least important to move us toward our Vision?

Additional questions were posed in the webinar sessions and the subsequent online survey to help the Project Group with the next phase of the project around prioritisation and action planning.

Given the short consultation period, the Project Group took a strategic approach to engagement, aiming to consult as thoroughly as practical while making efficient use of time. Five webinars were hosted, with the audience groups and attendance numbers as follows:

Table 1.
Overview of the webinars, audience groups, organisations represented, and attendance numbers

Webinar	Organisations represented	Attendance Numbers
Civil Contractors NZ (CCNZ) / Aggregate and Quarry Association (AQA)	CCNZ/AQA membership (Organisations represented included Donaldson Civil, Fulton Hogan, Goodmans, GP Friel Ltd, Prospect Consulting Ltd, Robinsons and Taggart, etc)	17
WasteMINZ webinar (open to anyone with an interest)	Government agencies, consultants, contractors, local government and landfill operators	123
Te Uru Kahika Contaminated Land and Waste Group	Regulators	22 (representing 11 regional councils and unitary authorities)
Central Government agencies	Department of Conservation, Local Government New Zealand, Land Information New Zealand - Toitu Te Whenua, Ministry of Business, Innovation and Employment, Ministry for Primary Industries, KiwiRail, and inistry for the Environment	7 (representing 6 agencies)
New Zealand Geotechnical Society (NZGS)	New Zealand Geotechnical Society membership	3*

Note:
*Consultation was extended in a targeted manner for the NZGS group due to overlapping symposium commitments during the initial consultation

The slide decks presented to each stakeholder group were largely the same, with minor adjustments to focus the attention of the audience on those items most likely to directly influence or be influenced by them. The full slide deck is included in Appendix D.

Discussion and Q&A took place naturally during the sessions, and attendees were invited to complete a short online survey or provide more detailed feedback via email before the consultation period closed. The results will be discussed in the following section.

Alongside the project, members from the Project Group continue to progress discussions with Sari Eru, Stephanie Dijkstra, Jo Cavanagh and Ani Kainamu and their work completed to date regarding Te Ao Māori values and soil reuse. These discussions are aimed at developing support and understanding how the application of a risk-based framework could support a deeper understanding of the relevant considerations for soil reuse from a Te Ao Māori perspective.

It should be noted that feedback received from all sectors was that the consultation period was short. While this is a valid comment, there will be further opportunity for stakeholders to engage in later stages of the process, and likely on many of the actions MfE or others may choose to take as a result of this work.

Most of the feedback received covered points already considered by the Project Group. This reflects that on individual and organisational levels, there is significant awareness of the current surplus soil management issue(s), however these submitters feel that the systems around surplus soil prevents them from routinely acting in a way that reduces soil to landfill.

6.5 Feedback collected on the initial gap and barriers identified via online survey

A total of 44 responses to the survey were received throughout the consultation period. The Project Group also received several direct responses via email from sector individuals and groups discussed in the following section.

The survey results have been summarised in the table and figures below, addressing the answers two main questions that the Project Group posed.

The survey can be found in Appendix E.

6.5.1 Did respondents agree with the key gaps/barriers identified? And if not, why not or what was missing?

Respondents strongly agreed with the Project Group's identification of key gaps and barriers preventing soil reuse with:

- 95% (41) respondents in agreement,
- 5% (2) respondent in part agreement, and
- 0% (0) respondents in disagreement.

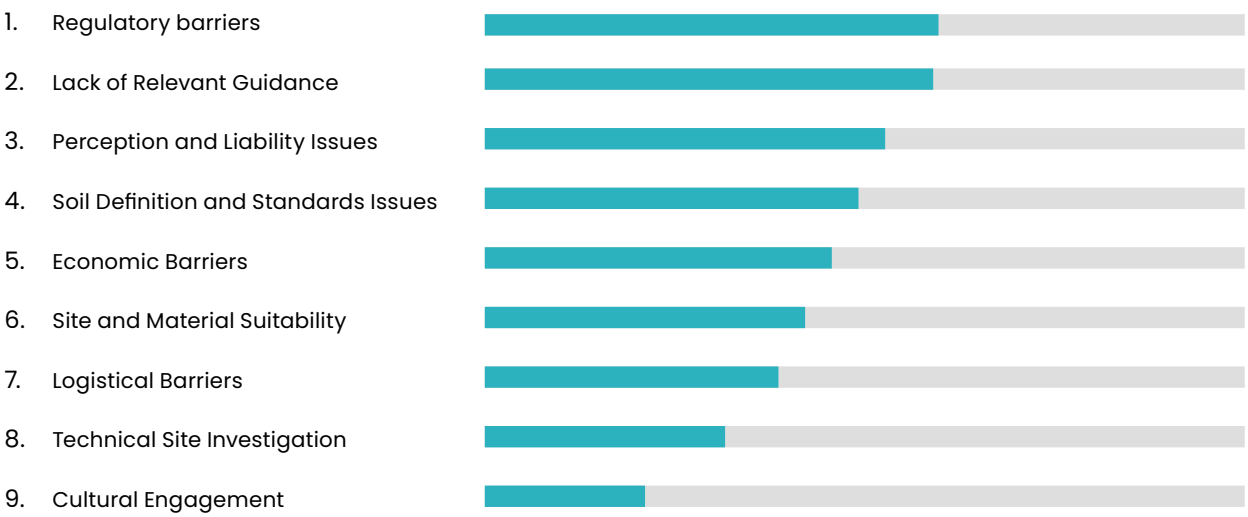
Additional gaps/barriers identified during the consultation and survey responses included:

- Invasive or pest species and the management of biosecurity risks (which relates to Suitability of Materials),
- Inclusion of planning controls within the Logistical and Economic barriers relating to updating sediment control/stockpiling controls,
- Data and Information sharing, and
- Education relating to the benefits and disadvantages of soil reuse initiatives.

6.5.2 How would respondents rank these key gap/barrier themes from most to least important to move us toward our vision?

Respondents ranked the themes of Regulatory Barriers and a Lack of Relevant Guidance as the most important gaps/barriers impeding a movement toward our Vision (refer to Figure 1a). Perception and Liability Issues and Soil Definition and Standards Issues were ranked as the next most important gaps/barriers.

Figure 1a.
Overview of respondents' prioritisation of issues most important to be addressed (ordered from most important to least important)



It should be noted that in written feedback, four submitters noted the ranking was difficult, as many of the issues are interrelated. Further, several submitters favoured incentivising soil optimisation in some form to encourage and/or overcome barriers to reuse.

Figure 1b provides an infographic showing the prevalence of keywords used by respondents in the freeform response to this question – noting 'infrastructure' (a sub-issue within Logistical Barriers), 'regulation/regulations', 'guidance', 'economics' (Economic Barriers) and 'standards/definitions' feature strongly here.

'Infrastructure' is noted as a significant barrier. During the shared discussions and in the survey responses, 'infrastructure' principally included references to:

- Improving the availability of and accessibility to a range of landfills per region, and
- Enhancements to new or existing sites to create 'soil transfer hubs' (allowing the deposit and receipt of soil consignments).

Infrastructure, in the case of additional landfill sites alone, was not considered a barrier to reuse by the Project Group. The Project Group expect that any changes to infrastructure must also be coupled with several other behaviour-based changes, such as the establishment and implementation of a surplus soil management hierarchy. They also recognise that infrastructure gaps and barriers can take several forms, as can the potential solutions – introducing soil transfer hubs in isolation of other changes will not solve the overall issue.

Figure 1b.
Overview of the key issues identified by the survey respondents

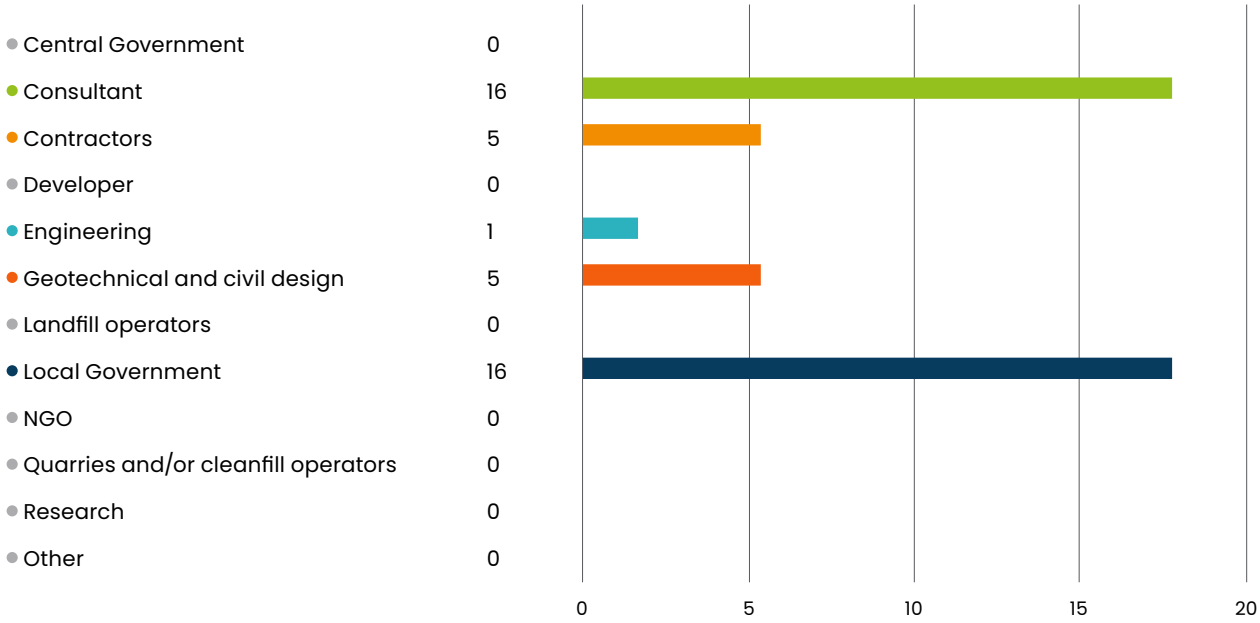
6.5.3 Survey respondents

Survey respondents represented a broad cross-section of individuals and groups, as shown in Figure 2.

Please note that:

- Many stakeholders engaged directly during webinars and discussion/s and did not provide feedback using the available forms. Their representation is not shown in Figure 2,
- Respondents were only able to select one of the below sub-sectors that they most closely associate with, although they may be closely linked to another (i.e. landfill waste acceptance support, etc), and
- The Project Group received several direct responses via email from sector individuals and groups which are not included in Figure 2.

Figure 2.
Sub-sector industries represented in the survey responses



6.6 Direct email feedback from sector representatives

Several direct email responses were also received throughout the consultation period. These emails were received on behalf of CCNZ, Timaru District Council, Tasman District Council, collective comments from regional and unitary authorities across Aotearoa New Zealand (via Te Uru Kahika), and several individual respondents. Results from these emails are summarised below, focussing on the two main questions that the Project Group posed.

The responses from CCNZ are included in the literature list provided in Appendix A, and Te Uru Kahika's response and Tasman District Council's responses are provided in Appendix F. Individual email responses are not attached to this report to protect the privacy of the sender/s.

6.6.1 Did respondents agree with the key gaps/barriers identified?

Email respondents were in general agreement with the Project Group's identification of the gaps and barriers, and their additional information (where it departed from the Project Group's) is summarised below.

CCNZ re-shared their position papers on the subject, in which they identify and agree on several of the same gaps and barriers as the Project Group, but from a civil contractor's perspective, including:

- A lack of guidance and clear specifications for reuse of material,
- A lack of infrastructure available throughout the country to provide for sustainable reuse and disposal options, compounded by regulatory barriers with respect to resource consent application expectations, and
- Regulatory barriers, notably the NES-CS and the challenges it presents with respect to background and cleanfill interpretations, and resultant resource consenting requirements.

From Te Uru Kahika: Councils generally agreed with the key issues identified in [the] gaps and barriers analysis. However, some important aspects were noted as requiring consideration. These include the need to address risks to groundwater and environmental receptors, which are critical for ensuring sustainable soil reuse practices. As well as naturally elevated minerals that may influence soil classification and reuse potential.

Te Uru Kahika further noted that some additional gaps and barriers which they felt need to be addressed in future discussion, including:

- Ongoing delays in the creation of new regional plans (under Regulatory Barriers),
- Communication, engagement, and education is suggested as a new theme, and
- Under the Perception and Liability theme, misinformation should be included.

To explain the last point, industry stakeholders often operate under assumptions about council expectations, rather than actual legislative requirements, leading to overly conservative practices that typically do not include soil reuse.

The Tasman District Council generally agreed with the key gaps and barriers identified; however, they suggested including the following, based on what they are seeing in their district:

- Groundwater and environmental receptor risks should be explicitly addressed in future guidance,
- Naturally elevated minerals should be considered as a distinct issue influencing classification and reuse potential,
- The requirements under the NES-CS for off-site disposal to authorised facilities create significant barriers, particularly where local disposal options are limited and landfill costs are high, and
- Clearer decision-support tools, for example, flowcharts for assessing reuse and disposal options would assist practitioners and councils in making consistent, risk-based decisions.

6.6.2 How would respondents rank these key gap and barrier themes from most to least important, to move us toward our Vision?

The CCNZ position paper does not necessarily prioritise the gaps and barriers that have been presented in the survey and webinar process, but the position paper clearly provides for a focus on Definitions and Standards (i.e. cleanfill and background), Technical Issues (i.e. promoting comprehensive and reliable risk assessments), Regulatory Barriers (i.e. the NES-CS, RMA, etc), and a Lack of Guidance (i.e. developing specifications/standards for reuse of materials).

Te Uru Kahika ranked the top three priorities to support the vision as: Regulatory Barriers (1), Site and Material Suitability (2) and Technical Site Investigation (3). These were followed by (in no particular order), Cultural Engagement and Economic Barriers.

Tasman DC ranked their top three priorities as Regulatory Barriers (1), Lack of Relevant Guidance (2) and Site and Material Suitability (3). These were closely followed by Perception and Liability Issues.

6.7 Refinement of the initial gap and barriers register based on the targeted stakeholder sessions and survey

The Project Group reviewed the feedback received and refined the descriptions of the following gaps and barriers as follows:

- Management of biosecurity risks (i.e. invasive or pest species) to be added to the Technical and Site Investigation Issues theme (i.e. within the suitability of materials for reuse issue),
- Delays in the creation of new regional plans to be added to the Regulatory Barriers theme,
- Create a new theme titled Communication and Education. While the Project Group has previously recognised that communication and education will be required in moving toward the vision, they had also linked it closely to the establishment of guidance to support soil reuse opportunities, i.e., the roll-out of any new guidance would be accompanied by communication and an education campaign,

- The Project Group also agree that improved information and data capture will support a broader understanding of the challenge and the success of implemented actions. However, this has not been included as a specific item as monitoring of this is already considered to be covered though features such as the MfE OWLS and individual site reporting requirements, and

- While Te Uru Kahika suggested 'misinformation' be added to the Perception and Liability theme, the Project Group considered that this can be addressed by an additional 'assumptions/expectations' issue under the same theme.

7 / Gap and Barrier Analysis – Results

At the close of the consultation period, and after reviewing the survey and email responses, the Project Group updated and reconciled the initial list of gaps and barriers. The revised gaps and barriers are set out below.

7.1 Regulatory barriers

7.1.1 Lack of clear and unified regulations and standards for soil reuse

The absence of consistent and comprehensive regulations/guidance for soil reuse in Aotearoa New Zealand creates uncertainty for developers, contractors and regulators, often leading to delays, increased costs, or landfill disposal of potentially reusable soil.

7.1.2 Existing regulatory frameworks such as the NES-CS create hurdles

Existing regulatory frameworks and guidance, including the NES-CS, do not promote reuse and may inadvertently hinder it. For instance, interpretations of Regulation 5(9), which require soil exceeding 'cleanfill' or 'background' levels to be disposed of at authorised facilities. This can significantly restrict reuse opportunities, even when the soil poses minimal risk. Generally, Regional Plans will also have similar provisions/rules with respect to cleanfill requirements, which in some cases default to background, due to no region specific cleanfill criteria being established in some regions.

7.1.3 Consent conditions and regulatory uncertainty

Further to Item 7.1.2, standardised resource consent conditions from both regional and local authorities will often include the requirement for imported soils to meet 'cleanfill' or 'background' criteria. This immediately prevents the ability to import soils that meet the relevant human health and ecological criteria – i.e., making them 'suitable for use'. Currently, there is a lack of alternative standardised consent conditions that facilitate soil reuse across all regions, despite some cases where this has been implemented well on larger projects.

Additionally, consideration was given to councils' use, or lack thereof, of Section 87BB, which can deem an activity, which would otherwise require resource consent, to be permitted in certain circumstances. While this provision could enable more efficient soil reuse, its broader application remains challenging due to additional important factors that must be assessed, including soil volumes, the nature of the receiving environment (e.g. high-risk erosion areas or high ecological value), rather than assessing soil quality alone. In many cases, this would require an applicant to provide similar information to what would be required in a resource consent application, for a council to make an informed decision.

It is also worth noting that many councils will not have in-house or immediate access to a subject matter expert (SME) to assist with assessments for soil reuse proposals, often resulting in conservative decision-making limiting soil reuse and driving further disposal to landfill.

7.1.4 Disconnect between various regulatory bodies

There is a disconnect between the regional and territorial authorities, leading to fragmented management approaches. For instance, territorial authorities control the land use (changes), subdivision and earthworks activities, while regional councils control discharges to the environment and, as well as earthworks in many cases.

7.1.5 Lack of incentives and enforcement around sustainable soil management

There are currently no national incentives to reusing soil, excepting in certain project-based circumstances where cost-benefit analyses have been undertaken and progressed for these projects alone. Incentives could include a vast range of economic, logistical or regulatory improvements for those who choose to reuse soils, rather than dispose. However, this barrier is heavily contingent on providing solutions for several other gaps and barriers. It is considered that provision of well thought out incentives could act to encourage and promote several soil reuse initiatives.

7.1.6 Delays in the creation of new regional plans

Ongoing delays in the creation of new regional plans leaves councils with ageing objectives, policies and rules, which are not representative of the current land development and infrastructure landscape, or technical knowledge around risk assessment.

7.2 Definitions and standards

Existing standards and definitions within industry guidelines and documents lead to three key unintended consequences with respect to surplus soil material, including:

- Surplus soil being disposed to landfill,
- Confusion in how to define and quantify soil waste, and
- Application of these documents outside of their intended scope.

7.2.1 Omission from standards

The absence of clear standards, or ambiguity of existing standards, with respect to surplus soil management can lead to the misapplication of related standards or the interpretation that the absence from standards is a de-facto exclusion from its application. Whether the lack of explicit inclusion leads to application or exclusion is typically resolved by the utilisation of the most conservative interpretation which, as discussed elsewhere in this document, often leads to perverse unintended outcomes.

An example of the former is the application of soil waste acceptance criteria (WAC) to aggregates, which have a different potential for leachate generation, as opposed to aggregate having its own standard. Currently, soil WAC are applied to aggregates despite important differences in particle size, chemical composition and use. This is particularly true when WAC is applied for the purpose of assessing suitability for recycling rather than disposal.

An example of the latter is New Zealand Transport Agency's 'Specification for Basecourse Aggregates' (M4), which allows for the use of named materials as sources for roading aggregates. It assumes products will be sourced from known geologies and quarries, although provides pathways for some recycled materials. However, when considering the use of these materials, limits are placed on 'foreign' materials, which are considered undesirable. Vagary in the text means that this foreign material limit is sometimes applied to all material sources not specifically named in the specification. This can prevent the reuse of used aggregates or other materials that meet the performance requirements of the specification.

7.2.2 Standards insufficiently comprehensive

The New Zealand Standard (NZS) 3604:2011 'Timber-framed buildings' refers to the construction of timber framed buildings on 'good ground'. This is representative of many engineering standards in Aotearoa New Zealand. It defines 'good ground' as 'any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300kPa' but specifically excludes topsoil, soft soils such as clay which can be easily moulded, loose gravel, expansive soils and several other soils.

By excluding many soil types and referring the user to bespoke engineering design, the standard encourages excavation and disposal of these materials which are common across Aotearoa New Zealand. If this standard, and others like it, provided advice on managing these materials on site or limiting the scope of engineering design, then these materials would be more likely to be reused.

7.2.3 Confusion in how to measure soil waste

The SWAP waste classifications do not have a 'soil' category. Rather, soil is assigned to Category 9 'Rubble, Concrete, etc' and/or Category 12 'potentially hazardous' for 'debris' and 'contaminated soil'. None of these categories are particularly useful in describing waste outside of Class 1 or 2 landfills and all tend to hide actual soil volumes by combining multiple materials within these categories.

Equally there remains significant confusion in the line between what is 'earthworks' and what is a 'Class 5/cleanfill'. Numerous examples exist of sites that are not registered as a waste disposal site receiving 'cleanfill' to achieve an earthworks outcome. The material being accepted at these sites would often not be deemed as Class 5 material due to the inclusion of concrete or asphalt material. While these sites represent legitimate reuse of material, they also represent a data gap in our understanding of actual soil waste volumes.

7.2.4 Application of documents outside their intended scope

Multiple central government and regional council documents define terms like 'soil', 'cleanfill', 'contaminant' and 'contaminated land' differently (if at all). It is unclear what these terms mean when at the edges of any given document's intended purpose, and what range of materials these terms should be applied to. There is a wide range of 'soil-like' materials, and inconsistency in the application of standards, legislation and guidance to them. For example, the NES-CS User's Guide specifically excludes construction aggregates from consideration as soil; however, when considering disposal of aggregates, the Technical Guidelines for Disposal to Land (TGDtL) treat them as soil by applying the same acceptance processes.

7.3 Perception and liability

7.3.1 There is a strong perception of liability/risk associated with reusing soils

The perception of liability and risk increases when soils are considered contaminated as they may be more challenging to work with, or to many may represent a diminished land value in particular land-use scenario. This is despite that in many cases, the contamination levels in the soil would not preclude it being used for the proposed land use.

7.3.2 Risk aversion to their land being associated with 'contaminated' material

Offsite disposal removes the 'contaminated' materials and therefore the perceived risk associated with them. Principally the developer/landowner has concerns that if the 'contamination' has been disturbed or moved – but remains onsite – they could be considered the polluter and with that, responsible for the contaminants into the future (this could also include further land use changes, standards change, emerging contaminants, etc).

7.3.3 There is a perception that retaining or reusing soil may affect a property's value

Sites with low-level contaminants remaining may not be as valuable as those that are at 'background' levels is recognised as a perception barrier. While in some cases this may be the case, there are also examples where contamination being present on a site has had little or no impact on the desirability of a property or its market value.

7.3.4 Those wishing to reuse soils may not meet the expectation of regulators' interpretation of the regulatory requirements

Unless prior engagement between the soil generator/user and the council has occurred, there is often misunderstanding of what each party expects (this is also considered to be covered within the 'Logistics' theme (see section 7.5.4)).

7.4 Technical and site investigation issues

7.4.1 Inadequate or inconsistent site investigations and characterisation of soils

In many cases, site investigations are completed to a minimum standard (i.e., 'to achieve resource consent') without regard for how the site may actually be used in the future and the earthworks required. This misses the opportunity to consider soil reuse and/or management during development.

This can be a function of poor advice, limited forward planning and engagement, agreed scope of work between developer and practitioner, commitment of the right funds at the right time, or a combination of some or all of these things. This also ties into the below gap/barrier regarding 'risk assessment' and having a lack of guidance to support 'how' these investigations are conducted consistently, and how they should be reviewed and approved by the regulator.

7.4.2 Confusing or conflicting definitions

Analogous to barrier 7.2.4 - Application of documents outside their intended scope, this barrier identifies several different and overlapping definitions of 'background', 'cleanfill', and 'contamination' found within Aotearoa New Zealand regulations, guidance, individual regional plans, and site-specific resource consent conditions. These definitions lead to inconsistent implementation and rulings and affects the ability for contaminated land practitioners to make clear risk assessments to provide justifications for/against soil reuse applications.

Certain jurisdictions may also provide 'black-and-white' responses to enquiries about reuse of soil with contaminant concentrations 'above background'.

Further, while 'background' and 'cleanfill' correspond to different qualities of soil material, they can and do overlap but are often interpreted as 'one and the same' by non-technical stakeholders. This leads to perverse outcomes where many believe that background quality is equal to cleanfill quality (and vice versa), which can limit reasonable risk assessments to be undertaken on relevant soils.

7.4.3 Lack of standardised testing protocols and soil specifications

There are no standard testing protocols for surplus soil and its reuse. WasteMINZ attempted to remedy this by providing the Technical Guidelines: Characterising Surplus Soil for Disposal (2024) on the characterisation of surplus soils from a contaminated land perspective. For ecosystem health, the recent Manaaki Whenua Landcare Research guidance 'Determining background soil concentrations of trace elements across New Zealand' (2023) can provide some guideline protocols but does not include physical sampling guidance and direction. This guidance is also limited to surface soils and does not provide guidance on the depth of these soils that should be retained to support healthy tree growth and/or stormwater management (as discussed further in the Parliamentary Commissioner for the Environment (PCE) report 'Are We Building Harder, Hotter Cities?' (2023)).

7.4.4 Some soils are simply not suitable for reuse in certain engineering applications

Some properties such as moisture, instability, contaminant load, organic content and/or biosecurity risks will mean soil cannot be practically reused, as the cost of engineering controls, remediation and/or management may be more than the cost of disposal and use of suitable material.

7.4.5 Geotechnical requirements often necessitate strict soil quality controls

This is similar to the 7.4.4, however 'specifications' also relate to requirements for backfill materials around council-owned underground utilities and/or by transport authorities in road or rail corridors.

7.5 Logistical and economic barriers

7.5.1 Lack of infrastructure options to manage soils and a mismatch in supply and demand make transfers between sites difficult

There is typically an excess of surplus soil relative to demand. Opportunities to transfer surplus soil to a receiving site are often complicated by conflicting timeframes and limited ability to temporarily store soil on development sites. A lack of this temporary storage and/or reprocessing facilities results in disposal. Connections to match supply and demand sites are limited to non-existent.

7.5.2 Simplicity, familiarity, and cost often make disposal more convenient and attractive

The design and planning required for disposal is generally minimal compared to that required for on or off-site reuse. In some cases, disposal may also be more cost effective than reuse. Also, the cost of virgin products is often low, and disposal may be seen to limit compliance and contractual risks compared to reused material/s.

7.5.3 Understanding disposal versus reuse costs

The true cost of soil disposal may not be well understood early in a project, which may mean opportunities for reuse are not explored. Potential savings from retaining and reusing surplus soils are not realised as are complex equations considering environmental and social outcomes, alongside economic outcomes.

7.5.4 Lack of coordination, early planning and engagement regarding soil reuse

Contract structures on large projects can also lead to surplus soil management 'falling between the cracks'. It becomes increasingly difficult, costly, and contractually risky to incorporate soil reuse into projects the further they proceed towards completion.

7.5.5 Projects often operate under tight timelines.

Soil reuse planning, extra testing and/or consenting may risk introducing costly delays if not accounted for prior to construction. Additional soil handling and storage may complicate construction methodologies. From a risk management perspective, the certainty of off-site disposal often trumps the potential cost savings and other benefits of reuse.

7.5.6 Perceptions of contamination or poor ground conditions and future consenting obligations are considered to reduce property resell values

This overlaps with perception/liability gaps but specifically addresses a legitimate economic barrier.

7.6 Cultural and engagement gaps

An overarching comment on this theme is that there is the lack of clear guidance for integrating Te Ao Māori perspectives into soil reuse conversations. Additional work will be required to ensure that future soil reuse frameworks in Aotearoa New Zealand embed culturally appropriate practices

This theme links strongly to Logistical Issues (i.e. lack of coordination, planning and engagement) and Communication and Education).

The key gaps identified currently are the:

- The lack of engagement and consideration of Te Ao Māori perspectives and the cultural connections of mana whenua to soil, and
- The absence of cultural considerations in current regulatory and risk assessment frameworks.

7.7 Communication and education

This stage of the project identified a general lack of understanding regarding the benefits and disadvantages of soil reuse throughout the industry.

Communication and education aimed at the wider sector will deepen understanding of the strengths, weakness, opportunities and threats of a variety of soil reuse initiatives.

8 / Options Analysis – Introduction

With the key gaps and barriers identified and consulted, the Project Group moved into the Options Analysis phase of the work with the objective of recommending 3-5 Priority Actions to MfE, to move from land development and infrastructure industry's current state toward the vision.

9 / Options Analysis – Methodology

The Project Group began the options analysis process by qualitatively scoring each identified gap or barrier using three criteria, which considered what would be required to provide solutions, or progressive steps toward the vision:

- Time to deliver,
- Energy/effort required, and
- Likely impact.

Simultaneously, selected stakeholders – LINZ, DOC, CCNZ, AQA and WasteMINZ - were also asked to complete this process. The scoring was collated across the Project Group, and a moderation session was held to align on the gaps or barriers with the highest score from each Project Group member. During this moderation the feedback from the selected stakeholders was also considered. Broadly their feedback aligned with that of the Project Group and discussions held during moderation.

The moderation identified ten gaps and barriers that ranked highly across both Project Group and selected stakeholders. These gaps or barriers are set out in table 2 below.

Table 2.
Overview gaps and barriers that ranked highly for Project Group members as well as selected stakeholder

Theme	Refefence	Identified Gap or Barrier
Regulatory Barriers	7.1.2	Existing regulatory frameworks such as the NES-CS create hurdles.
Regulatory Barriers	7.1.3	Consent conditions and regulatory uncertainty discourage reuse.
Regulatory Barriers	7.1.5	Lack of incentives and enforcement around sustainable soil management and reuse.
Perception and Liability	7.3.4	The perception that those wishing to reuse soils may not meet the expectation of regulators' interpretation of the regulatory requirements.
Technical and Site Investigation Issues	7.4.1	Inadequate or inconsistent site investigations and characterisation of soils inhibit appropriate assessment of soil suitability for reuse.
Technical and Site Investigation Issues	7.4.3	Lack of standardised testing protocols and soil specifications that support ecosystem and engineered needs.
Logistical and Economic Barriers	7.5.1	Lack of infrastructure options to manage soils/mismatch f supply and demand for surplus soils make transfers between sites difficult.
Logistical and Economic Barriers	7.5.3	Underestimation of disposal costs means potential savings from retaining and reusing surplus soils are not realised.
Logistical and Economic Barriers	7.5.4	Lack of coordination, early planning and engagement regarding soil reuse in project design.
Communication and Education	7.7	A general lack of awareness and comprehension of the benefits/disbenefits of soil reuse throughout the industry.

During the moderation process, the Project Group discussed and agreed the following:

- Regulatory Barriers items 7.1.2 and 7.1.3 were highly inter-related so could be carried forward as a single gap or barrier,
- Item 7.1.5 relating to a lack of incentives regarding reuse, was agreed as being broader than just a regulatory barrier, so may be better considered within 7.5.1 as a Logistical and Economic barrier,
- Economic and Logistical barrier themes 7.3.4 and 7.4.1, 7.5.1 and 7.5.4 were sufficiently similar to carry forward as a significant gap or barrier, and
- Communication and Education item 7.7 was considered to apply across all gaps and barriers and therefore needed to be addressed in any of the selected options going forward.

The Project Group also considered the opportunity to use current resource management reform as a pathway to include and encourage soil optimisation improvements in regulation. This meant that some solutions – regulation and guideline interventions – also had a time-dependent priority, where it would be most successful/highest impact if updates could be completed in coordination with current reform.

At the completion of this process, the following gaps and barriers were selected for the options analysis:

- Regulatory Barriers - primarily focussed on 7.1.2 and 7.1.3,
- Perception and Liability – primarily focussed on 7.3.4,
- Technical and Site Investigation Issues – primarily focussed on 7.4.1, and
- Logistical and Economic Barriers – primarily focussed on 7.5.1 and 7.5.4.

The Project Group then identified the opportunity that each gap or barrier presented and discussed the three most impactful potential solutions for. This process was workshopped over two dates, 18 and 20 November, the outcomes are discussed in the following section.

10 / Options Analysis – Results

The opportunities and solutions that were identified as likely being the most impactful by the Project Group, are described below, organised by theme. Further detail on how these barriers can be translated into solutions to support soil reuse is provided in Section 11.

10.1 Regulatory barriers

The regulatory barriers in this theme are the absence of consistent and comprehensive regulation and/or guidance that support or encourage soil reuse. Existing regulation generally results in the imposition of strict controls on soil and limits its movement other than to disposal sites, presenting a significant barrier to sustainable soil management practices being implemented on a consistent basis across the country.

Alignment of regulation to a 'soil management hierarchy' that enables and encourages beneficial reuse could create certainty for developers, practitioners, contractors and regulators. Developing new policy tools and amending existing regulations to support a soil management hierarchy, rather than focusing solely on disposal, would enable more effective soil reuse and promote more sustainable practices.

Options therefore include:

- **Developing a surplus soil management strategy and action plan.** This process would detail the methods through which soil could be reused, in a robust and consistent way that ensures the protection of human health and the environment. These methodologies would provide developers, practitioners, infrastructure providers, contractors, and regulators the confidence to operate in, where appropriate, a more permissive system enabling soils to be reused, while ensuring that genuinely inappropriate materials were disposed of properly.

- **Developing a National Policy Statement (NPS) for surplus soil management (framework).** The framework would provide the regulatory system for enabling soils that are suitable for reuse to, where possible, retain their highest value use in accordance with the hierarchy. It would elevate considerations of soil reuse to the front of the planning process, creating the greatest opportunity for land development and infrastructure projects to retain soil or find alternate onsite or offsite uses during initial project planning.

- **Targeted intervention in individual existing regulations** (including but not limited to the NES-CS, the Waste Minimisation Act (WMA) and the National Policy Statement for Highly Productive Land (NPS-HPL)) and/or seek a court decision on specific parts of existing legislation which currently causes confusion. As developing a strategy and/or framework are medium to long term projects, and as regulatory reform is underway, targeted intervention provides an opportunity to make change in a shorter timeframe. Prompt analysis of the new bills during consultation will allow all stakeholders to submit on barriers to soil reuse. Once enacted, necessary updates to NESs and NPSs will provide further opportunities to support more sustainable end uses of surplus soils.

10.2 Perception and liability

The principal focus barrier in this theme is the perception that those wishing to reuse soils may not meet the expectations of regulators (based on their interpretations of regulatory requirements).

Consultation feedback confirms that this manifests in different ways, with overlaps across other barriers. For some, it relates to differences in the expectations of soil managers and a perception of regulators as an impediment. Feedback from many regulators suggests that there is an appetite to facilitate appropriate soil reuse, but this is let down by either an assumption by the 'soil manager' that reuse will not be allowed, or the inadequate consideration or assessment of proposed reuse opportunities (see Section 10.3).

It is clear that without aligned expectations, soil reuse opportunities are not realised. Early engagement with regulators (included in Section 10.5) would provide an opportunity to rectify misaligned expectations.

Options for overcoming this barrier include:

- **Targeted intervention in individual existing regulations** (e.g. NES-CS, WMA, NPS-HPL and/or seek a court decision on uncertainty in existing legislation). At a minimum, the clarification of the key perceived regulatory barriers would reduce the inconsistency of application and provide better certainty for those wishing to reuse soil. There is also an opportunity to go a step further and make specific allowance for reuse within these instruments.

- **Developing a surplus soil management strategy and action plan** for use/reuse. A soil management strategy developed by central government would provide a reference for those wishing to reuse soil and for regulators, reducing uncertainty and misconception.

- **Education and communication campaigning**, i.e., raising awareness, behaviour change, workshopping, consultation, and engagement about soil reuse and optimisation. Improving industry and regulator knowledge of the benefits and drawbacks of soil reuse would likely reduce the disparity in expectations, resulting in wider adoption of reuse and more consistent approaches to surplus soil management.

Other solutions discussed in this report will help overcome this barrier by providing better guidance and support for reuse, improving understanding, and promoting and normalising more sustainable soil management.

By addressing this and other focus barriers, wider concerns about perception and liability will also be managed.

10.3 Technical and site investigation issues

By improving the consistency, quality, and standardisation of site investigations and soil characterisation, we can improve confidence and provide the evidentiary basis to accurately assess soil suitability for reuse, enabling more effective and permissive soil management.

Options for overcoming this barrier include:

- **Developing clear standards** for investigating materials for their suitability for reuse on source or receiving sites.
- **Developing guidance on land asset management** (or similar) to support asset owners and decision-makers in understanding the options and approaches available to them for maintaining their soil assets.
- **Education and communication campaign**, i.e., raising awareness, behaviour change, workshopping, consultation, and engagement about soil reuse and optimisation.

Related to this is also ensuring that a well thought out surplus soil strategy and NPS for surplus soil management are established, well communicated and understood.

10.4 Logistical and economic barriers (infrastructure)

The principal focus barrier in this theme is the absence of infrastructure to support soil reuse or recycling. While a desire exists across all consulted parties to reduce disposal to landfill, there is a noticeable lack of alternatives for material that cannot stay at a site. Where alternatives do exist, considerable work is typically required for their identification and evaluation.

Feedback received indicates demand for a range of infrastructure types, from basic soil transfer stations to more intensive reprocessing facilities. The Project Group's understanding of why this lack of infrastructure exists is that it is only recently that the scale of the opportunity has been identified. Further, there is significant concern that regulatory reform may reset the market to conditions representative of those before the WasteMINZ Technical Guidelines for Disposal to Land were published and the expansion of regulations under the WMA to include Class 3-5 landfills.

There is a perception that incentives would help to establish more infrastructure in this space, although is difficult to understand at this stage what incentives would be helpful and to be sure of their effect given the current scarcity of data associated with soil waste. Much of the feedback received in this space was about a lack of various landfill classes in certain regions. The Project Group feels that while this would alleviate some of the cost of soil disposal and potentially avoid unnecessary consumption of Class 1 landfill airspace, it ultimately enables the creation and disposal of soil waste. Landfilling of soil is possible in New Zealand because of the low population density and relative abundance of gullies and pits to fill. These areas are reducing in availability and will continue to do so. Therefore, a focus on creating new landfills without a drive to reduce volumes at source will eventually result in the same problems we face today as available sites are consumed, and it again becomes difficult to find a disposal site.

Potential solutions to overcoming these barriers include:

- **Market analysis to understand the supply and demand of surplus soil products.** The Project Group is not aware of a focused study that quantifies the supply and demand of soil and aggregates across Aotearoa New Zealand, while also incorporating wastes. Such a study would need to categorise the various streams based on their use, as some regions may have demand for topsoil but not sand or clay and vice versa, for example. A robust market analysis could also support investment cases for soil recycling and reuse infrastructure. Private companies are unlikely to take an approach of addressing the whole system and will focus on the most obvious opportunities which may lead to large components of residual materials being uneconomic to recycle.

- Following the market analysis, it is expected that councils and private business will **develop and invest in the infrastructure to divert soil waste from landfill.** These may include information and transaction facilitation platforms, physical transfer, treatment and manufacturing sites, or soils transfer stations.

- **Funding targeted to soil diversion from landfill opportunities** (e.g. including but not necessarily limited to the Waste Minimisation Fund). Funding in this space would achieve two separate outcomes. Firstly, it would demonstrate commitment to the long-term market conditions, secondly it would reduce the risk of first movers who are already present in the soil and aggregate space, but who otherwise may be reluctant to invest large amounts of capital in a workstream that could divert revenue from their currently successful businesses. We note that in Europe it was the demolition industry, not quarries or waste companies, who made the initial investments in soil recycling and treatment.

10.5 Logistical and economic barriers (lack of coordination/planning)

The second focus barrier in this theme is a lack of early planning, coordination, and stakeholder engagement in infrastructure and development projects. The Project Group concluded that several of the barriers identified in this category were distinct but closely related and could be addressed together.

There also appears to be a general lack of understanding of land assets prior to the projects commencing, with issues such as unsuitable soil, contamination, soakage, plant supporting capacity and others left until earthworks starting, rather than being used to inform project scope and design.

The failure to integrate soil management as a key design consideration results in:

- Underestimation of disposal costs,
- Conservationism based on uncertainty being carried into the project,
- Lack of consideration of alternative designs and/or reuse opportunities, and
- Programme delays and associated costs.

More proactive engagement would enable:

- Better considered earthworks designs and soil management planning,
- Better managed, lower risk, and lower cost projects, and
- Reduced environmental impacts.

Potential solutions for overcoming these barriers include:

- **A NPS for surplus soil management,** which would prioritise the sustainable management of soil, elevate it as a design consideration and enable the cascade of positive effects resulting from early consideration.

- **Market analysis to understand the supply and demand of surplus soil products.** A more mature understanding of the market for surplus soil would inform soil management opportunities and streamline the process for managing surplus soil which cannot be retained on site. This understanding would allow geotechnical and civil designers to understand the cost and environmental implications of different design approaches.

- **Developing guidance on land asset management** (or similar) to support asset owners and decision-makers in understanding the options and approaches available to them for maintaining their soil assets. More holistic guidance on how to maximise soil assets and minimise liabilities would facilitate an understanding of the need for good soil management outside of the constrained timelines of development/redevelopment.

11 / Priority Actions

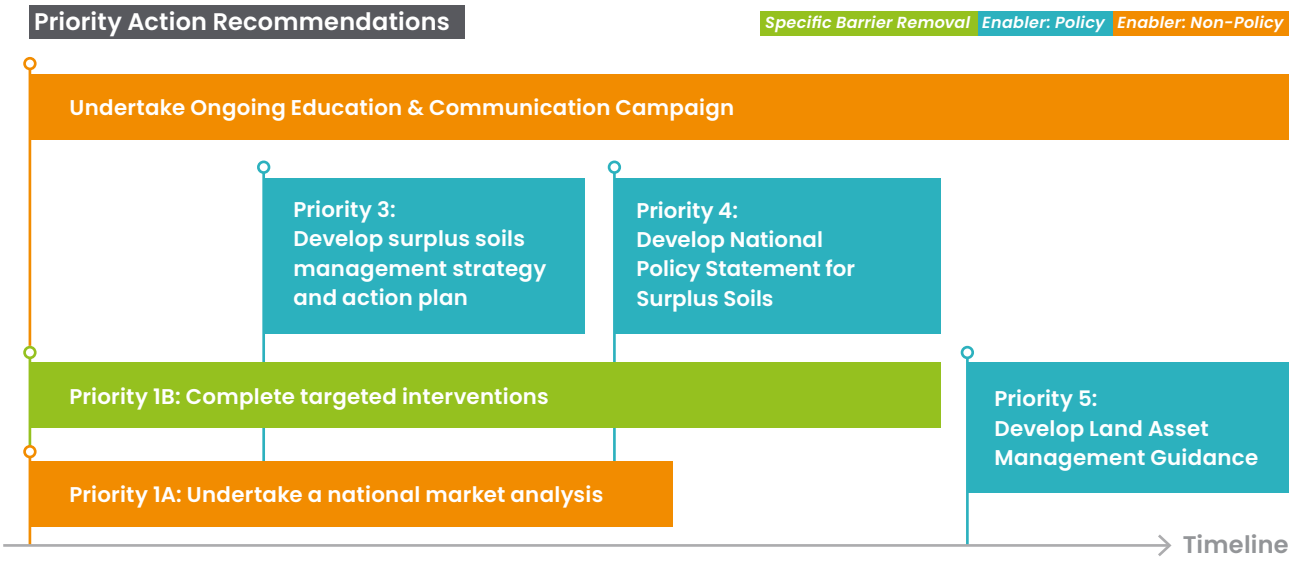
The project has identified a wide range of gaps and barriers to soil reuse in Aotearoa New Zealand. Some are specific barriers that can be removed through updates to legislation and guidance. Other barriers are less a specific impediment than a lack of enablers, whether this is legislation, guidance, or economic.

Addressing all the identified barriers would be a significant undertaking. We recommend focussing on priority actions that balance the greatest high-impact options with developing policy that can become the foundation of a robust and efficient surplus soil management system.

While each action will contribute to reducing soil waste, implementing the full suite of recommended measures under a systems approach will collectively address numerous barriers and facilitate meaningful progress towards the project's long-term vision.

The Project Group's recommendations regarding priority actions are presented in Figure 3, which illustrates a suggested timeline of implementation. Further detail on the priority recommendations is provided below the figure.

Figure 3.
Indicative timeline for implementation of priority actions



Education and communication

Education and communication emerged consistently throughout the Project Group's discussions and ongoing consultation as critical enablers of successful implementation and uptake of improvements to surplus soil management. The Group recommends that a coordinated education and communication campaign sits alongside each priority action. Embedding this campaign from the outset will help ensure stakeholders understand the intent, requirements, and expected outcomes of these initiatives, thereby strengthening alignment across central/local government, industry, iwi partners and other stakeholders, reducing implementation risks.

Similar to the gap and barrier analysis for this project, development of targeted education and communication for each stakeholder group will ensure that guidance and messaging are tailored to their specific roles and responsibilities. Delivering information through existing professional bodies and channels that stakeholders trust and use, ensures the campaign would build capability efficiently and support consistent adoption of actions and outcomes resulting from the priority actions below.

Priority 1A: Undertake a national market analysis

A national market analysis would enable the industry and stakeholders to understand the supply of- and demand for- surplus soil throughout Aotearoa New Zealand, focusing on its regions. It is expected that this analysis would characterise soil by its product types and assign value based not only on the product but also the inherent economic potential that material represents. This market analysis is expected to deliver comprehensive information on supply- and demand- for surplus soil materials to a regional scale. The work would identify the value of soil and aggregate production and provide a direct comparison of how much of those products end up as a waste, and in what region. An assessment of the cost to reuse or recycle those products could then be completed. This information would also provide credible evidence for both government and the private sector when considering incentives or investment in infrastructure to support soil and aggregate reuse. The opportunity is enormous but unproven in Aotearoa New Zealand.

Currently the Aggregate and Quarry Association publishes statistics for aggregate production in New Zealand. This information does not include recycled concrete and diversion from cleanfill which constitute part of the supply. Equally the measurement of these products as wastes do not easily link to production. Without this information it is difficult for private business to justify investment in plant and land for soil and aggregate diversion from landfill, particularly when coupled with challenging and inconsistent regulatory environments which may make consenting this plant and associated sites complex.

Overseas evidence suggests that up to a third of the aggregate market could be met by surplus soils if they were available[4]. Better understanding the Aotearoa New Zealand system would enable different rebalancing options to be considered across engineering design, land management and waste management.

Undertaking this priority action will have a significant impact on the reduction of surplus soil to landfill challenge as it will highlight areas and regions where several key barriers to reuse – such as lack of available infrastructure, and where the conditions for economically viable alternatives may be piloted (i.e. in those regions experiencing the most pressure in Aotearoa New Zealand). The outcomes of this market appraisal will give clear evidence of those regions which are at a tipping point where the cost of landfilling surplus soils can be easily met with alternatives such as soil hubs, temporary storage sites and/or digital connections between donor and receiving sites.

This market analysis should be commissioned by the central government agency responsible – the Ministry of Business, Innovation and Employment (MBIE), with the support of the MfE. Due to the strong connection to those driving production and usability of these materials, and their currently limited scope of reuse, alongside the potential for generation of new markets and jobs, we consider this sits with MBIE.

[4] Mineral Products Association, 2022. Construction Aggregates Supply in Great Britain.
Aggregates Europe, 2025. Aggregate Production Data. Retrieved: 12 December 2025. URL: https://www.aggregates-europe.eu/facts-figures/figures/

Priority 1B:
Undertake targeted interventions on existing regulations

Several regulations, standards and industry guidance documents have been identified as significant contributors to soil waste, or barriers to surplus soil reuse. These include but are not limited to:

- Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (notably Regulation 5.9 - for its strong link to background concentrations, and Regulation 8.3(e) - soil removed from sites can only be taken to approved facilities),
- New Zealand Transport Agency's 'Specification for Basecourse Aggregates' (M4) by failing to adequately accommodate recycled aggregate,
- New Zealand Standard (NZS) 3604:2011 'Timber-framed buildings' by focusing on "good ground" which is rarely the baseline conditions of land,
- The Waste Minimisation Act and its supporting regulations by confusing definitions of cleanfill, earthworks and landfill, and requiring the waste levy to be paid on stockpiles of surplus soils after six months,
- The SWAP protocol does not have a specific soil category. Categories that adequately describe the type of soils and aggregates, whether they are contaminated or uncontaminated would help monitor the effectiveness of the policy changes above, and
- National Policy Statement (NPS) for Highly Productive Land. This NPS aims to preserve high quality soils in place, but if there is no way to avoid soil disturbance, there are no policies encouraging the soils to be reused on the same soil type locally – preserving these soils and their value, rather than wasting them.

Each of these documents fulfils their specific function, however combined they contribute significantly to creating surplus soils resulting in the status quo. Careful intervention in this system could quickly reduce the drivers of soil waste and enable reuse more frequently. For example, updating the NES-CS Regulation 5 (9) requirements to be more permissive will allow for more surplus soils to be assessed using a risk-based framework, rather than a rigid black-and-white approach (i.e. contaminated or uncontaminated) - still retaining reuse conditions which support environmental protection. This will allow for more options to be explored regarding the fit-for-purpose nature of surplus soil materials, often resulting in soils being able to be more widely reused on source- and receiving sites. The same can be expected of interventions targeted at other guidance listed, all of which has the aim of providing flexibility to otherwise increasingly inflexible documents. The landfill-disposal-reducing effect of these targeted interventions are cumulative, each intervention will have an effect to a varying degree, however the Project Group feel as though the time is opportune to target each of those listed to achieve the highest level of impact from this priority action.

Parts of this action are deemed as urgent/time-critical based on the coincident resource management reform activities taking place at the time of this report and into the near future. Interventions could improve the permissiveness of soil reuse and support balancing the demand-side of the above market analysis (Priority 1A).

Priority 3:
Develop a national all of government surplus soils management strategy and action plan

A surplus soil management strategy and subsequent action plan would provide best practice for those generating, receiving, processing, treating, and managing surplus soils - and a pathway for its implementation. Soil management is fundamental to primary production, the environment, infrastructure and the nation's finances. An all of government approach to managing soil in New Zealand would clarify expectations for soil management and provide confidence to developers, infrastructure providers, waste operators, and regulators and set out how to value, use and protect soil.

Priority 1A would form the evidence base for the development of a surplus soils management strategy and action plan. Such an action plan would:

1. Coordinate the related central government agencies (i.e. MfE, Ministry of Primary Industries, MBIE, Ministry of Regulation, Ministry of Transport, Ministry of Housing and Urban Development, etc),

2. Develop the brief strategy statement committing to prioritising soil uses and value,

3. Develop the pathway to achieving the vision in this document,

4. Set enduring surplus soil management targets to support the long-term nature of infrastructure and aggregate production (20 years+),

5. Develop a soil management hierarchy with retaining soil in place at the top (most desirable), below this reuse of soil for various purposes, and at the bottom (least desirable) disposal to landfill. Accompany this hierarchy with a selection of tools and worked examples at each step to explore and apply to subject sites and projects,

6. Define a common set of terms, standards and language for soils and their management,

7. Explicitly state the conditions that cause soil to become a waste rather than a resource, and

8. Create economic opportunity to fill soil demand with surplus soils.

This strategy and action plan that provides a clear, enabling and consistent approach to the management of surplus soils. This would provide unity, clarity, stability and confidence to government and the private sector considering investing in development and infrastructure projects and specifically facilities that manage, remediate and reprocess surplus soils and aggregates. True impact and value lie in total commitment to this cause. Creating and driving behaviour-change in surplus soil management must come from our agency leaders and their commitment to this strategic direction. Developing this priority action will have an immediate effect on the way in which central government agencies, their ministers and their key, nationally significant projects approach surplus soil management. This is leading by example and will provide the direction for others – including local government and private business – to follow.

Priority 4:
Develop a National Policy Statement for Surplus Soils

A legal instrument such as this NPS will set out objectives and policies for surplus soil management, developing from the surplus soil strategy commitment and action plan in priority action 3. This NPS would provide national direction, guiding decision-making by regional and local authorities to ensure consistent and sustainable management of surplus soil resources throughout Aotearoa New Zealand.

As with other NPSs, it would have legal effect and would require councils to amend their planning documents and process accordingly. This could take points from an all of government surplus soil management strategy and set in law its implementation. One key benefit is it could enable cross-region alignment so that surplus soil can be freely traded across regional boundaries. (This priority action addresses a significant number of barriers related to regulatory direction, inconsistency and fractured management.)

The NPS would become a central piece of legislation for development and infrastructure planning. It would require planners to determine how any surplus soils generated are to be managed much earlier in the planning process. The consideration of such soils early in project design will enable methods to reduce soil disturbance to be costed against the current soil stripping practices and where the soils are acceptable for reuse on another site, increase the opportunities to identify other sites needing soil products.

Priority 5:
Develop Land Asset Management Guidance

This guidance would set out how to investigate, understand and maintain an owner's soil asset effectively – through a variety of related technical disciplines including geotechnical, contamination, ecological, etc. The guidance would include the expectations for information quality and advice, and knowledge, experience and calibre of appropriate sources of this advice.

This guidance would address and fill the gap identified in 'inadequate and inconsistent site investigation' and deliver the improved levels of information required to enable effective, efficient and nationally consistent surplus soil decision-making. Land development and infrastructure projects will utilise this guidance to commission more comprehensive up-front investigations which support a deeper understanding and options assessment for surplus soil management and reuse options – optimising project efficiencies and costs, and minimising resultant disposal to landfill – in a more consistent regulatory environment.

Development of this guidance will have a direct effect on reduction by providing focused actions and clear assessment pathways for decision-makers to understand and improve their surplus soil management by offering an exemplar toolbox for decision-makers to work through to achieve the best outcomes for their project, in line with the surplus soil management strategy and NPS (priority actions 3 and 4).

Reclaiming Our Resources: Optimising Soil Reuse in Infrastructure and Land Development

A strategic framework for optimising soil management – Phase 1

Appendices

Appendix A **Literature List**

Auckland Council, Manaaki Whenua Landcare Research, AECOM New Zealand, Woods. 2025. Compaction of urban soils: Understanding the feasibility of potential solutions for the amelioration of urban soils to reduce flood risk

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Michiel Gadella, Mari van Dreumel, Reinier Romijn. Session E1.1 – Feedback on policies: Review of 25 years of soil reuse and sustainable land management policies in the Netherlands – finding the balance between environmental protection and the need for recycling

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WasteMINZ. 2024. Reclaiming Resources: Optimising Soil Reuse in Infrastructure and Development

WasteMINZ. 2024. Technical Guidelines: Characterising Surplus Soil for Disposal

Appendix B Initial gap and barrier register

Appendix C – Initial gap and barriers register

Reference (update in line with literature review)	Issue	Subissues	Related Items/Considerations				
			Point 1	Point 2	Point 3	Point 4	Point 5
WasteMINZ White Paper							
WasteMINZ2024WP	No drivers for soil reuse in regulations or guidelines	No guidance/standard	CLMG	NPS	Wasteminz / TGfDL	Building Regs/Standards	
		No regulation					
	Existing Regulatory hurdles	NES:CS	NES:CS 5.9				
		Consent conditions					
		Conflicting cleanfill definitions					
		Reuse requires consent					
		Baseline is background rather than suitable for use	RMA (contaminated def.)				
	Perceived Liability	Perception that concentrations beyond background carries cost / liability	NES:CS 5.9				
		Background not clearly defined	NES:CS 5.9	Regional Plans			
	Relative ease of disposal	No/lack of alternatives					
		Convienience					

Reference (update in line with literature review)	Issue	Subissues	Related Items/Considerations				
			Point 1	Point 2	Point 3	Point 4	Point 5
WasteMINZ 2024 Workshop (expanded notes)							
WasteMINZ2024Notes	Policies and Planning Rules are inadequate or non-existent		Non-existent in regualtions and guidance	Clarification and standardization of terminology (soil, waste, cleanfill, contaminated, landfill).			
	Perceptions are misaligned with risk assessment (public, developers, cultural, etc)		Lack of understanding of risk (regulators)	Lack of risk-based guidance (i.e. CLMG #6)	Risk communication needs to be transparent and well-developed, including conceptual site models (CSM).	Councils have varied approaches; more uniformity needed.	Behaviour change/education

Reference (update in line with literature review)	Issue	Subissues	Related Items/Considerations				
			Point 1	Point 2	Point 3	Point 4	Point 5
	Cultural considerations are absent from typical assessments		Early, genuine consultation is essential.	Classification of contamination concerns: cultural, legal, human health, environmental, land sovereignty.	Risk communication needs to be transparent and well-developed, including conceptual site models (CSM).		
	Soil disturbance (general)	Not covered in NES-CS or environmental discharges					
	Inflexible consent conditions	Closest source of site management (i.e. consent trumps regional plan, national policy, etc) when considering site management	Consent conditions	Consent validity (c.up to 30 years)			
	Meaningful consequence	Fines, etc for non-compliance with					

Reference (update in line with literature review)	Issue	Subissues	Related Items/Considerations				
			Point 1	Point 2	Point 3	Point 4	Point 5
	s for non-compliance	soil reuse assessments					
Expert Opinion / Experience on Gaps/Barriers							
	Economic	No value placed on soil	NPS?				
	RMA	Effects of disposal not considered	NPS?				
	Professional behaviours	Relitigating settled matters ambient/background/urban	MfE position statement				
		Piece of Land	MfE position statement				
		Mandatory code of ethics	MfE position statement				
	Council Process	Failure to use S87bb	MfE position statement				
	Product standards	Fail to make allowance for recycled material	Specifications				
	Professional behaviours	Rigid/over-adherence to standards	Ambiguity in regulations	Lack of guidance			
		Design process fails to consider reuse opportunities	Civil design	Investigation standards	Lack of guidance		
		Perceived liability in taking anything	Perceptions and liabilities				

Please click here to access the full document

Appendix C Key gaps and barriers identified for consultation

Key Gaps and Barriers Identified

1. Regulatory Barriers

1.1. Lack of clear and unified regulations and standards for soil reuse.

1.2. Existing regulatory frameworks such as the NES-CS create hurdles, including interpretations that soil above "cleanfill" or "background" levels requires consent and disposal to authorized facilities, leading to limited reuse options.

1.3. Consent conditions and regulatory uncertainty discourage reuse (analogous to the use of section 87BB - Activities meeting certain requirements are permitted activities).

1.4. Disconnect between various governing authorities (e.g., regional councils vs local councils) results in fragmented management and oversight.

1.5. Lack of incentives and enforcement around sustainable soil management and reuse.

2. Soil Definition and Standard Issues

2.1. Multiple and varied definitions of soil within NZ regulatory context lead to confusion and inconsistency.

2.2. Many standards focus on "good ground" which excludes many soil types (e.g., topsoil) essential for ecosystem function, leading to over-stripping and soil disposal.

3. Perception and Liability

3.1. There is a strong perception of liability/risk associated with reusing soils that exceed background contamination. This is despite that in many cases the contamination levels in the soils would not preclude it being used for the proposed land use.

3.2. Public, regulator, and developer risk aversion of their land being associated with contaminated materials favour disposal over reuse. Offsite disposal removes the contaminated materials and therefore the stigma. They are concerned that if the contamination has been moved/disturbed/managed they could be considered the polluter and with that be responsible for the contaminants into the future.

3.3. There is a perceived stigma on properties with reused or formerly contaminated soils, affecting property value (economic and cultural) and financing. Whilst in some cases this may be correct, there are also examples where contamination being present on a site has had little or no impact on the desirability of a property or its market value.

4. Technical and Site Investigation Issues

4.1. Inadequate or inconsistent site investigations and characterisation of soils inhibit appropriate assessment of soil suitability for reuse.

4.2. Confusing or conflicting definitions of "background" soil, cleanfill, and contamination impede clear risk assessments.

4.3. Lack of standardised testing protocols and soil specifications that support ecosystem and engineered needs, such as supporting deeper-rooted vegetation or stormwater management.

4.4. Some sites/soils are simply not suitable (poor properties: too wet, too unstable, too highly contaminated, high organic content, etc.) for reuse in certain engineering applications.

4.5. Geotechnical requirements (ground suitability, building codes, specifications, etc.) often necessitate strict soil quality controls, which may contradict environmental and circular economy objectives.

5. Logistical and Economic Barriers

5.1. Lack of/mismatch of supply and demand for surplus soils, with a lack of infrastructure options to manage soils.

5.2. Convenience and familiarity make disposal easier and more attractive than reuse.

5.3. The direct cost of disposal, and lack of financial incentives or streamlined processes for reuse, means potential savings from retaining and reusing surplus soils are not realised.

5.4. Lack of coordination and early planning and engagement regarding soil reuse in project contracts and development phases.

5.5. Projects often operate under tight timelines. Soil reuse planning or extra testing / consents can introduce delays, which contractors see as risky.

5.6. Reputational, compliance, contractual or long-term risk.

5.7. Loss of revenue from soil disposal.

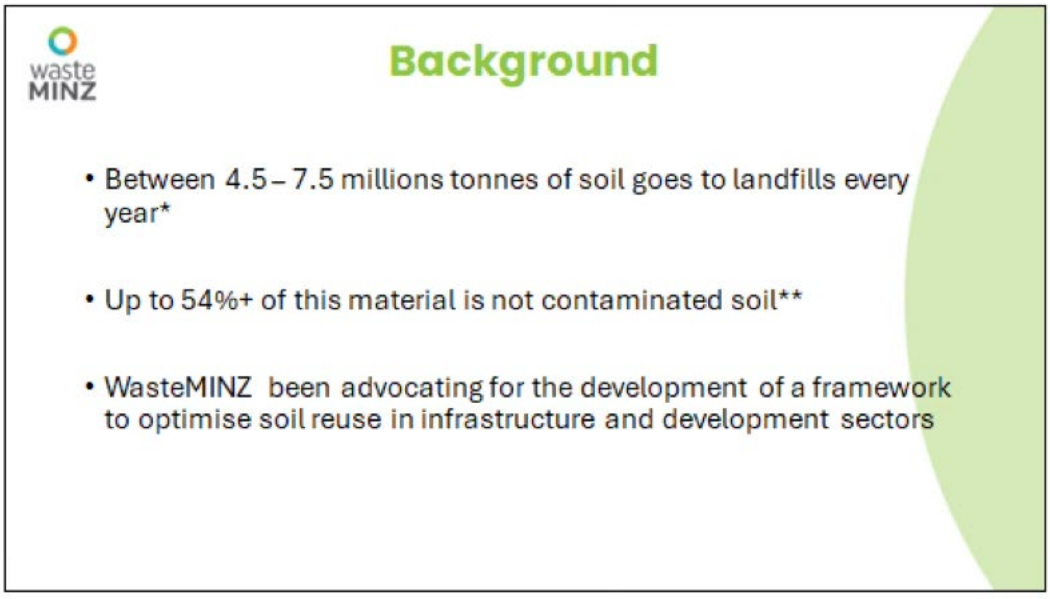
6. Cultural and Engagement Gaps

6.1. Lack of engagement and consideration of Te Ao Māori perspectives and cultural connections to soil and whenua mana.

6.2. Absence of cultural considerations in current regulatory and risk assessment frameworks.

Appendix D **Full Slide Deck**

1



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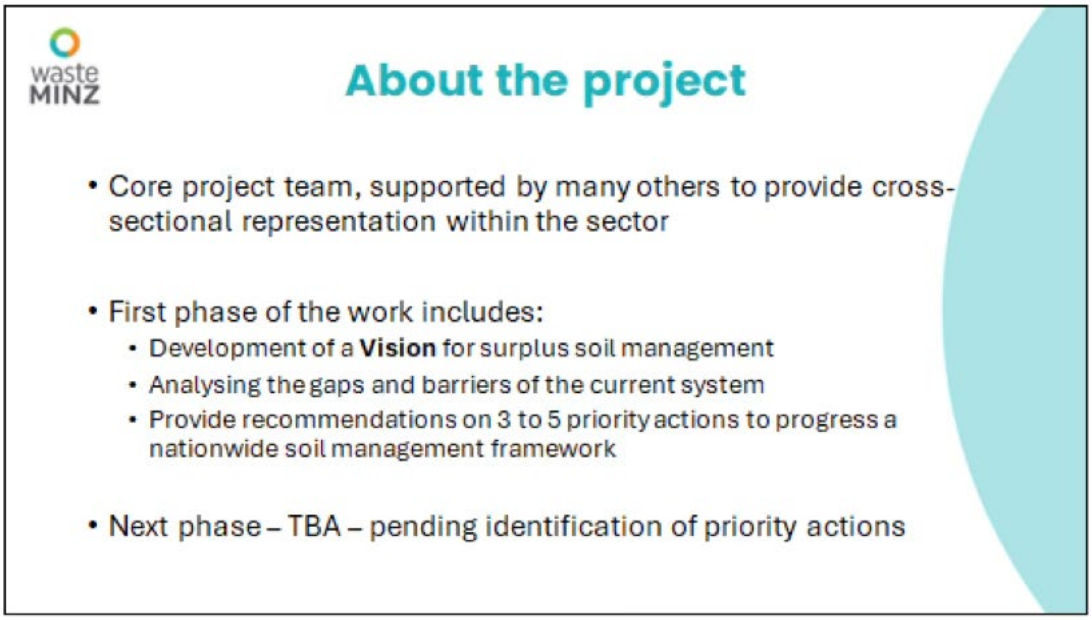
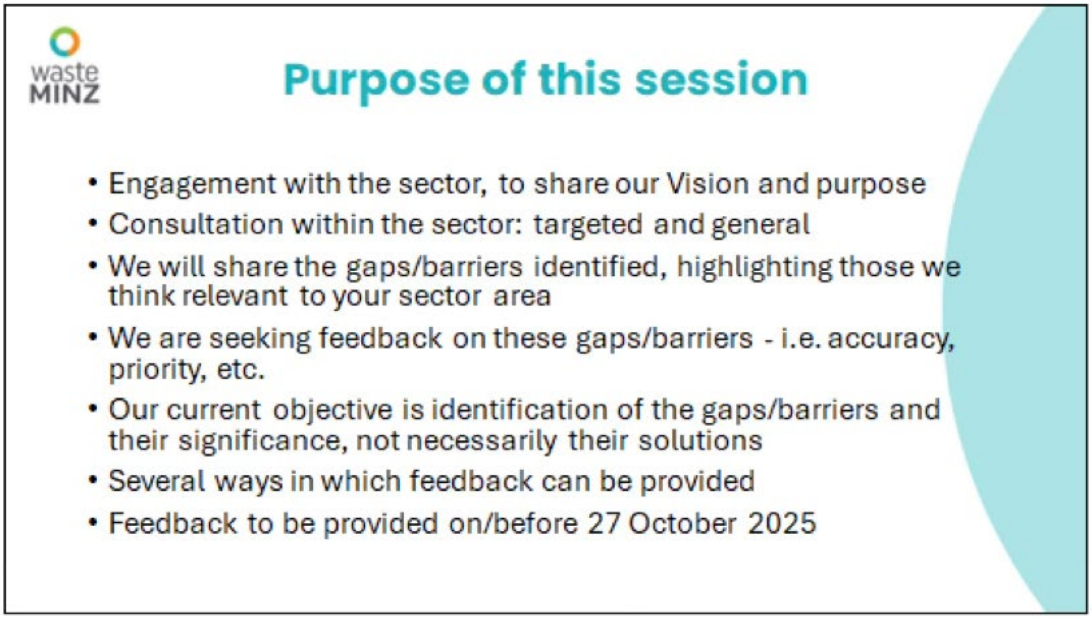

waste MINZ
About the project
• Core project team, supported by many others to provide cross-sectional representation within the sector
• First phase of the work includes:
• Development of a **Vision** for surplus soil management
• Analysing the gaps and barriers of the current system
• Provide recommendations on 3 to 5 priority actions to progress a nationwide soil management framework
• Next phase – TBA – pending identification of priority actions

3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Purpose of this session
• Engagement with the sector, to share our Vision and purpose
• Consultation within the sector: targeted and general
• We will share the gaps/barriers identified, highlighting those we think relevant to your sector area
• We are seeking feedback on these gaps/barriers - i.e. accuracy, priority, etc.
• Our current objective is identification of the gaps/barriers and their significance, not necessarily their solutions
• Several ways in which feedback can be provided
• Feedback to be provided on/before 27 October 2025

4

The Vision

Our Vision

That soil is managed as a finite resource: its economic, physical, environmental, wellbeing, and cultural attributes are understood and valued by all, and supported and preserved as far as practical.

That Aotearoa New Zealand's operating, regulatory and planning structure includes a viable, collaborative, and robust system to enable the economic and environmental opportunities for soil to be realised. In this system:

- soil maintains its highest value use,
- infrastructure and development projects are designed to minimise soil disturbance, and
- if soil needs to be disturbed, it is managed in accordance with a soil management hierarchy (**yet to be developed*).

Essentially, creating a system where it is better and smarter to reuse soil than to landfill it.

5

Next steps in the process

6


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MINZ
Key Sector Issues Identified

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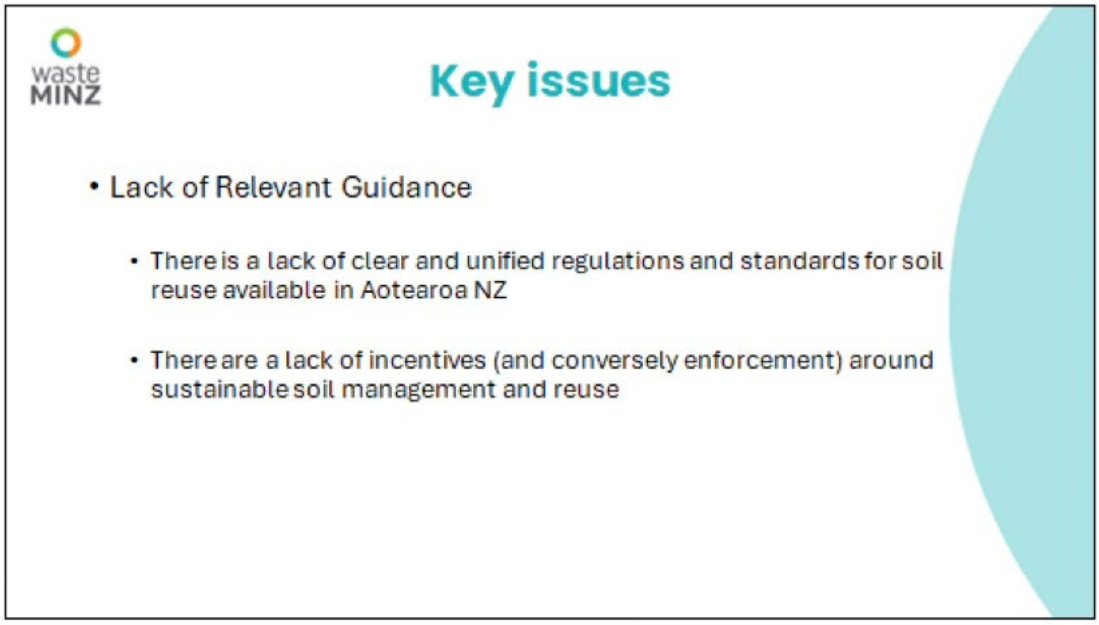
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MINZ
Key issues
• Lack of Relevant Guidance
• There is a lack of clear and unified regulations and standards for soil reuse available in Aotearoa NZ
• There are a lack of incentives (and conversely enforcement) around sustainable soil management and reuse

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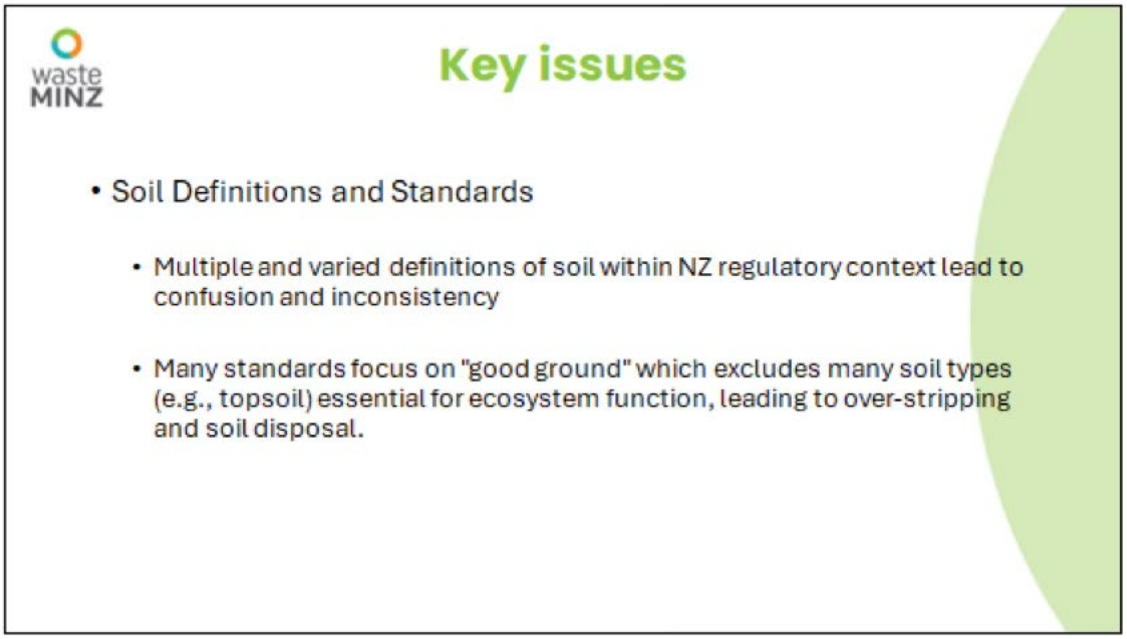
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Key issues
• Soil Definitions and Standards
• Multiple and varied definitions of soil within NZ regulatory context lead to confusion and inconsistency
• Many standards focus on "good ground" which excludes many soil types (e.g., topsoil) essential for ecosystem function, leading to over-stripping and soil disposal.

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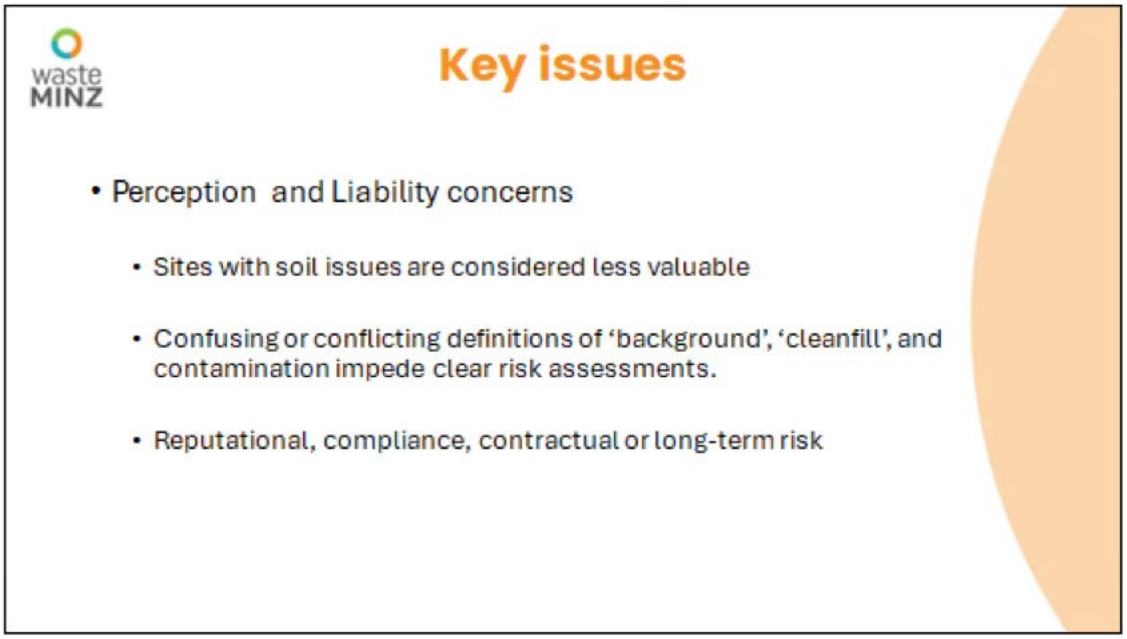
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Key issues
• Perception and Liability concerns
• Sites with soil issues are considered less valuable
• Confusing or conflicting definitions of 'background', 'cleanfill', and contamination impede clear risk assessments.
• Reputational, compliance, contractual or long-term risk

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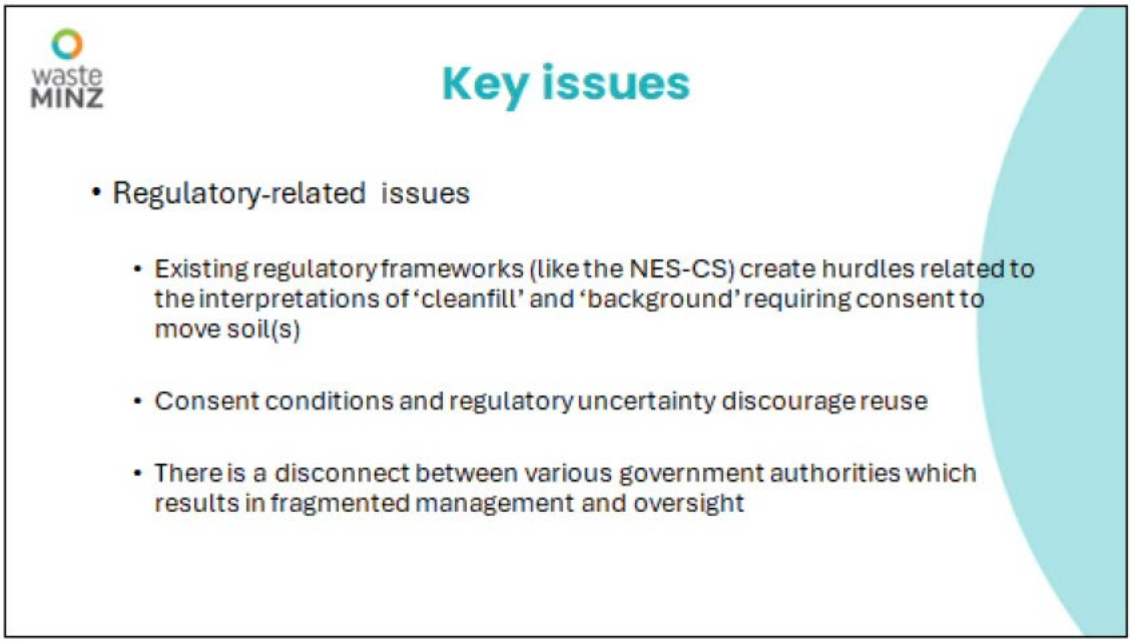
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Key issues
• Regulatory-related issues
• Existing regulatory frameworks (like the NES-CS) create hurdles related to the interpretations of 'cleanfill' and 'background' requiring consent to move soil(s)
• Consent conditions and regulatory uncertainty discourage reuse
• There is a disconnect between various government authorities which results in fragmented management and oversight

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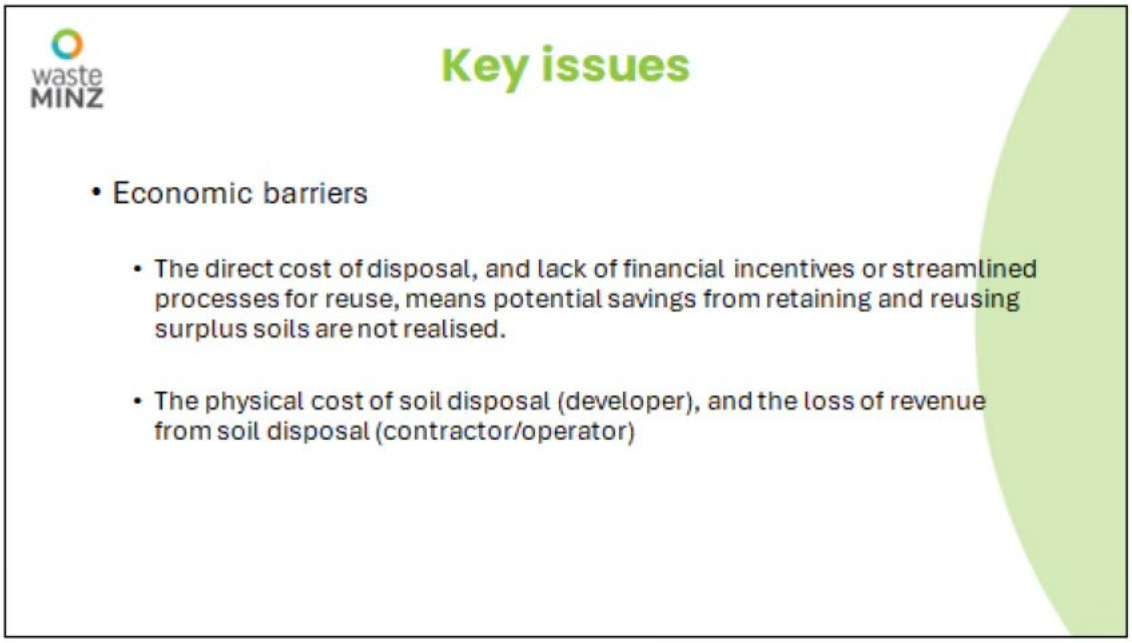
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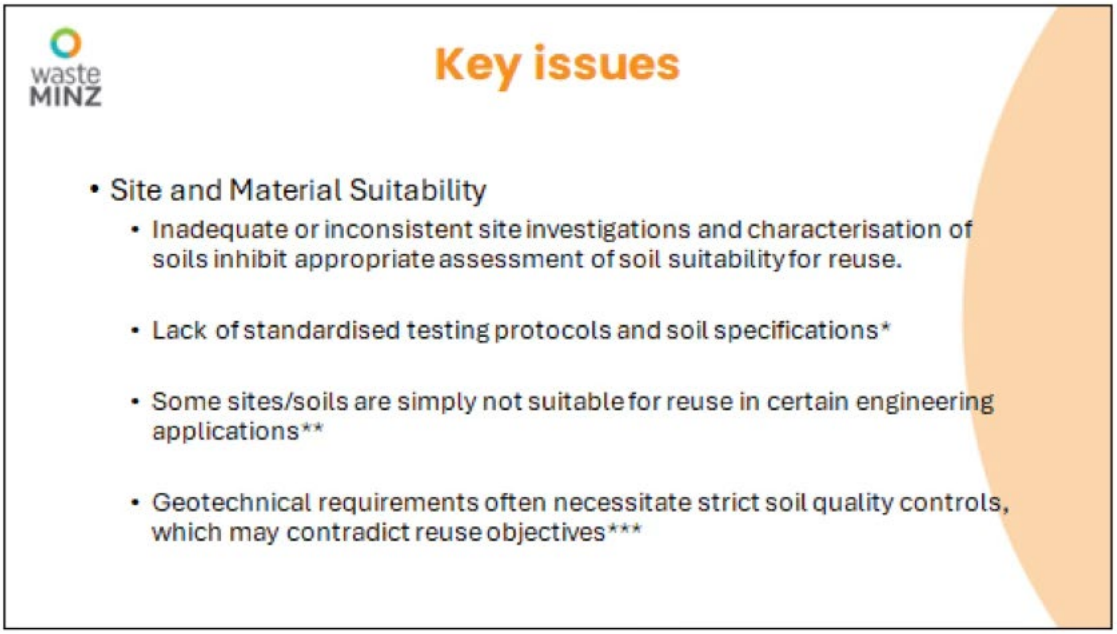
Key issues
• Economic barriers
• The direct cost of disposal, and lack of financial incentives or streamlined processes for reuse, means potential savings from retaining and reusing surplus soils are not realised.
• The physical cost of soil disposal (developer), and the loss of revenue from soil disposal (contractor/operator)

12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Key issues
• Site and Material Suitability
• Inadequate or inconsistent site investigations and characterisation of soils inhibit appropriate assessment of soil suitability for reuse.
• Lack of standardised testing protocols and soil specifications*
• Some sites/soils are simply not suitable for reuse in certain engineering applications**
• Geotechnical requirements often necessitate strict soil quality controls, which may contradict reuse objectives***

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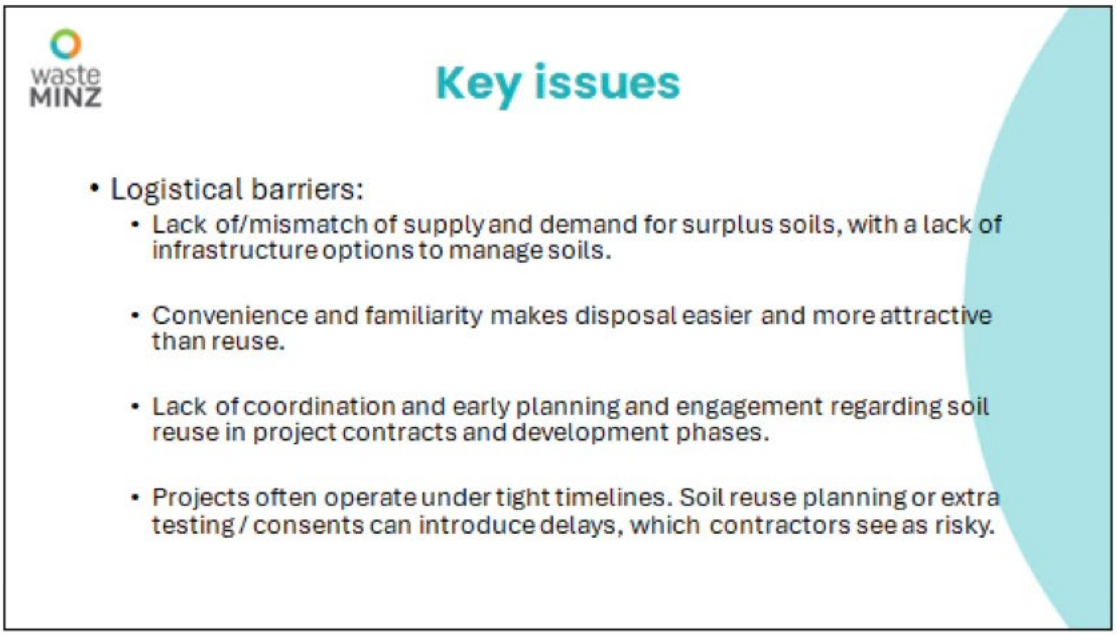
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Key issues
• Logistical barriers:
• Lack of/mismatch of supply and demand for surplus soils, with a lack of infrastructure options to manage soils.
• Convenience and familiarity makes disposal easier and more attractive than reuse.
• Lack of coordination and early planning and engagement regarding soil reuse in project contracts and development phases.
• Projects often operate under tight timelines. Soil reuse planning or extra testing / consents can introduce delays, which contractors see as risky.

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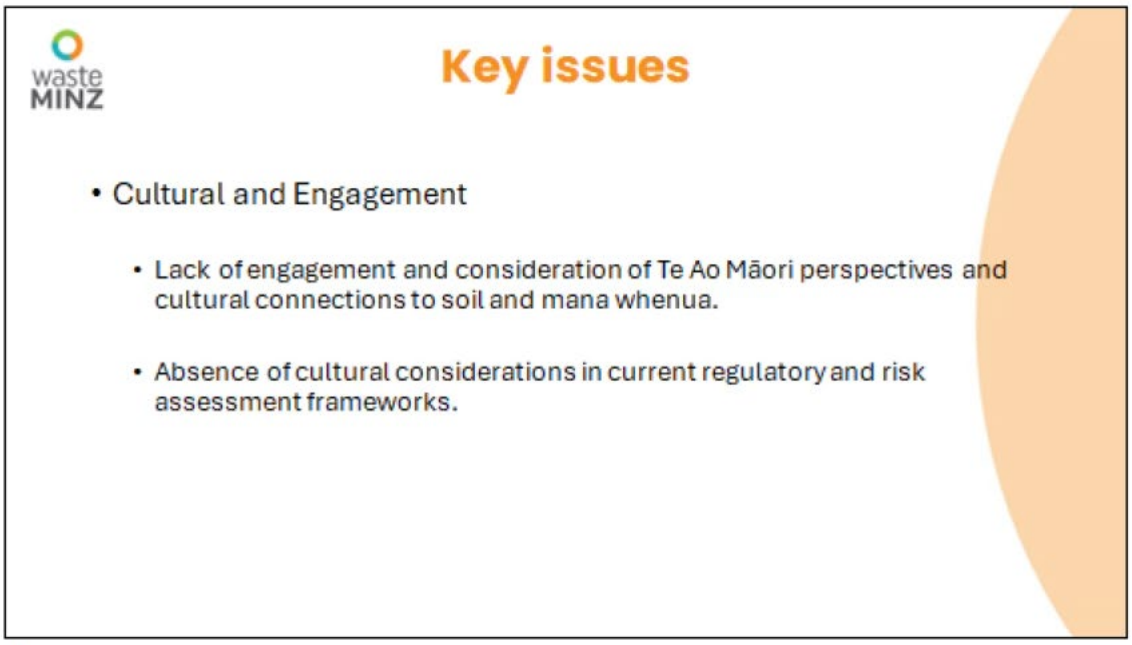
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Key issues
• Cultural and Engagement
• Lack of engagement and consideration of Te Ao Māori perspectives and cultural connections to soil and mana whenua.
• Absence of cultural considerations in current regulatory and risk assessment frameworks.

15


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Next steps

16

Consultation questions

Questions we would like you to consider are:

- Do you agree with the key issues identified / for your sector?
- How would you prioritise them to support moving toward the Vision?
- Are there any issues/gaps/barriers missing from the list that should be added?
- From your perspective, what is the biggest reason for soils not being reused/being disposed of?
- Why or how is this a problem?
- If there was one thing that could be done to improve it, what would it be?

17

Consultation and Feedback

Next steps
Report due to be submitted to MfE by end of October.

Ways to provide further feedback:
- Via a short survey
- Via email: madelon@wasteminz.org.nz

Feedback due 27 October

For more information or to subscribe to project updates:
https://www.wasteminz.org.nz/soil-surplus-project

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Appendix E **Survey**

* Required

Optimising Soil Reuse - Survey to inform the gaps and barriers analysis

1. Do you agree with the key issues identified for your sector?

   ◯ Yes

   ◯ No

   ◯ Partly

2. If you have answered 'no' or 'partly' agree with the key issues identified for your sector in the previous question, what do you feel needs changing?

3. How would you prioritise the issues identified to support moving towards the vision (please order from most important to be addressed to the least important)?

   Please click here to see the vision: https://www.wasteminz.org.nz/hubfs/Vision%20Statement_changes%20based%20on%20the%20consultation.pdf

- Cultural Engagement
- Economic Barriers
- Lack of Relevant Guidance
- Logistical Barriers
- Perception and Liability Issues
- Regulatory barriers
- Site and Material Suitability
- Soil Definition and Standards Issues
- Technical Site Investigation

4. Are there any issues/gaps/barriers missing from the list that should be added? And if so, how would you rank them against the issues listed under question 3?

5. From your perspective, what is currently the biggest reason for soils not being reused and being disposed of?

6. In your opinion, what is the number one action that should be taken to improve the current soil management system and enable the reuse of soils?

7. What do you think is (or could be in the future) the most significant consequence of soils not being managed appropriately?

About you

Your information is highly confidential, the following information is for internal research purpose only, all information will not be shared externally.

8. Name *

9. Email address *

10. Which industry are you working for?

- ◯ Central Government
- ◯ Consultant
- ◯ Contractors
- ◯ Developer
- ◯ Engineering
- ◯ Geotechnical and civil design
- ◯ Landfill operators
- ◯ Local Government
- ◯ NGO
- ◯ Quarries and/or cleanfill operators
- ◯ Research
- ◯ Other

11. What is your occupation?

12. Would you be happy to be contacted by the project team about your survey responses to provide further clarification if needed?

- ◯ Yes
- ◯ No

Appendix F Group email responses

28 October 2025

WasteMINZ
PO Box 305426
Triton Plaza
Auckland 0757

By email: madelon@wasteminz.org.nz

Dear Optimising Soil Reuse Project Team

Optimising Soil Reuse - Feedback on the gaps and barriers analysis

Thank you for the opportunity to provide feedback on the gaps and barriers analysis completed to support the project. This letter represents collective input received from regional and unitary authorities across Aotearoa New Zealand. It is acknowledged that each council will have nuanced perspectives, however, the following presents a consolidated view of the sectors response.

Agreement on Key Issues

Councils generally agreed with the key issues identified in gaps and barriers analysis. However, some important aspects were noted as requiring consideration. These included the need to address risks to groundwater and environmental receptors, which are critical for ensuring sustainable soil reuse practices. As well as naturally elevated minerals, that may influence soil classification and reuse potential.

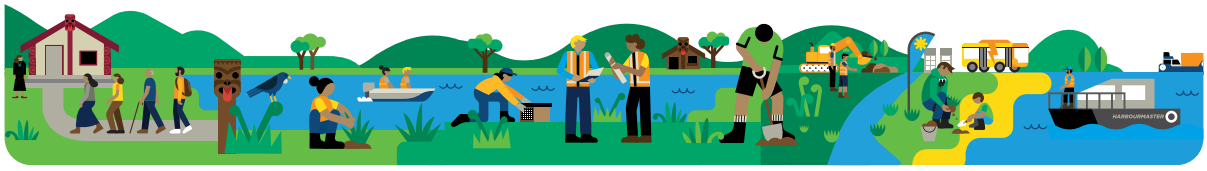
Prioritisation of Key Issues

The top three priorities identified by the sector were:

1. Regulatory barriers
2. Site and material suitability
3. Technical site investigation.

Improvement to these key issues were seen as fundamental to enabling effective soil reuse. While cultural engagement and economic barriers were ranked lower, these issues were still acknowledged as important. It was raised that cultural considerations should be integrated into planning processes, and economic incentives could play a role in promoting reuse practices.

A PO Box 364, Whakatāne 3158, New Zealand P 0800 884 880 E info@boprc.govt.nz W boprc.govt.nz



Additional Issues Identified

Other barriers identified by councils included:

- Under Regulatory Barriers delays in regional plan updates should be included. Ongoing delays in the creation of new regional plans leaves councils with an ageing consenting framework that impedes rather than enables soil reuse.
- Communication, engagement, and education is seen as its own barrier. Typically, information about soil quality and the resulting implications is available but is not communicated in a way that developers and contractors understand and can then consider the possible options to manage surplus soils in a cost-effective way before works are considered time critical.
- Under Perception and Liability misinformation should be included. Industry stakeholders often operate under assumptions about council expectations rather than actual requirements under current legislation, leading to overly conservative practices that hinder soil reuse.

Barriers to Soil Reuse

The most common reason resulting in soil being disposed of rather than reused was identified as geotechnical constraints. This was followed by risk aversion due to perceived contamination, as well as economic and time pressures of projects that favour landfill disposal.

Councils also noted a lack of clear reuse pathways and guidance, which contributes to uncertainty and conservative decision-making. Overly stringent concentration criteria and limited data on soil contaminants further complicate reuse efforts.

Recommended Actions

To address these challenges, councils identified the following actions to improve soil reuse:

- The development of a soil banking and tracking system was suggested to facilitate reuse across sites and regions.
- Clear national guidance and practical examples of successful reuse to build national confidence and consistency.
- Revisions to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS) to reduce regulatory barriers and support risk-based approaches.
- Improved inter-agency alignment and stakeholder engagement to foster collaboration and shared understanding.
- Promote risk-based approaches and better planning integration to embed soil reuse considerations into development processes from the outset.

Many regional and unitary authorities are actively implementing initiatives to improve soil reuse within the current regulatory framework. These include streamlining consent processes to allow the reuse of low-level contaminated soil, updating language associated with Land Information Memorandums (LIM) and Selected Land Use Sites Registers (SLUS) to reduce stigma, developing regional background concentration datasets, as well as encouraging record-keeping and tracking systems.

Consequences of Poor Soil Management

Councils expressed the following concerns about the consequences of poor soil management:

- Environmental risks from inappropriate relocation of soils.
- Irreversible loss of valuable life supporting productive soil resources.
- Increased landfill use and associated land use conflicts.
- Financial burdens leading to orphaned or stalled projects.

Additional Comments

The regional sector advocates for broader stakeholder involvement, particularly territorial authorities, acknowledging their obligations to administer the NESCS, which is identified as one of the underlying reasons the reuse of surplus soils in Aotearoa New Zealand is not more widely adopted as a standard practice. This would also ensure more diverse perspectives are considered.

We appreciate the collaborative nature of this project and look forward to continued engagement to develop a practical, nationally consistent framework that support sustainable soil reuse.

Please contact me if you wish to discuss any of the feedback further.

Yours sincerely

Rita Martin

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3 November 2025

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Dear Surplus Soils Project Team

Optimising Soil Reuse – Feedback on the Gap and Barrier Analysis

Thank you for the opportunity to provide feedback on the gap and barrier analysis to support the Optimising Soil Reuse project. We apologise for the delay in providing our response and appreciate your understanding and the chance to contribute to this important work. The following represents Tasman District Council's input based on regional experience with surplus soil management and contaminated land issues.

Key Issues

Tasman District Council generally agrees with the key issues identified in the gaps and barriers analysis. However, some important aspects warrant further consideration to ensure effective soil reuse and environmental protection, and maintain our productive land capacity.

Of particular concern is the need to address risks to groundwater and environmental receptors, and how naturally elevated minerals will be managed within current and future guidance. Tasman District includes a mineral belt containing naturally elevated copper, chromium, and nickel concentrations, which have not been mapped. This presents challenges when determining site and material suitability for soil reuse.

In addition, the definition of background concentrations requires clarification. We also need the difference between 'background' and 'non-harmful' levels of contamination to be clarified. We need a definition or a method to define safe levels of contamination so that soils can be reused – whether that's a permitted activity standard or, preferably, a change to the NES-CS regulations so that for non-harmful contamination levels materials do not need to go to an 'approved facility'.

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Under the NES-CS, the permitted activity for soil disturbance (Regulation 8(3)) allows soil to be taken off-site only to an authorised facility. This regulatory requirement interacts with background definitions (e.g., WasteMINZ Class 5) and can constrain reuse under the NES-CS framework.

Tasman also has a legacy of tobacco, orchard, and horticultural land uses, with widespread pesticide residues across production land. Soils in these areas typically require testing prior to subdivision, soil disturbance, or change of use. The surplus soil generated requires management prior to reuse and clear guidance on where the soil can be reused would be welcomed.

Priorities

The following issues were prioritised in order of importance:

1. Regulatory Barriers
2. Lack of Relevant Guidance
3. Site and Material Suitability
4. Perception and Liability Issues
5. Soil Definition and Standards Issues
6. Technical Site Investigation
7. Logistical Barriers
8. Economic Barriers
9. Cultural Engagement

Regulatory and technical clarity are viewed as fundamental to enabling appropriate reuse of soils.

Additional Issues

Tasman District Council recommends inclusion of the following additional issues:

• Groundwater and environmental receptor risks should be explicitly addressed in future guidance.

• Naturally elevated minerals should be considered as a distinct issue influencing classification and reuse potential.

• Regulatory requirements under the NES-CS for off-site disposal to authorised facilities create significant barriers, particularly where local disposal options are limited and landfill costs are high.

• Clearer decision-support tools—for example, flowcharts for assessing reuse and disposal options—would assist practitioners and councils in making consistent, risk-based decisions.

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Liability concerns remain significant. Councils risk assuming future liability where soil movement is approved based on limited contaminant testing (e.g., limited pesticide suites or untested asbestos). There are also instances of contaminated soil being placed on land vested to councils (reserves and roads), creating long-term liability for future soil disturbance.

Barriers

Key barriers to soil reuse in Tasman include:

- Regulatory requirements for off-site disposal under NES-CS provisions.
- Risk aversion linked to liability and uncertainty over contaminant presence.
- Lack of clear regional guidance for soil reuse and decision-making frameworks.

Other Comments

To improve soil reuse and reduce unnecessary disposal, Tasman District Council recommends:

- Development of comprehensive national guidance for soil reuse, including decision-tree flowcharts and case examples.
- The treatment of HAIL I sites and metal contamination from historic lead paint, which often fall outside standard reuse considerations.
- Review of waste disposal criteria across WasteMINZ Classes 1–4 to address inconsistencies (e.g., there is a discrepancy in waste disposal criteria between Class 1 and 2 compared to Class 3 and 4, highlighting the need to also review Class 1 and 2 values. For example, for Class 2, TCLP testing is required for cadmium concentrations above 4 mg/kg, whereas Class 3 allows concentrations as high as 10 mg/kg without any leaching tests).
- Standardised testing specifications for soil reuse applications such as bulk fill, horticultural use, and large stockpiles (>1,000 m^3).
- Guidance on leaching tests, including triggers for testing and interpretation of results.
- Mapping tools to identify aquifers, land use, and geology to inform where reuse or disposal is appropriate.
- Standards for production land, including zinc levels in orchard soils and the influence of soil chemistry on crop health.
- Improved understanding and coordination of soil reuse opportunities, potentially through development of regional or national “Soil Hubs.”
- Consideration of environmental certification or “fit-for-purpose” designations for reused materials.

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Consequences
There is concern that poor soil reuse may lead to the accumulation of contaminants in production land and the potential for adverse effects on land and water resources. This would undermine the principles of sustainable land use and soil protection.

Current Actions
Tasman District Council is developing HAIL decision trees to support consistent consenting advice for planners considering land use changes and subdivisions. There had also been intent to introduce plan provisions enabling reuse of lightly contaminated soils in appropriate locations; however, this work is currently paused pending national legislative reform, and it will be important to ensure that regions have sufficient flexibility in any framework developed to use agreed approaches across regional boundaries (i.e., to ensure the Tasman District Council–Nelson City Council situation can be addressed collectively).

Tasman District Council appreciates the opportunity to contribute to this important discussion and supports ongoing collaboration to develop a practical, risk-based, and nationally consistent framework for sustainable soil reuse across Aotearoa New Zealand.

Yours sincerely,
Soil & Contaminants Team
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