

What are we really protecting in our current management of contaminated land?



Contaminated land ~ contaminated soil



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

Jerry Mateparae, Governor-General

Order in Council

At Wellington this 10th day of October 2011

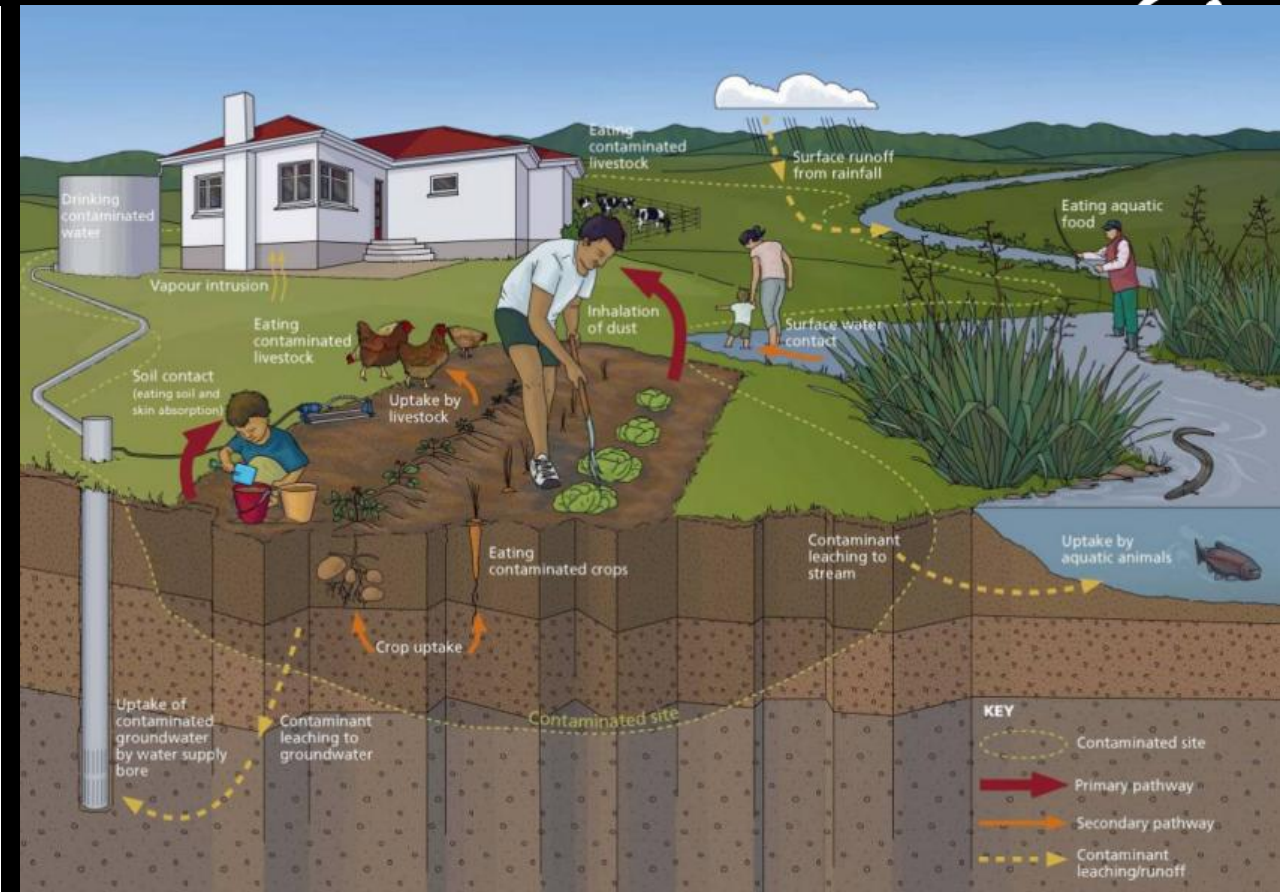
Present:

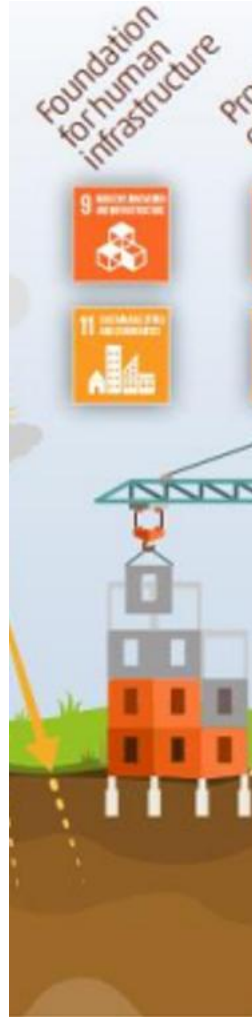
His Excellency the Governor-General in Council

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

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| 11 | Discretionary activities |





Provision of food, fibre and fuel



Soil is a valuable resource – why do we continue to dispose it to landfills?

The value of urban soils



Are we building harder, hotter cities?

The vital importance of urban green spaces

March 2023



Urban ground truths

Valuing soil and subsoil in urban development

March 2024



Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata

- National direction for urban soils and its services
- MfE to develop guidance
- Regional councils, territorial authorities and other relevant agencies should encourage developers to:
 - conserve and protect soil
 - reuse soils on-site instead of disposing of them off-site when the soil in question poses a low level of risk to people and the environment



Parliamentary Commissioner for the Environment
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- Focus is on land undergoing change i.e. there is no trigger for investigation of land not undergoing change, even though it may be contaminated [*passive discharges*]
- Human health focus

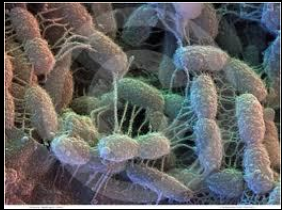
Table B2: Soil contaminant standards for health (SCS_(health)) for inorganic substances

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

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

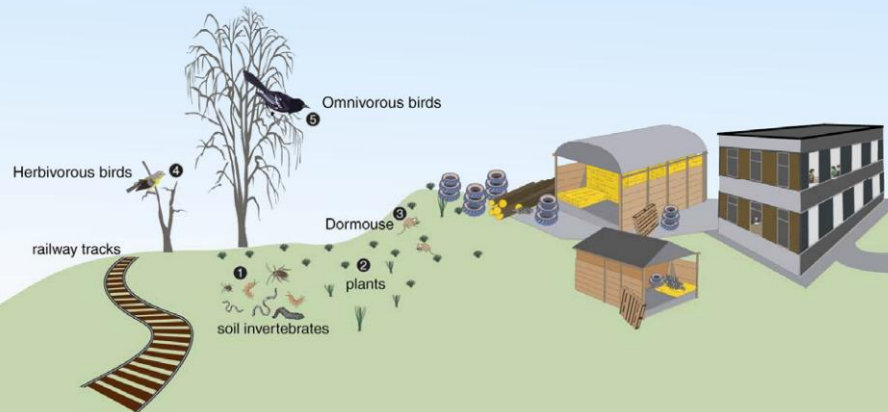
¹ Default value is for soil that is pH 5. Concentrations increase with increasing pH (see *Methodology*).

- Missing gap – ecological receptors



Exposure Pathways

1. Soil invertebrates take up contaminants through soil ingestion and direct contact.
2. Plants uptake contaminants from soil via their root system.
3. Omnivorous mammals (Dormouse) uptake contaminants through ingestion of plants, invertebrates and the incidental ingestion of soil.
4. Herbivorous birds uptake contaminants through ingestion of plants, seeds and the incidental ingestion of soil.
5. Omnivorous birds uptake contaminants through ingestion of plants, invertebrates, and other prey items and the incidental ingestion of soil.



An implementation framework for ecological soil guideline values

Envirolink Tools Grant: C09X2206

Protecting soil quality and managing contaminated land

June 2023

- [offsite movement – groundwater, surface water, air]

Proposed actions in event of non-compliance

| Value name | information source | Action in event of non-compliance |
|--|---|--|
| Target value (95% protection level) | DSI | Nothing other than potentially information to land manager about improving soil quality. Can be potential remediation targets (except for Cu and Zn) |
| Site investigation trigger – ‘soft’ action level (80% level) | DSI | <p>Te ao Māori aspirations are met for maintaining mauri Identify contaminated land for all land uses except commercial/industrial.</p> <p>Site investigation report includes assessment of options for mitigating risk eg reducing any ongoing inputs of eg Cu, Zn, as well as assessment of potential offsite risks. Advice on actions to remediate/reduce contaminant concs/mitigate risk to land-owner/manager.</p> <p>Would assist Māori in assessment, monitoring, and co-management, e.g. off site, to achieve te mana o te wai</p> |
| Limit value – ‘hard’ action level (60% protection level) | DSI, further investigation/ risk assessment | <p>Identify contaminated land for commercial/industrial land (excludes sealed/hard compacted areas)</p> <p>The intent is that non-compliance at this level gives rise to greater requirement to further assess risk/effect from contaminants including offsite risks, and risk mitigation – the incentive for risk assessment over ‘dig and dump’ is that demonstration of no effect/no risk can provide the basis for no further action (and therefore reduced cost).</p> |



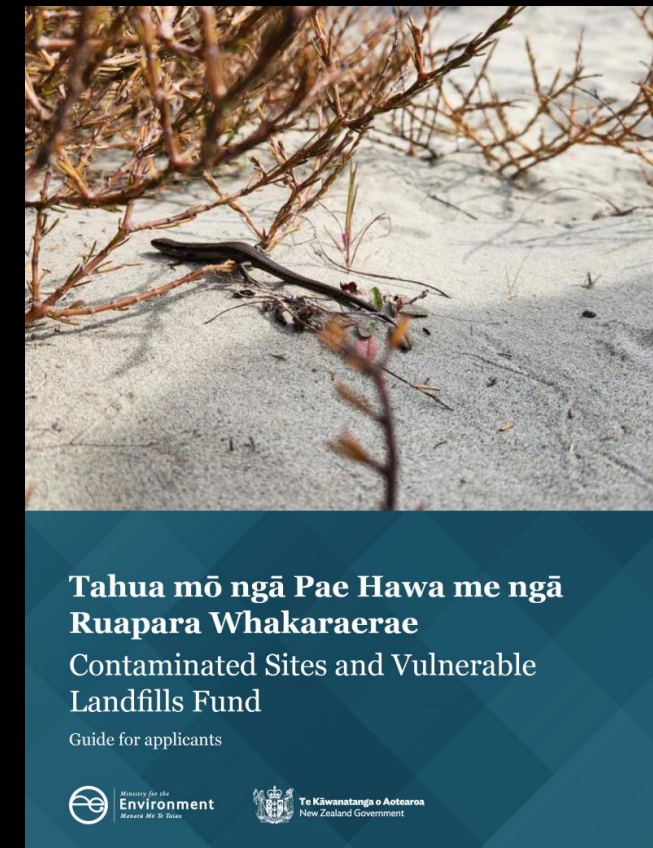
Application of Eco-SGVs in CLM

- Combined HH & Eco-SGVs values have been developed to enable 'easy' application to land-uses specified under NES

| Potential interim values | As (mg/kg) | Cd (mg/kg) | Cr III (mg/kg) | Pb (mg/kg) | BaP only (mg/kg) (BaP-eq) | DDT (mg/kg) | B (mg/kg) | Cu (mg/kg) | Zn (mg/kg) |
|--|------------|------------|----------------|------------|---------------------------|-------------|-----------|------------|------------|
| Rural residential/lifestyle (25% produce consumption) | 17 | 0.8 | 390 | 160 | 22 (6) | 4.8 | 15 | 245 | 320 |
| Residential produce 10% | 17 | 3 | 390 | 210 | 22 (10) | 4.8 | 15 | 245 | 320 |
| High-density residential | 45 | 12 | 390 | 500 | 22 (24) | 4.8 | 15 | 245 | 320 |
| Recreational area (80%) | 60 | 12 | 390 | 880 | 22 (40) | 4.8 | 15 | 245 | 320 |
| Commercial/industrial outdoor/industrial outdoor work* | 70 | 40 | 660 | 2500 | 22 (35) | 4.8 | 15 | 430 | 510 |

* 60% protection level

Preventing soil contamination vs managing soils that are already contaminated



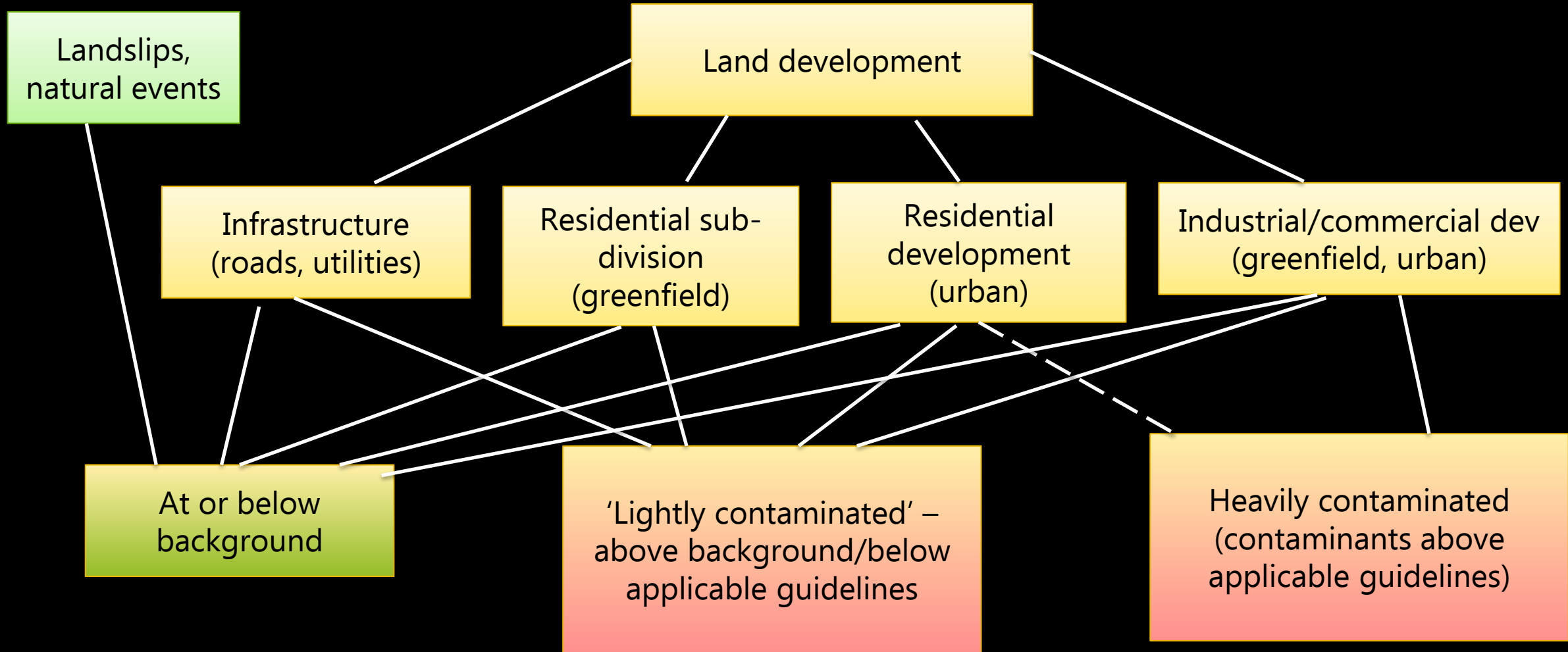
Surplus soils....



- 'Surplus' soils are those that have been disturbed through land development (including infrastructure development) or natural activities (e.g. landslips, silt/sediment) that are unable to be used on-site



'Sources' of surplus soil



A key driver for generation – NES-SC?



- 5(9) These regulations **do not** apply to a piece of land [must be HAIL]... about which a detailed site investigation exists that demonstrates that any contaminants in or on the piece of land are at, or below, background concentrations.
 - Implies that regulation **do** apply to [HAIL] land with concentrations above background, even if below any relevant human health criteria or environmental guideline
- Thus, under, 8(1)(f): soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind [to be a permitted activity]
 - Commonly taken to be a landfill (if not a landfill, requires authorisation)
- Contrasts with the discretion allowed in transport, disposal, and tracking of soil and other materials taken away in the course of the activity under controlled or discretionary activities (reg 9)

Guidance on the sustainable management of 'surplus' soil and subsoil: consultation draft

Envirolink Grant: C09X2206

Prepared for: Contaminated Land and Waste Special Interest Group,
Land Monitoring Forum

August 2023

Technical Guidelines: Characterising Surplus Soil for Disposal

Waste Management Institute New Zealand Incorporated (WasteMINZ)

September 2024

Reclaiming Resources: Optimising Soil Reuse in Infrastructure and Development

Prepared by Rod Lidgard, CEnvP SC (Pattle Delamore Partners Limited; lead author), Tim Dee (Fulton Hogan Limited), Chris Hillman (Tonkin and Taylor Limited), Kevin Tearney, CEnvP SC (SLR Consulting), Josh Evans (Waikato Regional Council) and Sarah Newall, CEnvP SC (HAIL Environmental Limited), with the support of Madelon de Jongh, on behalf of the WasteMINZ Contaminated Land Sector Group Steering Committee and WasteMINZ.

Wasteful soil practices costs New Zealand infrastructure and developers billions of dollars in direct costs and time each year. Inefficient use of this finite resource costs New Zealanders billions more in emissions from cartage and disposal, losses of landfill airspace, valuable soil resources, and increased pressure on roading networks. We have a solution, and we seek financial support to create a framework for the beneficial reuse of soil.

- Est 4.5M - 7.5M tonnes soil disposed to landfills at an approximate total cost of around \$1.35B - \$2.25B
- Contaminated soils above background are often perceived as a liability



Points of intervention

- Decisions for disturbing soil
- Decisions on removing soil from site
- How often is soil contamination the requirement for removal vs development requirements?
- How often does soil contamination influence where/how the soil can go?
 - Can we develop nationally agreed processes to support and streamline beneficial re-use?



- Principles for surplus soil sustainable management framework [beneficial reuse of soil framework?]
 - The generation of surplus soil and fill should be minimised by minimising the disturbance of soils and maximising on-site reuse
 - Reuse of soils on-site, and at alternative sites, needs to have a clearly defined beneficial use
 - There should be a clear understanding of the properties of soil required to achieve beneficial reuse, and that soils are fit for purpose
 - Disposal of soil to landfill should be made less cheap and convenient
- Addressing regulatory and logistical challenges
 - Redesign
 - Development of clear national processes for soil movement and handling, and 'soil hubs'
 - ***Development of explicit soil reuse criteria (based on most sensitive receptor)***
 - ***can we ditch 'background' concentration?(!)***

Changing legislative setting.....



- Modification of NES
 - amend 8(1)(f), 8 (3)(e) – could be - soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind *or applied/re-used in accordance with a rule in a relevant regional or district plan or resource consent*
 - Key principle needs to be it is as easy to reuse as it is to dispose to landfill
- Maximise opportunity for discretion/control for the transport, disposal, and tracking of soil and other materials taken away in the course of the activity or REMEDIATION TARGETS
- [what would happen if 5(9) background soil concentration clause was deleted?]
- NPS or higher-level strategy (National soil strategy?) to identify **desired outcomes** to help reduce inconsistency between councils etc



- The Planning Act
- Natural Environment Act
- How will environmental limits work?

Reforming the resource management system – replacing the RMA