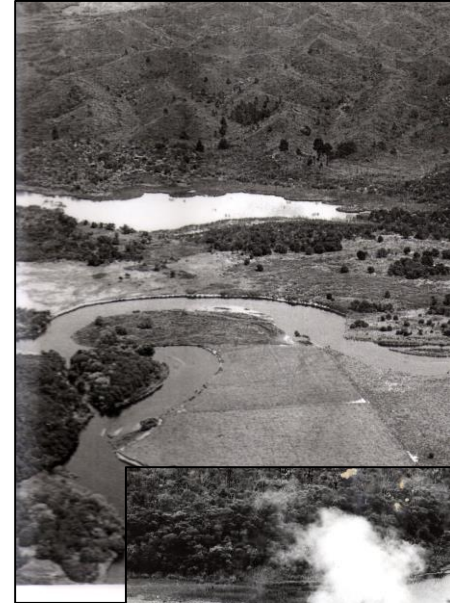


When Tier 1 isn't enough: Understanding the limits of conservative screening criteria

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Site Background

- Culturally and historically significant area for local iwi
- Traditional uses:
 - Bathing in the lake
 - Gathering kai, cooking in the lake (shell fish, eel, pipi)
 - Growing kumara
 - Holding wānanga
 - Urupā



Landfilling

- Land acquired in 1970s landfilling by the local mill.
- ~2,500,000m³ of waste deposited up to 2013
- Closure?

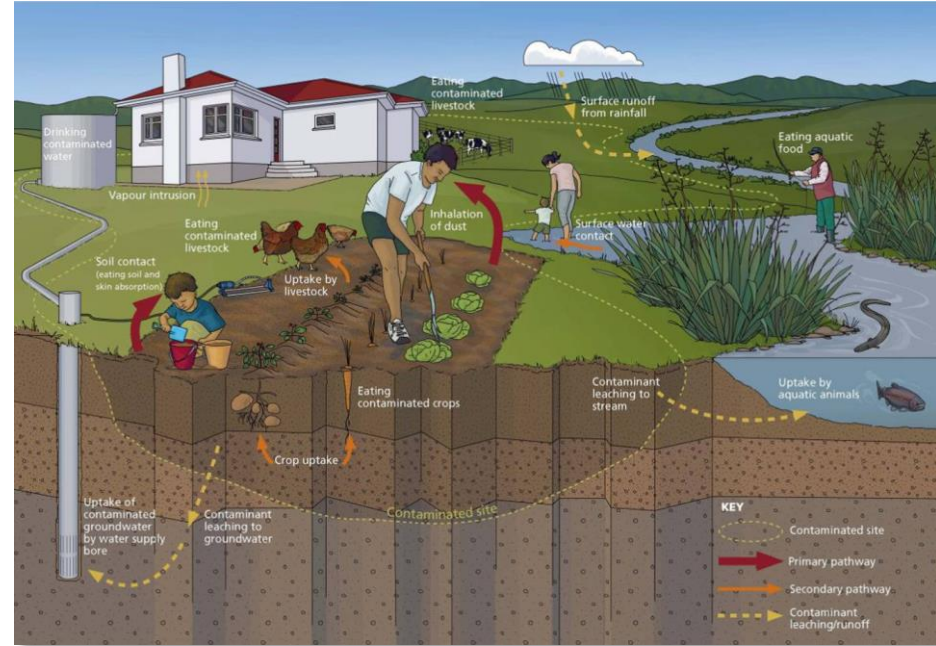




- Assumptions cover most people in NZ. E.g.

- Time on site
- Children / adults present
- Produce consumption

Consider Tier 2 if these are over-conservative



Tier 2 Assessment

- Part of legal case – did the lessee meet their obligations?
- Four scenarios / hypothetical people over their lifetimes
- Key considerations:
 - Lifetime relationship with site
 - Kaitiaki
 - Arsenic (non-threshold)
 - Dioxins (Threshold)

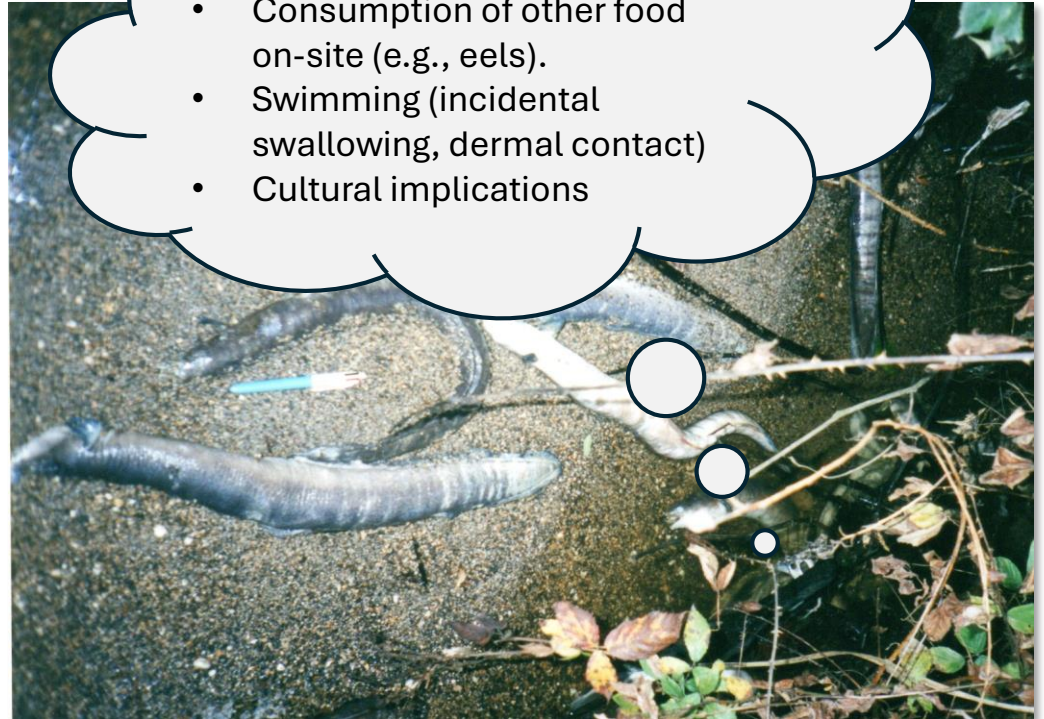
Scenario	Assumptions	Arsenic SCS	Dioxin SCS
<i>Tier 1 SCS -Standard Residential</i>	<i>Per MfE</i>	<i>20 mg/kg</i>	<i>0.15 µg I-TEQ/kg</i>
<i>Tier 1 SCS – Recreational</i>	<i>Per MfE</i>	<i>80 mg/kg</i>	<i>0.6 µg I-TEQ/kg</i>
1 – Long-term steward of the site	<ul style="list-style-type: none"> Once per week gardening / maintenance throughout entire life 10% produce consumption 	27.4 mg/kg	0.630 µg I-TEQ/kg
2 – Active member of family garden	<ul style="list-style-type: none"> 0.5 visits per week as a child, 1 visit per week as an adult 12% (child) / 25% (adult) produce consumption 	30.1 mg/kg	0.525 µg I-TEQ/kg
3 – Recreational use as child; infrequent return as an adult	<ul style="list-style-type: none"> Half of school holidays at the site, 10 days per year as an adult ~10% produce consumption as a child, ~2% as an adult 	69.7 mg/kg	0.521 µg I-TEQ/kg
4 – Recreational use over lifetime; no produce consumption	<ul style="list-style-type: none"> Half the exposure frequency of MfE recreational scenario, but over entire life duration (75 years) 	63.5 mg/kg	1.20 µg I-TEQ/kg

Risk Assessment

- ~25% of results exceed criteria for arsenic
- Limited sampling for dioxins
- Unacceptable risks if historical uses of land were to continue

Exclusions:

- Consumption of other food on-site (e.g., eels).
- Swimming (incidental swallowing, dermal contact)
- Cultural implications



Conclusions

- Traditional uses of site not captured by default scenarios
- Recreational scenario non-conservative
- Other exposure pathways beyond MfE SCS
- Cultural implications of contamination

