



Storm Environmental

To Stopbank or Not to Stopbank?

A Case Study

Peter Christensen



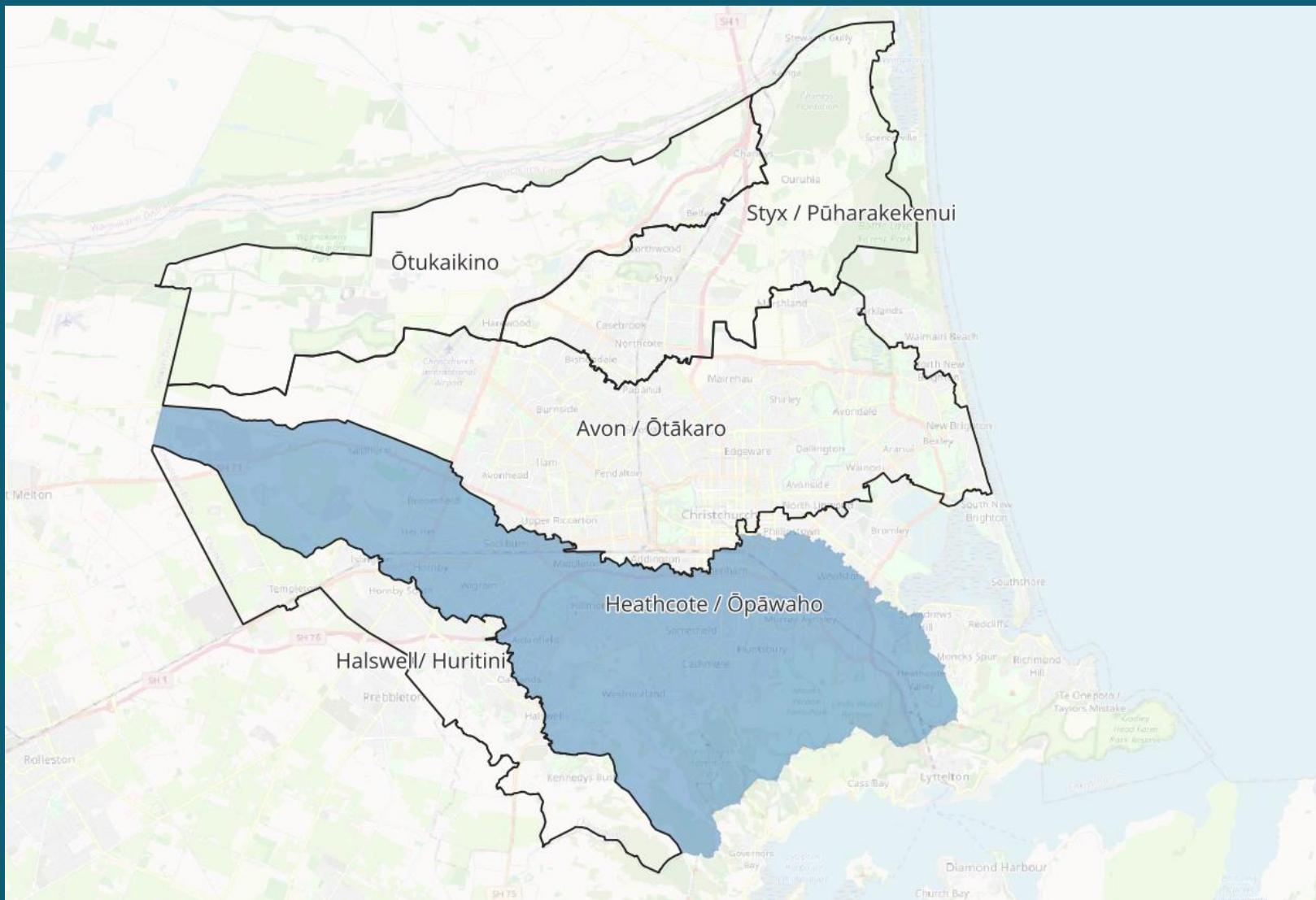
Stormwater 2023

Te Roopu Wai Āwhātanga

23–25 May | Cordis, Tāmaki Makaurau Auckland

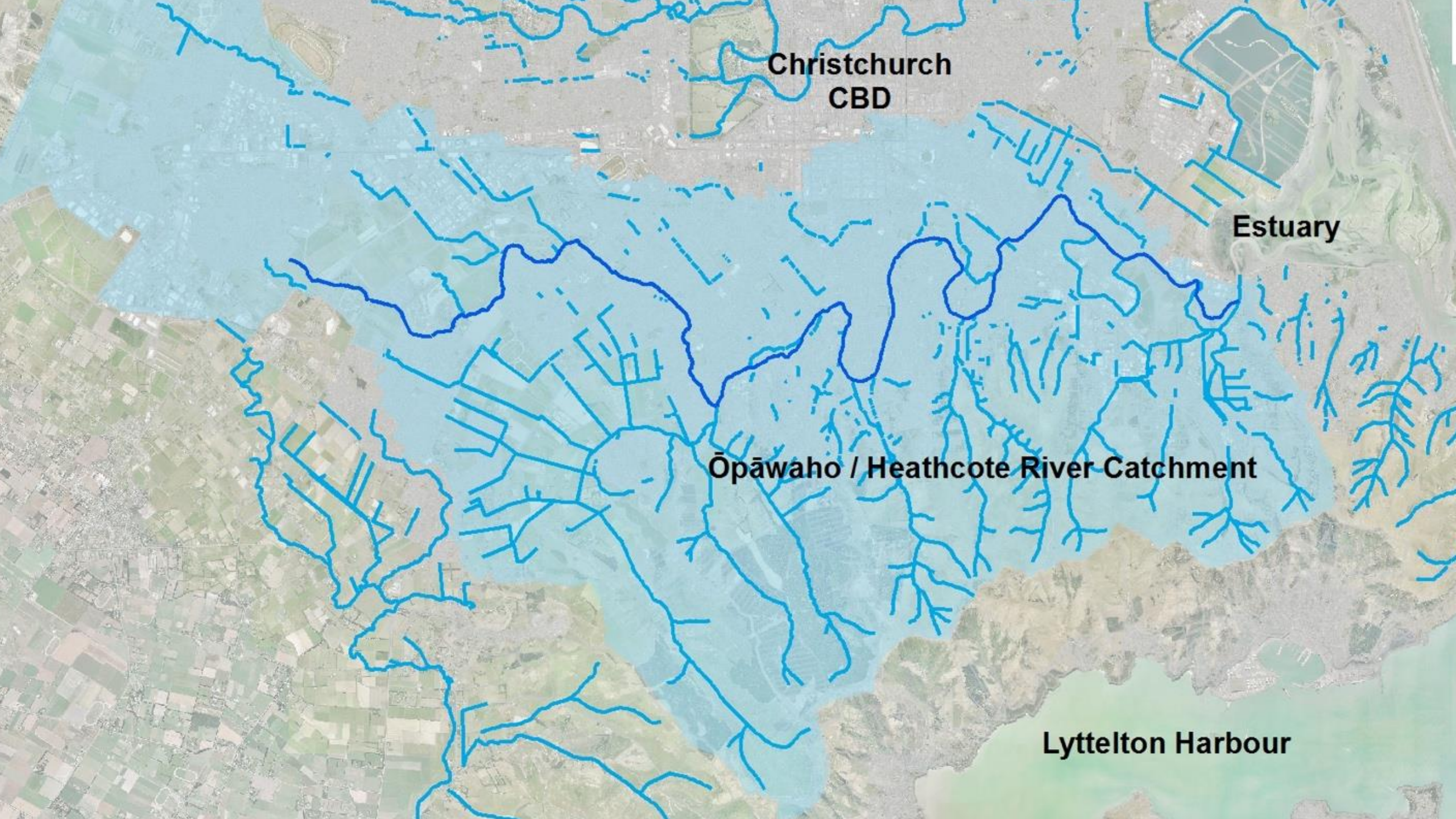
What is the 'fix' to flooding?





Background



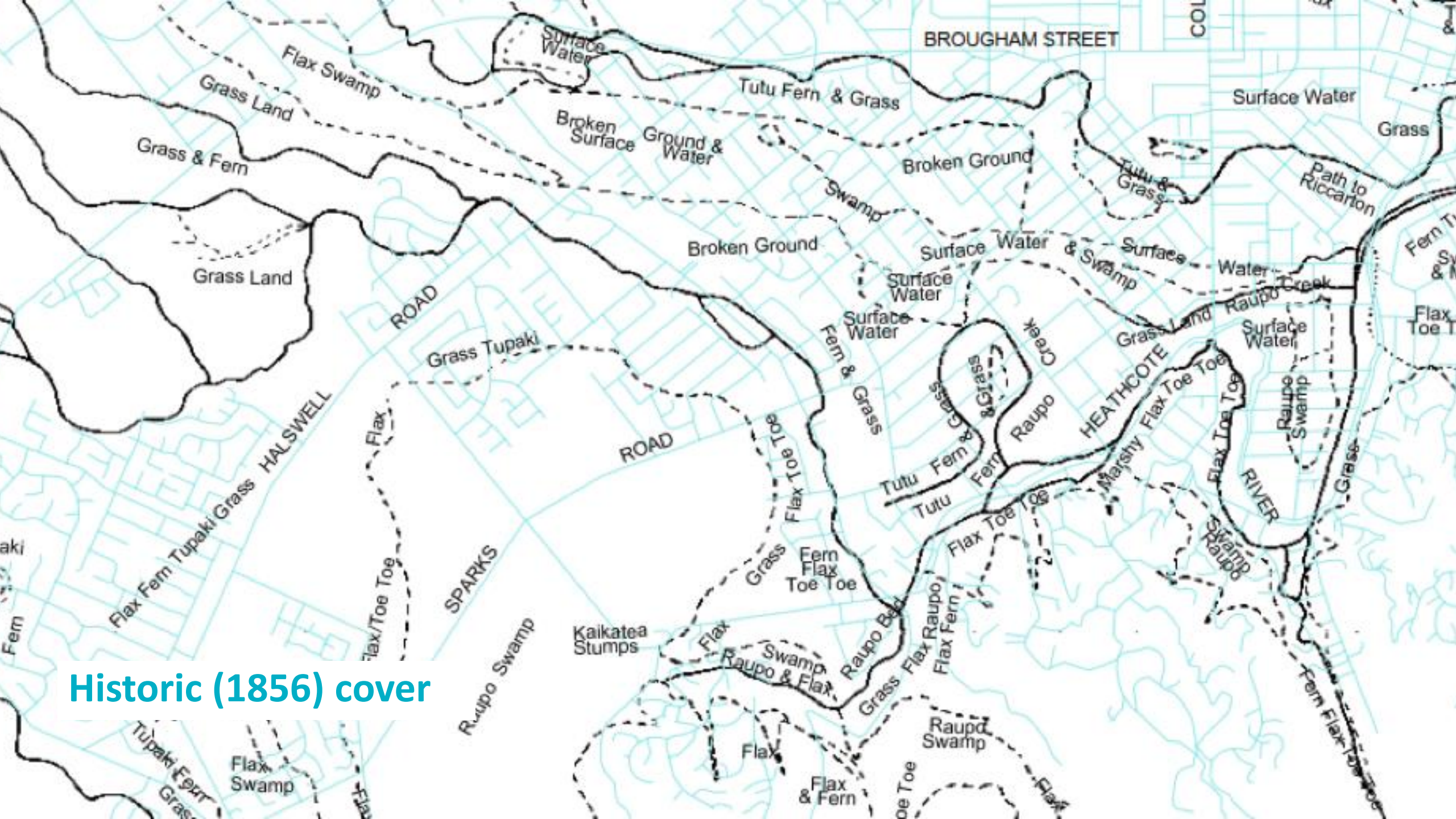


**Christchurch
CBD**

Estuary

Ōpāwaho / Heathcote River Catchment

Lyttelton Harbour



Historic (1856) cover

A history of flooding



Historic floodplain infill



No floodplain (2019)



Historic floodplain infill



Post-EQ flooding in Heathcote

Flooding 2017



Heathcote River Floodplain Management Plan (2017)

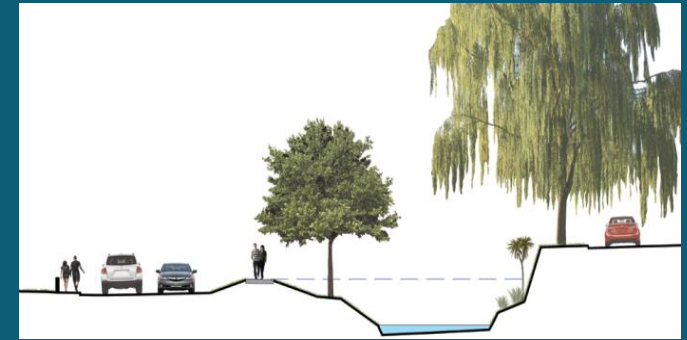
Storage



Dredging



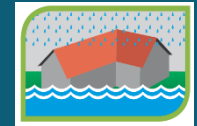
Stopbanks?



Bank stabilisation



Property purchase



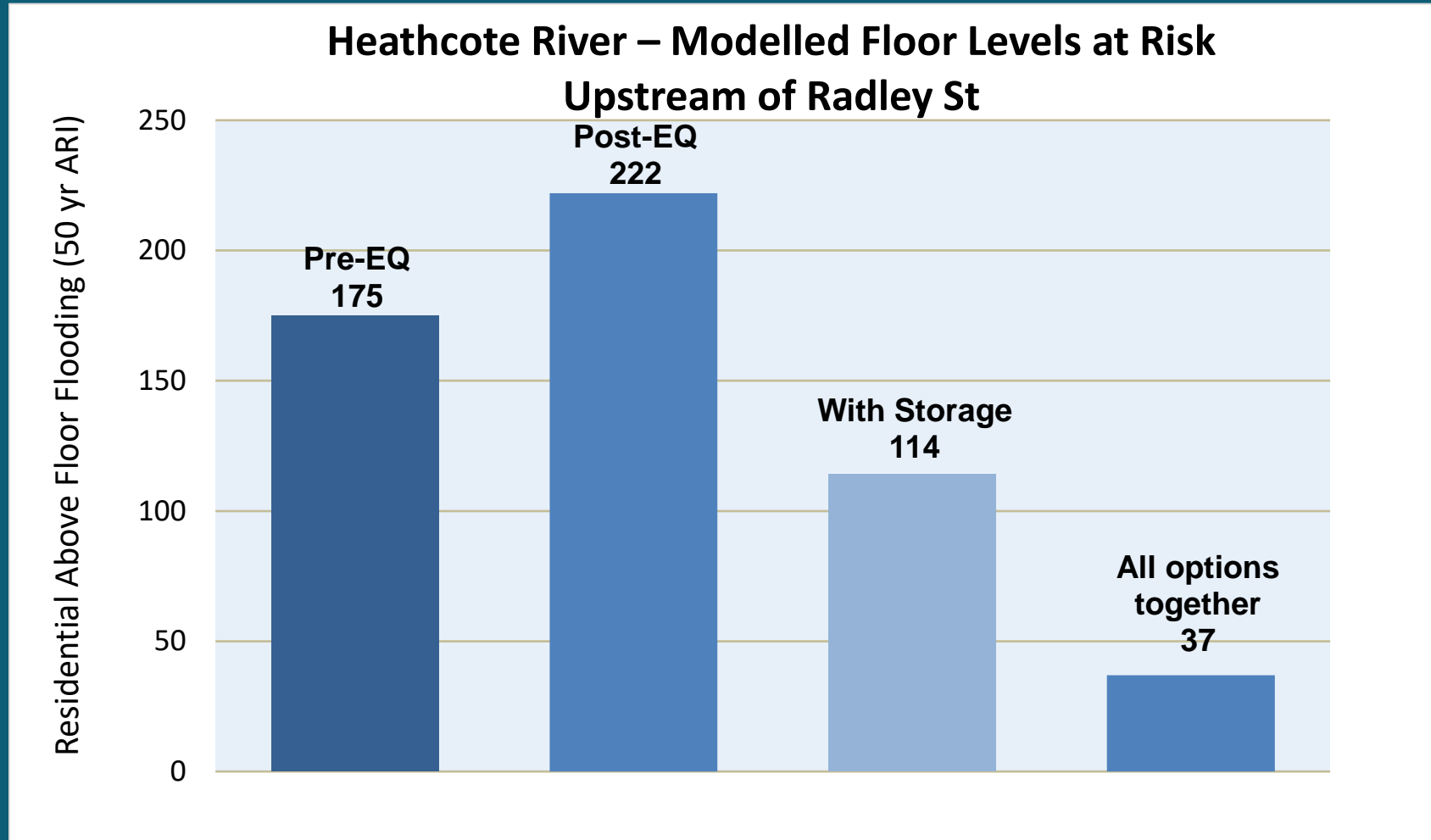
The New Zealand Water & Wastes Association Waiora Aotearoa

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Scheme benefits on flooding (2% AEP)



High stopbanks – not an option!

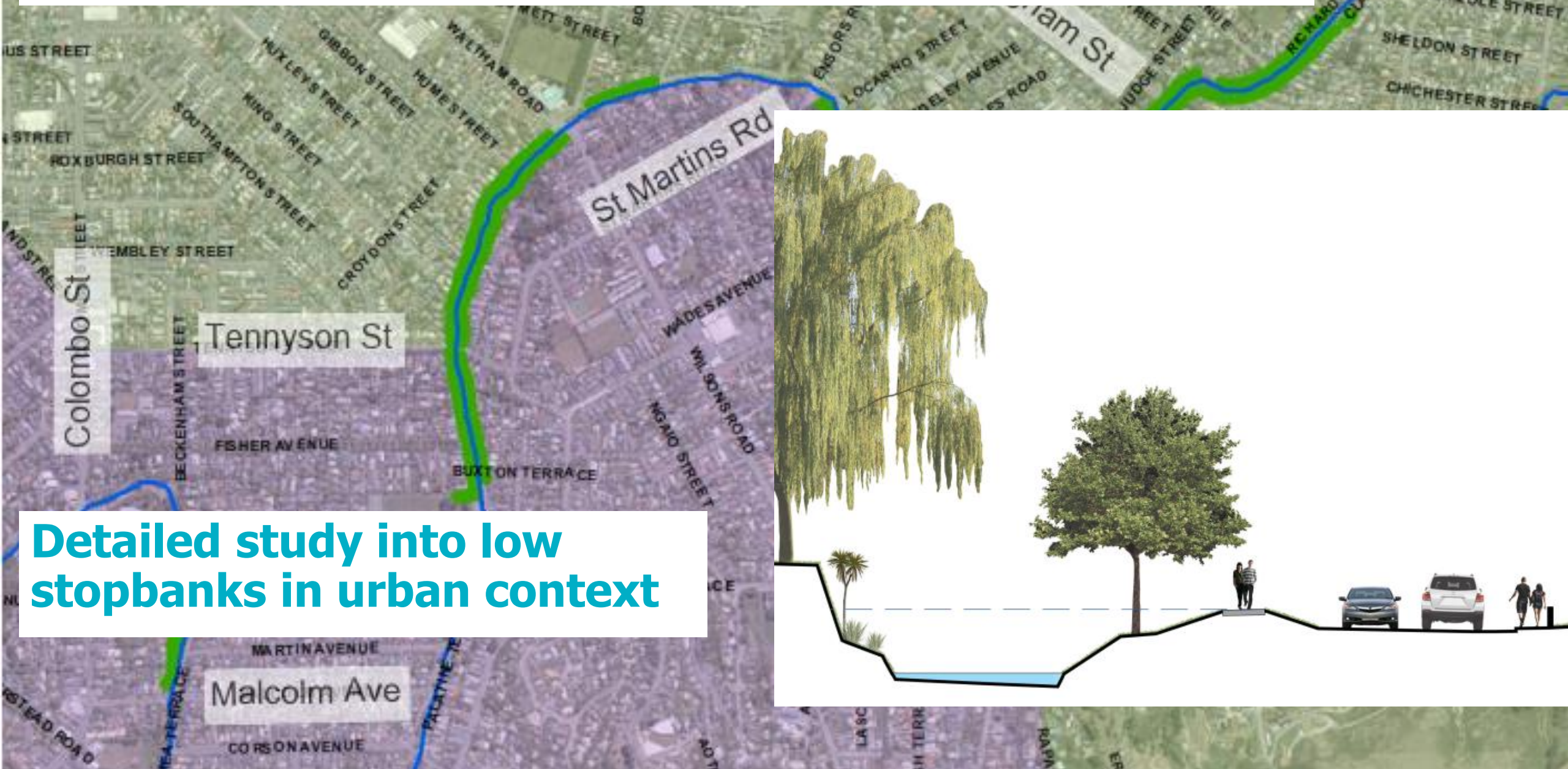


Frequent underfloor flooding impacts

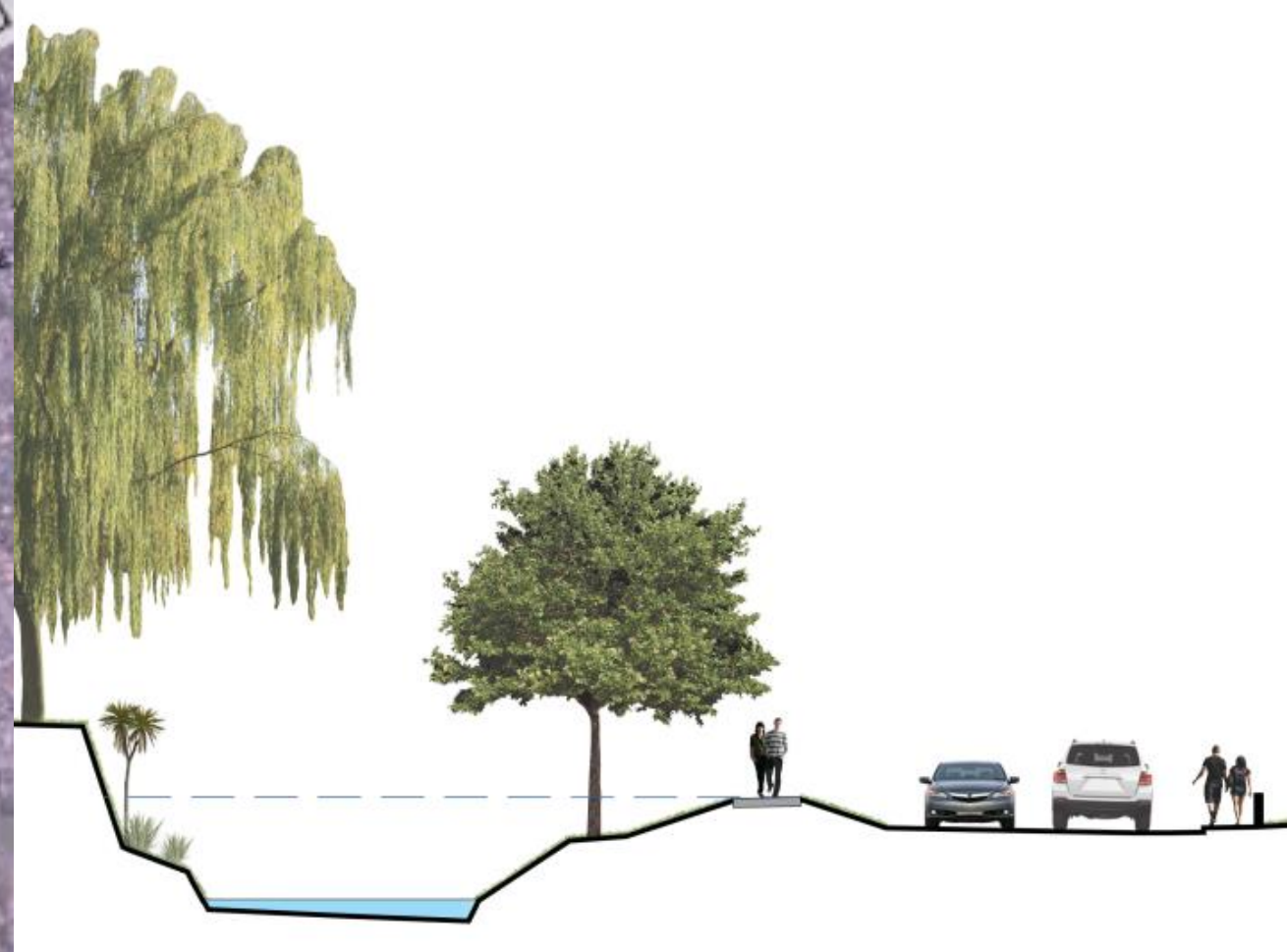
- Well-being affected by frequent flooding
- High losses due to no insurance or high excesses
- EOC activation
- Wastewater overflows to river (reduces inflows)
- Sewage on property/streets
- Damage to roads
- Danger to life
- Reputational damage to Council



Low stopbank feasibility study



Detailed study into low stopbanks in urban context



Low stopbank feasibility study

Study considered:

- Impact on transport, parking, accessibility
- Ecological impact – trees, aquatic ecology
- Effects and mitigation of stormwater
- Impact on services
- Landscape impacts
- Constructability
- Resilience, particularly to lateral spread or subsidence along the river edge
- Safety



Engagement

What does the community think?

- Immediately post-flood lots of calls for stopbanks
- When engaged with, feedback was more mixed
- Some supportive due to impacts of flooding
- Some concerned about river character being lost
- Ultimately little negative feedback when it was cancelled



Ōpāwaho Heathcote River Floodplain Management and Low Stopbanks

Webinar - July 2022

Christchurch
City Council

water
NEW ZEALAND
The New Zealand Water & Wastes Association Waiora Aotearoa



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To stopbank or not to stopbank?

Staff recommended not to, because:

- Setting a precedent for a similar level of service city-wide
- Inconsistent with the current approach elsewhere in the city
- Residents may consider flooding to be 'fixed' - leads to a less resilient outcome through community complacency
- Encourages ongoing investment in flood-prone areas
- Could be seen as predetermining a long-term approach of 'defending' against flooding, rather than changing land use and adapting to living with water
- When an overtopping flood occurs, residents may be caught unaware as the early signs of road flooding would not be present
- The community may expect Council to make the stopbanks higher over time rather than accepting the level of service provided.

Conclusions

- Flood 'protection' works leave gaps – acknowledge these
- Stopbanks have their place but can lead to unintended consequences
- A measured decision-making process considering the full range of benefits and costs is crucial
- This case study shows that it was appropriate to decide against stopbank construction in this instance
- Decision specific to a point in time and place – may be appropriate in other places or future time, eg daily tidal flooding

Acknowledgements

- Thanks to Christchurch City Council staff and consultancies involved in the project.
- Thanks also to the residents along the Ōpāwaho / Heathcote River for sharing their knowledge and experiences of flooding.