



MINDING THE GAP: REFLECTIONS ON TEN YEARS OF FLOOD RECOVERY WORK

Peter Christensen





Understanding the gap

What are we doing well?

What can we learn from others?

Where do we need to be making the biggest changes through advocacy and practice?



Christchurch earthquake effects on flooding

Direct damage to waterways

Direct damage to structures

Change in flood risk

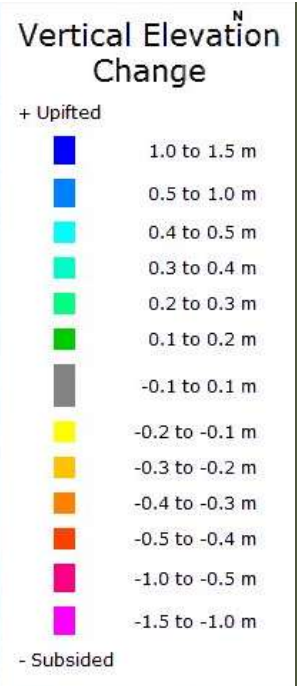
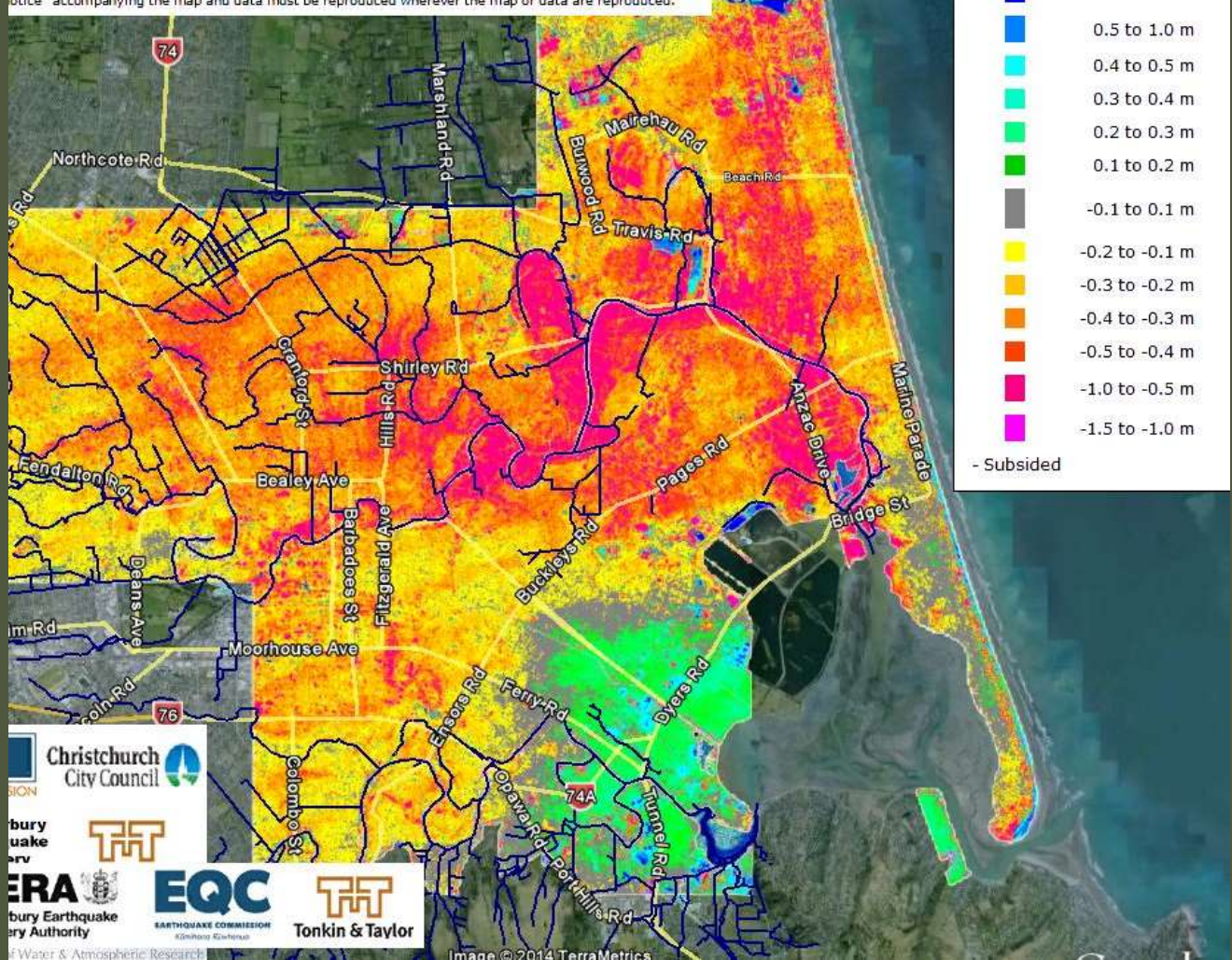


Direct
damage to
waterways



Direct
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structures

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Change in flood risk

Christchurch City Council

Canterbury Earthquake Recovery Authority

EQC EARTHQUAKE COMMISSION

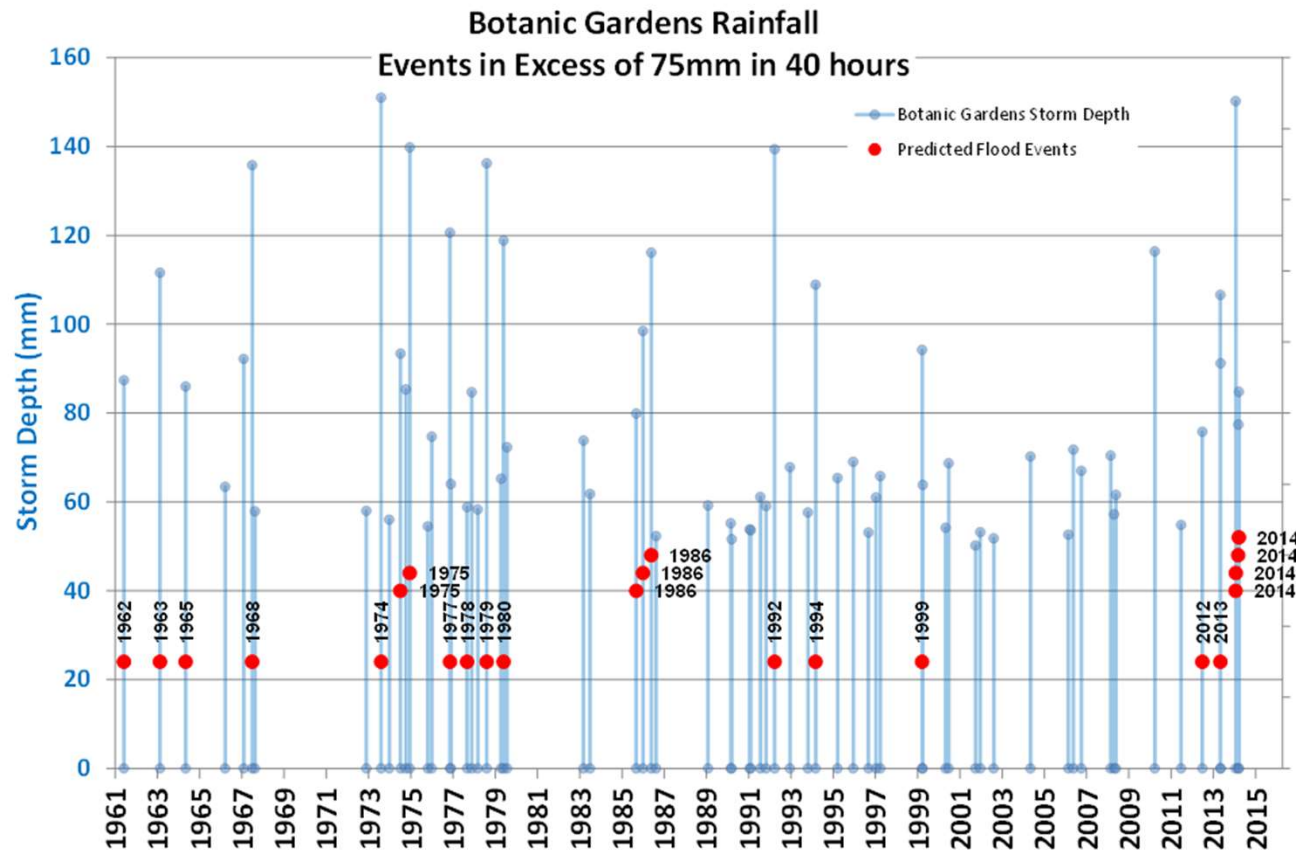
Tonkin & Taylor

Water & Atmospheric Research

Image © 2014 TerraMetrics



Of course,
earthquakes
don't cause
flooding,
rain does



One of many: April 2014 flooding in Christchurch





Post-EQ Flooding

Some houses were flooded four times above the floor over a short period

Increase in vulnerability to both frequent and extreme floods



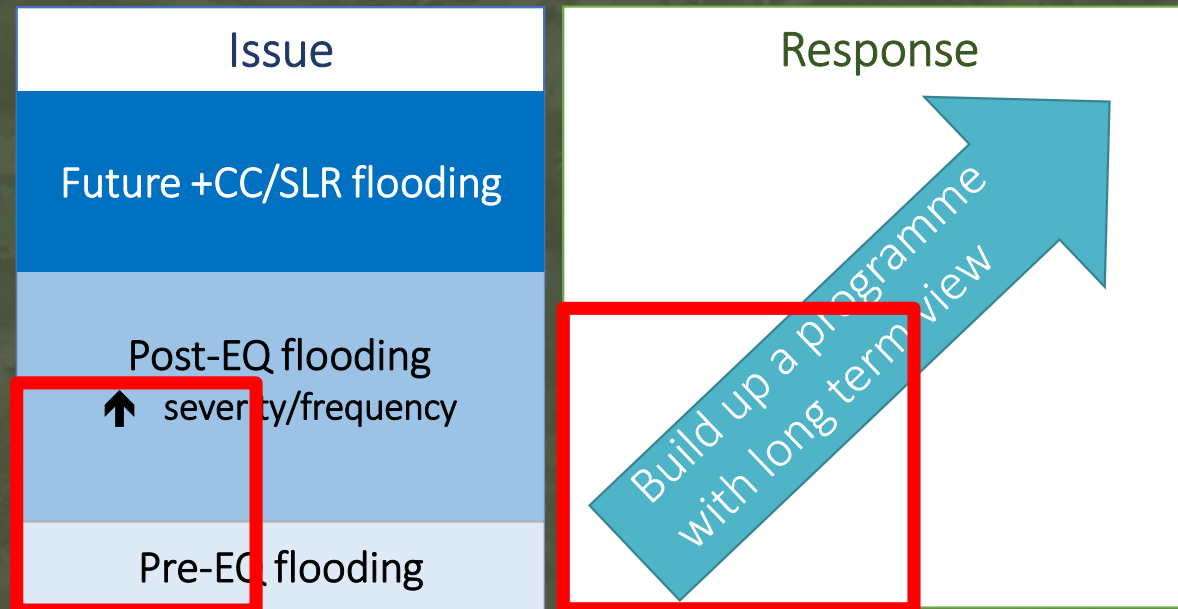
Land Drainage Recovery Programme

Goal: To restore flood risk to pre-earthquake levels

\$1.2B programme over 30 years (now absorbed into BAU)

\$300M spent to date

Heathcote River Floodplain Management Programme





Heathcote River Floodplain Management Programme

- Protect
- Avoid
- Retreat
- Accommodate

How did we do?

Council wins award for environmental sustainability



Caring for the environment | 20 Oct 2022

Share this story

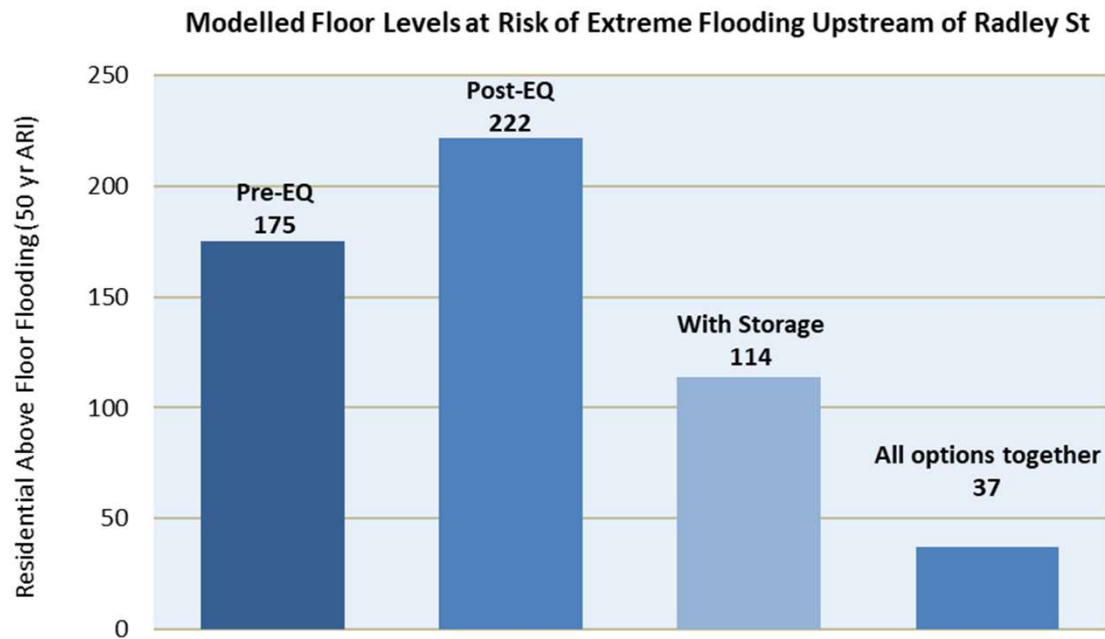


A multimillion-dollar floodplain management project in the upper catchment of the Ōpāwaho Heathcote River has earned Christchurch City Council a national award for Environmental Sustainability.

Protect – what happened

- Aimed for most frequent events – primarily fluvial
- Basins – major investment in green infrastructure
- Pump stations
- Bank repair and widening
- Stopbanks – process with the community to agree not to install
- ~\$120M spent to date





Extreme flood risk along the Ōpāwaho / Heathcote River (2% AEP, as estimated in November 2017)

Protect – what happened

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Flood protection work pays off as Christchurch homes stay dry



Tina Law • 05:00, Jun 01 2021

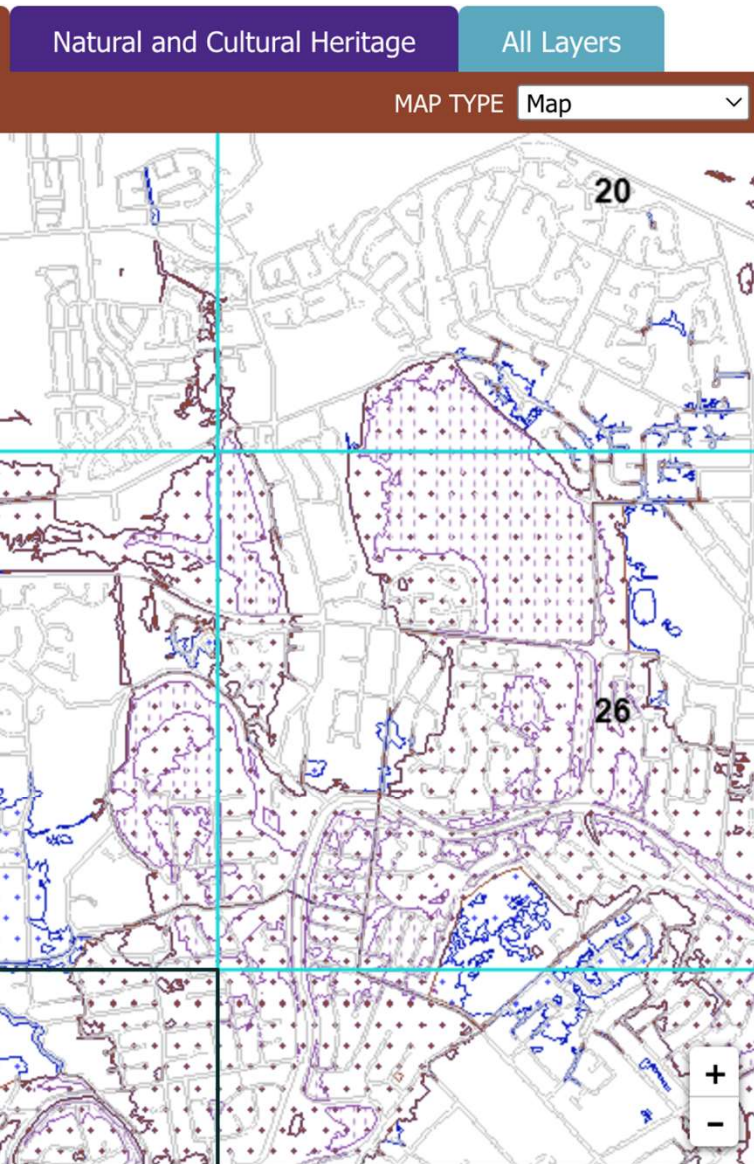


IAIN MCGREGOR/STUFF

Flockton residents have only had surface flooding over the past three days, unlike when in 2014 (above) when homes and streets were flooded. (File photo)

Protect – gaps

- Pluvial flooding still largely unaddressed
- Public perception that flooding is now fixed
- Funding dropping off after initial programme of works showing funding is still event-related
- Funding still largely based on 'actual' flooding rather than modelled flood risk
- No national level of service to guide investment



Map Legend

Select All

Natural Hazard Overlays

Flood Hazard

- Fixed Minimum Floor Level Overlay within Flood Management Area
- Flood Management Area
- Flood Ponding Management Area
- High Flood Hazard Management Area

Liquefaction Hazard

- Liquefaction Management Area (LMA)

Avoid - planning

- District Plan
 - High Flood Hazard Management Areas
 - Flood Ponding Management Areas
- Coastal Hazards Adaptation & Planning Programme
- 'Real' flooding helps build confidence in planning



Avoid – gaps

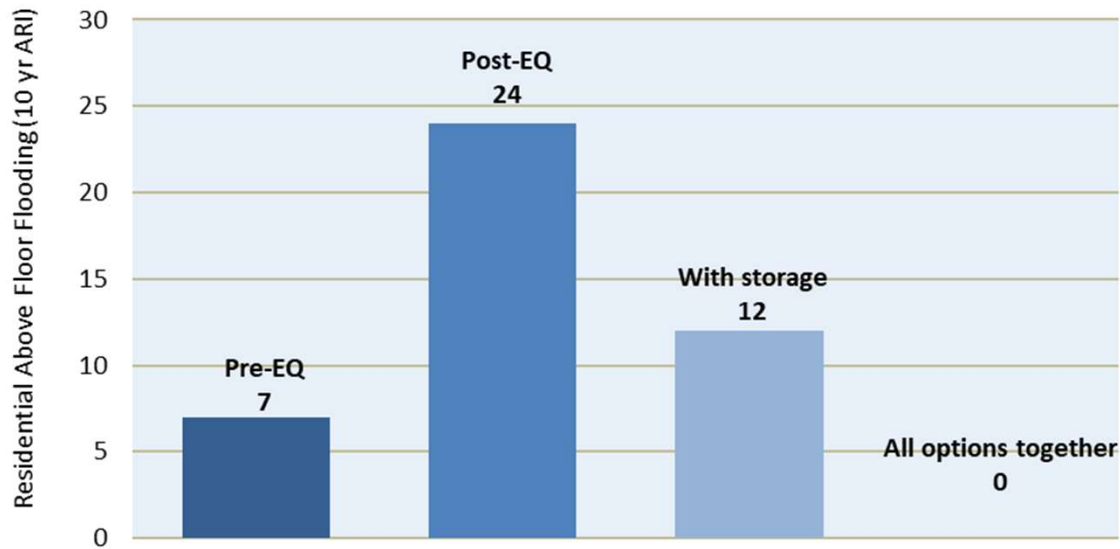
- Changes to planning are often too slow to keep up with new information
- Large legacy remains
- Good planning is often undermined by 'one-off' decisions – allowed for in the RMA process



Retreat

- Flood Intervention Policy
- Applied in Dudley Creek & Heathcote Catchment
- Most vulnerable houses purchased – those which:
 - Flooded multiple times above floor post-eq
 - Modelled above floor level flooding in 10% AEP current climate event

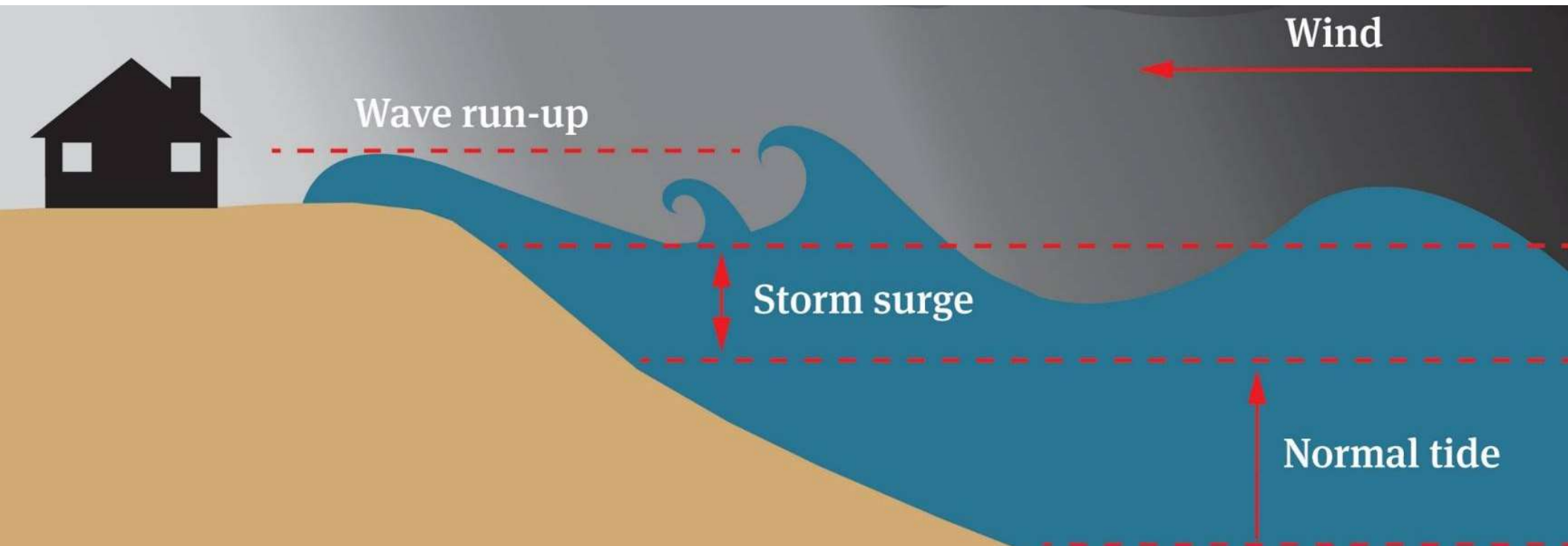
Modelled Floor Levels at Risk of Frequent Flooding Upstream of Radley St



Frequent flood risk along the Ōpāwaho / Heathcote River (10% AEP, as estimated in November 2017)

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Retreat - gaps

- Lack of clear direction from government
- Difficult conversation to have without a strong policy framework
- Concerns about setting precedents can lead to paralysis
- Impacts from sea level and groundwater rise are not a future problem, it's a now problem



Accomodate

- District Plan sets floor levels
- Individual properties often have accommodate measures
- Only address part of the risk



Accomodate – gaps

- Do people understand what it's like to live with flooding under their houses?
- Will they accept it when it becomes more frequent?
- Can the other networks (eg wastewater, roads) continue to function?
- People still don't really understand flood risk (or risk in general) and so 'accommodate' can result in an optimism bias ('It'll never happen to me...')
- People don't necessarily know what to do when it floods
- What about the cost of cleanup?



Gaps?

- 'Lines in the sand' for areas to avoid
- Understanding of the limitations of protect
- When is accommodate acceptable?
- National flood standards
- Proactive risk-based investment rather than reactionary
- How can we talk about risk better?
- Sharing best practice

Beyond the Quick Flood Fix by Clare Feeney

