Water Infrastructure for Growth –

Storming Ahead

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

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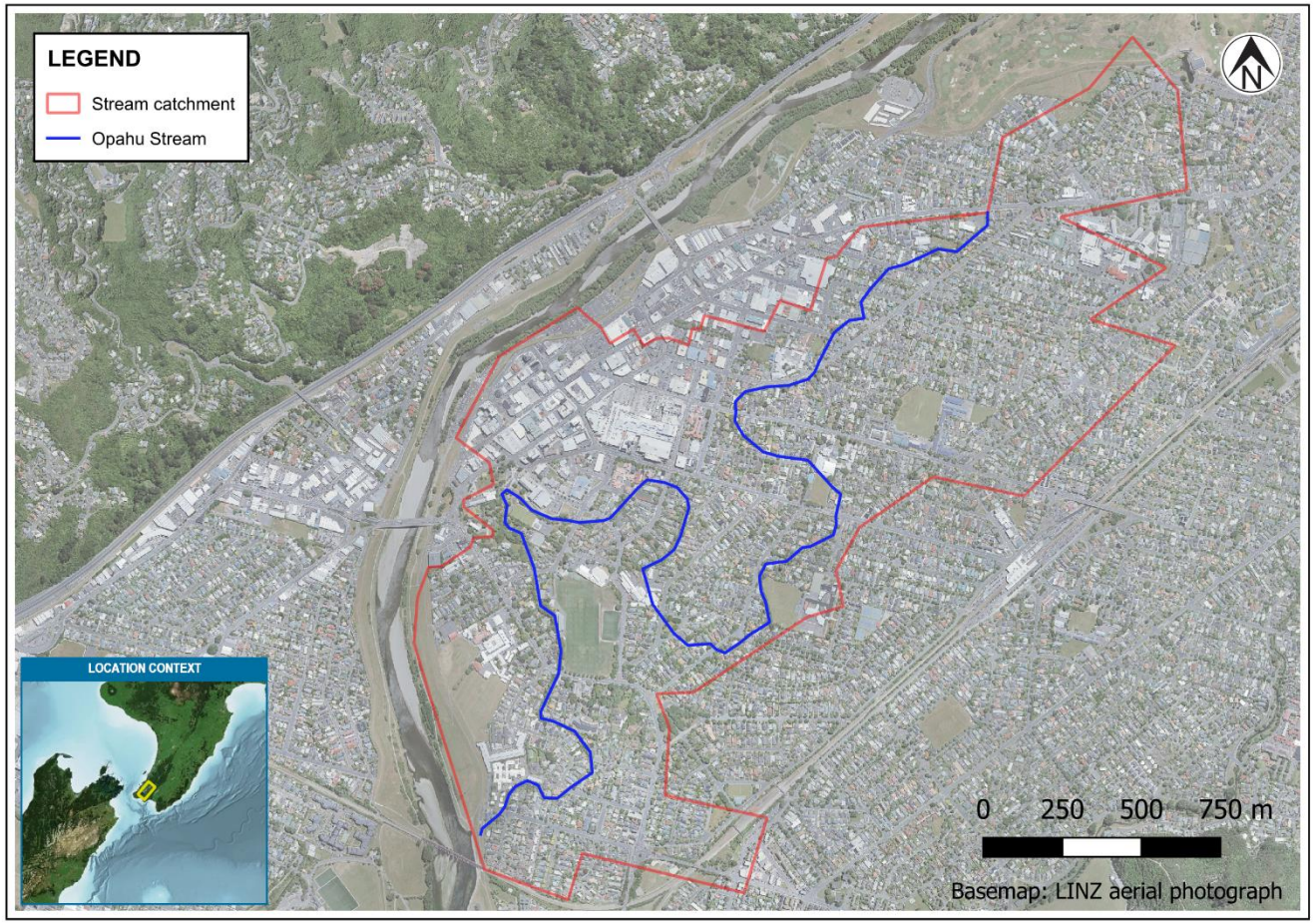
Stormwater 2024
15–17 May | Tākina Wellington Te Whanganui-a-Tara

MOTT MACDONALD

Tonkin+Taylor

Setting the scene



34,500+
new residents by 2051

50% of pipes
due for renewal in next 30 years

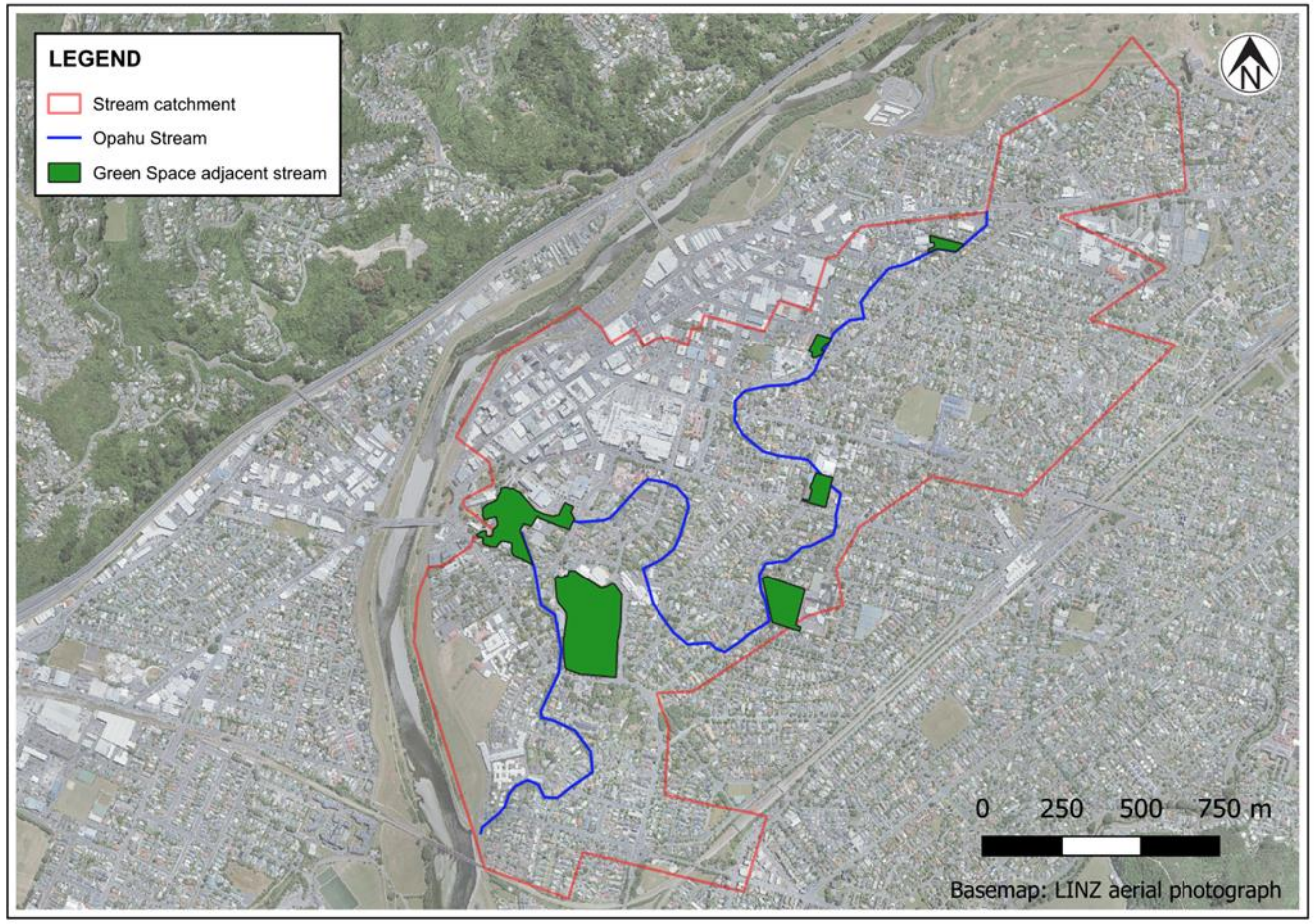
IAF provides funding for infrastructure to unlock housing

Growth in a developed catchment

Industry familiar with:

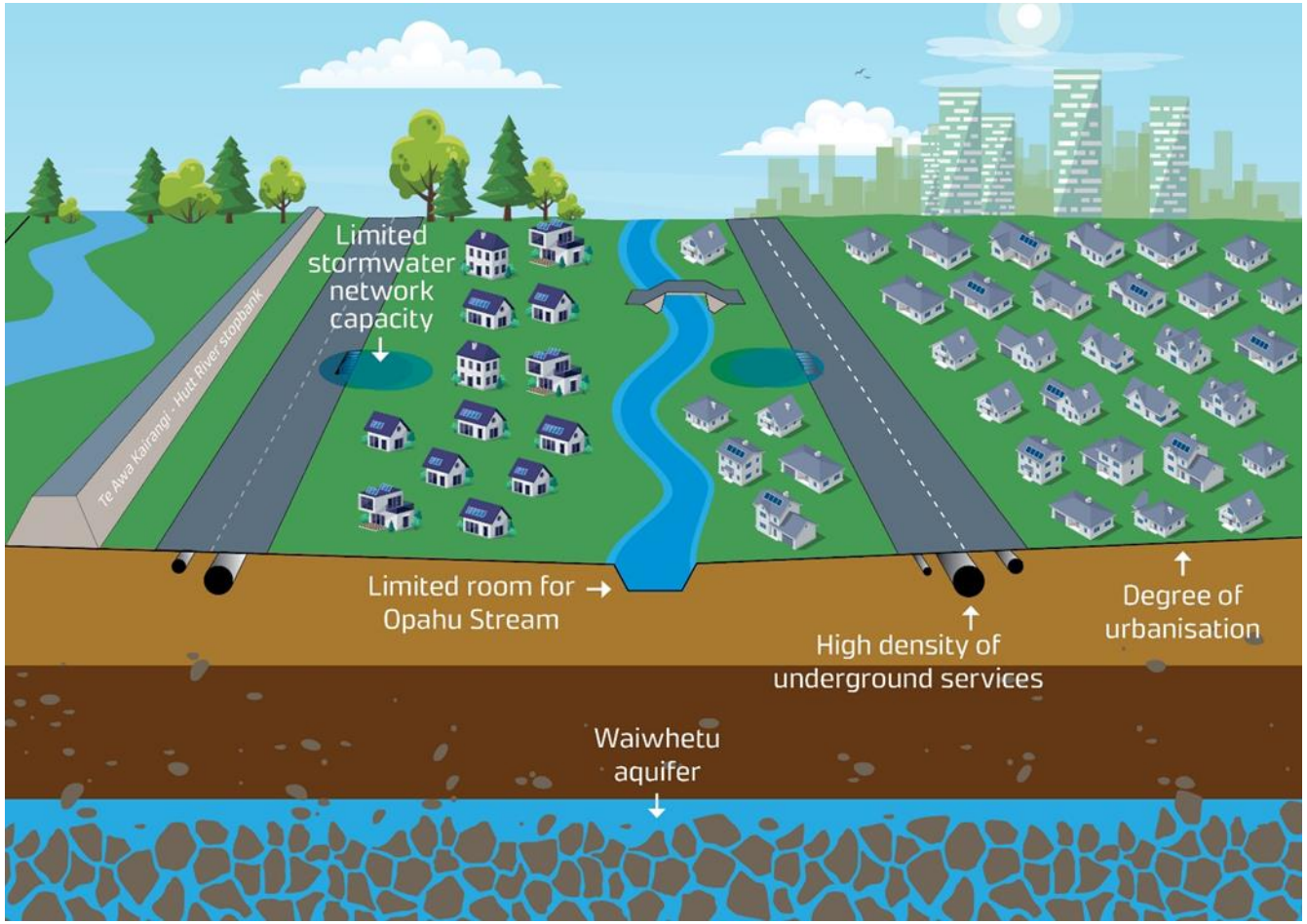
- Renewals aiming for LOS
- Masterplanning with fixed targets in fixed locations

Funding timing and future focus leads to an open-ended design philosophy.



Constraints

Physical constraints to stormwater runoff and solution provision are many.



Challenges

1. What is the problem we're trying to solve? How will we know when we've succeeded?
2. Shifting our mindset
3. Keeping it green

Future thinking – How might we better plan for future growth in developed constrained catchments?

Raye Powell - Should we?

Challenge 1

What is the problem we're trying to solve? How will we know when we've succeeded?

- Mind shift away from LOS to broadest impact for $
- Design philosophy
- MCA

Wellington Water

Regional Standard for Water Services

December 2021 Version 3.0

Our water, our future.

STANDARDS NEW ZEALAND
PAEREWA AOTEAROA

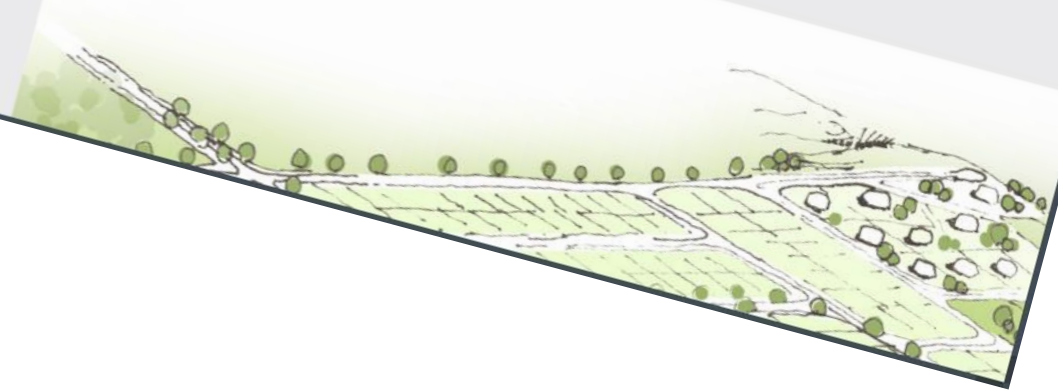
New Zealand Standard

NZS 4404:2010
Incorporating Amendment No. 1

Land Development and Subdivision Infrastructure

Superseding NZS 4404:2004

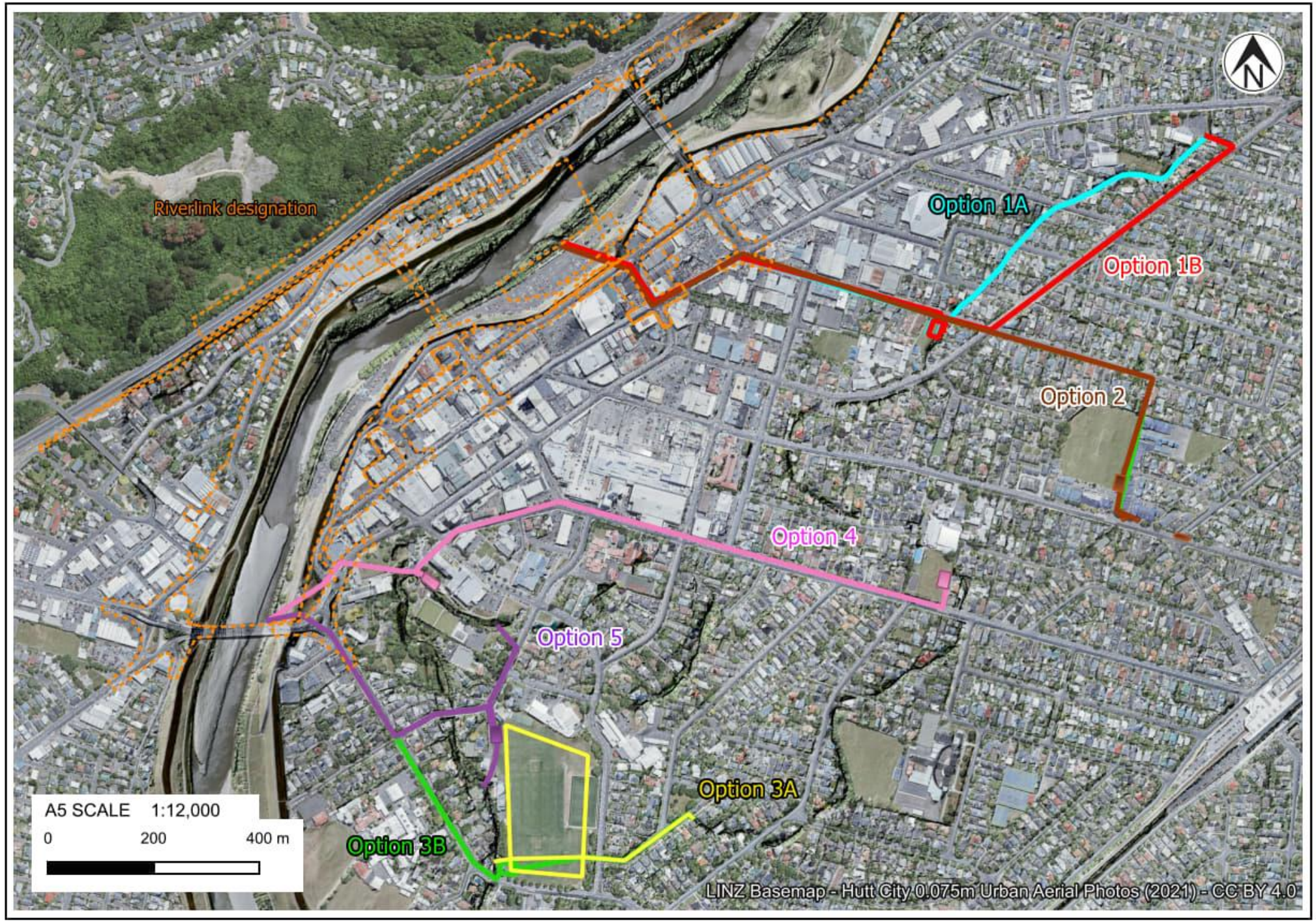
SZN



Challenge 1 … continued

Challenge 1. What is the problem we're trying to solve? How will we know when we've succeeded?

- Mind shift away from LOS to broadest impact for $
- Design philosophy
- MCA

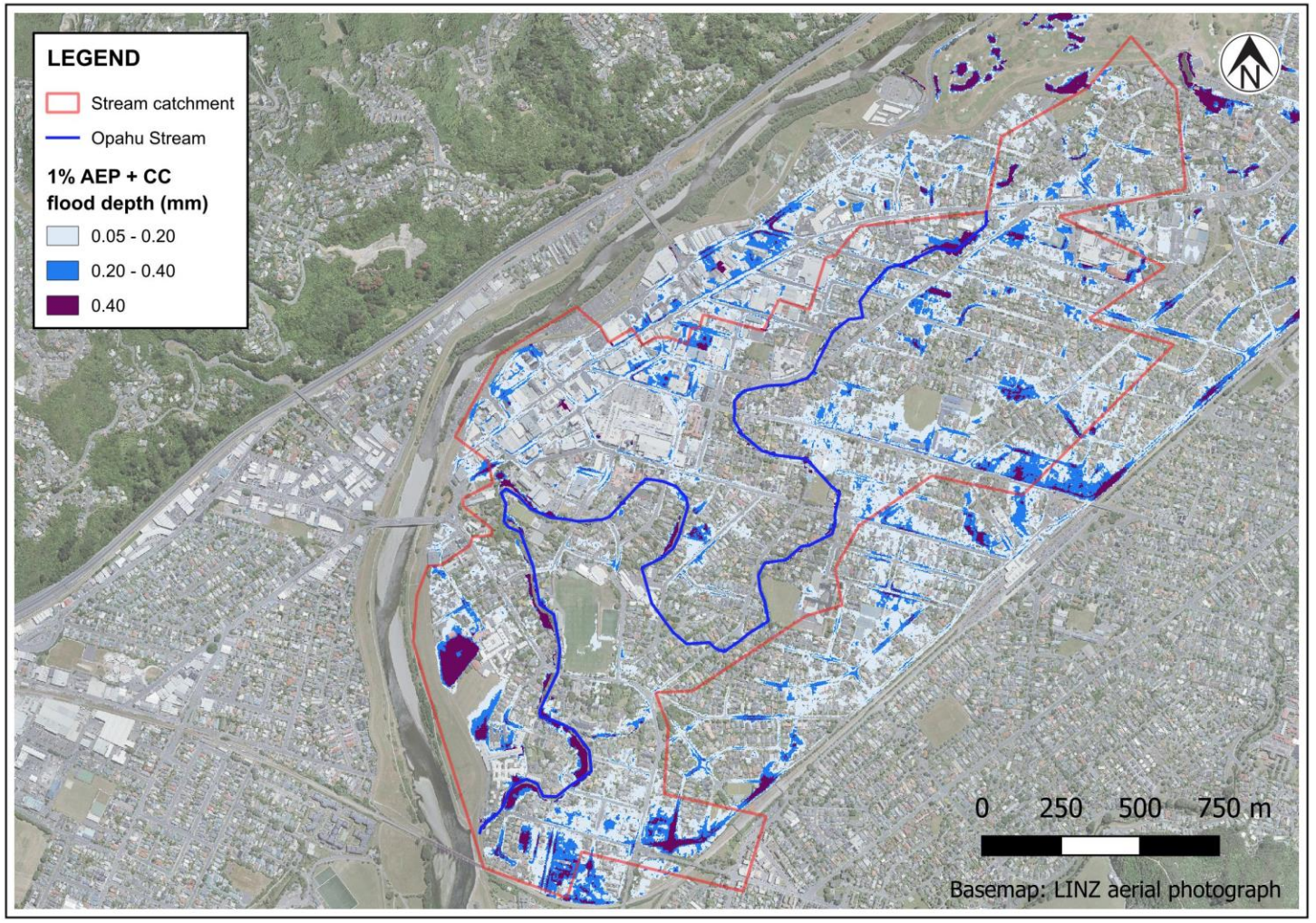

Riverlink designation
Option 1A
Option 1B
Option 2
Option 4
Option 5
Option 3A
Option 3B
A5 SCALE 1:12,000
0
200
400 m
LINZ Basemap - Hutt City 0.075m Urban Aerial Photos (2021) - CC BY 4.0

Challenge 2

Shifting our mindset

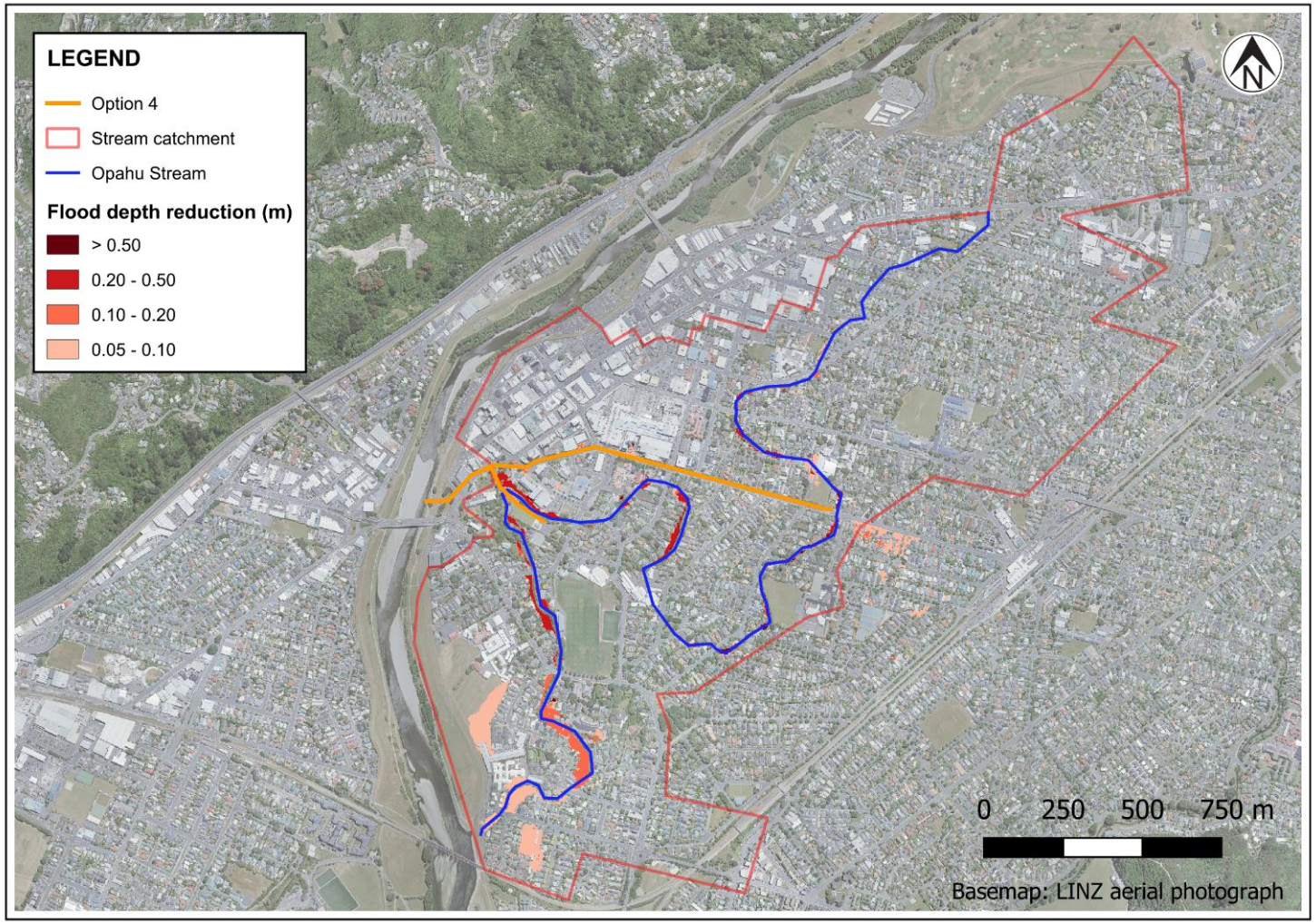
Challenge 2

- **Trigger: modelling didn't show the expected flooding reduction**



Challenge 2

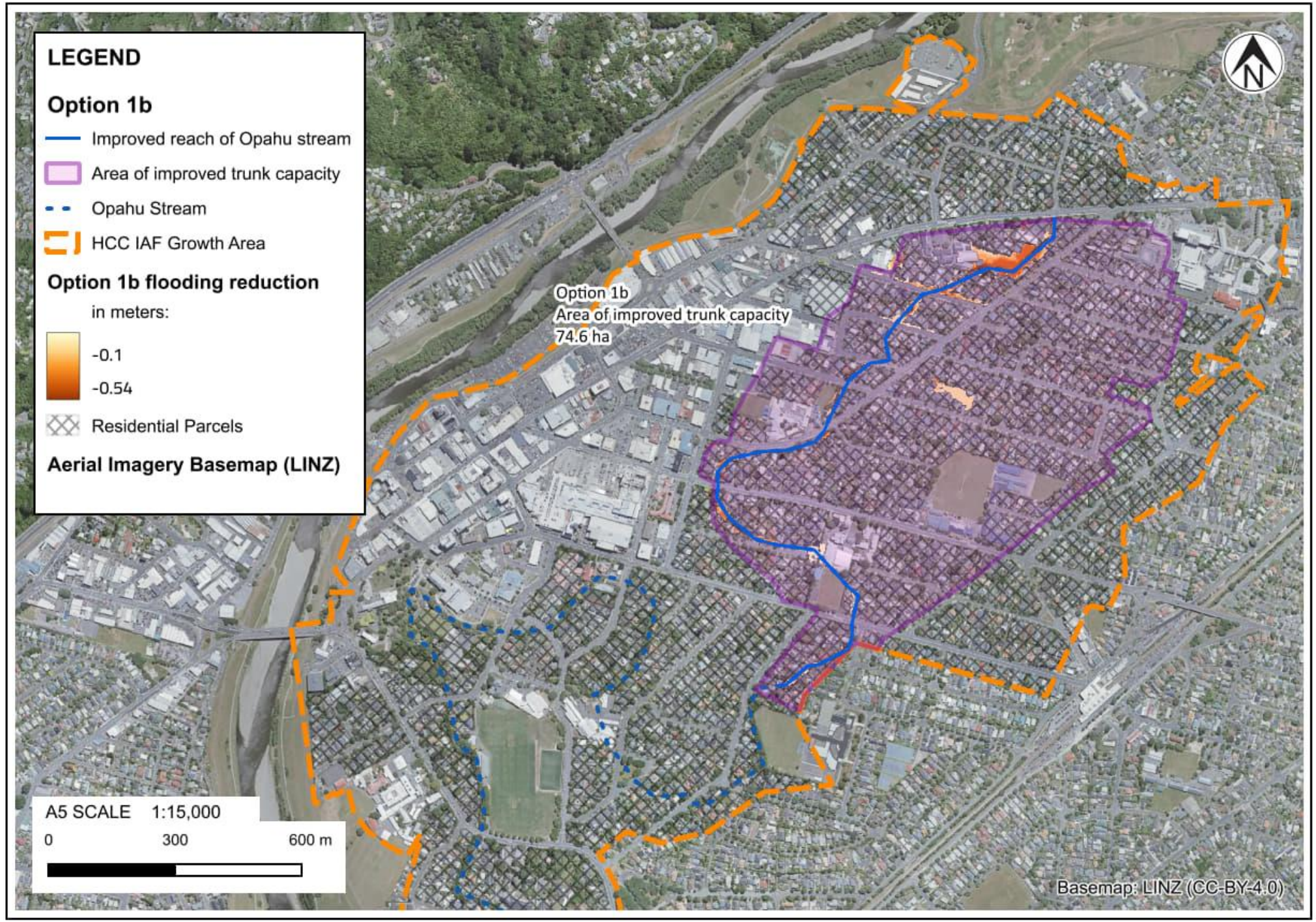
- **Trigger: modelling didn't show the expected flooding reduction**



Challenge 2 … continued

Challenge 2. Shifting our mindset

- Not just solving the problem you can see
- Intensification on the non-flooded land
- Improved trunk capacity combined with on-site detention


LEGEND
Option 1b
Improved reach of Opahu stream
Area of improved trunk capacity
Opahu Stream
HCC IAF Growth Area
Option 1b flooding reduction
in meters:
-0.1
-0.54
Residential Parcels
Aerial Imagery Basemap (LINZ)
Option 1b
Area of improved trunk capacity
74.6 ha
N
A5 SCALE 1:15,000
0
300
600 m
Basemap: LINZ (CC-BY-4.0)

Challenge 3

Challenge 3. How do we keep it green?

Firstly, what do we mean?

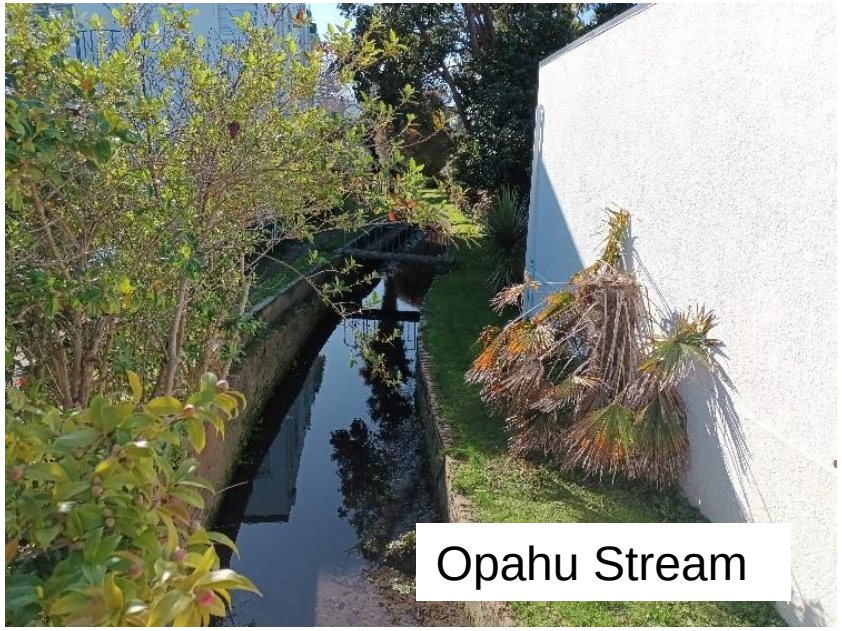
Challenge 3

So how can we keep it green?

Well, here's some of the things we tried:

- Use parks, open areas, school playing fields for detention
- Redevelop streetscapes to retrofit swales and rain gardens
- Daylighting streams

Option 1A


Opahu Stream

Challenge 3

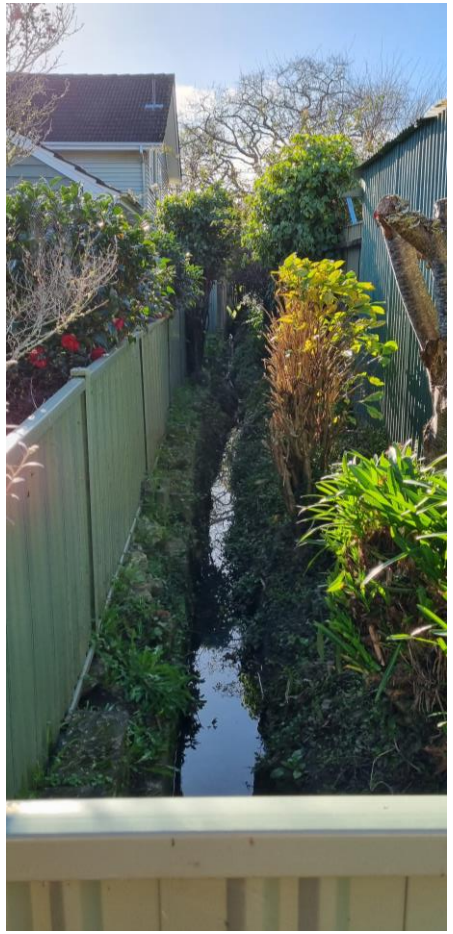
So how can we keep it green?

Well, here's some of the things we tried:

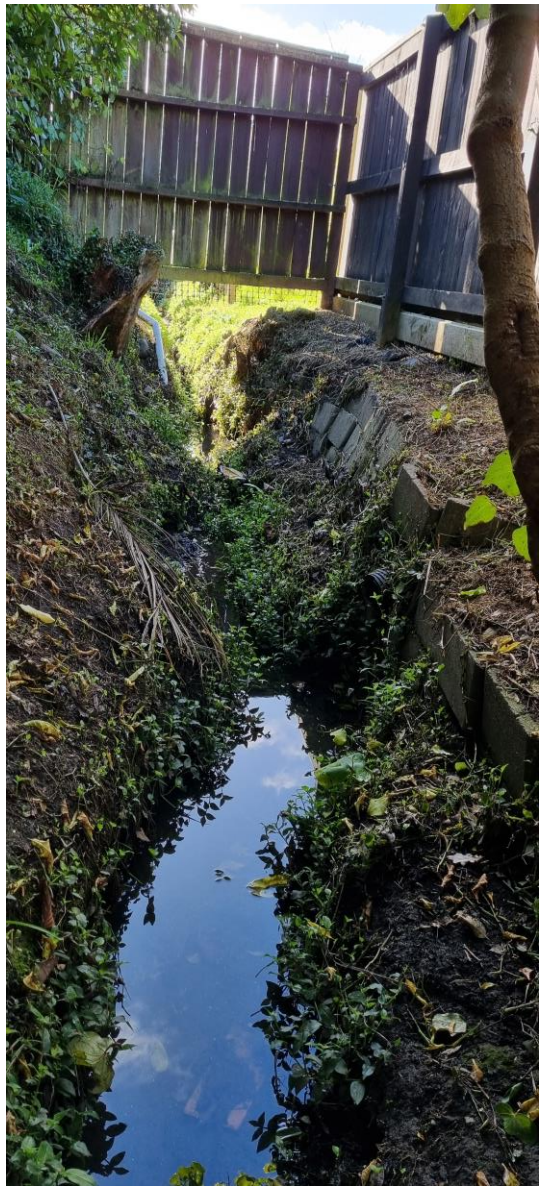
- Detention basins
- Localised benefit in terms of flooding reduction

- Redevelop streetscapes
- High cost, and requires trunk infrastructure upgrades

- Daylighting streams
- Highly disruptive to existing community.
- Long term commitment



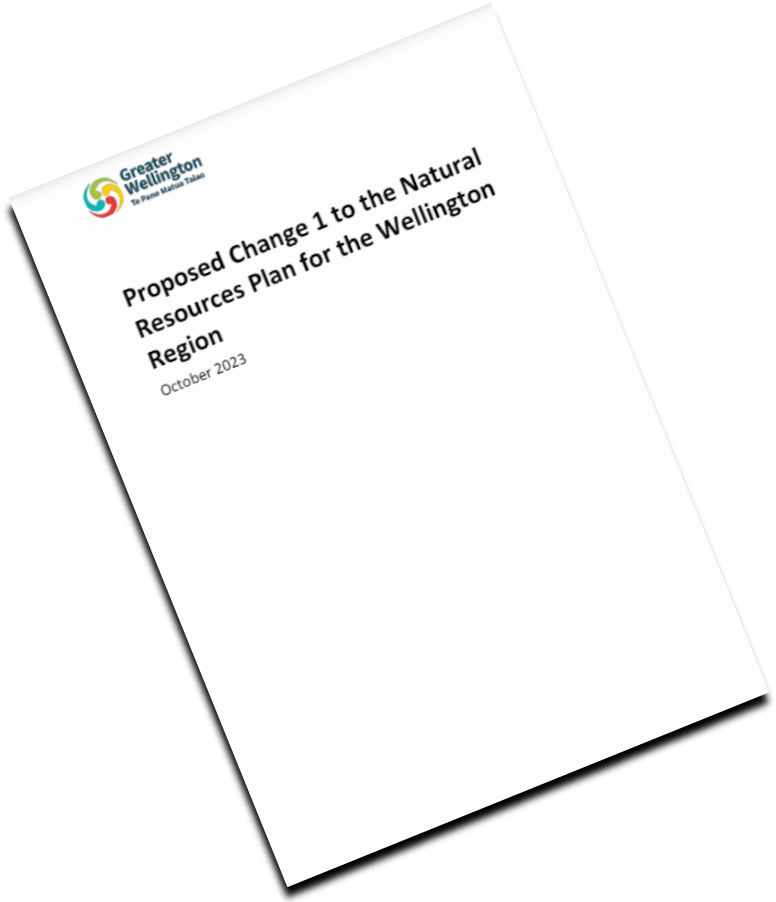
Opahu Stream (all)

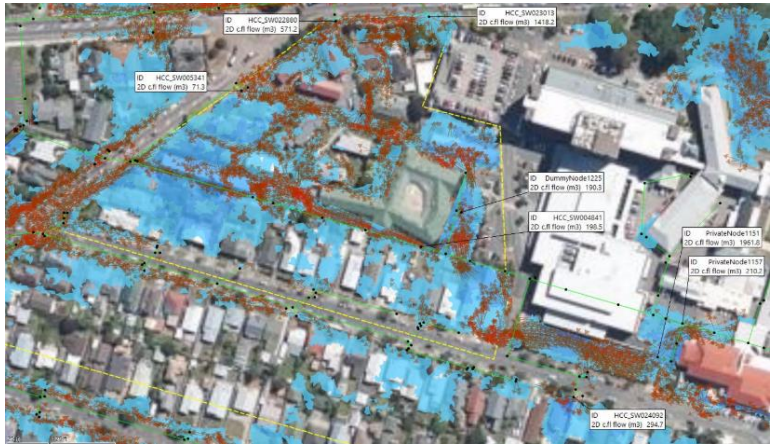


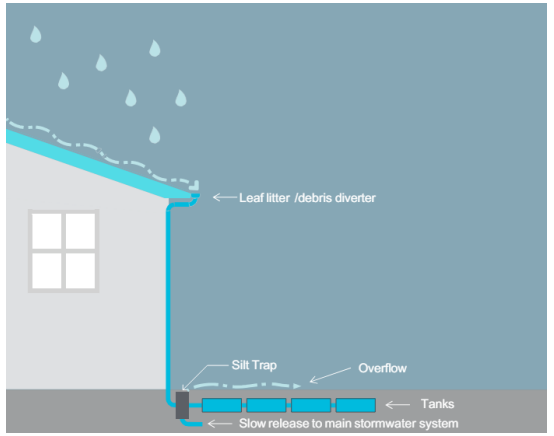
Challenge 3

So how can we keep it green?

Some future thoughts:







The Eddy – Circling back

Thank you!

Questions? Patai?

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