Te Awarua-o-Porirua Harbour & catchment

Environmental science overview

Megan Oliver

Presentation to the Porirua Harbour Trust - 3 September 2019

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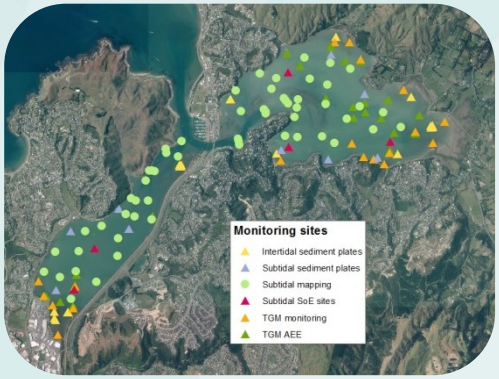

- Sediment
  - Sediment loads
  - Sedimentation rates
  - Bathymetry survey
  - Water clarity
- Pollution
  - Freshwater quality & ecology
  - Recreational water quality
- Habitat loss
  - Habitat mapping
  - Seagrass research
  - Shellfish surveys

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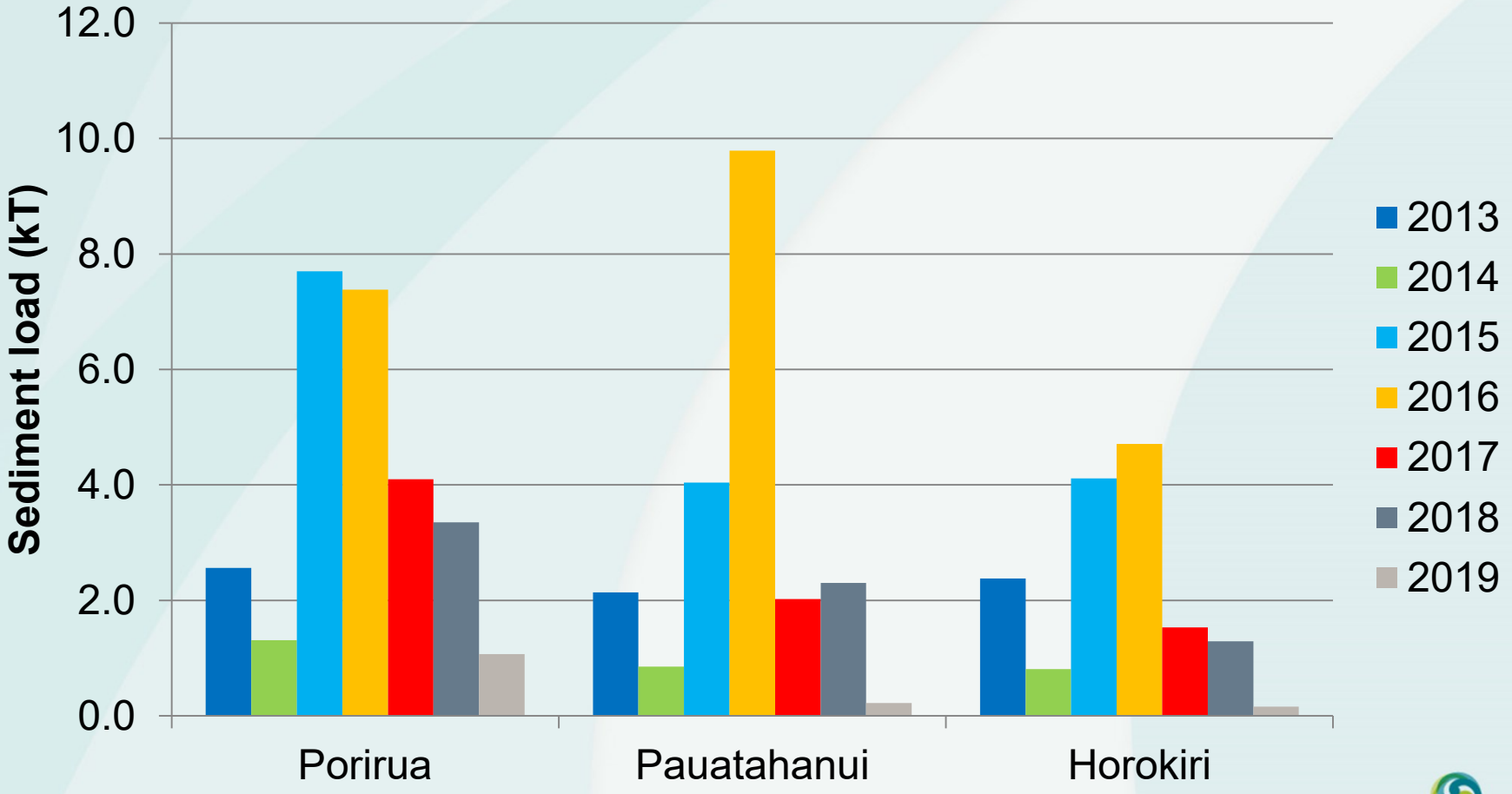
Porirua Harbour & catchment sediment monitoring sites

Annual sediment loads



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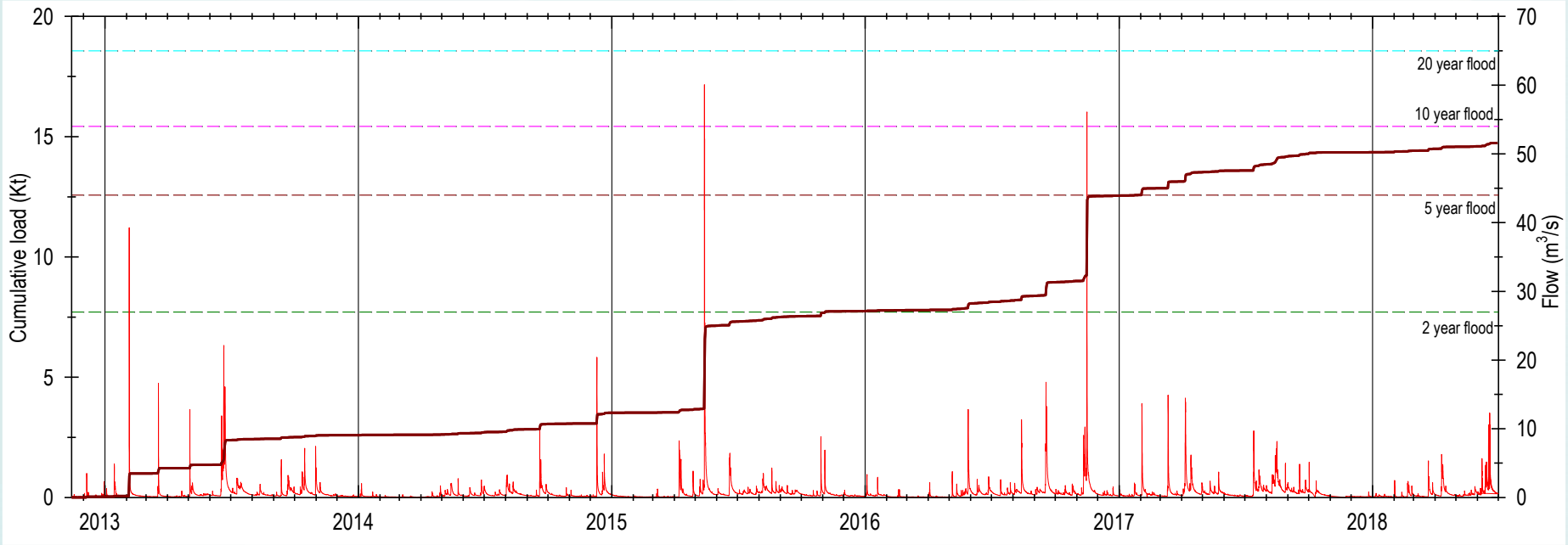
Horokiri Str sediment 2013-18



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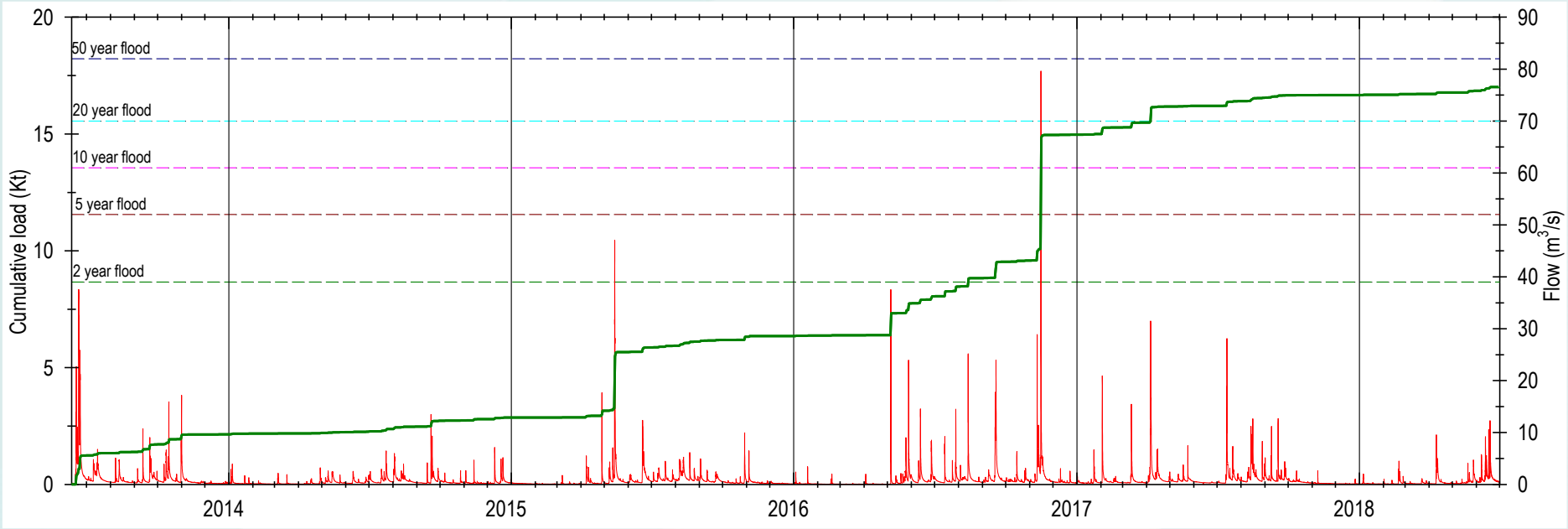
Pauatahanui Str sediment 2013-18



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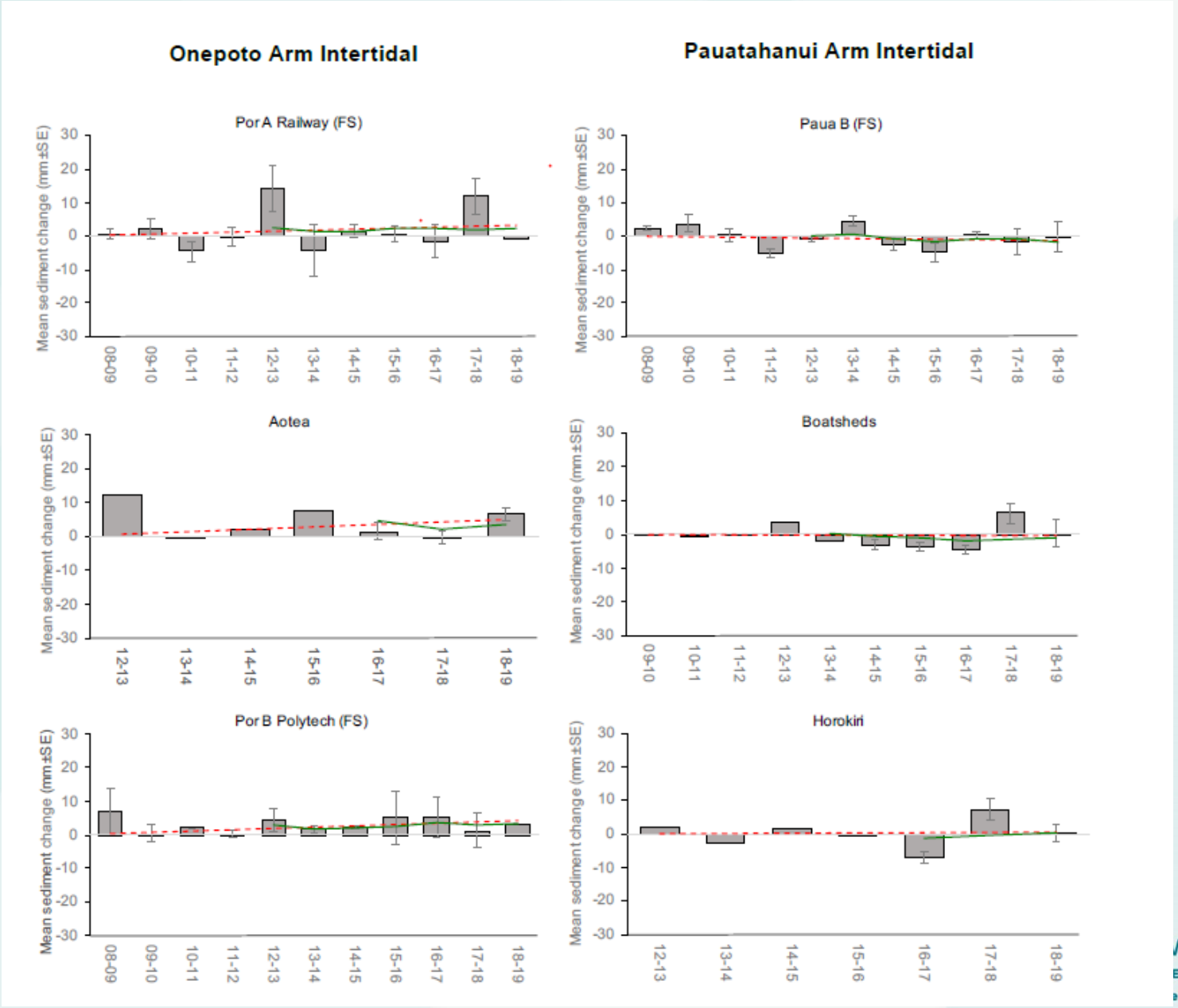
Sedimentation rates



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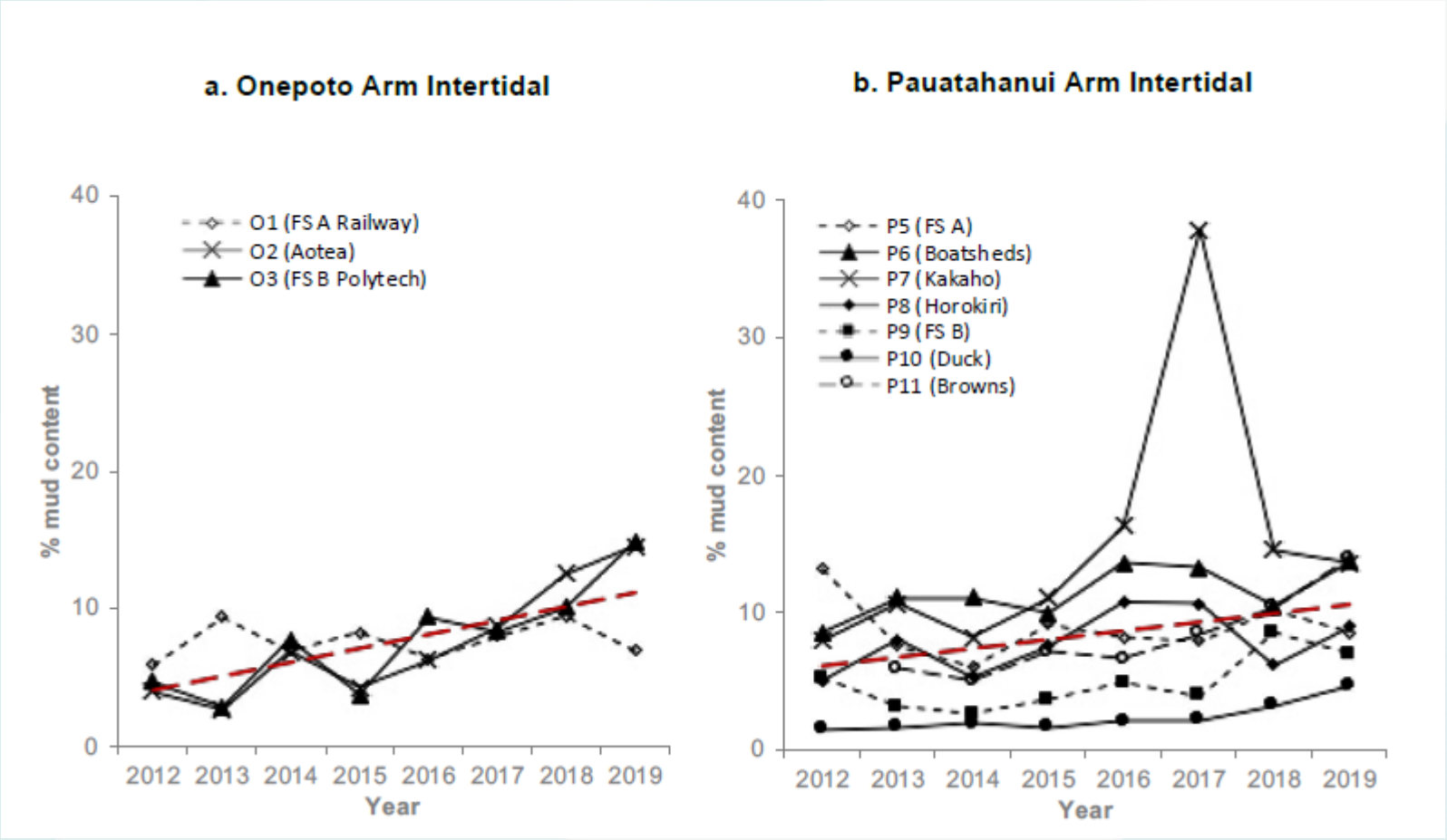
Mean mud content – 2018



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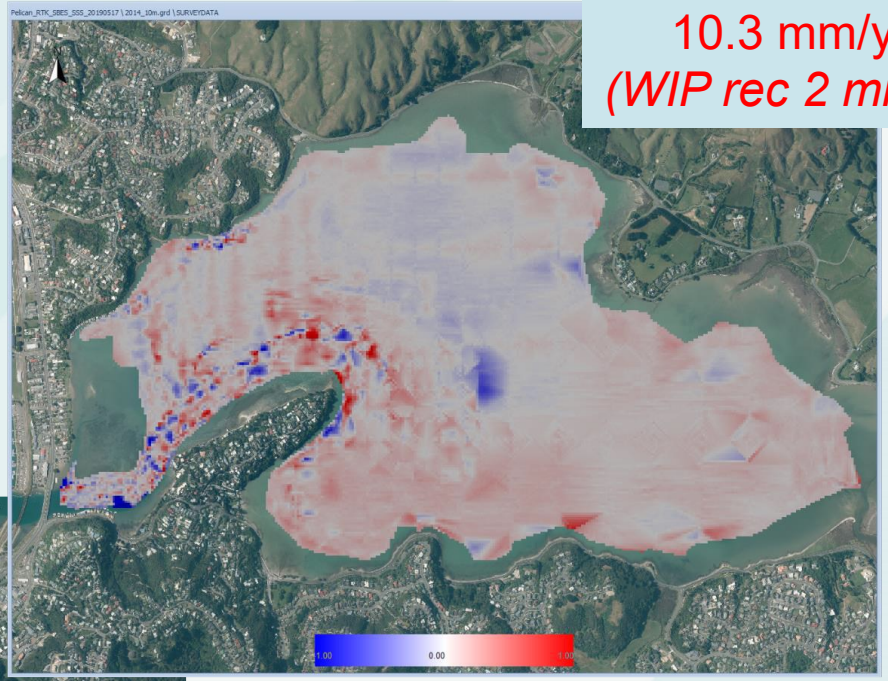
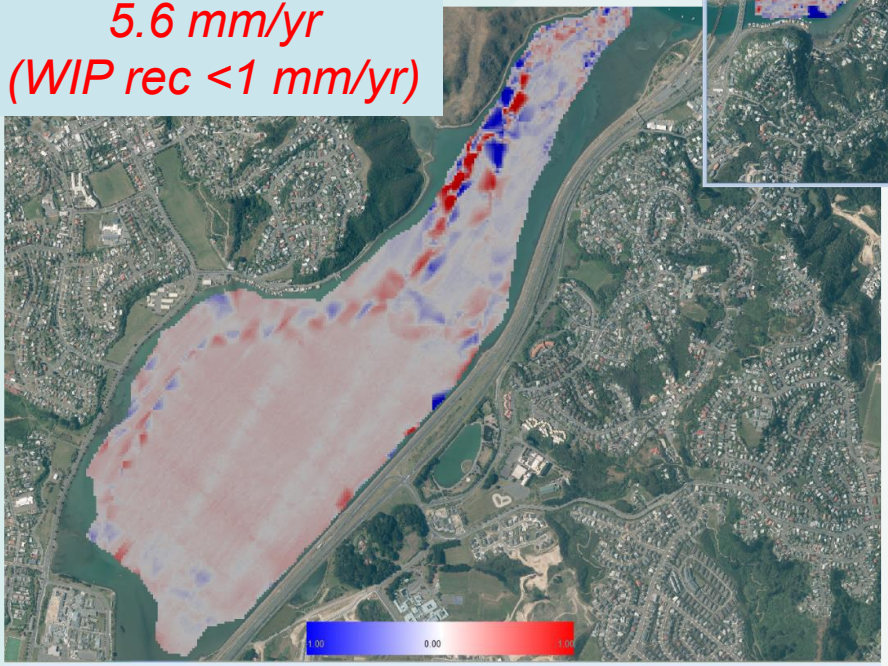
Bathymetric survey 2019

10.3 mm/yr
(WIP rec 2 mm/yr)



5.6 mm/yr
(WIP rec <1 mm/yr)



Blue = erosion
Red = deposition

Cf. sedimentation plates results -1.6 and 3.3mm/yr for Onepoto and Pauatahanui, respectively

DML. 2019. *Porirua Harbour bathymetric survey 2019.* Report prepared for GWRC

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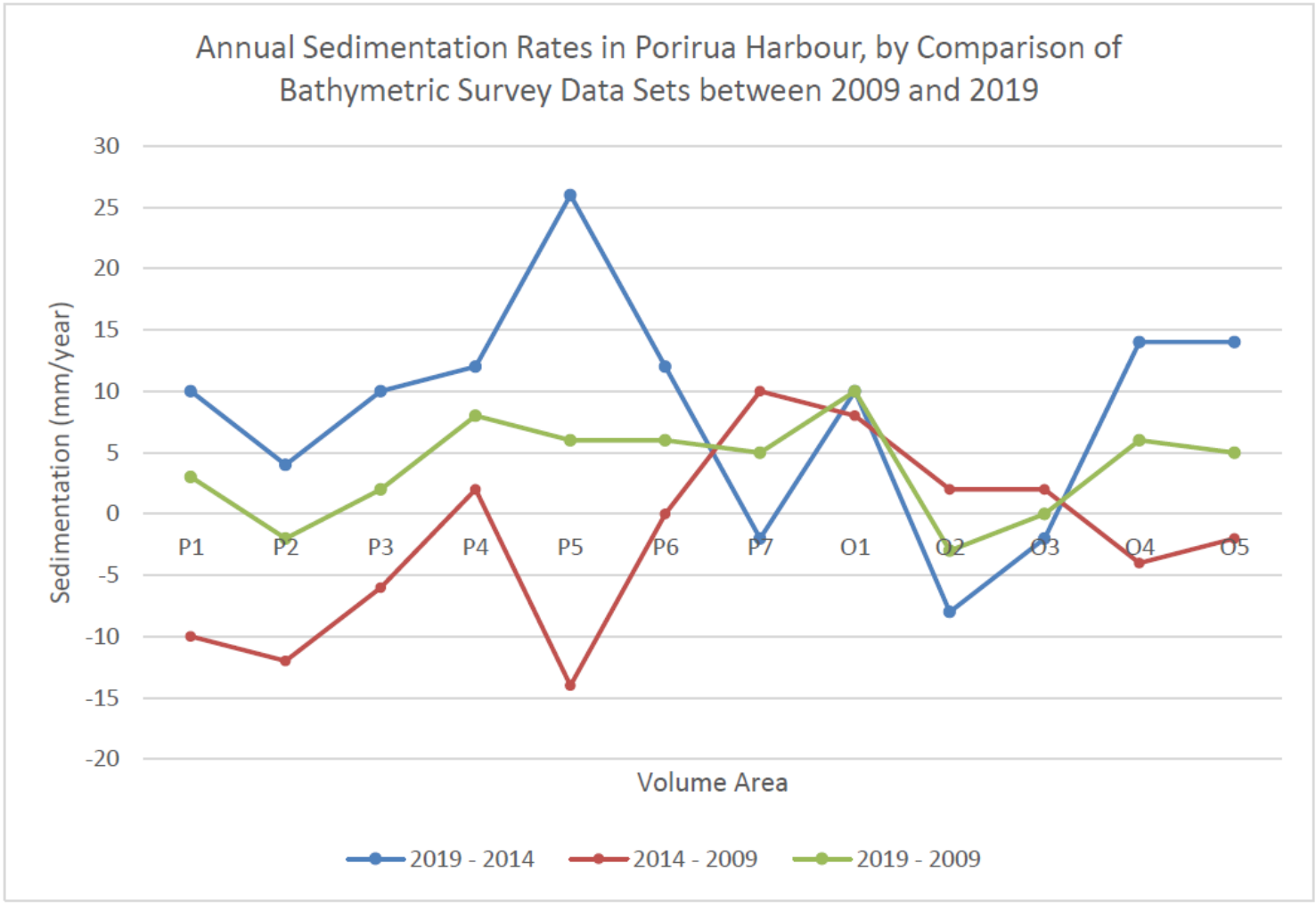

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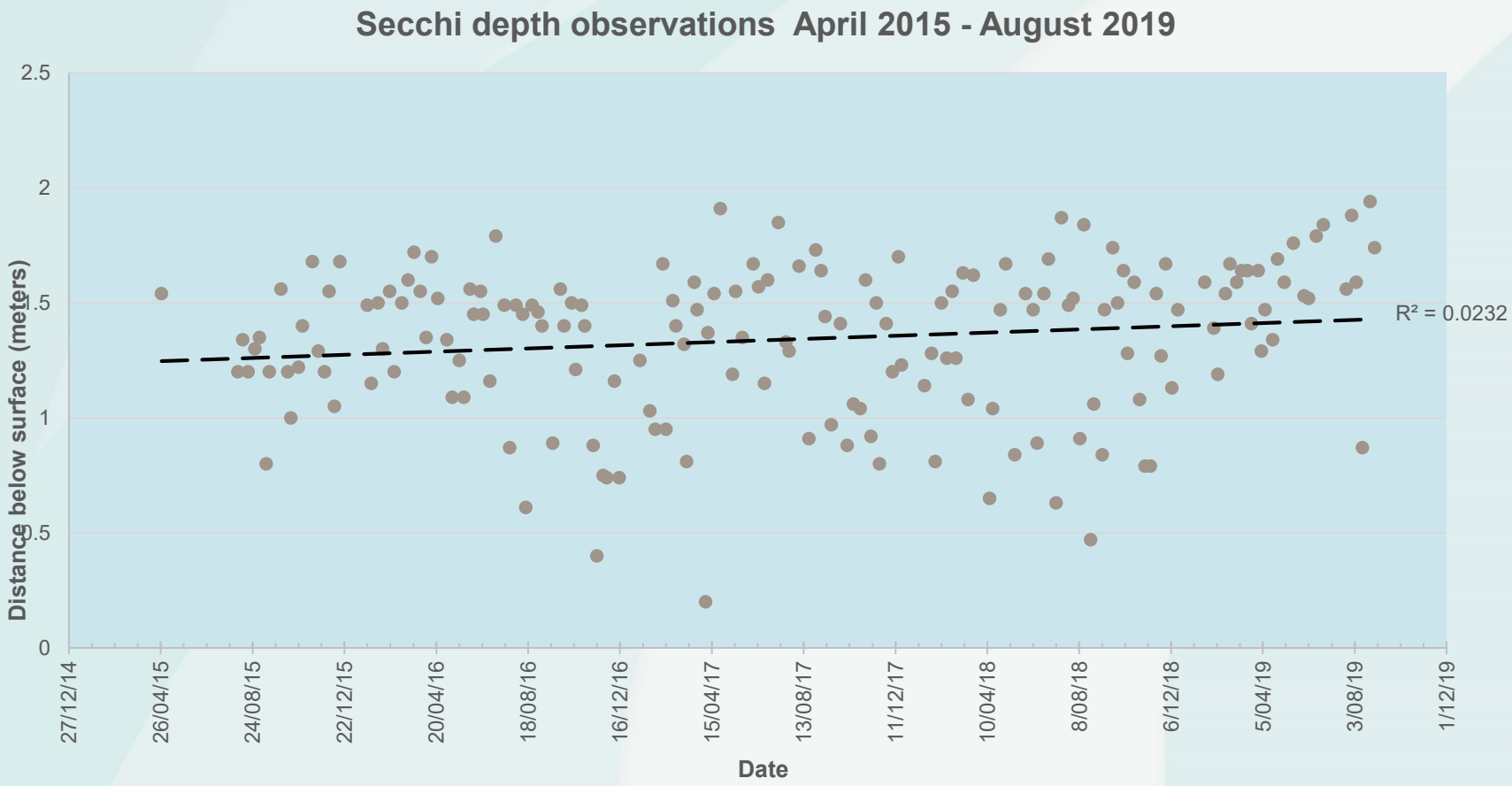
Water clarity



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Whaitua response?

Set limits for sedimentation rate, mud content, and mud extent, in the harbour

How?

- Load limits and reduction packages (-40%)
- Target erosion-prone land and streambanks, improved guidance and guidelines, strategic planting

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Stream water quality – State 2018

- Porirua – Fair WQ, fails on *E.coli,* N and P
- Horokiri – Fair WQ, fails on *E.coli* and N
- Pauatahanui – Good WQ, fails on *E.coli*
- Invertebrate community health – rated good to fair across sites
- Native fish values are high in all streams, but little known about populations



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Passive samplers in Porirua Stream

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Recreational water quality:
A new approach

What's the problem?

Current programme is retrospective - more often incorrect than correct

Two key problems

- Weekly monitoring underestimates (up to 70%) frequency of contamination events
- Time delay (48h) between sample collection and results available

Example – Rowing Club

Tuesday 13/11	Wednesday 14/11	Thursday 15/11 (today)
Routine sample 9am	Prelim result 8:30 am: ~3 x GL	Prelim 8:30 am < GL
	Follow up 9am	
	Lab result confirmed as ~12x GL , 8pm	Lab result confirmed as < GL

>48 h delay in being able to communicate lab results to public, during which time the results have markedly changed

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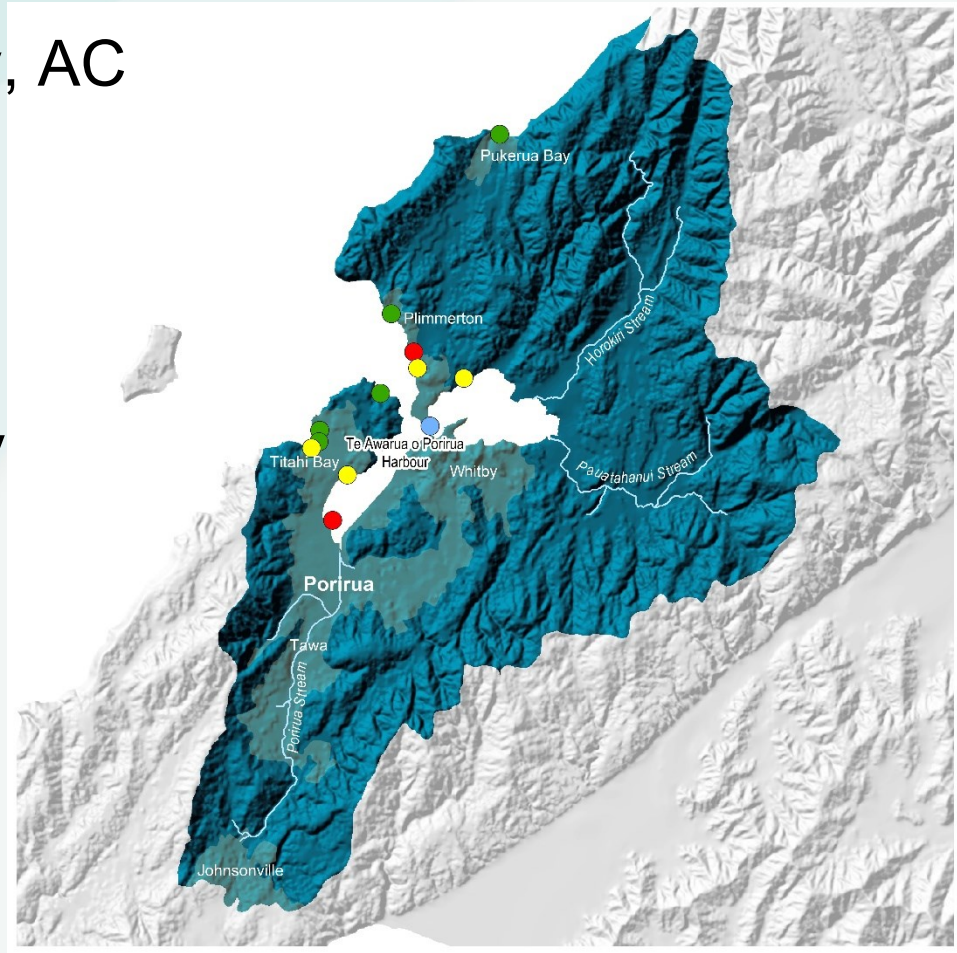
Decision tree

- Based on Melbourne, Sydney, AC
- Criteria scored on:
  - Bathing quality history (MAC)
  - Rainfall (Metservice)
- Automatic updates twice daily
- Manual override
- Simplified Risk message:
  - Good
  - Fair
  - Poor



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Porirua's problem sites

- We know where these are
- Site specific good /poor water quality
- Hot spots in Onepoto, Plimmerton
  - ➢ targeted investigations
- Validation of 'Decision tree' with fortnightly sampling

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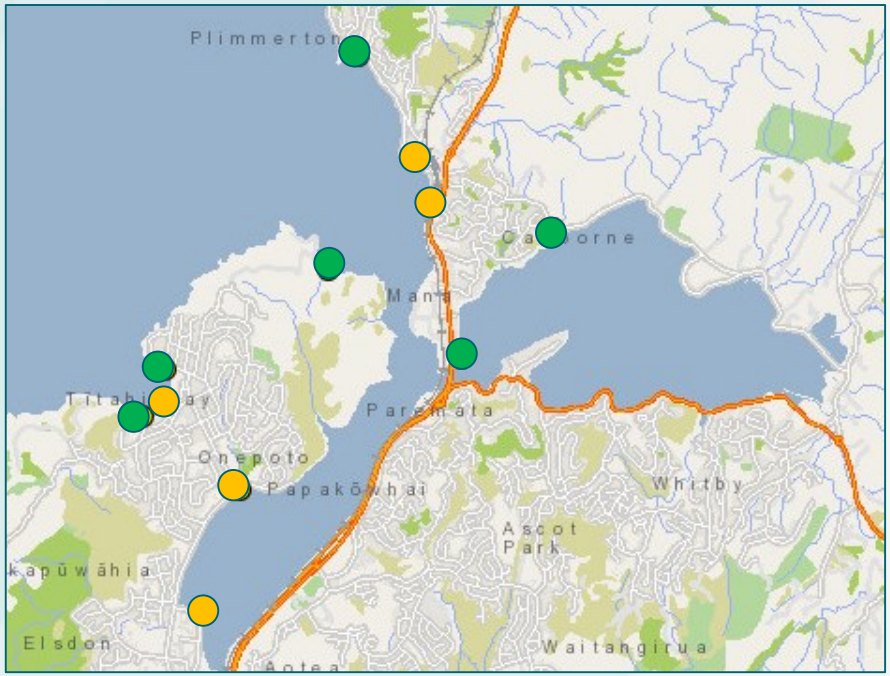
What you'll see

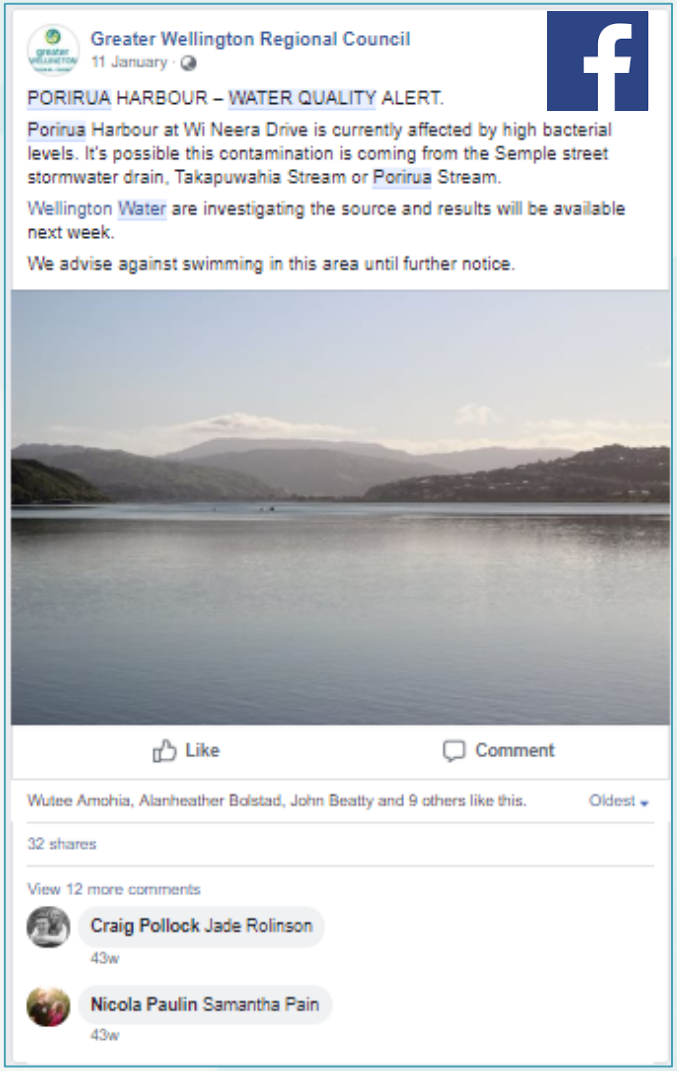
- Consistent messages
- Key alerts from agencies (WWL, TAs) displayed
- Key messages & updates communicated via social media, website

Long term:

- Improve science knowledge so we can effectively communicate risk



http://mapping.gw.govt.nz/GW/RecWaterQualityMap/RecWaterQualityMap.htm



https://www.facebook.com/pg/GreaterWellington

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Whaitua response?

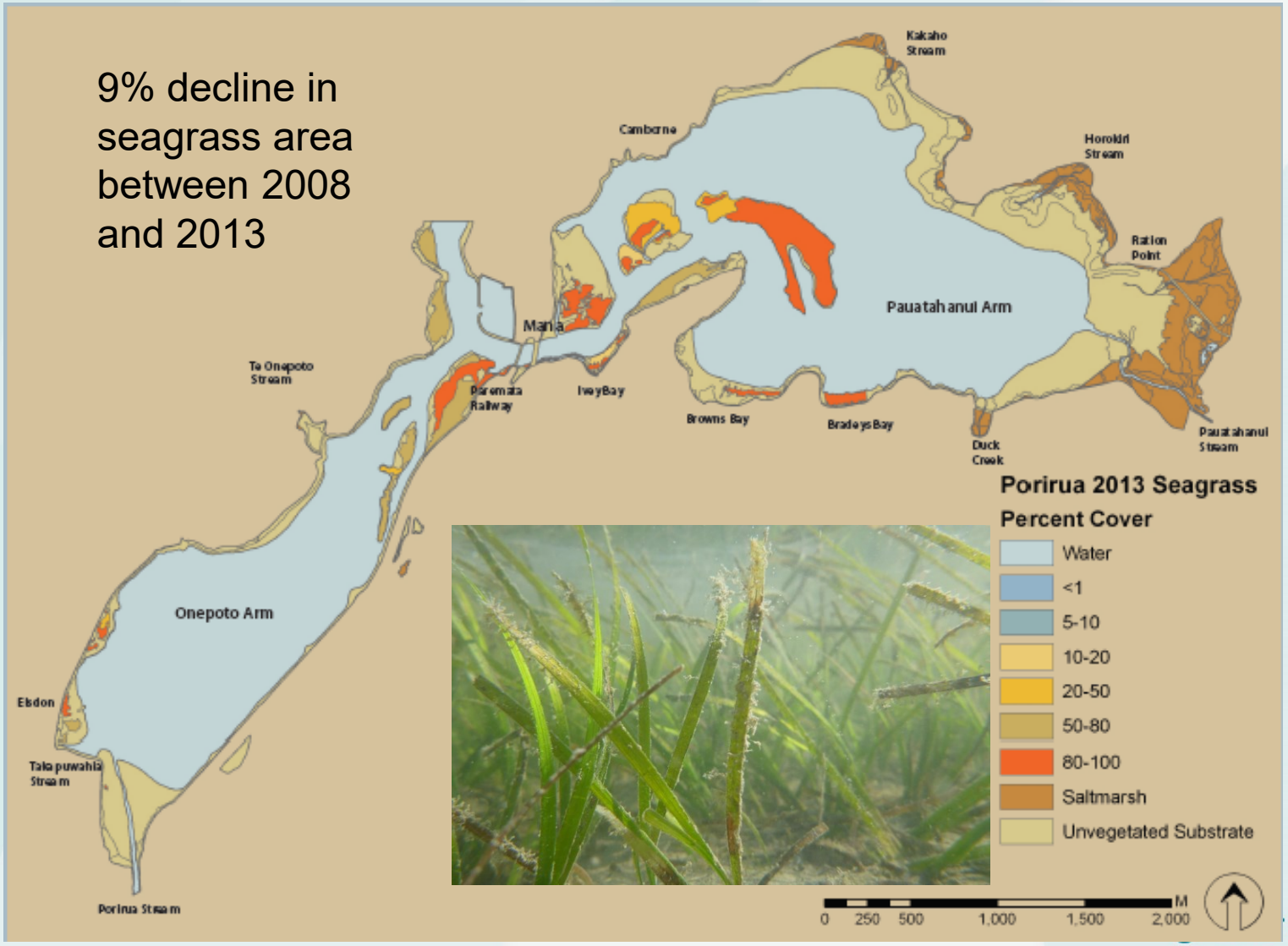
- Set limits Zn/Cu, periphyton, & N/P in FW
- Limits for metals and algae in the harbour
- Grades for rec WQ in FW and coast

How?

- SW performance standards
- Operational practices
- Infrastructure investment
- Influence central govt

Habitat mapping – seagrass 2019

9% decline in seagrass area between 2008 and 2013



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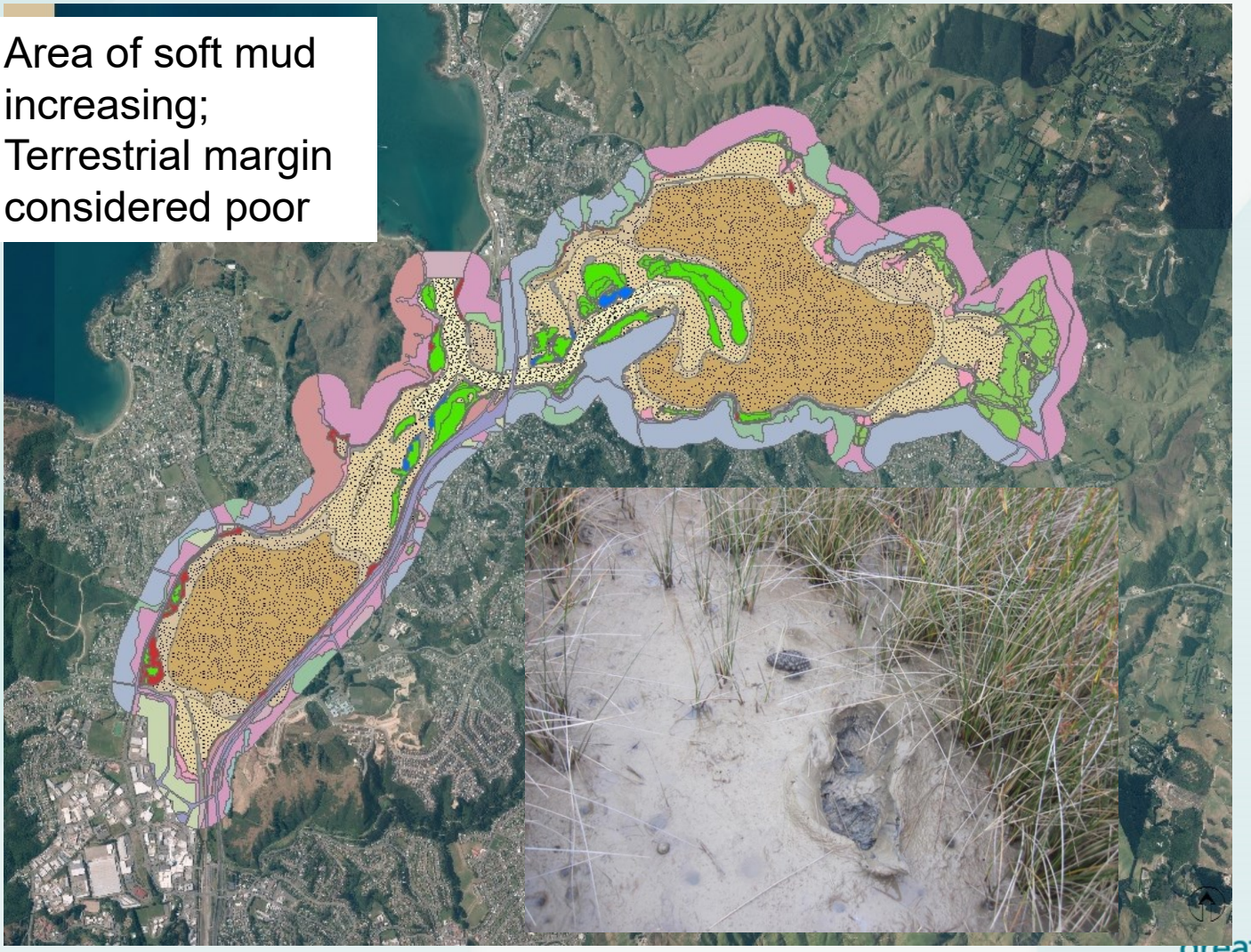
Habitat mapping – substrate 2019

Area of soft mud increasing;
Terrestrial margin considered poor



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Seagrass research

- PhD student - Inigo Zabarte (Uni of Waikato/NIWA)
- Studying effects of sedimentation on seagrass
- Plans to establish thresholds for growth
- Habitat enhancement and restoration opportunities

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Onepoto shellfish survey

- First volunteer survey of 5 sp
- Baseline survey by NIWA in 2015
- Signif incr in cockles from 2015
- 110 million cockles est (cf 288 million in Pauatahanui)
- Every 3 years
- Cultural indicators survey

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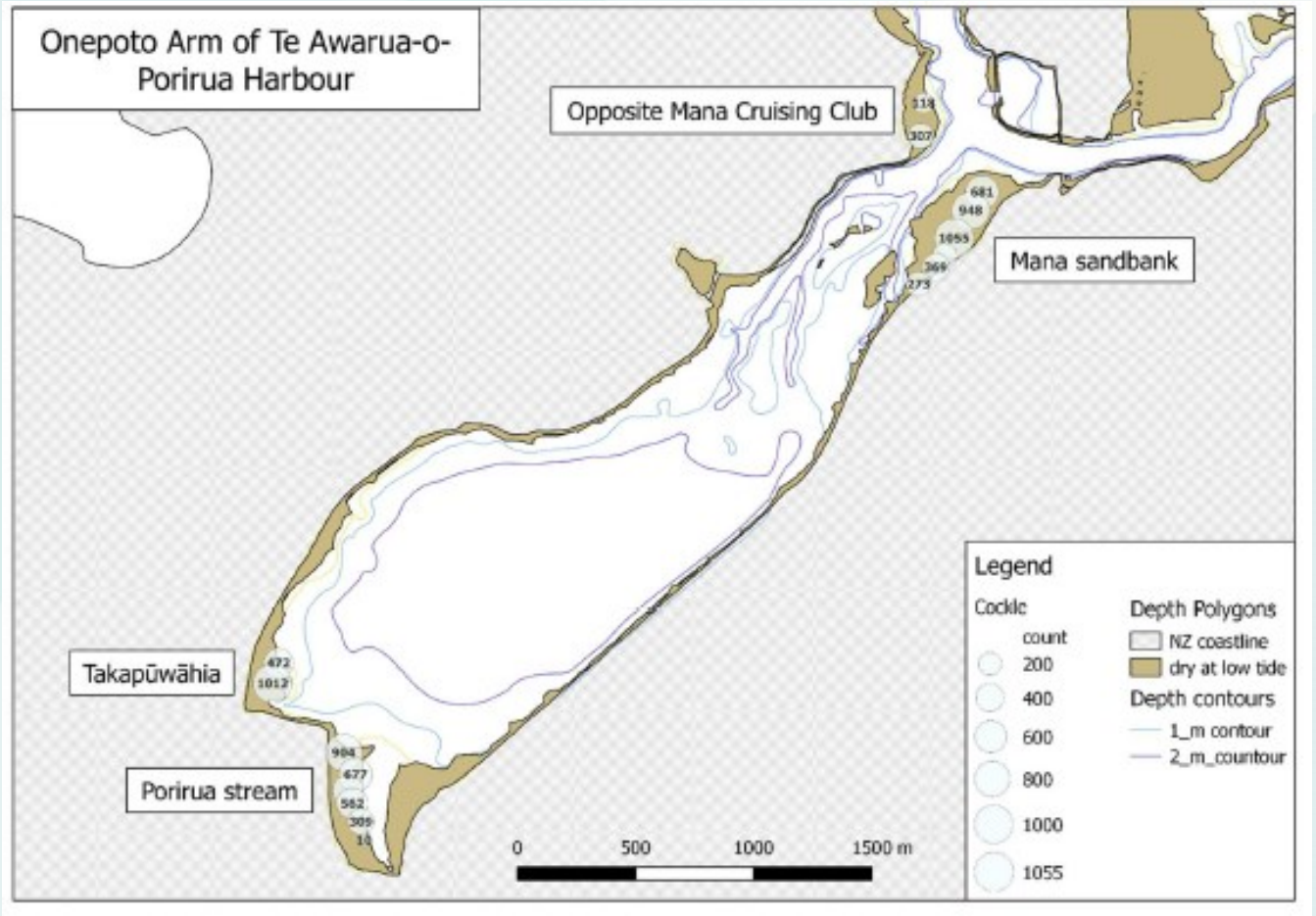
Onepoto shellfish survey



NB: mussel seeding proposal

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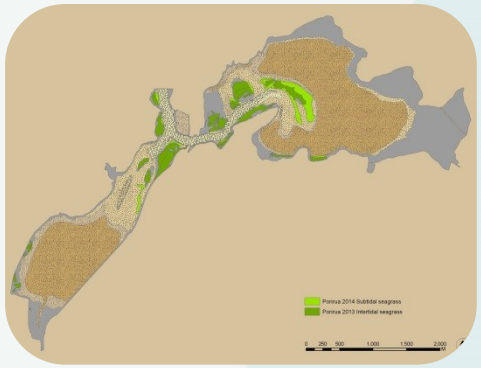
Whaitua response?

- Set objectives for inverts (MCI) and native fish in FW
- Habitat to be enhanced at all poss opportunity

How?

- Strategic programme of restoration work
- WSUD



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In summary

- Huge investment in monitoring and catchment activity, enabled by the PH&C strategy
- These data fed the whaitua
- The emerging whaitua recommendations are exciting
- The next iteration of the PH&C strategy will be an opportunity to align outcomes and actions

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