



TIAKI WAI | CARING FOR LAND & WATER

Catchment Solutions – Enhancing Rural Capability to Achieve Essential Freshwater Outcomes

A 3-years collaborative project focused on co-learning, exchange, and outreach

for targeted and effective water quality mitigation measures





FARMED
LANDSCAPES
RESEARCH
CENTRE



TIAKI WAI | CARING FOR LAND & WATER

FLRC - SOIL, WATER, AIR MATTERS

Key Partners



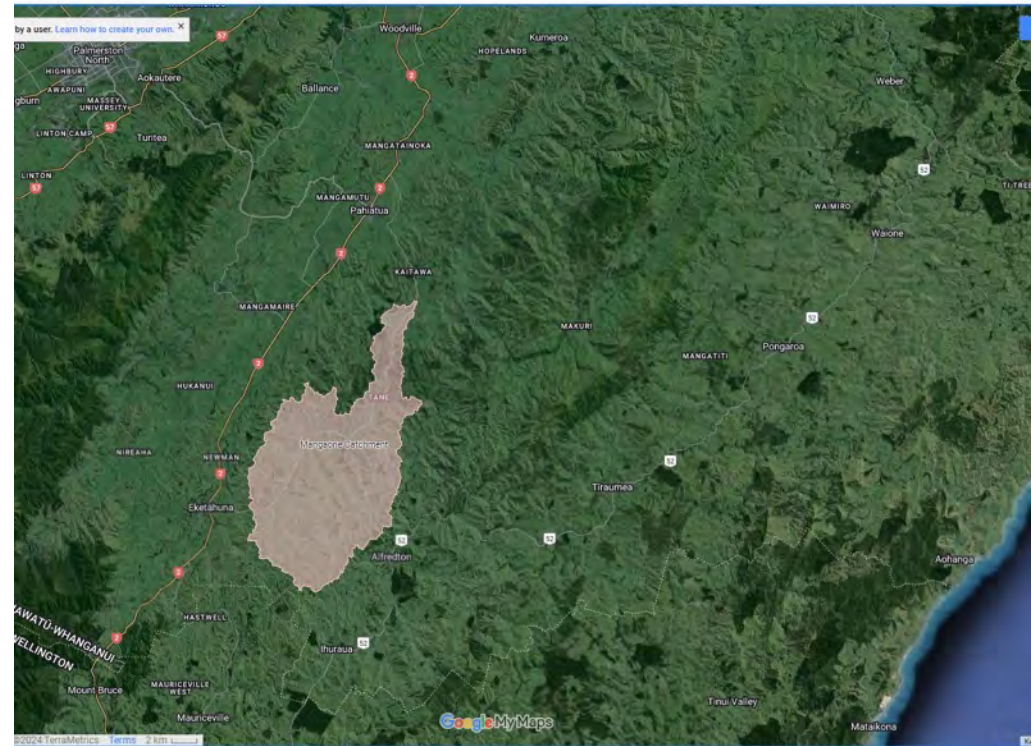
Ministry for Primary Industries
Manatū Ahu Matua



catchmentsolutions.co.nz

WORKING COLLABORATIVELY IN:

- **Manawatu** – Haynes Creek (on western side) and Mangaone River (on eastern side) catchments
- **Central Hawkes Bay** - Porangahau & Maharakeke catchments, and the Lake Whatuma catchment
- **Southern Taranaki** - Waingongoro River catchment




Mangaone River Catchment (focus of today's workshop)

Focus on critical flow pathways



Source: Environment New Zealand 2007, MfE.



**CO-LEARNING OF
CRITICAL FLOW
PATHWAYS AND WATER
QUALITY OUTCOMES**

- Collective catchment data collection and analysis
- Community aspirations
- Iwi/Hapū perspective





Water testing
(on-farm water
sampling in critical flow
pathways)



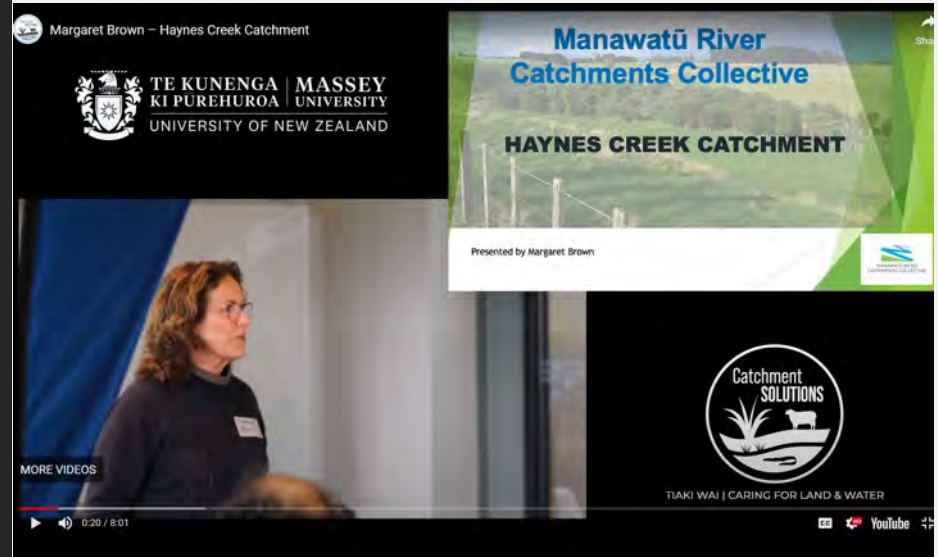
'Image credit: Liza Haarhoff, Otis Lane Design Studio'

Results nitrate-N



Spatial variability in nutrient flow pathways

CO-LEARNING CATCHMENT ANALYSIS TO IDENTIFY POTENTIAL MITIGATION PRACTICES



Pilot demonstrations



Construction of a woodchip bioreactor at Massey dairy No. 4

Pilot demonstrations



'Image credit: Liza Haarhoff, Otis Lane Design Studio'

Construction of a detention bund in Mangaone River catchment

Pilot demonstrations



Construction of a woodchip bioreactor in Haynes Creek catchment

Key take homes (so far)

- Catchment groups are highly interested in co-learning and co-discovery process
- Spatial variability in key water quality contaminants and their critical flow pathways – ‘e.g., elevated levels of nitrate in Haynes Creek, however elevated turbidity and phosphorus flows in Mangaone River, both flowing to Manawatu River’
- Farm water testing is highly engaging in co-learning process and critical for developing targeted and effective edge-of-field mitigations
- Create ‘safe operating space’ for catchment community to share and discuss their water quality results
- Sharing knowledge and tools/resources are key to enhance rural capability and capacity, as saying goes ‘putting science in the hands of farmers’
- Co-development of pilot demonstration is key for collaborative learning process for design and implementation of targeted and effective water quality measures

earth.google.com/web/data=MkEKPwo9CiExY2Qxdm5UQzFoQ2phZ28zeD8DXzRlV2U3WFlqckxjCVU4SFgoUMDZBNDFNzgzMjMxNURCQjI0N0QgAQ

Welcome to the new Google Earth! A new look, designed to speed up how you create and share

Haynes Creek Woodchip Bioreactor Tour

Catchment Solutions

St Agnes, Kwiitea

End stop: Summary

Stop 6: Interview with the farmer

Stop 5: Expected Performance of a Woodchip Bioreactor

Stop 4: Construction of the Bioreactor

Stop 3: Bioreactor design

Stop 2: Meet the Catchment Group

Stop 1: Location of the Bioreactor

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Google 97% Data attribution 4/6/2024 90 m Camera: 724 m 40°06'10"S 175°43'18"E 303 m

Stop 2: Meet the Catchment Group

MEET THE CATCHMENT GROUP

Meet the Chairman of the Haynes Creek Catchment Group, Mark Burke who shares his thoughts about the trial of the woodchip bioreactor in their catchment.

Meet Margaret Brown who with her family volunteered to trial the woodchip bioreactor on their family farm. Learn about the families journey as they negotiated the challenge to mitigate the effects of nitrate into their waterways in the catchment.

Click here to move [Stop 3](#) of the tour to learn how the Bioreactor was designed.

Location
40°06'06"S 175°43'21"E

3:30 PM
25/06/2024

Virtual tour a woodchip bioreactor in Haynes Creek



FIELDAYS, WORKSHOPS & MASTER CLASSES



FLRC - SOIL, WATER, AIR MATTERS



TIAKI WAI | CARING FOR LAND & WATER

26th June 2024 Annual Workshop and Field Day programme

Venue – Flagon room, Tui Brewery, Pahiatua

9.30 am - Registration/tea/coffee

10:00 am - Karakia and welcome

10.10 - 10:30 am – Ranvir Singh (Massey University) - Catchment Solutions objectives and activities, outline to the workshop and field day (15 min. + 5 min. Q&A)

10.30 - 10.45 am – Jack Keast (Horizons Regional Council) - Eradication of Fringed water lily in Mangone River catchment (10 min. + 5 min. Q&A)

10.45 - 11.15 am – John Paterson (PMP Inc) - Detainment Bunds^{PS120D} - a novel edge-of-field technique to mitigation surface runoff contaminant losses (25 min. + 5 min. Q&A)

11.15 - 11.40 am – Allister Body (West Otago farmer) - Construction and operation of a Detainment Bunds^{PS120C} at my farm (20 min. + 5 min. Q&A)

11.40 - 12.00 noon – Fernando Avendaño (Massey University) - Tools to map and design Detainment Bunds^{PS120D} at catchment-scale (15 min. + 5 min. Q&A)

12.00 - 12.25 noon – Katarina McIntosh (DairyNZ) - FarmAPT (Farm Action Prioritisation Tool) to identify targeted water quality mitigation practices at farm-scale (20 min. + 5 min. Q&A)

12.25 - 1.10 pm – Lunch (Flagon room)

1.10 – 1.20 pm – Anthony Mason & Mike Napier (Horizons Regional Council) - History of Mangaone flood control dam and its operations, maintenance, and future work programme

2.00 - 2.20 pm – Field visit to Mangaone flood control dam

2.40 - 3.15 pm – Practical demonstration of a recently constructed Detainment Bund^{PS120} in Mangaone River catchment - Alan Schnell and Debbie Sloan welcome the group, Fernando Avendaño and Ross Gray showcase posters explaining development process

3.30 pm – Wrap-up & Q&A