Mapping and Managing Riparian Zones

Landcare Research LINK Seminar

Ministry for Primary Industries
Manatū Ahu Matua

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

Today's seminar

Outline:

- 30 mins on "Riparian Planner" background

- 15 mins of live demonstration

- Q&A

Key messages:

- A simplified, user-friendly & effective tool

- Digital, accountable & transparent

…to **actually** enhance water quality

The **DairyNZ Why**? Freshwater Reform & Sustainable Dairying

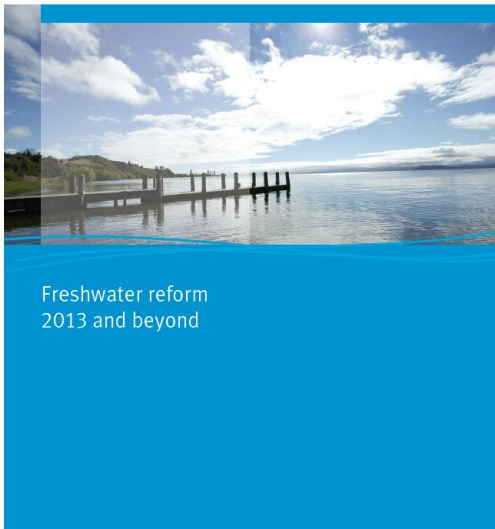Two big drivers for enhanced water quality, nationwide...

"Water Accord" – Industry commitment on x8500 farms

- Stock exclusion (2017)

- Crossings (2018)

- Riparian plans (2020)

- Actions complete (2030)

DairyNZ responsible for:

- Reporting (3rd party audits)

- Farmer guidance & **tools**

New Zealand Government

Freshwater reform
2013 and beyond

Sustainable Dairying:
Water Accord

A Commitment to New Zealand
by the Dairy Sector

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **DairyNZ Why**?
Filling the Industry toolbox

Riparian management
enhances water quality…

- Stock exclusion – bankside erosion & direct defecation

- Grass filters – strip N, P & *E.coli* (cut & carry)

- Plantings – cool water, shade weeds & offer habitat
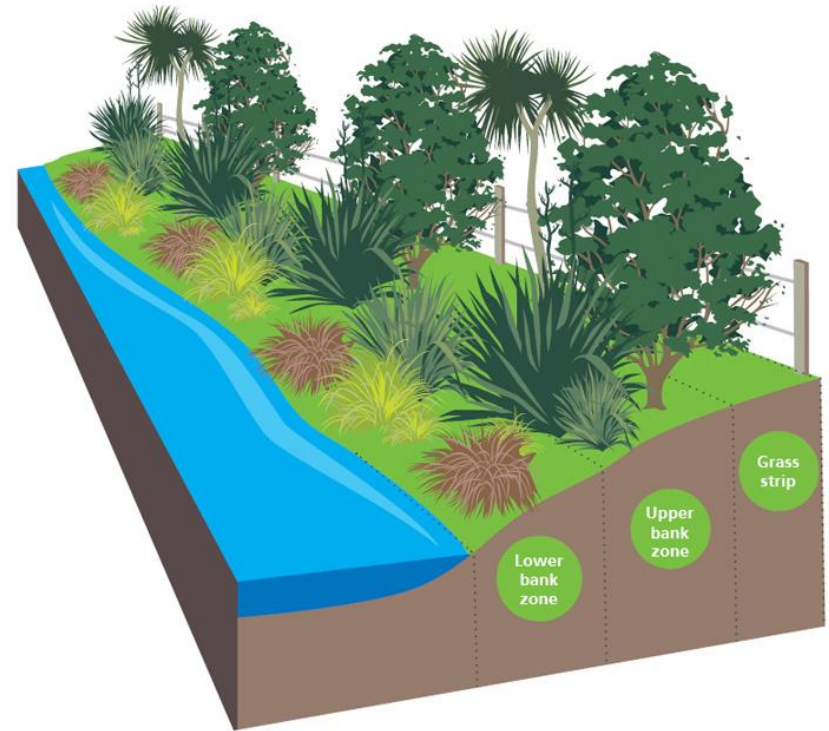
So, there must already be a practical riparian tool yes? Yeah nah.

The **LR Why**? Riparian management & biodiversity

- Our focus (in this space): biodiversity and ecosystem research

- Understand ecosystem services sustainability and specifically how riparian networks operate

- Focused around how these systems work in an agricultural land use context

The **LR Why**? Riparian management & biodiversity

Riparian networks form dynamic links between terrestrial and aquatic ecosystems, mediate exchange of cross-ecosystem subsidies, provide valuable ecosystem services and sustain under-represented biodiversity

Some of the key areas of research focus presently are

- How to improve mitigation benefits

- Measuring multiple functions/services

- Creating resilient catchments

- Scaling up to national scales

This research aims to help us understand the

critical role riparian networks play

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **LR Why**? Riparian management & biodiversity

An example… Mangawara Wetland Project

- Restoring habitat & enhancing water treatment

- Floating wetland for treatment

- 93% removal of nitrate & 80% total P from water leaving

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **LR Why**? Riparian management & biodiversity

Another example – UAV's monitoring on-farm

- Can we use LiDAR or Multispectral imagery to determine extent, continuity, slope and vegetation condition?

- Scoping study

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **LR Why**? Integration with our Informatics programme

- Building on work under our Nature Services 'brand'

- Leveraged our experience in spatial mapping web delivery and science/applied science data services to stakeholders

- Future potential to integrate new techniques and technologies for measuring wetland/riparian ecosystems

- Partnership will allow us to further develop opportunities to assist in getting evidence-based decision making into the agricultural space such as the important dairy sector

The **DairyNZ Development** story…

Farmers & rural professionals wanted:

- Better water quality

- Easy to use

- Low cost

Industry needed (more):

- Auditing & Reporting

- Consistency

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **DairyNZ Development** story…
Don't believe us?

The **DairyNZ Development** story – Roll-out & Support

Councils & professionals (now) regional training sessions

Farmers (2017+) training, guides & videos (...Field Days)

More time for farmers - less time with paperwork

Introducing the Riparian Planner - your online tool for creating quick, easy and effective riparian plans
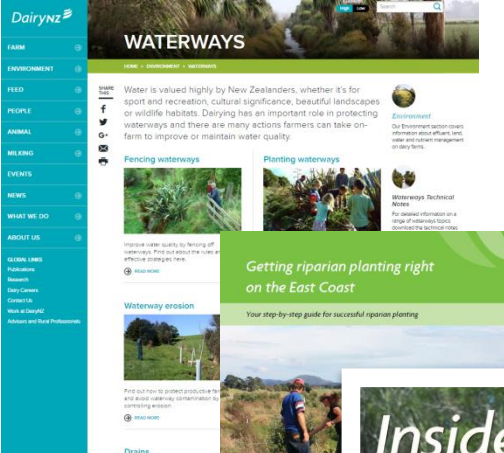
(Region : workshop date : location)

The dairy industry has committed to every dairy farm having a riparian management plan by 2020. Riparian plans are increasingly part of consent obligations. Farmers need **your support and advice** to get their plan sorted.

Join a workshop for rural professionals near you, and walk away with:

- access to an intuitive online tool to make your job easier;
- skills to add to your service offering and the potential to grow your client base;
- knowledge at your fingertips - easy mapping, built-in calculators, regional plants;
- the confidence you can deliver a riparian plan - quickly, effectively and to budget;

Register here to secure your place for a session delivered by DairyNZ - *free of charge* and *in your region.*

WATERWAYS

FARMER LEADERSHIP

Getting involved beyond the gate

LANDCARE RESEARCH
MANAAKI WHENUA

The **LR Development** story – Getting under the hood

Technical bits first…

- Web App in current web frameworks: Angular, Bootstrap, .Net, PostGIS database

- Web mapping with OpenLayers

- Consumes four different spatial services (LINZ, Landcare Research) all in the Cloud

- Authentication by a 3rd party cloud provider (Auth0)

- Web App and database hosted in the Cloud (Azure)

DairyNZ

LANDCARE RESEARCH
MANAAKI WHENUA

The **LR Development** story – Getting under the hood (Step 1)

The **LR Development** story – Getting under the hood (Step 2)

LINZ NZ Aerial Imagery

LINZ Cadastral

LR Topographical

LR Regional Boundaries

The **LR Development** story – Getting under the hood (Step 2)

The **LR Development** story – Getting under the hood (Step 3)
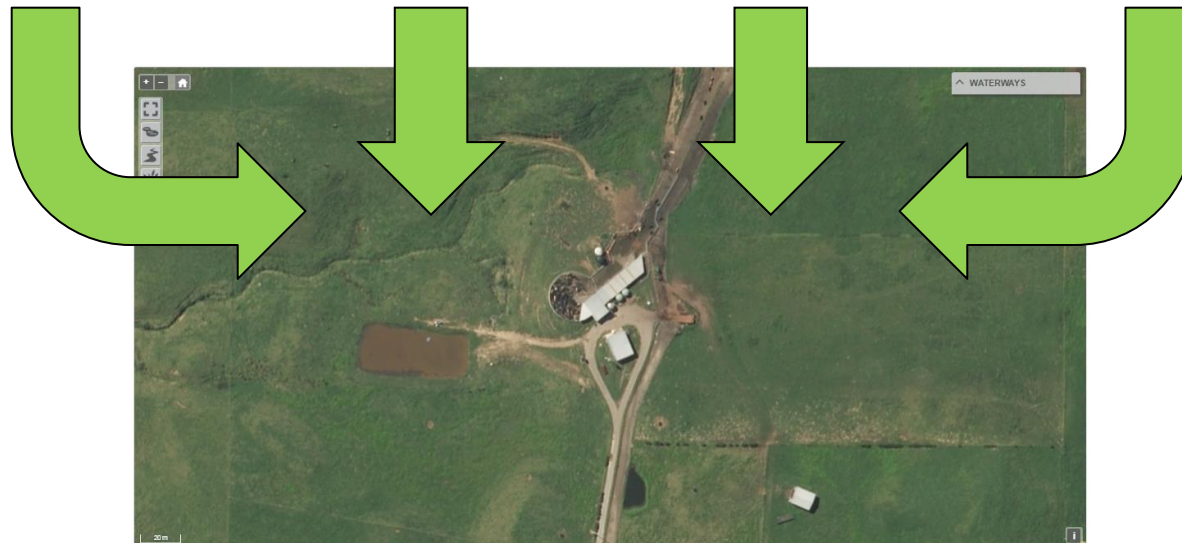
The **LR Development** story – Getting under the hood (Step 4)

1. Describe Plan	2. Map Waterways	3. Plan Actions	4. Get Summary

Review and print a summary of your plan, a tailored plant list and a map.

For further information on how to carry out riparian planting please refer to the information and downloadable guides found on Planting Waterways.
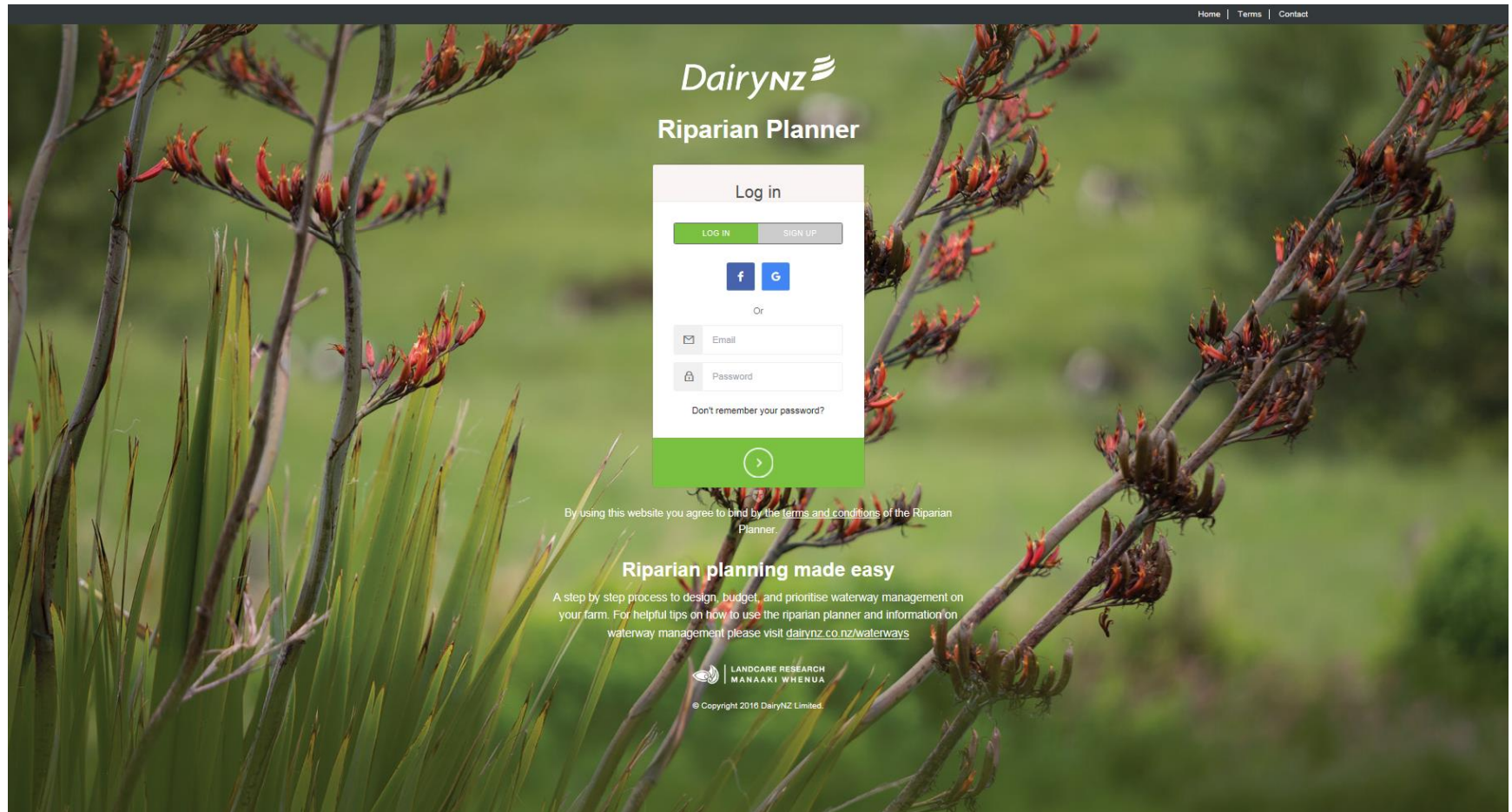
⬇ Download report

Overview	By Year	Plant List	Map

Waterway	Actions				Total cost
	Action	**Estimated cost**	**Start**	**Finish**	
🖼 **Main river** *Accord Waterway - eroding - both sides managed - predominantly grass*	Site preparation	$0			$25,270
	Planting (50%)	$22,770	2016	2020	
	Ongoing maintenance	$2,500	2016	2020	
	Other costs	$0			
📊 **Shed wetland** *Wetland - predominantly grass*	Site preparation	$0			$16,875
	Fencing (370m)	$2,035	2016	2016	
	Planting (100%)	$10,840	2017	2018	
	Ongoing maintenance	$1,500	2017	2019	
	Other costs	$2,500	2016	2020	
	2016: Pest traps 2017: Pest traps 2018: Pest traps 2019: Pest traps 2020: Pest traps				

Riparian Planner: A live demo
Does it hit the mark?