Mapping and Managing Riparian Zones

Landcare Research LINK Seminar

Ministry for Primary Industries
Manatū Ahu Matua

DairyNZ

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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

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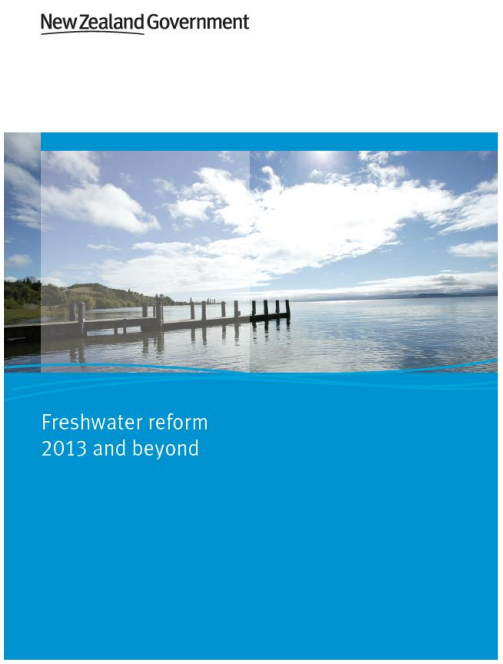
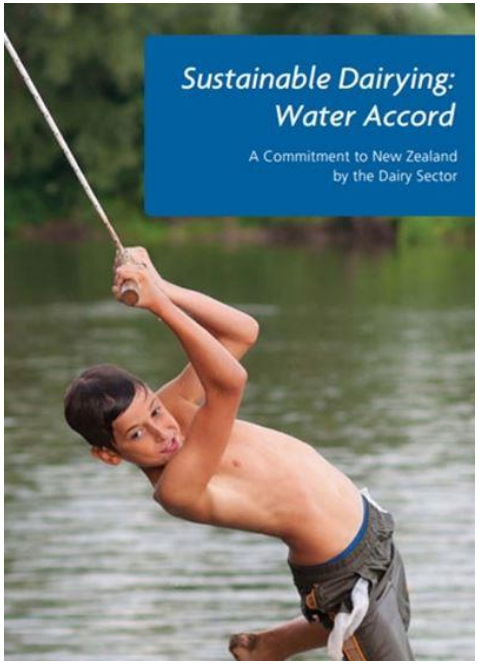
The **DairyNZ Why**? Freshwater Reform & Sustainable Dairying

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**

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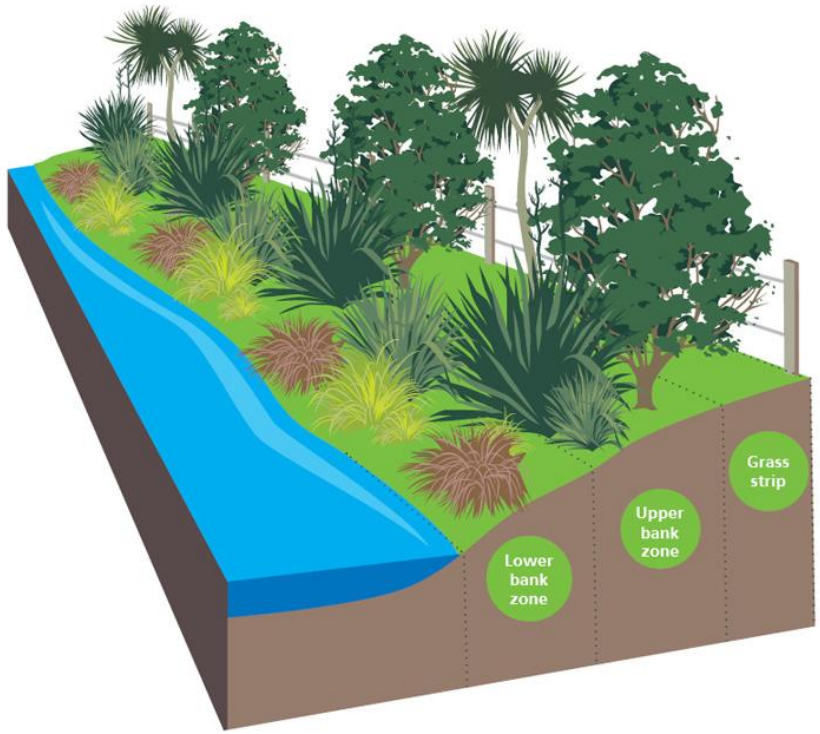
The **DairyNZ Why**?
Filling the Industry toolbox

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

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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

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

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

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

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

Councils & professionals (now) regional training sessions

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)

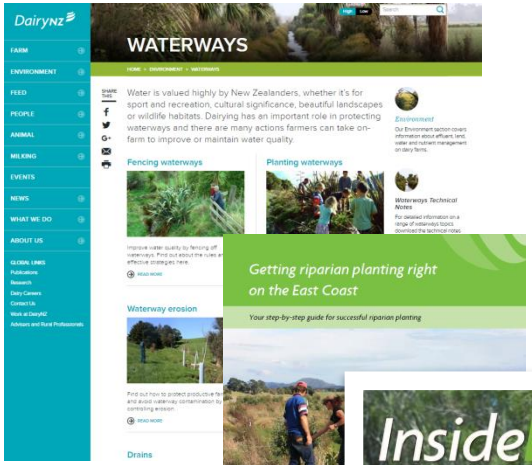
The dairy industry has committed to every dairy farm having a riparian management plan by 2020. Riparian plans are increasingly part of consent obligations. Farmers need **your support and advice** to get their plan sorted.

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.***

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



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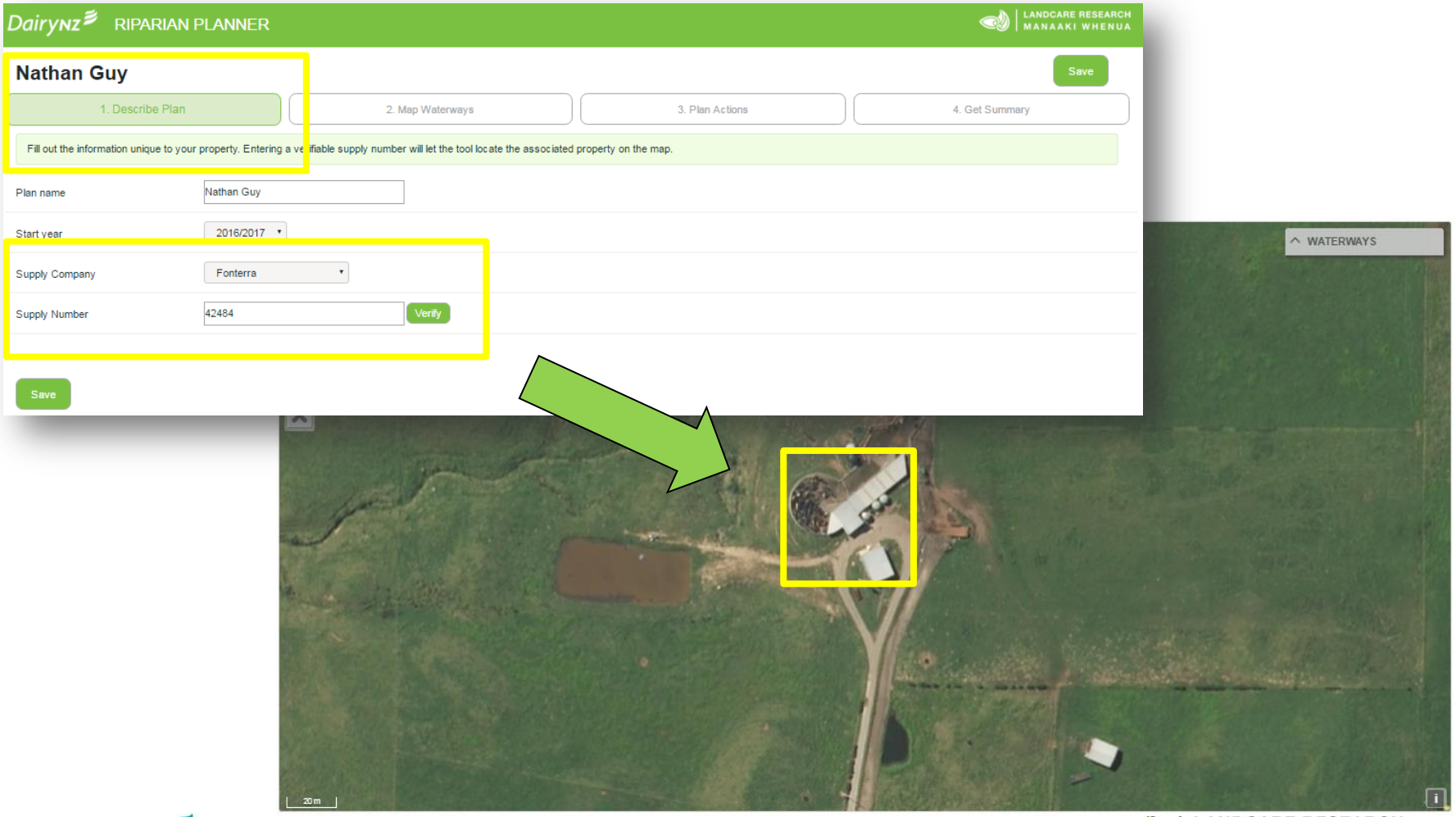
The **LR Development** story – Getting under the hood

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)

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



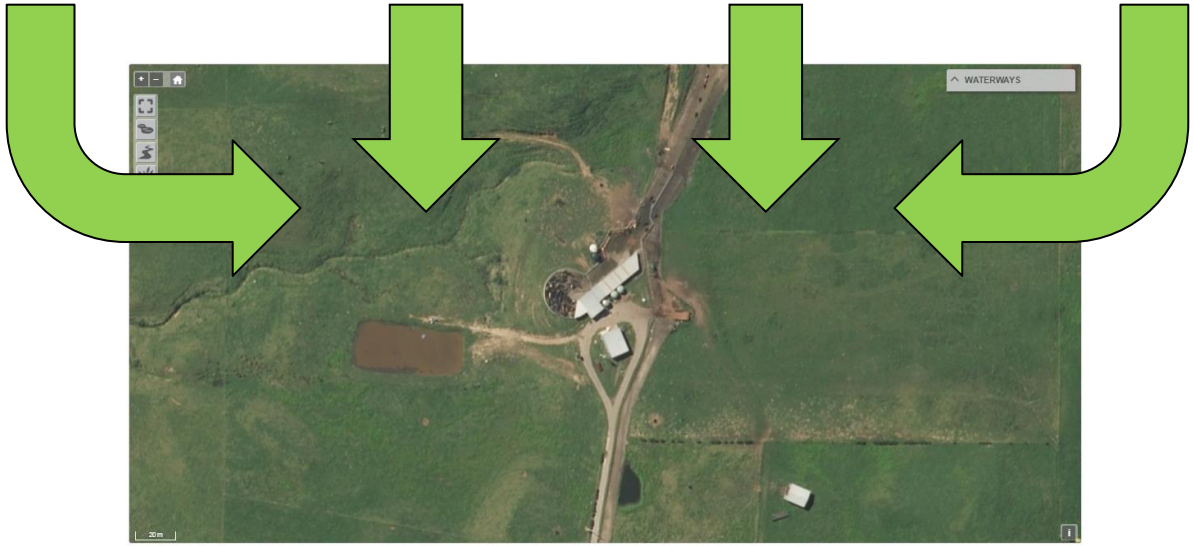
The **LR Development** story – Getting under the hood (Step 2)

LINZ NZ Aerial Imagery

LINZ Cadastral

LR Topographical

LR Regional Boundaries



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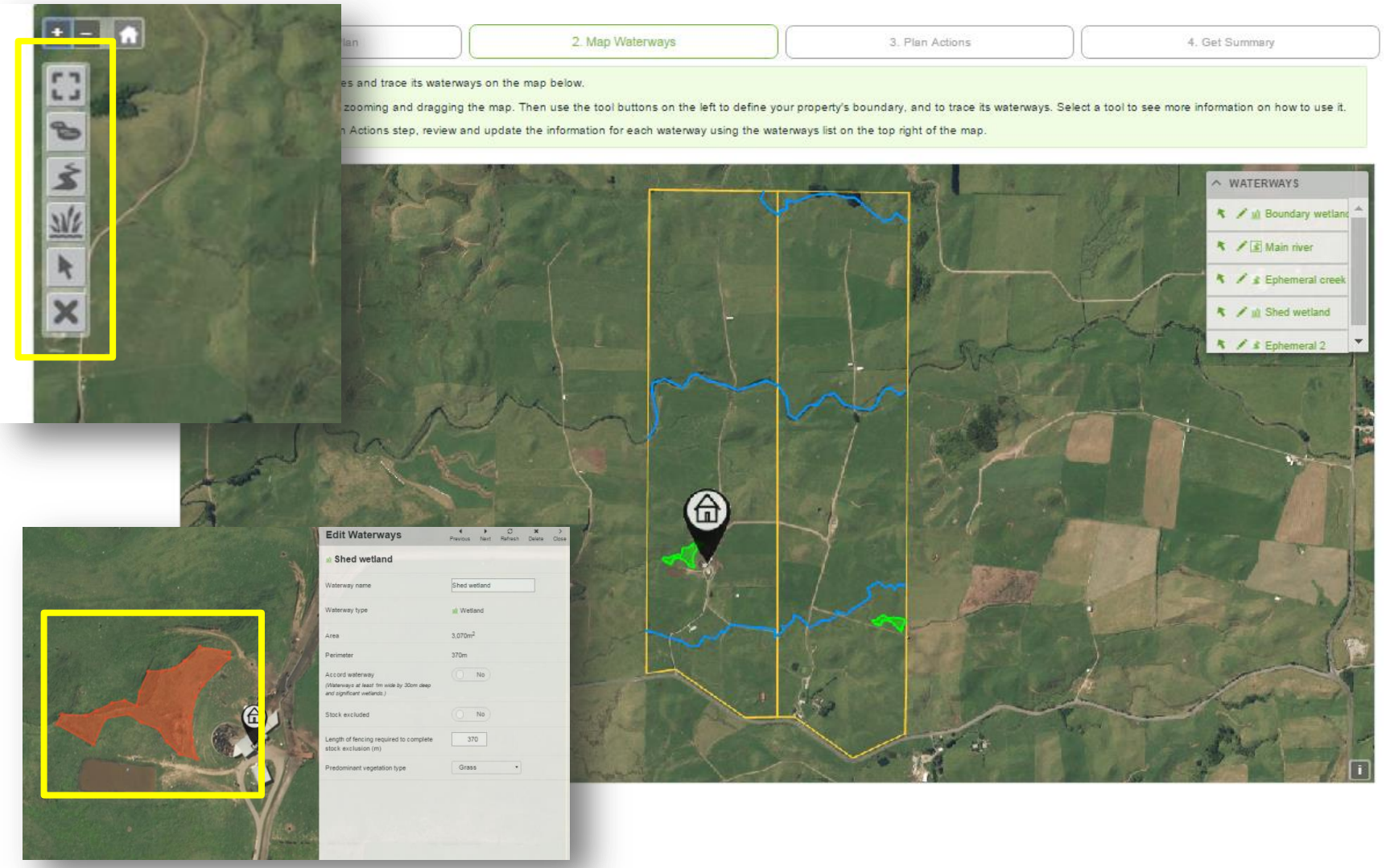
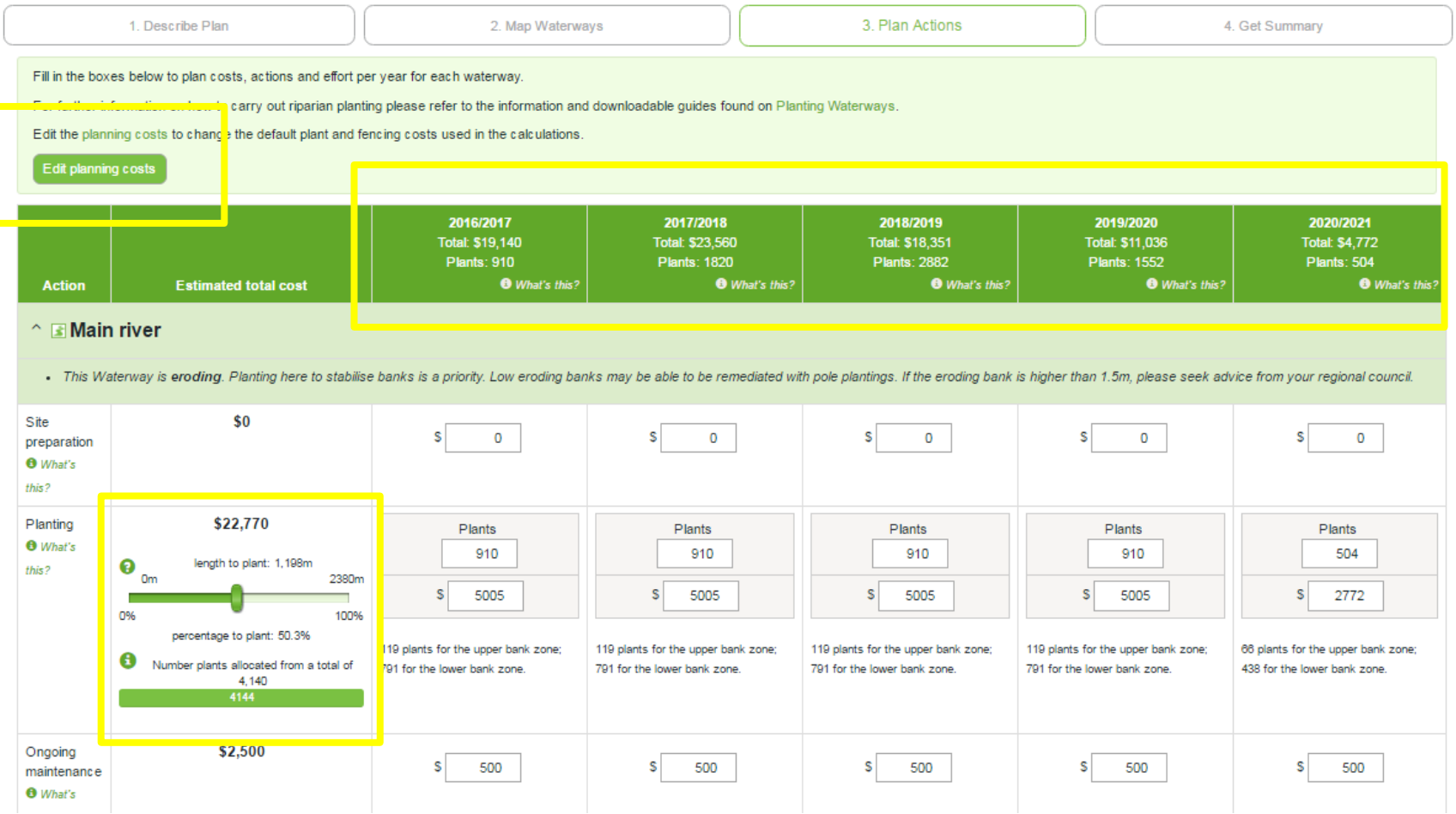
The **LR Development** story – Getting under the hood (Step 2)



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: Pest traps 2017: Pest traps 2018: Pest traps 2019: Pest traps 2020: Pest traps	2016	2020	

Riparian Planner: A live demo

Does it hit the mark?