WETLAND RESTORATION PLAN

Hunterfield, October 2022

Environment Canterbury Regional Council
Kaunihera Taiao ki Waitaha

MANAGING Wetlands AS FARM ASSETS
LED BY NZ LANDCARE TRUST

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INTRODUCTION

Canterbury wetlands - every wetland counts

Since European settlement in the mid-19th century, wetlands across New Zealand have been drained for urban and rural development. In Canterbury, it appears we have lost up to 90 per cent of our freshwater and natural wetlands and half of our coastal wetlands.

Most of Canterbury's remaining wetlands are coastal or in the foothills, high country, or margins of rivers. We might drive past a piece of scraggly-looking vegetation without realising it is a small remnant of a former, much larger wetland.

While we now recognise wetland values and how vital they are to maintaining waterways and biological riches, our remaining wetlands continue to be threatened by human activities and invasive pest species. Experience shows it is easier to work with nature to protect and restore our remaining wetlands and remnants rather than starting from scratch.

Managing Wetlands as Farm Assets is a project led by NZ Landcare Trust, working with project partners including Environment Canterbury, NZ Deer Farmers Association, Deer Industry New Zealand, NZ Merino, DairyNZ and Overseer, with support from Federated Farmers and Fonterra. In addition to partner funding, this project receives funding from Sustainable Food and Fibre Futures administered by the Ministry of Primary Industries.

This practical project is working with a cross-section of farmers to provide advice and share knowledge about the benefits wetlands offer the farming system and the wider community.

Fourteen wetland case study demonstration sites have been set up, focusing on the protection and restoration of wetlands. The demonstration sites cover a range of wetlands across the different farming systems and varying ecological zones of Canterbury. Three constructed wetland types are also included. The project runs until mid-2023.

See here for more about the Case study demonstration sites.

ABOUT THE PLAN

This Wetland Restoration Plan has been put together to help landowners and those supporting them to be used as a reference guide and a useful way of collating the materials and information that a landowner might need before carrying out any work.

The landowner must account for a number of factors to ensure they are not in breach of any regulations or local rules prior to any work being carried out in a wetland. In addition, wetland restoration requires an understanding of the current status of the wetland and the steps that will be taken to restore it. With the protection of mahinga kai now part of Farm Environment Plans for some Canterbury districts, it is also helpful if farmers understand why wetlands are regarded as taonga – treasured natural resources. A plan is also an opportunity to include the wisdom of Mātauranga Māori alongside farming and scientific knowledge.

In addition, wetlands can become a labour of love but require the allocation of resources and an ongoing commitment to ensure the long-term success of the wetland. We know from experience this requires the landowner to have a clear set of goals and objectives for the wetland and how it fits into the farm operation, the whole farm system and the catchment of which they are part.

As with any biological process, it is important to be aware of changes and interactions in the wetland and surrounding area and, where necessary, adapt our management to continue to support the restoration of the wetland. Whilst the plan is accurate as at the date on the cover, observation and regular monitoring should be included when the plan is reviewed on a 5 or 10-yearly basis.

KEY ACTIONS

At a high level, these are the priority actions for this wetland. Refer to the plan for more detail.

1. Willow and other weed poisoning
2. Move the fences back a bit
3. Do some water quality monitoring
4. Plant a few tree species near the future picnic area at the southern end of the wetland
5. Build a crossing point so people can access the picnic area

WETLAND RESTORATION/MANAGEMENT

SITE DETAILS

Landowner & Occupier

Primary contact

Location

Location details: Situated on a tributary of the Saltwater Creek.

Coordinates: Lot 6 DP 19091
Ecological District:
Ecological Region:

Wetland dimensions

Current extent of wetland is approximately 3.4ha which extends over 8 land parcels representing 3 farms and 4 lifestyle blocks. The portion of wetland area that falls within the property boundary of Hunterfield is 1.3ha. The greater wetland area follows a meandering course over a span of 1200m with a maximum width of 100m.

Special designation

N/A

Wetland Extent Photo

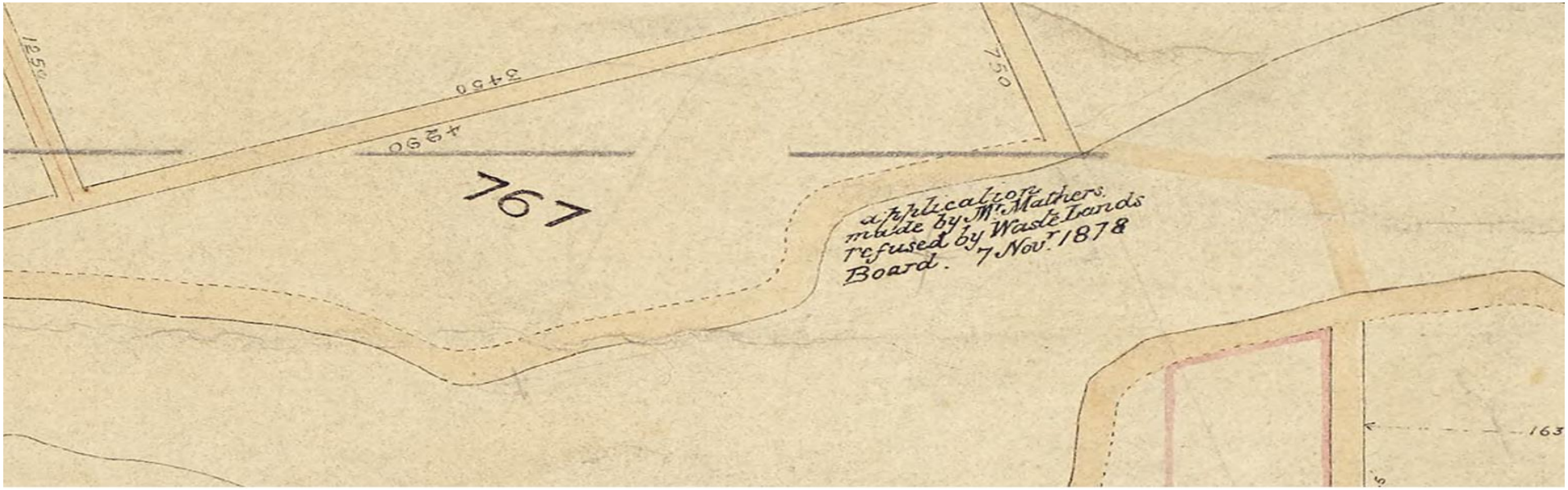

Figure 1 https://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=IE28249465

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Hunterfield Farm - Land Parcels

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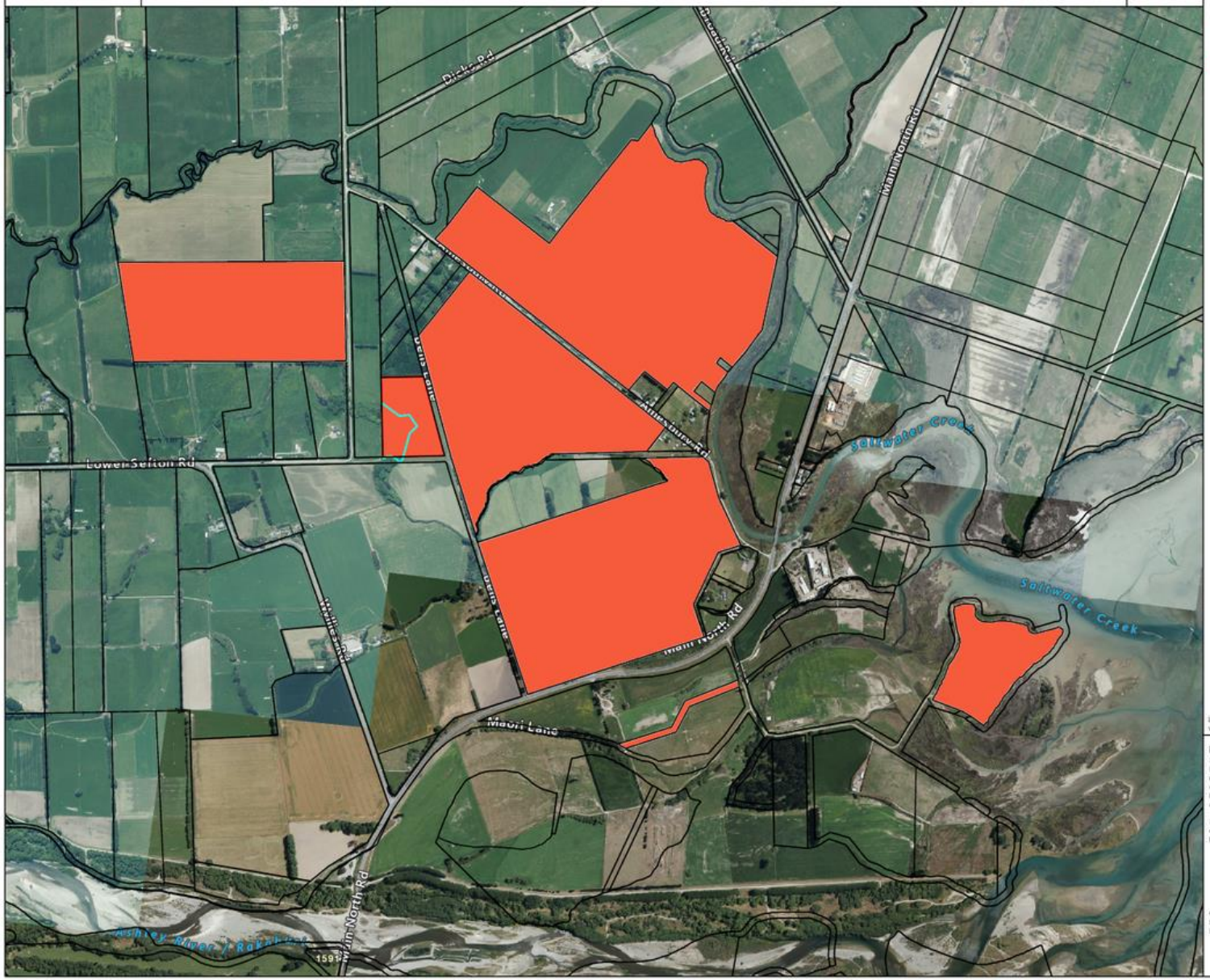

Property Boundaries
Approximate location of new fence

Area Drawings

Hunterfield Farm land parcels
Land parcel boundary

Legend note: if you have a large number of layers on the map, they may not all be visible in the legend.

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0 0.15 0.3 0.45 0.6 Kilometres

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Hunterfield Farm - Willow Canopy

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Area Drawings

- Lot 6 DP 19091
- Grey willow canopy
- Crack willow canopy

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Hunterfield Wetland - Fence

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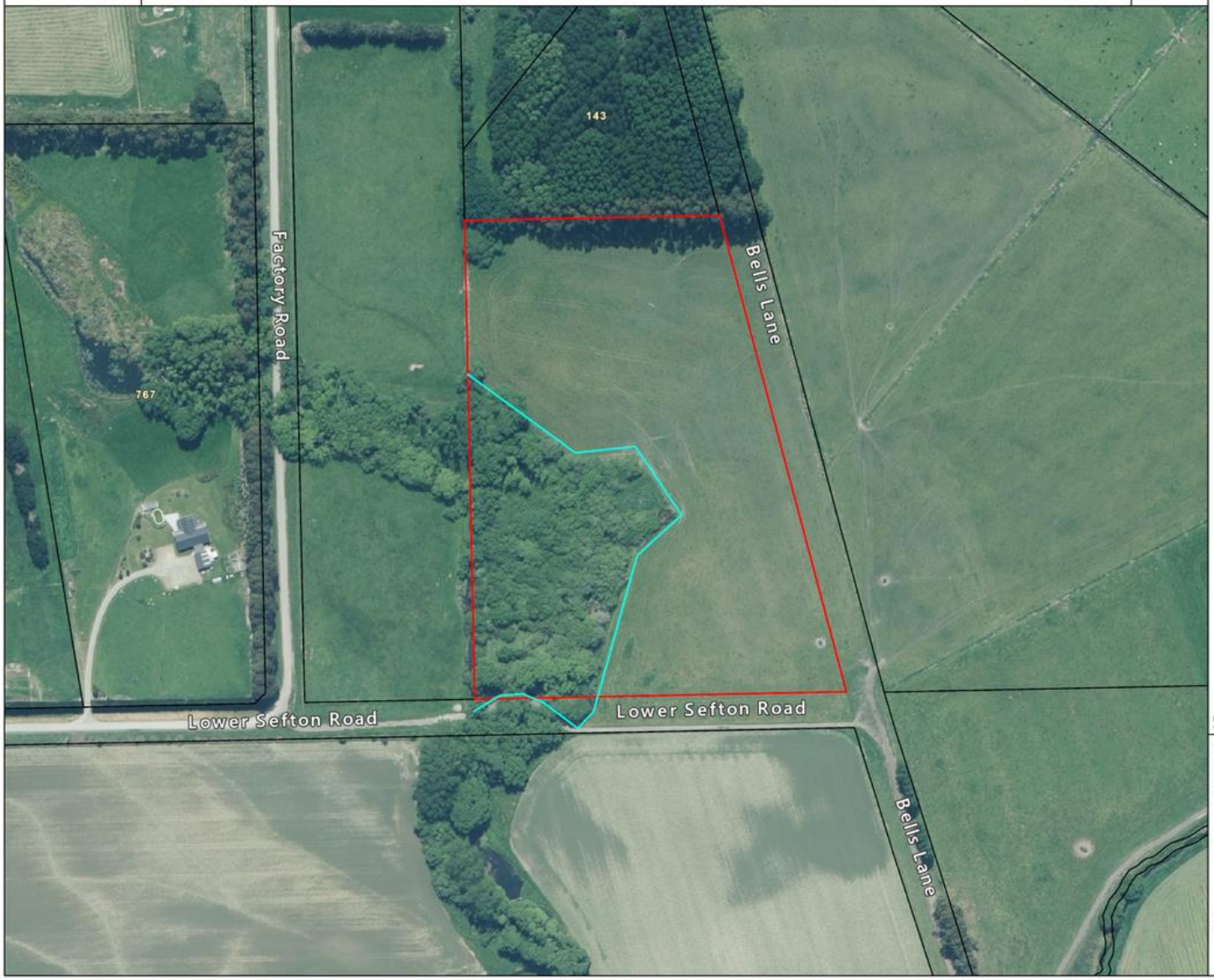

Approximate location of new fence
Land parcel boundary

Legend note: if you have a large number of layers on the map, they may not all be visible in the legend.

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SITE DESCRIPTION

General description

Primary hydrosystem: Palustrine
Secondary hydrosystem: Riverine
Primary wetland class: Swamp
Secondary wetland class: Riparian
Primary structural class: Willow forest
Secondary structural class: Sedgeland

Topography

Description: The topography is typical of the Canterbury Plains in being flat. There are a number of spring heads scattered throughout – particularly at the northeast corner. The waterway that flows through the wetland is a tributary of Benzie's Creek which in turn is a tributary of Saltwater Creek.

Soils:

Current Vegetation

Description: Dominated by willows with a rich understorey of fern species, the most prominent of which is mata (*Histiopteris incisa*). Areas of pukio (*Carex secta*), rautahi (*Carex geminata*), harakeke (flax/*Phormium tenax*), with scattered mikimiki (*Coprosma propinqua*) and karamū (*Coprosma robusta*). Blackberry (*Rubus fruticosa agg*.) is dense and common in places.

Special Features

Description: None known.

Figure 1 *https://ndhadeliver.natlib.govt.nz/delivery/DeliveryManagerServlet?dps_pid=IE28249465*

Nearby Natural Areas

Description: The Ashley/Rakahuri Estuary and Saltwater Creek are nearby, with large indigenous plant communities associated with Saltwater Creek 1000m away.

Wildlife

Description: Kahu/swamp harrier (*Circus approximans*) are frequently observed at the site.

Site history

Description: The wetland sits within a landscape dominated by high producing exotic grassland. Soil mapping (New Zealand Fundamental Soils layer – Ecan Maps) suggests a wetland of 1800ha occupied poorly drained soils in this part of the district with this wetland sited towards the southern edge of this historic wetland. This wetland was roughly bounded to the west by Upper Sefton Rd and to the north by Duffs and Gartys Rds, to the south and east the boundary was marked by the Ashley/Rakahuri River and the coastal dune system. Adjacent to other wetlands that are associated with the tributary that originates in the former "Education Reserve" bounded by Factory Road.

Description of water flow and drainage

Water primarily enters from a defined channel to the west and exits through a defined channel to the south. Water arises within the wetland from a number of springs, some of which are significant. Culverts and roads may have resulted in the need for the channelisation of the waterway.

Reference wetland

Despite a 19th-century history of extensive wetlands in the area it is very difficult to identify a suitable natural wetland remnant as a reference wetland.

Current condition

Description: Stock has been excluded for some time – currently, stock is excluded on 2 sides with two wire electric on waratahs (North and East), one wire on waratahs (South along access track) and a permanent boundary fence on the western edge.
Extensively willow forest with crack willow dominant and some very large grey willows. Other weeds include a reasonable amount of blackberry. A reasonable suite of ferns has established under the exotic canopy. Much of the typical vegetation of this wetland type has been lost to shading – harakeke and *Carices* have been much reduced and there are signs of some of the former vegetation present in the form of dead purei (*Carex secta*) pedestals.

ENHANCEMENT PROPOSAL — WHAT YOU PLAN TO DO

Vision

There have been willows in here for a long time. We've changed our farming practices over time and we want to give this wetland area a chance to return to it's earlier state. We're keen to see the native plants and birds flourish and we want this area to be accessible for locals to enjoy and we'd like to plant some moisture loving tree species that once covered the area.

Objective(s)/steps towards the vision

Willow eradication. Suppress blackberry. Plant several species to enrich the plant community. Manage waterway by planting shading species.

Water source/management

Water is sourced from an adjacent upstream property to the west, from overland drainage on this property and upwelling springs within the wetland.

Silting/silt management

Setback – make it count. Setback should be of a distance that achieves a good filter strip for sediment, nutrient and pathogen mitigation

Fencing

Improve fence to a permanent fence and setback that will intercept sediment, nutrient and pathogen discharge.

Weeds

Grey willow (*Salix cinerea*), crack willow *(S.* x *fragilis*) blackberry.
Basal bark, cut stump paint drill and inject as required.

TOTAL COST OF PROJECT

Funding source

SFF and Landowner

LEGAL/SOCIAL ISSUES

Consent requirements (Creation of open water will generally require earthworks consents. Check with Canterbury Regional Council and your local council if any other consents will be required in connection with blocking drains, diverting water and use of herbicide. You also need permits to release live fish or any other living organism into a waterway or waterbody from the Department of Conservation, Fish & Game Council, and/or the Ministry for Primary Industries – Fisheries).

Consent required for vegetation clearance under NES-F Part 3, r39. Works will be undertaken under Environment Canterbury compliance discretion.

Neighbour issues

Willows can be controlled while standing but some management of the dead material may be required. As the willows decomposes and fall there is a risk of waterway blockages that may constrain flows and back water up into adjacent productive land and neighbouring properties. Other risks include emergent species (monkey musk and watercress) blocking the drainage - shading the waterway with suitable species will assist in reducing this risk.

MONITORING — MEASURE YOUR SUCCESS

Monitoring methods (indicate using techniques below or alternative techniques)

Photopoints

Permanent photo points to be set up upon completion of the new fence.

Regeneration

Already occurring to an extent. Limited to common species and those that are shade tolerant. Changes in the plant community will be monitored by installing permanent vegetation plots.

Other

Wetland condition index score will be generated from the first measurement of the permanent vegetation plots.

Photos / Notes

TABLE OF ACTIONS

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
1.1	Landscape value / natural character - woody weeds	The overall wetland area has been invaded by a number of woody weeds, including grey and crack willow and blackberry. John remembers the wetland from when he was young, and some of these willows were old trees then. However, other areas where he remembers the old flaxes are now choked with blackberry and other weeds.	Project funding will be used to control weeds in the wetland (see map) and to create a managed buffer. Weed Control Plan in place to direct activity over time, with track logging included in contract.	Control larger trees by drilling and injecting. Smaller trees by cutting and stump painting with glyphosphate gel, taking care to remove all live cut material from wetland. Trees can be felled once dead if required for safety or to prevent blockage of the stream flowing alongside wetland.	Drill and inject - winter 2022 onwards Cut and paint - summer 2022	Project	$6,500	in kind - capture in kind to date, since joining project. If possible, quantify landowner cash spent, in total to date.
1.2	Landscape value / natural character - reinvasion of weeds	Re-invasion from grey willow airborne seed dispersal, plus blackberry regrowth.	Monitor and control.	Monitor and control as necessary.	Check annually - control before plant matures and flowers.	Farmer	$0	in kind
1.3	Landscape value / natural	N/A	N/A	N/A	N/A	N/A	$0	N/A

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
	character - hydrological function							
1.4	Landscape value / natural character - community access	Landowners wish to connect their wetland, as part of their farming activity, with the wider Sefton community including the school.	The opportunity to develop an adjacent picnic area to be investigated.	Farmer to scope potential location of picnic area and progress when able.	TBA	Farmer	$0	in kind
2.1	Indigenous wetland plant community	Weed invasion. Taller woody weeds will invade the wetland and displace the indigenous vegetation, particularly by competing for light. Willows can also alter hydrology. Exotic grasses will prevent establishment of planted plants in drier areas.	Careful monitoring and control of weeds, preferably by cut and paint method for woody species, will maintain indigenous vegetation and avoid collateral damage.	An annual inspection and control of scrub weeds and willows with cut and paste or careful knapsack-applied herbicide is recommended.	Check annually - control before plant mature enough to flower.	Farmer	$0	in kind
2.2	Wetland vegetation	Pugging and devegetation. Devegetation often results in exotic plant species occupying the	Exclude all stock and pests.	Monitor for stock within wetland and remove as required. Monitor and control	Ongoing	Farmer	$8,000	in kind

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
		disturbed areas before native species can. Other pests can devegetate the wetland (e.g. possums). Ongoing control required.		pests as necessary.				
		The wetland straddles the boundary with neighbouring farm.	Wetland is stock-proofed fenced according to its natural character, regardless of property boundaries.	Consult with neighbouring farm on a workable wetland fencing plan - project team to support farmer in this discussion. ECan to advise availability of grant funding for any additional fencing.	Ongoing	Farmer		
2.3	Planting	Ensure plants are eco-sourced from local area, where possible.	Plant site-appropriate species. Source plants grown from locally-sourced seed (look to Waimakariri catchment and nearby Cam River).	Source plants as required. Support farmer to seek further external funding, if required.	Ongoing	Farmer & Project	$0	in kind

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
			Maintain these plants as appropriate.					
		John notes old tree stumps from original plant community are found in the wetland, but the species is unknown. Given that there are two female Totara on the nearby Cam River, it is likely these stumps may include Totara. It is possible other species may also have been present in the original wetland.	John is keen to establish what species of tree these stumps but will require help to do this. May be potential for cuttings to be taken of the Totara on the Cam River.	ECan to advise best way to identify the tree species - to support this work as far as possible within project budget. Progress taking cuttings - need to check protocols.	Ongoing	Farmer & Project	$2,500	
2.4	Planting - maintenance	Exotic weeds smothering the planted plants	Maintain these plants as appropriate by spraying weeds before they smother plants.	Spray weeds up to 6 times per year or as required.	Spring/summer / autumn until established	Farmer	$0	in kind

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
3.1	Bird habitat	Willow invasion	Ongoing control of woody weeds.	Refer 2.1	Refer 2.1	Refer 2.1	$0	Refer 2.1
3.2	Bird habitat	Vertebrate predators (possums, rats, stoats, cats, etc.) Landowner is currently controlling possums.	This table of actions does not include specific predator control. ECan recommendation for landowner to install DOC 200 traps for control of rats and mustelids. Indicator chew cards and footprint tracking tunnels could be used as part of extension activities with the Sefton Saltwater Creek Catchment Group and/or local school	Landowner to continue existing possum control. No other action is described here at this point. If the land owner is interested at some future point, then advice can be provided.	N/A	N/A	$0	N/A

	Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
			groups.					
4.1	Buffering waterway and wetland	N/A	N/A	N/A	N/A	N/A	$0	N/A
5.1	Monitoring - water quality	N/A	N/A	N/A	N/A	N/A	$0	N/A
6.1	Fish - assessment of populations	Fish population in the wetland is unknown.	Collect baseline information about aquatic life.	Use Gee's minnow traps to assess fish population. NZLT to provide traps, and ECan to provide expertise for this work.	TBA	ECan & NZLT in kind	$0	in kind

Environment Canterbury contribution	$	
SFF Project	$	17,000

Value	Issue / Threat	Solution	Action	Timing	Person Responsible	Project Contribution	Farmer Contribution
				Landowner contribution		$	
				Total		$	17,000

APPENDICES

A guide to planting at Hunterfield Wetland

The anticipated outcome from killing the willows that are dominating this site is that the suppressed understorey of native species will recover and expand to replace the willows.

While the site may have originally been too wet to support forest species such as kahikatea, it is now highly modified and suitable for the establishment of several wet-tolerant species.

Many of the species that might be expected here are already present, while others are not and are unlikely to colonise unaided. The likes of harakeke and purei, which have seed sources on site, will be able to expand into suitable niches within the wetland, whereas kahikatea and pōkākā will need to be planted.

The recommendation for the species already present is to monitor their response to willow control and intervene if there is no sign of natural recruitment after a period of 5 years. Species that are not already present can be planted immediately following willow control.

The following plants are suitable for this site.

Scientific name	**Common name**	**Where to plant**
Dacrycarpus dacrydioides	kahikatea	drier sites
Coprosma robusta	karamū	drier sites
Elaeocarpus hookerianus	pōkākā	drier sites
Phormium tenax	harakeke|New Zealand flax	drier sites
Cordyline australis	tī rakau|cabbage tree	at wetland edge
Austroderia richardii	toetoe	at wetland edge
Carex secta	purei	saturated soils
Carex virgata	purei	at wetland edge
Carex maorica		saturated soils

Observations on site. An asterisk (*) indicates exotic species.

	Scientific name	Common name
Dicot trees|shrubs|climbers	*Salix cinerea*	grey willow
	Salix x fragilis*	crack willow
	*Hedera helix**	English ivy
	Coprosma propinqua	mikimiki
	Coprosma cunninghamii	
	Coprosma robusta	karamū
	Rubus fruticosa agg.*	blackberry
	*Ulex europaeus**	gorse
Dicot herbs	*Nasturtium officianale**	watercress
	*Erythranthe guttata**	monkey musk
	*Callitriche stagnalis**	starwort
	Lemna disperma	duckweed
	*Lotus pedunculatus**	lotus
	*Trifolium repens**	white clover
	*Cirsium arvense**	Californian thistle
	Senecio glomeratus	fireweed
Ferns	*Pteridium esculentum*	bracken
	Parablechnum minus	kiokio
	Parablechnum novae-zelandiae	kiokio
	Histiopteris incisa	mātātā
	Blechnum penna-marina	
	Hypolepis ambigua	
Monocot herbs	*Phormium tenax*	harakeke|New Zealand flax
	Carex secta	purei
	Carex coriacea	rautahi
	*Holcus lanatus**	Yorkshire fog
	Eleocharis acuta	spike sedge
	*Juncus articulatus**	jointed rush
	*Dactylis glomerata**	cocksfoot
Inverte-brates	*Dolomedes minor*	nursery web spider
	Orthoclydon praefectata	flax looper moth
Birds	*Rhipidura fuliginosa*	piwaiwaka | South Island fantail
	Chrysococcyx lucidus	pīpīwharauroa|shining cuckoo
	Circus approximans	kahu|swamp harrier

Link addresses may change from time to time

Wetland Restoration Handbook, Monica Peters and Beverley Clarkson, 2010
https://www.landcareresearch.co.nz/publications/books/wetlands-handbook

Canterbury Maps
https://mapviewer.canterburymaps.govt.nz/

Living Streams Handbook Part 3: Planting and Maintenance – Environment Canterbury, 2017 (updated)

Native Forest Restoration – A Practical Guide, Tim Porteous, 1993
https://qeiinationaltrust.org.nz/publications-and-resources/guides-and-handbooks/

Ecosourcing Code of Practice and Ethics, Chris Ferkins, Waitakere City Council, 2005 (Ecan policy to come)

Wetland Types in New Zealand – Peter Johnson and Phillipe Gerbeaux, 2004
https://www.doc.govt.nz/documents/science-and-technical/WetlandsBW.pdf

Environment Canterbury Biodiversity Officer

National Wetland Trust
https://www.wetlandtrust.org.nz/

Mana Whenua (Runānga)

Global Biodiversity Information Facility (GBIF)

Inaturalist
https://inaturalist.nz/home

NZPCN
http://www.nzpcn.org.nz/

New Zealand Birds Online
http://nzbirdsonline.org.nz/

Queen Elizabeth II National Trust
https://qeiinationaltrust.org.nz/

Canterbury Botanical Society
http://canterburybotanicalsociety.org.nz/

The Weed Control Handbook, Weedbusters, 2011

Weedbusters
https://www.weedbusters.org.nz/