

TOOLBOX: ACTION PLANS

These examples from two Hawke's Bay farms show some of the processes farmers have gone through when building their environment plans. It shows how tools such as maps and photos can be used to breathe life into planning.



Farm 1

This 328 ha mixed deer, sheep and beef operation, has about half of the farm deer fenced. A main branched waterway flows through the centre of the property down to swampy flats. It also flows through an area of native bush that the district council has identified as a Significant Natural Area.



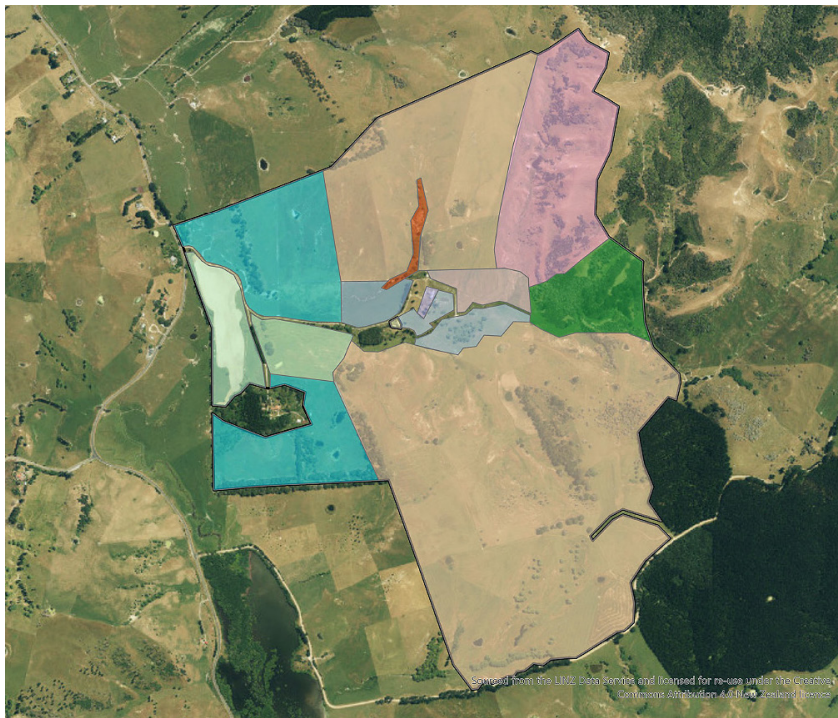


MAPPING THE MAIN FEATURES (see also Toolbox: Summary of maps)

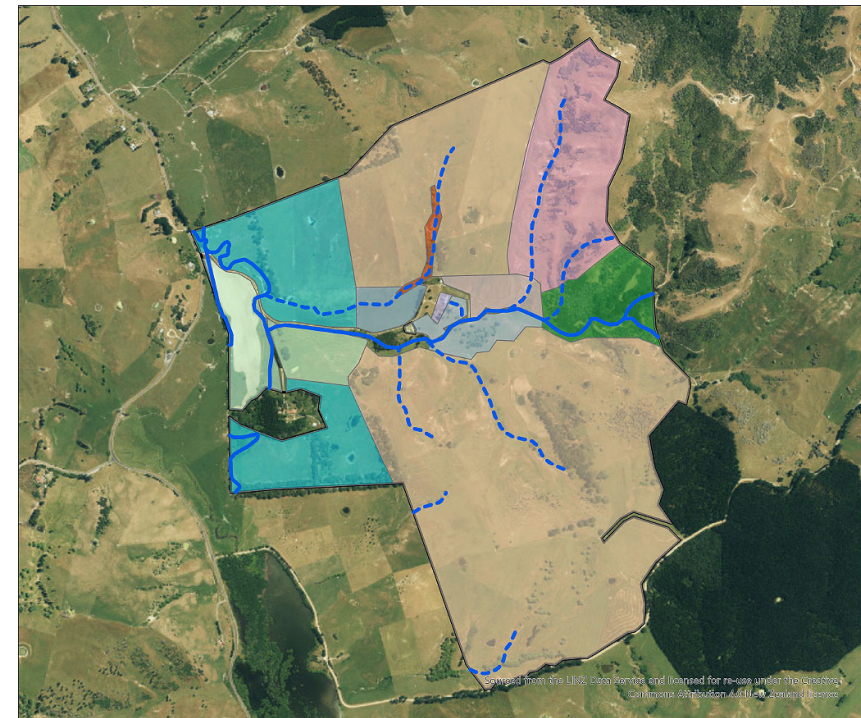
We broadly sectioned out the property according to slope and fencing style. Deer areas will need more erosion control plantings than the cattle areas, which can be protected with hotwires. The couple had already fenced and retired some badly eroded areas and there are already a lot of trees across the property. Much of the native bush area had already been fenced to exclude stock.

We then overlaid the main waterway flow paths, and marked where these waterways had already been fenced. This made it easy to prioritise the waterways in flat paddocks for fencing, and using the low stocking rate option in steeper paddocks until the farmers could afford to do more fencing.

Deer Farming Ltd, 123 Rural Road, Townville | Scale 1:15,177
Created 24/7/2020



Main areas and features



Main areas and features with waterways overlaid

Land management units

- Bush and scrub
- Deeply eroding gully, fenced and planted
- Easy hill pasture - deer fenced
- Easy hill pasture - not deer fenced
- Flats - deer fenced
- Flats - not deer fenced

- House
- Sheds and yards
- Rolling pasture - deer fenced
- Steephill pasture - not deer fenced

Boundary

- Boundary
- - - Intermittent flow
- Permanent flow



EROSION CONTROL ACTIONS



This area includes some deep earth flows, slips and gully erosion.

The couple love trees and were interested in how space-planted poplars and willows could be used to reduce erosion while generating carbon credits. They plan to use the Spikey Tree Guards and avoid grazing stags in this paddock to protect the poles.



Planned erosion control and waterway actions are sketched onto a photo

The native bush will be fenced to exclude stock, and a pest control contractor employed

The waterway running along the flats will be fenced to exclude stock

Current poplar plantings will be expanded to stabilise the hillside. Once they meet the "forest land" definition, they will be entered into the ETS to gain carbon credits.



EROSION CONTROL AND WATERWAY PROTECTION



To the south, the deershed, woolshed and yards are close to an intermittent waterway running along the flats. Earth flows dominate the southeastern hill paddocks.



Further erosion control and waterway actions sketched onto a photo

Poplar plantings will stabilise the hillsides. Once they meet the "forest land" definition, they will be entered into the ETS to gain carbon credits.

The waterway running along the flats will be fenced to exclude stock, and a culvert provided for crossing. Planted natives will help filter any runoff from the sheds and yards.



A PROBLEMATIC WATERWAY



To the west of the property are slipping hillsides and a snakey, boggy waterway running intermittently across the flats. Earth flows dominate the southeastern hill paddocks.



Planned fencing and planting to better protect and manage this waterway, sketched onto a photo.

Where the waterway flowed under the lane it created a wet corner that made moving stock difficult. This will be fenced and planted to provide a filter for the waterway

Poplar plantings will stabilise the hillsides. Once they meet the "forest land" definition, they will be entered into the ETS to gain carbon credits.

The wet flats will be drained into a waterway fenced to exclude stock. It will run into the planted filter area.



FARM 1 CONCLUSION: MAPPING FOR AN ACTION PLAN

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This map highlights planned actions for the next 12 months. The map can be added to the relevant Action Plans.

Boundary		Point	
○	Boundary	⚡	Drain flats and fence waterway
		🌳	Fence lane corner and plant to provide a filter area for sediment
Flow		🌳	Plant more poplars to stabilise hillside and generate carbon credits
⋯	Intermittent	🌳	Finish fencing the native bush area
—	Permanent	🔌	Use hotwires to exclude cattle from the waterway

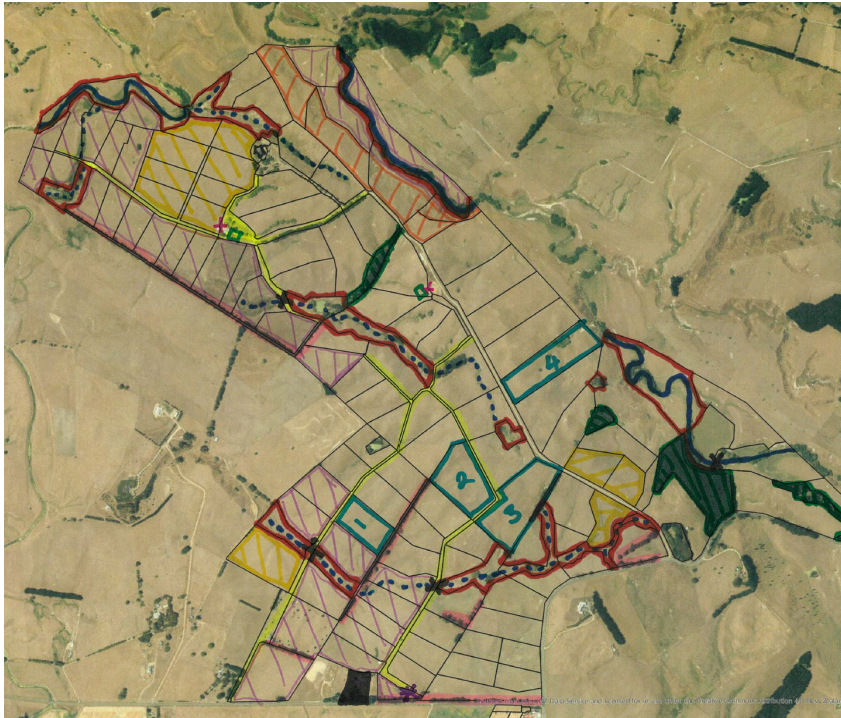
Using the low stocking rate option to avoid fencing off waterways in paddocks over 10o slope allowed the budget to be targeted to fencing off waterways in flat paddocks that are grazed by deer. The poplar poles are supplied at a significant discount from the regional council. The Spikey Tree Guards should protect them enough to establish as long as stags and bulls are kept out of those paddocks.



Farm 2: Handwritten examples

It's also possible to make handwritten planning maps on an aerial farm photo.

A Farm, 123 Rural Road, Townville | Scale 1:9,500 | Created 20/8/2020



Key features added to farm map.

- | | |
|-----------------------|---------------------------------|
| Permanent waterway | Pines |
| Intermittent waterway | Woolshed and yards |
| Fencing by waterway | Shelter belts |
| House | Crops |
| Deer shed | Hay/baleage made (flat pasture) |
| Tracks | Steep pasture |
| Culvert or bridge | Flat pasture |
| Yards | Rest easy hill pasture |

Now the risk checklist is used to create a risks map:



The numbers on the map highlight critical source/risk areas/areas for action.

- | | |
|-----------------------|--|
| 1. Woolshed and yards | 7. Intermittent waterways in flat paddocks |
| 2. Top deer shed | 8. Intermittent waterways in paddocks over 10° slope |
| 3. Bottom yards | 9. Erosion prone slopes |
| 4. Tangitupara | 10. Unbridged stock crossings |
| 5. Mangatarata | 11. Dump |
| 6. Crops by waterways | 12. Wetlands for planting |



RISK CHECKLISTS

In the unit **Toolbox: Risk Assessment**, tick the activities or locations that apply to you and add any extras that aren't on the list. Use the farm maps and farm description you completed as a prompt. These risks have been identified on the lists below for our example farm.

Biodiversity, phosphorus, sediment and bacteria risk checklist

Activity/location	
<input checked="" type="checkbox"/> Woolshed	<input type="checkbox"/> Effluent area
<input checked="" type="checkbox"/> Deer shed	<input type="checkbox"/> Feed lot
<input checked="" type="checkbox"/> Yards	<input type="checkbox"/> Feed pad
<input checked="" type="checkbox"/> Forage crops	<input type="checkbox"/> Wintering barn
<input checked="" type="checkbox"/> Erosion	<input type="checkbox"/> Sacrifice paddock
<input checked="" type="checkbox"/> Wallows	<input type="checkbox"/> Irrigation
<input checked="" type="checkbox"/> Deer fence pacing	<input type="checkbox"/> Silage stack
<input checked="" type="checkbox"/> Waterways	<input type="checkbox"/> Fertiliser storage
<input checked="" type="checkbox"/> Wetlands	<input checked="" type="checkbox"/> Tracks
<input checked="" type="checkbox"/> Stock crossings (through waterways)	<input checked="" type="checkbox"/> Animal or plant pests
<input checked="" type="checkbox"/> Bridges and culverts	<input type="checkbox"/> Paddocks with > optimum Olsen P
<input checked="" type="checkbox"/> Rubbish dump	<input type="checkbox"/> Cultivated areas
<input type="checkbox"/> Offal pit	<input type="checkbox"/> Areas with pugging or compaction
<input type="checkbox"/> Paddocks with no troughs or dams (stock drinking from waterways)	<input type="checkbox"/> Denuded stock camps or play areas
<input type="checkbox"/> Areas of native bush or other significant natural features or native animals	<input type="checkbox"/> Forestry blocks to be harvested
<input type="checkbox"/> Deer milking shed	<input type="checkbox"/> Sources of human drinking water

Nitrogen risk checklist

Activity/location	
<input type="radio"/> Exceeding nitrogen limit for your region (if one applies in your area)	<input type="radio"/> High winter stocking rates
<input type="radio"/> Applying more than 190kg/ha/year of synthetic nitrogen	<input type="radio"/> Winter forage cropping
<input checked="" type="radio"/> Blocks with high nitrogen loss (in your OverseerFM nutrient budget)	<input type="radio"/> Heavy application of biological fertiliser or effluent (e.g. chicken or piggery waste)
<input type="radio"/> Gorse	<input type="radio"/>

Irrigation risk checklist

Activity/location	
<input type="radio"/> Irregular monitoring	<input type="radio"/> Irregular system calibration
<input type="radio"/> Irrigating without soil moisture monitoring	<input type="radio"/> Irrigating grazed paddocks with waterways
<input type="radio"/> Ponding or runoff	<input type="radio"/> Using low accuracy methods like wild flooding or K-lines in wind



Notes on risks **NOT** relevant to this property (Farm 2)

- No offal pit – dead stock are buried.
- All paddocks have troughs
- No significant natural areas
- No sources of human drinking water
- No dairy, effluent, irrigation or intensive stock holding areas
- No silage stack or fertiliser storage
- Paddocks are all within or below Olsen P targets
- No cultivation – all crops direct drilled
- No pugging; N leaching is within limits



Action Plan examples

Using this manual you can create an action plan for each risk marked on your map. There are Action Plan Units for:

- | | | |
|---------------------|---|-------------------------|
| 1. Waterways | 6. Winter forage crops | 10. Camp and play sites |
| 2. Nitrogen | 7. Point sources – tracks and crossings | 11. Wallows |
| 3. Phosphorus | 8. Point sources – sheds and yards | 12. Irrigation |
| 4. Waste management | 9. Fence pacing | 13. Greenhouse gases |
| 5. Soil erosion | | 14. Biodiversity |



FARM 2, EXAMPLE 1:

Risk No. 1 on risk map (sheds and yards)

Activity/location examples

Bacteria and phosphorus loss in runoff due to dung

Risk assessment



Comment

Woolshed and yards seldom used; topography flat; not near waterways.



Shed and yards, showing low slope.

Actions: How I will reduce risk from sheds and yards

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
No contamination of waterways with bacteria or phosphorus from sheds and yards	Runoff in heavy rain		Vegetation maintained as buffer downslope; woolshed cleanings kept well away from waterways	Regular testing water quality in farm waterways; no visible contamination	1 January 2021	Me, farm staff, testing lab



FARM 2, EXAMPLE 2:

Risk No. 2 on map (top deer shed)

Activity/location examples

Runoff from shed into drainage channel

Risk assessment



Comment

Deer play in channel

Deer shed and yards

Grassed area to intercept run off from deer shed



Photo record detailing risk area

Actions: How I will reduce risk of runoff from shed getting into waterways

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
No sediment or bacteria loss from shed	Runoff into channel where deer have access	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<ol style="list-style-type: none"> 1. Dam gully below to create sediment trap 2. Fence and plant downstream area. 3. Maintain downstream vegetation to act as filter. 4. Investigate funding sources: council, 1bn Trees 	Maintain photo record; sediment load in catchment is visibly reduced	31 May 2020	Me, fencing contractor



Proposed dam wall to create sediment trap



Area down stream that could be fenced and planted

Photos detailing planned work



FARM 2, EXAMPLE 3:

Risk No. 5 on map (unfenced stretch of stream)

Activity/location examples

Direct deposition and stream bank damage

Risk assessment



Comment

South side 7-wire fence complete; north side to be done.



Photo record of completed and planned fencing

Fencing underway

Fencing complete

Actions: How I will reduce risk to unfenced stream

Goal	Risk identified	Risk level	Action	Measure and monitor	Date initiated	Who
No damage to stream bank or deposition of sediment	Damage from grazing cattle	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	Complete fencing of stream to exclude stock	No stock in stream; photograph new fencing; reduced silting and bank damage	31 May 2020	Me, fencing contractor