

# OUR PLAN

# Freshwater Assessment Table

FW1

Waterway	Date of assessment	Flow conditions	Assessment type	Notes (such as assessment score, overall health (e.g. good, intermediate, low), factors to consider)

# Stream Health Check

FW2

Stream Name: \_\_\_\_\_

Date and Time: \_\_\_\_\_

Notes on recent climatic conditions:

Notes on recent land use around waterway:

This assessment form is designed for landowners to assess critical aspects of their waterway as an indication of its current level of ecological health. The overall final score ranges from 500 to 50. A score greater than 250 indicates a good stream while a score of less than 120 indicates there are aspects of your waterway that might be contributing to its low health.

**Always ensure it is safe to go into the waterway. Where safe, this is a great activity to do with kids.**

Choose representative sites of streams on your property where you know you will go back and repeat the assessment. The assessment should be done annually, but you can do it more frequently if you choose.

To use the form, read each question thoroughly and circle the score which corresponds to the category best describing your stream (or the specific area of the stream you are assessing). Assess each section of stream 100m up-and-downstream of where you are standing. If your stream isn't described exactly by one category you can give it a score halfway between those given.

Sub-total the scores for each section to give a grand total. Low scores (2-4) to each of the questions can be linked with one or more risks outlined in the risk factors and drivers **Table 2.1** in the Farm Plan resource. The combination of your score and understanding your risk assessment can help you identify management practices to help improve the ecosystem health of the waterway.

Try to assess the stream under low flow conditions so you can see the substrate, and things like periphyton slime have not been washed away. This is when most aquatic life is active. A number of our native fish for example tend to burrow into the sediment (if they can) and remain inactive over winter.

*Developed by Dr. Russell Death, Massey University*



## Related waterway health risk

(see **Table 2.1 Risk factors and drivers**) in Freshwater ecosystem health

Stream banks				
<b>What type of vegetation is along the banks and sides of the stream?</b>	Trees with dense groundcover e.g. tussock, toetoe, ferns, flax, rushes.	Tall grasses with patchy trees and groundcover.	Patchy trees, groundcover grazed or absent.	Grazed pasture grasses to stream edge.
	16	8	4	2
<b>How continuous is the vegetation (other than pasture) along the stream banks?</b>	Tall vegetation (over 3m)/trees continuous, or a few small gaps.	Tall vegetation (over 3m)/trees a few large gaps or several small gaps.	Breaks in tall vegetation (over 3m)/trees frequent and very patchy.	Many large gaps in tall vegetation (over 3m)/ trees or no tall vegetation at all.
	16	8	4	2
<b>What is the average width of the vegetation (other than pasture) along the stream banks?</b>	>30m	10-30m	1-10m	<1m
	32	16	8	4

A,  
D,  
E,  
F



**Related waterway health risk**

(see Table 2.1 Risk factors and drivers) in Freshwater ecosystem health

Stream banks					
<b>What percentage of the stream is shaded by plants and stream banks?</b>	50% or more	30%	10%	Little or no shading.	↓ <b>B, F, I</b>
	16	8	4	2	
<b>How stable are the stream banks?</b>	Banks stable, rock and soil firmly held by grasses, shrubs and tree roots.	Banks firm but loosely held by grass and shrubs.	Banks of loose soil held by a patchy layer of grass and shrubs.	Banks unstable, of loose soil or sand easily disturbed.	<b>A, D, E</b>
	16	8	4	2	
<b>What is the level of erosion on surrounding landscape and on the stream banks?</b>	No evidence of erosion in surrounding landscape, no scarring on stream banks and no undercutting.	Some erosion in surrounding landscape, occasional scarring on stream banks and undercutting.	Moderate erosion in surrounding landscape. Eroding banks slowly widening.	Significant erosion in surrounding landscape, significant areas of stream bank cut away, some loss of farmland.	
	32	16	8	4	
In-stream life					
<b>What is the level of algal (periphyton) growth?</b> <i>NB: this needs to be assessed in summer with about 2 weeks of no flushing or flooding events.</i>	Stones rough to the touch. Scraping thumb nail over stones yields no slime.	Stones slippery to touch. Scraping thumb nail over stones yields no slime.	Stones very slippery to touch. Scraping thumb nail over stones yields a small amount of slime.	Thick layers of slimy algae. Scraping thumb nail over stones yields large volume of slime.	<b>A, D, E, F</b>
	32	16	8	2	
<b>Are there any natural obstructions to slow the stream flow?</b>	Rocks and old logs firmly set in place.	Rocks and logs backfilled with sediment.	Rocks and logs loose, move with floods.	No obstructions to slow the stream flow.	<b>H</b>
	16	8	4	2	
<b>What are the macroinvertebrates present in the stream?</b> <i>NB: to find stream insects look under rocks. Or if the stream has no rocks look on water weeds, grass, logs and other debris. Use a sieve and white icecream container if needed. Use the ID chart provided in your resource.</i>	Lots of mayflies, stoneflies and other types of crawling and swimming insects.	Moderate numbers of mayflies and caddisflies. Variety of other types of insect may also be found.	Very few crawling and swimming insects. Snails, worms and midges abundant.	Mostly snails, worms and midges.	<b>A, B, C, D, E, F, G, H</b>
	32	16	4	2	
<b>How often does your stream overtop (overflow) its banks?</b>	Never known to overtop banks.	Overbank flows rare.	Overbank flows occur during some winter storms.	Overbank flows frequent in winter/spring storms. Or stream has carved a definite channel.	<b>A, D, E, H</b>
	16	8	4	2	



**Related waterway health risk**

(see Table 2.1 Risk factors and drivers) in Freshwater ecosystem health

Potential for contaminants					
<b>Do stock have access to your stream?</b>	Stock do not have access to any of the stream or its banks.	Stock only have access to a small part of the stream.	Stock have access to most of the stream.	Stock have access to the entire stream.	<b>A, B, C, D, E</b>
	32	16	8	4	
<b>What is the potential for the input of sediment to your stream?</b> (e.g. from stream banks, stock damage/trampling, stock crossings, surface runoff, runoff from farm roads, slips/erosion, gravel extraction, etc).	No potential.	Low potential.	Moderate potential.	High potential.	<b>A, B, D, E</b>
	32	16	8	4	
<b>What is the potential for the input of contaminants to your stream?</b> (e.g. from spray drift, sprayer washings (sheep dips), effluent ponds, silage pits, dups, soil and foam, dead animals, etc).	No potential.	Low potential.	Moderate potential.	High potential.	<b>G</b>
	32	16	8	4	
Potential for contaminants					
<b>Is there any artificial drainage entering the stream?</b> (e.g. tile, mole, storm water, and/or open drains which are regularly cleared of vegetation)	No artificial drainage.	Sparse artificial drainage.	Moderate amount of drainage.	Extensive drainage networks.	<b>B, C, D, E</b>
	32	16	8	4	
<b>Are there any Critical Source Areas (CSA's) or overland flow pathways where runoff enters the stream?</b> (e.g. gullies, depressions, swales on adjoining land)	No CSA's or overland flow pathways within 100m.	One CSA or overland flow pathway within 100m.	2-3 CSA's or overland flow pathways within 100m.	Greater than 3 CSA's or overland flow pathways within 100m.	<b>A, B, C, D, E</b>
	16	8	4	2	
<b>How much nitrogen and phosphorus fertiliser is used by yourself and/or neighbours?</b>	None	Less than 150kg/ha super or equivalent, no nitrogen fertiliser.	150-300kg/ha super or equivalent, less than 50kgN/ha.	More than 300kg super or equivalent, greater than 50kgN/ha.	<b>A, B, C, D</b>
	32	16	8	4	



### Related waterway health risk

(see Table 2.1 Risk factors and drivers) in Freshwater ecosystem health

<b>How deeply incised are the stream banks?</b>	Top of stream banks 10m or higher above stream level.	Top of stream banks 5-10m or higher above stream level.	Top of stream banks 1-5m above stream level.	Top of stream banks less than 1m above stream level.	A, D, E
	16	8	4	2	
<b>What is on the streambed?</b>	Rocks and stones of different sizes, tightly packed together.	Stones, silt present in gaps between rocks/stones.	Gravel, sand and silt.	Sand and silt, stones absent.	
	16	8	4	2	
<b>If you stand in the stream and dig your feet into the substrate, does the water...</b>	Remain clear.	Clear quickly.	Remain murky for less than 1 minute.	Remain murky.	
	32	16	8	4	
<b>How cohesive are the soils of the stream bank?</b>	Very cohesive. Mostly rock and cemented material (boulders and bedrock).	Moderately cohesive. Tightly packed gravel or sand in a clay matrix.	Loose soils with fine aggregates. Tightly packed sands or gravel with some silt or clay.	Very loose soils. Loosely packed sand, gravel or pumice material.	
	16	8	4	2	
<b>How well do your soils drain after rain?</b>	Deep, well-drained soils that slow down the flow of water to waterways and drains.	Moderately well-drained soils, with some waterlogging for periods in winter where runoff poses a risk to waterway.	Excessively well-drained soils where water moves freely and rapidly through the soil into underground aquifer likely connected to waterway.	Poorly drained soils where water-logging and surface-ponding occurs where runoff a risk to waterway.	
	16	8	4	2	
<b>TOTAL</b> (add up each of your scores to generate a total)					

As part of your Stream Health Check you will have identified areas to help improve your scores and where risks may be greater. The final column in the Stream Health Check links to the 'Risk factors and drivers' table in Step 14. Combining the results from your assessment, identifying specific risk areas, and working through the risk matrix you will complete in Step 14, will help you identify appropriate actions to enhance freshwater ecosystem health on your farm addressing the areas of greatest risk first.

#### What does my total score mean?

- **More than 250:** Great! Your stream is very healthy and hence has low priority for waterway management. It provides important fish and wildlife habitat and clean water for downstream users.
- **120 - 250:** Your stream has lots of potential and is at an intermediate level of health. But there are clearly some aspects of your waterway that need attention. The final column in the form links with a list of ecosystem attributes and farm activities that may be impacting on these. By finding questions where you answered 2 or 4 you can find on-farm risks that may need attention in your farm management or planning.
- **Less than 120:** Your stream has been adversely affected by activities on your farm or upstream in the catchment. Again, by finding questions where you answered 2 or 4 you can identify on-farm risks that may need attention in your farm management or planning.

# Freshwater Risk Template

FW3

Risk to freshwater health	Risk factors on your farm	Overall risk rating
A. Deposited fine sediment		
B. Excessive algae/periphyton/slime		
C. Nitrogen		
D. Phosphorus		
E. Faecal bacteria and pathogens		
F. High temperature		
G. Harmful Chemicals		
H. Altered river form and channel margins		
I. Toxic Algae		
J. Other		





# Freshwater Monitoring Plan

FW5

Waterway Site Name	Monitoring Frequency	Date due to monitor	Assessment type	Person Responsible	Notes and scores	Date completed