



A GUIDE TO MANAGING STOCK ACCESS TO WATERWAYS IN THE WELLINGTON REGION

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greater WELLINGTON

REGIONAL COUNCIL

Te Pane Matua Taiao

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Chair of the Greater Wellington Regional Council, Hon. Fran Wilde



When it comes to managing freshwater quality, every region in New Zealand is grappling with a variety of issues. Farming, industry and urban activities are all putting pressure on water quality in our rivers, streams, lakes and wetlands.

Uncontrolled stock access to waterways is one such pressure. Stock can cause stream bank erosion, water pollution and sedimentation. All of these impacts affect our waterways and their ability to support healthy communities of plants, animals and people.

In response, Greater Wellington has worked in partnership with Beef and Lamb New Zealand, DairyNZ, Federated Farmers, the New Zealand Deer Farmers Association and Fonterra to produce these guidelines to assist farmers in working towards best practice for managing stock around waterways.

On their own, these guidelines are not a “silver bullet”. We know that the current Regional Freshwater Plan needs improving to better manage land uses and activities that can adversely affect our waterways. This is why in 2010 we began the review of all our regional plans. We are developing a range of incentives and rules to improve resource management outcomes in our region. Our new regional plan is being developed in partnership with the rural community, farming industry organisations, environmental groups, iwi and others, and its success depends on people’s active participation.

It’s clear that the community wants and expects our waterways to be better managed – free from excessive sediment and suitable for swimming with a good habitat for fish and other native animals.

These guidelines are a great example of how collaboration between farmers, industry leaders and regional councils can lead to success in this area. By working together, we believe we can help improve the health of our rivers.

1.

What is the purpose of this guide?

Greater Wellington, in association with Federated Farmers, DairyNZ, the New Zealand Deer Farmers Association and Fonterra has produced this guide to help you manage stock access to water bodies that run through your farm. This will help minimise the impact of stock on water quality.

The guide describes aspects of your farm's features and farm practices that may affect surface water quality, and provides a range of management options for protecting and improving water quality.

2.

Why is good water quality important?

Water is a valuable resource, integral to our health, wellbeing, livelihood and culture. People value freshwater for many reasons – economic, recreational, aesthetic, ecological and cultural. To Māori water represents the life blood of the land and its condition is a reflection of the health of the people.

Water needs to be plentiful and of good quality to satisfy all those values. The water quality of some of the rivers, streams, lakes, wetlands and groundwater in the region is being degraded by pollution from discharges and by intensive land uses – both intensive farming and urban development.

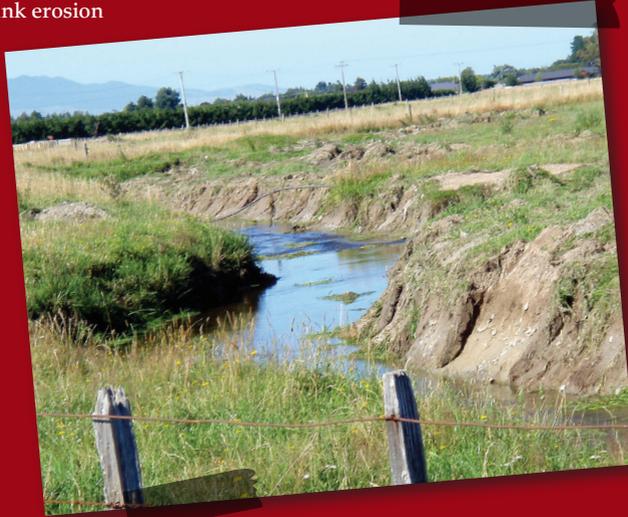
Working to minimise and where possible, eliminate adverse effects on water quality, will help protect and restore the mauri – life force – of waterways.



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Stream bank erosion



3.

What is the issue with stock accessing waterways?

When livestock access water bodies they contribute four main contaminants – pathogens from stock dung, nitrogen, phosphorus, and sediment. Stock can also cause riverbank erosion and eat and trample riverbank vegetation used for riparian management purposes.

The impact that each pollutant has on water quality will vary depending on farm features, land use and the management practices

in place. Assessing these factors will help you decide which problems should be a higher priority to manage on your property. It is recommended that you consider the water quality in not just the rivers, lakes, streams and wetlands on your property but also any artificial watercourses and drains, and the downstream waterbodies that your farm drains to.

3.1

Impact of various pollutants on water quality

Table 1: Pollutants and their impact on water quality

Pollutant	How it enters water	Effects
 <p>Stock dung – E.coli</p>	<p>Stock dung can be deposited directly into waterways from stock while they are in the water, or it may run off from stock access points.</p> <p>Examples include stock access points to the water that are steep or where stock bottleneck while waiting to cross.</p>	<p>Pathogens can cause gastro-intestinal illness. Its presence affects recreational use and drinking water quality for both people and livestock.</p>
 <p>Nitrogen</p>	<p>Nitrogen comes from stock urine and dung. It can enter water from direct deposits, through drainage systems, and by leaching through soil.</p>	<p>Nitrogen feeds nuisance plant and algae growth in water bodies. This can affect instream habitat, swimming, aesthetic values (so that it doesn't look very nice), and overall stream health. High levels of nitrogen will also affect drinking water quality.</p>
 <p>Phosphorus</p>	<p>Phosphorus enters waterways through sediment runoff (particularly from stream bank erosion) or through direct discharges of dung into the waterway.</p>	<p>Too much phosphorus results in water bodies becoming nutrient enriched, enabling nuisance plant and algae growth.</p>
 <p>Sediment</p>	<p>Sediment enters the water through streambank erosion, excess runoff from pugging or soil damage on sloping hillsides, and through disturbing the streambed.</p>	<p>Sediment reduces water clarity and smothers streambed habitat. This can also impact on swimming and aesthetic values.</p> <p>Sedimentation can also increase the impact of flood events.</p>

4.

Management options

When considering what management options may be right for you, as well as considering the characteristics of your farm, you should also consider whether the options will meet industry standards such as the Clean Streams Accord.

4.1 Fencing livestock from waterways

Fencing livestock to keep them from accessing waterways reduces the amount of phosphorus and sediment in the waterways by preventing stock from damaging the streambeds and banks and depositing dung and urine. It also reduces stock losses from drowning and bogging and protects stream bank plantings, helping create a vegetation buffer that retains nutrients and soil on the land.

Fence off areas where it is practicable and where heavier stock are likely to be grazed, such as flatter areas on your farm. This may mean that parts of your farm are not fenced, but those areas may be managed using options discussed on the next two pages.

For information on the best types of fences to use for your property, contact environment advisors for your industry or talk to a fencing contractor or supplier. Consider mechanisms for maintenance and stray stock removal in your design. Dairy farmers should also refer to Clean Streams Accord requirements.

Planting the banks and the fenced off areas will improve bank stability and filter runoff, helping to protect and improve water quality.

For further information on riparian planting and to find out if Council funding is available for you, see Greater Wellington's guide *Mind the Stream* or contact Greater Wellington on **0800 496 734** or www.gw.govt.nz. DairyNZ has a series of Farmfacts available at www.dairynz.co.nz and Fonterra suppliers can contact their local Sustainable Dairy Advisor on **0800 6565 68** or www.fonterra.com

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4.2

Temporary fencing

Temporary fencing may be an option for areas where livestock only occasionally graze, where permanent fencing is yet to be put in place or where flooding makes the use of permanent fencing inappropriate. This includes options such as hot wire fencing for cattle exclusion.

When strip-grazing paddocks next to waterways, ensure the waterway is fenced off when grazing. Strip graze parallel to the waterway, beginning the grazing at the furthest point away from the waterway and working towards it. This will ensure that for the majority of the grazing time there will be a vegetation buffer (longer grass) to help filter runoff before it reaches the waterway. It is recommended you leave a strip (approximately 3 metres wide) ungrazed adjacent to the stream.

4.3

Bridges and culverts

Installing bridges and culverts to keep stock out of the waterway is desirable, particularly where stock regularly cross waterways.

Many bridges and culverts will require a resource consent, however many small ones do not. Talk to Greater Wellington about getting consents for all your bridges and culverts at the same time.

Also check with your district council whether you need a building consent for your bridge or culvert.

Contact an engineer to discuss which crossing options are best for you and whether they can be designed or located to avoid the need for consent.

Managing waterways without fencing



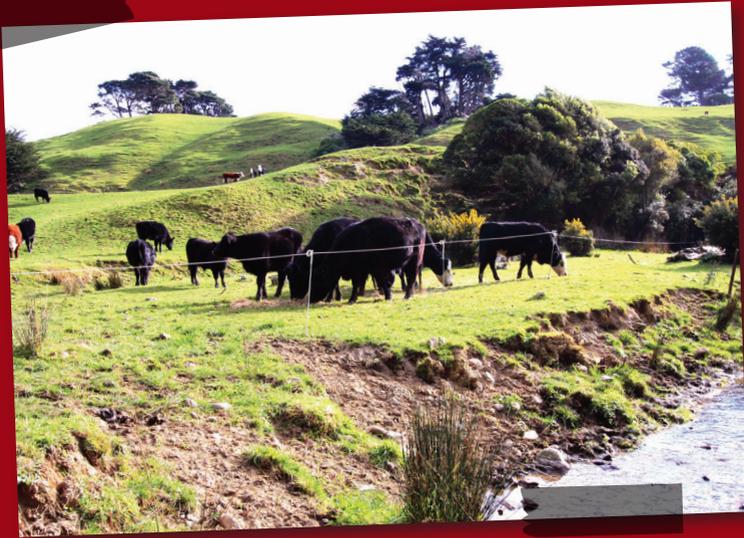
4.4

Options for managing water bodies without fencing

Managing waterways without fencing is appropriate for consideration with sheep, which do not have an affinity with water. Management practices to help keep stock out of waterways and to maximise water quality gains include:

- Provide enough troughs with clean water away from waterways where stock were previously accessing the water body for drinking. An additional benefit of providing troughs for drinking water is the quality of the water tends to be better, which will have stock health benefits
- Provide shade and shelter away from waterways where stock were accessing the water body for shade and cooling purposes
- Avoid grazing paddocks with unfenced waterways during wet periods. This will avoid sediment and runoff caused by pugging
- Graze younger or lighter stock in paddocks with unfenced water bodies. Younger or lighter stock will cause less pugging than fully-grown, heavier stock
- Put in crossings where stock naturally cross waterways. Ensure crossings keep stock out of the water body during the crossing
- Think about the effects of your grazing systems on waterways and how these can be managed to minimise access to waterways and the adverse effects caused by access

These practices may need to be used in combination in order to be effective. Use the considerations discussed in section 5 to help you decide which options may be useful for you.



5.

What can you do? Planning for actions on your farm

When considering how to manage stock access to waterways, think about the aspects of your property and farm practices that influence water quality, and the efficient running of your farm. You need to consider stock access to waterways as part of a wider integrated water management or farm management programme, which may include nutrient management tools, farm layout, riparian and erosion control

planting, and weed control. For more information, see your industry guidelines and Greater Wellington's guidebooks *Mind the Stream* and *Greater Wellington Riparian Stream Strategy*. You can also talk to your industry representative or Greater Wellington staff about which options are best for you and for help with developing a plan to prioritise changes.

5.1 Starting out

Use an aerial photograph or map to mark in farm features such as farm fencing and track layout, waterways, areas of vegetation and topography to help make decisions about which management options are right for you. Greater Wellington can supply an aerial map with waterways marked or you can download a map from Google Earth.

You can also get a Stream Health Monitoring and Assessment Kit (SHMAK) which has been designed by NIWA and Landcare Research for landowners and others to monitor the health of streams and keep a record of long-term trends and short-term impacts of actions on streams. Kits

can be ordered from NIWA and contain a manual, identification guide and monitoring kit. See www.niwa.co.nz/our-science/freshwater/tools/shmak for information, prices and order forms.

Table (2) covers different aspects of your farm that you also need to think about when deciding how to manage stock access. Use the table to record the different features on your farm. Greater Wellington has information available on land features in the region such as soil types, topography, and rainfall data, which may help you fill out the table.

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Pugging may be caused by saturated soils in intensively grazed areas

5.2

Farm features and their impact on farm management

Table 2: Farm features and their impact on farm management

Farm risk factor	What to check for	What it means for management	Your farm's risk results
Soil erosion	<p>Water erosion on sloping land</p> <p>Slips</p> <p>Large losses of soil following cultivation (either wind or rain)</p> <p>Stream banks eroding either by stock or naturally by water</p>	<p>Soil loss equates to thousands of dollars in valuable nutrients as well as the farm's most valuable asset – soil</p> <p>Vulnerable soils need special care:</p> <ul style="list-style-type: none"> • Riparian fencing and grass or planted buffer strips to trap and filter sediment • Use of sediment and P traps for large areas • Retire or ring-fence and plant slipping land • Use of lighter weight stocking class on high risk soils or at high risk times 	
Drainage capability	<p>Severe pugging</p> <p>Runoff from intensively grazed areas or forage crops</p> <p>Effluent or excessive sediment coming out of mole or tile drains</p>	<p>Minimise damage to pastures and runoff to waterways by using specially designed stand-off facilities or higher/drier ground during wet periods where pugging is likely to occur</p> <p>Use of grass/planted buffer strips in riparian zones</p>	
Rainfall	<p>Frequency and intensity of storm events which will wash runoff into waterways and contribute to erosion</p>	<p>Use of fencing and filtering with grass/planted buffer strips in riparian zones</p> <p>Sediment traps</p>	
Topography	<p>Erosion caused by stock trampling</p> <p>Slips and slumping</p> <p>Runoff during high intensity or prolonged rain or saturated soils</p>	<p>Stream fencing and use of riparian planting, grassy buffer zones</p> <p>Retiring (fencing and planting) vulnerable soils</p> <p>Avoid grazing heavy stock on saturated hill country</p>	

Table 2: Farm features and their impact on farm management

Farm risk factor	What to check for	What it means for management	Your farm's risk results
Livestock	Livestock type	<p>Cattle are heavier than other stock so are more likely to cause streambank erosion, pugging and damage to stream beds. They are also more likely to stand in the water</p> <p>Dairy cattle are often more intensively stocked than other livestock types and are also moved around the farm more regularly, so are more likely to cross waterways more often. Bridges or culverts will help avoid direct discharges of effluent to waterways</p> <p>Deer like to wallow and create mud holes, so should be kept out of waterways to avoid this damage.</p> <p>Wallows can be created away from waterways and installed and managed to avoid adverse effects on the waterways</p> <p>Sheep are generally less intensively farmed and are less likely to enter waterways. However they are more commonly farmed on steeper land than other stock types, where land is more prone to erosion and alternative drinking supply is less likely</p>	
Purpose for waterway access	Regular crossings Drinking Shade and cooling	Regular crossings may need a bridge or culvert Reticulated water systems Alternative shade such as tree plantings. This can include a fenced off and planted riparian margin	

Table 2: Farm features and their impact on farm management

Farm risk factor	What to check for	What it means for management	Your farm's risk results
<p>Water bodies</p> <ul style="list-style-type: none"> Width Water body type Bed geology Depth of water body and bank height Downstream uses 		<p>Width will determine crossing time</p> <p>Lakes, wetlands and slower-flowing streams will take more time to flush out contaminants so will have a bigger build-up</p> <p>Soft sedimentary beds are more vulnerable to damage, while harder rock or gravel beds are less vulnerable to damage but are also more likely to have a lower natural sediment level</p> <p>Waterways that are deep or have high or steep banks will be more vulnerable to bank erosion and instability</p> <p>Waterways with high quality, rare or unique ecosystems will be more vulnerable to damage</p> <p>Downstream uses may need different water quality standards that need to be met, such as drinking water standards</p>	



Stony river bed



Soft river bed



Water body with steep river banks



Stream crossing

6.

Funding programmes available to help with water body management

The Greater Wellington Regional Council offers financial support under the Streams Alive programme in selected catchments and under the Wetlands Incentive programme.

Greater Wellington also provides financial incentives on erosion-prone land, and implementation and advisory services on land and soil management.

Contact Greater Wellington Land Management and Biodiversity departments on **0800 496 734** or **www.gw.govt.nz** for more information.

6.1

Installing stream crossings

Consult an engineer regarding what sort of crossing will best suit your needs.

See the Ministry for the Environment guide to constructing culverts and bridges at www.mfe.govt.nz/publications/land/culvert-bridge-oct04/index.html

See the Greater Wellington guide *Fish-friendly culverts and rock ramps in small streams* at www.gw.govt.nz/assets/council-publications/fishfriendlyculv.pdf

Contact Greater Wellington Regional Council on **0800 496 734** or www.gw.govt.nz for advice on any resource consent requirements.

DairyNZ has Farmfact sheets covering waterway management and culverts and bridges, available at www.dairynz.co.nz or **0800 4324 7969**.

Contact your local council for advice on any resource consents or building consents you may need.

6.2

Health and safety

You are responsible, as a person who is in control of a work place, to take all practicable steps to ensure a safe working environment for employees and contractors. For more information on your health and safety duties, contact the Department of Labour on **0800 20 90 20** or www.dol.govt.nz.

DairyNZ has an online Compliance Toolkit to assist with health and safety as well as animal health and environmental compliance requirements. These are available at www.compliancetoolkit.co.nz or by contacting DairyNZ on **0800 4324 7969**.

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7.

Further information

For further information contact:

Greater Wellington Regional Council on **0800 496 734** or **www.gw.govt.nz**

Deer farmers can contact Deer Industry of New Zealand or the New Zealand Deer Farmers Association **www.deernz.org**

Fonterra on **0800 6565 68** or **www.fonterra.com**

Federated Farmers on **0800 FARMING (0800 327 646)** or **www.fedfarm.org.nz**

DairyNZ on **0800 4DAIRYNZ (0800 4324 7969)** or **www.dairynz.co.nz**

Fertiliser Company Representatives

See Beef & Lamb's Land and Environment Planning Toolkit at **www.beeflambnz.com/main.cfm?id=35&spid=447**



8.

References

DairyNZ Clean Streams: *A guide to managing water ways* – please note this guide is to be replaced by Farmfacts, available from DairyNZ: www.dairynz.co.nz/page/pageid/2145861419/Farmfacts

New Zealand Deer Farmers Landcare Manual

Ministry for the Environment *Managing Waterways on Farms*
www.mfe.govt.nz/publications/water/managing-waterways-jul01/index.html



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Water, air, earth and energy – elements in Greater Wellington's logo combine to create and sustain life. Greater Wellington promotes **Quality for Life** by ensuring your environment is protected while meeting the economic, cultural and social needs of the community

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Stock Access Management Options

Capital Works

Management Tool	Suitable for...
Permanent fencing	<p>Most situations, particularly for heavier stock and flatter areas.</p> <p>Unlikely to be practicable for the majority of steep areas.</p> <p>Riparian planting is a consideration for areas that are permanently fenced. Weed control is one matter that will need to be considered in conjunction with this.</p>
Temporary fencing	<p>Most situations. Provides a cheaper alternative to permanent fencing, where the fence can be moved to where the stock are being grazed. Particularly useful for flood prone areas.</p>
Bridges and culverts	<p>Regular stock crossing points, particularly where the entry to the bridge or culvert is flat or gently sloping, as steeper access points have runoff and erosion issues.</p> <p>Talk to your local councils and engineers on what options best for you.</p>



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Stock Access Management Options

Other management tools suitable for sheep or for other stock if in conjunction with capital works

Management Tool	Farm Benefit
Providing troughs away from waterways	Provides water for stock without them having to access the waterways. There are significant animal health benefits to providing clean reliable reticulated water.
Providing shade away from waterways	Provides shade and cooling for stock without them having to access the waterways. Providing both shade and shelter have a positive impact on production and live weight gain.
Avoiding grazing paddocks with unfenced waterways during wet periods	Helps to avoid sediment and runoff caused by pugging.
Plant fodder crops away from waterways Or avoid paddocks with waterways when planting winter forage crops and leave generous grass buffer zones between the edge of the crop and waterway	Fodder crops for use in dry seasons, especially fodder trees, should be planted away from rather than along the edge of waterways. Use setbacks between the waterway edge and forage crops to avoid runoff in the wetter season. Always fence waterways off when strip grazing, graze parallel to and towards the waterway so the remaining crop and grass buffer acts as a filter strip.
Consider grazing management effects on water	When considering your grazing system, consider the effects on waterways, such as sediment, runoff, pugging, and erosion and look at managing your grazing system to minimise these effects.



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