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**WASTE
MANAGEMENT**

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**BRIDGES, CULVERTS
AND STREAM
CROSSINGS**

Pollution proofing your land

It is important to future proof soil health and water quality on your farm. Protecting soil health and water quality will protect natural habitats, allow for farm business diversity, reduce compliance costs and positively assist the marketability of your product. Essentially, whatever goes onto your land can eventually run off or leach downstream to your neighbour, and their neighbour, and end up in Tauranga Harbour.

Help is at hand

This toolkit is for anyone who owns a farm, orchard or land surrounding Tauranga Harbour. We hope you will find the information useful for preventing pollution on your land. Please contact a Tauranga Land Management Officer for free advice.

Nutrient management

Nutrients are necessary to look after grass and plant health and improve horticultural and agricultural production. Applying too much nutrient, or fertiliser, beyond the ability of your pasture or crop to absorb it, allows it to leach into groundwater and other water receiving waterbodies. This is a waste of fertiliser, costs you more money and causes problems for our environment.

Effluent management

Farm dairy effluent mainly comprises dung, urine, udder washwater, milking plant washwater and milk spillages. It contains valuable nutrients such as N, P, K, S and trace elements and adds organic matter to the soil, increasing earthworm activity. However, effluent is also an environmental risk due to the nutrients and disease causing bugs it contains. Untreated effluent entering waterways or groundwater can have a detrimental effect on human health and water quality.

To protect your soil and water quality:

PLAN FOR THESE

- Create buffer zones around waterways which are no-go zones for fertiliser and effluent application and establish planted strips to intercept overland flow.
- Have two soil tests carried out per annum and monitor these to detect trends that will help identify annual nutrient requirements. Significant money can be saved if you know exactly what your pasture or crop nutrient requirements are.
- Smaller fertiliser applications at regular intervals are better than large applications at greater intervals.
- Ensure you have adequate storage for dairy effluent to allow for wet weather or machinery failure.
- Regularly check your applicator system for signs of wear and tear and immediately repair faults.
- Staff training on effluent management and fertiliser application in accordance with industry sector guides and advice.

MAKE USE OF THESE

- Use an accredited effluent professional to design your system and supervise the installation.
- Make full use of the wide range of fertiliser options to find one to suit your particular needs and your budget.



Photo: Water quality tester.

- Low application systems decrease the likelihood of effluent surface ponding and runoff and provide greater flexibility when conditions are wet.
- Bay of Plenty Regional Council advice on rules for dairy effluent discharge.
- Industry sector guides and advice.
- Nutrient management plan development and advice.

AVOID THESE

- Applying fertiliser when plant growth is insufficient to uptake nutrients; pasture should be 25mm high and soil temperature above 5 degrees.
- Applying fertiliser if significant rainfall is forecast (>20mm).
- Fertiliser storage or handling sites within 50m of open water.
- Allowing hazardous substance to enter stormwater systems.

Remember, effluent must never enter our Tauranga Harbour and lakes, estuaries, streams and rivers. Develop a sound contingency plan for yourself to reduce stress, avoid pollution and ensure you comply with your consent at all times. We are only too glad to help.

**REDUCE
STRESS AVOID
POLLUTION**

Good planning pays off for your health and your soil's health.

RESOURCES

New Zealand Landcare Trust - Kaimai Project: www.landcare.org.nz/Regional-Focus/Hamilton-Tauranga-Offices/Kaimai-Catchments-Project

Managing dairy farm effluent: www.boprc.govt.nz/media/126749/a_guide_to_managing_dairy_farm_effluent_-_bay_of_plenty.pdf

Caring for your harbour: www.boprc.govt.nz/environment/coast/tauranga-harbour/caring-for-your-harbour/

Farm track runoff

Keeping your water clean

When stormwater runs off farm tracks it collects effluent and sediment that can become contaminants should they find their way into our local waterways – our rivers, streams, and Tauranga Harbour. Sedimentation has a detrimental impact by modifying streambed habitat for native fish (less food), decreasing the water holding capacity of waterways (more flooding), and by smothering kaimoana in the harbour. Excess nutrients in waterways encourage unwanted algae growth.

Planning & designing tracks

It is important to design and build a track to do the job required for your type of property. For example, some properties need good access for general machinery like tractors, feed wagons, light farm transport, stock and fertiliser trucks.

Do you have a stream or wetland area crossing you need to plan your design around?

A proper maintenance regime will mean your farm track will provide good access indefinitely. On the other hand a poorly located and/or poorly constructed track will often be severely damaged by heavy rain. Using a reputable earthworks contractor to construct or maintain a track is a worthwhile investment in both time and money.

PLAN FOR THESE

- Manage water control from the top of the track and work down to select sites for cut-offs and culverts.
- Ensure stream approaches are as flat as possible.
- A minimum culvert size of 300mm with headwall (seek technical advice on correct size of culvert pipes).
- Time your track construction to avoid wet periods that hamper construction and the compaction of fill. Carry out earthworks in mid to late summer and complete in time for autumn oversowing of bare areas.



Photo: A farm track with humped water control cut-offs to divert flow off the track to grassed areas.

- Obtain resource consent if the proposed track crosses a slope of 25 degrees or more; crosses an Erosion Hazard Zone; disturbs a wetland; or involves a cut of 2000m³ or more.
- Move as little soil as possible to reduce erosion risks and construction costs.
- Annual track maintenance, even if is just clearing water tables (track stormwater drains) and unblocking culverts and cutoffs.

**AVOID WATER
CONTAMINATION**

Divert track runoff away from stream or wetland crossings to avoid water contamination and pollution.

2

Waste management

Just like any business, farms and orchards create rubbish that needs to be managed. Disposing of rubbish is an ongoing problem on most farms in the region. The disposal of dead animals, the open burning of dry, untreated wood, cardboard and paper and the disposal of residual waste in farm dumps, are strictly controlled activities under regional and district council rules. Regional rules control discharges to air, land and water including the discharge of smoke, ash, odour, and other harmful pollutants. Local rules cover issues relating to land use such as general nuisance, pest control, vibration, vehicle movements, and regulation of construction activities. Many waste materials are recyclable and this is preferable to burning or dumping.

PLAN FOR THESE

- Have a Waste Minimisation Plan to reduce, reuse and recycle.
- Where possible buy products (e.g. Agrichemicals) from companies that are part of a Product Stewardship scheme so their safe disposal is covered once purchased.
- Proper storage and handling practises which will help to prevent spills.
- There are safety and decommissioning requirements for dump sites that must be complied with.

MAKE USE OF THESE

- Bay of Plenty Regional Council advice on rules for farm dumps, ofal pits and burning.
- Smoke sense information leaflet.
- Bay of Plenty Waste and Recycling directory www.recycle.boprc.govt.nz
- The Waste Exchange www.nothrow.co.nz
- Agrecovery www.agrecovery.co.nz
- Plasbak www.plasback.co.nz
- Carbon Recovery www.carbonrecovery.co.nz

AVOID THESE

- Dump sites, ofal holes and silage pits within 50m of a bore, river, lake, wetland or coastal marine area or within areas that flood or are at risk of eroding. Areas with a ground water level less than 2m below the base of the dump, ofal hole or pit are not permitted sites.



Photo: A farm dump located at the head of a dry gully.

- Dumping of liquid waste.
- Dumping of hazardous, toxic and/or potentially toxic waste. This includes hazardous substances and their containers, petroleum hydrocarbons (including oils, fuels and their containers, and human sewerage or stock effluent).
- Sediment/dust discharges to water or off the property onto another person's land.

**REDUCE
REUSE
RECYCLE**

Talk to a Consents Officer about waste management options.

RESOURCES

Bay of Plenty Waste and Recycling directory: www.recycle.boprc.govt.nz

The Waste Exchange: www.nothrow.co.nz

Agrecovery: www.agrecovery.co.nz

Plasbak: www.plasback.co.nz

Carbon Recovery: www.carbonrecovery.co.nz

Bridges, culverts and stream crossings

Getting across

Inadequate culverts, bridges and stream crossings can be costly and lead to flooding and damage to livestock, crops and property. As well as structural collapse, poor construction can also lead to soil erosion changing water clarity and health.

You can design, install and maintain a small-scale stream crossing as a permitted activity without needing resource consent. The same applies to concrete pads or you can make use of a natural crossing.

There are some standard conditions around constructing crossings to ensure adverse effects are controlled. They are well worth checking out.

Key things to consider when designing a stream crossing

PLAN FOR THESE

- Crossings within 50 metres of your neighbour requires their written consent.
- Build it outside the fish spawning/migration season.
- Plan your design for a 10-year flood (seek professional engineering advice).
- Stabilise and protect approaches, abutments, inlets and outlets against erosion.
- Remove all unwanted construction material.
- Keep your crossing maintained to avoid flood debris accumulating.

MAKE USE OF THESE

- Design around the natural land contours of your farm to save you time and money.
- Use the right construction machinery to reduce the impact to the land and to save you money.
- Use sensible construction techniques that have minimal impact on your farm's surroundings.

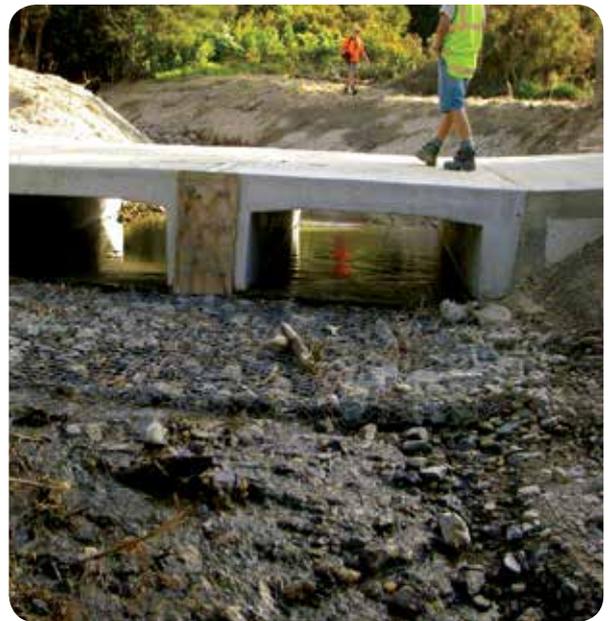


Photo: An example of a ford crossing that allows water to safely overtop during high water flows.

AVOID THESE

- Altering the natural course of the stream or flood channels.
- Disrupting fish spawning and migration - encourage life rather than hinder it.
- Allowing construction material or sediment entering the water, which will change the water's clarity and health.

Or, if you want to start thinking about building a bridge

PLAN FOR THESE

- Construct foundations parallel to stream flow, to maintain the current flow rather than alter it, which could encourage soil erosion.
- Install runoff controls to protect against erosion.

MAKE USE OF THESE

- Bridges cause minimal impact on streams, which is good news for your water quality.
- A bridge usually offers continuous access during flooding, so you can keep up farm productivity.
- Bridges do not hinder fish passage, allowing marine life to take its natural course.
- Bridges and culverts can be installed as a permitted activity (conditions apply).

AVOID THESE

- Ensuring your bridge is anchored securely will prevent your bridge being washed away by floods.

How about building a culvert crossing?

PLAN FOR THESE

- If your culvert is located in channels carrying a high volume of debris they may be susceptible to blockages.
- Incorporate a spillway that will protect your crossing during high water flows.
- Install your culvert on a hard, stable bed.
- Pipes must be large enough to handle the flow produced by a 10-year storm event. A 10-year storm event is a measurement of flood impacts, not necessarily return frequency. Some culverts will require engineering input or resource consent depending on the size of the upstream catchment area.
- Sow grass or legume seed immediately after construction, preferably during autumn, to promote growth and help reinstate the area.
- Design with care to avoid impeding fish passage.

MAKE USE OF THESE

- Culverts offer high-weight loading capacity, giving good access for your farm machinery.
- Culverts are low maintenance, allowing you to spend more time on other farm work.
- Culvert crossings can be installed as a permitted activity (conditions apply).
- Natural gentle slopes are great for stability.

AVOID THESE

- Using your culvert as a dam. Overtopping is a serious risk to structural collapse.
- Disturbing the soil. When moving soil, it works out cheaper to use an excavator.
- Wasting soil is unnecessary, so stockpile surplus soil but make sure it is well clear of stream channels.
- Using fill with vegetation and woody slash, car bodies, plastic containers or other refuse.

Key things to think about when constructing a ford

If you have wide shallow streams where a bridge or culvert is too expensive to build, building a ford could be just right for you. Another type of ford is a concrete pad.

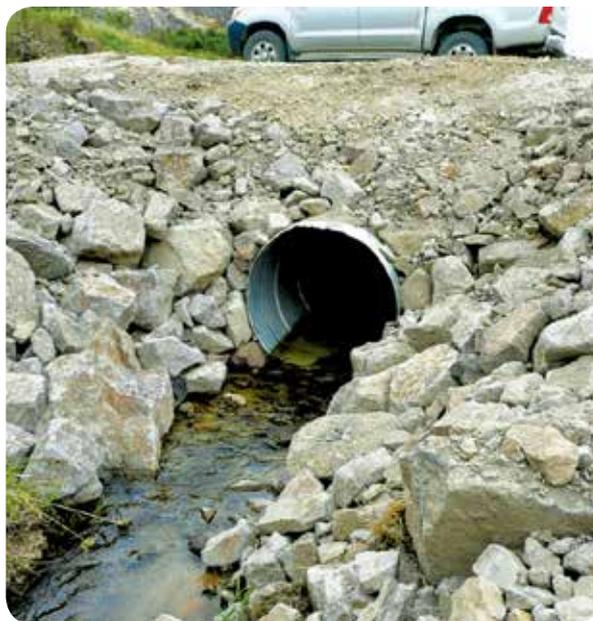


Photo: A well constructed culvert showing good water flow and protection against scouring, using a rock headwall.

Dry fords

PLAN FOR THESE

- Disruption during flooding.
- Potential fish passage.

MAKE USE OF THESE

- High-weight loading capacity to get heavy machinery around easily.
- Sites with a hard ignimbrite base for stability.
- Gravel and soft streams for ease of construction.
- Dry fords can be installed as a permitted activity (conditions apply).

AVOID THESE

- Allowing concrete and concrete ingredients to enter the stream.
- Interrupting fish passage.

**ALLOW
FOR FISH
PASSAGE**

Give a Tauranga Harbour Land Management Officer a call to find out more.

Wet fords

MAKE USE OF THESE

- Sites with a hard ignimbrite base for maximum support.
- Gravel and soft streams.
- A wet ford is a cost-effective option if you can't afford a culvert or bridge.
- Wet fords do not impede stream flow.
- They offer a high weight loading capacity.
- Wet fords can be installed as a permitted activity (conditions apply).

AVOID THESE

- Water contamination caused by concrete and concrete ingredients from entering the stream.

**KEEP
STOCK OUT**

Contact us to make use of our pond storage calculator.

RESOURCES

Tauranga Harbour: www.boprc.govt.nz/knowledge-centre/fact-sheets/tauranga-harbour-fact-sheets

Pollution Prevention Fact Sheet: www.boprc.govt.nz/knowledge-centre/fact-sheets/pollution-prevention-fact-sheets

Earthworks Fact Sheet: www.boprc.govt.nz/knowledge-centre/fact-sheets/earthworks-fact-sheets





Photo: Keeping your water ways pollution free means everyone can enjoy the Bay of Plenty. Source: Rick Stapa.



The natural resources you benefit from as a landowner through soil, plants and water, is worth defending. Doing nothing could threaten the quality of future production affecting soil, crops, livestock and your lifestyle. It could decrease your land value. Our series of toolkits will help you future proof your land to ensure it remains productive and profitable.

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