



### *The rules: what you need to know*

#### **Several effluent related activities are now prohibited.**

Poorly-applied effluent and effluent entering waterways via tile or open drains, or from surface runoff, significantly degrades our waterways. This problem continues to concern ORC.

As a result, the rules around effluent management are stringent and a number of practices are now prohibited – they can't be allowed to happen.

Anyone breaching these rules will face enforcement action.

#### **More details on the rules related to the following activities inside:**

- **Discharges to water and runoff**
- **Saturated soils**
- **Ponding**
- **Solids, sludge and slurry.**

### *The Otago water quality rules*

# Effluent management



**Well-managed effluent is a great source of fertiliser. Making sure it stays on the land and doesn't leach or runoff (to water) helps ensure local waterways (rivers, streams, lakes, and wetlands) stay healthy.**

## Activities prohibited under the water plan

### Rule 12.C.0.2 Otago Water Plan

#### **The Otago Water Plan prohibits the discharge of effluent from any animal waste system to:**

- any lake, river, or Regionally Significant Wetland, including their bed, or a drain or water race that goes to these waterways or the coast;
- saturated land;
- land if it results in ponding;
- land, if it results in an overland flow to waterways or the coast, or to a drain (open or mole and tile drain system) or water race that goes to waterways;
- any bore or soakhole;
- land within 50 metres of any lake, river, or Regionally Significant Wetland, bore or soakhole.



Ponding of effluent to land is prohibited.



Far left: Emptying your storage ponds during dry times will help you avoid having to apply to saturated soils.

Left: It is good practice, and will give you peace of mind, when you have enough storage to get through the wet times – in some areas this might mean more than three months.

## WHO DO THE EFFLUENT RULES APPLY TO?

They apply to all farming systems, including dairy farmers managing their effluent from ponds, as well as to farmers holding stock and collecting the effluent for disposal from a woolshed, holding shed, or feedpad.

**The effluent rules also cover silage and compost.**

## WHAT HAPPENS IF I BREACH A RULE?

Enforcement action means you may receive a warning letter, be issued with an infringement notice, or face prosecution in the Environment Court if you breach any prohibited activity rule. Prosecution may result in a criminal conviction and a hefty fine.

## WHAT ABOUT EFFLUENT RUN-OFF FROM LANEWAYS AND FARM TRACKS?

### Rule 12.C.1.1 Otago Water Plan

Make sure effluent does not run off to waterways, especially from major risk areas such as laneways and farm tracks. Any effluent to waterways not covered by the previously mentioned prohibited rule on page 1, must meet permitted activity conditions. These include ensuring there is no: conspicuous change in colour or visual clarity; noticeable increase in local sedimentation, floatable or suspended organic materials; and no odour, oil or grease film, scum or foam.

From 2020 water will also need to meet nutrient and bacteria thresholds.

## What other effluent-related rules do I need to know about?

**The Otago Air Plan includes these rules related to odour produced by effluent storage and land application. It is permitted to have:**

1. Odours, as long as they are not noxious, dangerous, offensive or objectionable beyond your farm boundary.
2. Outdoor stockpiles of material like waste animal bedding and manure provided they are more than 150m from your farm boundary.
3. Application to land of effluent providing it does not occur within:
  - **150m** of any residential dwelling on a neighbouring property or from any building used for employment purposes on a neighbouring property, and
  - **20m** from a formed road, and
  - **150m** from any public amenity area.

If you can't meet any of these permitted activity conditions, you must apply for a resource consent.



# UNDERSTANDING THE PROHIBITED ACTIVITY RULE



Discharging effluent to waterways is a prohibited activity.



Tiles running green like this are a sure sign that effluent is being applied poorly. Where there are tile drains, make sure that the timing and application rate of effluent is carefully managed.

## Discharges to water and runoff

**Both direct and indirect discharges of effluent from animal waste systems to waterways are prohibited under the Otago water quality rules.**

Effluent application to land needs to be managed well to avoid nutrient runoff getting into waterways.

The weather, soil moisture, pasture growth, and application rates and depths are all critical factors that must be well managed to reduce environmental effects and keep valuable nutrients on the land.

Applying effluent poorly often results in overland flow making its way to a waterway and causing serious damage. This is a breach of the rules, which will trigger enforcement action.



Effluent flowing into an open drain which leads to a waterway is a breach of the prohibited rule.



Effluent entering waterways can significantly reduce the ability of the water to support aquatic life.

# Saturated soils

**Applying effluent to saturated soils is prohibited, and if you are found to be in breach of this rule, you will face enforcement action.**

When the soil is saturated, the pores within it (gaps between soil particles) are filled with water. Any effluent applied during these conditions is likely to pond and run off or leach through the soil or into tile drains, rather than being absorbed and taken up by the plants.

## HOW DO I KNOW IF THE SOIL IS SATURATED?






### A simple squelch test can tell you

- Step on the soil. If your boot mark fills with water, the soil is saturated.
- Check the ORC soil moisture website <http://land.orc.govt.nz/landinfo/> to see if you have a monitoring site nearby.
- A hand-held moisture meter is useful. However, you need to test it in the soil in a range of conditions (dry–wet) so you see what reading to use for saturation.



## EFFICIENT EFFLUENT IRRIGATION

**Match your soil water deficit to your effluent irrigation**

SOIL WATER DEFICIT	EFFLUENT IRRIGATION
Flooding 	<b>Do not irrigate!</b>
Saturation 	<b>Do not irrigate - will cause ponding</b>
Field capacity 	<b>Delay irrigation, until there is sufficient soil water deficit, to ensure safe application of effluent</b>
10mm+ 	<b>OK to use pulsed application with a low rate application system</b>
20mm+ 	<b>OK to use a high rate (travelling irrigator) system with caution</b>

Effluent irrigation should only occur when the soil has some capacity to absorb further liquid, this is known as a 'soil water deficit'.

The soil water deficit will gradually build up as the soil moisture falls below the field capacity level.

Use this diagram to help you decide when and how much effluent to irrigate. This will help you avoid ponding, and the loss of nutrients from your farm.



# Ponding

**Ponding occurs when the effluent, solids, and liquids that are applied to land stay on the surface as a pond or puddle rather than being rapidly absorbed into the soil.**

Ponding of effluent results in runoff and leaching into waterways and groundwater aquifers and is a prohibited activity in the Otago Water Plan.

## WHAT CAUSES PONDING?

- Too much effluent is applied to land, or it is applied too quickly for the soil to absorb it.
- Effluent being applied when the soil is saturated.

Once the soil is squelchy under foot or at saturation point it's too late to avoid ponding and runoff. Irrigate only when there is enough soil water deficit (see diagram on page 4) to absorb the applied effluent.

If ponding or runoff occurs when there is a soil water deficit, it means you are applying too much effluent or applying it too quickly.



**Ponding like this is a serious breach of the prohibited rules.**



**Using well managed low rate irrigation systems will help you avoid ponding.**



**Effluent ponding from the irrigator is a serious breach of the rules.**



**This soil has received much more effluent than it can absorb. This is a serious breach of the rules.**

An example of a good sump, stone trap, and sealed pad area.



Ensure you have a sealed pond with sufficient storage to cover wet periods. The most common reason for inappropriate effluent application and poor performance of a pond system is undersized ponds.



## Solids, sludge, muck, and slurry

**Applying solids, sludge, muck and slurry to paddocks must be treated the same as liquid effluent. The same goes for effluent being applied with irrigation water, no matter what the mix is.**

### Good practices

#### Timing

Do not apply sludge, muck and slurry solids to soils that are at or near saturation. Apply it to land when the grass or crops are able to take it up quickly and use it when soil moisture levels are low, and soil temperatures are warmer. Keep the application well away (at least 50 metres) from waterways.

#### Thickness

Apply it as thinly and as evenly as possible. Do not dump large piles of muck onto paddocks. This creates a concentrated patch of effluent, or ponding. This is prohibited.

#### Cultivation

Apply effluent solids and sludges just before cultivating a paddock, so it can be mixed into the topsoil, providing extra nutrients for a crop or new grass.

### DAIRY COMPLIANCE INSPECTIONS

Dairy farms are inspected regularly by ORC environmental staff.

If you receive a minor or major noncompliant grade after inspection, some action will follow.

This may include:

1. A warning or infringement notice (ORC fine) may be issued for minor non-compliance.
2. Grade 5 refers to a major breach of the rules and could result in prosecution.
3. If it is decided that prosecution will be taken, ORC legal counsel will send a letter to you when they receive the case.
4. Prosecution in the Environment Court may result in a hefty fine and criminal conviction.





# Tips to help you meet the effluent management rules

## Ensure you have enough storage

- This is crucial. Calculate the storage requirements of your farm and build suitably sized storage. Help is available through effluent accredited designers (<http://effluentaccreditation.co.nz/>) or milk supply companies environmental specialists

## Reduce the amount of effluent going into your pond

- Use roof water diversion, winter yard water diversion and efficient wash down methods and systems such as the use of greenwater washdown to reduce the amount of effluent you have to store and manage.

## Manage your effluent application to land

- Apply effluent at a rate for that the soil can take up and avoid ponding or leaching. Make sure your effluent irrigation systems are not left running too long in one area, causing the soil saturation and ponding.
- Match your soil water deficit to effluent irrigation. Irrigate effluent only when the soil has the capacity to absorb the liquid, (known as a soil water deficit).
- Delay or stop effluent application when

your soil moisture is at field capacity. This will minimise the risk of ponding, runoff, or leaching to groundwater or tile drains.

- Identifying and recording high and low-risk paddocks will assist with decisions about when it is safe to apply effluent.
- Install fail-safe warning systems for all effluent irrigators.

## Check the soil moisture level regularly

- This can help you decide whether or not it is safe to apply effluent. The ORC website (<http://land.orc.govt.nz/landinfo>) has up to date information on soil moisture, rainfall and soil temperature for various sites around Otago.

## Empty your storage pond when soil conditions are optimum

- Your pond will then have the greatest capacity possible going into the wetter months or busier times of the year, such as spring.

## Regularly service and check equipment

- It helps to record these actions.

## Use highly trained staff

- Train your staff to keep your system efficient and trouble free and to be aware of their responsibilities for the good operation of it.



A low-rate effluent system will help you apply effluent to the right depth, and minimise the risk of ponding and leaching to water. Low rate also gives you more suitable irrigation days, meaning you can empty the pond faster.



Higher rate systems like travelling irrigators need to be well managed, calibrated and serviced regularly in order to work effectively. Install and maintain a fail-safe system. Use test buckets to make sure you are not applying too much effluent.

**Make sure your effluent application is not within 50 metres of a stream, river, lake or wetland. This is a prohibited activity.**

## Need more information?

The detailed rules can be found in the Otago Water Plan. Follow this symbol on our website.



The Dairy NZ effluent resources provide good guidance - see <http://www.dairynz.co.nz/environment/effluent/>

For additional peace of mind get a professional assessment of your dairy farm effluent system by a certified Dairy Effluent 'Warrant of Fitness' (WOF) assessor <http://www.effluentwof.co.nz/>

More information on when to apply effluent in Otago can be found on the ORC website - see <http://land.orc.govt.nz/landinfo/>

**Check out these other guidesheets.**

**4 - Silage and compost**

**8 - What is a river**

For further information email us on: [waterqualityrules@orc.govt.nz](mailto:waterqualityrules@orc.govt.nz)

Phone us on

**0800 474 082**



**Fail-safe systems on your effluent irrigators can send you alerts if things go wrong. This allows you to fix the problem before it causes damage or breaches the rules.**

## If things go wrong

**First, good maintenance and having a good setup that includes fail-safe mechanisms installed on effluent systems will help you avoid incidents.**

If an incident happens, immediately fix the problem. If you've had a pipe burst or the irrigator has got stuck, make sure you turn off the pump and clean up the mess as a priority.

If effluent has reached a drain, block it with a scoop of fill or a straw bale, and call the suction tanker to have the effluent removed.

In addition:

- Contact the ORC Pollution Hotline on 0800 800 033 as soon as possible to report the incident and get advice on what to do. The important thing for ORC is that accidents are identified and rectified early.
- If you are a dairy farmer, your Fonterra sustainable dairying advisor (0800 65 65 68) or the dairy Environmental extension specialist (0800 4 DAIRYNZ) can also help.