Good Environmental Practices Toolkit for New Zealand Piggeries

Contents

Carcass disposal options

Treatment options	Advantages	Disadvantages
Offal Pits	• Simple. • Cost effective. • Easy to manage.	• May involve stricter conditions from regional council plan. • Offal pit seepage can contaminate groundwater.
Composting	• Useful product generated – added value. • High composting temperature destroys pathogens and prevents fly incubation.	• A reliable supply (cost) of carbon source, e.g. sawdust, shavings or straw is required. • Requires knowledge of composting and can be labour intensive. • Predator and pest control is required (minimal).
Burial	• Simple and cost effective	• Predator and rat control required • Labour intensive
Off-farm Rendering	• Unlikely to have significant adverse effects on the environment • No risk of further	• Only available in some areas. • Requires secure area to store carcasses before pickup. • Potentially expensive
Incineration	• Carcass and pathogens are completely destroyed	• Only applicable in some areas • Potentially expensive • Strict rules regarding on-farm incineration (highly probable that these rules will be further tightened in the future).

Description of types of irrigators commonly used by pork producers

System Description	Pros	Cons
Travelling irrigators - irrigate liquid manure to a height of 2-3 metres on level ground. Effluent should have a total solids content of less than 5% to avoid blockages.	• Less labour intensive than stationary irrigators. • Both travelling and stationary irrigators can be modified to spray manure down instead of up, reducing the potential for odour effects.	• Potential for odour issues • Require manure to be piped from collection/storage area. • Regular maintenance required to avoid blockages.
Stationary irrigators - irrigate liquid manure to a height of 2-3 metres on level ground. Effluent should have a total solids content of less than 5% to avoid blockages.	• Low set up costs. • Less labour intensive than tankers or soil injectors. • Can be used on sloping land	• Potential for odour issues • More labour intensive than travelling irrigators. • Requires frequent shifting to avoid overloading soil.
Slurry tankers – used to transport all types of effluent both on and off-farm. Also used when emptying/desludging ponds.	• Effective way of spreading nutrient rich solids. • May be used on sloping ground.	• High labour input • Cannot be used on wet ground.
Soil injectors - inject manure into the soil near pasture root zones.	• Best system for reducing likelihood for odour issues.	• Labour intensive. • Cannot be used on overly wet or stony ground. • High initial cost

Example of Stage One Objectives sheet

This sheet has been filled according to the activities that may be identified as needing improved management practices in the Workbook. This form *only needs (although may be helpful to do anyway) to be filled out if completing the full EMS system*. The next 3 pages are examples for how this could be completed.

Objectives/Targets	
Workbook section: One	**Activity: Feeding and Composting**
Management objective(s)	1. Improve feed formulation to take into account factors that will affect the NPK within the effluent. 2. Ensure carcass disposal system is not causing any significant adverse environmental effects. 3. Ensure there is always enough water for the various systems on the piggery.
Time/Date of activity **NA**	Daily Weekly Monthly Other Time and duration of activity: feeding – early morning _____
Management strategies	1. Work with feed agent to ensure appropriate formulation of feed. May need to include an additive. 2. Change from offal pit to composting system for carcasses, ensuring management of the system is appropriate. 3. Document the water requirements over a one year period and implement strategies to improve efficiency.
Responsibility	Name of staff member:
Type of monitoring and/or recording	1. Regular communication with feed agent (as necessary). Ensure this communication is documented. 2. Visual check of composting area to ensure little or no leaching, sufficient cover of carcasses, little or no odour produced. 3. Determine a rough idea of water usage during different stages throughout the year (seasonal changes). Record these changes so that they can be referred to by council officers and other staff members.
Review Date	Date: / / Next review : / /

Example of Stage 2 Objectives Sheet

Objectives/Targets	
Workbook section: Two	**Activity: Collection**
Management objective(s)	1. Ensure there is no significant amount of odour produced during the collection, storage or processing of effluent. 2. Ensure water supply is not contaminated by storage/processing facilities. 3. Ensure there is no leaching of effluent into soil/water during collection effluent from shed/s.
Time/Date of activity **NA**	Daily Weekly Monthly Other Time and duration of activity: _____
Management strategies	1. Maintain drains and processing systems to a high standard. 2. Ensure processing systems are designed to handle the amount and specific type of effluent being collected. 3. Ensure there is no significant leaching or contamination of soil/groundwater due to storage or processing of effluent.
Responsibility	Name of staff member:
Type of monitoring and/or recording	1. Weekly checks of drains to ensure no blockages and maintenance requirements are satisfied. 2. Determine amount and type of effluent produced and the ensure the systems are of the appropriate design and size to cope. Consultation with an engineer or experienced producer may be required. See pages - in this Toolbox for help in assessing effluent characteristics. 3. Do a weekly visual check of the collection system to ensure there is little or no leaching. Ensure these checks are documented.
Review Date	Date: / / Next review : / /

Example of Stage Three Objectives Sheet

Objectives/Targets	
Workbook section: Three	**Activity: Land application**
Management objective	1. Ensure there is no significant amount of odour/dust/noise produced during the application of manure onto land. 2. Ensure water supply is not contaminated by manure stream 3. Ensure that the soil is not been overloaded or damaged by the application of manure to land.
Time/Date of activity **NA**	Daily Weekly Monthly Other _____ Time and duration of activity: Early morning (2-3 hours) and/or early afternoon (2-3 hours)
Management strategies	1. Reduce pressure in irrigator so that effluent is not sprayed high into the air. 2. Change timing of application to a time that has been negotiated with relevant neighbour. 3. Calculate appropriate loading rates for each area of the farm based on soil type and geography (esp. slope)
Responsibility	Name of staff member:
Type of monitoring and/or recording	1. A weekly visual check of fresh water system to ensure it has not been contaminated by application system. 2. Ensure (either visual or soil samples) that there is no ponding and/or runoff into streams. 3. Informal communication with relevant neighbour to ensure no adverse effects (monthly or bi-monthly basis). This will be documented.
Review Date	Date: / / Next review: / /

Print this page and use it to write the management objectives you have for improving the processes during each stage of the effluent system (as many pages as you need).

Objectives/Targets	
Workbook section:	**Activity:**
Management objective(s)	
Time/Date of activity **NA**	Daily Weekly Monthly Other
	Time and duration of activity:
Management strategies	
Responsibility	Name of staff member:
Type of monitoring and/or recording	
Review Date	Date: / / Next review : / /

Actions for Environmental Management System

(taken from Objectives/Targets pages above)

Issue	Date	Options	Actions	Outcome (Successful, ongoing, etc)

Consultation with affected groups during resource consent applications

Irrespective of good management practices, as part of your resource consent application it is highly likely that some consultation will be required. Consultation means bringing your application to the attention of parties that may be affected by the activities on the piggery. These could include:

- Immediate neighbours
- District and/or Regional Council
- Local Iwi
- Local school, church or community facility near your piggery operation
- Fish and Game
- Environmental/conservation groups
- Downstream water users using the same waterbody as you take water from and/or discharge treated effluent into.

It is important that you make a record of any consultation that you perform as part of your resource consent application. This includes instances where parties do not support your resource consent application. This may become important during meetings with the council (pre-hearing meetings, hearings, appeals to the Environment Court).

Being involved early on in the consultation process can help you to identify any problems you may encounter later on in your resource consent application or to identify any adverse effects that you have not considered. It is very important that all parties fully understand the implications of your resource consent application from the start.

Your local council may have a standard 'consultation' form that you will need to take around to affected parties. Always check with the relevant council to see if they have a form or not before you officially visit or talk to anyone. If you use your own document, ensure that the following are included on it for each consultation (see attached form):

- Date of consultation
- Name, contact details and signature of the person you consulted with
- Statement saying that they understand and accept the potential effects of the activity
- Acceptance of consent application

The outcome of the consultation may be:

- Support for your application
- Opposition to your application
- Partial support for your application
- Partial support for your application subject to conditions
- No opinion
- No opinion, subject to conditions

Even if the outcome of your consultation is not what you hoped for, it is important to show that you have consulted as widely as possible. This will assist your application getting through the resource consent process as quickly as possible.

RESOURCE MANAGEMENT ACT 1991
NEIGHBOURS APPROVAL FORM

To: Applicants (farm owner/manager) Name

Name: Your Name

being the owner(s)/occupier(s) of the property at Physical Address

hereby give our written approval to the resource consent application under Section 94 of the Resource Management Act 1991 for:

Resource Consent Application Title

I/We have sighted a copy of the application, assessment of effects and accompanying plans.
I/We record that I/we do not have any opposition to the proposed activity.
I/|We give this written approval to the granting of consent to the above application.
I/We understand that when considering this resource consent application, the ……District/Regional Council (delete one) will not take into account any actual or potential effect of the activity on any person from whom written approval has been obtained. In the event of any actual or potential effect occurring, this will not be grounds upon which the consent authority may decline to grant the application.

These questions must be answered:

This property is jointly owned.	**Yes / No**
This form is signed by or on behalf of all owners.	**Yes / No**
This property is occupied by tenants.	**Yes / No**
All the tenants have signed this form.	**Yes / No**

Note:

1 Should you be unsure of your legal rights in respect to signing this approval please discuss this matter with your local council.
2 All supporting information should be sighted and read by you to ensure you completely understand the proposal and its potential effect on you.
3 This approval can be withdrawn by notice given in writing to the relevant Council at any time before the resource consent is granted.

Signed: ..... (Owner/Tenant)

..... (Joint Owner/Tenant)

Dated: .....

Effluent Application Record

Date	Time	Location (map reference)	Weather conditions	Wind direction	Duration of application

Checklist for General Good Management Practices

Checklist item	Date	Details	Actions taken	Outcomes	Further comments
Visual inspection of pipes					
Visual inspection of ponds/compost system					
Visual inspection of land applied areas					
Have there been any changes in pig numbers this week?					
Has there been any environmental upskilling of staff?					
Have there been any complaints (informal or formal)?					
Have there been any inspections from the council?					
Document maintenance work done on any farm system					

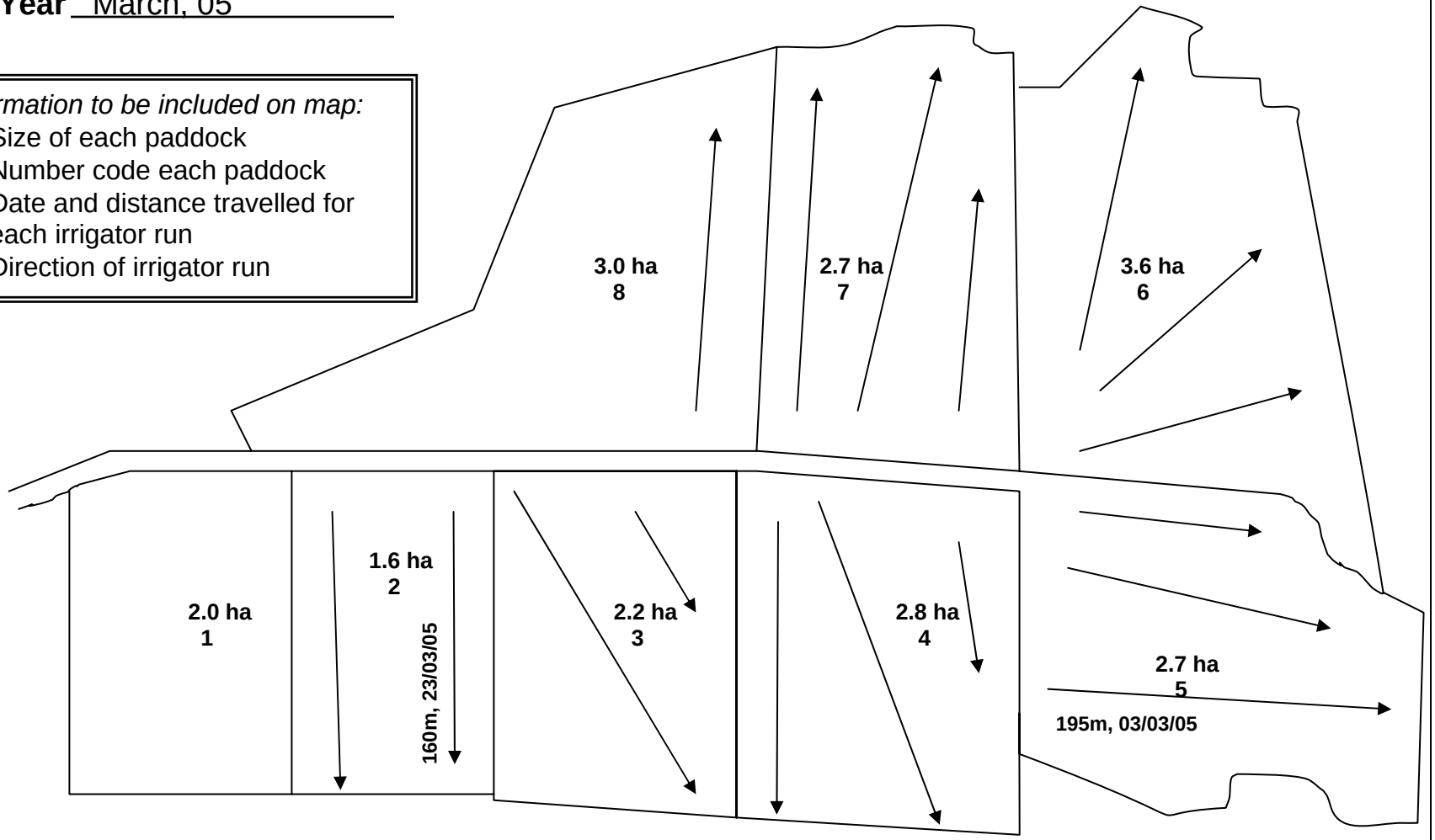
Farm effluent application map (example)

Piggery effluent [ ] **Dairy effluent** [x] **Block Name/Number** Dairy shed effluent block

Month/Year March, 05

Information to be included on map:

- Size of each paddock
- Number code each paddock
- Date and distance travelled for each irrigator run
- Direction of irrigator run



Farm effluent application map

Piggery effluent ☐ **Dairy effluent** ☐ **Block Name/Number** _____

Month/Year _____

Farm Effluent Application Details

Date	Paddock Number	Distance (m)	Irrigator Speed m/hour
Example - 23.03.05	**2**	**160**	**34**

Tools being developed or researched

OVERSEER Nutrient Budget Model

What does the model do?
OVERSEER is a programme designed to help farmers develop a nutrient budget for their farm. This nutrient budget is a summary of nutrient inputs and outputs from the farm or block, dealing with how they affect the growth rate of the pasture/crop as well as environmental effects such as leaching, acidification, greenhouse gases.

How is it designed?
There are three main models within the programme; pasture, crop and horticulture. The programme has a number of databases available to use, including information from the main fertilizer companies and their respective products. It also allows the user to input results of testing (of the effluent) into a personal database for comparison over time.

There are a number of outputs, once all information has been entered into the model (the below information is through the pastoral model):

1. Environmental Report - Farm N surplus (kg N/ha), leaching loss of N (kg N/ha), nitrate-N concentration in drainage water and CO_2 equivalent emissions from lime, fertiliser production, nitrous oxide (N_2O) emissions and from fuel use (Greenhouse gases).
2. Change in soil - Olsen P, QT K and QT Mg levels, expected direction of pH change over time
3. Block N report - N concentration in drainage (below the root zone) in ppm, N leached (kg N/ha), N surplus (kg N/ha), added N (kg N/ha) – N added to the block as fertiliser, farm dairy effluent or dairy factory effluent
4. Information on P and K - estimated P loss (kg P/ha) as leaching/runoff, rates of P and K applied when effluent is applied at the rate of 150 kg N/ha/yr, rates for K and P (ignoring the application of effluent), fertiliser required to maintain soil fertility status in the effluent block, assuming that effluent is applied at 150 kg N/ha/yr.
5. Value ($) of effluent applied

Note This programme is in the process of being assessed by the NZPIB and will be developed for the pork industry. It should be ready for producers to use by the middle of 2005 and would be complimentary to the effluent calculations already supplied.