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| Farm Environment Plan  Pork Enterprises Guidance Notes |
| |  |  |  | | --- | --- | --- | | New Zealand Pork Industry Board |  | V5: 2020 | |

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NZPork: Farm Environment Plan Guidance Notes

## Introduction

Farm Environment Plans (FEPs) are a management tool used by farmers to minimise and control the effects of their operation on the environment. In many regions, FEPs are required by Regional Councils to ensure a preferred activity status is maintained or as a condition of a resource consent. NZPork has compiled this Farm Environment Plan template to assist pork producers in assessing and minimising the effect of their activities on the environment, meeting regulatory requirements and future-proofing their farm.

The best way to start developing your FEP is with a farm walk. Try to view your operation through fresh eyes and note any potential risk to the environment, the likelihood it could occur and consequences that may result. Then work on strategies to avoid, remedy or mitigate that risk. Involving all staff in the development of your FEP allows for the contribution of fresh ideas and gives them ownership of the management practices on-farm. The person responsible for implementation of the FEP should be actively involved in the management of the activities on-site and should be involved with the development of the plan.

Farm Environment Plans should be reviewed at least annually to assess progress and identify any new issues that may arise. All staff should be aware of and understand the FEP and its importance in effective farm management and operation. A system where all staff are encouraged to report environmental incidents, risks or near misses should be developed to allow ongoing input into the FEP and ensure it is a dynamic document that accurately reflects farm management and allows for continuous improvement.

Section 1: Farm and Owner/Manager Information

Fill in the owner, lessee and manager contact information, and property information completely. Ensure contact details are kept up to date and there is more than one contact person listed.

The farm description is intended to give someone unfamiliar with your operation an overview of the on-farm activities. It doesn’t need to be long, but should give details such as stock numbers, the main activities that occur and management style. An example is below:

### Farm Description

|  |
| --- |
| *The property can be broken down into four main farming activities:*   1. *Outdoor (free farmed, closed herd, high health) farrow to finish piggery, averaging 600 sows, 24 boars and all progeny to sale at – kg deadweight. A deep litter system based on barley straw is used for all pigs post weaning.* 2. *Wheat and Barley crops which forms part of the pig diet.* 3. *Straw production used for bedding in the breeding and post weaning areas. Note: Additional straw is imported to the farm.* 4. *Compost production (used on the farm and exported)* |

### Summary of Key Actions

This section is a quick reference to actions identified in the plan that must be carried out as a priority. ***Fill this section in last.***

### Review/Audit

Even if there is no formal requirement for FEP auditing, a self-audit should be undertaken at least annually and involve all staff. This could consist of a team meeting to review any compliance reports, incidents and issues since the last audit, followed by a farm walk to visually assess environmental performance. Staff should be allowed to provide feedback on FEP and suggest improvements. Staff should also understand any resource consents held and how compliance with the consent conditions or other regional rules are met. A suggestion is to undertake formal reviews of environmental effects (or hazards) during regular reviews of health and safety hazards on the farm.

In some areas, formal audits will be carried out by the regulatory authority or an independent third party (such as a consultant). You should discuss this process ahead of time with the person who will be performing the audit so that you can be prepared with any information they may require. The audit will likely include an assessment of performance against the objectives, targets, good practices and timeframes described; an assessment of the robustness of the nutrient budget(s) and an assessment of the efficiency of water use (if irrigated).

It is a good idea to schedule your reviews/audits in advance. Below is an example of the completed table for this section.

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Type of Review/Audit | Results/comments/actions to be taken/implementation and recheck dates | Name/signature |
| 31 Jan 2020 | Document review | Creation of this plan and review | Consultant Farm Manager |
| 12 May 2020 | Self-Audit | Self-audit of this plan before it was submitted to ECAN as part of the consent application. Including GMPs. | Farm Manager |
| 31 July 2020 | Update | Update after farming activities resource consent was issued to incorporate consent conditions in Appendix. | Consultant Farm Manager |
| 5 June 2021 | Review | Review based on feedback on this plan from the FEP auditor. | Farm Manager |
| TBC 2021 | Self-Audit | Proposed annual self-audit of this plan | Farm Manager |
| TBC 2022 | Self-Audit | Proposed annual self-audit of this plan | Farm Manager |
| TBC 2023 | Review | Proposed review of this plan as the Farm Portal is expected to be available for pigs to use GMP loss rate | Consultant Farm Manager |
| TBC 2023 | Self-Audit | Proposed annual self-audit of this plan | Farm Manager |

Section 2: Adverse Environmental Effects and Risk Assessment

## Farm Characteristics

Land Management Unit (LMU)

A land management unit (LMU) is defined in the NZ Fertiliser Association Code of Practice as “*A homogenous block of land that responds in a similar way under similar management*.” Areas that need different management or show different responses need to be separated for good planning. LMUs are best assessed using a combination of physical factors (e.g. soil type, slope, and aspect), major management factors (e.g. dryland versus irrigated areas, different crops, effluent/compost application areas) and history of previous use and management. Some people will find that their property has several LMUs while others can treat their whole property as a single LMU – simply add or delete extra LMU sections from the FEP template as required. Ideally, LMUs will be identified as separate blocks within your farm nutrient budget.

Area:

The block area in hectares

Slope:

The gradient of the land e.g. flat, rolling, steep etc

Irrigation:

Do you irrigate this block (Yes or No?)

Soil Type:

Land and soils information can be sourced through the S-map Online (<http://smap.landcareresearch.co.nz>). The soil type information is need for your nutrient budget. It is likely that there are different soil types for each area of your farm.

PAW100:

The Plant Available Water capacity. This is the difference between field capacity (the maximum amount of water the soil can hold) and the wilting point (where the plant can no longer extract water from the soil) measured over 100cm or maximum rooting depth. The PAW100 figure is generated from the Soil Report generated at the S-map Online.

## Block Strengths and Weaknesses

Before completing this section, it is useful to understand the inherent strengths and weaknesses associated with your farm. Inherent risks are independent of farming activity as they are characteristic of the land itself – for example soil type (free draining to prevent mud), topography (sloped versus flat), presence and proximity of waterways, roads or sensitive activities, climate (high versus low average rainfall). These inherent characteristics influence the way the land is used and managed, as well as the risks of nutrient leaching. Include all strengths and weaknesses for each LMU as it relates to your farm, not just those related to nutrient management. An example of some block strengths and weakness are below.

|  |  |
| --- | --- |
| Block Strengths | Block Weaknesses |
| * Free draining * Flat land and run off risk low * Proximity to cereal supply (feed for pigs) * Set back from road (biosecurity) * Proximity to markets and access to straw * Availability of high-quality water * Easy access for staff * Rotated with cereal crop (removal of nutrients) * Away from community drinking water supply * Away from sensitive receiving environments (e.g. schools, residential areas etc.) * Depth to groundwater * Low rainfall * Not located in a flood management area | * Free draining and nutrient loss risk * Proximity to waterways * Uneven urine and dung distribution * Summer dry and occasional snow cover in winter * Wind erosion of soil * Wallows (high nutrients) |

## Environmental Risk Assessment

Assessing the risk of environmental effects on your farm involves looking at both the likelihood an effect will occur and the potential consequences of that effect. This is done through a risk matrix approach.

Affecting the inherent risks (strengths and weaknesses) associated with a property are the nutrient management risks associated with the farming activities occurring on site – for example fertiliser use, irrigation, effluent and compost application, cropping, stock access to waterways, winter grazing, location of offal and farm rubbish pits.

### Assessing Significance

Once you’ve identified the environmental risks on your land, you need to decide on the significance of these risks. A risk is defined as the combination of likelihood of occurrence and consequences of the effect.

For each risk identified on the property, consider the potential adverse effects and the likelihood of them occurring:

* Little chance of the effect happening (possible, but not aware of it happening previously on this property) = low likelihood;
* Some chance of the effect happening (happened in the past, but infrequently) = medium likelihood;
* Strong chance the effect will happen (it happens regularly) = high likelihood.

Now consider the consequences of the effect happening: will the effects be major or minor? Will they be localised or widespread? Will other people be affected? Will the effects be reversible?

* If the effect is unlikely to cause significant environmental damage, has minimal potential to affect other parties and/or would be easy to reverse, then the consequence is low.
* If the effect has some potential to cause damage or harm, is reversible but could affect the surrounding environment, then the consequence is medium.
* If the effect has the potential to cause significant environmental damage or harm, both in the immediate area and surrounding environment, is difficult to reverse and likely to concern the wider community, then you must consider the consequence high.

Now you can combine the likelihood and consequences to assess the overall significance of environmental risk as in the table below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **Environmental Consequence** | | |
| **Low** | **Moderate** | **High** |
| **Likelihood** | **Low** | Low Significance | Low Significance | Moderate Significance |
| **Moderate** | Low Significance | Moderate Significance | High Significance |
| **High** | Moderate Significance | High Significance | High Significance |

Fill in the Environmental Risk Assessment table for each LMU, stating the level of risk from each activity – whether that be high, moderate, low or not applicable (N/A). You may wish to add a short statement to qualify the risk assessment, such as “summer wind blow” for erosion risk due to stock grazing or lack of ground cover due to 3-month drought.

Once you have assessed the risks, think about management approaches to avoid, remedy or mitigate them. ***Any environmental risk with medium or high overall significance must be addressed in Section 3 of your Farm Environment Plan***, with best management practices chosen to minimise the risk.

Some, like following codes of practice, standard operating procedures or manufacturers’ instructions, may seem obvious, but it is important that they are all recorded.

Keep records and information used to determine adverse environmental effects and assess risk in your environmental file.

Section 3: Management Objectives & Actions

## Management Objectives and Actions

A description of how each of the management objectives included in the template will be met is a requirement of Environment Canterbury and other regional councils. If any of the listed activities do not occur as part of your farming operation, simply note that as being the case. For example, if you do not use an offal pit, include a statement like “Offal pits are not used” or “All dead stock are removed by contractors/composted”. For each management objective and target, where relevant, the table should be completed and include:

* Detail in keeping with the scale of the environmental effects and risks
* Defined measurable targets that set a pathway and timeframe (where applicable) for achievement, and set out auditable pass/fail criteria
* A description of good management practices together with actions required
* The records required to be kept for measuring performance and achievement of the target.

The table of suggested/example activities and risks provided in this Guide are provided to help you formulate a plan for your farming operation. Some will not be applicable, and you will have others than have not been given as examples. Many of the objectives will be ongoing, but where applicable, dates to achieve objectives or complete actions should be included (for example, fence all waterways by a certain date).

If you farm pigs outdoors, the Good Management Practices (GMPs) in your FEP should include those agreed upon by the pork industry as part of the Matrix of Good Management (MGM) project. The first of these is to undertake a farm environment plan including a farm environment risk assessment. The others are highlighted and appear first in the tables below. A full list of the pork industry GMPs can be found in the Pork Industry Guide: Environmental Management available at [www.nzpork.co.nz](http://www.nzpork.co.nz)

Important note: the improvement actions are implemented to achieve the objectives. These are documented in this section of the Farm Environment Plan. It is important that these actions are ‘**SMART’** and will be implemented on the farm.

* **S**pecific
* **M**easurable
* **A**greed-upon
* **R**ealistic
* **T**ime-related

## Management Area: **IRRIGATION AND WATER USE**

|  |  |  |
| --- | --- | --- |
| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| * Irrigation during or after rainfall * Ponding of irrigation water * Inefficient application * Drainage/flooding on other properties * Contamination of stormwater * Waste/wash-down water management * Losses from poor maintenance of irrigation equipment | * Use Irrigation New Zealand Code of Practice for design * Post installation checks to show system performs to desired standard * Schedule and apply water taking into account: crop type, soil type, rainfall etc. * Soil moisture monitoring * Include wastewater and wash-down in effluent management plan * Training of staff in the efficient use of irrigation water * Reticulated water system is managed and maintained to avoid wasted water | * Rainfall, Irrigation, soil moisture records * Checks of irrigation equipment and maintenance * Annual bucket tests and supplier reports * Irrigation meter records and application records * Water use data |

## Management Area: **NUTRIENTS**

| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| --- | --- | --- |
| * Contamination of ground and surface water (particularly nitrogen and phosphorus) * Runoff and leaching of effluent and fertiliser from paddock into waterways (including through tile and mole drains) * Over application/duplicated areas * Risk from stock wintering practices | * No NPK fertiliser to be applied to paddocks running pigs * Apply any other fertiliser in accordance with the NZ fertiliser Code of Practice * If runoff from tracks has potential to enter a flowing waterway/drain, employ management to prevent runoff from entering waterway. Place troughs, drinkers and gateways away from flowpaths. * Prevent runoff from wallows entering waterways. * Outdoor pig production is on flat land – therefore minimising the risk of runoff * Offal pits/farm dumps are sited away from waterways and other sensitive areas such as bores (check with council for rules and guidelines) * An appropriate diet and feed levels for physiological (reproductive) states of animal – e.g. separate gestation diet and lactating diet (nutrition) * Stocking rate is managed for outdoor pigs according to industry agreed GMPs * Farrowing huts are shifted after each lactation * Use appropriately accredited agrichemical applicators. The current industry standard is Spreadmark. * Use soil test results to plan nutrient needs * Use nutrient budgeting and nutrient management plan * Manage applications e.g. to avoid waterways, timing for crop needs, rainfall etc. | * Nutrient budget or recommendations from fertiliser consultant * Fertiliser invoices / records * Record of fertiliser applications (amount, date, placement records/map) * Paddock records of pasture, soil moisture, temperature at time of application * Use of GPS technology to record fertiliser placement and soil test sites |

## Management Area: **CULTIVATION AND SOIL STRUCTURE MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| * Soil compaction/pugging * Soil erosion * Soil health problems * Soil contamination * Maintenance of groundcover * Soil damage/loss from cultivation * Longer fallow periods accelerate nutrient losses | * Maintain groundcover in accordance with industry agreed GMP (listed below at the end of this table). * To maintain ground cover and prevent rooting in the soil, breeding stock should be fitted with a nose ring and/or clip(s). * Farm on lower rainfall area * Reduce fallow during and immediately after pig phase of rotation – e.g. by planting catch crops * Stocking rate is managed for outdoor pigs according to industry agreed GMP (listed below at the end of this table) * Paddocks should be grazed top to bottom (down the slope) * Stock should not be left on break feeding paddock when wet, or concentrated on small areas of paddock for long periods * Avoid stock pugging – stocking rate, rotation, stand-off pads etc. * Use shelter planting and reduced tillage to avoid wind erosion * Avoid irrigation during rainfall to minimise runoff, erosion and contamination of water * Use of direct drilling and minimum tillage * Cultivate across slope to reduce runoff * Wallow areas reduced and do not discharge to a waterway | * Cultivation records – dates, type. * Records of soil assessment and remediation of soil damage |

## Management Area: **WATERBODY MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| * Damage to stream banks * Nutrient and faecal contamination of waterways * Sediment entry to waterways * Stock crossings | * Exclude stock from natural waterways, drains, wetlands and water races that run through the property * Install culverts or bridges at stock crossings * If runoff from a paddock can get into a flowing waterway/drain, an effective planted riparian margin is required * Crop management, including buffer zone near waterways * Diversion of effluent from races to paddock rather than to crossing | * Maps showing waterway fencing, riparian planting, wetlands |

## Management Area: **EFFLUENT AND SOLID ANIMAL WASTE MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| * Contamination of ground and surface water during storage (leachate, storage failure, spillage, over application etc.) * Human error and knowledge | * No effluent to be spread on paddocks running pigs * Site composting areas away from waterways and flowpaths * Well-designed effluent system * Prepare effluent management plan * Include nutrients from effluent in nutrient budget and management plan * Preparedness plan for accidents/incidents * Fail safe protection * Adequate bedding applied to ecobarns and sheds to absorb manure. * Staff training and knowledge up to date * Compost heap is located in an area where there is no risk to contamination of groundwater, preferably at least 50m from a waterbody (or an alternative distance required by the regional council | * Maps showing waterway fencing, riparian planting, wetlands |

## Management Area: **POINT SOURCE DISCHARGES**

|  |  |  |
| --- | --- | --- |
| Potential Risks (environment/operational/people) | Examples of Key Actions: | Evidence of Completion: |
| * Contamination of groundwater * Contamination of waterbodies including drains from runoff of leachate. | * Offal pits, Silage pits and rubbish pits are in an area where there is no risk to contamination of groundwater, preferably at least 50m from a waterbody (or an alternative distance required by the regional council and in accordance to the regional rules). * The top of the offal pit is covered by a heavy-duty cover plate * No runoff of leachate evident from silage pits to waterways including drains. | * Map identifying pit locations * Records of regular pit checks |

Appendix A - Zone Specific Additional Management Objectives and Actions

In Canterbury, the regional water management strategy divides the region into ten sub-regional ‘water zones.’ Some of these zones have additional management objectives and actions over and above those listed in Section 3 of the FEP template. These are listed by zone in Appendix A. Fill out any additional tables required for your zone and add them to the Section 3 of your FEP.

If you’re unsure what zone you’re in, check the map below or see the Environment Canterbury website: [www.ecan.govt.nz/your-region/farmers-hub/](http://www.ecan.govt.nz/your-region/farmers-hub/)

A close up of a map

Description automatically generated

Appendix B – Maps

If you do not currently have an accurate farm map or plan, your regional council may be able to provide you with one. Alternatively, you can create a map using imagery from the following sources:

* Google Maps [www.googlemaps.com](http://www.googlemaps.com)
* Canterbury Maps <http://canterburymaps.co.nz/>

It is important that the map is clear, accurate and easy to interpret. It may be better to have more than one map if there are too many details to illustrate clearly on one. Show any relevant features on the map including:

* The boundaries of the property or land areas comprising the farm enterprise, including leased blocks.
* The boundaries of the land management units on the property or within the farm enterprise (should align with the blocks used in the assessment of environmental effects and risk, and the nutrient budget).
* The location of permanent or intermittent water bodies, including rivers, streams, lakes, drains, water races, ponds or wetlands.
* Any swampy areas or areas prone to flooding.
* The location of riparian vegetation and fences adjacent to water bodies.
* The location on all waterways where stock access or crossing occurs.
* The location of effluent storage facilities (ponds/sumps etc.), effluent discharge areas, piggery sheds, stock feeding or holding areas, offal or refuse disposal pits, raceways, tracks and crossings.
* Bores/wells.
* Tile drained areas and soakholes.
* Conservation or covenanted areas/indigenous bush/scrub or archaeological sites.
* The location of any areas within or adjoining the property that are identified in a District Plan as “significant indigenous biodiversity”.
* Any boundaries that are common with “sensitive activities” (these are activities that are sensitive to effects from the farming activity such as odour or noise.) Sensitive activities include dwellings, schools, meeting places, retail premises etc.
* Any other areas of risk or interest in environmental management.

It may be easier to provide this information over **three maps**:

1. An overview of your farm (boundaries, permanent waterbodies, areas of significant indigenous biodiversity)
2. Farm buildings, tracks, management blocks (LMUs), irrigators and other infrastructure
3. Critical point source discharges and nutrient ‘hot spots’ (e.g. silage pits, offal pits, waste pits etc)

Appendix C – Resource Consents and Compliance Monitoring

**Resource Consents and Compliance Monitoring**

Attach an up-to-date copy of all resource consents held for activities that are part of the farming operation. A copy of all results of monitoring or testing required, compliance monitoring inspection reports from council, complaints and follow-up, and correspondence with regulatory authorities should also be included. A complaints register should be kept detailing the date & time any complaints are received, specific activities to which complaints relate (including weather or other conditions that may be a factor), where the complaint originated and any response or follow-up actions.

Below is example list of what would be typical environmental compliance requirements for a farm located in Ashburton.

|  |  |  |  |
| --- | --- | --- | --- |
| **Regulator** | **Compliance Requirement** | **Further Information** | **Farm specific requirements** |
| Environment Canterbury | Land and Water Plan | <https://ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-land-and-water-regional-plan/> | Nutrient Budget, Farm Environment Plan and Farm activities resource consent by 31 July 2017 |
| Environment Canterbury | Air Plan | <http://previous.ecan.govt.nz/our-responsibilities/regional-plans/regional-plans-under-development/air-plan/Pages/Default.aspx> | Current Discharge of Contaminants to Air Resource Consent |
| Ashburton District Council | District Plan | <http://www.ashburtondc.govt.nz/our-services/planning-guidance-and-resource-consents/district-plan/Pages/default.aspx> | Section 3: Rural Zones. The farm is zoned Rural B and is on zone place R45. Intensive Farming is a permitted activity in this zone. The farm is not identified to be a flood risk.  There is a Land Use consent for the farm. |
| Ashburton District Council | Bylaws | <http://www.ashburtondc.govt.nz/our-council/policies-and-bylaws/Pages/bylaws.aspx> | Chapter 3: Keeping of Animals, Bees and Poultry: no pigs in urban area, fences must prevent escaping of stock to neighbouring properties, adequate water to be provided to animals.  Chapter 7: Open Fires: no fires in urban area, issue of fire permits.  Chapter 15: Water Races: application to council for construction, alteration or diversion of a water race, requirements for water race maintenance.  Chapter 16: Solid Waste: use of approved waste disposal facilities, approved containers for council provided facilities and collection. |

Appendix D – Record Keeping

**Nutrient Budgets**

Include nutrient budget reports for each of the identified land management units (blocks) and the overall farm. These budgets will be a report from the standalone pig module of OVERSEER and the main OVERSEER tool (indoor farms (export of effluent) and other farming systems). Specify who prepared the nutrient budgets and any other relevant information.

The data used to prepare the nutrient budget must be kept and includes but not limited to:

* Stock numbers
* Feed form
* Feed amounts
* Feed composition
* Straw and bedding quantities
* Green cover on paddocks in each season
* Soil tests
* Climate and soil information

**Additional Information**

If you have other environmental or sustainability initiatives on your farm, it is a good idea to keep records of those together with the FEP as a complete record of environmental management. Some of the additional information may include:

* Protection/covenants of native vegetation or important wildlife habitat
* Indigenous species of birds, animals or plants that may be present and how you manage for their protection.
* Wetland protection or restoration
* Pest management programmes (plant, animal, insect)
* Chemical storage, use and disposal
* Planting programmes (for shelter, erosion control, aesthetics or habitat)
* Waste management (recycling, reuse etc.)
* Greenhouse gas emissions
* Energy efficiency

Appendix E– Other Planning Documents

**Odour Management Plan**

An odour management plan should also be prepared for any farming activity that may have an odour effect, and this is covered under the relevant objectives in this FEP. Each time effluent, manure or compost is applied records should be made and kept for at least 3 months, including:

* The type of material applied to land
* The estimated (or measured) daily quantity of material applied to land in cubic meters
* The location of the application
* The wind direction at the time of application.

There is further information on odour in the NZPork Industry Guide: Environmental Management available at [www.nzpork.co.nz](http://www.nzpork.co.nz)

*Important note for Canterbury based producers:* Canterbury producers have the option of producing a standalone management plan or including it as part of the Farm Environment Plan. If you choose to amend the Farm Environment Plan to include odour, then the plan must include:

1. A description of the good management practices to be implemented to actively manage the frequency, intensity, duration, offensiveness and location of the effects of the odour under the relevant Farm Environment Plan objectives. For the collection, storage, treatment or application of animal effluent to land, reference should be made to the section on "how to avoid pond odour problems" in the DairyNZ Effluent Technical Note: Odour Management for Storage Ponds; and
2. An outline of actions and targets for improvement where risks or issues have been identified. For the collection, storage, treatment and application to land of animal effluent reference should be made to the section on "dealing with an odour issue" in the DairyNZ Effluent Technical Note: Odour Management for Storage Ponds.

**Biosecurity Plan**

You should already have a Biosecurity Plan for the farm. The idea of having this section within the Farm Environment Plan is that biosecurity information is provided to Environment Canterbury and the Farm Environment Plan auditor prior to their visit.

New Zealand Pork provides guidelines for on farm biosecurity at [www.nzpork.co.nz](http://www.nzpork.co.nz)

**Resources**

The following resources may be useful in the development of a pork production Farm Environment Plan:

* NZPork Good Practice Guide Nutrient Management 2017 ([www.nzpork.co.nz](http://www.nzpork.co.nz))
* NZPork Pork Industry Guide Environmental Management 2017 ([www.nzpork.co.nz](http://www.nzpork.co.nz))
* The Industry Agreed- Good Management Practices for Canterbury ([www.canterburywater.farm/gmp/](http://www.canterburywater.farm/gmp/))
* Australian Pork Limited environmental resources (<http://australianpork.com.au/industry-focus/environment/> )
* Environment Canterbury- Land and Water Regional Plan: Selwyn Te Waihora Catchment, Guide to providing for Mahinga Kai value ([www.ecan.govt.nz](http://www.ecan.govt.nz))
* Irrigation Installation Code of Practice and Technical Glossary ([www.irrigationnz.co.nz](http://www.irrigationnz.co.nz) )
* Irrigation Design Code of Practice and Standards ( [www.irrigationnz.co.nz](http://www.irrigationnz.co.nz))
* Australian Pork Limited- Piggery Manure and Effluent Management and Reuse Guidelines ([www.apl.com.au](http://www.apl.com.au))
* Water New Zealand Good Practice Guide- Beneficial Use of Organic Materials on Land ([www.waternz.org.nz](http://www.waternz.org.nz))