Industry-agreed Good Management Practices relating to water quality

Canterbury Matrix of Good Management Project

9 April 2015

FAR

New Zealand PORK

DairyNZ

beef+lamb new zealand

Horticulture™ New Zealand

Deer Industry New Zealand

Foreword

The Matrix of Good Management project aims to estimate the 'footprint' of nitrogen and phosphorus loss for the range of farm systems in Canterbury today, assuming that they are operating at good management practice (GMP). This means we need to be clear about what constitutes good management on farms.

Our approach to this been to ask the industry partners in the project - DairyNZ, Deer Industry New Zealand, NZPork, Beef + Lamb New Zealand, Horticulture NZ and the Foundation for Arable Research – to consult widely within their sectors to define GMP. Over the past 18 months, a great deal of hard work by a large number of farmers and growers has culminated in the definitions of GMP set out here.

It would not have been possible to achieve this milestone of industry-agreed, pan-sector GMP descriptions without the thoughtful contributions, willingness to listen, and sheer determination of many people from both the Canterbury and national farming community.

This sort of hands-on participation by all the project partners, and many of the farmers that they represent, typifies the 'co-production' of this important project.

As chair of the MGM project Governance Group, and on behalf of the Environment Canterbury Commissioners, I would like to thank all those involved in producing this milestone document.

Tom Lambie
Chair, MGM Governance Group

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BACKGROUND

The Matrix of Good Management (MGM) project is a collaborative initiative between Environment Canterbury, Crown Research Institutes (AgResearch, Plant & Food Research and Landcare Research), primary sector organisations (DairyNZ, Deer Industry New Zealand, NZPork, Beef + Lamb New Zealand, Horticulture NZ and the Foundation for Arable Research) and is overseen by a cross-sectoral governance stakeholder group. The project aims to quantify the typical nutrient losses that are expected to occur from the range of farming systems, soils and climates across Canterbury when managed to good management practice (GMP). This information is important for two key reasons: to provide more reliable nutrient loss estimates that can be used for catchment modelling, and for regulatory purposes to indicate that all farmers are operating at GMP.

Although there is widespread support for the implementation of good management practices across primary industries, until now there have been no commonly agreed definitions of GMP, nor a good understanding of the nutrient losses that occur on farms operating at GMP. For any particular GMP there will be a range of estimated nutrient losses and these losses will vary with differing land uses and different soil types and climate zones.

The GMPs described here have been prepared following workshops with groups of farmers, rural professionals and industry representatives covering the six sectors involved in the MGM project. The resulting lists of GMPs were compared across industries, and a single set of cross-sector GMPs has been developed along with implementation guidance for these GMPs. Most of the guidance is also cross-sector but some is specific to particular industries.

These GMPs will be applicable to all farms in Canterbury by June 2017. They do not overrule any requirements of council consents, regional plans or land management agreements. As knowledge and technology advance over time, updates to these GMPs, and the associated implementation guidance, is likely to be necessary.

Further information

There are many useful, generic and sector-specific publications that expand on the GMP implementation guidance. Use of these documents is recommended. These include:

Generic

- The Fertiliser Association of New Zealand's Code of Practice for Nutrient Management
- Irrigation New Zealand's Irrigation Design and Installation Codes of Practice and Standards
- Irrigation New Zealand's Performance Test Guidelines

Dairy

- Sustainable Dairying: Water Accord
- DairyNZ FDE Guide to managing FDE and Guides to operating effluent irrigation system
- FDE Design Code of Practice

Sheep and Beef

- Beef + Lamb New Zealand website
- Land and Environment Plan (LEP)

Deer

- The New Zealand Deer Farmers Landcare Manual 2012
- 1999 Deer Industry Guidelines for the Winter Enclosure of Deer
- Deer Industry New Zealand endorses the use of Beef + Lamb New Zealand's Land and Environment Plan (LEP)

Horticulture

- Nutrient Management Code of Practice
- Erosion and Sediment Control Guidelines

Arable

- FAR Focus 6 (2012): Nutrient Management Plans

Outdoor Pigs

- EnviroPork (2005) Pork Industry Guide to Managing Environmental Effects

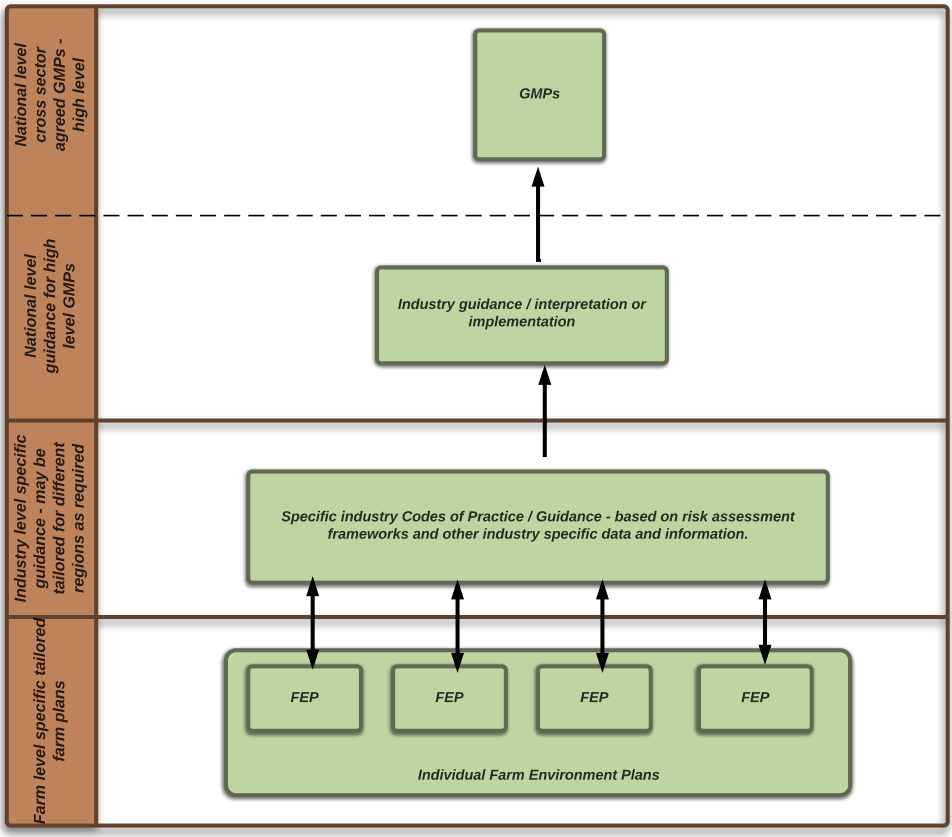
Underpinning concepts

- Understand the nutrient loss pathways on your property;
- Assess risks to water quality;
- Manage appropriately;
- Record actions;
- Review regularly.

Caveats

- This document includes some background information to provide context for the GMPs but it is not intended as a comprehensive report on the steps taken to develop these GMPs. Neither is it intended as a guide for farmers and growers.
- The Implementation Guidance set out here is not a requirement of GMPs, recognising that practices and actions relevant to a particular farm will be determined by risk assessment and intervention with the most appropriate action.
- GMPs for the MGM Project focus on water quality (notably nitrogen, phosphorus, sediment, and faecal contaminants) and may not fully take into account GMPs for other aspects of farm management (e.g. greenhouse gas reduction, health and safety, biosecurity, biodiversity and conservation of natural and cultural heritage).

The context of the Good Management Practices



Glossary of terms

These may be subject to further refinement as the Environment Canterbury Land and Water Regional Plan develops.

Buffer strips — Vegetated buffer strips are land strips adjoining waterways of critical source areas that are managed to maintain their vegetated state permanently; they are not cultivated and are grazed only to manage the vegetation. Width may vary according to level of mitigation required and topography.

Critical Source Area — Areas of enriched contaminant sources and hydrological activity that occur in small parts of a catchment or farm such as a gully, swale or depression, but that contribute a disproportionately large amount of contaminants to the environment.

Cultivation — The preparation of land for growing pasture or a crop and the planting, tending and harvesting of that pasture or crop, but excludes:

- Direct drilling of seed;
- No-tillage practices;
- Re-contouring of land;
- Forestry.

Intensive grazing — Intensive grazing is the grazing of stock on fodder crops or pasture, to the extent that the grazing results in significant de-vegetation. This is usually associated with break feeding behind temporary electric fencing.

Waterways, significant waterways, wetlands and significant wetlands
As defined by the relevant Regional Council or Unitary Authority.

SUMMARY LIST OF GOOD MANAGEMENT PRACTICES

WHOLE FARM

Farm planning and records

GMP: Identify the physical and biophysical characteristics of the farm system, assess the risk factors to water quality associated with the farm system, and manage appropriately.

GMP: Maintain accurate and auditable records of annual farm inputs, outputs and management practices.

LAND

Cultivation and Soil Structure

GMP: Manage farming operations to minimise direct and indirect losses of sediment and nutrients to water, and maintain or enhance soil structure, where agronomically appropriate.

Ground cover

GMP: Manage periods of exposed soil between crops/pasture to reduce risk of erosion, overland flow and leaching.

GMP: Retire all Land Use Capability Class 8 and either retire, or actively manage, all Class 7e to ensure intensive soil conservation measures and practices are in place.

Sediment, phosphorus and faecal bacteria

GMP: Identify risk of overland flow of sediment and faecal bacteria on the property and implement measures to minimise transport of these to water bodies.

GMP: Locate and manage farm tracks, gateways, water troughs, self-feeding areas, stock camps, wallows and other sources of run-off to minimise risks to water quality.

GMP: To the extent that is compatible with land form, stock class and intensity, exclude stock from waterways.

GMP: Monitor soil phosphorus levels and maintain them at or below the agronomic optimum for the farm system.

PLANTS

Nutrient management

GMP: Manage the amount and timing of fertiliser inputs, taking account of all sources of nutrients, to match plant requirements and minimise risk of losses.

GMP: Store and load fertiliser to minimise risk of spillage, leaching and loss into water bodies.

GMP: Ensure equipment for spreading fertilisers is well maintained and calibrated.

Irrigation and water use

GMP: Manage the amount and timing of irrigation inputs to meet plant demands and minimise risk of leaching and runoff.

GMP: Design, calibrate and operate irrigation systems to minimise the amount of water needed to meet production objectives.

ANIMALS

Feed

GMP: Store, transport and distribute feed to minimise wastage, leachate and soil damage.

Farm effluent and wastewater management

GMP: Ensure the effluent system meets industry specific Code of Practice or equivalent standard.

GMP: Have sufficient, suitable storage available to enable farm effluent and wastewater to be stored when soil conditions are unsuitable for application.

GMP: Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated.

GMP: Apply effluent to pasture and crops at depths, rates and times to match plant requirements and minimise risk to water bodies.

Intensive grazing

GMP: Select appropriate paddocks for intensive grazing, recognising and mitigating possible nutrient and sediment loss from critical source areas.

GMP: Manage grazing to minimise losses from critical source areas.

GOOD MANAGEMENT PRACTICES AND INDUSTRY IMPLEMENTATION GUIDANCE

WHOLE FARM

Farm planning and records

Our intent: Ensure that significant environmental risks to water quality have been assessed, addressed and documented to demonstrate adherence to GMP.

GMP: Identify the physical and biophysical characteristics of the farm system, assess the risk factors to water quality associated with the farm system, and manage appropriately.

Implementation guidance:
Consider:

- Biophysical characteristics such as soil types, topography, and climate.
- Physical characteristics such as waterways, artificial drainage networks, irrigation.
- Risk factors such as soil loss, nutrient loss and damage to soil structure.
- Management or practices that are required by third parties to be recorded e.g. offal pits, feed storage, effluent storage and application area and irrigation area.
- Outdoor pigs: farm in low rainfall area and on flat land to minimise runoff.

GMP: Maintain accurate and auditable records of annual farm inputs, outputs and management practices.

Implementation guidance:

Maintain accurate and auditable records that:

- set out objectives to be met;
- identify all relevant farming activities and practices, including those that demonstrate that relevant GMPs are being applied;
- demonstrate the assessment of all risks to water quality;
- identify how and when actions to mitigate risks will be undertaken;
- allow the generation of an annual actual OVERSEER® nutrient budget.

Utilise industry templates for recording key information – such as water use, fertiliser inputs, and spray diaries, planting dates, paddock rotation, feed inputs and composition, stock numbers and production outputs or yield.

Review the planned actions annually (e.g. carry out a self-audit).

- Farm Environment Plans (FEPs) may be used to assist with this GMP; FEPs include the industries' specific planning tools such as NZ Pork Farm Environment Plan, Sustainable Milk Plans, NZ GAP or Global GAP, Land and Environment Plans, ProductionWise.
- Environment Canterbury has approved consistent templates to assist in preparing FEPs.
- Mixed systems may need to combine or adapt existing FEPs.

LAND

Cultivation and soil structure

Our intent: To minimise direct and indirect losses of sediment and nutrients to water without being prescriptive about cultivation or soil management techniques used as there are many agronomic considerations to take into account on a paddock by paddock and season by season basis.

GMP: Manage farming operations to minimise direct and indirect losses of sediment and nutrients to water, and maintain or enhance soil structure, where agronomically appropriate.

Implementation guidance:
Consider:

- Distance from surface waterways, effectiveness of buffers
- Slope of land (degree and length) in relation to waterway
- Soil type and texture, quality (e.g. pugging, or compaction susceptibility)
- Climatic and weather conditions to determine timing of cultivation
- Cultivation methods (pre-, during, and post-cultivation; contour, no- or low-tillage)
- Measures to prevent sediment and nutrients entering waterways (e.g. sediment traps or interception drains, headlands or diversion bunds, grazing techniques)
- Measures to prevent soil loss through erosion, overland flow and wind blow (e.g. space planted trees, windbreaks, cover crops)
- Measures to prevent or remedy soil damage
- Previous use of land, and future use of land
- Using sub-soiling or ripping to remedy compaction of soils

Leave grassed areas around rocks, gullies and riparian margins. If spraying out pasture, first identify areas that won't be worked or re-sown e.g. gullies, runners, riparian margins and rocky areas.

In heavy soils, cultivate soil when conditions are dry enough to reduce compaction and pugging and improve drainage and soil structure.

Ground cover

Our intent: Reduce risk of erosion, overland flow and leaching associated with exposed soil.

GMP: Manage periods of exposed soil between crops/pasture to reduce risk of erosion, overland flow and leaching.

Implementation guidance:

- Consider soil conditions and crop rotation.
- Areas that are harvested, grazed or stock damaged (resulting in bare soil) are re-sown as soon as practical to minimise periods of exposed soil.
- Rest and re-sow erosion damaged areas.
- Use cover crops (green feed, oats, mustard, other biological activates) to reduce losses and nutrient use; this also increases organic matter.
- When developing paddocks, retain native vegetation such as tussock and shrub habitat in gullies, steep and higher country as this will regulate run off of water, help retain water quality, reduce soil movement and provide filter areas prior to water entering streams (a significant co-benefit is that it also provides cover for newborn stock).
- **Outdoor pigs:** Maintain groundcover in accordance with the following.
  - For dedicated outdoor units or those in a pastoral rotation the minimum ground cover is:
    - For dry sows: at least 40% cover on 75% of the land (less than 40% cover permissible on 25% of the land);
    - Each paddock to have on average more than 10% cover;
    - For lactating sows: at least 70% cover.
  - For outdoor units as part of an arable operation the minimum ground cover is:
    - For dry sows: 25% cover (100-0% over 2 years);
    - For lactating sows: at least 70%;
    - Reduce fallow during and immediately after the pig phase of the rotation e.g. by planting a catch crop.

GMP: Retire all Land Use Capability Class 8 and either retire, or actively manage, all Class 7e to ensure intensive soil conservation measures and practices are in place.

Sediment, phosphorus and faecal bacteria

Our intent: Minimise transport of sediment, phosphorous and faecal bacteria to water bodies.

GMP: Identify risk of overland flow of sediment and faecal bacteria on the property and implement measures to minimise transport of these to waterbodies.

Implementation guidance:

- Identify, record and manage risk to and from critical source areas such as wallows, bank erosion, pugging, trampling or slips on steep hillsides to minimise or eliminate sediment entering waterways.
- Where appropriate use methods to minimise or eliminate sediment entering waterways such as:
  - vegetated buffer strips/riparian planting adjusted in width for slope, hydrology, bank stability, land use and proximity to critical source areas;
  - sediment traps;
  - paddock contouring;
  - earth bunds;
  - raised headlands.
- **Deer** - Fence pacing considerations:
  - Maintain appropriate feeding levels to reduce stress and fence pacing.
  - Identify the best stock class to fit the soil types to minimise the risk of soil erosion, as identified in the Deer Farmers Landcare Manual.
  - Maintain pasture length in winter or wet periods, to prevent soil being washed off in heavy rain. In particularly vulnerable areas retain tussock cover or native vegetation to regulate water runoff and to reduce risk of soil loss particularly in gullies or along riparian margins.
  - If fence pacing is bad, fill in area and re-sow or plant with trees and if damage is extreme, re-fence to remove the problem area. If fence pacing continues, review fence placement as this can be a contributing factor.

GMP: Locate and manage farm tracks, gateways, water troughs, self-feeding areas, stock camps, wallows and other sources of run-off to minimise risks to water quality.

Implementation guidance:

- Locate and design laneways so that run-off is filtered by a vegetated strip. Design and manage laneways to minimise water ponding, excessive effluent build-up and erosion.
- In areas exposed to wind erosion, establish shelter belts with trees that will filter the wind and provide added shade and shelter.
- On tracks, allow for cut-offs and slumps that will take the run off away from streams.
- **Deer** - wallow considerations:
  - Identify natural springs and wallows prior to cultivating paddocks and pipe or drain into retired areas;
  - Provide a suitable area away from waterways for safe wallowing.

GMP: To the extent that is compatible with land form, stock class and intensity, exclude stock from waterways.

Implementation guidance:

- Plan and prioritise waterway areas (including wetlands) to fence, based on the vulnerability of the land, significance of the waterway and potential to impact on water quality off-farm.
- Exclusion of extensively farmed stock from waterways in hill and high country areas may not be practical but rather a mix of mitigations and practices can be used to minimise sediment and faecal bacteria losses from farms.
- Actively manage stock, stock density and stock classes adjacent to waterways to reduce risks to water where fencing is not practical.
- Exclude stock from significant waterways, drains and significant wetlands.
- Locate and manage crossing of waterways so it will not result in degradation of those waterways.
- Provide alternative stock-water sources away from waterways where possible.
- Provide shade and shelter away from waterways where appropriate.
- Place salt blocks and supplementary feed away from riparian margins.
- Leave an appropriate buffer depending on slope, to filter runoff, even if only temporarily during vulnerable periods.
- During high risk periods for erosion e.g. winter grazing, fawn weaning, actively manage stock to prevent slumping, pugging or erosion.

GMP: Monitor soil phosphorus levels and maintain them at or below the agronomic optimum for the farm system.

Implementation guidance:

- To determine the level of phosphorus fertiliser needed, conduct regular, on-going soil testing (Olsen P or an equivalent, recognised soil test) at the block scale to monitor trends, patterns and the impacts of nutrient management decisions.
- Leave an unfertilised strip as a buffer zone beside creeks, drains and storm water flood zones. Allow more distance as slopes become steeper.

PLANTS

Nutrient management

Our intent: Balancing the application of nutrients to match plant requirements and minimise risk of losses.

GMP: Manage the amount and timing of fertiliser inputs, taking account of all sources of nutrients, to match plant requirements and minimise risk of losses.

Implementation guidance:

- Manage nutrients supplied from all sources including the soil, brought in feed, previous grazing and crops and any organic sources applied.
- Regularly soil test to identify nutrient needs, particularly paddocks that are going into crop.
- Expert guidelines, for example using crop calculators, expert agronomic advice or codes of practice should be used where appropriate.
- Nitrogen and phosphorus fertiliser is applied strategically to meet agronomic requirements, and to avoid adverse environmental impacts (e.g. strategic use around Critical Source Areas). Detailed guidelines are provided in The Fertiliser Association of New Zealand's Code of Practice for Nutrient Management (with emphasis on fertiliser use).
- Nutrient budgets as a tool to manage nutrient loss can be helpful.
- Practices such as use of side dressings and split applications may be helpful to reduce the risk of leaching and ensure greater utilisation of nutrients by plants.
- Dairy: All farmers have and use a predictive nutrient budget (OVERSEER®) as the basis for managing nutrients on their farm (milking platform, and any support land). Predictive nutrient budgets and nutrient management plans are developed by Certified Nutrient Management Advisors, and updated when the farm system changes. The OVERSEER® data input standards are used to create OVERSEER® nutrient budgets.

The Dairy Industry's Audited Nitrogen Management System contains recording and reporting requirements for N fertiliser on dairy farms (including milking platform, and any contiguous support land).

- **Outdoor pigs:** No NPK fertilisers are to be applied to the outdoor pig unit.

GMP: Store and load fertiliser to minimise risk of spillage, leaching and loss into waterbodies.

Implementation guidance:

- Follow fertiliser industry code of practice for fertiliser handling, storage and use.
- Locate storage sites away from waterways.

GMP: Ensure equipment for spreading fertilisers is well maintained and calibrated.

Implementation guidance:

- Any contractors used for fertiliser spreading should be accredited. The current industry standard is Spreadmark.
- Ensure your spreading equipment is calibrated according to its design specifications specific to the product being spread.
- Information on fertiliser applications is kept (or sought from contractors), including product, rate, date, location.

Irrigation and water use

Our intent: To apply irrigation water efficiently to meet plant demands and minimise risk of leaching and runoff.

GMP: Manage the amount and timing of irrigation inputs to meet plant demands and minimise risk of leaching and runoff.

Implementation guidance:

There is a demonstrable reason why irrigation is to be applied, for example:

- to replace soil moisture deficit
- for the purpose of herbicide activation
- to prepare soil for cultivation
- frost protection
- for fertigation

GMP: Design, calibrate and operate irrigation systems to minimise the amount of water needed to meet production objectives.

Implementation guidance:

- Any new development, upgrade or redevelopment is consistent with irrigation industry codes of practice.
- The irrigation system is evaluated annually to demonstrate optimal performance using irrigation industry guidance.
- **Dairy:** Actual irrigation water take is measured with a water meter. Soil moisture levels are tracked throughout the season to justify irrigation events, e.g. using soil moisture balance calculations or soil moisture probes or tapes.
- **Dairy:** Actual annual irrigation use is evaluated for consistency with estimated agronomic needs for the season based on climatic data and pasture/crop requirements.
- **Dairy:** Dairy sheds will use no more water for dairy shed washdown and milk cooling than is necessary to produce hygienic and safe milk (Sustainable Dairying: Water Accord). Actual water use in the dairy shed is measured with a water meter.
- **Horticulture and Arable:** Water is applied to maintain soil between stress point and field capacity - knowledge of evapotranspiration, field capacity and use of soil probes can assist in achieving this.
- **Horticulture and Arable:** Volumes applied are informed by all relevant factors e.g. crop type, plant growth stage, soil type and field capacity.

ANIMALS

Feed

Our intent: Minimise risk of contamination of waterbodies from stored feed.

GMP: Store, transport and distribute feed to minimise wastage, leachate and soil damage.

Implementation guidance:

- Design feed storage facilities to minimise wastage and soil damage, i.e. sealed or compacted surface.
- Minimise leachate generation (e.g. make silage at optimum moisture content) and prevent leachate from entering surface waterbodies, groundwater or stockwater.
- Site silage stacks so that overland flow of water from heavy rain cannot enter the stack.
- Site feed areas away from waterways.
- Distribute feed so as to minimise soil damage (from farm equipment and animals) and potential surface run-off to waterways, i.e. avoid Critical Source Areas.
- Deer: Make sure silage is made at the optimum moisture content to reduce possible leaching, recommended at 30% dry matter or more.
- Outdoor pigs: Feed diets and feed levels appropriate for the physiologic state of the animal i.e. separate gestating and lactating sow diet.

Farm effluent and wastewater management

Our intent: Minimise risk of contamination of waterbodies from stored and applied effluent.

GMP: Ensure the effluent system meets industry specific Code of Practice or equivalent standard.

Implementation guidance:

- **Dairy:** All new effluent systems are designed to Farm Dairy Effluent (FDE) Design Code of Practice. The main objectives of the system are: to capture all FDE; to spread the FDE at a time that allows uptake by plants; to uniformly spread the FDE to the desired depth, and at the desired intensity; to control FDE application to within the boundaries of the application area; to ensure that FDE systems can be operated safely; and to comply with all regulatory requirements, including consent conditions.

GMP: Have sufficient, suitable storage available to enable farm effluent and wastewater to be stored when soil conditions are unsuitable for application.

Implementation guidance:

- **Dairy:** Suitable storage is calculated using the Dairy Effluent Storage Calculator. This enables FDE to be stored when soil and management conditions are unsuitable for FDE land application. All areas that FDE is collected from are sealed (this includes feed pads). All new effluent systems are designed to FDE Design Code of Practice standard. Storage facilities are sealed and maintained to ensure containment of effluent. Storage is actively management to ensure storage is available when required.
- **Deer:** Enclosure systems should be located and managed to minimise environmental impact of effluent. In particular:
  - Store effluent for later dispersal to land where appropriate;
  - Effluent and run-off water should not enter natural waterways untreated;
  - Solid waste should be kept away from waterways;
  - Faecal/urine surface material should be cleared annually;
  - Paddock enclosure systems should not result in significant or irreparable soil loss or erosion.

GMP: Ensure equipment for spreading effluent and other organic manures is well maintained and calibrated.

Implementation guidance:

- **Dairy:** Spreading equipment is calibrated according to its design specifications specific to the product being spread. The effluent system can apply effluent efficiently. Information on effluent applications is kept (or sought from contractors), including product, rate, date, location. The effluent system is self-evaluated annually to demonstrate optimal performance, e.g. through an application efficiency test (bucket test); see DairyNZ FDE Guide to managing FDE and Guides to operating effluent irrigation system.

GMP: Apply effluent to pasture and crops at depths, rates and times to match plant requirements and minimise risk to waterbodies.

Implementation guidance:

- **Dairy:** FDE is applied to pasture and crops at depth, rates and times to best prevent loss and to increase utilisation; area complies with consent (use OVERSEER® to calculate). Take account of nutrients supplied by effluent or manure when calculating

fertiliser requirements, e.g. use the DairyNZ FDE calculator app to determine the amount of nutrients applied. See FDE Design Code of Practice.

- **Outdoor pigs:** No effluent to be spread on the outdoor unit.

Intensive grazing

Our intent: Minimise risk of contaminant loss to waterbodies, and maintain soil structure and quality.

GMP: Select appropriate paddocks for intensive grazing, recognising and mitigating possible nutrient and sediment loss from critical source areas.

Implementation guidance:

- Where possible, select paddocks for winter grazing that are not vulnerable to pugging and compaction, do not have significant artificial drainage such as mole and tile drains, waterways, temporary streams or natural drainage channels (running in times of high rain). Choose wintering paddocks away from waterways if possible.

GMP: Manage grazing to minimise losses from critical source areas.

Implementation guidance:

- Sow crops for grazing across slopes if possible rather than up and down hills, to reduce runoff.
- Graze lower lying areas and areas closest to waterways last.
- **Deer:** Where possible, shift deer to dry, sheltered areas before wet weather arrives.
- **Deer:** Monitor animals regularly on self-feed silage pits to make sure all animals retain the required body condition score.

NOTES:

NOTES:

FAR

New Zealand PORK

DairyNZ

beef+lamb new zealand

Horticulture™ New Zealand

Deer Industry New Zealand