DAIRY EFFLUENT MANAGEMENT GUIDELINES TASMANIA

2025

THE TASMANIAN DAIRY INDUSTRY AUTHORITY

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1. Acknowledgements

These Guidelines were developed by the Tasmanian Dairy Industry Authority (TDIA) in collaboration with industry representatives and other relevant state authorities. TDIA would like to acknowledge all Tasmanian individuals and organisations, including Tasmanian dairy farmers, who provided feedback during the stakeholder consultation period.

We also acknowledge and thank the following organisations, whose people, publications and procedures have also informed these Guidelines to ensure consistency across jurisdictions:

1. *Dairy Australia and Agriculture Victoria - Dairy Feedpads and Contained Housing National Guidelines (third edition 2024)*
2. *Environmental Protection Authority, Government of South Australia - Code of Practice for Dairy Effluent Management 2025 (DRAFT)*
3. *Western Dairy (2021) Code of Practice for Dairy Farm Effluent Management Western Australia. Western Dairy, Western Australia*
4. *NSW Government – NSW Dairy Development and Environmental Guidelines (2024)*
5. *Agriculture Victoria - Management of Dairy Effluent – 2008 DairyGains Victorian Guidelines*
6. *NSW Department of Primary Industries - Environmental management guidelines for the dairy industry 2008 (superseded by 2024 version)*
7. *Agriculture Victoria – Managing Effluent - Department of Energy, Environment and Climate Action © 2025*
8. *Tasmanian Environment Protection Authority (2020) Guide to Land Spreading of Milk and Milk By-products (Tasmania).*
9. *Dairy Tas, Dairy Australia 2024 Effluent Management Fact Sheets*
10. *Agriculture Victoria – Effluent system components, compliance and warning signs presentation (2023)*

2. Purpose

This Guideline outlines shared industry, government and community expectations for dairy farm effluent management in Tasmania. The Guideline includes information relating to effluent management systems and effluent management plans and lists key considerations for dairy farmers to meet the requirements of the Farm Dairy Premises Effluent Management Code of Practice (The Code) 2025.

The Tasmanian dairy industry recognises the importance of having an environmentally sustainable industry. This document aims to clearly outline the responsibilities of dairy farmers

in relation to effluent and what they must consider to achieve compliance with the Code. The objective is that by meeting Code outcomes and achieving minimum requirements, Tasmanian dairy farmers can demonstrate to consumers, the community and regulatory agencies that they can produce quality dairy products sustainably.

The Code was originally developed in 2010. In 2024/25, the Code was extensively reviewed by the TDIA and industry stakeholders (including farmer representatives) and updated to its current format.

3. Scope

The Guideline outlines key considerations for managing dairy premises effluent on dairy farms in Tasmania. The Guideline enables dairy farmers to determine whether their existing or proposed effluent system and effluent management plan meets industry standards and best practice, or if modifications may be required.

The Guideline is not intended as a technical guide for dairy farm effluent management, this advice must be sought from a trained, independent professional. The information within this document includes both minimum and best practice approaches to allow for flexibility and innovation, different farm management styles, site conditions and future changes within the industry.

Effluent management systems are assessed using a risk-based approach – what risk they present to the environment, guided by the property's historical information, current practices and/or known future developments.

It is recognised that not all dairy farm effluent systems currently meet the Code, however the requirement is that dairy farmers must actively work towards achieving the Code Outcomes.

This document has been developed using a high level, outcomes-based approach with the aim to keep it relevant and adaptable for as long as possible. Where there are significant changes within the industry or legislation, it may need to be reviewed at that time.

4. Definitions

For the purposes of this Guideline, the following definitions apply:

Artificial Waterbody	A constructed waterway, including a constructed channel, dam or lake
Authorised Officer	An officer appointed by the Tasmanian Dairy Industry Authority (TDIA) for the purpose of the *Dairy Industry Act 1994* and/or the *Primary Produce Safety Act 2011* (PPSA)
Bund	Watertight wall or embankment designed to prevent liquid or solids entering and/or exiting an area
Calving Pad	A separate area for birthing dairy animals that provides a warmer and drier alternative to the paddock. It facilitates around-the-clock access for observation and assistance of animals, and care of the newborn and young stock. The area may incorporate subsurface drainage and is typically covered with some absorbent organic form of bedding, such as straw or sawdust
Compliant	Adherence to a rule, guideline, specification, policy, standard or legislation.
Contained Housing	An integrated facility for feeding and housing dairy animals with zero grazing such as a freestall, loose housing or dairy dry lot.

Dairy Farmer	A dairy producer who engages in dairy primary production for a commercial purpose as interpreted in the *Primary Produce Safety (Dairy) Regulations 2024*
Dairy Premises	Building premises, outbuildings, contained housing, temporary housing, holding areas and equipment associated with animal husbandry and milk harvesting practices, inclusive of feedpads and calving pads.
Dairy Premises Effluent	Can include Solid, semi-solid, slurry and/or liquid matter emanating from milk spillage, faeces, urine, wastewater from milking, washdown activities and/or cleaning of a dairy premises. It can also include waste feed, bedding and soil.
Effluent Management System	An integrated system designed to manage the dairy premises effluent stream from its point of generation through to its reuse onto land, or off-site export. It typically includes components to contain, treat, store and/or reuse effluent.
Effluent Management Plan	A plan, developed by a trained, independent Livestock Effluent Designer, in a form approved by the TDIA that aligns with current industry standards and describes the components, operation and management of the effluent management system.
Effluent Pond	Any dam, pond or lagoon constructed from earth that is used for the storage, conveyance and/or treatment of dairy premises effluent.

EHO	Environmental Health Officer
Environmental Harm	As defined in the *Environmental Management and Pollution Control Act 1994*
Environmental Nuisance	As defined in the *Environmental Management and Pollution Control Act 1994*
EPA	Environment Protection Authority
Feedpad	An area or structure used for the supplementary feeding of livestock
Ground Water	All water below the land surface that is free to move under the influence of gravity
Holding Area	Contained areas where dairy animals are held prior to accessing the dairy or after being milked
Impervious	Not allowing fluids to pass through
Livestock Effluent Designer	A trained, independent service provider who has successfully completed the nationally recognised course *Design Livestock Effluent Systems* and is listed as such on the Agricultural Victoria website or equivalent.
Non-conformance	A deviation from a specification, standard or expectation. Classified as minor, major or critical based on potential or proven risk.
Nutrient	A substance that provides nourishment essential for the maintenance of life and growth.

Pollutant	As defined in the *Environmental Management and Pollution Control Act 1994*
Pollute	Discharge, emit, deposit or disturb pollutants; or cause or fail to prevent the discharge, emission, depositing, disturbance or escape of pollutants. established by legislative act to set standards in a specific field of activity, or operations, then to enforce those standards
Regulatory Authority	An independent or governmental body
Sacrificial Area	A section of the farm considered to have little value and often sacrificed for the purposes of effluent distribution.
Surface Water	A waterway, any body of water above the ground, including streams, rivers, lakes, wetlands, reservoirs and creeks.
TDIA	Tasmanian Dairy Industry Authority
Temporary Housing	Shelters used by pasture-based dairy systems to manage seasonal conditions

5. Effluent Management Systems

What is an Effluent management System?

An Effluent Management System is an integrated system designed to manage the dairy premises effluent stream from its point of generation through to its reuse onto land or off-site export and typically includes components to contain, treat, store and/or reuse effluent.

Dairy premises effluent is any solid, semi-solid, slurry and/or liquid matter emanating from milk spillage, faeces, urine, wastewater from milking, washdown activities and/or cleaning of a dairy premises. It can also include waste feed, bedding and soil.

The system must encompass all dairy premises effluent generated from the dairy premises and direct it to appropriately designed, constructed and operated system.

When improving or building an effluent management system it is vital to consider regulatory requirements whilst also accounting for the farmer's limitations. A system does not need all the "bells and whistles" but must be suitable and practical for the particular needs of the farmer and premises, taking into account future business needs, management costs, personnel, site limitations and the overall practicality of the system and its day-to-day function.

Typical effluent storage/conveyance systems seen in Tasmania include both deferred and direct application systems such as effluent pond(s), concrete sumps, trafficable solids traps, tanks, bladders, elevated screens and screw presses.

From the system, effluent is typically either stockpiled and/or distributed using infrastructure such pumps, pivots/laterals, hard hoses, solid set irrigators, stationary sprinklers, travelling irrigators, muck spreaders and vacuum tankers.

Figure 1: Trafficable Solids Trap with weeping wall © Agriculture Victoria

Figure 2: Elevated Screen © Agriculture Victoria

Figure 3: Single Pond © Agriculture Victoria

Figure 4: Two Pond System © Agriculture Victoria

Figure 5: Solids Collection Ditch (as part of two pond system) © Agriculture Victoria

Figure 6: Effluent Tank © Agriculture Victoria

Figure 7: Effluent Bladder © Agriculture Victoria

How are systems assessed by the TDIA for compliance/non-compliance?

Licenced dairy farmers are routinely audited by the TDIA for food safety compliance and adherence to the effluent Code. Effluent systems are assessed using a risk-based approach – based on risk to the environment, guided by the property's historical information, current practices and/or known future developments.

Auditors primarily seek to verify that systems are operating in accordance with the farm's approved effluent management plan. This is done through discussions with the farmer, as well as physically viewing the system. In-situ assessments look to determine if the system is operating appropriately and if there are any potential managerial issues or system failures.

Elements of the effluent system assessed by auditors may include:

- Dairy premises configuration (e.g. herringbone, rotary, robots, feedpads etc.)
- Water sources and wash down infrastructure and activities
- Yard design (slope, bunding, surface area)
- Collection zones and infrastructure (pits, sumps, channels, pipes)
- Separation methods (weeping walls, elevated screens, sedimentation ditches, trafficable traps)
- Equipment used for transfer and pumping
- System construction and integrity (breakages, erosion, cracking, leakage)
- Application methods (irrigators, pivots, muck spreaders)
- Solids stockpiles and reuse areas

Compliance is achieved when the elements of an effluent management system adhere to the outcomes of the Code and the assessment of a farm's operation and management are in line with its approved TDIA effluent management plan.

If a system is found to be in breach of the Code, a non-compliance may be issued. Within the TDIA, non-compliances are classified as minor, major or critical based on potential or proven risk. Timeframes will be applied to correction of the non-conformances to ensure actions are undertaken to comply with the Code, and penalties may apply if these are not adhered to.

Non-compliances are not limited to, but may be associated with the following items:

- Pond and sump overflows
- Lack of contingency measures taken in response to system failures (e.g. back up pumps, appropriate diversions, contacting authorities when effluent leaves the property boundary)

- Feedpads and calving pads not accounted for in effluent management plans
- Stockpiles inappropriately located and/or associated leachate not re-captured in the system
- Pipe breakages or blockages
- Insufficient irrigation infrastructure and/or rotations causing runoff and high nutrient loading on pastures/crops
- Systems or effluent management plans not upgraded in response to herd increases or premises extensions/alterations
- System capacities not appropriately lowered in preparation for recommended storage periods
- Not maintaining adequate freeboard
- System access and visibility poor (e.g. vegetation growth)
- Rubbish from the dairy premises entering the system (e.g. mastitis tubes, spray cans, rubber gloves).

Non-compliances may be issued by the TDIA outside of the routine audit scope in response to public complaints or in support of findings of other regulatory bodies such as Municipal Environmental Health Officers (EHO) and the Environmental Protection Authority (EPA).

Warning Signs

When assessing your effluent system, it is important to recognise warning signs and features of the system that may indicate that the system is under pressure, not functioning correctly or has construction faults. These can include, but are not limited to the following:

Dairy Premises:

Excessive manure build-up in drains or collection points

Effluent backflow from the conveyance system

Inadequate nib walling

Excessive water consumption

Poor wash down practices

No roof guttering or collection

Solids Separation:

Pump failure/missing pump

Weeping wall(s) removed

Heavily silted sand and gravel trap

Foreign objects in system (e.g. spray cans, mastitis tubes, gloves etc.)

Ad hoc manure stockpiling

Damaged walls

Transfer pipes lacking, blocked or damaged

Undersized and does not allow for adequate and frequent cleaning

Ponds and Secondary Storage:

Pond overtopping (or evidence of previous overflows)

Diminished freeboard

Storage high or full during irrigation season

Excessive weed growth

Thick crust on secondary storages

Buckled, damaged or displaced transfer pipes

Prolonged odour

Animal Carcasses

Significant milk disposal events

Floating synthetic liners

Wall breaches or cracking

Recycling effluent from small ponds (salt accumulation)

Excessive gas bubbles (indicates potential sludge transfer and build up)

Stockpiles:

Poor placement near sensitive receptors

Inadequate bunding

Leachate not recaptured in effluent system

Animal Carcasses (*specific management applies in this area)

Excessive stockpiling

Mixed debris (rocks, gravel)

Constant odour

Irrigation:

Located close to sensitive receptors

Sign of corrosion on equipment

Deep wheel furrows

Blockages in spray nozzles

Insufficient rotation/relocation of infrastructure

Travelling irrigators stationary

Single pond injecting into pivot

Open-ended pipe

Poor anchoring

Soil saturation and pooling

Run-off

Pasture burn

Damages/leaks

Herd Health:

Milk fever, grass tetany

Salmonella, leptospirosis

Regular mastitis outbreaks

Bovine Johnes

Increasing Bulk Milk Cell Counts

Increased Fly Presence

Reduced pasture intake (due to palatability)

Farm Management:

Limited soil testing or rising soil fertility

No pond nutrient sampling

Fertiliser on effluent paddocks

Limited maintenance of system

No contingency planning

No action taken following system failures/shortfalls

A YouTube video from Dairy Australia relating to Avoiding Problems with Effluent Management can be viewed here:

https://www.youtube.com/watch?v=oVndgTZG-LU&list=PLF43zgg2AAtbvskdiP75CWi4OCkaI7KlQ&index=2

How is the Code enforced?

The Farm Dairy Premises Effluent Management Code of Practice (the Code) 2025 was approved by the Minister and administered by TDIA in accordance with Part 5 of the *Dairy Industry Act 1994.*

As a Code of Practice issued under the *Dairy Industry Act 1994*, compliance with this Code is a condition of licence or accreditation for all dairy farmers licensed under the *Dairy Industry Act 1994* or accredited under the *Primary Produce Safety Act 2011* in Tasmania.

The Code becomes part of the dairy farmer licence conditions and requirements to operate in Tasmania. Authorised Officers of the TDIA enforce licence conditions, which includes compliance with the Code. Compliance will be assessed as part of routine TDIA audit inspections, which may be announced or unannounced.

Breaches of the Code can result in possible suspension or revocation of licences or accreditations, and in the event of potential breaches of the EMPCA, referrals are made to Municipal Environmental Health Officers (EHO) or Environmental Protection Authority (EPA) for further action under that Act.

Enforcement actions can vary to include education, informal or formal warnings, administrative actions such as fines or suspension of licence and even legal action or revocation of licence. Enforcement is risk-based and is underpinned by the regulatory pyramid approach whereby enforcement actions are graduated and proportionate to the non-compliance.

Licencing and Due Diligence

Dairy farmer licences are not automatically transferred upon the sale of a dairy premises. Outstanding issues and action items associated with the licence may inhibit the transfer process if unresolved.

It is the responsibility of the purchaser to undertake due diligence before purchasing a property to ensure that they are not potentially inheriting any outstanding issues that they have not allocated capital funding to correct.

As part of this due diligence, the TDIA strongly recommends that the purchaser seek the following documents **prior** to purchase:

(1) a copy of the most recent farm audit report(s) for the property and;

(2) a copy of the property's current effluent management plan

Please note that the TDIA are unable to provide any information without approval in writing from the current owner. Permissions need to be granted in writing to the TDIA before any information is released.

For more information relating to licences, please visit *https://tdia.tas.gov.au/starting-a-dairy-business* or call or email the TDIA directly on (03) 6478 4100 or enquiries@tdia.tas.gov.au.

6. Effluent Management Plans

Overview

Effluent Management Plans (EMPs) are a documented plan, developed by a trained, independent Livestock Effluent Designer, in a form approved by the TDIA that aligns with current industry standards and describes the components, operation and management of the effluent management system.

Plans are site specific and tailored to the needs of the property and its managers. They need to be reliable and robust, to meet the property management objectives and maintain the system's longevity.

The Australian dairy industry delivers the Design Livestock Effluent Systems course nationally through Agriculture Victoria in conjunction with Dairy Australia. Service providers who undertake the course need to successfully demonstrate competencies and performance criteria to become a trained effluent system designer. The primary source of technical information of this course is the Effluent and Manure Management Database for the Australian Dairy Industry (2008). It sets the engineering and design standards for manure systems, and industry best practice for application to land reuse. Trained service providers have access to best practice formulas and calculators in the Effluent System Designer Toolkit. They are also required to regularly update their knowledge and skills.

An EMP must include the following elements, supported by evidence and written detail to demonstrate that elements have been considered. These elements and the information gathered on-farm, underpin all EMPs developed by trained professionals.

1. Statement of Intention
2. Property background and scale of enterprise
3. Statement of the farm's current effluent system and management

4. Contributions to the effluent stream (site water audit and balance, including a 1 in 10 wet year risk assessment - 90th percentile rainfall, 10th percentile evapotranspiration).
5. Environmental variables specific to the farm
6. Effluent system options and design specifications
7. Effluent system siting and integration
8. System management notes
9. Effluent conveyance and application notes
10. Nutrients (budgets and mapping)
11. Manure stockpile management (whole property)
12. Work Health and Safety requirements
13. Contingency measures

Considerations when choosing a trained Livestock Effluent Designer

Advising dairy farmers on the type of effluent systems currently utilised throughout the industry and the various design components which meet legislative, and engineering standards requires specialised technical knowledge and experience.

Service providers listed on Agriculture Victoria's website have achieved a level of competence based on successfully completing all assessments and course requirements for the Design Livestock Effluent Systems Course and are able to offer farmers relevant services with respect to planning, design and management. Service providers selected from this list are automatically deemed appropriate by the TDIA.

The design course provides designers with two methodologies for assessing livestock effluent systems:

1. Dairy WatBal
2. Effluent Toolkit

When selecting a designer, the following items should be considered:

- Qualifications and competencies
- Do they use Dairy WatBal, the Effluent Toolkit or alternate model supported by relevant regulatory bodies?
- Service costs (including any unforeseen costs) and what is included in the service agreement (e.g. small editorial changes, training of farmer about plan, engagement with regulatory bodies on your behalf)
- Designer workload and subsequent timelines for completion.
- Ongoing support services

Assessment and Approval

You may be required to submit a new or revised EMP to the TDIA in the following circumstances*:

1. Building a new dairy premises
2. Purchasing a dairy premises that has previously held a dairy licence
3. In response to a TDIA audit request
4. When directed to do so by a regulatory body
5. Following significant changes to your dairy operation such as installation of feed pads or calving pads/sheds, stockpiles, yard or building extensions, herd size increases, changes in calving patterns, altered milking frequencies, management changes and new or removed effluent infrastructure (including washdown systems, sumps, pumps, irrigation extensions etc).

**All items may not be listed. Contact the TDIA for further guidance.*

Submitted plans must be completed by a trained, independent Livestock Effluent Designer and in a format approved by the TDIA. **The TDIA no longer deems the 2010 TDIA Effluent Management Plan template to be an appropriate format as a standalone document as it does not effectively address the elements listed in Section 6.**

Plan are reviewed and assessed by the TDIA against the 13 elements listed in Section 6, with feedback provided to both the designer(s) and dairy farmer as necessary - usually within **60 days** of submission.

Upon finalisation and approval, the TDIA will request a sign off letter from your effluent designer confirming that the physical system in place is a direct reflection of the approved plan. If it is found that this is not the case, the plan will need to be amended accordingly.

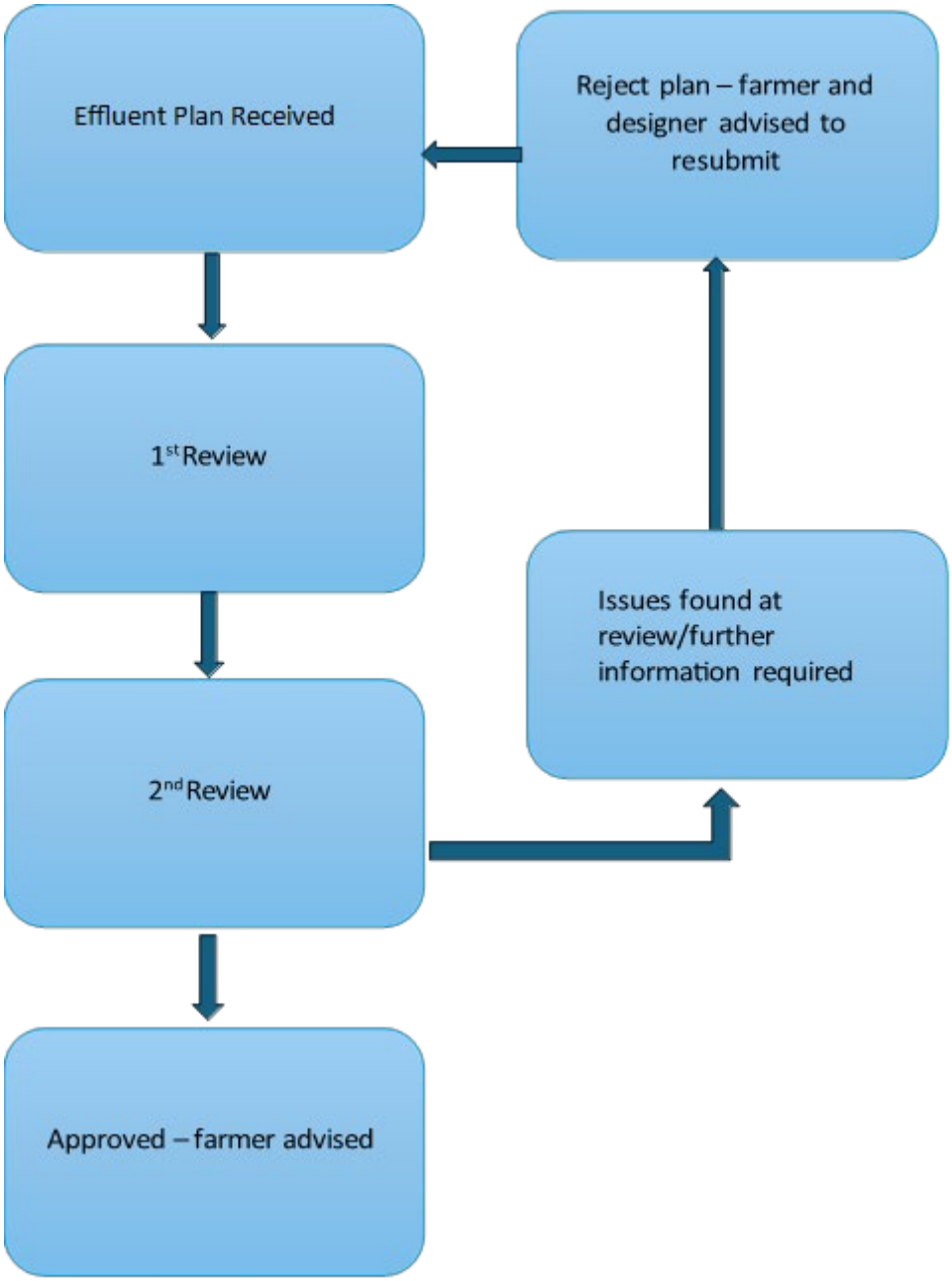

Figure 4: TDIA Effluent Management Plan assessment flow chart

Your dairy farmer licence/accreditation will have a condition applied that stipulates the maximum number of milking animals allowed to be milked through the premises at any point in time. Other conditions may also be applied at the discretion of the TDIA.

It is the responsibility of the dairy farmer to regularly review their effluent management plan to ensure it reflects the system in use. **If you are unsure whether you are required to amend your effluent plan following changes to your business, please contact the TDIA for guidance and support.**

7. Key Considerations

Effluent systems are made up of many components, all of which need to be considered and applied in the farming system so that effluent management objectives are met. Systems will vary and contain different components depending on farm considerations and preferred management. When assessing a new or existing effluent management system, the following elements are to be considered:

System selection, design, siting and integration

There is no 'one size fits all' system that can be applied to all farms. Systems must be designed and constructed on a case-by-case basis to meet regulatory requirements, site constraints and the individual requirements and preferences of the farmer. Ensure that you have discussions with your effluent designer and other contributing service providers (e.g. irrigation, electrical, plumbing) on what your expectations are, including any future expansion plans, and what your responsibilities will be in relation to the system's future management and maintenance prior to construction.

KEY CONSIDERATIONS

- Dairy premises effluent must not leave the farm boundaries or enter surface waters or groundwater, unless treated and discharged in a manner approved by the relevant regulatory authorities. **(Minimum requirement 1.1 of the Code)**
- Dairy premises effluent must not enter surface waters, except artificial water bodies wholly contained within the farm boundaries. **(Minimum requirement 1.2 of the Code)**
- A dairy premises where stock are held for extended periods must have concrete or other impervious base. **(Minimum requirement 2.4 of the Code)**
- Effluent management systems are constructed and managed to relevant regulatory standards, do not pollute or pose environmental harm, and reduce the risk of groundwater contamination and runoff. **(Minimum requirement 2.1 of the Code)**
- Design and site effluent systems so that all effluent generated from controlled areas such as sheds, feedpads and intensively stocked areas is captured, conveyed and reused. All other runoffs should be diverted from the system, unless calculated into the design.
- Design and manage your effluent system to suit your site-specific requirements, for example, labour, future expansion, topography, soils and maintenance. Utilise gravity wherever possible.

- Design your effluent system in a way that effluent can be easily managed and maintained, and water and nutrients effectively utilised on crops and pasture.
- Undertake appropriate environmental and farm investigations before building an effluent system or developing an effluent plan. For example, permeability tests, ground water location, nutrient fertility testing, pond sampling and analysis, soil profiling, and areas of salinity.
- Consult appropriate authorities to ensure all legislative and planning requirements are met prior to development. All systems must be built to applicable manufacturers standards and recommendations.

  If you are building or altering an effluent pond or existing dam, you must first consult the Department of Natural Resources and Environment (NRE) Tasmania Water Branch to determine your responsibilities in relation to permits, registrations and geotechnical investigations (effluent tanks may require Council permits).

  The TDIA will ask for evidence of relevant approvals or permits as part of the approvals process.

  Further information relating to dam permits can be found at *https://nre.tas.gov.au/water/dams/building-a-farm-dam*
- Ensure all effluent storage facilities are appropriately sealed and lined. Using natural material for pond construction requires geotechnical testing to ensure it meets permeability requirements. Where clay is unavailable or unsuitable, an artificial liner may be required to protect groundwater. Ponds requiring a synthetic liner may require a leak detection system.
- Ensure effluent system siting and design takes into consideration site specific requirements including climate, labour, safety, topography, soils, waterways and other sensitive environmental areas.
- Determine water and power requirements to ensure adequate access is available to maintain the system.
- Consider dairy herd numbers and time spent in the dairy premises and percentage of excretion to be managed within the system, separated into manure streams (liquids, slurry, solids, bedding) and volumes.
- If extending an existing system, make sure that the system components do not impede on one another’s functions.

Water Management

The largest contributor to a farm's effluent management system is water. Recognising this and taking this into account during your day-to-day operations will significantly reduce the load on your system.

KEY CONSIDERATIONS

- Train staff to minimise water use during milking and washdown.
- Recycle plate cooler water and divert stormwater (that does not contain effluent) away from the effluent system to minimise storage requirements.
- Consider installing rainwater diversions
- Dry scrape intensively used areas to break up solids prior to using floodwash, hydrants or hosing systems.
- Where possible* utilise effluent recycled from pond(s) for washdown of yards, feedpads and stock containment areas.
  ***Recycled manure cannot be used for hygiene/milk contact areas in accordance with FSANZ 4.2.4 Primary Production and Processing Standard Dairy.**
- Conduct regular water audits to check water use in the shed.
- Replace or repair leaking taps/pipes/gutters.
- Build systems to handle 90th percentile rainfall and 10th percentile evaporation events (refer to Australian Bureau of Meteorology).

Effluent conveyance

The drainage and conveyance of dairy effluent requires careful planning to avoid pipe blockages or soil degradation, depending on the conveyance method.

KEY CONSIDERATIONS

- Consider yarding design principles, such as slope, dimensions, surfacing and nib walls, to optimise efficiencies in animal flow and yard cleaning.
- Where possible use gravity to move effluent around the farm.
- Pipe sizing, positioning, configuration (e.g. 'T'-piece, 'Y'-piece) and type. Dairy effluent can contain high levels of salt, so consideration should be given to the type of pipe that can withstand corrosion.

- Effluent conveyance methods must not pose a risk to surface water, ground water or soil integrity. **(Minimum requirement 2.6 of the Code)**
- The base of a dairy premises and associated management areas must have bunds around the perimeter or are otherwise designed so that all effluent is directed to, and contained within, the effluent management system. **(Minimum requirement 2.5 of the Code)**

System Management

An effluent management system may be built to gold standard design and functions, but without appropriate and consistent management, a system can quickly become out of control and pose potential risks.

KEY CONSIDERATIONS

- Review and modify your effluent system and plan when farm circumstances change (e.g. herd expansions, changes to infrastructure, premises extensions/additions).
- Separate solids and debris from the effluent stream to minimise impact on pumps, pipes and storages and to minimise overflows and blockages.
- Regularly clean solids traps, weeping walls, filters and screens associated with solid and liquid separation to ensure continual flow and prevent overflows and blockages.
- Regularly service equipment to maintain it in working order.
- Ensure levee banks and diversion drains are maintained to prevent the runoff from surrounding areas entering effluent systems, particularly ponds.
- Monitor and repair damaged system components, including pond walls and banks to prevent seepage and overflows.
- Empty ponds prior to the wet period to ensure adequate capacity to cope with inflows.
- Ponds used for recycling should regularly be emptied onto pastures and crops to remove accumulating salts.
- Regularly spray and remove weeds on or around the effluent system to maintain visibility, accessibility and safety.
- Regularly desludge ponds to ensure adequate storage capacity. Leave a small amount of effluent in ponds when cleaning to prevent drying and to maintain microbial populations.

- Ensure trees do not grow on pond banks or create shading on pond surface as this may affect bank stability and pond activity.
- Avoid dumping large quantities of milk in the effluent system as it reduces pond performance and creates odours.
- Maintain appropriate freeboard to allow for extreme weather events and wave action (in ponds).
- Store effluent when the volume of effluent generated is greater than the volume that can be applied due to climatic and soil conditions.
- Develop a maintenance schedule that outlines frequency for emptying solids traps, effluent ponds and equipment maintenance and other items identified for optimal system function in your effluent plan. Record dates when actions are carried out.
- Stir and agitate effluent ponds before de-sludging to re-suspend solids and achieve a more uniform product. Be sure to know how much liquid needs to be left in the pond or available from an external source to allow for this.

Land applications

Healthy soils are key to any dairy system, helping to grow sustainable and productive pastures, crops and dairy animals. This is achieved through careful soil fertility planning and management practices that reduce cultivation, compaction and anaerobic conditions. Factors like soil type, slope, topography, area (size) and accessibility are important when applying nutrients from manure sources to reuse areas.

KEY CONSIDERATIONS

- Ensure effluent application schedules and rates are appropriate to the farm as assessed in your effluent management plan. **(Minimum requirement 3.1 of the Code)**
- Effluent must not be distributed to a sacrificial area, or through an open-ended pipe, unless proven to be done so in an environmentally sound manner. **(Minimum requirement 3.2 of the Code)**
- Ensure runoff containing effluent does not leave the boundary of a property.
- Apply effluent when pasture and crops are actively growing to avoid losses and maximise nutrient uptake and yields.
- Adjust effluent application rates to suit your soil types to avoid runoff and leaching below plant root zones.
- Apply liquid effluent through an irrigation system that achieves a controlled rate and uniform application to maximise infiltration and reduce runoff.

- Avoid application of effluent in wet weather or on waterlogged pastures due to an increased likelihood of runoff.
- Avoid sensitive areas such as waterways, drainage lines and property boundaries when applying effluent.
- Consider wind direction when agitating, desludging or applying effluent sludge to pastures and crops. Avoid and restrict spray drift from sprinklers and irrigators.
- Regularly relocate movable sprinklers and irrigators to distribute nutrients over a large area of the property.
- Periodically sample ponds, containment storages and solid stockpiles to accurately analyse nutrient composition to determine application rates and areas.
- Undertake soil testing on areas where effluent is applied to monitor soil nutrient levels, salinity and pH. Modify fertiliser applications to match soil fertility targets.
- Consider ground cover, slope, risk of erosion and the hydrology of the application site. Avoid steep slopes and land within flood inundation risk areas.
- Ensure effluent reuse areas are large enough to avoid build-up of excess nutrients.
- Where a risk of runoff into sensitive water resources exists, consider physical barriers such as water diversion banks, contouring and/or vegetated biofilters to minimise risks.
- Consider potential herd health problems associated with excess nutrients and microbes which may adversely affect production. For example, high potassium levels in soil and pasture can supress the uptake of calcium and magnesium by stock, altering metabolism and potentially leading to a deficiency in both magnesium and calcium. A deficiency in magnesium can contribute to grass tetany and a deficiency in calcium can contribute to milk fever.
- Consider what grazing withhold periods may need to be adopted to avoid potential health and palatability implications. A withholding period of at least 21 days before grazing after an effluent application will help minimise the live microbe population.
- Do not allow any young stock (less than 12 months) to access land with effluent applied.
- Target paddocks with lower soil phosphorus levels to reduce the risk of phosphorus loss in surface runoff (solids applications).
- Target soils that are appropriate for effluent application and with depths of application that will match the soil's water holding capacities. The objective is to apply at a rate where effluent only remains within the pasture’s plant root zone.

- Ensure maximum nutrient export from the application areas by using high production activities (e.g. hay or where additional irrigation water is available, summer fodder crops) and cut and carrying fodder as opposed to grazing.
- If irrigation is required during the recommended storage months (as determined by the Effluent System Designer Toolkit or local water balance calculations), your EMP must contain detailed management information as to how irrigation can be completed in an environmentally sounds manner and adhere to the Code outcomes.

Stockpiling

A component of many larger effluent systems is the need to periodically stockpile large volumes of solids, particularly in a pond-based system. As solids can be difficult to handle when the first removed due to high moisture content, many dairy farmers opt to stockpile this material to allow it to dry out before being utilised on farm. Where and how these piles are managed must be planned (and prepared) prior to clean out.

KEY CONSIDERATIONS

- Where possible, immediate application to land of manure solids and organic bedding upon removal should be undertaken to avoid double handling, reduce the need for impermeable storage and maximise the nutrient value of the materials.
- Establish an appropriate stockpile area that is easily accessible and close to a separation system to enable drainage from the drying stockpile to be contained and reused.
- Locate stockpiles on an impermeable bunded surface to prevent leaching away from the pile or into ground water surface water.
- Periodically sample and test stockpile to accurately assess the nutrient levels to determine application rates.
- When composting stockpiles, refer to licensing and testing requirements that may apply where composted material is to be sold. For example, Australian Standard (AS)-4454 (2003) Composts, Soil Conditioners and Mulches.

Work Health and Safety (WH&S)

Although TDIA are not responsible for assessing WHS on farm, it must be referenced in Effluent Management Plans as part of the standard elements (refer to Section 6) and your general due diligence. Some information is provided here to assist with understanding of business responsibilities for WHS on farm.

Dairy effluent systems can be hazardous if they are poorly designed and managed. Farm safety and accident prevention is everyone's responsibility and should be the highest priority on the farm, ensuring the farm surrounds are as safe as possible.

KEY CONSIDERATIONS

- Maintain a complaint and incident register recording dates, complainants, weather conditions and issues to address.
- Identify and address potential risks and hazards associated with effluent systems and their management (e.g. fencing and signage).
- Control weeds and vegetative growth around pond and containment systems.
- Locate and clearly mark pond surfaces before moving machinery for maintenance activities.
- Do not use recycled effluent inside milking sheds or vat rooms.
- Avoid cleaning with effluent through high pressure hoses. The potential health risks associated with dairy effluent aerosols is largely unknown.
- Consider topography and areas around ponds when using slurry tankers and solid spreaders, as they are not suited to steep sloping country.
- Ensure internal batter slopes on ponds are gradual enough to allow stock and people to exit if they fall in.
- Ensure appropriate fencing and signage around all effluent storages.

Contingency planning

No matter how well an effluent system is designed and managed, breakdowns are inevitable given the reliance on equipment and the foreign material and debris likely to enter the effluent stream. Contingency plans and procedures for emergency breakdowns are essential.

A contingency plan should enable procedures to be put in place immediately when failures occur with minimum impact to facility operations and the environment. All staff members should be familiar with contingency plans and procedures.

KEY CONSIDERATIONS

- Appropriate contingencies must be in place to contain all effluent within the effluent management system, regardless of adverse weather conditions and/or component failures. **(Minimum requirement 2.7 of the Code)**

- Contingency plans should consider things such as: milk disposal, power disruptions, pump breakdowns, pond overflows, breaches and pump and pipe blockages.
- A contingency plan should contain procedures that can be put in place immediately when failures occur to minimise impact on farm operations as well as avoiding pollution to groundwater and surface waters.
- Plans should include contact details of service providers and relevant authorities and be accessible to all farm staff and clearly understood.
- Avoid depositing large volumes of milk into your effluent management system in the case of an emergency. Milk can produce excessive odours and reduce the system's biological function. If applying milk or milk by-products to land, follow guidance from your supply company and the Environment Protection Authority (2020) Guide to Land Spreading of Milk and Milk By-products (Tasmania).
- If effluent leaves the boundaries of the farm and may cause environmental nuisance or harm, it is critical that the appropriate regulatory authorities are advised. Failure to do so can result in significant fines.
- Effluent Management Plans must reflect the effluent management system in use and must be regularly reviewed by the dairy farmer. **(Minimum requirement 2.3 of the Code)**

8. Further Information

Further information regarding Effluent Systems design, management and benefits can be found at Dairy Australia and Agriculture Victoria:

General information:

https://www.dairyaustralia.com.au/soils-and-water/effluent-management

https://agriculture.vic.gov.au/livestock-and-animals/dairy/managing-effluent

Effluent and Manure Management Database for the Australian Dairy Industry (2008):

https://www.dairyaustralia.com.au/en/resource-repository/2020/07/09/effluent-and-manure-management-database-2008

Effluent Management Fact Sheets (DairyTas and Dairy Australia) 2024:

https://www.dairyaustralia.com.au/soils-and-water/effluent-management/effluent-system-management/resources