CODE OF PRACTICE FOR DAIRY FARM EFFLUENT MANAGEMENT WA

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The following stakeholders provided input, advice and guidance through the Working Group during the review of this document:

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Department of Primary Industries and Regional Development - Leon van Wyk

WA dairy farmer representatives – Tim Crimp, Jacqui Biddulph

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GOVERNMENT OF WESTERN AUSTRALIA

Department of **Water and Environmental Regulation**

Department of **Primary Industries and Regional Development**

Effluent tanker
Photo credit: Western Dairy

Multi-bay trafficable solids trap
Photo credit: GeoCatch

PURPOSE

This Code of Practice outlines shared industry, government and community expectations for dairy farm effluent management in Western Australia (WA). The Code sets out clear standards for dairy farmers to meet these expectations and demonstrates that the dairy industry is committed to minimising the impact of dairy effluent on the environment.

BACKGROUND

The WA dairy industry recognises the importance of having an environmentally sustainable industry.

This document aims to set clear and achievable standards for dairy effluent management that respond appropriately to environmental and commercial objectives of the dairy industry. By meeting standards set out in this Code, WA dairy farmers can demonstrate to consumers, the community and regulatory agencies that they can produce quality dairy products sustainably.

The Code of Practice for Dairy Shed Effluent Western Australia was originally developed in 2012. In 2020 the original Code was extensively reviewed by state and local government agencies, the dairy industry, milk processors and dairy farmers and updated to the current format.

SCOPE

The Code outlines industry standards for managing dairy effluent on dairy farms in WA, including both existing and new dairy enterprises. The Code enables dairy farmers to determine whether their existing or proposed effluent system meets industry standards, or if modifications may be required.

The Code defines dairy effluent as any solid and/or liquid matter from faeces, urine, wastewater from milking, cleaning and yard wash-down activities on dairy farms. Effluent management encompasses all components of the effluent system including the dairy shed, feedpads, underpasses, lane ways, effluent ponds and pastures or crops where effluent may be applied.

The Code is not intended as a technical guide for dairy farm effluent management. The standards within this Code are high level to allow for flexibility and innovation, different farm management styles, site conditions and future changes within the industry. Recommended management practices are included to provide practical actions that farmers can implement to assist in meeting the standards. The list is not exhaustive and other management practices may also achieve the standards and outcomes.

A list of useful technical references is provided at the back of this document that provide technical information on how to design and establish a best practice effluent management system.

PRINCIPLES

1. The Code provides a consistent set of standards for dairy effluent management on WA dairy farms, whilst recognising site differences and flexible approaches to meeting the Code.
2. The Code is voluntary and consistent with relevant WA state guidelines and planning requirements.
3. The Code is supported by industry best management practices that reflect the latest research and technical information.
4. The expectation is for dairy effluent to be managed in a manner that does not discharge to groundwater, surface water, or create nuisance odours or impacts off farm.
5. Dairy effluent is a resource to be optimised and incorporated into whole farm nutrient management.
6. Best practice effluent management on all dairy farms is essential for the long-term future of a sustainable dairy industry in WA.
7. The Code supports and encourages innovation in effluent management to improve productivity and profitability on WA dairy farms.

BENEFITS TO MEETING THE CODE OF PRACTICE

Meeting the standards of the Code provides multiple benefits for:

The Farmer	Economic benefits from utilising effluent as a fertiliser resource. Meeting the Code may assist in demonstrating on-farm sustainability, the right to farm and access to funding incentives. Good effluent management improves general farm management through improved amenity and animal health while the community can be assured dairy farmers are working towards sustainable outcomes.
The Dairy Industry	Enhanced reputation as a sustainable industry. Good effluent management demonstrates that farmers care about the environment.
The Environment	Direct benefit through the reduction in nutrients and organic matter entering waterways and estuaries.
The Community	Increased confidence in the dairy industry, improved local amenity and odour management, and broader improvements in water quality.
The Processor	Quality Assurance requirements and consumer expectations can be more easily met by milk suppliers.

LEGISLATIVE CONTEXT

The Code outlines the minimum standards for dairy farm effluent management in WA and aims to meet expectations of the industry, community, and government agencies. It is recognised that not all dairy farm effluent systems currently meet the Code, however the expectation is that dairy farmers are working towards achieving these standards. Government and industry incentives have been provided over the past 10 years to support farmers to meet these standards. These incentives will continue to support farmers through access to technical advice and in some situations funding incentives.

ADVICE FOR FARMERS

Contact Western Dairy for advice on practices you can implement on your farm to meet the Code of Practice

In the case where a dairy farmer is not working towards meeting the standards in the Code and dairy effluent may be causing environmental harm, the following State legislation may apply:

Environmental Protection Act 1986

Sections under Part V of the Act may have relevance where dairy farm effluent is suspected or likely to cause pollution or environmental harm and could constitute a potential breach of the Act.

Dairy farms in Western Australia are not currently classified as a 'prescribed premise' under Schedule 1 of the Environmental Protection Regulations 1987 and are not licensed. However, premises that process milk or dairy products are classified as prescribed premises under Category 17- Milk processing. The production or design capacity threshold for licensing is when 100 tonnes or more per year of milk is processed.

Composting is a prescribed activity under Category 67A if 1000 tonnes or more per year of material is composted.

Above: Meeting the standards for effluent management protects waterways, wetlands and other sensitive areas
Photo credit: GeoCatch

Environmental Protection (Unauthorised Discharges) Regulations 2004

These regulations list 'animal waste', 'chemical waste' and 'food waste' (including milk or milk products) as materials that must not be discharged into the environment. Where sufficient evidence exists to substantiate the elements of an offence, enforcement action may be considered by DWER.

Environmental Protection (Controlled Waste) Regulations 2004

Sections of the Act will apply if (liquid) effluent is moved off site. Schedule 1 to the Regulations includes animal effluent or residues.

Waste-derived materials Legislative Framework

Under the current definition of waste (Environmental Protection Act 1986), dairy shed effluent, if discharged into the environment, constitutes waste. An expanded definition of waste under the Act will be proposed in a separate Waste Reform Bill, which is anticipated to be presented to Parliament in 2021. The new definition would provide the head powers for the CEO of DWER to determine when certain 'waste-derived materials', cease to be waste for the purposes of the licensing and levy regimes.

Country Areas Water Supply Act 1947

By-laws exist under the Country Areas Water Supply Act 1947 that will apply to the construction of dairy sheds and to the application of dairy effluent in PDWSAs.

Soil and Land Conservation Act 1945

Seeks to prevent and mitigate land degradation, including eutrophication, by encouraging and educating landholders and the public about appropriate land use and soil conservation practices which includes the management of effluent from dairy sheds. Enforcement of the Act may be considered by the Commissioner of Soil and Land Conservation where land degradation results from effluent disposal.

1 WATER USE EFFICIENCY

STANDARD 1

Water use is minimised and stormwater managed to reduce the volume of effluent generated

OUTCOME

Reduced water use and diversion of stormwater from the dairy shed lowers the volume of effluent generated, minimising storage and pumping requirements.

Minimising water use during yard wash reduces the volume of effluent generated each day
Photo credit: GeoCatch

1 Effluent and Manure Database 2008 pp. 20

Recommended management practices

- Recycle plate cooler water and divert stormwater (that does not contain effluent) away from the effluent system to minimise storage requirements.
- Consider rainwater diversion off the yard.
- Dry scrape the yard and other intensively used areas to break up solids before washdown.
- Where practical and suitable[1] for floodwash systems, utilise recycled effluent from pond/s (preferably from final pond in multi-pond system) for wash down of yards, feedpads and stock containment areas.
- Conduct regular water audits to check water use in the shed. Replace or repair leaking taps/pipes/gutters.
- Train staff to minimise water use during milking and washdown.

Below: Minimising water use during yard wash reduces the volume of effluent generated each day
Photo credit: GeoCatch

1 Water use efficiency

2 SOLIDS AND STOCKPILE MANAGEMENT

STANDARD 2A

Solids in effluent are managed to optimise handling and reuse

OUTCOME

Managing solids enables effective handling and greater reuse options of both liquids and solids as fertiliser and/or soil conditioner and minimises impacts on the environment.

Recommended management practices

- Direct drainage from dairy sheds, feedpads and yards to a central location to collect and manage solids.
- Utilise a solids separation system[2] that matches the management preferences, proposed reuse system, and is effective for the volume of effluent being generated.
- Regularly clean solids traps, weeping walls, filters and screens associated with solid and liquid separation to ensure continual flow and prevent overflows and blockages.

Mechanical solids separators provide dry solids that are easy to handle
Photo credit: GeoCatch

A primary solids pond is a low maintenance option to separate solids and liquids

2 Effluent and Manure Database 2008 pp. 30

STANDARD 2B

Solids are stored in a manner that does not impact on ground or surface waters

OUTCOME

Solids stockpiled on an impermeable surface that drains back into the effluent system to minimise impacts on surface and groundwater.

Recommended management practices

- Locate stockpiles on an impermeable surface to prevent leaching into ground water.
- Establish a stockpile area that enables drainage from the drying stockpile to be contained and directed back into the effluent system.
- Stockpile solids until dry enough for handling and spreading (see Standard 7).
- When composting stockpiles, refer to best management practices[3] and guidelines[4] to minimise odour and optimise nutrient availability. Licensing and testing requirements may apply where composted material is to be sold.
- Periodically sample and test stockpile to accurately assess the nutrient levels to determine application rates.

Solids storage pad with stormwater pond

Solids storage bunker with weeping wall directs runoff back to sump

3 Effluent and Manure Database 2008 pp. 88
4 DWER, 2020 (Draft) Better practice composting

3 ROADS, UNDERPASSES, LANEWAYS AND CROSSINGS

STANDARD 3

Effluent that concentrates on roads, underpasses, laneways and bridges is managed to minimise impacts on the environment and other users

OUTCOME

Impacts on water quality are minimised through the management of effluent that collects in areas around the farm, including areas that cattle frequently cross. Impacts on other users (e.g. neighbours) are also reduced.

Recommended management practices[5]

- Scrape and remove manure deposits from roads, roadsides, laneways and bridge crossings to ensure any manure or runoff generated is controlled and reused.
- Divert water runoff from tracks to grassed areas at regular intervals to trap sediment and encourage infiltration.

Regularly remove manure that collects on crossings such as underpasses

Scrape manure build up on road crossings to avoid impacting other users

5 DPI 2008, DairyGains Victorian Guidelines

3 Laneways and crossings

4 STORAGE OF EFFLUENT

STANDARD 4A

Effluent is stored in a manner that minimises impact to surface and groundwater, and people

OUTCOME

Impacts on water quality are minimised by preventing nutrients leaching from effluent storages into groundwater and surface water.

A synthetic pond liner may be required if suitable clay is not available on the farm

Recommended management practices

- Ensure the required effluent storage capacity is adequate to store the volume of effluent from your enterprise and has been calculated by a suitably qualified specialist[6] or practitioner, with proven experience and knowledge to design effluent systems.
- Ensure all effluent storage facilities are sealed or lined. Clay for lining ponds requires geotechnical testing to ensure it meets permeability requirements. Where clay is unavailable or unsuitable, an artificial liner may be required to protect groundwater.
- Remove accumulating sludge and solids on a regular basis to avoid blockages when irrigating and to maintain long-term storage capacity.
- Monitor and repair any damaged pond walls to prevent seepage and overflows.
- Ensure appropriate fencing and signage around all effluent storages.
- Refer to WQPN39 (Ponds for Stabilising Organic Matter) for design, siting, odour management and monitoring guidance.

6 A person who has completed the nationally recognised unit of training AHCLSK506 – Design Effluent Systems or has equivalent proven skills, knowledge and experience.

STANDARD 4B

Effluent is stored over periods when soils are saturated and/or precipitation exceeds evaporation

OUTCOME

Storing effluent during wet periods allows strategic application to pasture or crops at times when nutrients can be better utilised and surface water runoff is minimised.

Recommended management practices

- Store effluent when the volume of effluent generated is greater than the volume that can be applied due to climatic and soil conditions.
- Empty storages (with reference to Standard 7 Reuse of dairy effluent) prior to the wet period to maximise storage capacity.

Solids management is required in single ponds to maximise storage capacity over wet periods

Effluent storages should be emptied by the end of March each year

5 REUSE OF DAIRY EFFLUENT

STANDARD 5

Dairy effluent is reused to optimise nutrients and minimise offsite impacts

OUTCOME

Strategic reuse of effluent maximises the benefits from nutrients, organic matter and water on farm productivity, and minimises impacts on the environment and neighbours.

Recommended management practices

Select effluent reuse areas that minimise impacts to the environment

- Target soils with a high Phosphorus Buffering Index and suitable drainage based on soil tests; avoid soils prone to waterlogging and sandy soils that drain too quickly.
- Consider ground cover, slope, risk of erosion and the hydrology of the site. Avoid steep slopes and land within flood inundation risk areas.
- Target paddocks with lower soil phosphorus levels to reduce the risk of phosphorus loss in surface runoff.
- Avoid sensitive areas close to waterways, drainage lines and property boundaries. Refer to page 22 for recommended setback distances for reuse areas.
- 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 nutrients in dairy effluent as a part of your whole farm nutrient plan[7]

- Ensure effluent reuse areas are large enough to avoid build-up of excess nutrients. Refer to your Effluent Plan or Farm Nutrient Plan for area calculations.
- 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.
- Undertake annual soil testing on areas where effluent is applied to monitor soil nutrient levels, salinity and acidity. Apply effluent to alternative paddocks if soil testing indicates excess nutrient levels.
- Only apply additional phosphorous or potassium fertilisers if soil testing shows nutrient deficiencies.
- Analyse effluent every 2–3 years to determine nutrient concentration and establish application rates for effluent. Refer to your Effluent Plan or Farm Nutrient Plan for recommended application rates.

7 Gourley et al. 2019; Summers and Weaver 2011; DWER 2008, WQPN22; DWER 2010 WQPN33

Consider environmental, social and animal health issues in timing of effluent application

- Minimise nuisance odours[8] and spray drift when applying effluent by choosing periods of warm weather and light winds that will assist in dispersal of odours. Consider direction of wind and distance to neighbouring residences.
- 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 to decrease the likelihood of runoff.
- Use shallow application depths for liquid effluent and ensure there is a soil moisture deficit, particularly on landscapes that are relatively flat with high water tables (e.g Swan Coastal Plain).
- Avoid areas with high soil Colwell K to minimise risk to animal health[9]. Monitor and manage livestock where effluent is applied and restrict access to young stock (less than 12 months old).
- Withhold grazing for a minimum of two weeks[10] after liquid effluent has been applied to pastures. Heavier slurries will require a 21 day withholding period.

8 DairyNZ, 2021
9 Harris 1997; Effluent and Manure Database 2008
10 Effluent and Manure Management Database, 2008

A separate line of nozzles is used to irrigate effluent through a centre pivot

6 EFFLUENT MANAGEMENT PLANS

STANDARD 6

WA dairy farms have a current effluent management plan

OUTCOME

Effluent management plans demonstrate and document that the effluent system design and recommended management will effectively reuse nutrients while minimising impacts on the environment and meet industry standards and best practice.

Use a qualified and experienced system designer to develop your effluent management plan

Recommended management practices

- Engage a suitably qualified specialist[11] or practitioner, with proven experience and knowledge to design effluent systems and make management recommendations, to develop an effluent management plan for your dairy farm.
- Ensure effluent management plan includes contingency procedures to respond to events such as pump failure, equipment breakdown, spills, blockages and pond overflows.
- Contingency procedures must ensure large volumes of discarded milk is not diverted into the effluent system as it can cause severe problems in storages and the environment.
- Review and update your effluent plan to reflect major changes in your farming practices. This may include changes to yard wash systems, increased herd size, milking frequency, extending holding yards or new feedpads.
- Ensure effluent plan considers guidelines within state government Water Quality Protection Notes (refer to reference list in this document).

Check with Western Dairy, your processor or local catchment group to determine if any incentives are available for the development of plans.

11 A person who has completed the nationally recognised unit of training AHCLSK506 – Design Effluent Systems or has equivalent proven skills, knowledge and experience

6 Effluent Management Plans

7 MONITORING, MAINTENANCE AND RECORD KEEPING

STANDARD 7

Dairy effluent systems are monitored and maintained in good working order and records kept of key management practices

OUTCOME

Monitoring and regular maintenance of effluent systems helps prevent system failures and assists with farm and nutrient management. Keeping a record of management actions is useful to demonstrate best practice.

Even the best system will fail without regular maintenance. Keep your system in good working order to prevent small issues becoming big ones.

Recommended management practices

- 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.
- Along with your grazing and fertiliser management records, note (for example, using a diary or map) location, date and volume of effluent applications, particularly sludge management activities, to help manage grazing rotations and evidence of best practice.
- Conduct soil sampling and nutrient testing of effluent stockpiles and liquid effluent every 2–3 years.
- Notify appropriate authorities if effluent discharges offsite so that offsite impacts can be quickly addressed.

Any effluent that escapes the effluent system and poses a risk to waterways should immediately be reported to the DWER's Pollution Watch Hotline.

Phone 1300 784 782 or email **pollutionwatch@dwer.wa.gov.au**

Below: Keeping track of nutrient levels is an important part of monitoring effluent reuse areas
Photo credit: GeoCatch

7 Monitoring and maintenance

New developments
and upgrades

NEW DAIRY SHEDS, UPGRADES, FEEDPADS AND CONTAINED HOUSING

This section of the Code aims to assist new dairy farm enterprises and upgrades to existing dairy farm operations to meet requirements for best practice effluent management in WA. Items that a proponent should consider during the planning stage are outlined below.

New dairy farm enterprises and/or upgrades may need a development approval from the local government authority (LGA). The Code aims to provide a consistent standard for Local and State Government referral agencies when assessing new (or upgrades to) dairy shed developments. Where practicable, the Code is based on existing local and State Government guidelines and policy. Specific guidelines are referenced where applicable. Proponents should contact their LGA to determine local planning approval requirements before submitting a development application, as requirements may vary between local government areas.

The minimum setback distances outlined in the Code are based on State Government and industry guidelines (as referenced) and aim to reduce the risk of impacts of effluent on surface water, groundwater, the environment and public health. The setbacks also aim to minimise impacts of noise and odour on neighbours and the broader community. If a proponent cannot meet these setbacks, they may need to demonstrate (via their effluent management plan) how risks from effluent on the environment or neighbours have been considered and will be managed.

In public drinking water source areas (PDWSA), dairy enterprises and/or upgrades are incompatible in Priority 1 and Priority 2 areas. In Priority 3 areas, the Department of Water and Environmental Regulation's advice is required on management measures to help protect water quality and public health.

Effluent system design for new dairy effluent infrastructure

For new dairy farm enterprises or major upgrades, it is recommended to have a site-specific Effluent Management Plan developed by suitably qualified specialist with proven experience and knowledge[12]. The Effluent Management Plan should outline all aspects of the dairy effluent system, including capture, containment, treatment and reuse, potential risks to the environment and/or neighbours, and mitigation measures.

Site Selection

Siting of a new dairy shed or upgrade will aim to:

- Reduce impacts to the environment and neighbours by considering hydrology, soil types, topography and nearby land use.
- Meet local government planning scheme requirements and be located in General or Agricultural zones.
- Be located outside of Priority 1 or Priority 2 Public Drinking Water Source Areas[13] where it is incompatible; and seek DWER's advice if within P3 areas, where it is compatible with conditions, for the protection of drinking water quality and public health.
- Be located a minimum of 100m[14] from waterways, wetlands, defined foreshore areas[15] and other sensitive water resources.
- Be located a minimum of 300m[16] from a neighbouring residence.
- Be located a minimum of 500m[17] from a Residential or Rural Residential area.
- Be located a minimum of 50m[18] from a property boundary.

Above: Contained housing developments are becoming more common in the eastern states
Photo credit: Agriculture Victoria

12 A person who has completed the nationally recognised unit of training AHCLSK506 – Design Effluent Systems or who has equivalent proven skills, knowledge and experience
13 WQPN25 - Landuse compatibility for PDWSAs
14 Water and Rivers Commission 2001. Position Statement: Wetlands
15 DWER 2012, Operational policy: Identifying and establishing waterway foreshore areas
16 Personal Communication (advice) DPIRD 2020; min. threshold to negate odour modelling
17 EPA 2005, Guidance for the Assessment of Environmental Factors
18 DPIV 2010, Guidelines for Victorian Feedpads and Freestalls; DPI NSW 2008, Environmental management guidelines for the dairy industry in NSW

- Demonstrate how management and/or design will minimise risk of impacts on the maximum groundwater table.

Siting of permanent feedpads or contained housing:

- Should consult relevant government agencies and professional service providers to determine appropriate separation distances from sensitive receptors as the increased buffers from those outlined above may apply.
- Should consider Australian Dairy Feedpads and Contained Housing Guidelines (currently under development)[19].

Setbacks for effluent reuse areas

Effluent reuse areas will aim to be located:

- A minimum of 100m[14] from waterways, wetlands and other sensitive water resources. Where minor paddock drains are located in reuse areas, apply a 10m[20] buffer as a minimum. Where lesser setback distances are proposed, outline measures to mitigate impacts on waterways in your effluent management plan.
- Outside Public Drinking Water Source priority 1 and 2 areas (incompatible) and seek DWER's advice within P3 areas where it is compatible with conditions.
- A minimum of 100m[21] from a neighbouring residence.
- Where the calculated land area (in effluent management plan) to distribute nutrients is available.
- On land that is not permanently or seasonally flooded or waterlogged. On land that has suitable slope and hydrology, with low risk of erosion.
- Where there is a minimum water table depth of 2 metre[22] during proposed time of irrigation.
- With regard to requirements in the Water Quality Protection Note 22 and Guidance on the establishment and management of irrigation schemes for the land disposal of wastewater (DWER, draft).

Setbacks for effluent infrastructure (including storage facilities and feedpads)

Effluent infrastructure will aim to be located:

- A minimum of 100m[14] from waterways (and foreshore area), wetlands and other sensitive water resources.
- A minimum of 300m[23] from a neighbouring residence.
- A minimum of 500m[24] from a Residential or Rural Residential area.
- A minimum of 50m[25] from a property boundary.
- A minimum of 45m[20] from the dairy shed to reduce the risk of flies or odour.
- On land where there is a vertical separation of at least 1 metre[26] from the bottom of the pond liner to the maximum water table.
- On land where construction and compaction specifications[27] can be met.
- Outside Priority 1 and Priority 2 Public Drinking Water Source Areas and advice sought from DWER for Priority 3 areas.

19 DPIV 2021 (Draft) Australian Dairy Feedpads and Contained Housing Guidelines
20 Fertiliser Association of New Zealand, 2018
21 DPI NSW 2008. Pp 25
22 DWER WQPN 22 – Irrigation with nutrient-rich wastewater
23 Personal communication (advice) DPIRD 2020; min. threshold to negate odour modelling.
24 EPA (2005) Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses
25 DPIV (2010) Guidelines for Victorian Feedpads and Freestalls; DPI NSW (2008) Environmental management guidelines for the dairy industry in NSW
26 DWER WQPN 39 – Ponds for stabilising Organic Matter. Agriculture WA 1999; pp.31 acknowledge that a 1 metre vertical separation may not be possible on coastal plain areas of WA and these areas should be avoided for storage ponds, except where permeability is low or can be achieved by an engineered clay or artificial liner
27 DWER WQPN27 - Liners for Pollutants using engineered soils; WQPN39

IMPLEMENTATION

Governance

This is an industry code that aims to support best practice and self-regulation of dairy effluent management. It is the responsibility of farmers to meet the Code with support from Western Dairy and government agencies. Consistency within Local Government with regards to the Code will improve implementation, particularly for new developments.

Timeframe to meet the Code

The expectation of the WA dairy industry and government agencies is that all WA dairy farms can demonstrate how they are working towards, or meeting, the standards within this Code of Practice.

Financial support

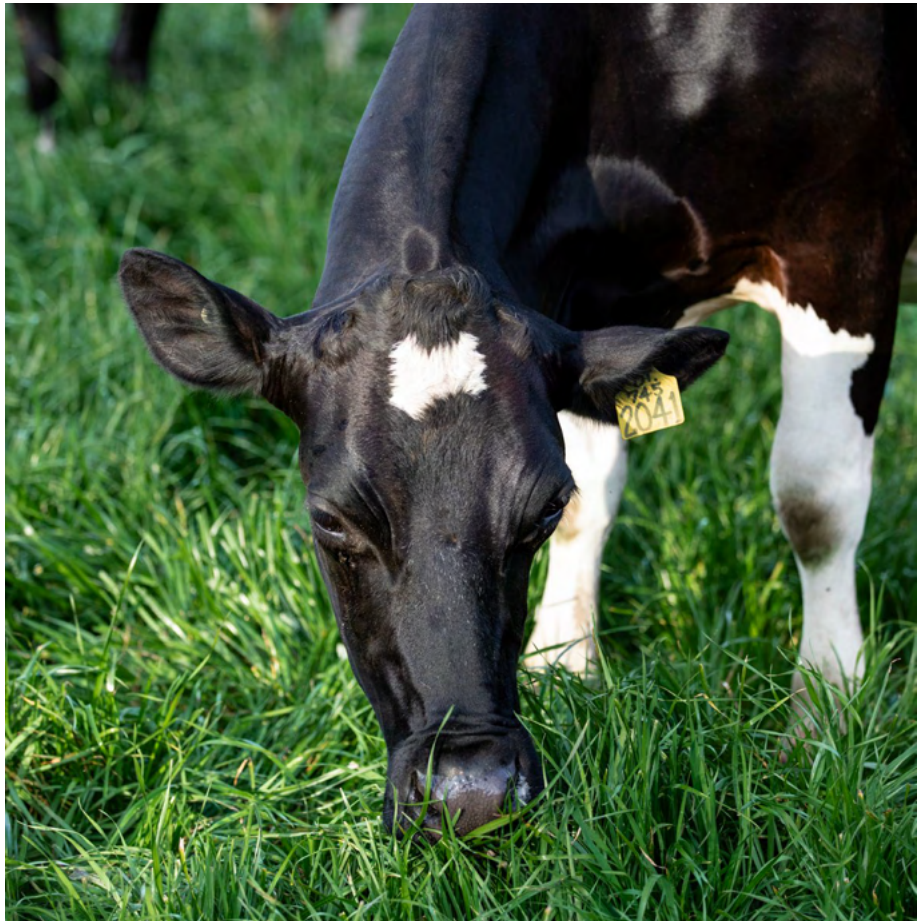
Farmers are encouraged to contact their milk company, local catchment group or Western Dairy to see if any incentives are available to assist with the development of effluent plans or system upgrades. The costs associated with upgrades or effluent systems for new dairy developments should be carefully considered during the planning process.

Technical advice

Contact Western Dairy who can provide technical support and/or a list of accredited system designers and service providers with experience and expertise in effluent management.

FUTURE REVIEW

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.



GLOSSARY

Contained housing	Refers to freestalls, barns and drylot facilities that are designed and capable of housing and containing cattle with limited or no grazing.
Dairy shed	Any structure where the milking of animals is undertaken, including any associated yards or areas in which animals are confined prior to or following milking.
(Dairy) Effluent	Solid and/or liquid matter from faeces and urine, wastewater from milking, cleaning and yard wash-down activities.
Effluent pond	Any dam, pond or lagoon that is constructed from earth that is used for the storage or treatment of dairy effluent.
Effluent Management System	System components and management measures adopted to manage dairy effluent. The most common systems allow effluent to be captured, solids managed, provision of storage during wet periods and application during drier months, to maximise production and minimise environmental risk.
Effluent Management Plan	Details the technical design and management of effluent with a focus on effective use of nutrients.
Environment	Living things, their physical, biological and social surroundings, and the interactions between them.
Groundwater	Water that occupies the pores and crevices of rock or soil beneath the land surface.
Infiltration/Seepage	The downward movement of water or effluent through the ground into groundwater reserves.
Management practice	Management practices use current information, science and technologies to inform effective and practical ways to achieve a desired outcome. Management practices change as new information and research demonstrates improved methods are available.
Objective	A thing aimed at or sought; a goal.
Outcome	The way a thing turns out; a consequence.
Public Drinking Water Source Area (PDWSA)	The area from which water is captured to supply drinking water. It includes all underground water pollution control areas, catchment areas and water reserves constituted under the Metropolitan Water Supply, Sewerage, and Drainage Act 1909 or the Country Areas Water Supply Act 1947.
Priority areas	Different priority areas are assigned within PDWSAs to guide land use planning decisions. Priority 1 (P1), Priority 2 (P2) and Priority 3 (P3) areas are defined in WQPN 25: Land use compatibility tables for public drinking water source areas. Different types of land uses are appropriate in each priority area.
Reuse	The application of manure and liquid effluent on to pasture and crops. The application rate and area is based on a calculated nutrient budget for that specific crop and soil type.

Right to farm	Refers to the right of farmers to carry out lawful agricultural activities without fear of nuisance complaints, harassment or trespass from adjacent property owners or the general public.
Soil conditioner	A soil conditioner is a product which is added to soil to improve the soil's physical qualities, usually its fertility (ability to provide nutrition for plants) and sometimes its mechanics.
Standard	A level of quality or something used as a measure, norm or model.
Setback distance	The distance separating a possible source of pollution from sensitive features intended to minimise the risk of the pollutant impacting on the feature.
Surface water	Water flowing or held in streams, rivers and other wetlands on the surface of the landscape.
Waterways, wetlands and other sensitive water sources	All permanent, intermittent or seasonal waterways (e.g. rivers, creeks, streams, brooks and their estuaries and inlets), dams, drains/artificial channels/canals, and wetlands (e.g. lakes, swamps, marshes, springs, dampland, sumpland, palusplain) inclusive of any existing riparian zone or wetland vegetation, waterway foreshore area and wetland buffers (RIWI Act, 1914). Sensitive water resources in Western Australia include public drinking water source areas, private water supplies, clearing control catchments and high value water dependent ecosystems, including most natural waterways and their estuaries, many wetlands and groundwater ecosystems (WQPN 4). For the purposes of this document, irrigation channels are included as a waterway where the channels are at ground level and can receive surface runoff.
Withholding period	The minimum period of time that will elapse between applying effluent to pastures and stock grazing those pastures.

Traveling irrigators are a cost effective method to reuse effluent
Photo credit: GeoCatch

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- WQPN4 Sensitive Water Resources (2016).
- WQPN 6 Vegetation buffers to sensitive water resources (2006). Note - review proposed 2021.
- WQPN 22 Irrigation with nutrient-rich wastewater (2008). Note - under review.
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