



CODE OF PRACTICE FOR

DAIRYSHED EFFLUENT

WESTERN AUSTRALIA



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BACKGROUND

The Western Australian dairy industry recognises the importance of having an environmentally sustainable industry that is committed to minimising the impact of dairy shed effluent on the environment. This Code aims to respond appropriately to both the environmental and commercial objectives by establishing clear and agreed industry standards for dairy shed effluent management. By meeting the standards of the Code, WA dairy farmers can demonstrate to consumers, community and regulatory agencies that they produce quality dairy products while minimising the potential for adverse environmental impacts.

There are a number of existing publications providing technical details on how to establish a best practice effluent management system. However it was identified that they do not always provide a clear description of the expected minimum industry standards. Setting clear and achievable expectations in a concise document is considered the most effective way to communicate the standards required.

Establishing a Code of Practice for Dairy Shed Effluent Management in Western Australia will give dairy farmers the opportunity to self regulate effluent management on their farms. The Code will enable all farmers the ability to quickly determine whether their effluent system meets industry standards in WA, or if improvements are required.



PURPOSE AND PRINCIPLES

This Code of Practice describes shared industry and agency expectations for dairy shed effluent management in Western Australia. Its development demonstrates the dairy industry is committed to minimising the impact of dairy effluent on the environment.

PRINCIPLES

1. To provide a consistent approach to dairy shed effluent management, whilst retaining the ability to recognise site differences on each farm.
2. The Code is supported by the latest research and technical information on how to establish an effluent management system that meets industry best practise.
- 3 Dairy shed effluent is a resource, not a waste product.
4. Best practice effluent management on all dairy farms is essential for the long term sustainability of the Western Australian dairy industry.



BENEFITS

Meeting the industry standards of the Code with an effective effluent management system that reuses effluent on farm provides multiple benefits for:

THE FARMER

Can expect long term economic benefit from utilising effluent as fertiliser and lessening the need and cost of commercially sourced fertilisers.

THE DAIRY INDUSTRY

Can promote a clean green reputation within the community and with consumers of dairy products by taking a proactive approach to their responsibilities in dairy shed effluent management.

THE ENVIRONMENT

The risk to soil and water resources from nutrient pollution will be minimised. Appropriate reuse of “fit for purpose” wastewater can also reduce the risk of nutrient export to the external environment.



INDUSTRY STANDARDS FOR ALL DAIRY SHEDS

THE FOLLOWING STANDARDS APPLY TO ALL DAIRY FARM OPERATIONS IN WESTERN AUSTRALIA.

1. Effluent from a dairy shed will be prevented from entering surface waters or groundwater.

- Dairy shed effluent will not be discharged into any river, creek, wetland or drain.
- Dairy shed effluent will not be stored or discharged onto land where it is likely to enter any river, creek, wetland, drain, dam or groundwater resource.
- Where there are waterways, wetlands or other sensitive water resources within a dairy shed set back area, riparian vegetative buffers should be maintained and revegetated (where degraded) with native species sourced from local provenance.¹

2. All dairy sheds will have an effective effluent management system.

- Effluent management systems will collect, contain and reuse all effluent generated from dairy shed premises and adjoining stock holding yards.
- Any new effluent management systems or upgrades to existing systems will be designed by a suitably qualified specialist² or practitioner with proven experience and knowledge.
- A system may provide for year-round direct application of effluent or storage/treatment of effluent in suitably lined ponds for application at a suitable time.

- It is recognised that even in well designed systems there is potential for incidents or accidents (including large storm water events) that will lead to inadvertent runoff, spills or splits to liners. Dairy sheds will have contingency procedures in place to respond to any emergencies that might disrupt normal operation of the effluent management system.

3. Effluent management systems will be monitored, maintained and reviewed.

- A maintenance program will be developed and followed to ensure the system operates effectively and efficiently.
- Ongoing monitoring is required for all aspects of the effluent management system including structures, equipment and processes.
- New technology (where appropriate) may be integrated into existing effluent management systems to improve practices.
- In the event of an increase in milking herd numbers or in the amount of organic material collected, a review of the effluent system will occur to ensure the system copes with increased volumes of effluent.

4. All dairies will maximise water use efficiency.

- Dairy sheds will undertake operations to minimise water use and the generation of wastewater.
- Where practical wash down water will be re-used.
- All uncontaminated stormwater collected from the dairy shed roof (and where possible also the areas/yards surrounding the shed) will be diverted away from the effluent system.

5. Dairy shed effluent will be reused on farm.

- Nutrients in dairy shed effluent will be considered as a part of the whole farm fertiliser program and reused on pastures or crops. Paddocks used for effluent reuse should be rotated to avoid a build up of excess nutrients in one area.
- It is recommended that stored effluent be analysed periodically to establish typical nutrient concentration (and variation) and then applied onto land at the appropriate rate that enables the nutrients contained to be utilised for plant growth.
- Effluent reuse should be undertaken at controlled rates to minimise any leaching into groundwater systems.
- Regular soil testing³ will be undertaken at the application sites to monitor soil health and nutrient requirement and to prevent excessive nutrient build up.
- Sensitive areas such as waterways, drainage lines and property boundaries will be avoided when applying effluent. Refer to page 8 for recommended set back distances for reuse sites.
- A minimum of two weeks grazing withholding period is often recommended after effluent has been applied to pastures. The Effluent and Manure Management Database for the Australian Dairy Industry, 2008 (www.dairyingfortomorrow.com) demonstrates under certain circumstances where and why longer withholding periods may be required.

1 Refer to DOW's WQPN 6 – Vegetation buffers to sensitive water resources and contact a Local catchment or Landcare groups for information on vegetative buffers.

2 A person who has completed the nationally recognised unit of training RTE5301A – Design Effluent Systems training or who has equivalent skills, knowledge and experience.

3 DAFWA Farmnote 418 – Soil Testing High Rainfall Pastures



GUIDELINES FOR NEW DAIRY SHEDS

These guidelines assist with the development of new dairy sheds to meet best practice expectations for effluent management in Western Australia. They provide a consistent approach for local government and referral agencies when assessing new dairy shed developments.

ALL NEW DAIRY SHEDS SHOULD COMPLY WITH THE FOLLOWING:

1. Site Selection

Siting of the dairy sheds, effluent system and effluent reuse paddocks will consider waterways, groundwater, soil types, topography and nearby land use.

- New dairy sheds will be located as far away as possible from any sensitive environments including, but not limited to, waterways, wetlands and remnant vegetation.
- The proponent will clearly demonstrate that the system design and placement is suitable for site conditions.
- The recommended setback distances described in this Code will apply unless the proponent can justify why a lesser distance could apply and still ensure the protection of sensitive environments from the dairy shed operation.



2. Dairy shed and system design

- For any new dairy shed development the effluent management system will be developed by a suitably qualified specialist with proven experience and knowledge.⁴ The system will be documented in an effluent management plan.
- Potential future expansion of the dairy herd or likely output of organic material collected should be considered in the design of an effluent management system.
- Dairy sheds will be constructed to minimise the risk of effluent polluting the environment, to ensure all effluent and any associated washdown water is drained and contained as part of the effluent management system.
- Reuse application areas will be suitably located and sized to avoid nutrient build up and minimise runoff.

3. Monitoring Program

An ongoing monitoring program should be established to demonstrate that the new dairy shed, associated effluent system and reuse are not impacting on water quality in any nearby waterways or groundwater.

- It is recommended sampling points be established upstream and downstream in any nearby waterways. Baseline data should be collected prior to establishment of infrastructure and thereafter biannual water sampling undertaken.⁵
- Regular soil testing⁶ of any effluent application areas should be undertaken to monitor nutrient build up.

4 A person who has completed the nationally recognised unit of training RTE5301A – Design Effluent Systems or who has equivalent skills, knowledge and experience.

5 Refer to DOW publication - Field sampling Guidelines: a guideline for field sampling for surface water quality monitoring programmes

6 DAFWA Farmnote 418 – Soil Testing High Rainfall Pastures



RECOMMENDED MINIMUM SETBACK DISTANCES AND REQUIREMENTS

An appropriate Effluent Management System will be identified on a case by case basis as site differences will impact on system suitability. As a guide, the following setback distances and requirements are considered to be an acceptable minimum in Western Australia. The setback distances and requirements will apply unless the proponent can justify why a lesser distance could apply and still ensure the protection of sensitive environments from the dairy operation.

1. Any new dairy shed should be located:

- A minimum of 200 meters from waterways, wetlands and other sensitive water resources.
- A minimum of 200 meters from a neighbouring residence.
- A minimum of 30 meters from a property boundary.
- A minimum 2 metre vertical separation to the maximum winter groundwater level, where possible.⁷

2. Any effluent storage facility (eg pond) should be lined with clay or an artificial liner and located:

- A minimum of 200 meters from waterways, wetlands and other sensitive water resources.
- A minimum of 200 meters from a neighbouring residence.
- A minimum of 30 meters from a property boundary.
- At a distance that does not increase the risk of flies or odour at the dairy shed.

- On land where there is a vertical separation of at least 1 metre⁸ from the bottom of the pond to the maximum winter water table and construction and compaction permeability specifications required for the storage of effluent can be met.

3. Any effluent reuse area should be located:

- A minimum of 100 meters from waterways, wetlands and other sensitive water resources.
- A minimum of 100 meters from a neighbouring residence.
- Where sufficient area of arable soil is available.
- Away from permanently or seasonally flooded/waterlogged land.
- High in the landscape where there is a minimum water table depth of 2 meters⁹ to minimise contamination risks to natural waterways, wetlands and other sensitive water resources.

And consider the following:

- Perennial native vegetation buffers should be retained or re-planted between effluent reuse sites and any sensitive water resources.
- Effluent reuse scheme should be designed to minimise water-logging and leaching of nutrients into surface or ground water.
- Reuse area should be monitored to ensure that nutrient build up does not occur.

⁷ Based on DOW's recommendations in WQPN 80 – Stockyards.

⁸ Based on DOW WQPN 39 – Ponds for stabilising Organic Matter. Note it is acknowledged that a 1 metre vertical separation may not be possible on the coastal plain areas of WA and these areas should be avoided for storage ponds except where permeability is low (Agriculture WA, p.31, 1999).

⁹ Based on DOW's recommendations in WQPN 22 – Irrigation with nutrient-rich wastewater.

GLOSSARY

BEST PRACTICE

Management practices that use the most current and recommended information, science and technologies available. Best practice changes as new information and research demonstrates improved methods.

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, urine, wastewater from milking, cleaning and yard wash-down activities in the dairy shed.

EFFLUENT POND

Any dam, pond or lagoon that is constructed from earth that is used for the storage or treatment of dairy shed effluent.

EFFLUENT MANAGEMENT SYSTEM

Works and management measures adopted to manage dairy shed effluent.

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.

REUSE

The application of manure and recycled effluent on to pasture and crops. The application rate is based on a calculated nutrient budget for that specific crop and soil type.

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 or seasonal rivers, streams, creeks, drains/artificial channels/canals, estuaries, lakes, coastal lagoons, inlets harbours and wetlands inclusive of any existing riparian zone vegetation.

WITHHOLDING PERIOD

The minimum period of time that will elapse between applying effluent to pastures and stock grazing those pastures.

INFILTRATION/SEEPAGE

The downward movement of water or effluent through the ground into groundwater reserves.

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REFERENCES AND FURTHER READING

Effluent and Manure Management Database for the Australian Dairy Industry, 2008. Available online at < www.dairyingfortomorrow.com > *select tools & guidelines > effluent and manure management database.*

DairySAT – Dairy Self Assessment Tool

Available online at < www.dairyingfortomorrow.com.au > *select tools & guidelines > DairySAT*

Department of Water – Water Quality Protection Notes

Available online at < www.water.wa.gov.au > *select publications > find a publication > series browse > water quality protection notes*

- WQPN 6 Vegetation buffers to sensitive water resources (2006)
- WQPN 22 Irrigation with nutrient-rich wastewater (2008)
- WQPN 26 Liners for containing pollutants, using synthetic membranes (2009)
- WQPN 27 Liners for containing pollutants, using engineered soils (2010)
- WQPN 33 Nutrient and irrigation management plans (2010)
- WQPN 39 Ponds for stabilising organic matter (2009)
- WQPN 80 Stockyards (2006)

Department of Water - Field Sampling Guidelines: a guideline for field sampling for surface water quality monitoring programmes, 2009

Available online at < www.water.wa.gov.au > *select publications > find a publication*

Water & Rivers Commission (2001) Position Statement: Wetlands.

DAFWA Farmnote No. 418 – Soil Testing High Rainfall Pastures

Available online at < www.agric.wa.gov.au > *select publications > farmnotes*

DAFWA Bulletin 4689: DairyCatch Environmental Best Practice Guidelines, 2006.

Available online at < www.agric.wa.gov.au > *select publications > bulletins*

George, R.J, Bennett D.L., Bell, J.R.M and Wrigley, R.J, 1999. Observations of Shallow Groundwater Contamination Due to Leakage of Dairy Ponds on the Swan Coastal Plain, WA. Resource Management Technical Report 192, Agriculture WA.

ARMCANZ & ANZECC, 1999. National Water Management Strategy: Effluent management guidelines for dairy sheds in Australia.

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