

Management of Intensive Use Areas

Guideline No 10



Management of dairy effluent is not only an issue at the dairy but also in areas such as laneways, feed sheds or feed pads, night paddocks and roadways where stock are concentrated for any length of time.

It is important to actively manage the effluent from these areas so as to minimise the pollution risk it may have on water supplies and groundwater systems.

This guideline aims to provide some useful suggestions in management of effluent in areas of intensive use.

General principles

Intensive use areas are where stock concentrate for any length of time - laneways, feed sheds, feed paddocks, sacrifice paddocks and night paddocks. On many farms, stock spend more time in these areas and deposit more effluent than they do at the dairy. Without proper management, this effluent can cause just as many problems, as that dropped at the dairy and it can be more difficult to manage.

Aim to manage the cows so that their effluent is naturally distributed over as much of the grazing area as possible. A system of laneways that promotes free cow flow to and from the dairy and a paddock layout that allows, as far as possible, all paddocks to be grazed in rotation will help.

The more effectively effluent is distributed around the farm, the less the risk of groundwater pollution.

Intensive use areas are generally close to the dairy and it is important that effluent from these areas does not find its way into farm water supplies. Nutrient and bacterial contamination of farm and dairy water supplies can lead to health problems for the family and quality problems in milk.

Laneways

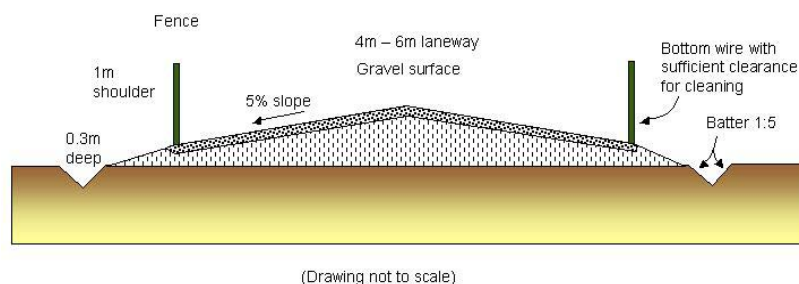
Laneways can generate large quantities of effluent because they are heavily used by stock and they are generally designed to shed water quickly.

Water draining from laneways should be directed onto pasture paddocks at frequent intervals along the laneway to prevent the build-up of large volumes of water at one point and the associated load of sediment and nutrients. Mounds or concrete diversions across the laneway can direct runoff away into the paddocks. Drainage water from laneways should not be directed into watercourses or swamps.

To reduce runoff laneways should be built on the contour where possible, rather than up and down the slope.

Laneways should be cambered and built of compacted material much the same as you would build a road. Avoid dips and flat spots in laneways to prevent pooling of water.

Where laneways cross creeks a properly constructed creek crossing should be built, and runoff from the drains on the laneway should be directed out into the paddock well clear of the creek.



Laneway Construction

Runoff from laneways must not be allowed to enter calf paddocks due to the risk of Johnes Disease

Try to reduce the amount of manure deposited by reducing the time that cows spend in the laneways. Some ways may include:-

- Allowing the cows to move freely at their own pace along laneways. Trying to hurry cows will upset them and cause increased deposition of manure and urine.
- Encouraging the cows to move away from the dairy after milking by providing a fresh good quality pasture or supplementary feed on a feed pad. Cows will move away readily depositing less manure at the dairy and in the laneways.
- If you need to hold cows at the dairy, hold the cows on concrete at the dairy until milking is finished then move them back to the paddock in a group. This concrete area should drain into the dairy shed effluent system.
- Providing water and shade in the paddocks rather than in laneways.
- Avoiding right angle bends in laneways. Cows tend to bunch up at right angle bends, slowing down movement and increasing the amount of effluent dropped. Good cow flow from the paddock, through the dairy and back to the paddock maximises the time cows spend in the paddock and minimises the amount of effluent dropped in laneways.

Runoff from the intensively used laneways around the dairy and associated structures should be directed to the effluent management system.

Consider stabilising or otherwise treating these laneways so that the solids can be scraped off. It may also be possible to design drains in this area so that solids that collect in them can be removed, rather than being flushed away.

Feed Sheds or Feed Pads

Many farms have invested in sheds or feed pads where cows are fed supplementary feed as well as having access to pasture. Stock in these areas are usually standing on concrete or a hard surface so it is relatively easy to collect and handle effluent. If the feeding facilities are close to the dairy the drainage should be directed into the storage ponds, which need to be large enough to hold the effluent produced from all sources – shed, yards, laneways and feeding areas.

Solids can be scraped to a holding area and stockpiled for later spreading on the farm or sale off the farm. Drainage from the manure holding area should be directed to the storage pond.

Intensive feeding areas that are distant from the milking shed effluent system or where the effluent cannot be managed in the milking shed effluent system due to pond size constraints need to have their own effluent collection and management system. Intensive feeding systems have the potential to cause environmental harm and should be planned and constructed to minimise environmental impacts.

Guidelines for planning feed pads and feedlots are outside the scope of these dairy shed effluent guidelines. Contact Rural Solutions SA on 08 8842 6222 or your farm consultant for more information on planning feed pads and feedlots.

Night paddocks

Night paddocks are paddocks close to the dairy that are used to regularly paddock the herd overnight. The continuous grazing which night paddocks receive is not conducive to high pasture production, even though these paddocks are usually the most fertile on the farm. In many cases there is a continual build-up of nutrients in the area, as more nutrients are deposited than are removed.

Soil testing will usually show that these paddocks do not need added fertiliser. The convenience of night paddocks is outweighed by reduced pasture production from continuous grazing and by having too many nutrients concentrated in a small area where they cannot be used effectively.

Night paddocks should be used in rotation or use an alternative area and sow a crop that is capable of using some of the high nutrient levels. Some crops that may be suitable include maize for silage, sorghum or millet.

Try to limit the use of night paddocks by providing good fresh pasture for the milkers.

Silage pits and stacks

Effluent draining from silage stacks smells unpleasant and means the loss of valuable nutrients such as minerals, sugars and nitrogen compounds. It is a very strong pollutant and must never be allowed to enter water resources.

Silage pits should be constructed and located to prevent discharge to waterways and drains. Keep silage pits well away from watercourses, and do not dig silage pits in areas with high water tables. If the silage bunker is constructed with concrete slabs the joints should be sealed with a flexible compound.

The volume of silage effluent can be minimised by wilting the crop before carting it to the storage area. The minimum dry matter should be at least 25% in the material being ensiled.

Effluent draining from silage stacks or bunkers should be either contained within the vicinity of the bunker with earthen bunding, or drained into an effluent treatment system which has been designed to manage and treat organic wastes by anaerobic treatment.

Wrapped or sealed silage bales should be sited away from waterways, bores, springs and drains. When unwrapping and feeding out the bales, do it some distance from waterways.

Road Crossings

As well as being a road safety issue, road crossings contribute to dairy cow wastes leaving the property.

Special consideration should be given to road crossings. The South Australian Dairyfarmers' Association (SADA) and Transport SA are examining the issue of road crossings and should be contacted if road crossings are necessary.

Creek Crossings

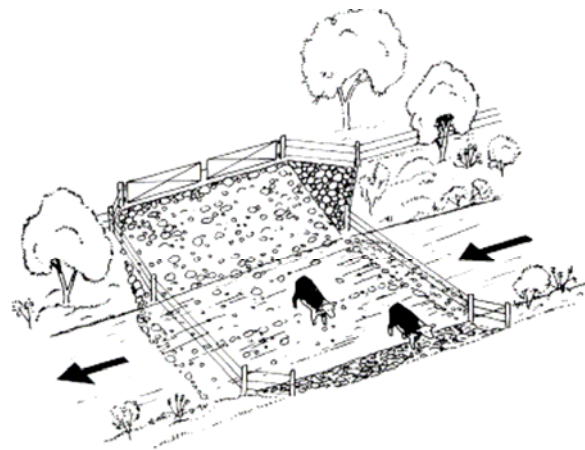
If cows need to cross winter creeks to access grazing or the dairy, properly designed creek crossings should be constructed.

Crossings can be constructed through the creek bed, or over the creek with bridges or culverts.

Creek bed crossings should be constructed by bed hardening and should not significantly change the profile of the channel. On soft bed material, the channel should be dug out and rock laid to below bed level to provide resistance to flow passing beneath the crossing and causing destabilisation.

The rock banks should extend to the full height of the embankment (above high water level) to prevent scouring of the banks and to stabilise the access points to the crossing. The banks of the crossing should also be graded to a maximum 4:1 slope, with the lowest section of the crossing being in the centre of the channel.

Both sides of the crossing should be fenced across the full width of the waterway, connecting to existing fencing so that livestock cannot have access along the channel to the riverbanks.



Bridges or culverts are the best way to get cows across a permanent stream. Nib walls or raised edges on the bridge will prevent manure being washed into the stream. Runoff from the bridge should be directed into permanently grassed areas for settling and filtering.

Calf Rearing Facilities

Calf rearing areas should be located well away from watercourses as calves can often be the source of high concentrations of the human pathogen *cryptosporidium spp.*

Effluent from paddocks or areas to which adult cattle have access should be totally excluded from calf rearing areas.

Calf areas should be well away from cow areas.

In calf rearing sheds and pens where sawdust or similar material is used as bedding, sufficient depth of material should be used to ensure that all effluent is contained within the bedding so that there is no runoff from the calf rearing sheds or pens.

Spent bedding should be stored in areas from which there is no possibility of leachate entering surface water.

The floor of a calf rearing shed should be impermeable. Floors should be constructed of concrete or compacted clay topped with a hard wearing surface such as road rubble. The calf pens should be cleaned out after each batch of calves.

Manure from calves reared on grating or mesh housing systems can be washed or flushed away. The effluent should be drained to the effluent management system.

Calf hutches are designed to be moved regularly. Allow at least six weeks before the hutch is returned to the same position.