



Fact Sheet 7:

Planning a New Pond

Key messages

Planning a new pond:

- Get expert help in the planning stage.
- Allow for future expansion.
- Assess the potential pond site suitability for
 - Use gravity conveyance,
 - Consider access to power,
 - Beware of existing utilities,
 - Consider pond access for maintenance,
 - Avoid areas that are inundated during flood or build embankments to provide flood protection.
- Avoid being too close to waterways.
- Get a geotechnical assessment of soil type to ensure it can meet permeability requirements.
- Check dairy company and food safety requirements.

There are a lot of factors to consider when planning a new effluent pond, and selecting a site.

It's important to obtain good advice from an experienced consultant who is then able to size the pond to suit the number of cows that you are milking, the amount of water that is being used, and to allow for expansion for more cows, or the addition of a feedpad in future.

Once you have decided on the type and size of the pond required, it's time to look at pond site selection.

- It is preferable to convey effluent to the pond by **gravity**, as it's cheaper and more reliable than pumps. Remember that you want to be able to pick up discharges from all collection points around the dairy.



- Consider how you will **power** any pump needed in reusing effluent from the pond or recycling for flood-wash. If you intend to use an electric pump, proximity to power, preferably three-phase, is an important consideration. But never site a pond under an overhead power line. Apart from during construction, machinery will need on-going access to de-sludge the pond.
- Look out for **buried cables or pipe work** and other farm infrastructure and utilities which may be impacted. Check service plans and use 'Dial before you dig'.

- Allow plenty of room for **access** to the pond for maintenance activities by providing wide embankments, access ramps to raised embankments, and space to manoeuvre machinery inside pond fences. Talk to any contractors you might use about their requirements for safe and efficient access.
- **Topography** is crucial. Ponds should be sited on flat to gently sloping areas, but in some regions these can be hard to find and you may have to use a moderately sloping site. If so, rigorous construction practices and contingency plans must be in place to prevent breaches and pond overflows.
- **Avoid siting ponds on flood plains and low-lying areas** unless you have no other option. You will need to seek advice from your Catchment Management Authority if you are located on a floodplain but it is likely that the embankment will need to be high enough to protect the pond from inundation during a significant flood event. The groundwater table needs to be at least a meter below the bottom of any pond.
- Keep well **clear of any existing surface water** bodies. Not only will this reduce the risk of contaminating clean water, it will also reduce restrictions on you during construction and maintenance activities.

Once you've selected a site, you will need to do a site investigation with a geotechnical engineer. This is to determine if a pond can be built that will remain structurally sound and be able to meet minimum permeability requirements.

The usual requirement is that you demonstrate the soil forming **the first 300 to 600 mm** of contact with the effluent, is able to achieve a permeability of **less than 1×10^{-9} m/s**.

Check dairy company regulations too, as they can govern how close a pond can be built to the dairy. In general, you should try to avoid any pond or manure storage being located within 50m of the vat room.

It's a good idea to seek engineering advice when you start planning the project. This may seem expensive, but it should avoid costly problems arising as the project takes shape.

Reference:

Effluent and Manure Management Database for the Australian Dairy Industry, 2008. Section 2.5 Pond design and Construction. Dairy Australia.
www.dairyingfortomorrow.com.au/index.php?id=48

[View Planning a new effluent pond on a dairy farm video](#)

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