

Property planning: Using off-stream watering points



The importance of well spaced watering points

Water is the most powerful attractant to cattle on grazing properties. Placement of watering points can determine the grazing patterns and pressure across a paddock.

Access to clean, unpolluted water is important in optimising animal health, growth rates and productivity. Waterholes often become polluted during the dry season from cattle disturbing the edges and the input of nutrients from cattle faeces and urine. Improved water quality from reticulated water systems, coupled with evening out grazing pressure across the paddock can improve production as well as environmental outcomes.

Watering systems are expensive and therefore need careful consideration. Designing watering systems should be considered part of whole farm planning. Satellite imagery is an effective tool to aid in property planning as it allows natural features as well as existing and proposed infrastructure to be mapped for planning purposes. **It is cheaper to plan on paper than on the ground.**



Managing grazing pressure

The natural consequence of a watering point is the excessive grazing of the immediate vicinity and soil disturbance caused by cattle trailing in and out for water, or cattle camping in the area. This high grazing pressure and disturbance is accentuated by drought and has resulted in many (most) areas surrounding permanent watering points to be degraded and considered as *sacrifice areas*.

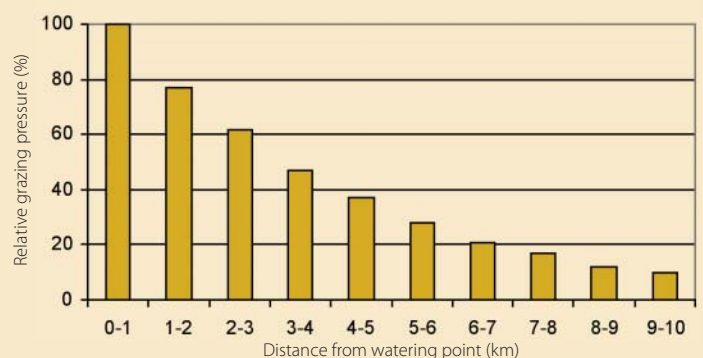
Grazing pressure decreases with increasing distance away from watering points (Figure 1). Topography also affects grazing patterns but is more difficult to account for. A sufficient number of watering points should be located across a paddock to allow stock to graze all areas without having to walk long distances.

- Well-spaced watering points reduce stock concentrating around one watering point; thereby reducing overgrazing and soil erosion around each watering point (reduces the size of the "sacrifice area"). This spreads grazing pressure and can reduce uneven grazing patterns within a paddock.

Considerations for spacing of watering points

The spacing of watering points depends on the level of development of the property and topography. Highly developed properties may opt to maximise production by keeping walking distances from water below 1km, while less developed properties may aim for walking distances of 2–3km (which may be reduced in the future as the property is developed).

Figure 1: Relative grazing pressures for distance away from watering points.



Source: Biograz (2000) Biograz: Waterpoints and wildlife. CSIRO.

Considerations for location of watering points

To avoid excessive erosion and the development of large sacrifice areas, careful consideration should be given to the placement of watering points.

Things to consider when planning to install watering points include:

1. **spacing:** for most CQ properties, watering points 3–4km apart result in fairly uniform grazing pressure. Highly developed properties (e.g. cell grazing) or properties in steep country may choose to keep walking distances below 1km (watering points 2km apart).
2. **slope:** watering points should be located on reasonably level sites with good drainage that are not subject to large flows of run-on water. If possible, watering points should be located so as not to encourage cattle to walk directly up and down slopes.
3. **soils:** erodible soils should be avoided. If possible watering points should be located 1–2 km away from highly erodible soils, e.g. shallow sodic duplex soils.
4. **drainage lines** (gullies, creeks and depressions): watering points should be located away from these areas
5. **central location**, so cattle can approach from several directions, reducing the severity of cattle pads
6. **having more than one watering point** in a paddock to reduce the pressure around each watering point
7. **shade clumps:** troughs should be placed away from shade clumps, to prevent cattle camping in the area and destroying the shade clump. Shade clumps in any paddock should be large enough to cope with the number of cattle in the paddock.
8. **biodiversity values:** while many native plants and animals are not adversely affected by grazing, some species decline when their habitats are grazed. Thus, maintaining some areas or paddocks of the property away from watering points can preserve biodiversity values on the property, preventing some plant and animal species disappearing from the landscape. (For more information, see *Biograzed: Waterpoints and wildlife*, CSIRO, 2000.)



Placing troughs on fencelines results in cattle tracks developing along the fence. During heavy rain cattle tracks can concentrate water, causing gullies to form.

Photo by Gavin Peck, FBA



Photo by Gavin Peck, FBA

- ◆ Shade clumps, water and feed supplements are strong cattle attractants – avoid placing them together in a paddock. In the photo above, the dung and urine will flow directly into the dam, increasing the risk of algal blooms (and related stock deaths)



Photo by Chantelle James, FRCC

Things to consider when planning your water system include:

- 1. water supply:** both quantity and quality of available water. Bores and dams should be tested for their yields and quality of water (more information is supplied on NRM&W water fact sheets). Where dam water is pumped to troughs, stock should be excluded from the dam, as manure and urine can induce algal bloom, while disease-causing bacteria, viruses and parasites can reduce cattle health and production. ▼



Photo © FBA

- 2. ability to gravity feed** water from a centrally located turkeys nest or tank
- 3. mob sizes:** average daily consumption is used for determining long term storage needs, while peak daily consumption (consumption during hot weather) is used for determining pumping capacity and short term storage needs.

	Average daily consumption (litres/head/day)	Peak daily consumption (litres/head/day)
Lactating cows	70	100
Dry stock (400kg)	45	80
Young stock	25	50

Sources: *Water requirements for sheep and cattle*, NSW Department of Primary Industries, and *Water Facts: Water requirements — stock and domestic purposes*, QLD Department of Natural Resources, Mines and Water.

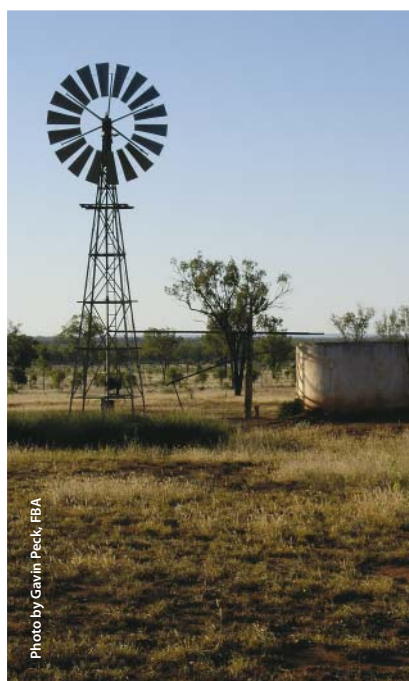


Photo by Gavin Peck, FBA

- 4. reliability of pumping system:** Storages are required to reduce the pumping hours per day as well as to ensure water supplies when repairs or maintenance is required; or in the case of windmills, to account for little or no wind. Storages should have the capacity to supply water for a **minimum of:**

- 5 days for windmill driven water systems ←
- 2 days for other pumping systems →

- 5. allowing enough capacity in the system for future property developments,** for example:

- increasing the number of troughs from a single pump, in order to decrease the distance between watering points or to pump water to additional areas
- moving to a rotational grazing system, where a larger number of animals occupy individual paddocks for a short period of time (while other paddocks are rested), increasing the required daily amount of water for paddocks.

- 6. water medication:** supplements can be supplied through watering systems.
- 7. pipelines:** prior planning of pipeline placement can minimise pipeline lengths, avoid difficult areas (e.g. stony and steep areas) and determine where air valves need to be located. Storage tank and pipeline placements need to be surveyed to ensure gravity systems work effectively, information and advice is available from pumping suppliers.

Clean water benefits cattle too

Researchers in Canada studying the effect of water quality on cattle found that animals supplied with clean water gained more weight than those drinking poor quality water directly from dams.

The study, repeated over six years, examined weight gain by yearling cattle and cows with calves. Differences in weight gain varied from year to year; however, over a 2-month period, yearlings gained 23% more weight drinking clean water compared to dam water, while calves gained 10% more weight. Those drinking dam water pumped to a trough had intermediate weight gains. There were no significant differences in the prevalence of faecal pathogens among the different groups of animals, so this was probably not a factor in weight differences. Cattle with higher quality water spent more time grazing and less time resting than cattle drinking dam water.

The study suggests that excluding cattle from direct access to water sources can provide production benefits as well as improving water quality by reducing faecal contamination and damage to the riparian zone.

Willms, W.D., et al. (2002) Effects of water quality on cattle performance. Journal of Range Management 55(5):452-460.



Photo by Gavin Peck, FBA



Unfenced section of the Dawson River, managed by off-stream watering points

Considerations for off-stream watering points without fencing

Off-stream watering points can be used as an alternative to fencing in many situations as it reduces the amount of time cattle spend in streams and water holes. In many situations landholders have demonstrated that cattle prefer drinking from well placed troughs than from waterholes.

Watering points without riparian fencing should be designed to reduce cattle pressure on waterholes and associated frontage country as well as not causing erosion at the new watering point. Location of off-stream watering points in riparian paddocks should be placed to take in all the considerations listed above as well the following:

- Troughs should be placed greater than 200m away from waterholes to reduce the opportunity of cattle to use the waterhole area as a camp.
- Troughs should be placed less than 1km from waterholes so that cattle use the trough as a preferred place to drink as opposed to a second watering point in the paddock.

References and resources

Visit the FBA web site (www.fba.org.au) for the following resources:

- Case Study: *On the ground: Protecting riparian areas in the Dawson* (publication number FBA-05-020)
- Case Study: *On the ground: Fencing wetlands near Taroom* (publication number FBA-05-019)
- Fact Sheet: *Fitzroy Basin Association's Satellite Imagery Project: Mapping for the CQ Community* (publication number FBA-05-023) (or contact our GIS team on (07) 4999 2800)
- Fact Sheet: *Neighbourhood Catchments* (publication number FBA-05-002)

Questions? Contact the Regional Coordinator for the Sustainable Landscapes program on (07) 4999 2800.

References:

Biograze: *Waterpoints and wildlife*. 2000. CSIRO.
www.savanna.ntu.edu.au/downloads/biograze.pdf

Department of Natural Resources, Mines and Water (NRM&W): Water Facts.
www.dnr.qld.gov.au, including: *Water Facts: Stock water reticulation and Water Facts: Water requirements — stock and domestic purposes*.

Price, P. and Lovett, S. 2002. *Managing Stock*, Fact Sheet 6, Land and Water Australia, Canberra. www.rivers.gov.au.

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Willms, W.D., et al. 2002. *Effects of water quality on cattle performance*. Journal of Range Management 55(5):452-460.

NSW Department of Primary Industries, *Water requirements for sheep and cattle*, www.agric.nsw.gov.au/reader/water-livestock/a054.htm

Author of this fact sheet: Gavin Peck

Further information

Fitzroy Basin Association
Level 4, 34 East Street
PO Box 139
Rockhampton QLD 4700
Phone (07) 4999 2800
Fax (07) 4921 2860

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