



Burnett Mary REGIONAL GROUP

Practical Solutions for Natural Resource Management

Property watering facilities

Planning, location and construction

The importance of watering points

Water is the most important item on a property. Where water is scarce or watering points badly distributed, pasture utilisation is poor.

Fencing and water point locations are inextricably linked. Most fencing layouts in the past have been governed by access to water rather than the principles put forward in the fencing paper. The availability of polypipe, concrete tanks and troughs plus cost effective pumping equipment means that water reticulation can now be sensibly planned to suite the fencing layout and not vice versa. It is not cheap to reticulate water. However, the upfront costs of water reticulation have to be balanced by the long term benefits of better pasture utilisation, less erosion associated with poor siting of fences and waters and sustained productivity.

The natural consequences of water points

The natural consequences of watering points are the excessive grazing of the vegetation in the immediate vicinity, and the excessive disturbance of the soil caused by cattle

trailing in and out for water or camping nearby.

The disturbance is accentuated by drought conditions. The country surrounding permanent watering points such as bores and dams is more exposed to serious damage than that around seasonal stream water supplies. Consequently it is expected that permanent watering points will be surrounded by a sacrifice area.

Whether a watering point will develop a sacrifice area will depend on the susceptibility of the soil to wind or water erosion, and the degree of protection which may be afforded by the terrain and vegetation cover. For this reason it is desirable to locate watering points in stable situations.

Location of watering points

A sufficient number of watering points should be available to allow stock to graze all pasture areas without walking long distances. This helps to reduce concentrations of stock around each watering point and thus, reduce overgrazing and soil erosion.

To avoid excessive erosion and the formation of a sacrifice area, watering points should be located;

- On reasonably level sites not subject to large flows of run-on water
- At least 1 to 2 km from areas of highly erodible soils (avoid shallow texture



contrast soils – a coarse sandy surface soil is ideal)

- 1 to 2 km apart in steep country
- 3 to 4 km apart in lower sloping country
- More than one watering facility to a paddock
- In or amongst belts of trees or scrub (excluding drainage areas)
- In clearings in well timbered flats in undulating country
- So that stock can approach from several different directions

Because of their high susceptibility to erosion, extensive areas of texture-contrast soils should be watered by seasonal surface waters. This forces such areas to be rested during prolonged droughts, but makes water available so that cattle may utilise forage after rains.

Texture contrast soils are suitable for surface watering of stock with dams due to the water holding properties of the subsoil. Extreme care must be taken during construction with some subsoils as they are very dispersive and tunnelling may cause dam wall failure.

Areas of shallow, rocky or hard soils form good water catchments for dams, as runoff occurs after light falls of rain. Small dams sited below these areas will therefore fill frequently and provide reliable stock water. As grass responds to light falls of rain in these areas, good feed is often available earlier than in areas of heavier, more fertile soils. This feed can only be utilised if stock water is available.

In low gradient, well grassed areas with deep soils, surface runoff will only occur after heavy rain or prolonged periods of lighter rain. Dams situated in and below these areas need to be much larger to be reliable throughout the year. On these poor catchments, the collection of runoff will be greatly improved if catch banks or diversion drains are used to bring water from other catchments.

Ancillaries associated with watering points

Generally dams should be fenced and water pumped to a turkey nest or tank from which it can reticulate by gravity to troughs. Therefore it makes sense that the turkey nest or tank is located as high as possible in the paddock. The troughs can be placed at suitable locations and still filled by gravity.

Fencing stock out of dams avoids bogging and loss of capacity by trampling and siltation. It is safer for weak stock and extends the life of the dam. The fenced out area should include the bywash and bywash return slopes to maintain grass cover on these areas.

Shade clumps should be set aside close to water, but downstream of the bank to prevent large amounts of dung from camps getting washed into the water and causing pollution.

No trees and shrubs should be allowed to grow on the dam wall, bywash and bywash return slope. This is to maintain grass cover and prevent turbulence leading to erosion. Shrubs and trees on the bywash could trap debris and restrict flood flows, on the wall, they could lead to piping, cracking etc.

If a windmill is used to lift water from the dam to a turkey nest or tank it needs an open area as free as possible from obstruction such as large trees. Trees should be cleared for approximately 400m around the windmill.

Dam construction and maintenance

This section only discusses bywashes, topsoiling and general construction information. Experts on dam construction should be engaged when planning a new dam.

In initial site clearing it is very important that the bywash return slope is not cleared or touched in any way with mechanical equipment. If the slope is treed it can be cleared chemically or by a chainsaw cutting close to the ground.

Topsoil is removed from the areas under the embankment, bywash areas and excavation areas and stockpiled for later use.

Bywash width and flow capacity should be designed according to the size of the water catchment contributing to a dam. A rough rule of thumb for calculating bywash width on small dams is:

Width (metres) = 2 x area of catchment in hectares

Soil condition during construction is an important consideration, especially if building dams on unstable soils (e.g. dispersible clay subsoils). Soils should be at the correct moisture content. Dry soil is difficult to compact properly, and too much moisture will make soil difficult to work.

Embankments should be well compacted throughout construction. A scraper will compact soil much better than a dozer. The use of a sheepsfoot roller is essential for proper compaction, particularly in conjunction with a dozer.

Dam embankments should have at least one metre of freeboard above the bywash. The bywashes must be excavated level to ensure uniform flow which is discharged down the return slope back into the gully.

Trickle flows wreck bywashes. Where these are a problem, use a drop inlet and an outlet pipe with the top of the drop inlet approximately 100mm lower than bywash level. Where possible, silt traps should be built to prevent premature siltation. Topsoil is generally replaced to 100 to 150mm depth over embankments and bywash. As soon as possible the embankment should be planted with a spreading type of grass e.g. African Star, couch etc. rather than a tufted grass e.g. Buffel. Regular slashing of grass in the bywash and return slope areas will promote a dense ground cover.

Licensing

Refer to current DNRM legislation, regulation and guidelines.

Compiled by, John Day 2014 from DNRM historic soil conservation data.



