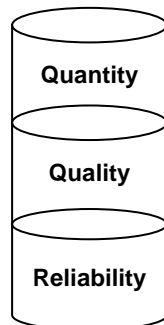


Stock water – a limited resource

The best way to manage and maintain stock water is to have reliable information about your property's water supplies. This means knowing where the water is, how much is available and whether it is 'fit for purpose'. A water stocktake will provide this vital information.

Farm water comes from a number of different sources. These may be natural sources such as rivers and channels, or they may be constructed in the form of dams, ground tanks, wells or bores. Whatever the sources, the suitability of water you have now and the water you need for the future depend on its **quantity, quality and reliability**.

Water on your property is an asset to be managed and maintained



Water Stocktake: Quantity

Knowing **where** water is on your property and **how much** you have available is vital in times of drought. Assessing your water resources involves:

- personal knowledge of your property
- continuous observation
- knowing the quantity of each water storage
- knowing the safe pumping rate from bores or wells
- being aware of any conditions (like cease-to-pump rules) in any water sharing plans for your area

- monitoring evaporation rates
- drawing on past experiences of water use during drought and long dry spells, eg which water storages are spring fed and which have had extremely poor quality water in the last 10-15 per cent.

“Your major water storages are critical in times of drought. You can always pipe water”

What size are your existing dams?

- Step 1** - List in Table 1 all the water storages on your property that can be used for stock watering purposes.
- Step 2** - Determine the width, length and depth of each water storage and fill in the calculation table accordingly.
- Step 3** - Using the formula relevant to the water storage shape, calculate the surface area in square metres of each water storage and enter in the table.
- Step 4** - Using the following formula, calculate the volume in cubic metres (m³) and enter the results in the table.
Volume (m³) = 0.4 x Surface Area x Depth
0.4 is a conversion factor that takes into account the slope of the sides of water storages.
- Step 5** - Calculate the capacity of each water storage in megalitres (ML) by dividing the volume in cubic metres (m³) by 1000 and enter in the table.
- Step 6** - Add up the storage capacity of all your water storages in the table to give your Total Existing Water Storage Capacity.

(Extract from NSW Department of Natural Resources Updated March 2006 DIPNR 04_029)

Table 1: Calculation table

Water storage name or Number	Width (m)	Length (m)	Depth (m)	Surface area (m ²)	Approx volume in m ³	Water Storage capacity in ML
eg Ground tank.1	30	30	4	900	0.4 x 900 x 4	1.44
eg Ram paddock	100	150	4	15000	0.4 x 15000 x 4	2.40

Water Stocktake: Quality

Good quality water is vital for your stock, household and business. It is, therefore, important to identify and correct any water quality problems. Knowing your water quality allows you to plan for water treatments to avoid problems such as poor plant growth, blocked irrigation or stock watering pipes, staining and other undesirable effects.

“Poor water quality can even render water unusable”

Problems with water quality may have a **chemical** basis (eg pH or concentrations of certain elements) or they may be due to **physical** causes (eg turbidity when the water is cloudy with suspended solids). Some problems may be more obvious, while other problems may require more extensive analysis and treatment. Some of the common problems that affect water quality are hardness, algae and salinity.

After testing, water quality problems can be identified and corrected.

Common problems affecting water quality

- pH (best between 6.5-8.5)
- iron
- hardness
- corrosion
- salinity
- sodicity
- other elements
- turbidity/cloudiness
- algae
- colour, taste and odour
- bacterial growth

Water quality testing

If you have any doubt about the quality of water that you use for irrigation, stock or domestic purposes you should get it tested by an accredited laboratory. It is a good idea to have your water tested before, and sometimes during use.

“If stock show any reluctance to drink, provide an alternative supply if possible, and consider getting your water tested”

Water Stocktake: Reliability - meeting the water demand

As part of assessing your property’s water sources you will need to consider the **average versus peak** demand and how well-equipped you are to meet an unexpected interruption to normal water supplies.

“A reliable water supply is a precious resource”

Thinking about your property’s water supplies as ‘managing your water budget’ is a good way to begin looking for efficiencies in water use across all your operations. A water budget plan may limit the situation of a forced destock due to insufficient water supplies.

“Water requirements and maximum advisable levels of salinity and conductivity vary widely according to the type of stock and the type of grazing”

Stock type	Consumption per head per day (L)
Weaners, average all feeds	2–4
Adult dry sheep – grassland	2–6
Adult dry sheep – saltbush	4–12
Ewes with lambs, dry feed	4–10

Notes:

- Water consumption by sheep can increase by 80% in extreme, hot conditions.
- Sheep can drink 40% more in summer than winter, and 50-80% more if their water contains more than 2,000ppm total dissolved salts (TDS).
- Water at 4,000-10,000 ppm TDS may cause problems initially until animals adjust.
- Include native animals in your calculations, although sheep drink around 6.5 times more water each day than kangaroos.
- When planning water supply requirements, allow for evaporation losses eg, the NSW Southern Tablelands average 25% loss of dam water over the late spring, summer, autumn period.

“Remember: your water budget is just as critical as your feed budget”

Example

A water storage on your property has the following dimensions of 1.44MI. At assessment, the water storage is at 60% capacity. How many stock could this water storage potentially service over the summer, spring and autumn period without rainfall top up?

Total water capacity	= 1,440,000 L
60% capacity	= 864,000 L
less 15% residual	= 216,000 L
<i>(15% of 100% capacity for fouling, bogging)</i>	
less 25% evaporation	= 216,000 L
<i>(25% of 60% capacity)</i>	
available stockwater	= 432,000 L

1000 Dry sheep at 4L/hd/day = 108 days

For further information about managing your resources during drought visit:

www.wool.com.au/drought

This document was prepared with the assistance of Greg Meaker, NSW Department of Primary Industries Livestock Officer Goulburn, and StockPlan®.