

A reliable source of water is a precious resource. The quality of water from bores, tanks, wells, creeks, rivers and farm dams can vary widely with common problems including hardness, iron and salinity. Water quality can impact on plant growth and animal production and can affect machinery and irrigation equipment.

## Don't gamble on the quality of your farm water

Department of Primary Industries Environmental Laboratory offers world-standard water testing services for farmers, graziers and property owners. This service can determine the suitability of water for stock drinking, agricultural, general domestic purposes and human consumption. To assess the suitability of water for human consumption you will also require our microbiology test sample kit.

Our standard water test package provides information on

- pH
- chloride
- turbidity
- alkalinity
- electrical conductivity & total dissolved salts (salinity indicators)
- hardness
- saturation index
- sodium absorption ratio

Additional test packages are also offered to add to the Standard suite of tests depending on the use/application of the water

Laboratory testing is performed using the industry approved APHA test methods. APHA advises that for best results pH should be determined at the time of sample collection. As this is not always practical, we recommend that clients chill samples immediately on collection and forward to the laboratory as soon as possible.

Follow the simple instructions on the sampling kit, refer to the guide overleaf for test selection, fill in the sample submission form and send your sample in the post. **Do not send payment** with samples. Invoices will be issued after results are reported.

## Sample Name/Identification

All sample containers need to have a unique identification, which should identify the owner or property and the specific location where multiple water sources exist e.g. Surname – site/dam. If multiple containers are used for water from one source, this should be appended with "A", "B", etc

## Results

An interpretive sheet for water kit test results will accompany each report. However for specific plant needs, please discuss your results with an agronomist or horticulturist.

Local Land Services (LLS) at **1300 795 299** may have a local representative who can assist.

Alternatively, email or call our Customer Service office at [wollongbar.csu@dpi.nsw.gov.au](mailto:wollongbar.csu@dpi.nsw.gov.au) or call 02 6626 1103 for assistance.

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Testing performed by  
this laboratory is  
accredited by the  
National Association  
of Testing Authorities  
(NATA)



## Guide to test selection

Understanding which water test best suits your needs can be difficult. All farm water supplies should be tested using the Standard Kit. The table below is given as a guide to testing, however if you are unsure of your needs or have special requirements please consult an agronomist or horticulturist or give us a call.

Purpose	Package
Stock Water/ Domestic use/Irrigation	Standard
Stock /Domestic use/Irrigation/ Element Suite	Standard + Element Suite (dissolved)
New Bore Characterisation	Standard + Element Suite (total)
Fertigation/Hydroponics/Nursery	Standard + Element Suite (dissolved) + Total N & P
Effluent use or contamination	Standard + Element Suite (total) + Nutrients
Drinking Water (Routine Chemistry)	Standard + Low Level ICP MS
Drinking Water* (Chemistry & E Coli)	Standard + Low Level ICP MS + Micro
Stock/Domestic/Irrigation/New Bore/Drinking*	Standard + Element Suite (total) + Nutrients + Low Level ICP MS + Micro
Your specific Needs	Personalised (Please Call)

TEST	INFORMATION
pH	It is good to know pH to minimise corrosion and encrustation in pipes and fittings. Water for stock & domestic should be in the range 6.5-8.5. Irrigation 5.5-8.5
electrical conductivity (EC)	The electrical conductivity of water measures the concentration of ions (positively charged cations and negatively charged anions) that make up salts and is an assessment of salinity. Reported in uS/cm
total dissolved solids (TDS)	An estimate of salinity derived by calculation from EC. Reported in mg/L
chloride	High chloride (Cl <sup>-</sup> ) levels in water can burn the leaves, cause poor plant growth and even plant death. It is a greater problem with overhead irrigation than with drip or surface irrigation. The taste threshold for Chloride is in the range 200-300 mg/L
turbidity	As a guide, water with a turbidity of 5 Nephelometric Turbidity Units (NTU) appears slightly muddy or milky in a glass, while at >60 NTU, it is not possible to see through the water. "Crystal-clear" water usually has a turbidity of less than 1 NTU. Turbidity needs to be considered in relation to filtration, disinfection and aesthetics.
alkalinity	Alkalinity is a chemical measurement of the water's ability to neutralise acids. Alkalinity is also a measure of the buffering capacity of the water and its ability to resist changes in pH. It is mainly caused by the presence of bicarbonates (HCO <sub>3</sub> <sup>-</sup> ) and carbonates (CO <sub>3</sub> <sup>2-</sup> ) in water. Alkalinity should not be confused with the measurement of pH described above.
hardness	Hardness means the concentration of all the metallic cations in water. In practice, it is a measure of the dissolved calcium and magnesium salts, and is also expressed as mg/L CaCO <sub>3</sub> equivalent. Hard water affects the behavior of domestic water, as it precipitates fatty acids, causing formations of scums, yellowing of clothes and making it difficult to lather soap. It also causes encrustations that can block hot water systems, metal pipes and irrigation fittings, and can reduce soil structure.
saturation index	The saturation index (SI) of water is a relationship between pH, salinity, alkalinity and hardness. It assesses the potential of the water to cause scaling and precipitation (positive number) or corrosion (negative number).
sodium adsorption ratio (SAR)	SAR is the sodium adsorption ratio, which indicates a possible sodium hazard. It relates the amount of sodium relative to calcium and magnesium in water. When the SAR is >3, the water is sodic, and can increase the exchangeable sodium percentage (ESP) of soil.
Element Suite ICP OES	Used to determine cations and metals and includes the following elements: aluminum, arsenic, boron, calcium, cadmium, cobalt, chromium, copper, iron, potassium, magnesium, manganese, molybdenum, sodium, nickel, phosphorus, lead, selenium, sulfur, zinc. <b>Dissolved elements</b> are determined following filtration of the water to remove all particulate matter and results exclude any suspended solids or sedimentary material. <b>Total elements</b> are determined by acid digestion of the total water sample as received and results will represent analysis of water and all sediment or particulate matter present
Low level element suite ICP MS	Aluminum, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Zinc. The Australian drinking water guidelines sets the acceptable levels for these metals
Total Nitrogen & Total Phosphorus	A measure of all Nitrogen & Phosphorus containing compounds (organic & inorganic forms). This information is important when considering applications of fertiliser via irrigation water. It also helps maintain the right balance for hydroponic applications
ammonia, nitrate, nitrite, phosphate & sulfate (Nutrients)	These can reach unacceptable levels in effluent used for irrigation, or if effluent has leaked into a dam. Nutrients can enter waterways via runoff from Agricultural fertilisers and other chemicals. High nutrient levels can be responsible for overgrowth of aquatic weeds or algae. High levels of nitrate & nitrite can be hazardous to animals
Total coliforms and Escherichia coli (E. coli)	Tests for E. Coli are applicable to the analysis of drinking water, surface water, groundwater and wastewater and are regarded as the most specific indicator of recent faecal contamination. Total coliforms include many species occurring naturally in the environment. Samples for these tests must be collected using our Water Microbiology sampling kit