



COMMUNITY INFORMATION SHEET

Cooling systems

How data centres stay cool — and the trade-off between water and energy

Why cooling matters

Computers produce heat, and that heat must be removed continuously or the equipment fails. Cooling is the largest non-computing user of resources in a data centre, and the cooling choice drives both how much water and how much extra energy a facility uses.

The main approaches

Approach	Water use	Notes
Air-cooled / free cooling	Very low	Uses cool outside air; suits Tasmania's climate; a little more energy
Liquid / immersion	Low (sealed loop)	Increasingly used for dense AI; very efficient
Hybrid / adiabatic	Moderate	A balance of water and energy
Evaporative (water-cooled)	Highest	Uses the most water; produces a concentrated waste stream

Two simple measures

PUE (energy efficiency — lower is better) and **WUE** (water efficiency — litres per unit of computing energy, lower is better) describe how well a facility manages this trade-off. Tasmania's cool climate makes efficient, low-water cooling readily achievable.

What good practice looks like

- A low-water cooling design suited to the cool local climate (a low WUE).
- Non-potable, recycled or rainwater used where water is needed — not drinking water.
- A defined, controlled route for any cooling waste water, with quality limits.
- High energy efficiency (a low PUE) and, where possible, waste-heat reuse.

Want to know more? Your local council, the EPA Tasmania and ARPANSA publish further information. This sheet is general information, not medical, legal or planning advice; figures are indicative and a specific proposal is confirmed by qualified assessment.