Why sustainability matters in a lab
Lab work has a significant impact on the environment, ranging from energy and resource consumption to chemical and equipment use and disposal.
This guide gives an overview to reducing energy usage, conserving water and minimising waste in labs. It provides easy steps to a safer, more sustainable lab.

Green Guide for Griffith Laboratories
Griffith laboratories—aiming for best sustainable practice

Tips to minimise waste

Items purchased for use in labs can have significant impact on water and energy use and waste generation. Consider:
- Is it essential?
- Is it right for the job?
- Is there an alternative—compare and choose the options with the lowest resource use and waste generation.
- Consider the energy and water efficiency rating.

Chemicals
- Order only what you need.
- Before purchasing a new chemical, consider bartering for a small amount from others.
- Share—if you have unused chemicals that are no longer required.
- Check Safety Data Sheets on Chemwatch for safe storage and disposal.
- Be informed on Griffith chemical waste disposal processes.

Clinical and Related Waste and Recycling
When preparing a new experiment:
- Evaluate the types and quantities of waste products that will be generated.
- Consider possible methods to reduce or eliminate waste.

Where possible, remove packaging before entering labs:
- Reduce recyclable waste being placed in Clinical and Related waste bins. This improves our recycling rates and reduces Clinical and Related waste disposal costs.
- Place paper in paper recycling bins.
- Place cardboard in cardboard recycling bins.
Labs are energy intensive—on average laboratories use 1.5 times more energy than office space.

**Fume cupboards**
Operating fume cupboards as efficiently as possible can significantly reduce a lab's energy requirements.
- Open and close the sash slowly.
- Items should not block the sash from closing.
- Use the sash height sticker. Closing the sash reduces the fan speed, thereby saving energy.
- Keep the sash closed when possible.
- Do not use fume cupboards for storage.
- Switch off the unit when not required for use.

**Autoclaves**
- Load to capacity without compromising performance.
- Ensure that the size of the autoclave meets your needs.
- Switch off when not being used.

**Equipment and devices**
- Switch off non-essential electrical equipment and devices when not being used.
- Assess and adjust optimal temperature levels for your heating and cooling apparatus.

**Lights**
- Switch off lights when not needed.
- Consider using task lighting.

**Fridges and Freezers (particularly -80°C)**
- Share space with neighbouring labs.
- Check door seals.
- Implement a cleaning and defrost roster.

**Tips to conserve water**
- When washing labware, fill the sink rather than using running water, or minimise flow.
- Make sure your dishwasher is full before running a cycle and reduce the number of rinse cycles whenever possible.
- Cycle off autoclaves, ice machines, stills and other equipment during nights and weekends when possible.
- Fix leaky taps—submit a facilities maintenance request.

**Reverse Osmosis Water**
- Only use Reverse Osmosis (RO) water when necessary.

**Tips to reduce energy usage**
Labs are energy intensive—on average laboratories use 1.5 times more energy than office space.

- A unit that runs 24 hours, 365 days a year consumes 3.5-times more energy than an average house.
- A fully opened fume cupboard costs Griffith University $5,100 a year in energy. The University has 335 fume cupboards.

**Shut the sash**

A unit costs $3000/year in heating/cooling energy costs. Closing the sash can cut the air volume and costs by two thirds. An open sash wastes energy and increases the risk to lab users from fumes.

**Fume cupboard energy statistics**

A unit that runs 24 hours, 365 days a year consumes 3.5-times more energy than an average house.

**Reverse Osmosis (RO) Water**

RO Water production is a water, energy and maintenance intensive process:
- RO produces significant volumes of contaminated wastewater; for every 1 litre of RO water used 1 litre of contaminated waste water is produced.
- RO water membrane cartridges are single use and go to landfill.

* When producing 0.2 megaOhm water from potable water supply.
  There are additional wastewater losses when producing ultrapure (18 megaOhm) water.

**Fridges and Freezers**

Freezers are one of the biggest power users in the lab

It is important that space is well used and they are running efficiently.