GO WITH THE FLOW
Designing Bathrooms for Water Efficiency and Comfort
INTRODUCTION

Australia’s unforgiving climate makes saving water a key requirement for property owners and urban designers. Extended droughts, low rainfall and rapid population growth means public water supplies are constantly under strain. Some cities face chronic water shortages, while others face a looming risk of running out of water altogether.1

Showering is one of the main drivers of water consumption in the average Australian home. In a 2016-17 period, households spent approximately $10.6 billion on water and related services.2 The shower alone makes up 34% of indoor water use (with the toilet coming in a distant second at 26%).3 Effective strategies at reducing water consumption therefore must include specifying water-efficient bathroom fixtures and fittings.

Water-efficient bathrooms are critical to saving Australians money and keeping public water reserves at sustainable levels. According to the Australian government, using more water-efficient products could save Australians $2 billion by 2030 – 65% from reduced electricity, 35% from reduced water bills.4

However, specifying bathroom products based solely on the amount of water they consume is not enough. The challenge is balancing water efficiency with user comfort and satisfaction. If water-efficient showerheads deliver a below-par user experience, any water savings may be circumvented by negative user behaviours such as taking longer showers or reverting to inefficient showerheads.5

In this whitepaper, we take a close look at the various design factors that go into selecting showerheads for sustainable and water-efficient bathrooms.
WATER REGULATIONS AND LABELLING SCHEMES

Water efficiency requirements for new buildings were implemented across Australia in the mid-2000s. In 2011, the National Construction Code (NCC) incorporated the Plumbing Code of Australia (PCA). The PCA includes performance requirements and technical specifications for water services, sanitary plumbing and drainage systems, and stormwater drainage systems. It is an important component towards implementing the minimum necessary regulations for water efficiency for Australian housing. Multi-residential buildings must comply with the energy efficiency requirements provided therein that aim to reduce energy consumption and water usage.

There are other water efficiency schemes and frameworks relevant to design professionals. State-based and local government schemes include the Building Sustainability Index (BASIX), which helps reduce water and energy use in homes across New South Wales, and Victoria’s 6-star building standard and local council best practice standards.

Sustainability certification schemes have also gained prominence, providing guidance and standards for energy-efficient and environmentally-friendly building design and product selection. This includes GreenStar and the National Australian Built Environment Rating System (NABERS), both of which award credits for use of water-efficient products.

The Water Efficiency Labelling and Standards (WELS) provides critical guidance when designing and specifying for water-efficient bathrooms. Established in 2005, WELS is a mandatory labelling scheme that requires regulated products to be tested by an accredited laboratory for water consumption and rated out of six stars. The scheme enables consumers to compare the water efficiency of a range of appliances and fixtures. WELS-regulated products include showers, taps, flow controllers, toilets and washing machines.

Plumbing and drainage products must also demonstrate fitness for purpose by having WaterMark certification. WaterMark is a separate scheme that governs the authorisation of plumbing materials and products for use in plumbing and drainage installations.

WELS RATINGS FOR SHOWERHEADS

The WELS star rating for showerheads considers the overall performance of the shower in addition to its water consumption. Testing under the WELS scheme covers the following performance areas:

- spray angle;
- temperature drop between 150 mm and 750 mm below the showerhead;
- endurance of the flow controller;
- watertightness;
- water consumption; and
- spray force and coverage (4-star showers only).

When selecting a showerhead, check for the water flow rate on the label. Flow rates for showers are on the water rating label and expressed as litres per minute (L/min).

According to SmartMark, every 1L/min difference will save a family of four approximately 12 kilolitres (kL) of water annually. This amounts to a $35 saving each year on their water bill (based on an 8-minute shower per person per day with water at $2.99 per kL).

Based on these estimates, replacing a shower that flows at 15L/min with a 3-star shower that flows at 9L/min will save 70kL/$210 each year.

Water-efficient showerheads also contribute to energy savings due to less water being heated for showers. Depending on energy costs, this may result in an equivalent amount saved each year on energy bills.

“If water-efficient showerheads deliver a below-par user experience, any water savings may be circumvented by negative user behaviours…”
There is a direct correlation between a user’s experience with high efficiency products and achieved water savings. Studies indicate that, despite the prevalence of water-efficient showerheads on the market, user behaviours may negate water savings if the shower experience is not satisfactory. If low-flow devices do not deliver equivalent service, user dissatisfaction may lead to longer showers, which in turn has a direct impact on the amount of water used.

In one study, 22 of 37 participants who were not satisfied with flow rate and pressure during WELS-rated showerhead trials preferred their original showerheads.

Given these findings, user comfort and satisfaction are key considerations when selecting water-efficient showerheads. The key factors contributing to a satisfactory shower experience include:

- spray intensity (or “pressure”)
- water distribution; and
- temperature loss.

In years past, low flow showers were often associated with poor shower pressure. With recent advances in showerhead design and spray technology aimed at maintaining satisfactory water pressure, this association is no longer accurate.
CHOOSING SHOWERHEADS: KEY CONSIDERATIONS

WELS Star Rating

When choosing a showerhead, ensure that the showerhead is properly rated and labelled according to its water efficiency. Models with a three-star rating range from 6L to 9L of water per minute, providing significant water savings as compared to less efficient showerheads.

Builders, developers, plumbers and anyone else involved in the supply, sale and/or installation of products that are regulated under the WELS scheme must comply with the requirements of the scheme. This includes ensuring the product is registered with the WELS scheme and is labelled correctly with water efficiency information. WELS products must also be installed so that they function as registered, and match the water efficiency performance detailed on the label.

Intended Use

There are two main types of showerheads – fixed and hand-held. Within these categories, there is a range of models including massage showers, rain shower heads, waterfall showers, multi-head showers and so on.

Users may have special needs that call for specific types of showerheads. For example, for children or in aged-care situations, hand-held showerheads may be preferred. In a family home, you may need to accommodate multiple users so the shower should be height adjustable and capable of withstanding regular movement on bolts and joints. Adjustable spray settings may be preferred by some users.

Shape of Showerhead

Wider shower heads, such as rain shower heads, offer increased coverage and may be more comfortable depending on user preferences. However, larger showerheads mean water spread is wider, so it feels lighter on the user’s body. For shower and bath combinations, a longer showerhead may be needed to reach over the lip of a bath. 17

Shape can affect spray and coverage. Round showerheads offer more even distribution and balanced spray coverage. Rectangular showerheads focus spray across the back and shoulders due to a wider spray pattern.

Spray Pressure

Showerhead technology has evolved to make better use of water without compromising on spray pressure. Aerated showerheads create a feeling of stronger water pressure by adding air into the stream. A downside is that the added air can reduce water temperature, encouraging the user to use more hot water.

Some showerheads increase output pressure by manipulating the shape and pattern of the flow. Advanced flow paths have been designed to cause the water to accelerate towards the nozzle. This high speed flow and unique flow pattern is combined with special nozzles that allow water to break water into droplets faster resulting in more even water distribution and larger spray coverage. Some new models reduce the number of nozzles to minimise water flow restriction.

When choosing a showerhead, compare the performance of new showerhead technology against showers offering comparable L/min performance. Leading manufacturers offer 8L/min showerheads that feel like a 22 L/min shower.

“Showerhead technology has evolved to make better use of water without compromising on spray pressure.”
Inspired by innovation and passionate about design since 1989, Phoenix Tapware are market leading pioneers in Australia’s and New Zealand’s bathroom and kitchen industry. With a range of internationally award-winning tapware, accessories and shower products, Phoenix Tapware proudly celebrates a ground-breaking reputation for design, quality and customer service.

Today, those principles continue to inform their vision for a better future.

**Phoenix HydroSense® Showers**

Phoenix’s international award-winning showers featuring HydroSense® Technology deliver unique and exceptional coverage, while remaining water efficient. Developed by Phoenix’s inhouse design and engineering team, HydroSense® features ground-breaking spray technology that creates a fully immersive showering experience.

Phoenix HydroSense® Showers have a simplified internal structure and fewer nozzles than that of a standard shower. As there are fewer nozzles, occurrences of water flow restriction will be minimal. As a result, water pressure remains strong and flow acceleration is uninterrupted before reaching the nozzles.

Once the water hits the curve of the diamond shaped nozzles, the combination of high-speed flow and the unique flow pattern allows the water to break into droplets faster. As a result, water is distributed more evenly, ensuring a larger spray coverage.

An 8 L/min shower with HydroSense® Technology feels like a 22 L/min shower.

**Benefits:**

- WELS 3-Star rated
- 10x water flow speed
- Improves low pressure output
- More even coverage
- Reduced debris collection

The NX shower collection features HydroSense® Technology and has been recognised internationally by the Good Design Awards, iF Design Awards and Red Dot Design Awards. All NX Showers are backed by a lifetime warranty.
REFERENCES


8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.

12. Above n 5.

13. Ibid.

14. Ibid.

15. Ibid.

16. Ibid.


All information provided correct as of November 2020.