Government of South Australia
Department for Energy and Mining

The Department for Energy and Mining's technical regulation section is undertaking industry consultation for the removal of a South Australia Variation to the National Construction Code (NCC) Volume 3 (The Plumbing Code of Australia).

Issue 1: Heated water temperature control.

The Office of Technical Regulator (OTR) currently has a plumbing variation that removes the requirement for heated water temperature control at sanitary fixtures on properties that were built prior to the 19th of October 1995.

Heated water temperature requirements for sanitary fixtures were first introduced in the Australian Standards *AS/NZS 3500.4:1994*. This standard was ratified by SA WATER on the 19th of October 1995 who at the time oversaw plumbing regulation in South Australia. As the standards at the time only called for "new" heated water installations to require temperature control, properties built prior to the ratification of the standards were exempt, this included replacement heated water services. This was further clarified with the introduction of a South Australian plumbing variation (Figure 4) in the first Plumbing Code of Australia.

The heated water requirements were moved from AS/NZS3500.4 to the NCC vol 3 in 2019 where it was reworded (Figure 2) to ensure that new and replacement heated water services were being captured. The SA variation was amended in the NCC Vol 3 2016 to specifically mention the 19th of October 1995 cut-off date which is what we have today. (Figure 3)

National Plumbing Legislation:

1.10 WATER TEMPERATURE

1.10.1 Storage temperature The minimum storage temperature for hot water shall be 60°C.

1.10.2 Sanitary fixtures delivery temperature (see Figure 1.1) All new hot water installations shall deliver hot water, not exceeding—

(a) 43.5°C for early childhood centres, primary and secondary schools and nursing homes or similar facilities for aged, sick or disabled persons; and

(b) 50°C in residential buildings at the outlet of all sanitary fixtures used primarily for personal hygiene purposes (i.e. in bathrooms and ensuites).

Figure 1 AS/NZS 3500.4:1994

Business unit/Division

11 Waymouth Street, Adelaide 5000 | GPO Box XXXX Adelaide SA 5001
Tel (+61) 08 8XXX XXXX | Fax (+61) 08 8XXXX XXXX | www.energymining.sa.gov.au | ABN 83 XXX XXX XXX

SOUTH AUSTRALIA

B2D5 Maximum delivery temperature

[2019: B2.5]

The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

(a) not more than 45 °C in any—

(i) residential part of an *aged care building*; or

(ii) *patient care area* in a *health-care building*; or

(iii) part of an *early childhood centre*, or primary or secondary *school*, that is used by children; or

(iv) designated *accessible* facility in a common area of a Class 2 building, or in any part of a Class 3, Class 5, Class 6, Class 7, Class 8, Class 9a, Class 9b, Class 9c or Class 10 building; or

(b) not more than 50 °C in all other cases.

Figure 2 NCC VOL 3 2019

South Australian Plumbing Variation

SA B2D5 Maximum delivery temperature

[New for 2022]

(1) The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

(a) not more than 45 °C in any—

(i) residential part of an *aged care building*; or

(ii) *patient care area* in a *health-care building*; or

(iii) part of an *early childhood centre*, or primary or secondary *school*, that is used by children; or

(iv) designated *accessible* facility in a common area of a Class 2 building, or in any part of a Class 3, Class 5, Class 6, Class 7, Class 8, Class 9a, 9b, 9c or Class 10 building; or

(b) not more than 50 °C in all other cases.

NCC 2022 Volume Three - Plumbing Code of Australia (1 May 2023) Page 249

SA B2D5

South Australia

(2) *Heated water* services in buildings constructed after 19 October 1995 shall have temperature control in accordance with 1(a) and (b).

(3) All new solar water installations (including solar water heater replacements) shall be in accordance with 1(a) and (b).

(4) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed, the delivery temperature at the fixture shall be in accordance with 1(a) and (b).

(5) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater. The device must meet the requirements of 1 (a) and (b).

Figure 3 NCC Vol 3 2022 South Australian variation.

(d) Where a water heater is replaced, it is not mandatory to install a temperature limitation device to control the temperature of water delivered to sanitary fixtures used primarily for personal hygiene purposes, unless

(i) the replacement water heater is of a solar type; or

(ii) the heating source is uncontrolled; or

(iii) such a device was in place prior to the installation of the replaced water heater.

Figure 4 NCC VOL 3 South Australia Variation 2011

Consolidation of, Variations and Additions to the NCC

The Australian Building Codes Board Intergovernmental Agreement 12 Feb 2020 included an objective for State and Territory Administrations to take reasonable steps to consolidate all their mandatory provisions affecting the design, construction and performance of Building and Construction into the NCC.

The proposal to remove the South Australian variation *SA B2D5 Maximum Delivery Temperature item (2)* supports the Intergovernmental Agreement.

Recommendation

It is recommended that industry supports the removal of the South Australian variation to the NCC Volume 3- *SA B2D5 Maximum Delivery Temperature item (2)*. Removal of this variation will reduce the likelihood of vulnerable people, being the elderly and young children, sustaining serious burns whilst using a sanitary fixture. Young children have no concept of the danger.

Child advocacy group Kidsafe SA and local leading burns physicians also support this proposal as data suggests this would significantly reduce serious burns to young children in residential homes. (Figure 5)

Children have increased susceptibility to scalds in the home due to factors such as thinner skin and poor reaction time. Low socio-economic status often coincides with unregulated hot water systems and less parental supervision further worsening the risk of a scald occurring.

Water temperatures and scalding

The maximum delivery temperature for heated water connected to plumbing fixtures used primarily for personal hygiene purposes must not exceed the requirements as set out under the **Plumbing Code of Australia (PCA).**

Heated water fixture outlets used for personal hygiene purposes must deliver water at a temperature which is unlikely to scald. Fixtures that are used primarily for personal hygiene purposes include showers, baths, handbasins and bidets.

Heated water can cause serious burns, particularly to children, the elderly and vulnerable people. Children and the elderly are more likely to suffer injury than other age groups as their skin tends to be softer, and they are less likely to be able to protect themselves.

For water temperatures less than 50°C, there is a substantial safe contact time before third degree burns occur.

Reducing risks of accidental alteration of water temperature whilst bathing

A recent study examining people who sustained residential tap water scalds between 2010 and 2018 and were admitted to Australian and New Zealand burn centres, identified that **92% of injuries occurred in the bathroom and 84% of people were bathing at the time of the injury.**

More than half of all injuries were caused from accidental alteration of heated water temperature at the faucet.

This included older people or people with medical conditions who lost balance and used the tap(s) to try to break the fall, as well as infants and young children who accidentally altered water temperature when they, or their siblings, were left momentarily unsupervised.

Liquid type	Temperature	Time
Hot water from a tap	**60°C**	**5 seconds for an adult** **1 second for a child**
Hot water from a tap with a temperature control device	50°C	5 minutes for an adult or child

Table 1 - Contact time with hot water to cause third degree burns

Figure 5 Extract from the OTR's plumbing advisory note.

Financial Impact

On new installations of storage type hot water units' suitable temperature control will need to be installed which will come at a cost. This would be a gradual change and would only need to be upgraded with adequate temperature control during the replacement of an existing heated water service.

Data collected from Certificate of Compliances lodged by plumbers and gasfitters show that Gas and electric storage heated water services make up approximately 43% of all heated water services in South Australia. Census data from 2021 reported that there are 808,366 dwellings in South Australia this equates to roughly 347,597 homes with storage water heaters. Since Oct 1995 there have been over 225 413 (Australia Bureau of Statistics) new dwelling built in South Australia that would have had to comply with heated water requirements.

It is estimated approximately 7% of these properties would have had temperature control installed regardless of the requirements leaving about 113,632 dwelling in South Australia affected. Estimated cost of labour and materials to install a temperature control device to these affect properties is around $230 including GST.

The Consultation period for this proposal is from 24 July 2024 to COB 24 August 2024. Please provide any comments or feedback on this proposal to.

Joshua Knight Plumbing Standards and education officer email: Joshua.knight@sa.gov.au