

# Temperature limited water heaters

Proposed modification to the referencing  
of AS 3498 in Acceptable Solution G12/AS1

August 2024





**MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT**  
HĪKINA WHAKATUTUKI

## **Ministry of Business, Innovation and Employment (MBIE) Hīkina Whakatutuki – Lifting to make successful**

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## Preface

The Building Code forms a key part of our building regulatory system in New Zealand. It sets the minimum performance for building work and new buildings. The Ministry of Business, Innovation and Employment (MBIE) is responsible for updating the Building Code and its documents so we can keep pace with innovation, current construction methods and the needs of contemporary New Zealand.

A high-performing system is critical to ensure people are safe and healthy, and living in durable homes and buildings. At MBIE, we aim for a balance between setting minimum performance requirements where necessary and encouraging higher standards of performance where this will impact positively on outcomes for the country.

This consultation document seeks your feedback on a proposal to modify the Acceptable Solution G12/AS1 Table 8B reference to AS 3498 to exclude sub-clause 7.3.2.1(a) of this standard.

Please take the time to let us know your thoughts. MBIE will carefully consider and weigh all submissions before making any decisions. You can provide feedback by following the instructions on [MBIE's Have Your Say webpage](#).

Final decisions on the changes will be made and communicated later this year.

## How to provide feedback

We invite you to submit feedback on this proposed update to the Building Code transition period **by 5pm on Monday, 2 September 2024**.

- You can provide your feedback by downloading a submission form at [MBIE's Have Your Say webpage](#) and send it to us by email or post.

Email to: [buildingfeedback@mbie.govt.nz](mailto:buildingfeedback@mbie.govt.nz), with subject line '**Building Code consultation - Temperature limited water heaters**'

– Post to:

**Building Code consultation - Temperature limited water heaters**

Building System Performance

Ministry of Business, Innovation and Employment

PO Box 1473

Wellington 6140

Your feedback will contribute to further development of the Building Code.

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If your submission contains any information that is confidential or you otherwise wish us not to publish it, please:

- indicate this at the start of your submission, with any confidential information clearly marked within the text
- provide a separate version excluding the relevant information for publication on our website.

Submissions will also become official information, which means it may be requested under the [Official Information Act 1982](#) (OIA). The OIA specifies that information is to be made available upon request unless there are sufficient grounds for withholding it. If we receive a request, we cannot guarantee that feedback you

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# 1. Temperature limited water heaters

In May and June of 2022, MBIE consulted on proposed changes to improve the safety and reliability of new plumbing systems. The consultation submissions we received informed the decision to proceed with the proposed changes to reduce the risk of scalding injuries from hot water.

On 2 November 2023, MBIE reduced the maximum hot water temperature allowed by Acceptable Solution G12/AS1 for sanitary fixtures used for personal hygiene in most buildings from 55°C to 50°C at the outlet. This change is intended to reduce the risk of scalding injuries from hot water. There is a 12-month transition period for this change, ending on 2 November 2024.

As part of this change, additional acceptable hot water delivery temperature control devices and product standards were introduced into G12/AS1 in Tables 8A and 8B.

In G12/AS1 Table 8B, instantaneous (continuous flow) temperature limited water heaters that meet AS 3498:2020 *Safety and public health requirements for plumbing products - Water heaters and hot-water storage tanks* are listed as an acceptable temperature control device for limiting the water delivery temperature to a maximum of 50°C.

A temperature limited water heater (TLWH) is a water heater that limits the delivered hot water temperature at the outlet of any sanitary fixture used for personal hygiene supplied by the water heater, without the need for an additional temperature control device.

MBIE has heard from some manufacturers and suppliers that a sub-clause within AS 3498 limits flexibility for how certain ranges of instantaneous (continuous flow) water heaters available on the New Zealand market can be used. This issue has been compounded by some suppliers holding high stock levels of these products.

MBIE are now proposing to modify the G12/AS1 Table 8B reference to AS 3498 to exclude sub-clause 7.3.2.1(a) of this standard. This sub-clause limits the maximum temperature adjustment for a TLWH.

This change would mean that a temperature limited water heater set to deliver water that does not exceed 50°C could be subsequently adjusted by an authorised installer to deliver water above 50°C, if required.

In these situations, the authorised installer (e.g., licenced plumber) would be responsible for providing additional temperature control device(s) as needed to ensure the maximum temperature of hot water delivered at the outlets of sanitary fixtures used for personal hygiene does not exceed 50°C.

It is proposed that this change would come into effect on 2 November 2024, with no transition period.

## 1.1. Reasons for the change

### **Background**

In May and June of 2022, MBIE consulted on proposed changes to improve the safety and reliability of new plumbing systems.<sup>1</sup> The consultation submissions we received informed the decision to proceed with the proposed changes to reduce the risk of scalding injuries from hot water.

On 2 November 2023, MBIE reduced the maximum hot water temperature allowed by Acceptable Solution G12/AS1 for sanitary fixtures used for personal hygiene in most buildings from 55°C to 50°C at the outlet. This change is intended to reduce the risk of scalding injuries from hot water. There was/is a 12-month transition period for this change, ending on 2 November 2024.

As part of these changes, additional acceptable hot water delivery temperature control devices and product standards were introduced into G12/AS1, in Tables 8A and 8B.

The acceptable hot water delivery temperature control devices introduced into G12/AS1 reflect the solutions for the control of delivery temperatures in previous versions of AS/NZS 3400.4 *Plumbing and Drainage - Heated water services*. These solutions have been acceptable means of controlling hot water delivery temperature in New Zealand since 2007 because AS/NZS 3500.4 at the time was referenced by G12/VM1.

### **Temperature limited water heaters**

A temperature limited water heater (TLWH) is a water heater that limits the delivered hot water temperature at the outlet of any sanitary fixture used for personal hygiene supplied by the water heater, without the need for an additional temperature control device.

Under these solutions in G12/AS1, in Table 8B, instantaneous (continuous flow) TLWHs that meet AS 3498:2020 *Safety and public health requirements for plumbing products - Water heaters and hot-water storage tanks*<sup>2</sup> are listed as an acceptable temperature control device for limiting the water delivery temperature to a maximum of 50°C.

MBIE has heard from some manufacturers and suppliers that a sub-clause within AS 3498 limits flexibility for how certain ranges of instantaneous (continuous flow) water heaters available on the New Zealand market can be used. This issue has been compounded by high stock levels of these products.

## 1.2. Proposed change

We propose to modify the G12/AS1 Table 8B reference to AS 3498 to exclude sub-clause 7.3.2.1(a) of this standard. This sub-clause currently requires a TLWH not be adjustable to produce water at a temperature that could exceed 55°C. The reference to 55°C in sub-clause 7.3.2.1(a) is an allowance within this standard for commissioning adjustment to accommodate heat losses between the water heater and the fixture(s) it serves.

This change would mean that a TLWH set to deliver water that does not exceed 50°C could be subsequently adjusted by an authorised installer to produce water above 55°C, if some other means of limiting the water temperature at sanitary fixtures used for personal hygiene is provided. This situation may arise where some outlets served by the water heater are not used for personal hygiene, or where heat losses between the water heater and the fixture(s) it serves will be greater than 5°C.

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<sup>1</sup> <https://www.mbie.govt.nz/dmsdocument/20115-consultation-document-building-code-update-2022-plumbing-and-drainage>

<sup>2</sup> [AS 3498:2020 Safety and public health requirements for plumbing products - Water heaters and hot-water storage tanks](#)

In these situations, the authorised installer (e.g., licenced plumber) would be responsible for providing additional temperature control device(s) as needed to ensure the maximum temperature of hot water delivered at the outlets of sanitary fixtures used for personal hygiene does not exceed 50°C.

[Please refer to Appendix A for the proposed wording in Acceptable Solution G12/AS1.](#)

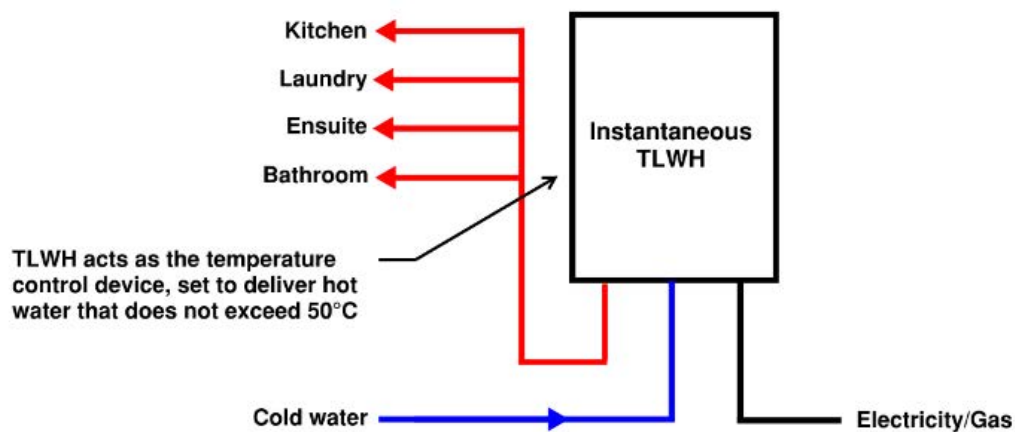


Figure 1 - Instantaneous temperature limited water heater

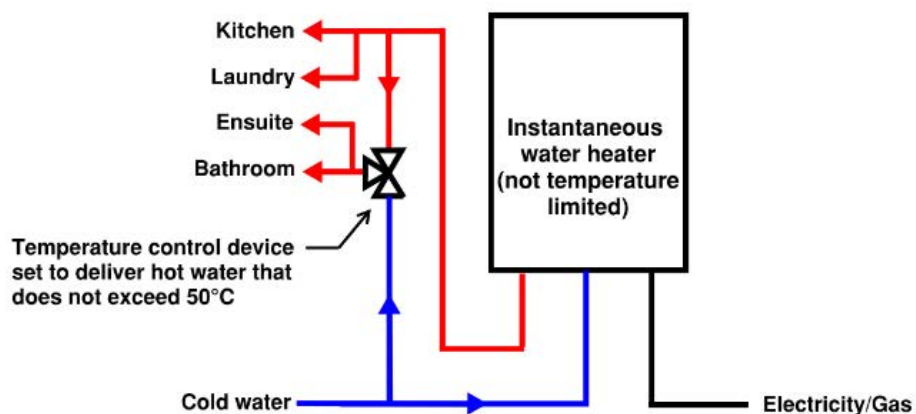


Figure 2 - Instantaneous water heater (not temperature limited)

### 1.3. Options considered

For this proposal, MBIE has considered the following three options:

**Option 1.** Retain the current TLWH hot water delivery temperature control option (status quo).

This option considered retaining the current provisions for instantaneous (continuous flow) TLWHs in G12/AS1 Table 8B. This would maintain the citation of AS 3498 in full, as an acceptable option for instantaneous temperature limited water heater delivery temperature control in New Zealand. This has been the status quo since 2007 (via citation of AS 3498 in previous versions of AS/NZS 3500.4 and G12/VM1) and there are numerous TLWHs available on the NZ market that currently comply with the relevant provisions of AS 3498.

**Option 2.** Modify the current TLWH hot water delivery temperature control option (proposed).

This option considered modifying the provisions for instantaneous (continuous flow) TLWHs in G12/AS1 Table 8B. This option would modify the citation of AS 3498 to exclude sub-clause 7.3.2.1(a) of this standard.

**Option 3.** Develop a new TLWH hot water delivery temperature control option (not progressed).

This option considered the creation of a new deemed to comply pathway for instantaneous (continuous flow) temperature limited water heater delivery temperature control. This option was not progressed due to the limited benefits of developing a bespoke TLWH hot water delivery temperature control solution for a subset of this product range, noting that there are numerous instantaneous (continuous flow) water heaters available on the NZ market that currently comply with the relevant provisions of AS 3498.

## **1.4. Analysis of the proposed changes**

### **1.4.1. Objectives of the proposal**

The objective of this proposal is to support the successful implementation of changes to reduce the potential for scalding from hot water and provide a range of acceptable hot water delivery temperature control device options.

### **1.4.2. Impacts of the proposed changes**

The costs and benefits of the proposed change were assessed qualitatively. This assessment concluded that the overarching objective to ensure the supply of heated water at a temperature that avoids the likelihood of scalding could be achieved without a TLWH meeting AS 3498:2020 sub-clause 7.3.2.1(a).

This is because:

- There are legitimate uses in building work for a water heater that produces water above 55°C. They may be suitable where some outlets served by the water heater are not used for personal hygiene, or where heat losses between the water heater and the fixtures it serves will be greater than 5°C, and
- Where a TLWH is adjusted by an authorised installer to produce water above 55°C, the authorised installer (e.g., licenced plumber) would be responsible for providing additional temperature control device(s) as needed to ensure the maximum temperature of hot water at the outlets of sanitary fixtures used for personal hygiene does not exceed 50°C.

To be considered a TLWH, instantaneous (continuous flow) water heaters would still need to meet the other safety provisions of AS 3498:2020, including:

- Supplied factory adjusted to not produce water above 50°C.
- Not end user adjustable to produce water above 50°C.
- Provide a steady state delivery temperature not exceeding 50°C at the outlets of sanitary fixtures used for personal hygiene once installed and commissioned.
- Meet delivery temperature stability performance tests, including during hot water flow variation conditions.
- Operate safely, or fail safe, and continue to demonstrate this through endurance tests.
- Include clear and detailed instructions on how to install and commission the appliance.

Other types of instantaneous (continuous flow) water heaters would be unaffected by the proposal and would remain able to be used in compliance with G12/AS1 when a temperature control device is installed on the hot water supply to the outlets of sanitary fixtures used for personal hygiene.

The proposed timing of this amendment is expected to improve the ability of product suppliers to provide compliant products from the date that the new hot water delivery temperature requirements come fully into



force. It ensures a compliance pathway remains available after this date for TLWHs that do not meet the requirements of AS 3498:2020 sub-clause 7.3.2.1(a) without precluding the supply or use of those which do.

## **1.5. Transitions**

It is proposed that this amendment to G12/AS1 Table 8B will come into effect from 2 November 2024, with no transition period. This amendment will not apply to building consent applications submitted on or before 1 November 2024.

Until amended, the current Acceptable Solution G12/AS1, Third Edition, Amendment 13 can still be used to show compliance with the Building Code. The previous version of G12/AS1, Third Edition, Amendment 12 can also still be used to show compliance with the Building Code and can be used for building consent applications submitted before 2 November 2024.

### **Questions for the consultation**

1. Do you support amending Acceptable Solution G12/AS1 Table 8B to modify the hot water delivery temperature control device provision for instantaneous (continuous flow) temperature limited water heaters to exclude sub-clause 7.3.2.1(a) from the citation of AS 3498?

This would mean that a TLWH set to deliver water that does not exceed 50°C could be subsequently adjusted by an authorised installer to deliver water above 50°C, if required.

2. What impacts would you expect for you or your business from the proposed change?

These impacts may be economic/financial, environmental, health and wellbeing, or other areas.

3. Do you agree with this change taking effect on 2 November 2024, with no transition period?

# Appendix A. Proposed changes to the Acceptable Solution G12/AS1

We are proposing changes to the Acceptable Solution G12/AS1 Table 8B as shown in the table below. The table below identifies the portions of the document that we are proposing to amend. The proposed changes are presented as the new or amended text shown in blue with existing text, that is proposed to be deleted, shown in red.

Should you require any clarification please contact [buildingfeedback@mbie.govt.nz](mailto:buildingfeedback@mbie.govt.nz).

## Proposed change to the referencing of AS 3498 in Acceptable Solution G12/AS1

G12/AS1 Water supplies, 3 <sup>rd</sup> Edition, Amendment 13	
Table 8B:	Acceptable temperature control devices where a maximum delivery temperature of 50°C is required by Paragraph 6.14.1 Paragraph 6.14.2 and Figure 16
Device type	Standard
Thermostatic mixing valve (TMV) <sup>1234<del>345</del></sup>	AS 4032.1 BS EN 1287 (Low pressure) BS EN 1111 (High pressure)
Thermostatically controlled tap <sup>14<del>5</del></sup>	AS 4032.4
Tempering valve (TV) <sup>1234</sup>	AS 4032.2 NZS 4617
Instantaneous (continuous flow) temperature limited water heater <sup>5<del>2</del></sup>	AS 3498 <sup>5</sup>
Notes:	
1. Temperature control device materials and components shall comply with Paragraph 2.0.	
<del>2.3.</del> Each thermostatic mixing valve or tempering valve shall have a <i>non-return valve</i> fitted to the hot and cold water supply. These devices may be fitted separately or form an integral part of the thermostatic mixing or tempering valve.	
<del>3.4.</del> See Figure 16 for acceptable methods of limiting hot water delivery temperature using a thermostatic mixing valve or tempering valve.	
<del>4.5.</del> Delivery temperature control devices require routine maintenance and performance testing. For information on maintenance, refer to AS 4032.3.	
<del>5.2.</del> An instantaneous (continuous flow) temperature limited water heater is a water heater that limits the temperature of hot water delivered <del>hot water temperature</del> at the outlet of any sanitary fixture used for personal hygiene supplied by the water heater. <b>Where an instantaneous (continuous flow) water heater is adjusted to deliver hot water exceeding 50°C, additional temperature control device(s) shall be provided to ensure delivered hot water temperature at the outlet of any sanitary fixture used for personal hygiene does not exceed 50°C.</b>	
<del>6.</del> Modification to AS 3498 – delete sub-clause 7.3.2.1(a).	



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