



Outcome of consultation Building Code update **Plumbing and drainage**

Decisions for acceptable solutions and verification methods for E1, G12,
and G13

4 May 2023



Ministry of Business, Innovation and Employment (MBIE)

Hīkina Whakatutuki – Lifting to make successful

MBIE develops and delivers policy, services, advice and regulation to support economic growth and the prosperity and wellbeing of New Zealanders.

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Summary of the consultation

Consultation process

Consultation is an important part of developing updates to the Building Code acceptable solutions and verification methods. Consultation provides the sector and public an opportunity to provide their feedback on proposed changes.

Between May and July 2022, MBIE sought feedback for proposals on:

- plumbing and drainage
- structural stability of hollow-core floors
- protection from fire for residential homes
- fire safety system standards.

In June 2022, MBIE also consulted on a proposed extension to the transition period for changes to insulation requirements for housing from the 2021 Building Code update. In July, MBIE released an outcome document advising the decision to extend the transition period for insulation for housing to May 2023, with a staged transition for windows and doors. In November 2022, MBIE released the outcomes of the proposals for lead in plumbing products and hollow-core floors, advising that these proposals were proceeding with new documents to be published in November 2023.

Submissions received

The 2022 Building Code update consultation received 111 submissions across the proposals for plumbing and drainage, structural stability of hollow-core floors, and protection from fire.

MBIE would like to thank the individuals and organisations who took the time to prepare a submission for this consultation.

Number of submissions received by occupation

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 2 (2%) |
| Designers or engineers | 35 (31%) |
| Builders or tradespersons | 9 (8%) |
| Building consent authorities | 22 (20%) |
| Building product manufacturers | 12 (11%) |
| Building owners, occupants or tenants | 4 (4%) |
| Other submitters including those who did not specify their occupation | 27 (24%) |
| Total | 111 |

Purpose of this document

This outcome document contains the decision made for the proposals for plumbing and drainage. The feedback received during the consultation was used to inform the decisions on these proposals. Similar documents for the outcomes of the proposals for protection from fire and structural stability of hollow-core floors are available on building.govt.nz.

While the decisions on these proposals have been made, new acceptable solutions and verification methods will be published in November 2023. The release of these documents will be supported with education and information content about the changes.

MBIE is committed to updating the Building Code so that it keeps pace with innovation, current construction methods and the needs of modern society. The Building Code provides clarity, certainty and consistency to the building and construction sector.

Summary of the decisions

MBIE is amending the acceptable solutions and verification methods to support plumbing and drainage work in New Zealand.

This includes changes to the compliance pathways for water supplies, foul water, and surface water drainage systems. These changes are the latest in a series of continuous improvements to ensure the Building Code compliance pathways for the plumbing sector are fit for purpose and up to date. These changes will help improve the safety and reliability of new plumbing and drainage systems for New Zealanders. This update will help support the provision of plumbing and drainage systems that comply with the Building Code and meet the safety and wellbeing objectives in the [Building Act 2004](#).

The changes for this plumbing and drainage update focus on improving the means of complying with the following three Building Code clauses:

- E1 Surface Water – Disposal of rainwater and protecting property from damage caused by surface water.
- G12 Water Supplies – Requires the safe supply, storage, reticulation and delivery of hot and cold water.
- G13 Foul Water – Requires the safe disposal of foul water to prevent illness and the loss of amenity due to odour and accumulated matter.

This update supports MBIE's commitment to the ongoing development of technical Building Code solutions within the plumbing technical focus area, and is a key step towards:

- Modernising the compliance pathways for the plumbing sector to incorporate technical innovation and research which support current hydraulic theory and installation practices.
- Promoting consistent outputs by improving alignment between Building Code compliance pathways for the plumbing sector.
- Addressing targeted technical issues and gaps within existing compliance pathways.

The amendments to the acceptable solutions and verification methods will be published in November 2023 and follow high levels of support for the changes. The announcement of the decisions in this document follows the decision already announced on lead in plumbing products in November 2022.

All the proposals will be proceeding to publication. We have considered the feedback from the consultation and have incorporated some changes to the content that was originally proposed. The main changes to what was consulted are for proposals 2, 3, and 5 which relate to water supplies. We encourage you to read more about the individual decisions for additional information.

From the consultation feedback, we acknowledge that information and education is required to support the changes to hot water delivery temperatures as many did not understand the intent or technical implications of the proposal. The reduced water temperatures do not affect the storage temperature used to prevent legionella bacteria in storage vessels and will continue to provide hot water service where needed in a household. However, the changes will reduce the risk of scalding particularly to children and the elderly and align with the same temperature requirements in several other countries including Australia and the UK.

Key to these amendments is the adoption of the latest version of the AS/NZS 3500 plumbing and drainage standards as part of the compliance pathways. MBIE participated in the development of these standards. The new versions of the standards include a number of New Zealand specific requirements meaning that several of the previous New Zealand Building Code modifications to the standards are no longer required. The standards will be cited as compliance pathways through acceptable solutions E1/AS2, G12/AS3, and G13/AS3.

By announcing these decisions prior to the publication of the revised acceptable solutions and verification methods, our aim is to provide certainty and direction to the sector and allow time to develop information and education content about the changes prior to their release. This will help support the implementation for those looking to familiarise themselves with the revised documents.

If you are an industry body or education provider who is interested in working with us to develop supporting information and education resources, please email us at building@mbie.govt.nz for more information on how you can help implement the changes.

1. Lead in plumbing products

1.1. What we proposed

MBIE proposed to limit the allowable lead content in plumbing products which contain copper alloys and are intended for use in contact with drinking water to not more than 0.25%. These new requirements were proposed for inclusion in the acceptable solutions for Building Code clause G12 Water Supplies. The transition period was proposed to end on 1 September 2025 to provide plumbing product manufacturers and suppliers time to make the necessary changes.

1.2. What we are doing

In November 2022, MBIE announced the decisions on the outcome of this proposal. Considering the feedback from the consultation, MBIE is amending Acceptable Solution G12/AS1 to limit the maximum quantity of lead permitted in certain plumbing products.

[Read more about the consultation on lead in plumbing products.](#)

The amended document will limit the maximum lead content of any product that contains copper alloys, intended for use in contact with potable water for human consumption. This includes products such as pipe fittings, valves, taps, mixers, water heaters, and water meters.

The change to the Acceptable Solution G12/AS1 will have a transition period lasting until 1 September 2025. At the end of the transition period, the previous requirements will no longer be able to be used. On 1 September 2025, any product that contains copper alloy and is intended for use in contact with potable water for human consumption will have to have a weighted average lead content of no more than 0.25% verified in the form of a test report provided by a test facility with IANZ or equivalent accreditation in accordance with NSF/ANSI/CAN 372: 2020 Drinking Water System Components Lead Content.

MBIE indicated in our consultation proposal the intent to align the lead in plumbing products transition period for New Zealand with the time when equivalent requirements will come into force in Australia. The transition period end date for the introduction of equivalent requirements in Australia has recently been extended by 8 months, to 1 May 2026. We are currently considering the implications of re-aligning the transition period end date for New Zealand extending with Australia.

Additionally, MBIE is amending Acceptable Solution G12/AS1 to require all copper alloy water supply system components to be dezincification resistant and comply with AS 2345: 2006 (R2016) Dezincification resistance of copper alloys. This change will have a transition date of 12 months from publication of the amended Acceptable Solution G12/AS1.

MBIE is continuing to work with our counterparts in Taumata Arowai and in Australia on the implementation of this change. Additionally, MBIE's Building Systems Performance Branch have funded Aotearoa New Zealand's participation in a Standards Australia led project to revise the joint copper and copper alloy standards which will assist in the implementation of this change.

[Read more information about the new requirements for lead in plumbing products for G12/AS1.](#)

2. Water temperatures

2.1. What we proposed

MBIE proposed to reduce the maximum temperature of hot water at the tap to reduce the risk of scalding injuries to New Zealanders. This proposed change included:

- Reducing the maximum allowable temperature of hot water delivered to plumbing fixtures used for personal hygiene in most buildings from 55°C to 50°C.
- Reducing the maximum allowable temperature for early childhood centres from 45°C to 40°C to align with Ministry of Education requirements.
- Maintaining the current maximum allowable temperature of 45°C for institutions such as schools, hospitals and care homes.
- Amendments to Acceptable Solution G12/AS1 to limit maximum hot water delivery temperatures
 - Amending the maximum water temperatures in Paragraph 6.14.1 to reduce the risk of scalding
 - Amending Paragraph 6.14.2, Figure 16 and provide a new Table 7 to list acceptable hot water delivery temperature control devices and manufacturing standards
 - Amending Paragraph 6.14.3 to replace the term ‘mixing’ with ‘delivery temperature control’
 - Redesignating Paragraph 6.14.4 as an informative comment to Paragraph 6.14.3 and include additional comments clarifying that alternative methods of controlling Legionella are outside the scope of G12/AS1
- Citing the following water temperature control device standards in Acceptable Solution G12/AS1
 - BS EN 1111: 2017 Sanitary tap ware – Thermostatic mixing valves (PN 10) General technical specifications
 - BS EN 1287: 2017 Sanitary tapware. Low pressure thermostatic mixing valves. General technical specification
 - AS 4032: Water supply
 - Part 1: 2005 Valves for the control of heated water supply temperatures Thermostatic mixing valves - Materials design and performance requirements
 - Part 2: 2005 (R2015) Tempering valves and end of line temperature-actuated devices
 - Part 3: 2004 Requirements for field-testing, maintenance or replacement of thermostatic mixing valves, tempering valves and end-of-line temperature control devices
 - Part 4: 2014 Thermostatically controlled taps for the control of heated water supply temperatures

For this proposal, MBIE sought feedback on three questions:

- Do you support amending Acceptable Solution G12/AS1 to help reduce the number of hot water scalding injuries in New Zealand, by reducing maximum hot water delivery temperatures for some buildings?
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- Do you agree with the proposed transition time of 12 months for the proposed changes to take effect?

Respondents were given tick box options for the first question to identify their support. There was also space available for free text responses across all questions. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

2.2. What we heard

2.2.1. Who submitted on the proposal

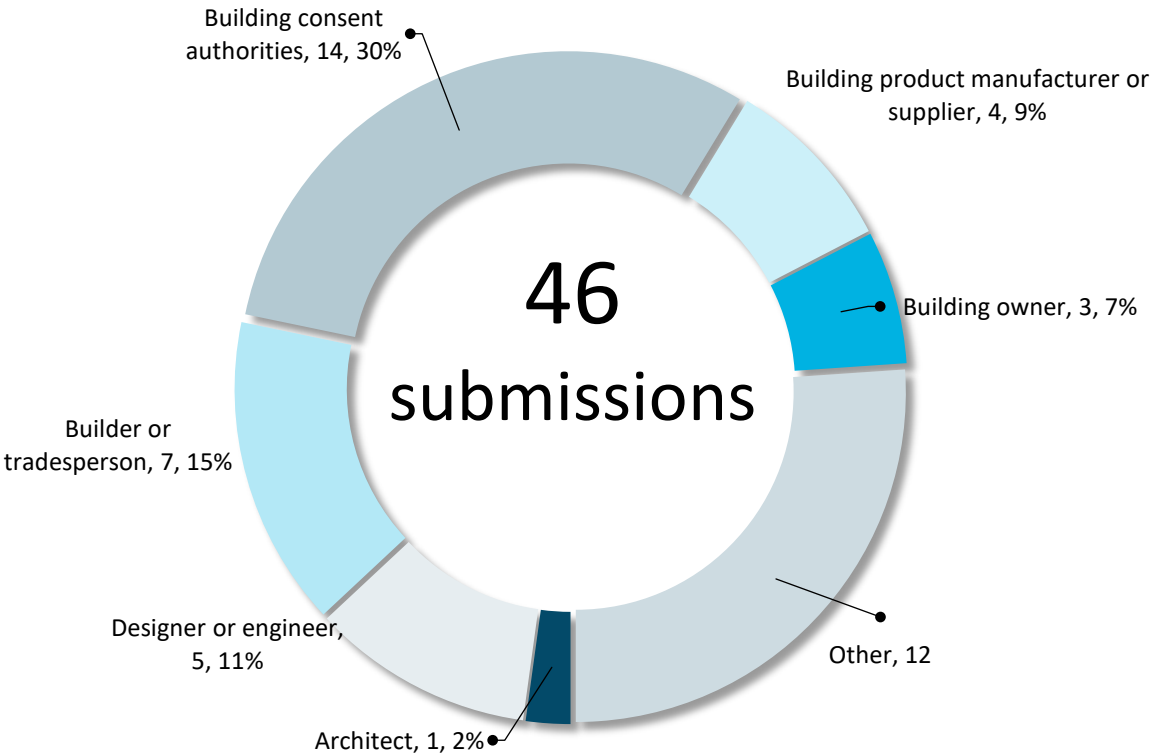
There were 46 submissions on this consultation as shown in Table 2.1 and Figure 2.1. Feedback was primarily received from building consent authorities, industry bodies, and public health professionals.

Proposal 2. Water temperatures

TABLE 2.1: Number of submissions received on the proposal for water temperatures

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (2%) |
| Designers or engineers | 5 (11%) |
| Builders or tradespersons | 7 (15%) |
| Building consent authorities | 14 (30%) |
| Building product manufacturers | 4 (9%) |
| Building owners, occupants or tenants | 3 (7%) |
| Other submitters including those who did not specify their occupation | 12 (26%) |
| Total | 46 |

FIGURE 2.1: Number of submissions received on the proposal for water temperatures



2.2.2. Submitter preferences on the proposal

Submitter preferences are shown in Table 2.2. There were a mix of responses to this proposal. Twenty-eight submissions (59%) favoured the proposal to lower the temperatures or indicated that the temperatures should be even lower. Fourteen responses (32% of the submissions) preferred that the temperatures remain the same (the status quo option). The remaining submissions did not indicate a preference. Submissions supported the lower temperatures because:

- There is evidence to support the benefits of this change and the protection of those who are most vulnerable.
- Lowering the temperatures for bath, showers, and hand basins will likely reduce the risk of scald injuries and is the right thing to do. Lowering the temperatures even further would further reduce the risk. The proposal still allows for higher temperatures for kitchens sinks and laundries which is also a practical solution.

Proposal 2. Water temperatures

- The proposed changes strike a balance between safeguarding vulnerable people from injury as well as keeping the temperatures high enough at source to prevent the growth of legionella bacteria in heated water.
- The proposal supports the objective, functional and performance requirements in clause G12 of the Building Code and aligns with the standard AS/NZS 3500.4 Heated water services.

Submissions that did not support the proposal because:

- They were unaware of hot water temperatures significantly contributing to scalding injuries in New Zealand. As noted in Section 2.1 of the consultation document, the Burns Registry of Australia and New Zealand led a study into people with tap water scalds admitted to Australian or New Zealand burn centres¹. Lowering the maximum delivery temperatures in New Zealand is expected to reduce the risk of scald injuries across the country.
- Incoming cold water temperatures may vary across the different climates in the country and it may be harder to mix to 50°C in some parts of the country. It may also be difficult to achieve this temperature for low-pressure systems. A 5°C reduction in the maximum hot water delivery temperature is not anticipated to meaningfully affect the operation of a shower or tap mixer installed in colder climates or designed for low or unequal pressures.
- The requirements in clause G12 relate only to safe water temperatures. The Ministry of Education requirements for 40°C for early childhood centres are primarily related to comfort rather than safety. To reduce the risk of scalding, only two temperatures may be necessary: 50°C for most buildings and 45°C for schools, early childhood centres, hospitals and similar.
- It may require more work to wash dishes in the sink if the hot water delivery temperature is lower. As noted in Section 2.4.2 of the consultation document, the proposed maximum delivery temperatures would not apply to water delivered to kitchen sinks or laundries as these are not considered sanitary fixtures used for personal hygiene. However, this may then lead to unintended consequences where even hotter water (60°C or higher) is delivered to the kitchen or laundry sink to meet customer/user demands.

There were also several submissions which confused the maximum hot water delivery temperatures in this proposal with the minimum hot water storage temperature of 60°C which is required to prevent the growth of legionella bacteria. This proposal did not affect the minimum storage water temperature and only considered the maximum delivery temperature of water at the tap and the devices used to limit that temperature. These submissions generally opposed aspects of the proposed change and indicated that highlighting the change may lead to confusion with homeowners who may be unaware of the difference between storage and delivery water temperatures.

Other comments on the proposal suggested that:

- The requirements should target older existing buildings with untempered hot water. This was considered to be outside the scope of this proposal. However, these systems are phasing out over time as older fixtures and water heaters are replaced.
- MBIE should consider the installation and placement of bath and shower taps in a manner that can further reduce the risk of accidental alteration of water temperature whilst bathing as outlined in the 2022 edition of the Plumbing Code of Australia.
- There is a lack of awareness regarding hot water system energy efficiency requirements under clause H1 of the Building Code.

TABLE 2.2: Responses to the question in the consultation: Do you support amending Acceptable Solution G12/AS1 to help reduce the number of hot water scalding injuries in New Zealand by reducing maximum hot water delivery temperatures for some buildings?

| Occupation | Response | | | |
|------------------------------|---|---|--|------------------------|
| | Yes, these temperatures are about right | No, these temperatures should be even lower | No, the temperatures should remain as is | Not sure/no preference |
| Architects | 1 | 0 | 0 | 0 |
| Designers or engineers | 1 | 1 | 2 | 1 |
| Builders or tradespersons | 3 | 0 | 4 | 0 |
| Building consent authorities | 8 | 0 | 4 | 1 |

¹ ["The home, the bathroom, the taps, and hot water": The contextual characteristics of tap water scalds in Australia and New Zealand](#)

Proposal 2. Water temperatures

| | | | | |
|---------------------------------------|-----------------|---------------|-----------------|---------------|
| Building product manufacturers | 2 | 0 | 1 | 1 |
| Building owners, occupants or tenants | 0 | 0 | 3 | 0 |
| Other submitters | 9 | 1 | 0 | 1 |
| Total | 24 (54%) | 2 (5%) | 14 (32%) | 4 (9%) |

No other significant impacts to the installation of plumbing systems were identified in the submissions.

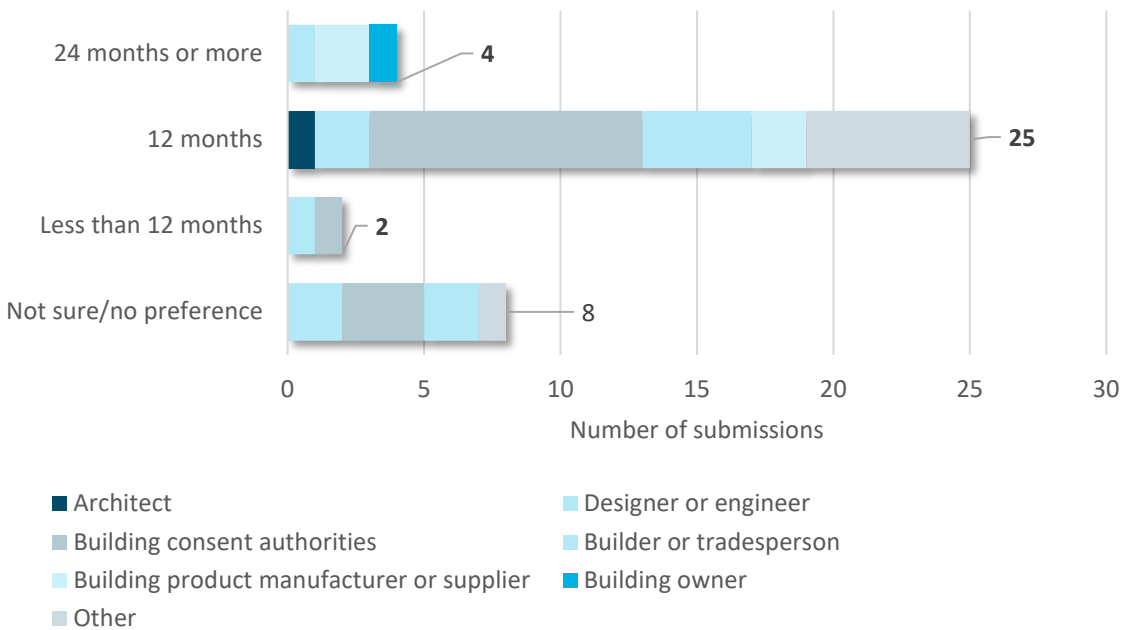
2.2.3. Submitter preferences on the transition period

There were 39 responses to the question on the transition period (see Table 2.3 and Figure 2.2). Twenty-seven submissions (69%) preferred a transition period of 12 months or sooner for the change to take effect. Eight submissions had no preference on the transition period. Those who preferred a longer transition period indicated that it may take longer to deplete existing stocks of equipment particularly continuous flow water heaters. These submissions indicated 18 to 24 months would be sufficient for the transition period.

TABLE 2.3: Preferred transition period from the public consultation submissions

| Occupation | Preferred end of the transition period | | | |
|---------------------------------------|--|-----------------|---------------------|------------------------|
| | 24 months or more | 12 months | Less than 12 months | Not sure/No preference |
| Architects | 0 | 1 | 0 | 0 |
| Designers or engineers | 0 | 2 | 1 | 2 |
| Builders or tradespersons | 1 | 4 | 0 | 2 |
| Building consent authorities | 0 | 10 | 1 | 3 |
| Building product manufacturers | 2 | 2 | 0 | 0 |
| Building owners, occupants or tenants | 1 | 0 | 0 | 0 |
| Other submitters | 0 | 6 | 0 | 1 |
| Total | 4 (10%) | 25 (64%) | 2 (5%) | 8 (21%) |

FIGURE 2.2: Preferred transition period for the proposal for water temperatures



Proposal 2. Water temperatures

2.3. What we are doing

Considering the feedback from the consultation, MBIE is amending Acceptable Solution G12/AS1 to reduce the maximum temperature of hot water at the tap to reduce the risk of scalding injuries to New Zealanders. The maximum allowable temperature for most buildings will be reduced from 55°C to 50°C. The changes will only apply to new plumbing fixtures used for personal hygiene, such as hand basins, baths and showers. However, this change will not apply to early childhood centres, schools, aged care facilities, rest homes, retirement homes, institutions for people with intellectual or physical disabilities, and hospitals. For these buildings, the maximum hot water delivery temperature will remain at 45°C. There will be no change in the maximum allowable temperature for early childhood centres within Acceptable Solution G12/AS1.

These changes will be introduced into Acceptable Solution G12/AS1, along with additional temperature control devices and pressure requirements which will provide more ways to comply and will improve alignment with AS/NZS 3500.4. Additionally, G12/AS1 will be amended to include an informative comment highlighting the Ministry of Education Licensing Criteria requirements for water temperatures for early childhood education and care services. MBIE have discussed this approach with the Ministry of Education who raised no objection to including this reference as an informative comment.

Other changes for G12/AS1 to assist in the interpretation of the new requirements in this proposal include:

- Amendment of the comment in G12/AS1 Table 3 to indicate that the maximum safe water temperatures are given in Paragraph 6.14.1. The specification of a flow rate to be measured at 60°C for sinks and laundry tubs will also be removed as the acceptable hot and cold flow rates for these fixtures in this table are measured individually at both the hot and cold taps and a specific hot water temperature is required.
- The term 'tempering valve' or 'valve' will be replaced with 'tempering valve' or 'thermostatic mixing valve' in applicable locations.
- Figure 8 (a) will be modified to include a heat trap after the expansion vessel to align with Paragraph 6.6.7 d). The titles of Figure 8 (a) and (b) will also be amended to state expansion vessel and expansion control valves (as shown).
- Figure 16 will be modified to include an additional note that untempered hot water must not be provided to fixtures from uncontrolled heat sources (such as a wet-back or solar water heater).

As part of this change, MBIE will also be developing an information on water temperatures to clarify the differences between the minimum storage water temperature for hot water and the maximum delivery temperature for hot water along with adequate water temperatures for hand-washing dishes. This campaign will highlight that this change will not affect the minimum temperature for hot water storage and will not increase the risk of legionella bacteria growth in hot water systems. It will also highlight that homeowners should not, themselves, adjust the temperatures of storage water heaters (e.g. thermostats) and this work should only be performed by an authorised plumber.

The documents will be amended in November 2023 with a 12 month transition period ending in November 2024. At the end of the transition period, the previous version of the Acceptable Solution G12/AS1 will no longer be deemed to comply with the Building Code. Announcing this decision early and providing a 12 month transition period will give manufacturers and retailers sufficient time to update their supplies of equipment to meet the new requirements.

3. Protection of potable water

3.1. What we proposed

We proposed to update Acceptable Solution G12/AS1 to improve the requirements to protect potable water from backflow contamination. The proposed changes will improve clarity around when backflow prevention is required, what type of backflow prevention devices are suitable and how these devices should be installed and tested.

The proposed changes include:

- Amendments to Acceptable Solution G12/AS1 to protect potable water supplies from backflow contamination:
 - Amend G12/AS1 Paragraphs 3.3.1 Comment, 3.3.2 Comment, 3.3.3 Comment, 3.4.6, 3.5.2 Comment, 3.6.2, 3.6.3, 3.6.4, 3.7.2, 4.3.1; and Table 2 Notes; and Figure 2
 - Issue new G12/AS1 Paragraphs 3.4.3 c), 3.4.6, 3.6.1 b), c) and comment, 3.6.3 b), c) and comment 4, 3.6.4 v) and comment; and Table 2A
- Citing the following backflow prevention standards in Acceptable Solution G12/AS1:
 - AS/NZS 2845.3: 2020 Water supply – Backflow prevention devices – Field testing and maintenance of testable devices
 - New Zealand Legislation Water Services Act 2021
 - Water New Zealand and Master Plumbers, Gasfitters and Drainlayers NZ Inc, NZ Backflow testing standard 2019 - Field testing of backflow prevention devices and verification of air gaps
- Providing new definitions for:
 - Drinking water standards
 - Containment backflow protection
 - Point of supply
 - Potable water
- Other amendments to Acceptable Solution G12/AS1 as part of this proposal:
 - G12/AS1 Paragraph 4.3.1 – Amend the text to cite AS/NZS 3500.1 for pipeline identification
 - G12/AS1 Figure 2 – Amend the text in diagram (a) to clarify the clear space required

For this proposal, MBIE sought feedback on three questions:

- Do you support the proposed amendments to Acceptable Solution G12/AS1 for the protection of potable water?
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- Do you agree with the proposed transition time of 12 months for the proposed changes to take effect?

Respondents were given tick box options for the first question to identify their support. There was also space available for free text responses across all questions. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

3.2. What we heard

3.2.1. Who submitted on the proposal

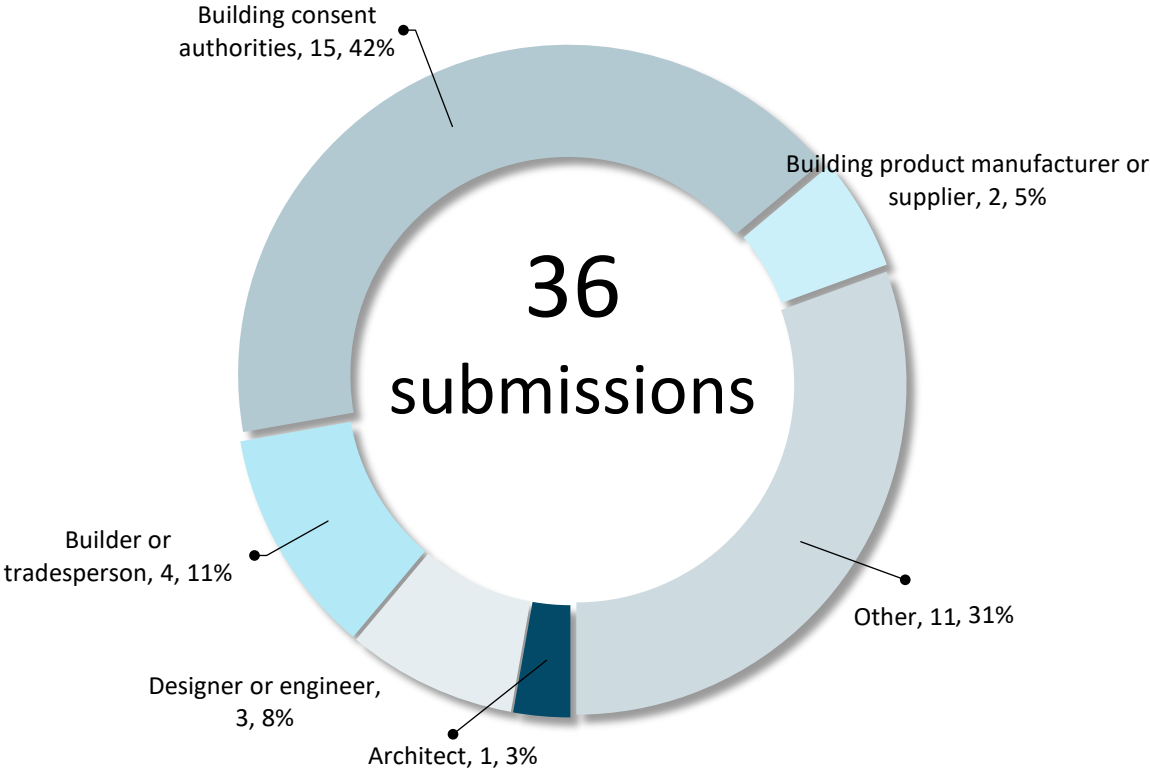
There were 36 submissions on this consultation as shown in Table 3.1 and Figure 3.1. Feedback was primarily received from building consent authorities, industry bodies, and public health professionals.

Proposal 3. Protection of potable water

TABLE 3.1: Number of submissions received on the proposal for protection of potable water

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (3%) |
| Designers or engineers | 3 (8%) |
| Builders or tradespersons | 4 (11%) |
| Building consent authorities | 15 (42%) |
| Building product manufacturers | 2 (5%) |
| Building owners, occupants or tenants | 0 (0%) |
| Other submitters including those who did not specify their occupation | 11 (31%) |
| Total | 36 |

FIGURE 3.1: Number of submissions received on the proposal for protection of potable water



3.2.2. Submitter preferences on the proposal

Submitter preferences are shown in Table 2.2. Twenty-eight submissions (82%) supported the proposal. Two submissions did not support the proposal and four more submissions did not indicate a preference. Submissions supported the proposal because the proposed changes strengthen provisions for protecting potable water from contamination and provided public health benefits.

There were over 100 comments from the submissions on specific aspects of the proposal. This included comments on:

- Ensuring that the Building Code compliance pathways aligned with drinking water regulatory requirements.
- Improving clarity of proposed containment backflow protection provisions in G12/AS1 and aligning terminology with other regulations. Providing a separate containment backflow section in G12/AS1 may help with clarity.

Proposal 3. Protection of potable water

- The proposed new examples for low, medium, and high hazard situations had a mixture of submissions supporting and disagreeing with several of the specific changes.
- Clarifying the use and installation of vacuum breakers

Regarding the impacts of the proposal, comments generally indicated that additional training or education would be required for building consent authorities and Councils to reduce confusion over the changes.

TABLE 3.2: Responses to the question in the consultation: Do you support the proposed amendments to Acceptable Solution G12/AS1 for the protection of potable water?

| Occupation | Response | | |
|---------------------------------------|-----------------------------|----------------------------------|------------------------|
| | Yes, I support the proposal | No, I don't support the proposal | Not sure/no preference |
| Architects | 1 | 0 | 0 |
| Designers or engineers | 2 | 0 | 1 |
| Builders or tradespersons | 3 | 0 | 0 |
| Building consent authorities | 13 | 1 | 1 |
| Building product manufacturers | 1 | 1 | 0 |
| Building owners, occupants or tenants | 0 | 0 | 0 |
| Other submitters | 8 | 0 | 2 |
| Total | 28 (82%) | 2 (6%) | 4 (12%) |

3.2.3. Submitter preferences on the transition period

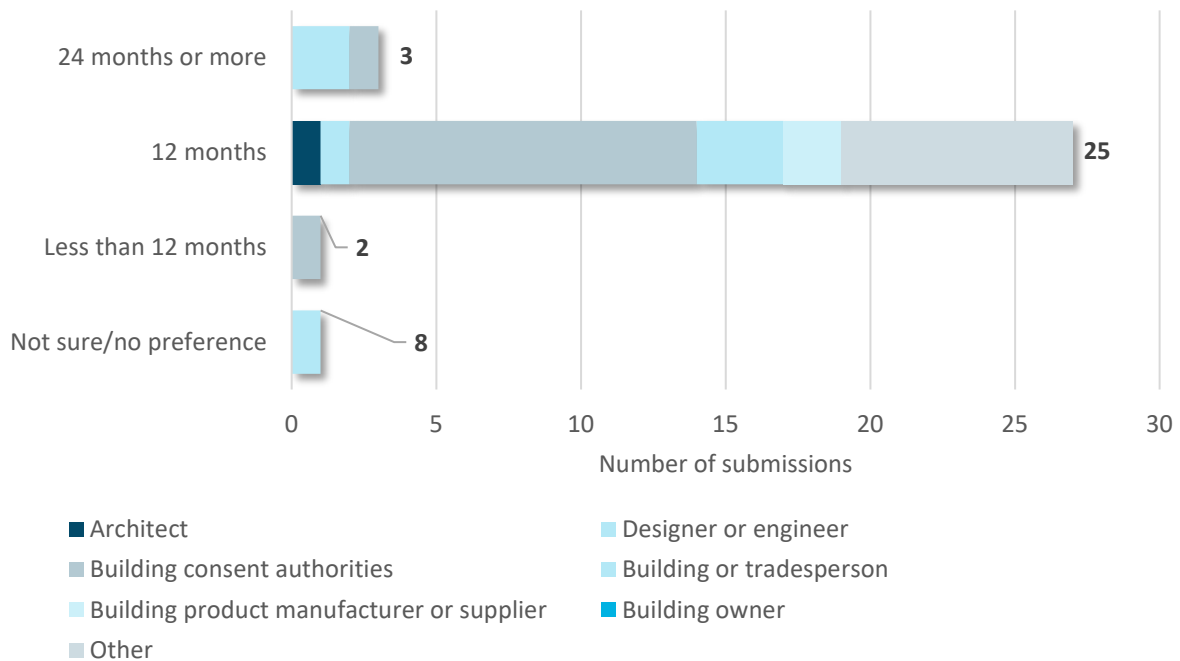
There were 32 responses to the question on the transition period (see Table 3.3 and Figure 3.2). Twenty-eight submissions (87%) preferred a transition period of 12 months or sooner for the changes to take effect. Three submissions preferred a longer transition period. The only comment on the longer transition period indicated that a longer time period would be required if backflow devices were to be added to new or existing compliance schedules.

TABLE 3.3: Preferred transition period from the public consultation submissions

| Occupation | Preferred end of the transition period | | | |
|---------------------------------------|--|-----------------|---------------------|------------------------|
| | 24 months or more | 12 months | Less than 12 months | Not sure/No preference |
| Architects | 0 | 1 | 0 | 0 |
| Designers or engineers | 2 | 1 | 0 | 0 |
| Builders or tradespersons | 0 | 3 | 0 | 1 |
| Building consent authorities | 1 | 12 | 1 | 0 |
| Building product manufacturers | 0 | 2 | 0 | 0 |
| Building owners, occupants or tenants | 0 | 0 | 0 | 0 |
| Other submitters | 0 | 8 | 0 | 0 |
| Total | 3 (9%) | 27 (84%) | 1 (3%) | 1 (3%) |

Proposal 3. Protection of potable water

FIGURE 3.2: Preferred transition period for the proposal for the protection of potable water



3.3. What we are doing

Considering the feedback from the consultation, MBIE is amending Acceptable Solution G12/AS1 to improve the requirements to protect potable water from backflow contamination. The proposed changes will improve clarity around when backflow prevention is required, what type of backflow prevention devices are suitable and how these devices should be installed and tested. G12/AS1 will be amended in November 2023 with a 12 month transition period ending in November 2024. At the end of the transition period, the previous version of G12/AS1 will no longer be deemed to comply with the Building Code. MBIE will be supporting these changes with the provision of information and education about the changes.

Changes for G12/AS1 to assist in the interpretation of the new requirements in this proposal and to address comments received in the consultation include:

- Clarity of containment backflow protection
 - Grouping the containment backflow provisions together into a new section 3.5.
 - Clarifying that the containment backflow protection provisions would only apply where containment backflow protection is not provided by the network utility operator and that they do not apply to premises containing only household units.
 - Drafting the proposed comments for Paragraph 3.4.6 as separate paragraph requirements for how containment backflow can be achieved and where it is to be located.
- Hose connection vacuum breakers
 - Clarifying that hose connection vacuum breakers are only suitable for low cross connection hazard protection against back-siphonage. Installation requirements of vacuum breakers have also been provided to align with similar requirements in AS/NZS 3500.1: 2021.
 - Withdrawing the proposal to limit the need for backflow prevention devices to be testable in service to medium and high cross connection hazards. This retains the status quo and supports clarifying that hose connection vacuum breakers are suitable devices for protecting against low cross connection hazards in Table 2 as these devices and are testable in accordance with the method outlined in the 2019 NZ backflow testing standard.
- High hazards

Proposal 3. Protection of potable water

- Withdrawing the proposed high hazard example for “Demineralising equipment using ion-exchange resins with acid and alkali regeneration” on the grounds that this example is overly specific and these systems would generally be subject to specific engineering design
- Adding hose taps associated with “soil waste dump points” as an example of a high cross connection.
- Withdrawing metal finishing plants, pathology laboratories, premises where access to conduct inspections is restricted, premises with an alternative water supply, sanitary depots, timber treatment facilities from the high hazard premises in Table 2A as part of consolidating duplicate or overlapping premises descriptors.
- Adding laboratories, dental surgeries, premises contains soil waste dump points, and other education facilities with laboratories to the high hazard premises in Table 2A to clarify the terminology.
- Medium hazards
 - Adding an exemption to the example for swimming pools, spas and fountains to exclude those filled by a hose tap in conjunction with household units. This is intended to support the addition of a low cross connection hazard example for hose taps and the clarification of the cross connection hazard rating for hose connection vacuum breakers. This will supports the provision of hose connection vacuum breakers as an acceptable backflow prevention device for the filling of swimming pools, spas and fountains in conjunction with household units.
- Low hazards
 - Withdrawing the proposed low hazard examples for “rainwater tanks and supply systems” and “emergency eye wash and shower stations”. Further consideration is required for these systems before they can be included in the list of examples.
 - Refining the wording of the low hazard example for hose taps to clarify that all hose taps, other than those associated with medium or high hazard situations, may be considered to pose a low cross connection hazard. The proposed 18 m distance for hose taps will not be included as there are concerns that hose lengths can vary and this is not regulated so it would be difficult to apply this in practice.
 - Removing premises with rainwater tanks from Table 2A for further consideration.
- Pipeline identification
 - Withdrawing the cross reference to AS/NZS 3500.1 and instead providing the applicable requirements directly in G12/AS1. This is intended to make these provisions easier to read and comply with. The consequential changes include:
 - Removing the requirement for potable pipework to be made identifiable in household units which also contain non-potable pipework.
 - Providing for alternative identification methods to lilac coloured pipe
 - Clarifying pipework identification marking requirements
 - Including provisions for the identification of below ground non-potable water supply pipework.
- AS/NZS 2845.1 Water supply – Backflow prevention devices: Materials, design and performance requirements – G12/AS1 will now cite the 2022 edition of this standard. The 2022 edition was revised to include changes to detector check assemblies which improve performance resulting in less head loss in fire installations to provide greater water pressure to fight fires.

4. AS/NZS 3500 Plumbing and drainage standards

4.1. What we proposed

MBIE proposed to cite the 2021 editions of the AS/NZS 3500 Plumbing and drainage standards as acceptable solutions for complying with Building Code clauses E1 Surface Water, G12 Water Supplies and G13 Foul Water. This follows a three-year revision project to improve these standards. These standards play an integral part in setting out design and installation requirements for plumbing and drainage systems in New Zealand. We also proposed to cite AS/NZS 3500:2021 Part 1 and Part 4 under a new Acceptable Solution G12/AS3, which will provide consistency between the status of these standards under the Building Code.

The proposed changes included amendments for:

- Acceptable Solution E1/AS3
 - Cite the new AS/NZS 3500.3: 2021 Plumbing and drainage – Stormwater drainage
 - Remove the modifications to AS/NZS 3500.3 previously found in E1/AS2 for Clauses 1.2.2, 3.3.5.2, 3.4.5, 3.7.3, 3.7.7.1, 3.8, 5.2.3, 5.3.1.1, 5.4.8 (b) (ii), 5.4.11.1 (b), 5.4.12, 5.5, 6.2.8 (d) (ii), 6.3.3 (b); and Appendices F, I, and K. These modifications are no longer necessary for the proposed citation of AS/NZS 3500.3: 2021
 - Update the modification to AS/NZS 3500.3 for Clause 5.4.5 (b) for rainfall intensity data sources
- Acceptable Solution G12/AS1
 - Cite the new AS/NZS 3500.1: 2021 Plumbing and drainage – Water Services
- Acceptable Solution G12/AS2
 - Cite the new AS/NZS 3500.4: 2021 Plumbing and drainage – Heated water services
- Issuing the new Acceptable Solution G12/AS3
 - Issue the new Acceptable Solution G12/AS3 which cites AS/NZS 3500.1: 2021 Plumbing and drainage – Water Services and AS/NZS 3500.4: 2021 Plumbing and drainage – Heated water services as a means of demonstrating compliance with clause G12
- Acceptable Solution G13/AS3
 - Cite the new AS/NZS 3500.2: 2021 Plumbing and drainage – Sanitary plumbing and drainage Amendment 1
 - Remove the modifications to AS/NZS 3500.2 previously found in G13/AS3 for Clauses 4.9.1, 5.6, 6.6.2.4, and 6.6.2.6. These modifications are no longer necessary for the proposed citation of AS/NZS 3500.2: 2021
 - Update the modification to AS/NZS 3500.2 Clause 2.2 to reference the G13/AS2 provisions for foul water drainage systems materials and products

For this proposal, MBIE recommended citing the new versions of the standards with some specific modifications for use in the New Zealand Building Code.

In the consultation, MBIE sought feedback on five questions:

- Do you support amending the Acceptable Solutions for E1, G12, and G13 to cite the following AS/NZS 3500: 2021 Plumbing and drainage standards as proposed?
- Do you support issuing the new Acceptable Solution G12/AS3 as proposed to cite AS/NZS 3500.1: 2021 – Water services and AS/NZS 3500.4: 2021 – Heated water services?
- Are there any additional modifications to the referencing of the AS/NZS 3500: 2021 Plumbing and drainage standards that we should consider? If there are modifications that you think should be included, please tell us.
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- Do you agree with the proposed transition time of 12 months for the proposed changes to take effect?

Respondents were given tick box options for the first question to identify their support separately for each part of the AS/NZS 3500 standards. There was also space available for free text responses across all questions. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

Proposal 4. AS/NZS 3500 Plumbing and drainage standards

4.2. What we heard

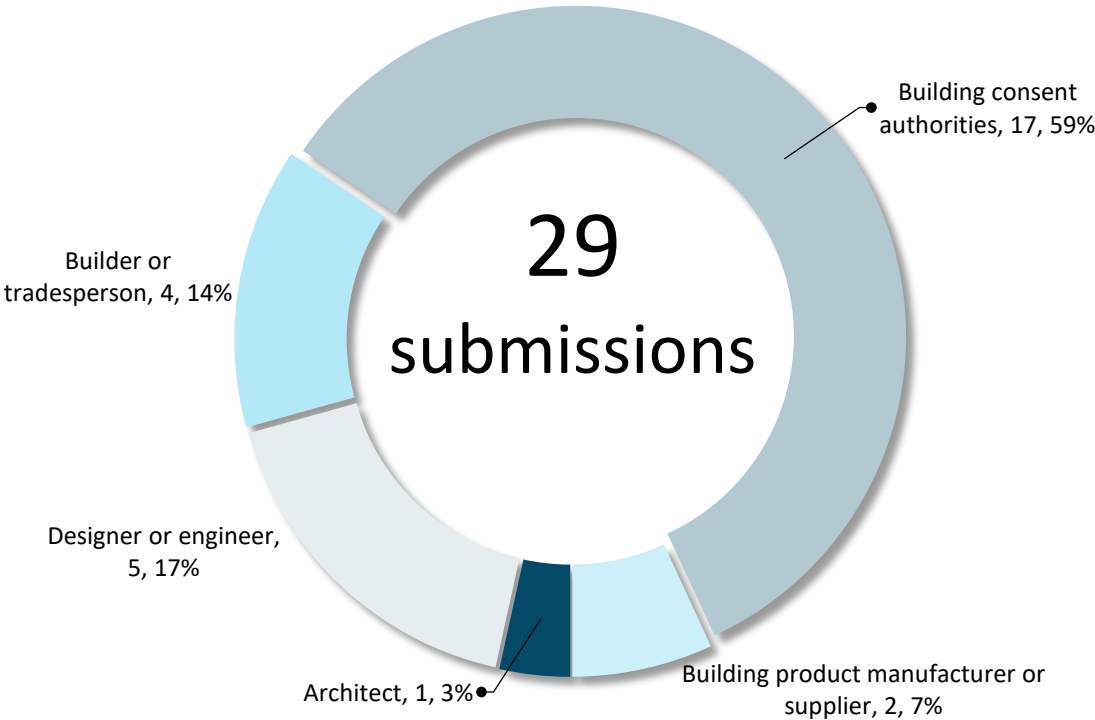
4.2.1. Who submitted on the proposal

There were 29 submissions on this consultation as shown in Table 4.1 and Figure 4.1. Feedback was primarily received from building consent authorities.

TABLE 4.1: Number of submissions received on the proposal for the AS/NZS 3500 Plumbing and drainage standards

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (3%) |
| Designers or engineers | 5 (15%) |
| Builders or tradespersons | 4 (12%) |
| Building consent authorities | 17 (50%) |
| Building product manufacturers | 2 (6%) |
| Building owners, occupants or tenants | 0 |
| Other submitters including those who did not specify their occupation | 0 |
| Total | 29 |

FIGURE 4.1: Number of submissions received on the proposal for the AS/NZS 3500 Plumbing and drainage standards



4.2.2. Submitter preferences on the proposal

Submitter preferences on the first two questions of the proposal are provided in Table 4.2 There was nearly unanimous support for the standards and the new acceptable solution. One submitter did not support citation of the new AS/NZS

Proposal 4. AS/NZS 3500 Plumbing and drainage standards

3500.4 or its adoption into Acceptable Solution G12/AS3 but the comments in this submission better reflected proposed changes in proposal 5 and were considered for that proposal.

TABLE 4.2: Responses to the questions in the consultation: Do you support amending the Acceptable Solutions for E1, G12, and G13 to cite the following AS/NZS 3500: 2021 Plumbing and drainage standards as proposed?

and

Do you support issuing the new Acceptable Solution G12/AS3 as proposed to cite AS/NZS 3500.1: 2021 – Water services and AS/NZS 3500.4: 2021 – Heated water services?

| Occupation | Response | | |
|--|-----------------------------|----------------------------------|------------------------|
| | Yes, I support the proposal | No, I don't support the proposal | Not sure/no preference |
| AS/NZS 3500.1: 2021 Water Services | 29 (100%) | 0 | 0 |
| AS/NZS 3500.2: 2021 Sanitary plumbing and drainage | 27 (94%) | 0 | 2 (6%) |
| AS/NZS 3500.3: 2021 Stormwater drainage | 26 (90%) | 0 | 3 (10%) |
| AS/NZS 3500.4: 2021 Heated Water Systems | 27 (94%) | 1(3%) | 1 (3%) |
| Acceptable Solution G12/AS3 | 27 (94%) | 1 (3%) | 1 (3%) |

Additional modifications to the citation of the standards proposed in the submissions included:

- Removing the modification to AS/NZS 3500.2 clause 4.6.6 regarding sewer surcharge and drainage overflow
- Strengthening wording around where drains are laid as the current AS/NZS 3500 standards only state “drains should be laid external where practical” and this is difficult to enforce. Drains laid under concrete floors are difficult to repair in the event of earthquakes.
- Clarifying if designs are able to mix systems in existing buildings or confirming if that is not the case.
- Adding additional text to AS/NZS 3500.3 clause 4.5.6 regarding inlet pits and clause 3.4.5 regarding membrane roofs.

There were additional comments raised regarding provisions for water supply for firefighting and mandating floor wastes for all kitchen, bathroom, and laundry areas. These comments and the proposed modifications above were considered outside the scope of this proposal and logged for future consideration.

No significant impacts were identified in the submissions. Comments on the impact of the changes focused on the need for education and guidance for plumbers and building consent authorities. regarding the changes

4.2.3. Submitter preferences on the transition period

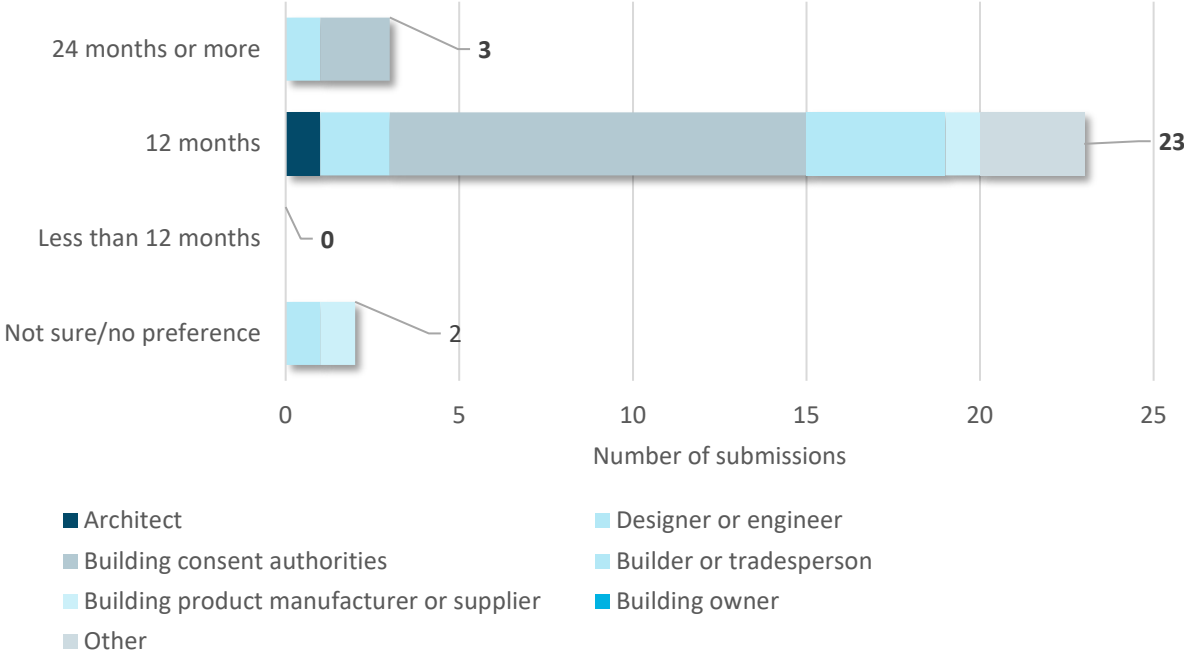
There were 28 responses to the question on the transition period (see Table 4.3 and Figure 4.2). Twenty-three submissions (82%) preferred a transition period of 12 months while three submissions preferred 24 months or more and 2 submissions had no indicated preference. The submissions that preferred the longer transition period to provide more time to support industry education of the new standards. These standards were published in May 2021.

TABLE 4.3: Preferred transition period from the public consultation submissions

| Occupation | Preferred end of the transition period | | | |
|---------------------------------------|--|-----------------|---------------------|------------------------|
| | 24 months or more | 12 months | Less than 12 months | Not sure/No preference |
| Architects | 0 | 1 | 0 | 0 |
| Designers or engineers | 0 | 2 | 0 | 1 |
| Builders or tradespersons | 0 | 4 | 0 | 0 |
| Building consent authorities | 2 | 12 | 0 | 0 |
| Building product manufacturers | 0 | 1 | 0 | 1 |
| Building owners, occupants or tenants | 1 | 0 | 0 | 0 |
| Other submitters | 0 | 3 | 0 | 0 |
| Total | 3 (11%) | 23 (82%) | 0 | 2 (7%) |

Proposal 4. AS/NZS 3500 Plumbing and drainage standards

FIGURE 4.2: Preferred transition period for the proposal for AS/NZS 3500 Plumbing and drainage standards



4.3. What we are doing

Considering the feedback from the consultation, MBIE will be citing the new version of the AS/NZS 3500 standards and issuing the new Acceptable Solutions G12/AS3. The documents will be amended in November 2023 with a 12 month transition period ending in November 2024. At the end of the transition period, previous versions of the acceptable solutions and the standards will no longer be deemed to comply with the Building Code. MBIE considers that, since the new versions of the standards have already been available for two years, the additional 12 month transition period will be sufficient for the changes. This will align with the transition period for other proposals for plumbing and drainage. MBIE will be supporting these changes with the provision of information and education about the changes.

With the citation of the standards, MBIE will including the AS/NZS 3500.1: 2021 Amendment 1 versions of this standard. This amendment was initiated by MBIE to correct New Zealand Building Code references and to reinstate backflow prevention device details that were erroneously removed during the publication process.

Along with the publication of the acceptable solutions and verification methods, MBIE will be updating information on the [building.govt.nz website](https://www.building.govt.nz) regarding [drain blockages](#) to reflect the revised versions of AS/NZS 3500.2.

5. Water supply system components

5.1. What we proposed

MBIE proposed 12 improvements within Acceptable Solution G12/AS1 to fill in gaps in this compliance pathway, addressing issues raised by building consent authorities and industry bodies, and to provide more ways for building water supply systems to comply with the Building Code.

We also proposed to introduce a 'deemed to comply' pathway for use by plumbing system designers to calculate the design flow rates for sizing water supply pipework in multiple types of buildings within Verification Method G12/VM1.

The changes proposed included amendments to the provisions in Acceptable Solution G12/AS1 for:

- Introducing expansion vessels as an option for managing thermal expansion within mains pressure storage water heating systems
 - Amending G12/AS1 Paragraphs 6.2.2, 6.3.3 a), 6.6.1 and 6.6.3
 - Issuing new G12/AS1 Paragraphs 6.6.5 c), 6.6.7, 6.6.8, Table 7 and Figure 8 (a)
 - Cite BS EN 13831: 2007 Closed expansion vessels with built-in diaphragm for installation in water
- Seismic restraint of water heaters
 - Amending G12/AS1 Figure 14 to provide more options for the positioning of seismic restraint straps
- Accessible Taps
 - Amending G12/AS1 Paragraph 8.0.1 and Figure 18 to clarify the requirements for accessible lever handle taps, remove the provisions for capstan handle taps and allow for sensors taps to be provided for use by people with disabilities
- Wet-back water heaters
 - Amending G12/AS1 Paragraph 6.13.1
 - Citing Part 4 of NZS 4603: 1985 Installation of low-pressure thermal storage electric water heaters with copper cylinders (open-vented systems): Amendment 1 for the design and installation of wet-back water heating systems
- UV resistant pipework insulation material
 - Amending G12/AS1 Paragraphs 6.7.6 and 6.8.3 b)
 - Issuing new G12/AS1 Paragraph 6.7.7 to specify that pipework insulation material exposed to direct sunlight to be UV resistant or suitably protected to withstand the degradation that can be caused by exposure to ultraviolet light
- Cleaning and disinfection of water storage tanks
 - Issuing new G12/AS1 Paragraph 5.1.2 and 5.2.2 comment to cite AS/NZS 3500.1: 2021 for the cleaning and disinfection of potable water tanks and overflow pipe discharge locations.
- Minimum and maximum water pressures at sanitary fixtures
 - Issuing new G12/AS1 Paragraphs 5.3.1, 5.3.2 and 5.3.3 and a comment to specify minimum and maximum water pressures for sanitary fixtures, sanitary appliances and hose taps.
- Water supply pipework installation standards
 - Amending G12/AS1 Paragraph 7.4.1
 - Issuing new G12/AS1 Paragraphs 7.5.2 and 7.5.3
 - Citing the following water supply pipework installation standards in Acceptable Solution G12/AS1
 - AS/NZS 2033: 2008 Installation of polyethylene pipe systems Amendment 1, 2
 - AS 4809: 2017 Copper pipe and fittings – Installation and commissioning
- Unintentional heating of cold water
 - Issuing the new Paragraph 7.3.1 and a comment to require water supply systems to be installed in a manner that avoids the unintentional heating of cold water
- Relief valve drain discharge locations and tundish drain sizing
 - Issuing Paragraph 6.7.2 d) comment, Figure 12 Note and Figure 13 Note to provide examples of acceptable storage water heater relief valve drain discharge locations and additional information regarding the sizing of relief valve tundish drains
- Minimum pipework cover below ground level for non-trafficable areas

Proposal 5. Water supply system components

- Amending Paragraph 7.3.2 to reduce the minimum cover of water supply pipes below gardens, lawns, paths paving for pedestrian use or other areas not subjected to vehicular traffic to 300 mm
- Flushing of water supply systems on completion of construction
 - Issuing Paragraph 7.7.1 to require newly installed and altered water supply systems to be flushed at each discharge point to remove any dirty water or debris on completion of construction.

The changes proposed included amendments to the provisions to Verification method G12/VM1 for the water pipe sizing calculation method

- Removing the citation of AS/NZS 3500.1 and AS/NZS 3500.4
- Citing the loading unit method of the Chartered Institute of Plumbing and Heating Engineering, Plumbing Engineering Services Design Guide, Hornchurch 2002 for determining maximum simultaneous flow rates for use in sizing hot and cold water services in multiple types of buildings

In the consultation, MBIE sought feedback on three questions:

- Do you support the amendments to Acceptable Solution G12/AS1 for the following topics?
- Do you support the proposed amendment to Verification Method G12/VM1 to cite the Plumbing engineering services design guides loading unit method for determining maximum simultaneous flow rates for sizing water supply pipework?
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- Do you agree with the proposed transition time of 12 months for the proposed changes to take effect?

Respondents were given tick box options for the first question to identify their support separately for each of the topics. There was also space available for free text responses across all questions. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

5.2. What we heard

5.2.1. Who submitted on the proposal

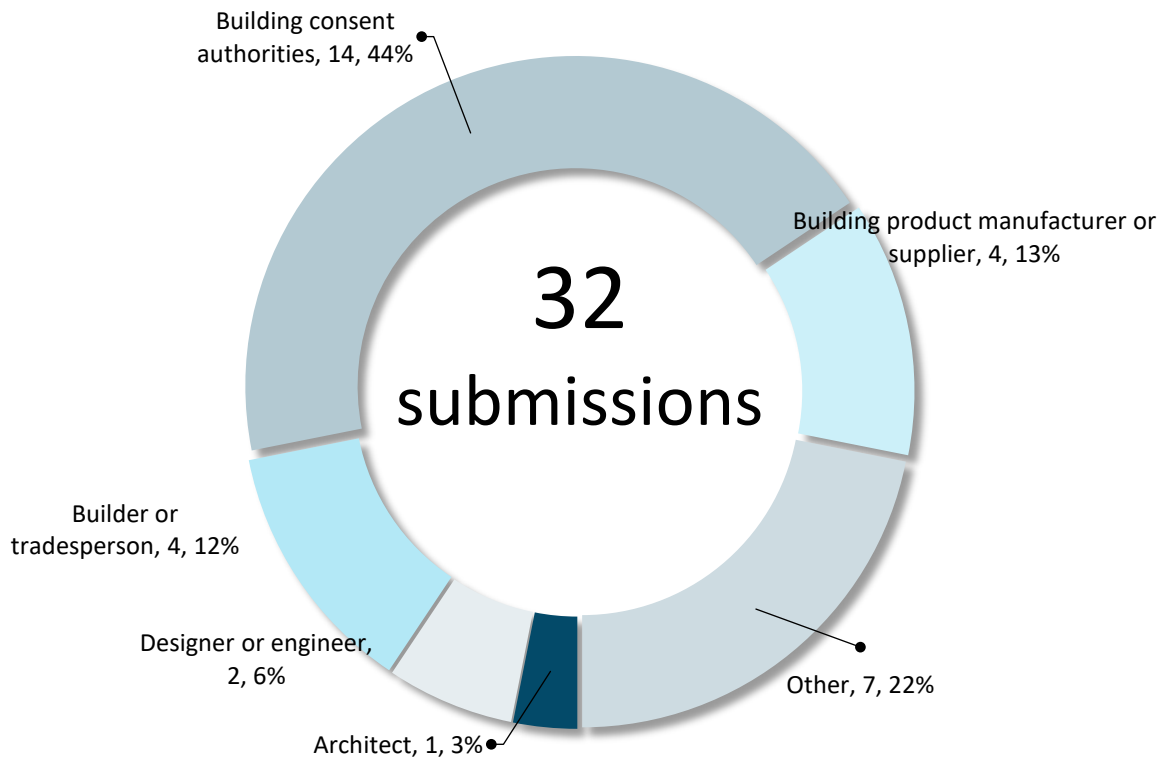
There were 32 submissions on this proposal as shown in Table 5.1 and Figure 5.1. Feedback was primarily received from building consent authorities.

TABLE 5.1: Number of submissions received on the proposal for water supply system components

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (3%) |
| Designers or engineers | 2 (6%) |
| Builders or tradespersons | 4 (12%) |
| Building consent authorities | 14 (44%) |
| Building product manufacturers | 4 (13%) |
| Building owners, occupants or tenants | 0 (0%) |
| Other submitters including those who did not specify their occupation | 7 (22%) |
| Total | 32 |

Proposal 5. Water supply system components

FIGURE 5.1: Number of submissions received on the proposal for water supply system components



5.2.2. Submitter preferences on the proposal

Support for the individual topics in the proposal is shown in Table 5.2. These topics had almost universal support. Comments received on the specific topics are provided in the following sections.

TABLE 5.2: Responses to the question in the consultation: Do you support the amendments to Acceptable Solution G12/AS2 for the following topics?

| Topic | Response | | |
|---|-----------------------------|----------------------------------|------------------------|
| | Yes, I support the proposal | No, I don't support the proposal | Not sure/no preference |
| Expansion vessels | 27 (93%) | 1 (3%) | 1 (3%) |
| Seismic restraint of water heaters | 27 (96%) | 1 (4%) | 0 |
| Accessible taps | 24 (86%) | 0 | 4 (14%) |
| Wet-back water heaters | 24 (86%) | 1 (4%) | 3 (11%) |
| UV resistant pipework insulation material | 25 (93%) | 0 | 2 (7%) |
| Cleaning and disinfection of water storage tanks | 25 (89%) | 0 | 3 (11%) |
| Water supply pipework installation standards | 25 (89%) | 0 | 3 (11%) |
| Minimum and maximum water pressures | 25 (89%) | 2 (7%) | 1 (4%) |
| Relief valve drain discharge locations and tundish drain sizing | 25 (89%) | 2 (7%) | 1 (4%) |
| Minimum pipework cover below ground | 24 (86%) | 0 | 4 (14%) |
| Flushing of water supply systems | 24 (86%) | 0 | 4 (14%) |
| Unintentional heating of cold water | 23 (82%) | 0 | 5 (18%) |
| Verification Method G12/VM1 | 23 (82%) | 0 | 5 (18%) |

Proposal 5. Water supply system components

5.2.2.1. Expansion vessels

This topic was supported by 93% of the submissions. Analysis of the expansion vessel proposal submissions identified the following key aspects to consider:

- Additional clarity could be provided regarding the applicability of expansion control options to various valve vented storage water heating systems in the proposed G12/AS1 Paragraph 6.6.3 a).
- The wording change to add “pressure” before “relief valve” in G12/AS1 Paragraph 6.6.3.
- The use of the word “alternatively” in the proposed G12/AS1 Paragraph 6.6.5 c) as it could be interpreted as implying an alternative solution.
- Requiring both expansion control valves and expansion vessels to be provided as an additional safety precaution.
- The direct mounting of expansion control valves to storage water heaters would be unlikely to meet the performance requirements of Building Code clause H1.3.4 which covers the energy efficiency of hot water systems.
- Remote mounting of an expansion vessel with a heat trap and the advantages of this configuration. The proposed minimum distance/heat trap provision for expansion vessels is intended to minimise any risks associated with heated water entering and remaining within the expansion vessel. To minimise the risk of Legionella bacteria growth, expansion vessels should be installed in cool areas on cold flowing pipes and mounted as close to the incoming water supply as possible.
- The practicality of requiring a heat trap to be provided on the cold water supply pipe between the expansion control valve and the storage water heater where expansion control valves are located within 500 mm of a storage water heater inlet. This may be difficult due to space constraints and drain locations. Additionally, it was indicated that warm water expands back towards the valve. The warm water remains in the inlet pipe which is typically uninsulated and the residual heat is lost.

5.2.2.2. Seismic restraint of water heaters

The introduction of additional options for the seismic restraint of storage water heaters is supported by 96% of consultation submitters. Submitters recognised that this can be a pain point and that any improvements would provide a benefit.

Analysis of the submissions identified the following key aspects to consider:

- The clarity of notes regarding the water heater strapping appeared conflicting and confusing.
- Whether straps installed in the top 25% and bottom 25%, without the requirement for an additional strap, are sufficient to address the risk.

MBIE note that the proposed changes in the consultation were based on the latest loading standard requirements and are designed to cover a broader range of scenarios than the current detail. It also is in line with requirements for proprietary systems on the market or other requirements for the restraint of building systems.

5.2.2.3. Accessible taps

This topic was supported by 86% of the submissions with the remaining submissions having no stated preference. No submissions were received objecting to, or proving comment on, the accessible tap proposal. This was not unexpected as this topic supported provisions for modern accessible tapware to align with current industry practice.

5.2.2.4. Wet-back water heaters

This topic was supported by 86% of the submissions. Comments from the submissions recommended clarifying that Paragraph 6.13.1 applies to wet-back water heating systems as opposed to wet-back water heaters themselves (i.e. the heat exchanger installed within the solid fuel heater).

MBIE also received comments requesting the inclusion of water heaters with stainless steel coil and to provide solutions for all types of dual heating water heating systems. These were determined to be out of scope for the proposal and logged for consideration as part of a future update.

5.2.2.5. UV resistant pipework insulation material

This topic was supported by 93% of the submissions with the remaining submissions having no stated preference. No specific feedback was received regarding the UV resistance of pipework insulation material. This was not unexpected as this practice aligns with good industry practice and provisions within AS/NZS 3500.

5.2.2.6. Cleaning and disinfection of water storage tanks

This topic was supported by 89% of the submissions with the remaining submissions having no stated preference. Comments from the submissions recommended MBIE to consider:

Proposal 5. Water supply system components

- Withdrawing the cross reference to AS/NZS 3500.1 in G12/AS1 Paragraph 5.2.2 comment as it does not solely relate to the provision of water tank overflows.
- For the cleaning and disinfecting of water storage tanks used to supply water to multiple properties, a more thorough cleaning process is required with monitoring of chlorine contact time. It was suggested that consideration is given to pointing towards the [Water New Zealand Hygiene Practises guide](#) to prevent water contamination as an additional source of information. However, this guidance is more suited for use by network utility operators when disinfecting water supply reservoirs and water mains rather than for Building Code compliance.

5.2.2.7. Water supply pipework installation standards

This topic was supported by 89% of the submissions with the remaining submissions having no stated preference. One submission noted that installation information should also be provided for polybutylene and cross-linked polyethylene pipe systems as these are two of the most used plumbing pipe systems in New Zealand. MBIE considered this during the development of this proposal. However, we were unable to identify any suitable installation standards to reference for these pipework systems.

5.2.2.8. Minimum and maximum water pressures

This topic was supported by 89% of the submissions. Comments from the submissions recommended MBIE to consider:

- The practicality and costs of limiting the maximum water pressure for external hose taps to 1000 kPa when the pressure from the mains is rarely above 1000 kPa.
- Providing additional information on the background of the proposed maximum water pressures for sanitary fixtures and appliances. Although the introduction of a maximum pressure may help improve water efficiency, the primary reason for proposing the inclusion of maximum and minimum water pressures within G12/AS1 is to ensure flow rates to sanitary fixtures and sanitary appliances are adequate for the correct functioning of those fixtures and appliances under normal conditions. Additionally, limiting water pressures reduces the risk of water hammer, splashing, excessive discharge of pressure relief valves and protects fixtures, appliances, valves and other system components from pressures that exceed their design limits.
- Whether the proposed Paragraph 5.3.1 should exclude pressure increases due to thermal expansion of water. MBIE notes that this is a complex issue and the minimum and maximum water pressures proposed are not anticipated to be a barrier in the design of water heating systems that fall within the scope of G12/AS1. The point raised could be more of an issue in more complex water supply systems, such as circulatory domestic heated water systems installed in multi-story buildings, which fall outside the scope of G12/AS1.
- The term “reference” in Paragraph 5.4.1 and the 5.5.3 comment as opposed to the term “referred to” to avoid confusion on whether manufacturer’s instructions are to be included in the reference section of the document.
- A new cross-reference for the provisions in G12/AS1 Figure 5.

5.2.2.9. Relief valve drain discharge location and tundish drain sizing

This topic was supported by 89% of the submissions. One comment indicated concern about the proposed notes below G12/AS1 Figures 12 and 13 regarding the sizing of tundish and tundish drains. Full flow discharge is not the way these relief valves would typically open. Sizing the tundish and drain to receive full flow may be overly onerous and could conflict with the requirements in Paragraph 6.7.3 for combined relief valve drains.

5.2.2.10. Minimum pipework cover below ground

This topic was supported by 86% of the submissions with the remaining submissions having no stated preference. No comments or objections were received regarding the proposal to reduce the minimum cover of water supply pipes below gardens, lawns, paths paving for pedestrian use or other areas not subjected to vehicular traffic to 300 mm.

5.2.2.11. Flushing of water supply systems

This topic was supported by 86% of the submissions with the remaining submissions having no stated preference. No comments or objections were received regarding the proposal to require newly installed and altered water supply systems to be flushed at each discharge point to remove any dirty water or debris on completion of construction.

5.2.2.12. Unintentional heating of cold water

This topic was supported by 82% of the submissions with the remaining submissions having no stated preference. One comment was received which suggested that the unintentional heating of cold water has potential safety impacts and should be treated with the same focus as backflow.

Proposal 5. Water supply system components

5.2.2.13. Verification Method G12/VM1

Issuing the new Verification Method G12/VM1 was supported by 82% of the submissions with the remaining submissions having no stated preference. The new verification method was acknowledged as being a good option as the existing pipe sizing method in AS/NZS 3500.2 has limitations. Submissions on this topic suggested that more clarity be added to the scope of the content being referenced with G12/VM1 to make it more user-friendly.

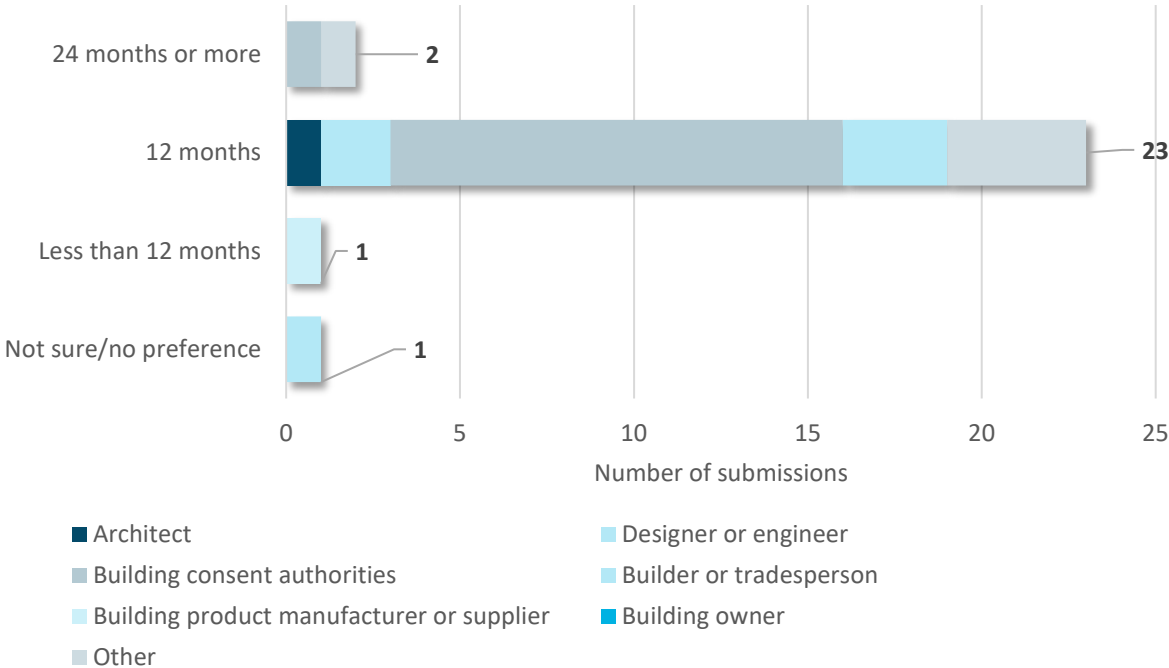
5.2.3. Submitter preferences on the transition period

There were 27 responses to the question on the transition period (see Table 5.3 and Figure 5.2). Twenty-four submissions (89%) preferred a transition period of 12 months or less while two submissions preferred 24 months or more and 1 submission had no indicated preference.

TABLE 5.3: Preferred transition period from the public consultation submissions

| Occupation | Preferred end of the transition period | | | |
|---------------------------------------|--|-----------------|---------------------|------------------------|
| | 24 months or more | 12 months | Less than 12 months | Not sure/No preference |
| Architects | 0 | 1 | 0 | 0 |
| Designers or engineers | 0 | 2 | 0 | 0 |
| Builders or tradespersons | 1 | 3 | 0 | 1 |
| Building consent authorities | 0 | 13 | 0 | 0 |
| Building product manufacturers | 0 | 0 | 1 | 0 |
| Building owners, occupants or tenants | 0 | 0 | 0 | 0 |
| Other submitters | 1 | 4 | 0 | 0 |
| Total | 2 (7%) | 23 (85%) | 1 (4%) | 1 (4%) |

FIGURE 5.2: Preferred transition period for the water system supply components



Proposal 5. Water supply system components

5.3. What we are doing

Considering the feedback from the consultation, MBIE is amending Acceptable Solution G12/AS1 to fill in gaps in this compliance pathway, address issues raised by building consent authorities and industry bodies, and to provide more ways for building water supply systems to comply with the Building Code. We are issuing the new Verification Method G12/VM1 to introduce a method for use by plumbing system designers to calculate the design flow rates for sizing water supply pipework in multiple types of buildings.

The documents will be amended in November 2023 with a 12 month transition period ending in November 2024. At the end of the transition period, previous versions of the documents will no longer be deemed to comply with the Building Code. MBIE will be supporting these changes with the provision of information and education about the changes.

Changes for G12/AS1 and G12/VM1 to assist in the interpretation of the new requirements in this proposal and to address comments received in the consultation include:

- Expansion vessels
 - Clarifying the wording in Paragraph 6.3.3 around the applicability of expansion control options to particular storage water heating systems.
 - Withdrawing the proposed Paragraph 6.6.5 c) regarding expansion control valve and heat trap installation. Heat trap provisions will be considered for future potential changes to G12/AS1.
 - Providing editorial changes in wording for Paragraph 6.6.7 d), 6.6.8 Comment, and Table 7.
- Seismic restraint of water heaters - Providing editorial changes in wording to notes for Figure 14.
- Accessible taps – Clarifying the dimension in Figure 18 indicates the clearance of the lever handle in all positions.
- Wet-back water heaters – Clarifying that Paragraph 6.13.1 c) applies to wet-back water heating system pipework in addition to the wet-back heat exchanger.
- UV resistant pipework insulation material – No changes to what was proposed.
- Cleaning and disinfection of water storage tanks – Withdrawing the proposed Paragraph 5.2.2 comment which referenced AS/NZS 3500.1 and instead including a list of examples for acceptable water tank overflow pipe discharge locations directly in this comment.
- Water supply pipework installation standards – Replacing the proposed paragraphs with a single table to list the standards and including a note to refer to manufacturer’s information and installation instructions.
- Minimum and maximum water pressures
 - Replacing the term “static pressure” with “working pressure” as this relates to the maximum water pressure encountered while a sanitary fixture or sanitary appliance is in operation.
 - Expressing the working pressures with meters of head along with Pascals.
 - Relocating the existing Paragraph 5.3.2 to the section on water pressures as it relates to water pressures instead of water pipe size.
 - Revising the proposed comment for Paragraph 5.3.2 to indicate that manufacturers’ information must also be referred to for minimum and maximum pressure requirements.
 - Withdrawing the proposal to introduce a maximum pressure limit for external hose taps on the basis that pressure limitations for external hose taps are not considered necessary.
- Relief valve drain discharge locations and tundish drain sizing – Removing the term “full flow” on the basis that full flow discharge is not the way these relief valves would typically open.
- Minimum pipework cover below ground – No changes to what was proposed.
- Flushing of water supply systems – No changes to what was proposed.
- Unintentional heating of cold water – Replacing the term ‘services’ with ‘cold water supply systems’.
- Verification Method G12/VM1 – Providing an expanded introduction and scope of the verification method to assist with consistency in its application.

6. Plumbing and drainage system material standards

6.1. What we proposed

MBIE proposed to cite the latest manufacturing standards for plumbing and drainage system components. These proposed changes form part of regular maintenance updates to address outdated product manufacturing standard citations. In total, there are twelve new or amended standards proposed for citation in Acceptable Solution E1/AS1, twenty-two for G12/AS1 and G12/AS2, and another twelve for G13/AS1 and G13/AS2.

The changes proposed:

- Cite the following surface water drainage material standards in Acceptable Solution E1/AS1
 - AS/NZS 1254: 2010 PVC-U pipes and fittings for stormwater and surface water applications, Amendment 3: 2018
 - AS/NZS 2280: 2020 Ductile iron pipes and fittings, Amendment 1
 - AS/NZS 2566.1: 1998 Buried Flexible pipelines – Structural Design, Amendment 1: 2017
 - NZS 3501: 1976 Specification for copper tubes for water, gas, and sanitation, Amendments: 1, 2, 3
 - AS/NZS 4130: 2018 Polyethylene (PE) pipes for pressure applications, Amendment: 1: 2021
 - BS EN 1172: 2011 Copper and copper alloys – sheet and strip for building purposes
 - AS 1397: 2021 Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium
 - AS 1432: 2004 Copper tubes for plumbing, gasfitting and drainage applications
 - AS 1528.1: 2019 Stainless steel tubes and tube fittings for food processing and hygienic applications – Tubes
 - AS 1566: 1997 Copper and copper alloys – Rolled flat products
 - AS 1866: 1997 Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
 - ASTM A240/A240M: 2020 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- Amend Acceptable Solution E1/AS1
 - Remove the citation for NZS/BS 970.1: 1991 Specification for wrought steels for mechanical and allied engineering purposes – General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels, Amendment 1. This standard has been revoked and the applicable references in the acceptable solution were proposed to cite ASTM A240 instead.
 - Revise the acceptable material standards for rainwater downpipes and gutters listed in Tables 4 and 6 to include NZS 3501, AS/NZS 4130, AS 1432, AS 1528, AS 1566, AS 1866, and ASTM A240M
- Cite the following water supply system material standards in Acceptable Solution G12/AS1
 - BS 6920 Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water
 - Part 1: 2000 Specification
 - Part 2: 2000 Methods of tests
 - AS 1357.1: 2019 Valves primarily for use in heated water systems, Part 1: Protection valves
 - AS 1432: 2004 Copper tubes for plumbing, gasfitting and drainage applications
 - AS 3498: 2020 Safety and public health requirements for plumbing products - Water heaters and hot-water storage tanks
 - AS 3688: 2016 Water supply and gas systems – Metallic fittings and end connectors
 - AS 5200.053 Plumbing and drainage products – Stainless steel pipes and tubes for pressure applications
 - AS/NZS 1477: 2017 PVC pipes and fittings for pressure applications
 - AS/NZS 2492: 2007 Cross-linked polyethylene (PE-X) pipes for pressure applications
 - AS/NZS 2537: Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications
 - Part 1: 2011 Plastics piping systems for hot and cold-water installations – Crosslinked polyethylene (PE-X) - General
 - Part 2: 2011 Plastics piping systems for hot and cold-water installations – Crosslinked polyethylene (PE-X) - Fittings, Amendment 1

Proposal 6. Plumbing and drainage system material standards

- Part 3: 2011 Plastics piping systems for hot and cold-water installations – Crosslinked polyethylene (PE-X) - Fitness for purpose of the system
- Part 4: 2011 Plastics piping systems for hot and cold-water installations – Crosslinked polyethylene (PE-X) - Guidance for the assessment of conformity
- AS/NZS 2642.1: 2007 Polybutylene pipe systems – Polybutylene (PB) pipe extrusion compounds, Amendment 1
- AS/NZS 3879: 2011 Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings
- AS/NZS 4020: 2018 Testing of products for use in contact with drinking water
- AS/NZS 4129: 2020 Fittings for polyethylene (PE) pipes for pressure applications
- AS/NZS 4130: 2018 Polyethylene (PE) pipes for pressure applications, Amendment 1
- New Zealand Regulations Gas (Safety and Measurement) Regulations 2010
- Remove the following references from G12/AS1
 - NZS/BS 1387: 1985 Specification for screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or screwing to BS 21 pipe threads, Amendment 1
 - NZS 5807.2: 1980 Code of practice for industrial identification by colour, wording or other coding – Identification of contents of piping, conduit and ducts, Amendments 1 and 2
 - NZS 7601: 1978 Specification for polyethylene pipe (Type 3) for cold water services
 - NZS 7602: 1977 Specification for polyethylene pipe (Type 5) for cold water services, Amendment 1
 - NZS 7610: 1991 Specification for blue polyethylene pipes up to nominal size 63 for below ground use for potable water, Amendments: 1, 2 and 3
- Amend Acceptable Solution G12/AS1
 - Table 1 – Amend the list of materials for hot and cold-water pipes and fittings to include additional types of materials and cite the relevant standards for their manufacturing and installation, and remove galvanised steel as an acceptable material.
 - Table 5 – Amend the cited regulations for gas storage and instantaneous water heaters
 - Paragraph 2.2.4 – Provide a new comment indicating that WaterMark certified products may be verified as satisfying the relevant performance requirements of Building Code Clause G12 Water Supplies.
- Cite new plumbing and drainage system material standards in Acceptable Solutions G13/AS1 & G13/AS2
 - AS/NZS 2280: 2020 Ductile iron pipes and fittings, Amendment 1
 - AS/NZS 3879: 2011 Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings
 - AS/NZS 4130: 2018 Polyethylene (PE) pipe for pressure applications, Amendment 1
 - AS/NZS 7671: 2010 Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings - Polypropylene (PP)
 - AS 1432: 2004 Copper tubes for plumbing, gasfitting and drainage applications
 - AS 1741: 1991 Vitrified clay pipes and fittings with flexible joints - Sewer quality
 - AS 3571: 2009 Plastic piping systems – Glass reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin – pressure and non-pressure drainage and sewerage (ISO 10467: 2004 MOD), Amendment 1
 - AS 4809: 2017 Copper pipe and fittings – Installation and commissioning
 - BS EN 295.1: 2013 Vitrified clay pipe systems for drains and sewers – Requirements for pipes, fittings and joints
 - BS EN 1124: Pipes and fittings of longitudinally welded stainless steel pipes with spigot and socket for waste water systems
 - Part 1: 1999 Requirements, testing, quality control
 - Part 2: 2014 System S, forms and dimensions
- Amend Acceptable Solution G13/AS1 and G13/AS2
 - G13/AS1 Paragraph 2.1.1 and G13/AS2 Paragraph 2.0.2 – Provide informative comments to explain that WaterMark certified products may be deemed to satisfy the relevant performances of clause G13
 - G13/AS1 Table 1 and G13/AS2 Table 1 – Amend the list of materials for sanitary plumbing and drainage pipes to include additional materials and cite installation and manufacturing standards

For this proposal, MBIE considered options to identify alternative standards and to cite newer versions of standards already cited. MBIE considered alternative standards where the current standards had been revoked and no other suitable standards specific to the context in New Zealand were identified.

Proposal 6. Plumbing and drainage system material standards

In the consultation, MBIE sought feedback on three questions:

- Do you support the amendments to the following to include the proposed referenced standards and documents for manufacturing plumbing and drainage system components? The list of standards is provided in the appendices to the consultation document. If there are standards you don't support, please tell us which standards those are and any reason(s) for your choice.
- What impacts would you expect for you or your business from the proposed change to the transition period? These impacts may be economic/financial, environmental, health and wellbeing, or other areas.
- Do you agree with the proposed transition time of 12 months for the proposed changes to take effect?

Respondents were given tick box options for the first question to identify their support separately for the E1, G12, and G13 documents. There was also space available for free text responses across all questions. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

6.2. What we heard

6.2.1. Who submitted on the proposal

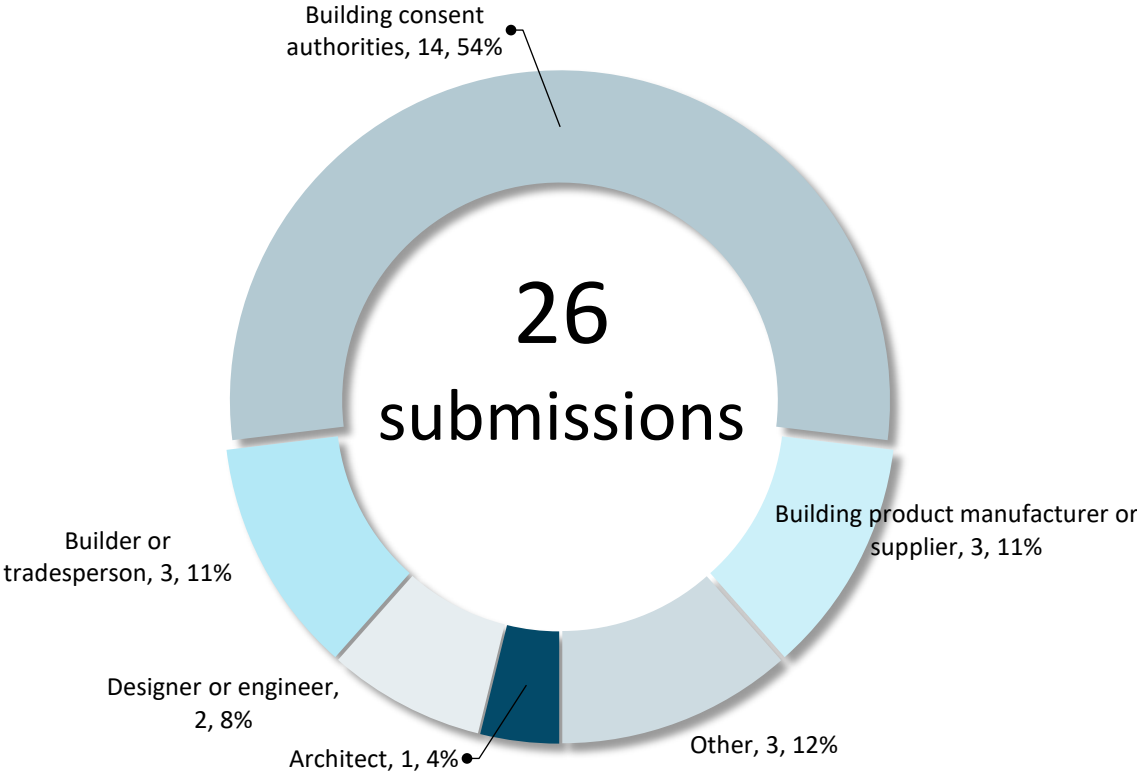
There were 26 submissions on this consultation as shown in Table 6.1 and Figure 6.1. Feedback was primarily received from building consent authorities.

TABLE 6.1: Number of submissions received on the proposal for plumbing and drainage system material standards

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (4%) |
| Designers or engineers | 2 (8%) |
| Builders or tradespersons | 3 (11%) |
| Building consent authorities | 14 (54%) |
| Building product manufacturers | 3 (11%) |
| Building owners, occupants or tenants | 0 (0%) |
| Other submitters including those who did not specify their occupation | 3 (12%) |
| Total | 26 |

Proposal 6. Plumbing and drainage system material standards

FIGURE 6.1: Number of submissions received on the proposal for plumbing and drainage system material standards



6.2.2. Submitter preferences on the proposal

Submitters responses to question 1 in the proposal are shown in Table 6.2. There was unanimous support for the changes for the E1 and G13 acceptable solutions. One submission did not support the changes for the G12 acceptable solutions. This submission indicated a concern about the acceptance (or lack of acceptance) of galvanised pipe as a corrosion resistant material in the construction emergency eyewash and shower systems. Galvanised steel was proposed to be removed from G12/AS1 Table 1 as a deemed to comply material for hot and cold water systems. However, there are not currently any deemed to comply solutions for emergency eyewash or shower systems. The removal of galvanised steel from G12/AS1 Table 1 is not anticipated to effect how these systems are assessed for compliance with the Building Code. This comment was considered out of scope for the consultation and logged for future consideration. Other comments considered to be out of scope for the proposal include one related to provisions for a surface water sump in E1/AS1 and E1/AS2 and the inclusion of PE-RT pipe in G12/AS1 Table 1. These comments have been logged for future consideration. One submission commented on of performance of cross-linked polyethylene pipe manufacturers to AS 2492 when used in hot water systems. This comment suggested that G12/AS1 Table 1 is accompanied by an equivalent limitation to that specified in AS/NZS 3500.4: 2021 Table C3(a).

TABLE 6.2: Responses to the question in the consultation: Do you support the amendments to the following to include the proposed referenced standards and documents for manufacturing plumbing and drainage system components?

| Acceptable solutions | Response | | |
|----------------------|-----------------------------|----------------------------------|------------------------|
| | Yes, I support the proposal | No, I don't support the proposal | Not sure/no preference |
| E1/AS1 and E1/AS2 | 23 (100%) | 0 | 0 |
| G12/AS1 and G12/AS2 | 24 (96%) | 1 (4%) | 0 |
| G13/AS1 and G13/AS2 | 23 (100%) | 0 | 0 |

There were no significant impacts identified from the submitters on this proposal. One submission identified that there may be short term price increases to the cost of materials but there is not expected to be any significant impact to the overall

Proposal 6. Plumbing and drainage system material standards

cost of materials or construction from this proposal. Several submissions identified that training and education should be provided to limit any potential impacts on consenting resulting from the changes.

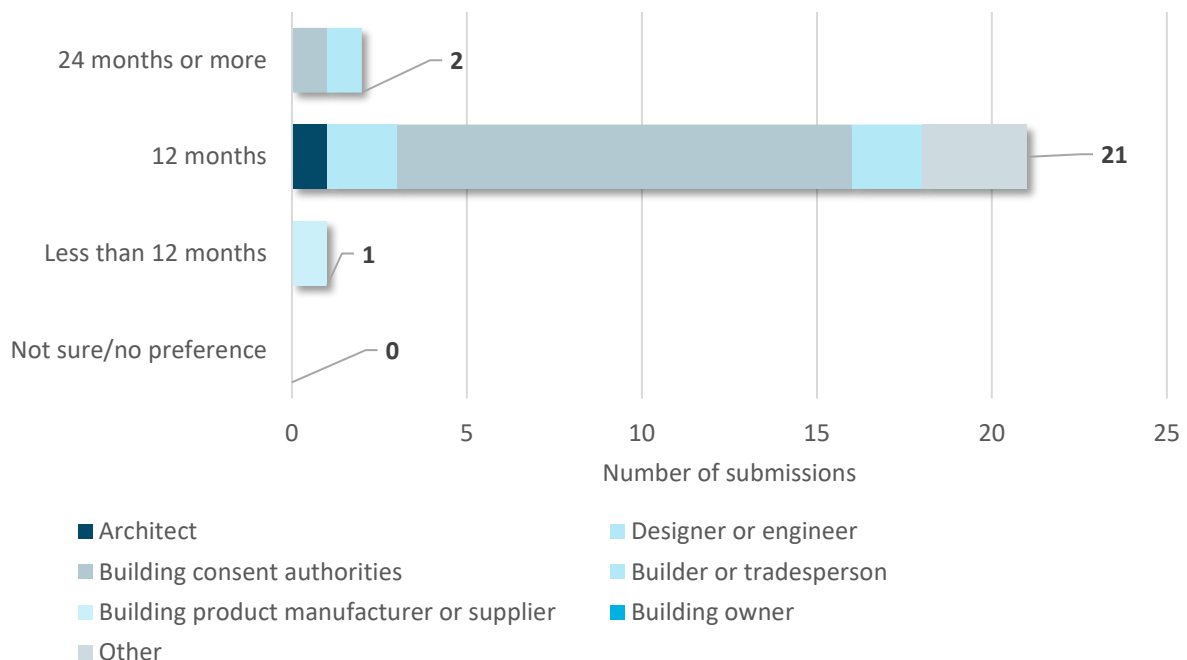
6.2.3. Submitter preferences on the transition period

There were 24 responses to the question on the transition period (see Table 6.3 and Figure 6.2). Twenty-two submissions (92%) preferred a transition period of 12 months or less for the changes to take effect. Submissions that supported a longer transition period preferred this as it would give more time for manufacturers to incorporate the proposed changes.

TABLE 6.3: Preferred transition period from the public consultation submissions

| Occupation | Preferred end of the transition period | | | |
|---------------------------------------|--|-----------------|---------------------|------------------------|
| | 24 months or more | 12 months | Less than 12 months | Not sure/No preference |
| Architects | 0 | 1 | 0 | 0 |
| Designers or engineers | 0 | 2 | 0 | 0 |
| Builders or tradespersons | 1 | 2 | 0 | 0 |
| Building consent authorities | 1 | 13 | 0 | 0 |
| Building product manufacturers | 0 | 0 | 1 | 0 |
| Building owners, occupants or tenants | 0 | 0 | 0 | 0 |
| Other submitters | 0 | 3 | 0 | 0 |
| Total | 2 (8%) | 21 (88%) | 1 (4%) | 0 (0%) |

FIGURE 6.2: Preferred transition period for the proposal for plumbing and drainage system material standards



6.3. What we are doing

Considering the feedback from the consultation, MBIE will amend the E1, G12 and G13 acceptable solutions to cite the new standards. The documents will be amended in November 2023 with a 12 month transition period ending in November

Proposal 6. Plumbing and drainage system material standards

2024. At the end of the transition period, previous versions of the documents will no longer be deemed to comply with the Building Code. MBIE will be supporting these changes with the provision of information and education about the changes.

As part of this proposal, we will also be amending G12/AS1 to clarify provisions for cross-linked polyethylene pipes used for hot water in Table 1 and to remove galvanised steel pipework support spacings in Table 9 to match with the new Paragraph 2.2 requirements for pipe materials which no longer includes galvanised steel. We will also be revising two existing guidance documents to reflect the revised list of standards. These include:

- [Evaluation of pipe suitability for hot and cold water services](#)
- [Copper water pipe and fittings](#)

7. Resolving conflicts and editorial changes

7.1. What we proposed

We proposed to amend Acceptable Solutions E1/AS1, G12/AS1, G12/AS2, G13/AS1 and G13/AS2 to make editorial changes and align requirements between compliance pathways for plumbing and drainage systems. Editorial changes include obvious errors in the text, typos, spelling mistakes, incorrect cross-references, changes in the formatting, minor clarifications of text with minor to no impact, or other items related to current document drafting practices.

The proposed changes are described below.

- E1/AS1 Providing example surface water sump catchment area calculations – This proposed change involves the addition of a sample calculation example in a comment to Acceptable Solution E1/AS1 Paragraph 3.6.2. This is intended to aid in the interpretation of the calculations for determining the maximum catchment area for type 1 and 2 surface water sumps. This comment box is provided for information only and not intended to affect the level of performance expected in design.
- G12/AS1 Storage water heater vent pipe standing water level – This proposed change involves updating a dimension in G12/AS1 Figure 7 to align the standing water level dimension with the requirements of G12/AS1 Paragraph 6.8.2 e). The water level in the vent pipe in the figure is proposed to be shown with a minimum height of 3.0 metres above the highest outlet.
- G12/AS1 Free outlet (push through) storage water heating system relief valve – This proposed change involves the inclusion of a relief valve on the free outlet (push through) water heater shown in G12/AS1 Figure 11 to align with the requirement for this valve in G12/AS1 Paragraph 6.4.2.
- G12/AS1 Legionella control within circulatory heated water systems – This proposed change involves shifting G12/AS1 Paragraph 6.14.4 to an informative comment and providing clarification that the design and installation of hot or warm water circulating systems and alternative methods of controlling Legionella within these systems is outside the scope of this Acceptable Solution.
- G12/AS1 Water pipe size table references – This proposed change involves amending the water pipe size table references in G12/AS1 Paragraph 5.3.1 comment, Table 3 and Table 4.
- G12/AS1 PVC-U pipework testing method paragraph structure – This proposed change involves amending the structure of G12/AS1 Paragraph 7.5.2 PVC-U for consistency.
- G12/AS2 Flashing of pipe penetrations through profiled metal roofs – Amend the text in G12/AS2 Paragraph 5.2.5 and 5.2.6 and Figure 6 for flashing dimensions for consistency with equivalent requirements found in Acceptable Solution E2/AS1 Paragraph 8.4.17 a).
- G13/AS1 Paragraph 4.6.3 and G13/AS2 Paragraph 3.5.2 and Figure 1 – Provide new requirements for the installation of junctions in graded pipes and drains to align with AS/NZS 3500.2: 2021. Junctions in graded discharge pipes and drains are proposed to have an upstream angle of no greater than 45° and be positioned at an incline of not less than 15° above the horizontal to reduce the risk of blockage.
- G13/AS2 Gully trap height above unpaved ground level – The proposed change includes reducing the minimum overflow level for a gully dish above unpaved surfaces within G13/AS2 Paragraph 3.3.1 a) ii) and Figure 2 from 100 mm to 75 mm. This is to be made consistent with equivalent requirements under G13/AS3 Sanitary plumbing and drainage (AS/NZS 3500.2: 2021).
- G13/AS2 Paragraph 3.5.2 – Provide a new comment to help clarify the requirement for drains to be installed at the maximum practicable gradient.

In the consultation, MBIE sought feedback on one question for the proposal:

- Do you support the following amendments to the acceptable solutions to address the editorial changes and align plumbing and drainage requirements as proposed?

Respondents were given tick box options to indicate their support for amendments to the individual documents. They were also provided with space for free text responses. Responses to the consultation were received through an online survey portal and through emails sent to MBIE directly.

Proposal 7. Resolving conflicts and editorial changes

7.2. What we heard

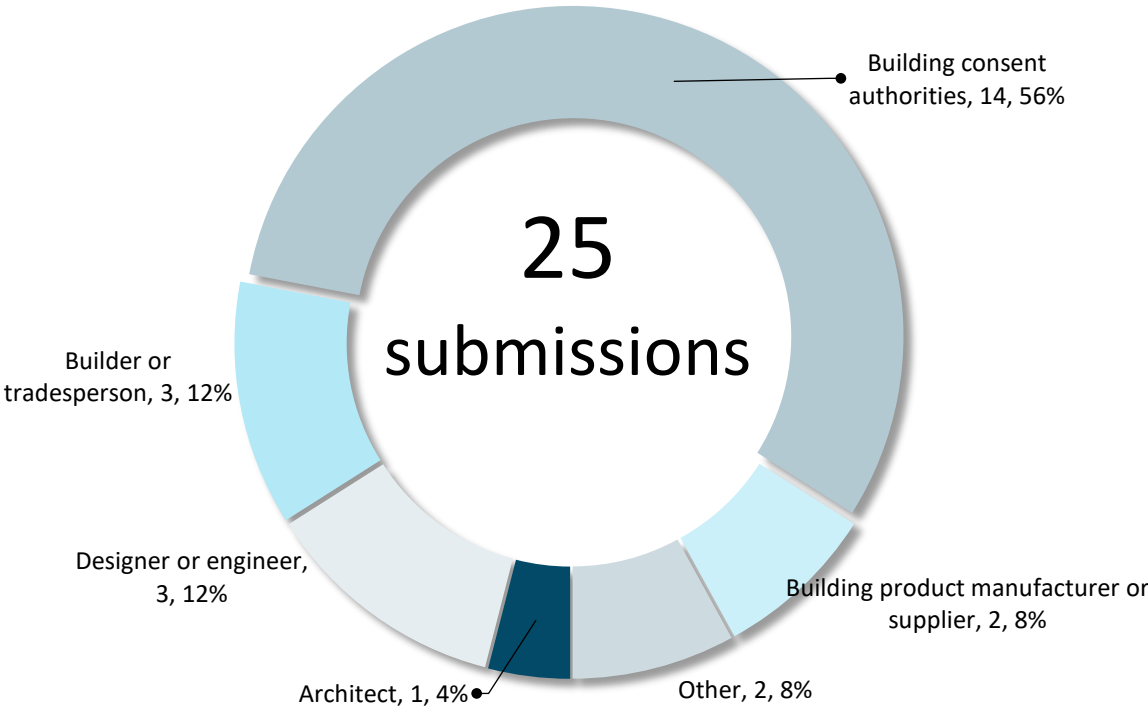
7.2.1. Who submitted on the proposal

There were 25 submissions on this consultation as shown in Table 7.1 and Figure 7.1. Feedback was primarily received from building consent authorities.

TABLE 7.1: Number of submissions received on the proposal for resolving conflicts and editorial changes

| Occupation | Number of submissions and percentage of total |
|---|---|
| Architects | 1 (4%) |
| Designers or engineers | 3 (12%) |
| Builders or tradespersons | 3 (12%) |
| Building consent authorities | 14 (56%) |
| Building product manufacturers | 2 (8%) |
| Building owners, occupants or tenants | 0 (0%) |
| Other submitters including those who did not specify their occupation | 2 (8%) |
| Total | 25 |

FIGURE 7.1: Number of submissions received on the proposal for resolving conflicts and editorial changes



7.2.2. Submitter preferences on the proposal

Submitters responses to the proposal are shown in Table 7.2. Support on this proposal was nearly unanimous except for one submission that did not agree with the proposed amendments to G12/AS1. This comment was in relation to the comment on legionella control within circulatory heated water systems in G12/AS1 Paragraph 6.14.4. This submission

Proposal 7. Resolving conflicts and editorial changes

stated that the current text should be left as a requirement and not a comment. Another submission commented on this paragraph and the use of circulation ring mains less than 55°C being clarified as outside the scope of this acceptable solution. This submission indicated that there is confusion regarding what is acceptable regarding low temperature circulation ring mains.

Another comment on the proposal suggested that the term ‘graded pipes’ in G13/AS1 and G13/AS2 be clarified.

TABLE 7.2: Responses to the question in the consultation: Do you support the amendments as proposed?

| Acceptable solution | Response | | |
|---------------------|-----------------------------|----------------------------------|------------------------|
| | Yes, I support the proposal | No, I don't support the proposal | Not sure/no preference |
| E1/AS1 | 24 (100%) | 0 | 0 |
| G12/AS1 | 24 (96%) | 1 (4%) | 0 |
| G12/AS2 | 23 (100%) | 0 | 0 |
| G13/AS1 | 24 (100%) | 0 | 0 |
| G13/AS2 | 25 (100%) | 0 | 0 |

7.3. What we are doing

Considering the feedback from the consultation, MBIE will amend the E1, G12 and G13 acceptable solutions and verification methods to make editorial corrections. The amended documents will be published in November 2023. However, the portion of the proposal related to G12/AS1 Paragraph 6.14.3 will be revised. The proposed comments 2, 3 will not be included in the amended G12/AS1. These comments relate to the hot water flow and return circulating systems which are outside the scope of the acceptable solution. This scope limitation will be clarified in a comment to Paragraph 6.1.2. The risk of legionella growth and possible legionella outbreaks from circulatory hot water systems, used mostly in highly populated buildings, requires more detailed information about the requirements than is appropriate for a short comment.

All other portions of the proposal will proceed for the amended document. Other editorial corrections already identified to be made to the document after consultation include:

- E1/VM1 Paragraph 2.1.1 – A typo will be corrected in the equation. The letter ‘S’ will be replaced with the appropriate summation sign ‘Σ’. This typo was previously [identified in 2009 as a correction](#).
- E1/VM1 Figure 3 – The figure will be amended to correct the positioning of gradient numbers on the x-axis. An error was introduced into the labelling on the axis when E1/VM1 Amendment 6 was published in 2003. Historical Versions of the Verification Method E1/VM1 before that showed the correct labelling of the axis.
- E1/AS1 Paragraph 3.6.2 Comment – ‘Type 1’ and ‘Type 2’ will be replaced with ‘Type-one’ and ‘Type-two’ to match Figures 8 and 9.
- E1/AS1 Paragraph 3.9.2 – The term ‘acceptable solutions’ will be replaced with ‘acceptable methods’ to differentiate from the acceptable solution itself.
- G12/VM1, G12/AS1, G12/AS2, G12/AS3 – The definition of toxic environment will be amended to include the new defined term *drinking water standards* inserted by the Water Services Act 2021 into the Building Act 2004 and Building Code clause A2.
- G12/AS1 Paragraph 5.1.1. Comment 2 – Reference to NZBC A1 will be replaced with a specific reference to the community care classified use in clause A1 of the Building Code.
- G12/AS1 Paragraph 5.4.1 Comment – The term ‘referenced’ will be replaced with ‘referred to’ and ‘tempering valves’ replaced with ‘temperature control devices’.
- G12/AS1 Table 4 – The term “medium pressure” will be removed from the column heading. The parameters in the column are considered to be low pressure in other parts of the document. The water heater manufacturing Standards cited in G12/AS1 Table 5 include pressure ratings up to 12 meters head in their definitions of low pressure water heaters.

The transition period for these changes will be 12 months to align with other changes made in the E1, G12, and G13 documents. MBIE will be supporting these changes with the provision of information and education about the changes.

