BUILDING PERFORMANCE

Statement of proposals for amending Acceptable Solutions and Verification Methods

August 2018

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

New Zealand Government

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BACKGROUND

The primary legislation governing building work in New Zealand is the Building Act 2004 and the New Zealand Building Code. The main purpose of this legislation is to ensure that buildings in New Zealand are suitable for people to use and occupy, while contributing to the health and wellbeing of occupants and supporting sustainable development. To do this, the Building Act requires that all building work comply with the Building Code.

Acceptable Solutions and Verification Methods are issued by MBIE and provide one way of demonstrating compliance with relevant clauses of the Building Code.

The Government's goal is a more efficient and productive building industry that builds it right the first time and stands behind the quality of its work. To help achieve this, MBIE seeks to ensure that Acceptable Solutions and Verification Methods reflect the latest research, knowledge and building practices. The proposed changes to amend some Acceptable Solutions and Verification Methods are part of this work.

Since the last Acceptable Solution and Verification Method update a number of cited Standards have been amended or updated and new Standards and other documents have been published. It is proposed that these be incorporated into the relevant Acceptable Solutions and Verification Methods.

COMMENT SOUGHT ON THIS STATEMENT OF PROPOSALS

The Ministry of Business, Innovation and Employment (MBIE) seeks your views on two separate matters:

1) on proposals to amend Acceptable Solutions and Verification Methods relating to Clauses B1 Structure, B2 Durability, E2 External moisture, G12 Water supplies and G13 Foul Water as below:

- Building Code Clause B1 Structure: B1/VM1
- Building Code Clause B2 Durability: B2/AS1
- Building Code Clause E2 External Moisture: E2/VM1, E2/AS1
- Building Code Clause G12 Water Supplies: G12/VM1, G12/AS1, G12/AS2
- Building Code Clause G13 Foul Water: G13/AS1, G13/VM2, G13/AS2, G13/AS3

Materials to be incorporated by reference in these proposals are:

- available for inspection free of charge at the Ministry of Business, Innovation and Employment, 15 Stout Street, Wellington (please ring 0800 242 243 to arrange an appointment), or
- may be purchased from Standards New Zealand, 15 Stout Street, Wellington or online at www.standards.govt.nz.

See pages 9-31 below which describe the proposals and request your comment.

2) on the proposal to revoke the Simple House Solution SH/AS1.

MBIE considers SH/AS1 should be revoked as it is now out of date and conflicts with other Acceptable Solutions. SH/AS1 has limited scope and anecdotal evidence suggests the document is not being used.

See pages 32-37 below which describe the proposal and rationale in more detail and request your comment.

HOW TO PROVIDE YOUR FEEDBACK

MBIE invites written comments on the proposals in this document by **5:00pm, Friday 21 September 2018**.

You are welcome to make submissions on some or all of these proposals. Key questions are provided throughout the document to guide your responses.

You can download a submission form at http://mbie.govt.nz/info-services/building-construction/consultations/acceptable-solutions-and-verification-methods-2018 and send your submission by:

- email to buildingfeedback@mbie.govt.nz, with subject line "Consultation – Amendments to Acceptable Solutions and Verification Methods 2018"
- post or courier to:

  Consultation – Amendments to Acceptable Solutions and Verification Methods 2018
  Building Performance and Engineering
  Ministry of Business, Innovation and Employment
  15 Stout Street, Wellington 6011
  Or:
  PO Box 1473, Wellington 6140

What happens to your feedback?

Your feedback will contribute to updating the Acceptable Solutions and Verification Methods. It will also become official information which means it may be requested under the Official Information Act 1982 (OIA).

The OIA specifies that information is to be made available upon request unless there are sufficient grounds for withholding it. If we receive a request, we cannot guarantee that feedback you provide us with will not be made public. Any decision to withhold information requested under the OIA is reviewable by the Ombudsman.

PROPOSED TIMING OF CHANGES TO ACCEPTABLE SOLUTIONS AND VERIFICATION METHODS

Effective Date: 30 November 2018

It is proposed that the amendments to the Acceptable Solutions and Verification Methods will be published on and have an effective date of 30 November 2018*.

Transitional Arrangements: 4 months

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Acceptable Solutions and Verification Methods will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

The proposed revocation of the Simple House Acceptable Solution SH/AS1 will become effective on 30 November 2018, but SH/AS1 will remain in force until 31 March 2019 (the proposed Cessation Date).

The table below illustrates how the proposed transitional provisions will work, with an explanation to follow:

	Before 30 November 2018 (the proposed Effective Date)	**From 30 November 2018 (Effective Date)* to 31 March 2019 (Cessation Date)***	**From 1 April 2019 (the proposed Cessation Date)**
Existing Acceptable Solutions and Verification Methods	If used, will be treated as complying with the Building Code	If used, will be treated as complying with the Building Code	If used, must be considered as an alternative solution proposal
Amended Acceptable Solutions and Verification Methods	Not yet published	If used, will be treated as complying with the Building Code	If used, will be treated as complying with the Building Code
Revoked Simple House Acceptable Solution	If used, will be treated as complying with the Building Code	If used, will be treated as complying with the Building Code	If used, must be considered as an alternative solution proposal

* The actual Effective Date and actual Cessation Date may change following consideration of any responses received.

Under the proposed transitional arrangements:

- if a building consent application is lodged on or before the Cessation Date, using the existing Acceptable Solutions and Verification Methods including the Simple House Acceptable Solution, it will be treated as complying with the relevant provisions of the Building Code;
- if a building consent application is lodged after the Cessation Date, using the existing Acceptable Solutions and Verification Methods and the revoked Simple House Acceptable Solution must be treated as alternative solution proposals; and
- if a building consent application is lodged after the Effective Date, using the amended Acceptable Solutions and Verifications Methods it will be treated as complying with the relevant provisions of the Building Code; and
- to avoid doubt, in the period from the Effective Date to the Cessation Date (dates inclusive) building consent applications will be treated by Building Consent Authorities as complying with the relevant provisions of the Building Code if they correctly use either:
    - i) the existing Acceptable Solutions and Verification Methods including the Simple House Acceptable Solution; or
    - ii) the amended Acceptable Solutions and Verification Methods

PROPOSED AMENDMENTS TO ACCEPTABLE SOLUTIONS AND VERIFICATION METHODS

The following content changes are proposed to the MBIE published Acceptable Solutions and Verification Methods. To make the changes easier to see, new text has been highlighted in **blue**, and existing text that is being deleted has been highlighted in **red**.

Should you require any clarification please contact buildingfeedback@mbie.govt.nz.

Clause B1: Structure

Proposal

MBIE proposes to amend Verification Method B1/VM1 to:

- reference a recently published Technical Specification for specifying durability requirements for steel structures
- reference a recently published Standard for designing composite steel-concrete structures
- update references to wind loading Standards to incorporate the latest versions

The advantages of doing this are that:

- current knowledge and practices would be reflected in the Verification Method
- the Verification Method will clearly specify how to meet Building Code performances
- maintaining the Verification Method will help consenting efficiency because composite steel-concrete design and steel protection measures will no longer need to be treated as alternative solutions proposals

Proposed Reference section changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
AS/NZS 1170: Part 2: 2011 Structural design actions - Wind actions *Amends*: 1, 2, 3	AS/NZS 1170: Part 2: 2011 Structural design actions - Wind actions *Amends*: 1, 2, 3, **4, 5**	Amendments 4 and 5 are included in the reference to AS/NZS 1170.2. Amendments 4 and 5 include: • corrections and clarifications to text • pressure coefficients for previously undefined geometric shapes • clarifying requirements for calculating internal pressures for buildings that may be impacted by windborne debris. The term "dominant opening" is removed
Not currently referenced	**AS/NZS 2327: 2017 Composite structures – Composite steel-concrete construction in buildings**	New Standard referenced in B1/VM1. AS/NZS 2327:2017 provides information on the structural design of steel-concrete composite structures. It expands on the information currently in NZS 3404 Section 13 (currently cited in B1/VM1) providing design information for a wider range of composite structures. Many engineers are already using AS/NZS 2327:2017. A Preliminary Impact Analysis undertaken by the Australian Building Codes Board indicates that use of the Standard will result in more economical, higher quality buildings using fewer building materials and thus reducing cost and environmental impact.
Not currently referenced	**SNZ TS 3404: 2018 Durability requirements for steel structures and**	New Technical Specification referenced in B1/VM1. Currently there is no means of compliance with Building

Current Text	Proposed Changes	Explanation and reasons/justification for change
	components	Code clause B2 Durability for steel construction. Most often, compliance is demonstrated using Appendix C of NZS 3404.1, which references AS/NZS 2312. This Standard is difficult for designers to interpret and generally requires specialist expertise. SNZ TS 3404 clarifies the application of AS/NZS 2312, meaning more designers can specify corrosion protection systems. The proposal to reference NZS TS 3404 in B1/VM1 will provide an approved compliance pathway and avoid the need to justify alternative solutions.
NZS 4211: 2008 Specification for performance of windows	NZS 4211: 2008 Specification for performance of windows ***Amend: 1***	Amendment 1 is included in the reference to NZS 4211. Amendment 1 includes requirements for Extra High wind zones. The change aligns the wind zones provided in NZS 4211 with those in NZS 3604 and NZS 4229, which already incorporate the Extra High wind zone.

Questions relating to the Reference section changes:

Question B1 – 1 Do you agree with the proposed changes to the References section of the B1 Acceptable Solutions and Verification Methods document? Why/ why not?

Question B1 – 2 Do you have any other comments on these referenced Standards and their related documents?

Proposed Verification Method B1/VM1 content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
2.1 AS/NZS 1170.2: 2011 including Amendments 1, 2 and 3	**2.1** AS/NZS 1170.2: 2011 including Amendments 1, 2, 3, **4 and 5**	This is a consequential change to paragraph 2.1 and updates the reference to NZS 1170.2 to include amendments 4 and 5. The effect of including Amendments 4 and 5 is described in the "References" section of this proposal.
No equivalent paragraph currently	**5.1.4A Section 13 Design of composite members and structures** Replace Section 13 Design of composite members and structures with the following: "13 Design of composite members and structures shall be in accordance with AS/NZS 2327."	A recently published Standard AS/NZS 2327 is proposed to replace existing design requirements for composite steel-concrete design in B1/VM1, which currently uses NZS 3404.1 Section 13. Existing composite beam provisions in NZS 3404.1 Section 13 are now superseded by AS/NZS 2327. NZS 3404.1 does not have provisions on composite floors and composite columns and, as a consequence of this, designers often utilise overseas Standards, which may not necessarily provide the safety margins required by AS/NZS 1170.0.
No equivalent paragraph currently	**5.1.9A Appendix C** Replace Appendix C Corrosion Protection with the following: "Appendix C Corrosion Protection Corrosion protection shall be in accordance with SNZ TS 3404 Durability requirements for steel structures and components."	A recently published Technical Specification NZS TS 3404 is proposed to replace corrosion protection provisions in B1/VM1, which references Appendix C in NZS 3404.1. NZS 3404.1 does not currently provide adequate durability provisions for steel structures and components.

Questions relating to the B1/VM1 content changes:

Question B1 – 3	**Do you agree that these changes are appropriate for B1/VM1? Why/why not?**

Question B1 – 4	**What is the impact on you or your business? (Please provide detail of any impact)**

Question B1 – 5	**Do you have any other comments on the proposed changes to B1/VM1?**

B1 Transitional Arrangements

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Verification Method B1/VM1 (Amendment 16) will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question B1 – 6	**Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable?**

Clause B2: Durability

Proposal

MBIE proposes to amend Acceptable Solution B2/AS1 to introduce a new Technical Specification to advise and clarify durability requirements for steel construction. The advantages of doing this are that:

- current knowledge and practices would be reflected in the Acceptable Solution
- the Acceptable Solution would clearly specify requirements for corrosion protection
- maintaining the Acceptable Solution will help consenting efficiency because steel protection measures will no longer need to be treated as alternative solution proposal

Proposed Reference Section changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
Not currently referenced	**SNZ TS 3404: 2018** Durability requirements for steel structures and components	MBIE proposes to reference the new Technical Specification in B1/VM1. Currently there is no means of compliance with Building Code clause B2 Durability for steel construction. Most often, compliance is demonstrated using Appendix C of NZS 3404.1, which references AS/NZS 2312. This Standard is difficult for designers to interpret and generally requires specialist expertise. SNZ TS 3404 clarifies the application of AS/NZS 2312, meaning more designers can specify corrosion protection systems. The proposal to reference NZS TS 3404 in B1/VM1 will provide an approved compliance pathway and avoid the need to justify alternative solutions.

Questions relating to the Reference Section changes:

Question B2 – 1 Do you agree with the proposed changes to the References Section of the B2 Acceptable Solutions and Verification Methods document? Why/why not?

Question B2 – 2 Do you have any other comments on this referenced Technical Specification and its related documents?

Proposed Acceptable Solution B2/AS1 content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
No equivalent paragraph currently	**3.6 Steel** **3.6.1 SNZ TS 3404:** SNZ TS 3404 is an acceptable solution for meeting the durability requirements of steel building elements.	A recently published Technical Specification NZS TS 3404 is proposed as an Acceptable Solution for corrosion protection of steel structures. Currently there is no referenced means in this Acceptable Solution for demonstrating compliance with Building Code clause B2 Durability for steel construction.

Questions relating to the B2/AS1 content changes:

Question B2 – 3 Do you agree that these changes are appropriate for B2/AS1? Why/why not?

Question B2 – 4 What is the impact on you or your business? (Please provide detail of any impact)

Question B2 – 5 Do you have any other comments on the proposed changes to B2/AS1?

B2 Transitional Arrangements

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Acceptable Solution B2/AS1 (Amendment 9) will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question B2 – 6 Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable?

Clause E2: External Moisture

Proposal

MBIE proposes to amend Verification Method E2/VM1 and Acceptable Solution E2/AS1. The proposed amendments are intended to be minor, and can be grouped into seven topics:

1. Update reference to *NZS 4211:2008 Specification for performance of windows* to include *Amendment 1* (2011), which gives requirements for windows to be used in Extra High wind zones. This change will affect both E2/VM1 and E2/AS1.
2. Editorial changes to E2/VM1 for clarity and to correct errors (paragraph breaks and paragraph numbering, incorrect references to other paragraphs).
3. Clarify when a rigid underlay is not necessary within an E2/VM1 test specimen, and provide informative commentary.
4. Modify the current list of cladding junction details that are mandatory for a cladding manufacturer to include within an E2/VM1 Class 2 test specimen, provide examples of optional additional cladding junction details that a manufacturer may elect to also include, and provide informative commentary to clarify that the specimen must include all details for which Building Code compliance is intended to be claimed.
5. For E2/VM1 testing, require the level of deliberately introduced air leakage to be varied relative to the size of the test specimen.
6. Expand on and clarify options for providing a means of viewing water leakage in the cavity during the E2/VM1 test procedure.
7. Allow current E2/VM1 test certificates to remain valid, whilst mandating that the proposed changes apply to all new testing under the amended Verification Method.

The advantages of doing this are that:

- Current knowledge and practises as suggested by testing laboratories and cladding suppliers would be reflected.
- Verification Method clearly defines the minimum testing requirements.
- Changes reflect continued maintenance of the Verification Method to ensure the Building Code System operate efficiently.

Proposed References Section changes

Current Text		Proposed Changes		Explanation and reasons/justification for change
NZS 4211: 2008 Specification for performance of windows	VM1 1.2, AS1 9.1.10	NZS 4211: 2008 Specification for performance of windows ***Amend: 1***	VM1 1.2, AS1 9.1.10	Updates reference to Standard to include Amendment 1 which incorporates requirements for Extra High wind zones. The amendment specifically provides testing requirements for windows to be rated for Extra High wind zones, which were not included in the Standard prior to its amendment. Currently E2/VM1 and E2/AS1 are ambiguous in that they reference a Standard for windows that does not provide requirements for Extra High wind zones, despite specifically allowing cladding systems to be used in those wind zones and providing various measures to ensure the effects of wind pressure are appropriately managed. It is likely that cladding system manufacturers and suppliers are already using the amended Standard despite it not having been referenced in E2/VM1 or E2/AS1.

Questions relating to the Reference Section changes:

Question E2 – 1 Do you agree with the proposed changes to the References Section of the E2 Acceptable Solutions and Verification Methods document? Why/why not?

Question E2 – 2 Do you have any other comments on this referenced Standard and its related documents?

Proposed Verification Method E2/VM1 content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
1.3 Specimen details The minimum size of the wall *cladding* specimen to be tested shall be 2.4 m x 2.4 m. Any *cladding system* within an Extra High *wind zone* or subject to a specific design wind pressure up to ULS 2500 Pa that relies on this Verification Method shall have a rigid *underlay* installed in accordance with Paragraph 9.1.7 of E2/AS1. In either of these two circumstances, a rigid *underlay* is not necessary for the verification tests as a flexible *wall underlay* may suffice - unless the *cladding* to be tested specifically includes a rigid air barrier as part of the *specified system*. If the *cladding system* is never to be used with *building elements* penetrating the exterior surface *walls*, then the specimen shall include the details from Class 1. In all other cases, specimens with the details of Class 2 shall be tested, where the classes are described below:	**1.3 Specimen details** The minimum size of the wall *cladding* specimen to be tested shall be 2.4 m x 2.4 m. Any *cladding system* within an Extra High *wind zone* or subject to a specific design wind pressure up to ULS 2500 Pa that relies on this Verification Method shall have a rigid *underlay* installed in accordance with Paragraph 9.1.7 of E2/AS1. In either of these two circumstances, a rigid *underlay* is not necessary for the verification tests as a flexible *wall underlay* may suffice - unless the *cladding* to be tested specifically includes a rigid *underlay* as part of the *cladding system*, and its removal would compromise the structural fixings or support for the *cladding*. **COMMENT** Testing a *cladding* with flexible *underlay*, but then verifying the *cladding* for use with rigid *underlay*, is allowed in order to make testing quicker and easier. It is expected that *cladding systems* with a cavity within the scope of E2/VM1 will perform better with a rigid *underlay* than with a flexible *underlay*, although this has not been proven. For *cladding systems* intended to be available for use in multiple situations, including *cladding systems* for which a New Zealand supplier has commissioned the testing for the purposes of providing product	The current wording does not address all situations where rigid underlays are incorporated as part of the cladding system. The revised text clarifies when a rigid underlay is not necessary within the test specimen, and clarifies the status of the mandatory lists of construction details for Class 1 and Class 2 testing. An informative comment has also been added to assist manufacturers, specifiers and BCAs in understanding why the test method allows the specimen to include a flexible underlay instead of a rigid underlay.

Current Text	Proposed Changes	Explanation and reasons/justification for change
	assurance, Class 1 or a Class 2 testing must be selected. Class 1 and Class 2 each include a mandatory minimum set of details to be included in the specimen. If any of the mandatory details from Class 1 or Class 2 are omitted from the specimen, then E2/VM1 compliance to Class 1 or Class 2 cannot be claimed.	
Class 1: *Cladding systems* where only vertical joints are required, and having no penetrations through the *cladding*. Testing shall include vertical joints, internal and external corners of the external *wall* junctions, and footer and header termination systems.	**1.3.1 Class 1:** *Cladding systems* where only vertical joints are required, and having no penetrations through the *cladding*. Test specimens shall include vertical joints, internal and external corners of the external *wall* junctions, and footer and header termination systems.	Paragraph numbering added and formatting changed, for clarity.
Class 2: All other *cladding systems* to be used within the scope of this document. Testing is to include representative samples of penetrating *building elements* or joints, and including vertical and horizontal *control joints*, internal and external *wall* junctions, windows and/or doors, electrical meter boxes, balcony drainage and *parapet flashings*, and footer and header termination systems, plus any other relevant details. To allow the observation of any water penetration, a proportion of the internal wall *lining* shall be made using transparent material of sufficient structural capability and similar airtightness to resist the applied wind pressures. Adjacent to critical elements where visual access is required, the *wall underlay* shall be cut through and fastened back onto the	**1.3.2 Class 2:** All *cladding systems* within the scope of this document that are not Class 1. Testing is to include representative samples of penetrating *building elements* or joints to be used. a) Test specimens must include vertical and horizontal *control joints*, internal and external *wall* junctions, windows and/or doors, a *parapet* or *enclosed balustrade capping* with a *saddle flashing*, a 200 mm diameter pipe penetration, and footer and header termination systems. b) Test specimens may also include other details relevant to the use of the *cladding system* on the building, such as *scupper* penetrations, meter boxes, junctions with other *cladding systems* or building elements, and junctions where roof and *enclosed deck* terminations, *gutters*, or other	Testing laboratories and BRANZ have: • advised that cladding system manufacturers sometimes find the current list of mandatory construction details required for a Class 2 test to be onerous and not representative of the details for which the cladding system is expected to be used • advised that the provisions for creating transparent viewing panels in the test specimen to enable observation of water entry do not cater for specimens with rigid underlays, whereas for specimens with flexible underlays the specimen wall lining could be completely replaced by a transparent panel

Current Text	Proposed Changes	Explanation and reasons/justification for change
framing, with the transparent internal *lining* fully sealing the internal perimeter of the observation opening. It is required that at least 2% of the area of the *wall underlay* (or equivalent) be so removed. A 15 mm diameter round hole shall be formed in the internal *lining* below the window to simulate the effect of power points, light switches and other air leakage through the internal *lining*.	features occur within walls (including within the sides of framed chimneys with *cladding*). **COMMENT** Although only certain details are mandatory for inclusion within test specimens, the inclusion of other additional details could enable manufacturers, suppliers and specifiers who commission tests to demonstrate compliance for a wider range of situations than those which the mandatory details cover. Manufacturers, suppliers and specifiers should ensure that test specimens include all *cladding* details or junctions for which compliance with this Verification Method is intended to be demonstrated and claimed. A 15 mm diameter round hole shall be formed in the internal *lining* below the window to simulate the effect of power points, light switches and other air leakage through the internal *lining*. Where a *cladding* specimen is larger than 2.4 m x 2.4 m, an additional 15 mm hole shall be added for each 7 m² of *cladding* area (or part thereof). **1.3.2.1** To allow the observation of any water penetration, one of the following options must be followed: a) For specimens that include a rigid *wall underlay*, adjacent to critical elements where visual access is required a proportion of the *underlay* shall be made using transparent	without affecting the test validity • pointed out that the current level of simulated air leakage to be applied during testing does not take account of the size of the test specimen. The revised text: • alters the list of mandatory details to be included in a test specimen, to better represent the details currently in common usage in building work • explicitly provides freedom to persons who commission tests (such as cladding system manufacturers) to include within the test specimen only those additional details which are intended for use with the cladding system (and which the manufacturer can then include within published technical literature) • explains that the Verification Method is only applicable to those construction details which are included in the test specimen • makes provision for transparent viewing panels in rigid underlays, for specimens with flexible underlays to have the specimen wall lining completely replaced by a transparent panel, and for the use of borescopes and small video cameras as an

Current Text	Proposed Changes	Explanation and reasons/justification for change
	material of sufficient structural capability and similar airtightness to the specified wall *lining* material, and able to resist the applied wind pressures. The proportion shall be at least 2%, but shall be small enough that it does not affect the ability of the specimen to represent the performance of the *underlay* within the *cladding system*; or b) For specimens that do not include a rigid *wall underlay*, adjacent to critical elements where visual access is required, the *wall underlay* shall be cut through and removed, or fastened back onto the *framing*, with a rigid transparent internal *lining* used to support the air pressure. It is required that between 2% and 100% of the area of the *wall underlay* (or equivalent) be so removed; or c) For specimens that include a flexible or a rigid *underlay*, small video cameras and/or borescopes shall be installed within the cavity to provide a clear view of all critical elements where visual access is required. Borescopes and cameras must be positioned clear of all junctions, and must be installed in a manner that does not affect the airtightness of the air barrier (rigid *underlay* or internal wall *lining*) or affect the path of any moisture that enters the cavity. **COMMENT** The use of borescopes and cameras requires care to	alternative means of enabling observation of water entry • requires an increased number of holes which simulate air leakage, for specimens which exceed the minimum allowable size. Paragraph numbering has also been added for clarity.

Current Text	Proposed Changes	Explanation and reasons/justification for change
	achieve these requirements, but may be the most appropriate option in situations such as when other AS/NZS 4284 tests are to be performed on the same specimen, or to help resolve doubts about the whether the replacement of a proportion of the *lining* or *underlay* with a transparent material will affect the performance of the *cladding*.	
1.4.4.1 Immediately upon the conclusion of the Water Management Tests (within 30 minutes) (Paragraph 1.4.4), the layers behind the *wetwall* that support air pressure (including sealing in the window trim cavity) shall be removed, and any evidence of non-compliance (as defined in Paragraph **1.4.5.3**) noted.	**1.4.4.1** Immediately upon the conclusion of the Water Management Tests (within 30 minutes) (Paragraph 1.4.4), the layers behind the *wetwall* that support air pressure (including sealing in the window trim cavity) shall be removed, and any evidence of non-compliance (as defined in Paragraph **1.5**) noted.	Renumbering of a reference to the paragraph containing definition of non-compliance, to match proposed new paragraph numbering.
1.4.5 Series 3 'Wetwall Test' **1.4.5.1** Repeat Paragraph 1.4.**3** with an air pressure of 50 Pa, applied across the *wetwall* only, for 15 minutes.	**1.4.5 Series 3 'Wetwall Test'** **1.4.5.1** Repeat Paragraph 1.4.**2** with an air pressure of 50 Pa, applied across the *wetwall* only, for 15 minutes.	Correction to a paragraph reference within the description of the wetwall test (which is carried out under static pressure to Paragraph 1.4.2, not cyclic pressure to Paragraph 1.4.3)
1.4.5.2 Non-compliance shall be the presence of water (as defined in Paragraph 1.4.5.3) after carrying out the tests in Paragraphs 1.4.2 and 1.4.3, and the subsequent 'water management' tests (or evidence of any water) on the removed surfaces of the cavity. **1.4.5.3** Water which is able to penetrate to the back of the *wetwall* through introduced defects and joints shall be controlled. It may contact battens and other cavity surfaces, but no water shall be transferred to the plane of the *wall underlay*, cavity air sealing or structural *framing* due to a design or systemic failure. Water that may arrive on the *underlay* due to an	**1.5 Non-compliance** **1.5.1** Non-compliance shall be the presence of water (as defined in Paragraph 1.5.2), or evidence of any water, either: a) On the removed surfaces of the cavity after carrying out the tests in Paragraphs 1.4.2 and 1.4.3, and the subsequent 'water management' tests in Paragraph 1.4.4; and/or b) During or after the test in Paragraph 1.4.5. **1.5.2** Water which is able to penetrate to the back of the *wetwall* through introduced defects and joints	Editorial changes to provide a separate heading and paragraph numbers for the definition of non-compliance. This information currently appears as a sub-topic of Series 3 testing, but it is more appropriate to appear under a separate heading because it is also relevant to Series 1 and Series 2 testing.

Current Text	Proposed Changes	Explanation and reasons/justification for change
'isolated blemish' may be disregarded. No water may drip through an airspace within the cavity where it is possible for water to impact on a surface in the cavity and splash onto the *wall underlay*. However, the spattering of water into the cavity through the introduced defects shall be ignored. During the *Wetwall* Test, water is allowed to spatter up from the footer *flashing*, provided it is not held above any cavity obstruction.	shall be controlled. It may contact battens and other cavity surfaces, but no water shall be transferred to the plane of the *wall underlay*, cavity air sealing or structural *framing* due to a design or systemic failure. Water that may arrive on the *underlay* due to an 'isolated blemish' may be disregarded. No water may drip through an airspace within the cavity where it is possible for water to impact on a surface in the cavity and splash onto the *wall underlay*. However, any spattering of water into the cavity through the introduced defects shall be ignored. During the *Wetwall* Test, water is allowed to spatter up from the footer *flashing*, provided it is not held above any cavity obstruction.	
1.5 Verification Certificates Verification certificates issued after 30 June 2013 must meet the current Verification Method E2/VM1.	**1.6 Existing verification certificates as at 31 March 2019** **1.6.1** E2/VM1, included in E2 Acceptable Solutions and Verification Methods Amendment 8, is effective from 30 November 2018. **1.6.2** E2/VM1, included in E2 Acceptable Solutions and Verification Methods Amendments 5 - 7 remains effective (excluding transitional arrangements for E2/VM1 included in E2 Acceptable Solutions and Verification Methods Amendment 4 or earlier) for all *cladding systems* with verification certificates issued prior to 31 March 2019 provided that any verification certificates issued under E2/VM1 from 31 March 2019 must be under E2 Acceptable Solutions and Verification Methods Amendment 8.	The amendments to E2/VM1 within this proposal (to become Amendment 8) are mostly intended to provide more flexibility for testing cladding systems, without significantly altering the performance level which they must achieve. Currently valid test results and certificates (being those issued under Amendments 5 – 7, excluding those issued under previous transitional arrangements) may therefore remain valid. However the requirements of Amendment 8 may be used from the date it becomes effective, and will be mandatory for all testing which is certified after the end of the transition period (31 March 2019).

Current Text	Proposed Changes	Explanation and reasons/justification for change
		A new heading and renumbering of paragraphs is also proposed, to better describe the topic and to suit other proposed changes.
1.6 Pro-forma for test details	**1.7 Pro-forma for test details**	Paragraph renumbered to suit other proposed changes.

Questions relating to the E2/VM1 content changes:

Question E2 – 3 **Do you agree that these changes are appropriate for E2/VM1? Why/why not?**

Question E2 – 4 **What is the impact on you or your business? (Please provide detail of any impact)**

Question E2 – 5 **Do you have any other comments on the proposed changes to E2/VM1?**

E2 Transitional Arrangements

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Verification Method E2/VM1 will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question E2 – 6 **Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable?**

Clause G12: Water Supplies

Proposal

MBIE proposes to amend the G12 Acceptable Solutions and Verification Methods document to include reference to an amended Standard. This will provide a compliance solution for the jointing of stainless steel pipework to ensure satisfactory performance of such installations. The requirements in the Standard have been in place since September 2017 and are in common use, so this proposal will mean common stainless steel pipework installation will no longer have to be treated as an alternative solution proposal.

The advantages of making these amendments are that:

- current knowledge and practices would be reflected in the G12 Verification Methods and Acceptable Solutions document
- changes reflect continued maintenance of Acceptable Solutions and Verification Methods to ensure the Building Code System operates efficiently.

Proposed References Section changes

Current Text		**Proposed Changes**		**Explanation and reasons/justification for change**
AS/NZS 3500: Plumbing and Drainage Part 1: 2015 Water Services	Where quoted VM1 1.0.1a) AS1 3.5.2	AS/NZS 3500: Plumbing and Drainage Part 1: 2015 Water Services *Amend: 1*	Where quoted VM1 1.0.1a) AS1 3.5.2 Comment	Amendment 1 added to clarify the installation of stainless steel cold water pipework. Reference to AS/NZS 3500.1 in Paragraph 3.5.2 is in Comment only.
AS/NZS 3500:- Plumbing and drainage Part 4: 2015 Heated water services	Where quoted VM1 1.0.1b) AS1 6.15.1 AS2 1.1.1, 4.2.2, 5.0.1	AS/NZS 3500:- Plumbing and drainage Part 4: 2015 Heated water services *Amend: 1*	Where quoted VM1 1.0.1b) AS2 1.1.1, 4.2.2 Comment, 5.0.1	Amendment 1 added to clarify the installation of stainless steel hot water pipework. Reference to Paragraph 6.15.1 removed as this paragraph no longer exists. Reference to AS/NZS 3500.4 in Paragraph 4.2.2 is in Comment only.

Questions relating to the Reference Section changes:

Question G12 – 1 Do you agree with the proposed changes to the References Section of the G12 Acceptable Solutions and Verification Methods document? Why/why not?

Question G12 – 2 Do you have any other comments on these referenced Standards and their related documents?

Question G12 – 3 What is the impact on you or your business? (Please provide detail of any impact)

Question G12 – 4 Do you have any other comments on the proposed changes?

G12 Transitional Arrangements

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Acceptable Solutions and Verification Methods will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question G12 – 5 Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable?

G13: Foul Water

Proposal

MBIE proposes to amend the G13 Verification Methods and Acceptable Solutions document to reference an amended Standard. This will update requirements in the G13 document relating to the junctions, structural support and testing of drains to ensure satisfactory performance. The amended Standard also provides another drainage option by detailing the requirements for the design and installation of vacuum drainage systems.

The testing provisions have been in the Standard since it was published in 2015 and are now being included in the G13 document. The improved drainage provisions have been applicable in the Standard since June 2017 and the option of vacuum drainage system since November 2017. The provisions of the Standard are in common use so this proposal to reference them will mean their use will no longer have to be treated as alternative solution proposals.

The advantages of making these amendments are that:

- current knowledge and practices would be reflected in the G13 Verification Methods and Acceptable Solutions document
- changes reflect continued maintenance of Acceptable Solutions and Verification Methods to ensure the Building Code System operates efficiently
- use of drainage provisions and provisions for a vacuum drainage system will no longer need to be treated as alternative solution proposals

Proposed References Section changes

Current Text		**Proposed Changes**		**Explanation and reasons/justification for change**
AS/NZS 3500:- Plumbing and drainage Part 2: 2015 Sanitary plumbing and drainage	AS1 7.1.3, 8.0.1, 8.0.2 8.1 VM2 1.0.1 Comment AS2 6.1.3, 7.0.2, 7.1 AS3 1.0.2	AS/NZS 3500:- Plumbing and drainage Part 2: 2015 Sanitary plumbing and drainage *Amend: 1, 2*	AS1 7.1.3, VM2 1.0.1 Comment AS2 6.1.3 AS3 1.0.2	Two amendments have been added to the referencing of this Standard as follows: (1) Amend 1 for the clarification of foul water drainage installations, and Amend 2 for the inclusion of vacuum drainage systems in buildings. (2) Updating where AS/NZS 3500.2 is referenced as follows: -AS/NZS 3500.2 is no longer referenced from G13/AS1 8.0.1, 8.0.2 and 8.1 as these

Current Text		Proposed Changes		Explanation and reasons/justification for change
				paragraphs have been deleted. -AS/NZS 3500.2 is no longer referenced from G13/AS2 7.0.2 and 7.1 as these paragraphs have been deleted.

Questions relating to the Reference Section changes:

Question G13 – 1 Do you agree with the proposed changes to the References Section of the G13 Acceptable Solutions and Verification Methods document? Why/why not?

Question G13 – 2 Do you have any other comments on this referenced Standard and its related documents?

Proposed Acceptable Solution G13/AS1 Sanitary Plumbing content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
7.1.3 Air tests may be carried out in accordance with either clause 12.3.2 of AS/NZS 3500.2.2 or paragraph 8.3 of E1/VM1	**7.1.3** Air tests may be carried out in accordance with either clause 15.3 of AS/NZS 3500.2 or paragraph 8.3 of E1/VM1	Updated to correct cross references in the AS/NZS 3500.2. Clause 15.3 of AS/NZS 3500.2 changed from clause 12.3.2 of AS/NZS 3500.2.2

Questions relating to G13/AS1 content changes:

Question G13 – 3	**Do you agree that these changes are appropriate for G13/AS1? Why/why not?**
Question G13 – 4	**What is the impact on you or your business? (Please provide detail of any impact)**
Question G13 – 5	**Do you have any other comments on the proposed changes to G13/AS1?**

Proposed Acceptable Solution G13/AS2 Sanitary Plumbing content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
6.1.3 Air tests may be carried out in accordance with either clause 12.3.2 of AS/NZS 3500.2.2 or paragraph 8.3 of E1/VM1	**6.1.3** Air tests may be carried out in accordance with either clause 15.3 of AS/NZS 3500.2 or paragraph 8.3 of E1/VM1	Updated to correct cross references in the AS/NZS 3500.2. Clause 15.3 of AS/NZS 3500.2 changed from clause 12.3.2 of AS/NZS 3500.2.2

Questions relating to G13/AS2 content changes:

Question G13 – 6	**Do you agree that these changes are appropriate for G13/AS2? Why/why not?**
Question G13 – 7	**What is the impact on you or your business? (Please provide detail of any impact)**
Question G13 – 8	**Do you have any other comments on the proposed changes to G13/AS2?**

Proposed Acceptable Solution G13/AS3 Sanitary Plumbing content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
2.0.1 AS/NZS 3500.2, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13, as modified by paragraph 2.0.2, is an Acceptable Solution for plumbing and drainage	**2.0.1** AS/NZS 3500.2, Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, and 16, as modified by paragraph 2.0.2, is an Acceptable Solution for plumbing and drainage.	The referencing of sections 15 and 16 is added to AS/NZS 3500.2. Section 15: Testing of sanitary plumbing and sanitary drainage installations. Section 16: Vacuum drainage design and installation.

Questions relating to G13/AS3 content changes:

Question G13 – 9 **Do you agree that these changes are appropriate for G13/AS3? Why/why not?**

Question G13 – 10 **What is the impact on you or your business? (Please provide detail of any impact)**

Question G13 – 11 **Do you have any other comments on the proposed changes to G13/AS3?**

G13 Transitional Arrangements

It is proposed that the changes will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that the existing Acceptable Solutions and Verification Methods will remain in force, as if not amended, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question G13 – 12 **Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable?**

PROPOSED REMOVAL OF THE SIMPLE HOUSE ACEPTABLE SOLUTION SH/AS1

The Simple House Acceptable Solution (SH/AS1) was developed in conjunction with the Starter Home Design Competition in 2008. Specific design criteria were provided by the then Department of Building and Housing which placed limits on the scope of competition design solutions. Designs were limited to small, single-storey, detached houses with simple roof forms and floor layouts and only two wall cladding alternatives. There were six designs selected from the competition that informed the final SH/AS1 document.

While SH/AS1 was intended as a proactive response to assist designers to design simple houses, limitations on floor and roof shapes and the conservative wind and seismic loads have made it too simplistic. MBIE acknowledges the SH/AS1 contains a number of environmental and physical design constraints that were meant to make the design process simple. MBIE's contacts with designers and architects indicate that it is not of significant value to them as it is too restrictive to be useful. Designers have noted that other Acceptable Solutions and Standards (e.g. E2/AS1 and NZS 3604) allow them more flexibility and that the SH/AS1 unnecessarily duplicates information in these solutions.

As part of MBIE's continued maintenance of the Building Code System a number of older documents are being revisited to see if they are still meeting the needs of the sector. The SH/AS1 is now eight years old and has not been updated in that time. While it has been on the list for review, it has been given a low priority to date as it has not met criteria for action and is observed to have a low uptake and use. Website traffic indicates that SH/AS1 is not often visited or downloaded. Building consent data also indicates it is infrequently used. Seven Building Consent Authorities have indicated they have not seen SH/AS1 used in the past eight years.

In reviewing other comments from the sector MBIE has concerns that changes to the referenced Standards contained in the SH/AS1 mean some parts of this Acceptable Solution may now be in conflict with other Acceptable Solutions and Standards.

The content of SH/AS1 has been reviewed and is not aligned with current market demand and performance requirements.

MBIE is proposing to remove and revoke the Simple House Acceptable Solution SH/AS1 (published in 2010) from the current suite of Acceptable Solutions.

Proposed Simple House Acceptable Solution SH/AS1 content changes

Current Text	Proposed Changes	Explanation and reasons/justification for change
SH/AS1	Revoke the whole SH/AS1	The SH/AS1 duplicates existing Acceptable Solution information and is considered too limited in scope by designers. SH/AS1 is now out of step with performance requirements and may conflict with other Standards and Acceptable Solutions. It is a document that has been infrequently used and provides little additional value to designers and Building Consent Authorities. Rather than updating it, MBIE is proposing to revoke it.

Proposed Reference section changes:

Current Text	Proposed Changes	Explanation and reasons/justification for change
NZS 2295:2006 NZS 3109:1997 (Amendments 1 and 2) NZS 3602:2003 NZS 3603:1993 (Amendments 1, 2 and 4) NZS 3604:1999 (Amendments 1 and 2) NZS 3605:2001 NZS 3617:1979 NZS 3622:2004 (Amendment 1) NZS 3631:1988 NZS 3640:2003 (Amendment 4) NZS 4121:2001 NZS 4206:1992 NZS 4210:2001 NZS 4211:1985 (Amendments 1, 2 and 3) NZS 4217:1:1980 NZS 4217:2:1980 NZS 4223:1:2008 NZS 4223:2:1985 (Amendments 1 and 2) NZS 4223:3:1999 (Amendment 1) NZS 4223:4:2008 NZS 4246:2006	Remove all material incorporated by reference	This is an administrative effect of revoking the SH/AS1. The proposal to revoke SH/AS1 will mean the list of reference material (e.g. Standards) will no longer have legal effect for this Acceptable Solution as it is being revoked. **NOTE: This does not revoke the reference material for the purposes of any other Acceptable Solutions or Verification Methods.**

Current Text	Proposed Changes	Explanation and reasons/justification for change
NZS 4402:2:1986 NZS 4431:1989 (Amendment 1) NZS 4606:1:1989 (Amendments 1, 2 and 3) NZS 4606:2:1989 (Amendment A) NZS 4606:3:1992 (Amendment A) NZS 5261:2003 (Amendment 1) NZS 5262:2003 (Amendment 1) AS 1111:1:2000 AS 1111:2:2000 AS 1214:1983 AS 1397:2001 AS 1547:2000 AS 1804:1976 AS 2049:2002 AS 2870:1996 AS 3566:2:2002 AS 3730:7:1992 AS 3730:8:1992 AS 3730:9:1992 AS 3730:10:1992 AS/NZS 1260:1999 AS/NZS 1547:2000		

Current Text	Proposed Changes	Explanation and reasons/justification for change
AS/NZS 1604:3:2002 AS/NZS 1734:1997 AS/NZS 1859:1:2002 AS/NZS 2269:2004 AS/NZS 2588:1998 AS/NZS 2699:1:2000 AS/NZS 2699:2:2000 AS/NZS 2699:3:2002 AS/NZS 2712:2007 AS/NZS 2728:2007 AS/NZS 2908:2:2000 AS/NZS 2918:2001 AS/NZS 3000:2007 AS/NZS 3350:2.35:1999 AS/NZS 3500:1:2003 (Amendment 1) AS/NZS 3500:2:2003 (Amendment 1) AS/NZS 3500:4:2003 (Amendment 1) AS/NZS 3500:5:2003 AS/NZS 4200:1:1994 (Amendment 1) AS/NZS 4256:2:1994 AS/NZS 4455:1997 AS/NZS 4456:2003 (Amendments 1 and 2)		

Current Text	Proposed Changes	Explanation and reasons/justification for change
AS/NZS 4586:2004 AS/NZS 4671:2001 AS/NZS 4680:2006 AS/NZS 4936:2002 AS/NZS 60335.2.30:2009 ASTM C1549:2002 ASTM D6134:1997 ASTM E96:1992 ASTM E903:1996 ISO 11600:2002 ISO/TS 15510:2003 Federal Specification Standard TT-5-002230C BRANZ Bulletin 330:1995 Thin flooring materials - Preparation and laying BRANZ Bulletin 411:2001 Recommended domestic wastewater management BRANZ House Insulation Guide - 3rd Edition, with 2008 Supplement BRANZ Technical paper P21:1991 A wall bracing test and evaluation procedure BRANZ Evaluation Method EM1 Structural joints - strength and stiffness evaluation BRANZ Supplement to P21 An evaluation method of P21 test results for use with NZS 3604:1990		

Current Text	Proposed Changes	Explanation and reasons/justification for change
Ministry of Health: 2005 Drinking Water Standards for New Zealand Ministry of Health: 2006 Household water supplies: the selection, operation and maintenance of individual household water supplies Resource Management (National Environmental Standards relating to certain Pollutants, Dioxins and other Toxins) Regulations: 2004 (NESAQ) Plumbers, Gasfitters, and Drainlayers Act 2006		

Questions relating to the revoking of SH/AS1:

Question SH/AS1 – 1 **Do you agree or disagree with revoking the Simple House Acceptable Solution SH/AS1? Why/why not?**

Question SH/AS1 – 2 **Will this have an impact on you or your business? If so, please provide detail of the impact/s.**

Simple House Acceptable Solution SH/AS1 Transitional Arrangements

It is proposed that the revoking of SH/AS1 will come into effect on 30 November 2018 (the proposed Effective Date). It is also proposed that SH/AS1 will remain in force, as if not revoked, until 31 March 2019 (the proposed Cessation Date), a period of four months.

Question SH/AS1 – 3 **Do you agree with the proposed transitional arrangements for revoking Acceptable Solution SH/AS1? If you do not agree, why not and what arrangements would be more suitable?**

Feedback on this statement of proposals

Thinking about this consultation do you have any comments or suggestions to help us improve the consultation process?

What worked or didn't work for you; what did you like or not like?

What could we do better?

Any other comments?