BUILDING PERFORMANCE

# Building Code Update
## Consultation document

NOVEMBER 2019

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

New Zealand Government

## Disclaimer

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**www.mbie.govt.nz/building-code-consultation**

# Contents

# 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 for 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.

# November 2019 update highlights

The November 2019 update is the third instalment in the biannual Building Code consultation, which is part of the overall programme to improve the Building Code.

Within the updates proposed to five of the Acceptable Solutions and Verification Methods, the most significant changes are in two main areas. The first is geotechnical in nature and will promote robust foundation designs that are suitable for the site soil conditions. The second supports housing densification and provides more choice of materials by citing the National Association of Steel Framed Housing (NASH) Enclosure Standard as an Acceptable Solution. In particular, the areas of change are:

**Promote robust foundation solutions for liquefaction-prone ground**

Limiting the application of the B1 Acceptable Solution B1/AS1 so that it may not be used on ground prone to liquefaction or lateral spreading. The application is already limited in the Canterbury region and the proposed change would extend this to all of New Zealand. This will provide clarity to all building consent authorities (BCAs) and engineers, and will produce safer and more resilient outcomes for all buildings.

**Support building higher-density housing and give more choice in framing specification**

The National Association of Steel Framed Housing (NASH) Standard (an Alternative Solution), which ensures steel framed housing is weathertight, is proposed to become an Acceptable Solution. This will remove additional costs associated with steel framed housing, giving developers and designers more construction options.

Other proposed changes continue the maintenance of the Building Code documents by updating references, cited Standards, and correcting editorial errors.

# Comment sought on this Building Code update consultation

MBIE seeks your views on proposals to amend Acceptable Solutions and Verification Methods relating to Clauses B1 Structure, B2 Durability, E2 External Moisture and H1 Energy Efficiency as below:

- Building Code Clause B1 Structure: B1/VM1, B1/AS1
- Building Code Clause B2 Durability: B2/AS1
- Building Code Clause E2 External moisture: E2/AS4
- Building Code Clause H1 Energy efficiency: H1/AS1

Materials to be incorporated by reference in these proposals are:

- available for inspection free of charge from MBIE, 15 Stout Street, Wellington (please ring 0800 242 243 to arrange an appointment), or
- available to purchase from Standards New Zealand, 15 Stout Street, Wellington or online at www.standards.govt.nz.

The NASH (National Association of Steel Framed Housing) Enclosure Standard is available for free from **www.nashnz.org.nz/documents-for-purchase/**

# How to provide your feedback

MBIE invites written comments on the proposals in this document by **5pm, Friday 13 September 2019**.

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 complete an online submission form or download the form at **www.mbie.govt.nz/building-code-consultation**

**Send your submission by:**

- email to buildingfeedback@mbie.govt.nz, with subject line "Building Code update consultation November 2019"
- post or courier to:
  Building Code update consultation November 2019
  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 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: 28 November 2019

It is proposed that the amendments to the Acceptable Solutions and Verification Methods will be published on and have an effective date of 28 November 2019*.

## Transitional arrangements: four months and two years

It is proposed that the changes will come into effect on 28 November 2019 (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 2020 (the proposed cessation date), a period of four months. The exception to this is the amendment to the 'good ground' definition in B1/AS1, which will remain in force, as if not amended, until 28 November 2021 (the proposed cessation date), a period of two years.

The table below illustrates how the proposed transitional provisions will work:

| | Before 28 November 2019* (the proposed effective date) | From 28 November 2019 (effective date)* to 31 March 2020* (cessation date) | From 1 April 2020 |
|---|---|---|---|
| Existing Acceptable Solutions and Verification Methods, except B1/AS1 and B1 Definitions | 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 or new Acceptable Solutions and Verification Methods, except B1/AS1 and B1 Definitions | 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 |
| | **Before 28 November 2019* (the proposed effective date)** | **From 28 November 2019 (effective date)* to 29 November 2021*(cessation date)** | **From 30 November 2021** |
| Existing B1/AS1 and B1 Definitions | 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 B1/AS1 and B1 Definitions | 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 |

* 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 an existing Acceptable Solution or Verification Method, it will be treated as complying with the relevant provisions of the Building Code; and
- If a building consent application is lodged after the cessation date, using an existing Acceptable Solution or Verification Method, it must be treated as an Alternative Solution proposal; and
- If a building consent application is lodged after the effective date, using an amended or new Acceptable Solution or Verification Method, 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 (BCAs) as complying with the relevant provisions of the Building Code if they correctly use either:
  - i) the existing Acceptable Solutions and Verification Methods; 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 selected 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 the B1 Acceptable Solutions and Verification Methods document to:

- Limit the application of the B1 Acceptable Solutions to ground that is not prone to liquefaction and/or lateral spreading in all regions of New Zealand. Currently, this limitation on the application exists for the Canterbury region only.
- Specifically, the proposed change is to update the definition of 'good ground' within the Definitions of the B1 Acceptable Solutions and Verification Methods document, and to edit specific references to the term 'good ground' within B1/AS1.

The focus on liquefaction and lateral spreading is a result of the experience of the Canterbury earthquakes and responds to recommendations made by the Royal Commission of Inquiry.

MBIE expects that the advantages of this proposal are that:

- New housing stock will have foundations that are appropriate for the kind of land they are built on. In areas prone to liquefaction and lateral spreading, houses may need to be built with more robust foundations.
- BCAs will have the flexibility to determine how to best mitigate the risk posed by liquefaction and lateral spreading in their region. In 2017 MBIE, the Earthquake Commission (EQC) and the Ministry for Environment published 'Planning and engineering guidance for potentially liquefaction-prone land' to assist BCAs with managing these risks.

However, MBIE understand that the proposal will affect a number of different stakeholders and is seeking feedback so that we can understand exactly what these impacts might be. Some of the potential impacts of this proposal are:

- BCAs may have to spend time mapping liquefaction-prone areas. Some councils have already done this, but for the ones that haven't, there will be an increase in work until this is done.
- Some homes in liquefaction-prone areas will need to be built with more robust foundations, which could mean an increase in the overall cost of the build.

MBIE realise this could be a big change for parts of the sector, and that it's important they have time to imbed the new processes. Therefore, a two-year transition period is proposed, which will provide BCAs with enough time to complete the mapping of liquefaction-prone areas.

## Proposed References section changes

| Current text | | Proposed changes | | Explanation and justification for change |
|---|---|---|---|---|
| AS/NZS 2566:2002 Buried flexible pipelines<br>Part 1: 1998 Structural design<br>Part 2: 2002 Installation. | AS1 6.1<br>AS1 6.2 | AS/NZS 2566:2002 Buried flexible pipelines.<br>Part 1: 1998 Structural design<br>Amend: 1<br>Part 2: 2002 Installation<br>Amend: 1, 2, 3 | AS1 6.1<br>AS1 6.2 | Reference the most up-to-date version of the Standard for the installation of buried pipelines that aligns with current technology and industry practice on the installation and pressure testing of such pipes. |
| AS 1397:2001 Steel sheet and strip – Hot-dipped zinc-coated or aluminium/zinc-coated. | AS3 1.7.9 | AS 1397:2011 Steel sheet and strip – Hot-dipped zinc-coated or aluminium/zinc-coated. | AS3 1.7.9 | Reference the revised Standard AS 1397:2011 (Continuous hot-dip metallic coated steel sheet and strip. . .). This revision includes new coatings of zinc alloyed with aluminium and magnesium. |
| AS/NZS 4600:2005 Cold-formed steel structures. | VM1 5.2 | AS/NZS 4600:2005 Cold-formed steel structures<br>Amend: 1 | VM1 5.2 | Amendment 1 contains additional and corrected calculations. |
| AS/NZS 1163:2016 Cold-formed structural steel hollow sections. | VM1 5.1.1 | AS/NZS 1163:2016 Cold-formed structural steel hollow sections<br>Amend: 1 | VM1 5.1.1 | Amendment 1 correction. |

### QUESTIONS RELATING TO THE REFERENCES 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 to update the citation of AS/NZS 2566 part 1:1998 (Buried flexible pipelines – Structural design) to include Amendment 1?<br>Why/ why not? |
| **Question B1 – 2** | Do you agree with the proposed changes to the References section of the B1 Acceptable Solutions and Verification Methods document to update the citation of AS/NZS 2566 part 2:2002 (Buried flexible pipelines) to include Amendment 1, 2 and 3?<br>Why/ why not? |
| **Question B1 – 3** | Do you agree with the proposed changes to the References section of the B1 Acceptable Solutions and Verification Methods document to update the citation of AS 1397:2001 (Steel sheet and strip – Hot-dipped zinc-coated or aluminium/zinc-coated) to AS 1397:2011?<br>Why/ why not? |
| **Question B1 – 4** | Do you agree with the proposed changes to the References section of the B1 Acceptable Solutions and Verification Methods document to update the citation of AS/NZS 4600:2005 (Cold-formed steel structures) to include Amendment 1?<br>Why/ why not? |
| **Question B1 – 5** | Do you agree with the proposed changes to the References section of the B1 Acceptable Solutions and Verification Methods document to update the citation of AS/NZS 1163:2016 (Cold-formed structural steel hollow sections)?<br>Why/ why not? |
| **Question B1 – 6** | Do you have any other comments on these referenced Standards and their related documents? |

## B1 References transitional arrangements

It is proposed that the changes will come into effect on 28 November 2019 (the proposed effective date). It is also proposed that the existing references will remain in force, as if not amended, until 31 March 2020 (the proposed cessation date), a period of four months.

| | |
|---|---|
| **Question B1 – 7** | Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable? |

## Proposed Definition section changes

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of: land instability, ground creep, subsidence, (liquefaction, lateral spread *– for the Canterbury earthquake region only)*, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots. | c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of: land instability, ground creep, subsidence, liquefaction, lateral spread, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots. | This change limits the definition of 'good ground' to ground that is not prone to liquefaction or lateral spreading throughout New Zealand. |

## Proposed B1/AS1 content changes

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| 6.1 AS/NZS 2566.1. | **6.1 AS/NZS 2566.1** and Amendment 1. | Amendments to the buried flexible pipe standard AS/NZS 2566 contain revised text and equations that are essential to the proper deployment of the standard. |
| 6.2 AS/NZS 2566.2. | **6.2 AS/NZS 2566.2** and Amendment 1, 2 and 3. | Amendments to the buried flexible pipe standard AS/NZS 2566 contain revised text and equations that are essential to the proper deployment of the standard. |
| COMMENT:<br>Foundations for houses built on ground that has the potential for liquefaction or lateral spread are outside the scope of B1/AS1.<br>Foundation designs for houses built in areas that have the potential for liquefaction, as defined by the Christchurch City Council, the Selwyn District Council and the Waimakariri District Council, may be in accordance with the MBIE Guidance Document "Repairing and rebuilding houses affected by the Canterbury earthquakes" (refer to www.mbie.govt.nz). | **COMMENT:**<br>Foundations for houses built on ground that has the potential for liquefaction or lateral spread are outside the scope of B1/AS1.<br>For houses built in areas that have the potential for liquefaction, a foundation solution following those provided for TC2 in the MBIE Guidance Document "Repairing and rebuilding houses affected by the Canterbury earthquakes" may be appropriate. | This change limits the soil type where B1/AS1 may be used on ground that is not prone to liquefaction or lateral spreading throughout New Zealand. |

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| The foundation options in the MBIE Guidance Document apply to properties in the *Canterbury earthquake region* that have been categorised as Technical Category 1 to 3 (TC1, TC2 and TC3).<br>For TC1 properties, provided the conditions for *good ground* in Section 3 of NZS 3604 are met, house foundations following B1/AS1 can be used.<br>For TC2 and TC3 properties the MBIE Guidance Document provides a range of foundation solutions depending on expected ground movement and available bearing capacity. These parameters also determine the degree of involvement of structural and geotechnical engineers and the extent of specific engineering design.<br>Further guidance is being developed for other New Zealand regions and it is expected that this will inform the wider building and construction sector in due course. In the meantime for properties outside the *Canterbury earthquake region* that have the potential for liquefaction, MBIE recommends that further engineering advice is sought. For these properties a foundation solution following those provided for TC2 in the MBIE Guidance Document may be appropriate. | | |
| 3.1.1 NZS 3604 paragraph 1.3 Definitions<br>Add (in the definition for Good Ground): "(liquefaction, lateral spread – for the *Canterbury earthquake region* only)" after 'subsidence' in subparagraph (c). | **3.1.1 NZS 3604 paragraph 1.3 Definitions**<br>Add (in the definition for Good Ground): "liquefaction, lateral spread" after 'subsidence' in subparagraph (c). | Refer above. |
| 3.1.14 NZS 3604 Foundations in the Canterbury earthquake region only where good ground has not been established. | **3.1.14 NZS 3604 Foundations where good ground has not been established.** | Refer above. |
| **1.2** B1/AS gives an Acceptable Solution for small chimneys. | **1.2** B1/AS3 is an Acceptable Solution for small chimneys. | This change correctly cites the AS3 and corrects poor grammar. |
| **2.1.2 NZS 4229**<br>Foundations in the Canterbury earthquake region only where good ground has not been established. | **2.1.2 NZS 4229 Foundations where good ground has not been established.** | This change limits the soil type where B1/AS1 may be used as an Acceptable Solution to only non-liquefaction-prone ground throughout New Zealand. |

### QUESTIONS RELATING TO THE B1/AS1 CONTENT CHANGES:

| | |
|---|---|
| **Question B1/AS1 – 8** | Do you agree with the proposed changes to the B1/AS1 document to include amendments in the reference to AS/NZS 2566? |
| **Question B1/AS1 – 9a** | The proposed changes regarding 'Good Ground' in B1/AS1 are intended to ensure that foundations in areas prone to liquefaction and lateral spreading are appropriately robust. Do you agree with these proposed changes to the B1/AS1 document? Why/ why not? |
| **Question B1/AS1 – 9b** | For BCAs only: Have you mapped the liquefaction and lateral spreading hazard areas in your region? |
| **Question B1/AS1 – 9c** | For BCAs only: If you have not yet mapped the liquefaction and lateral spreading hazard areas in your region, do you expect to complete this mapping during the proposed transition period (to November 2021)? |
| **Question B1/AS1 – 9d** | For BCAs only: Will identifying land susceptible to liquefaction or lateral spreading impact your land-use planning decisions? If so, how? |
| **Question B1/AS1 – 9e** | Do you agree that the building and construction industry in your region has the capacity to design and build foundations other than those prescribed in B1/AS1? |
| **Question B1/AS1 – 9f** | Do you expect that the proposed changes will increase/decrease the cost and/or time for residential construction in your region? If so, by how much? |
| **Question B1/AS1 – 9g** | Do you expect that the proposed changes will affect the cost and availability of insurance in your region? If so, how? |
| **Question B1/AS1 – 10** | Do you agree with the proposed changes to the B1/AS1 document to cite B1/AS3 correctly? Why/ why not? |
| **Question B1/AS1 – 11** | What is the impact on you or your business of the proposed changes to B1/AS1, e.g. financial or operational? |

## B1 Definitions and B1/AS1 transitional arrangements

It is proposed that the changes will come into effect on 28 November 2019 (the proposed Effective Date). It is also proposed that the existing Definitions and Acceptable Solution B1/AS1 will remain in force, as if not amended, until 28 November 2021 (the proposed Cessation Date), a period of two years.

| | |
|---|---|
| **Question B1/AS1 – 12** | Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable? |

## Proposed B1/VM1 content changes

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| 5.1.1 Clause 2.2.1 Specification In Clause 2.2.1 a) replace: "AS 1163 Structural steel hollow sections". | 5.1.1 Clause 2.2.1 Specification In Clause 2.2.1 a) replace: "AS 1163 Cold-formed structural steel hollow sections". | This change cites the correct name of the Standard. |

### QUESTIONS RELATING TO THE B1/VM1 CONTENT CHANGES:

| | |
|---|---|
| **Question B1/VM1 – 13** | Do you agree with the proposed changes to the B1/VM1 document to reference AS 1163 Cold-formed structural steel hollow correctly? |

## B1/VM1 transitional arrangements

It is proposed that the changes will come into effect on 28 November 2019 (the proposed effective date). It is also proposed that the existing Acceptable Solution B1/VM1 will remain in force, as if not amended, until 31 March 2020 (the proposed cessation date), a period of four months.

| | |
|---|---|
| **Question B1/VM1 – 14** | 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

## Proposed B2/AS1 content changes

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| 2.2.1 Scheduled maintenance comprises the inspection, maintenance and reporting procedures for building elements required to have a compliance schedule in terms of section 44 of the Building Act. | **2.2.1** Scheduled maintenance comprises the inspection, maintenance and reporting procedures for building elements required to have a compliance schedule in terms of section 100 of the Building Act. | Change to cite the correct clause of the Building Act to avoid confusion. |

### QUESTIONS RELATING TO THE B2/AS1 CONTENT CHANGES:

| | |
|---|---|
| **Question B2/AS1 – 1** | Do you agree with the proposed changes to the B2/AS1 document to reference the correct section of the Building Act? |

## B2/AS1 transitional arrangements

It is proposed that the changes will come into effect on 28 November 2019 (the proposed effective date). It is also proposed that the existing Acceptable Solution B2/AS1 will remain in force, as if not amended, until 31 March 2020 (the proposed cessation date), a period of four months.

| | |
|---|---|
| **Question B2/AS1 – 2** | 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 issue a new Acceptable Solution that references the National Association of Steel Framed Housing (NASH) Enclosure Standard as a means of demonstrating compliance with Building Code Clause E2. The NASH Enclosure Standard provides a means of assessing the weathertightness performance of wall cladding systems of Light Steel Framed (LSF) buildings. The demand for LSF buildings is increasing alongside the densification of housing taking place in many of New Zealand's cities.

The NASH Enclosure Standard closely follows the existing timber framing Acceptable Solution E2/AS1. The performance levels set by these Standards cover the majority of New Zealand buildings.

As part of their technical review processes, NASH has commissioned independent research by Heavy Engineering Research Association (HERA), Swinburne University and Building Research Association New Zealand (BRANZ). Research is available on the **NASH website**.

The advantages of issuing the proposed new Acceptable Solution E2/AS4 are that:

- Current knowledge and practices would be reflected in the E2 Acceptable Solutions and Verification Methods.
- A means of demonstrating Building Code compliance for clause E2 External Moisture for LSF buildings up to 10 m in height is made available that is deemed to comply and does not rely on engaging additional specialist consultants. There is currently no Acceptable Solution or Verification Method for Building Code Clause E2 for LSF buildings.
- Designers who utilise the Acceptable Solution will demonstrate a compliant level of performance; consenting officials will be able to assess buildings consistently.
- There will be a more level playing field when framing material selection is considered.

## Proposed Reference section changes

| Current text | Proposed changes | | Explanation and justification for change |
|---|---|---|---|
| Not currently referenced | NASH (National Association of Steel Framed Housing) Building Envelope Solutions: 2018*. | AS4 1.0 | New citation of NASH Building Envelope Solutions: 2018, quoted within new Acceptable Solution Method E2/AS4 paragraph 1.0. Citation of the NASH steel framing standard will provide a 'deemed to comply' pathway for steel framing that provides certainty to the industry and clarity for regulators. |

* NASH (National Association of Steel Framed Housing) Building Envelope Solutions: 2018 can be viewed at **http://nashnz.org.nz/publications/**

## Questions relating to the Reference section changes:

| | |
|---|---|
| **Question E2 – 1** | Do you agree with the proposed addition to the Reference section and Acceptable Solutions of E2, citing The National Association of Steel Framed Housing (NASH) Enclosure Standard as a new Acceptable Solution – E2/AS4?<br><br>Why/ why not? |

## Proposed E2/AS4 content changes (wording)

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| No equivalent Acceptable Solution. | **Acceptable Solution E2/AS4**<br>1.0 Light Steel Framing Construction within the scope of NASH Building Envelope Solutions: 2018.<br>**COMMENT**<br>The NASH Building Envelope Solution 2018 provides an Acceptable Solution for E2 (External moisture) only. Means of compliance with other clauses, such as E3 (Internal moisture) and H1 (Energy efficiency) must also be considered when designing and specifying construction typologies. | NASH is an active industry association centred on light structural framing systems for residential and similar construction. They represent interests of suppliers, practitioners and customers – all those involved in steel framing systems.<br>NASH has recently published its Building Envelope Solution 2018 document, which is proposed as an Acceptable Solution E2/AS4 for Building Code Clause E2 External moisture (for buildings that fall within its scope). The scope is provided in Section 1. These scope limitations include:<br>› building height up to 3 storeys or 10 metres,<br>› external walls that are vertical, and roofs that are 45° or less above the horizontal, and<br>› buildings with structural design in accordance with the NASH Standard Part 2.<br>The proposed Acceptable Solution provides a means of demonstrating compliance with Building Code Clause E2 for light steel framed buildings that are not covered by the currently available Acceptable Solutions and Verification Methods. |

### QUESTIONS RELATING TO E2/AS4 CONTENT CHANGES:

| | |
|---|---|
| **Question E2 – 2** | Do you agree that providing design information for light steel framed buildings and the citation of the NASH Enclosure Standard is appropriate for E2?<br>Why/ why not? |
| **Question E2 – 3** | What is the impact on you or your business of the proposed changes to E2, e.g. financial or operational?<br>Why/ why not? |
| **Question E2 – 4** | With the citation of the NASH Enclosure Standard as a new Acceptable Solution – E2/AS4 are you likely to consider light steel framing as an option?<br>Why/ why not? |
| **Question E2 – 5** | For BCAs only: as a percentage, how many construction projects currently use light steel framing? How do you anticipate this change affecting this percentage?<br>Why/ why not? |
| **Question E2 – 6** | Do you have any other comments on the inclusion of steel framing as an Acceptable Solution? |

## E2 transitional arrangements

It is proposed that the new E2/AS4 will come into effect on 28 November 2019 (the proposed effective date).

| | |
|---|---|
| **Question E2 – 7** | Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable? |

# Clause H1: Energy efficiency

## Proposal

It is proposed to update the reference *'Energy Efficiency for Large Buildings Part 2: Lighting (NZS 4243.2:2007)'* in Acceptable Solution H1 Energy efficiency (H1/AS1) to the amended version of that Standard (NZS 4243.2:2007+A1). Two sections of that Standard, which H1/AS1 references, have been amended. These sections include:

- The lighting power density limits (LPDL), which lighting designs are compared with to check they are compliant with the Building Code.
  - NZS 4243.2:2007+A1 includes lower LPDLs that reflect advances in lighting technology (such as LEDs) commonly used within the industry.
- Two methods for calculating lighting power densities (LPDs).
  - NZS 4243.2:2007+A1 removes the redundant LPD calculation method.

Note that the requirements of H1/AS1 for artificial lighting only apply to commercial buildings and communal non-residential buildings where the floor area is greater than 300m².

The advantages of this proposal are:

- To increase energy efficiency requirements for artificial lighting to align with common industry practice in commercial and communal non-residential buildings.
- To reference the calculation method commonly used for calculating LPDs, while removing one that is obsolete.

## Proposed Reference section changes

| Current text | | Proposed changes | | Explanation and justification for change |
|---|---|---|---|---|
| 1. If artificial lighting is included when applying the modelling method of NZS 4243.1 section 4.4, there is no need to comply separately with NZS 4243.2 section 3.3 or 3.4. | VM1 1.3.1 Comment 1. | 1. If artificial lighting is included when applying the modelling method of NZS 4243.1 section 4.4, there is no need to comply separately with NZS 4243.2 section 3.3. | VM1 1.3.1 Comment 1. | This change will increase energy efficiency requirements for artificial lighting to align with common industry practice in commercial and communal non-residential buildings. |
| NZS 4243: Energy efficiency – large buildings. Part 2: 2007 Lighting. | References | NZS 4243: Energy efficiency – large buildings. Part 2: 2007 Lighting.<br>Amend: 1 | References | Referencing the amended standard will increase energy efficiency requirements for artificial lighting. |
| 6.1.1 Artificial lighting energy consumption in commercial, communal non-residential buildings having a net lettable area greater than 300m² shall comply with NZS 4243.2 section 3.3 or section 3.4 to satisfy the requirements of NZBC H1.3.5. | 6.1.1 | 6.1.1 Artificial lighting energy consumption in commercial, communal non-residential *buildings* having a net lettable area greater than 300m² shall comply with NZS 4243.2 section 3.3 to satisfy the requirements of NZBC H1.3.5. | 6.1.1 | Deletion of a superseded reference. |

| Current text | | Proposed changes | | Explanation and justification for change |
|---|---|---|---|---|
| NZS 4218:2009 Thermal Insulation – Housing and Small Buildings.<br>VM1 1.1.1, 1.1.2<br>AS1 1.0.5, 1.0.6, 2.1.1, 2.2.2, 4.0.1 | References | NZS 4218:2009 Thermal Insulation – Housing and Small Buildings.<br>VM1 1.1.1, 1.1.2<br>AS1, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.1.7, 2.2.1, 4.0.1 | References | Updating of References section page to align with where standards are quoted. |
| NZS 4214:2006 Methods of determining the total thermal resistance of parts of buildings.<br>VM1 1.1.2, 1.4.1,<br>AS1 1.0.5, 2.3.1 | References | NZS 4214:2006 Methods of determining the total thermal resistance of parts of buildings.<br>VM1 1.4.1,<br>AS1 2.3.1 | References | Updating of References section page to align with where standards are quoted. |

## QUESTIONS RELATING TO THE REFERENCE SECTION CHANGES:

| | |
|---|---|
| **Question H1 – 1** | Do you agree with the proposed changes to the Reference section of the H1 document to update the citation of AS/NZS 4243.2:2007 to include Amendment 1?<br>Why/ why not? |
| **Question H1 – 2** | Do you agree with the proposed changes to the Reference section of the H1 document to delete the citation of AS/NZS 4243.2:2007 section 3.4?<br>Why/ why not? |
| **Question H1 – 3** | Do you agree with the proposed changes to the Reference section of the H1 document to edit the citation of AS/NZS 4218:2009 to show the correct references?<br>Why/ why not? |
| **Question H1 – 4** | Do you agree with the proposed changes to the Reference section of the H1 document to edit the citation of AS/NZS 4214:2006 to show the correct references?<br>Why/ why not? |

## Proposed H1/AS1 content changes (wording)

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| **COMMENT: (VM Section 1.1)**<br>1. Housing includes detached dwellings, multi-unit dwellings such as *buildings* which contain more than one separate household or family, e.g. an apartment *building*, and also group dwellings, e.g. a *wharenui*.<br>2. The restrictions in clause 4.3.1 of NZS 4218, on when the Modelling Method must be used, do not form part of the requirements in H1/AS1 (i.e. sections 3, 4.1 and 4.2). Clause 4.3.1 of NZS 4218 is deleted rom H1/VM1 solely to avoid doubt, and should not read as implying that requirements in H1/VM1 are in any way applicable to H1/AS1. | COMMENT: (VM Section 1.1)<br>1. Housing includes detached dwellings, multi-unit dwellings such as *buildings* that contain more than one separate household or family, e.g. an apartment *building*, and also group dwellings, e.g. a *wharenui*.<br>2. The restrictions in clause 4.3.1 of NZS 4218, on when the Modelling Method must be used, do not form part of the requirements in H1/AS1 (i.e. sections 3, 4.1 and 4.2). Clause 4.3.1 of NZS 4218 is deleted from H1/VM1 solely to avoid doubt, and should not read as implying that requirements in H1/VM1 are in any way applicable to H1/AS1. | Spelling error requires correction. |
| **COMMENT: (AS Section 2.1)**<br>1. Common walls or common floors/ ceilings that separate adjacent conditioned spaces in a multi-unit building are not required to form part of the thermal envelope. A single thermal envelope may be used to enclose all the conditioned spaces within the building, or multiple thermal envelopes may be used, provoded all conditioned spaces are enclosed.<br>2. When the common walls or floors/ ceilings are not considered to be part of the thermal envelope, they are not required to acchieve the R-values specified in NZS 4218. However, the maximum area of glazing (which is a percentage of the total wall area of the thermal envelope) will be smaller, due to the lower total wall area of the single thermal envelope. | **COMMENT: (AS Section 2.1)**<br>1. Common walls or common floors/ ceilings that separate adjacent conditioned spaces in a multi-unit building are not required to form part of the thermal envelope. A single thermal envelope may be used to enclose all the conditioned spaces within the building, or multiple thermal envelopes may be used, provided all conditioned spaces are enclosed.<br>2. When the common walls or floors/ ceilings are not considered to be part of the thermal envelope, they are not required to achieve the R-values specified in NZS 4218. However, the maximum area of glazing (which is a percentage of the total wall area of the thermal envelope) will be smaller, due to the lower total wall area of the single thermal envelope. | Spelling errors require correction. |
| 2.1.4 Comment C3.1.2 in NZS 4218 shall be replaced as follows:<br>"COMMENT: Recessed luminaires that can be safely abutted to, or covered with, insulation must be used in order to comply with the Electricity (Safety) Regulations 2010. NZS 4246 provides good practice guidance on installing insulaton around recessed luminaires. Ceiling access hatches often form part of the thermal enveope and therefore should be insulated." | 2.1.4 Comment C3.1.2 in NZS 4218 shall be replaced as follows:<br>"COMMENT: Recessed luminaires that can be safely abutted to, or covered with, insulation must be used in order to comply with the Electricity (Safety) Regulations 2010. NZS 4246 provides good practice guidance on installing insulation around recessed luminaires. Ceiling access hatches often form part of the thermal envelope and therefore should be insulated." | Spelling error requires correction. |

| Current text | Proposed changes | Explanation and justification for change |
|---|---|---|
| **COMMENT: (AS Section 2.1)**<br>1. The R-value of concrete slab-on-ground floors increases as the area:perimeter ration increases. Large uninsulated slabs (larger than 100 to 150m²) typically have area:perimeter ratios high enough to result in R-values greater than R1.3. Small concrete slabes may not achieve an R-value of 1.3 but can be assumed to comply for the purposes of this Acceptable Solution. | **COMMENT: (AS Section 2.1)**<br>1. The R-value of concrete slab-on-ground floors increases as the area:perimeter ratio increases. Large uninsulated slabs (larger than 100 to 150m²) typically have area:perimeter ratios high enough to result in R-values greater than R1.3. Small concrete slabs may not achieve an R-value of 1.3 but can be assumed to comply for the purposes of this Acceptable Solution. | Spelling errors requires correction. |

### QUESTIONS RELATING TO THE REFERENCE SECTION CHANGES:

| | |
|---|---|
| **Question H1 – 5** | Do you agree with the proposed changes to H1/AS1 to correct the spelling error?<br>Why/why not? |

## H1 transitional arrangements

It is proposed that the changes will come into effect on 28 November 2019 (the proposed effective date). It is also proposed that the existing Acceptable Solution H1/AS1 will remain in force, as if not amended, until 31 March 2020 (the proposed cessation date), a period of four months.

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|---|---|
| **Question H1 – 6** | Do you agree with the proposed transitional arrangements? If you do not agree, why not and what arrangements would be more suitable? |

# Feedback on this consultation

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

Please provide us with your comments and any suggested changes.

## What could we do better?

Please provide us with your comments and any suggested changes.

## Was the consultation period adequate?

Please provide us with your comments and any suggested changes.

## Any other comments?

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