

1 KEY POINTS

1.1 Quality and durability – suggested addition to the report

Currently the BCA deals with some quality and durability related issues but not in a systematic way. The Draft Report should include a strategy for addressing quality and durability either directly through the BCA or through some other process.

1.2 A National approach

NATSPEC supports the concept of the Building Code of Australia as a common building regulation for the whole of Australia. We see it as an evolving document and welcome the publication of the Productivity Commission's Draft Research Report ("the Draft Report") as a step in that evolutionary process.¹

As a generalisation, the amendments to date have shaped the BCA into a truly useful regulatory tool and NATSPEC endorses making the BCA free of charge

1.3 Variations across jurisdictions

State, Territory and Local Government variations should be phased out. Over 30% of BCA Volume 1 is devoted to State and Territory Appendix Variations. Introducing a requirement for regulatory impact statements for State and Local Government variations may help, with complying material incorporated. The material on tolerances in the 'guidelines to standards and tolerances', published in some jurisdictions, should be looked at with a view to incorporation. Increasing uniformity and reducing disputes would be a national benefit.

1.4 National consistency

Maintaining two BCA Volumes seems onerous and there are currently inconsistencies in the citation of standards. Also, some cited Australian Standards have been superseded. The ABCB, or its successor, should consider combining the current two volumes of BCA into a single volume, abandoning the distinction between domestic and non-domestic construction and phasing out of State and Territory variations. The excellent *Acceptable Construction* should be expanded to apply to the existing Volume 1 content.

1.5 Articulating the performance-based requirements

The Final Report should contain recommendations as to how performance objectives and deemed to comply solutions can be aligned.

1.6 Articulating prescriptive requirements - Sound

As a generalisation, the amendments to date have shaped the BCA into a truly useful regulatory tool. There are however areas where it is less useful than it could be such as the problems with the new material on sound.

Deemed-to-comply material does not cover enough examples to reflect current practice.

1.7 Compliance and enforcements systems

Create a National Federal level centralised mechanism for appeals and rulings on the BCA, possibly modelled on Building Commission Victoria's Building Appeals Board

¹ Productivity Commission, *Reform of Building Regulation : Productivity Commission Draft Research Report*. (Melbourne, Vic.: Author, 2004).

(BAB) <http://www.buildingcommission.com.au> approach. Such a centralised mechanism could also serve to ratify variations requested by State, Territory and Local Governments.

2 INTRODUCTION

2.1 About NATSPEC//Construction Information

Construction Information Systems Australia Pty Limited publishes NATSPEC, Australia's national building specification. The aim of NATSPEC is to help prepare accurate, clear and concise specifications and so save time, money and frustration. Each package incorporates an appropriate quality control regime of standards conformance, testing, inspection and sample submission.

Construction Information Systems Australia Pty Limited is a not-for-profit company owned by twenty building industry shareholders including the State, Territory and Commonwealth governments, professional associations and contractors' associations. The following NATSPEC shareholders are nominated in the terms of reference as bodies to be consulted in the Productivity Commission's study:

- Australian Government - Department of Finance and Administration
- Master Builders Association
- Royal Australian Institute of Architects
- Institute of Engineers Australia
- Australian Institute of Building

Further information on NATSPEC, documentation packages and shareholders is available from our website at www.natspec.info.

3 DETAILED SUBMISSION

3.1 Quality and durability – suggested addition to Report

Terminology

In the following the word *quality* is used in its common meaning of “character with respect to excellence, fineness etc., or grade of excellence”, rather than the more restricted sense, used in AS/NZS ISO 9000, of the “degree to which a set of inherent characteristics fulfils requirements”.^{2,3}

Quality and durability

The Draft Report's terms of reference appear not to encompass quality issues although it is possible that quality might fall within the meaning of *amenity* as expressed in “community expectations for health, safety and amenity”.⁴ While the Draft Report notes that *health* and *safety* are relatively straightforward terms its interpretation of *amenity* seems to be restricted to a limited range of issues such as disabled access and sound abatement. It appears therefore that quality issues are seen in the Draft Report as outside its terms of reference. Despite this at a number of points the Draft Report makes reference to matters that clearly relate to the quality of buildings. For example:

It is impossible to regulate in such a way as to ensure each individual gets the quality of building he or she prefers and is willing to pay for.⁵

² *The Megalex Concise Macquarie Dictionary* (2.6) [Software] (Eurofield Information Solutions, 2002 [cited]).

³ *AS/NZS ISO 9000:2000 Quality Management Systems - Fundamentals and Vocabulary*, (Sydney: Standards Australia/Standards New Zealand, 2000).

⁴ Productivity Commission, *Reform of Building Regulation Productivity Commission Draft Research Report*, iv.

⁵ *Ibid.*, xxv..

Other weaknesses with the current version of performance-based regulation include [that] it allows costs to be shifted from the construction of a building to the maintenance phase, transferring savings in capital costs to maintenance costs, which could be an issue if the owner or occupier does not know about it.⁶

The BCA deals with some quality issues but not in a systematic way. In some instances this arises out of the health and safety objectives, for example it sets durability requirements for some building components like wall ties, mandates termite protection and sets standards for waterproofing.

In addition, some provisions of cited standards exceed the minimum for health and safety. For example the minimum ventilation rates in AS 1668.2 are more oriented to comfort (for example no perceptible odours) than minimum health requirements.⁷

The BCA's approach means that significant issues like the durability of buildings are not addressed systematically. From a whole building life expectancy perspective durability is a key issue since early failure and higher maintenance costs can weigh against reduced capital costs. While it might be argued that it is difficult to set consistent economic life objectives for non-residential buildings this is rarely the case for residential buildings where durability is a reasonable expectation for first and subsequent purchasers.

Some states have attempted to address this by producing their own requirements for domestic construction but a coordinated national approach with appropriate regional provisions is clearly superior.^{8,9}

Recommendation

The Draft Report should contain a strategy for addressing quality and durability issues. This might be by regulation or some non-regulatory process (for example, expanded deemed-to-comply provisions) that might parallel and integrate with the development of regulations.

3.2 National consistency

Standards in the BCA

Between Volumes 1 and 2 and the State and Territory amendments, the BCA currently directly cites about 116 Australian Standards. A concern not adequately addressed in the Draft Report is the extent to which the editions and amendments of these standards are not current. If it is accepted that Australian and International Standards represent a consensus of best practice the citing of out of date editions must represent less than best practice.

Non-current standards and amendments

We list below current editions of standards, and amendments to the standards, not yet cited in the BCA Volumes 1 and 2 (*Housing provisions*). These mainly relate to the standards cited in the State and Territories Appendices, together with some other anomalies. While a few of the deficiencies are typographical the total is significant.

BCA – Volume 1 Part Schedule of referenced documents

- AS/NZS 1170.3:2003 (AS 1173.3:1990 cited).
- AS/NZS 717.1:2004 (AS/NZS 1276.1:1999 cited).
- AS/NZS 1428.4:2002 (AS 1428.4:1992 cited).
- AS 1668.2:2002 (AS 1668.2:1991 cited).

⁶ Ibid., xxix.

⁷ AS 1668.2:1991 *The Use of Ventilation and Airconditioning in Buildings - Mechanical Ventilation for Acceptable Indoor Quality*, (Sydney: Standards Australia, 1991).

⁸ Building Commission, *Guide to Standards and Tolerances* (Melbourne, Victoria.: Building Commission, 2002).

⁹ Office of Fair Trading, *Guide to Standards and Tolerances for Home Builders and Renovators* (Parramatta NSW: Office of Fair Trading, 2003.).

NATSPEC//Construction Information

Submission: Reform of Building Regulation – Productivity Commission Draft Research Report

- AS/NZS 2890.1:2004 (AS 2890.1-1993 cited).
- AS 4254-2002 to Amendment 2 (AS 4254-1995 cited)

ACT Appendix Volume 1

- AS/NZS 2890.1:2004 (AS 2890.1-1993 cited).

NSW Appendix Volume 1

- AS 2464 Part 3-1983, Part 5-1985 and Part-6-1983 cited, though superseded by AS/NZS 4859.1:2002 (also cited).

NT Appendix – Volume 1

- AS 1851.1-1995 Amendments 1 and 2 (Amendments not cited).
- AS 1851.4-1992 Amendment 1 (Amendment not cited).
- AS/NZS 2293.2:1995 Amendment 1 (Amendment not cited).

Qld Appendix – Volume 1

- AS/NZS 1891.4:2000 (AS 2626-1983 cited).

TAS Appendix – Volume 1

- AS 1187-1996 (cites 1996 but uses the title of the 1988 version).
- AS/NZS 1668.1:1998 Amendment 1 (Amendment not cited).
- AS 1668.2-2002 Amendments 1 and 2 (AS 1668.2-1991 cited).
- AS/NZS 2022:2003 Amendment 1 (Amendment not cited and ‘AS’ prefix used).
- AS/NZS 2381.1:1999 Amendment 1 (Amendment not cited and ‘AS’ prefix used).
- AS/NZS 2381.2:1999 Amendment 1 (Amendment not cited and ‘AS’ prefix used).
- AS/NZS 3500.2:2003 (AS/NZS 3500.2.2:1996 cited).
- AS/NZS 3760:2003 (AS/NZS 3760:2001 cited).
- AS/NZS 4220:2003 (AS/NZS 4220:1994 for *Bunk beds* cited).
- AS 4464-1998 (A non-existent AS 4464-1997 cited).
- AS 4465-2001 Amendment 1 (Amendment not cited).
- AS 4466-1998 (A non-existent AS 4467-1997 cited).
- AS 5008-2001 Amendment 1 (Amendment not cited).
- AS/NZS 60079.10:2004 (AS 2430.1-1987 cited).

BCA – Volume 2 Part 1.4.1 Schedule of referenced documents

- AS/NZS 1170.3:2003 (AS 1173.3:1990 cited).
- AS/NZS 717.1:2004 (AS/NZS 1276.1:1999 cited).
- AS 1668.2-2002 (AS 1668.2-1991 cited).
- AS/NZS 2269:2004 (AS/NZS 2269:1994 cited).
- AS/NZS 3500.5:2000 to Amendment 2 (Amendments not cited).
- AS 4254-2002 to Amendment 2 (AS 4254-1995 cited Amendments 1 and 2 not cited).

SA Appendix – Volume 2

- AS 1720.2-1990 (A non-existent AS 1720.2-1997 *Timber structures – Wind forces* cited).

Recommendation

An effective mechanism is required for ensuring that cited material is the most current. Minimising or eliminating State and Territory variations would greatly assist this.

3.3 Articulating the performance-based requirements

The Draft Report makes the following observation:

... the majority of the 'performance' requirements actually in the Code do not give readily measurable outcomes that must be achieved. The standards are more accurately described as 'principle' based, specifying broad, but not measurable, targets or objectives for buildings.¹⁰

It is NATSPEC's experience that, even given the greater latitude available to us in preparing master specifications, arriving at such performance based descriptions may not, in fact, be achievable. Put simply, there may well be no way of describing, in general terms, the aims or objectives to be achieved in a way that represents verifiable and objective targets.

While it recognises the problem the Draft Report would not appear to have adequately confronted the practical reality implied in the above quotation.

Other approaches are possible and could be considered. For example in some instances it may be possible to require that alternative solutions must provide no lesser performance than model deemed-to-comply provisions.

Recommendation

We acknowledge the desirability of providing both performance objectives and deemed-to-comply solutions. The Final Report should contain recommendations as to how these can be aligned.

3.4 Articulating prescriptive requirements – sound

Summary

The new BCA material on impact sound is an example of the problems encountered. These can be improved by addressing the following:

- The deemed-to-comply provisions should be extended to include current industry practice such as the use of an acoustic underlay of a nominated value.
- The text should be re-written to include more "user friendly" technical terms.

Although NATSPEC endeavours to produce its own material in simple, concise and unambiguous language our subscribers have to deal with the realities of the BCA. In addition to providing master specification material we provide commentaries on it to assist our subscribers to write better specifications. The following NATSPEC commentary on impact sound illustrates the problems in using the BCA in its present form:

BCA Volume 1 Specification F5.2 Table 3 *Construction deemed to satisfy* contains a limited number of floor systems all of which have an isolated suspended ceiling except the case of a 200 mm concrete slab with carpet and underlay. Floor systems incorporating acoustic underlays are not provided for. Such a system may be required for hard floor finishes where the underside of the slab is given a skim coat in lieu of an isolated ceiling.

Under these circumstances the options for BCA compliance are the prescriptive approach (deemed to satisfy) or the performance approach (verification method).

The prescriptive approach relies on the laboratory testing of a range of complete floor systems from which the designer can choose (including the limited examples in the BCA as deemed to satisfy).

¹⁰ Productivity Commission, *Reform of Building Regulation: Productivity Commission Draft Research Report*, xxix

The performance approach involves the selection of a complete floor system that can be field tested on completion. The selection process for this option would require a lot of confidence and this implies professional acoustic design.

The prescriptive approach would appear the most straightforward means of compliance with the BCA. However there is the possibility of field tests being called for by the end user for verification, and failure could lead to legal complications.

Some acoustic underlay manufacturers have published laboratory tests of a range of flooring systems incorporating their products. Close liaison with all suppliers involved in the floor system is essential to ensure the compatibility of all the products. Verification of the value achieved for the weighted normalised impact sound pressure level with the spectrum adoption term can be obtained from an ISO 9001 quality management system certified supplier. A guarantee for successful field tests is unlikely as the completion of the floor system involves the work of a number of contractors unrelated to the suppliers.

An unfortunate side effect of the BCA amendment is the adoption of impossibly complicated technical terms. "Weighted normalised impact sound pressure level and spectrum adoption term" is too much of a mouthful and its value " $L_{n,w} + (C_i)$ " simply can not be quoted over the telephone or typed into an email.

Recommendation

We endorse adoption of recommendation 5.6 of the Draft Report.¹¹

4 REFERENCES

AS 1668.2:1991 : The Use of Ventilation and Airconditioning in Buildings : Mechanical Ventilation for Acceptable Indoor Quality. Sydney: Standards Australia, 1991.

AS/NZS ISO 9000:2000 : Quality Management Systems - Fundamentals and Vocabulary. Sydney: Standards Australia/Standards New Zealand, 2000.

Building Commission. *Guide to Standards and Tolerances.* Melbourne, Victoria.: Building Commission, 2002.

The Megalex Concise Macquarie Dictionary (2.6) [Software]. Eurofield Information Solutions, 2002.

Office of Fair Trading. *Guide to Standards and Tolerances for Home Builders and Renovators.* Parramatta NSW: Office of Fair Trading,, 2003.

Productivity Commission. *Reform of Building Regulation: Productivity Commission Draft Research Report.* Melbourne, Vic.: Author, 2004.

¹¹ Ibid., 107.