



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

ARCHIVED

Effective until 2 November 2022
Replaced by
G7/AS1 Second Edition
G7/AS2 First Edition
G7/VM2 First Edition

Acceptable Solutions and Verification Methods

For New Zealand Building Code Clause
G7 Natural Light



Status of Verification Methods and Acceptable Solutions

Verification Methods and Acceptable Solutions are prepared by the Ministry of Business, Innovation and Employment in accordance with section 22 of the Building Act 2004. Verification Methods and Acceptable Solutions are for use in establishing compliance with the New Zealand Building Code.

A person who complies with a Verification Method or Acceptable Solution will be treated as having complied with the provisions of the Building Code to which the Verification Method or Acceptable Solution relates. However, using a Verification Method or Acceptable Solution is only one method of complying with the Building Code. There may be alternative ways to comply.

Users should make themselves familiar with the preface to the New Zealand Building Code Handbook, which describes the status of Verification Methods and Acceptable Solutions and explains alternative methods of achieving compliance.

Defined words (italicised in the text) and classified uses are explained in Clauses A1 and A2 of the Building Code and in the Definitions at the start of this document.

Enquiries about the content of this document should be directed to:



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

Ministry of Business, Innovation and Employment
PO Box 1473, Wellington.
Telephone 0800 242 243
Fax 04 494 0290
Email: info@dbh.govt.nz

**Verification Methods and Acceptable Solutions
are available from www.dbh.govt.nz**

New Zealand Government

© Ministry of Business, Innovation and Employment 2014

This document is protected by Crown copyright, unless indicated otherwise. The Ministry of Business, Innovation and Employment administers the copyright in this document. You may use and reproduce this document for your personal use or for the purposes of your business provided you reproduce the document accurately and not in an inappropriate or misleading context. You may not distribute this document to others or reproduce it for sale or profit.

The Ministry of Business, Innovation and Employment owns or has licences to use all images and trademarks in this document. You must not use or reproduce images and trademarks featured in this document for any purpose (except as part of an accurate reproduction of this document) unless you first obtain the written permission of the Ministry of Business, Innovation and Employment.

ARCHIVED

Document Status

The most recent version of this document (Amendment 2), as detailed in the Document History, is approved by the Chief Executive of the Ministry of Business, Innovation and Employment. It is effective from 14 February 2014 and supersedes all previous versions of this document.

The previous version of this document (Amendment 1) will cease to have effect on 14 August 2014.

People using this document should check for amendments on a regular basis. The Ministry of Business, Innovation and Employment may amend any part of any Verification Method or Acceptable Solution at any time. Up-to-date versions of Verification Methods and Acceptable Solutions are available from www.dbh.govt.nz

G7: Document History			
	Date	Alterations	
First published	July 1992		
Amendment 1	Effective from 1 December 1995 until 14 August 2014	pp. i and ii, Document History	p. 5, Table 2
Amendment 2	14 February 2014	p. 2A, Document History, Status p. 7, References	p. 9 Definitions
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

ARCHIVED

New Zealand Building Code

Clause G7 Natural Light

This Clause has been extracted from the New Zealand Building Code contained in the First Schedule of the Building Regulations 1992.

64	<i>Building Regulations 1992</i>	1992/150
FIRST SCHEDULE—continued		
Clause G7—NATURAL LIGHT		
Provisions	Limits on application	
OBJECTIVE		
<p>G7.1 The objective of this provision is to safeguard people from illness or loss of <i>amenity</i> due to isolation from natural light and the outside environment.</p>		
FUNCTIONAL REQUIREMENT		
<p>G7.2 <i>Habitable spaces</i> shall provide <i>adequate</i> openings for natural light and for a visual awareness of the outside environment.</p>		
PERFORMANCE		
<p>G7.3.1 Natural light shall provide an <i>illuminance</i> of no less than 30 lux at floor level for 75% of the <i>standard year</i>.</p>		
<p>G7.3.2 Openings to give awareness of the outside shall be transparent and provided in suitable locations.</p>		
		<p>Requirement G7.2 shall apply only to <i>Housing</i>, old people's homes and early childhood centres.</p>

ARCHIVED

Contents

ARCHIVED

	Page
References	7
Definitions	9
Verification Method G7/VM1	11
1.0 Illuminance	11
Acceptable Solution G7/AS1	13
1.0 Vertical Windows and External Walls	13
2.0 Awareness of the Outside Environment	16
Index	17

ARCHIVED

References

ARCHIVED

For the purposes of New Zealand Building Code compliance, the acceptable New Zealand and other Standards, and other documents referred to in this Verification Method and Acceptable Solution (primary reference documents) shall be the editions, along with their specific amendments, listed below. Where the primary reference documents refer to other Standards or other documents (secondary reference documents), which in turn may also refer to other Standards or other documents, and so on (lower order reference documents), then the applicable version of these secondary and lower order reference documents shall be the version in effect at the date this Verification Method and Acceptable Solution were published.

Amend 2
Feb 2014

Standards Association of New Zealand

NZS 6703: 1984 Code of practice for interior lighting design
Amend C1: 1985

Amend 2
Feb 2014

Where quoted

VM1 1.0.1,
AS1 Table 2

ARCHIVED

Definitions

ARCHIVED

Amend 2
Feb 2014

This is an abbreviated list of definitions for words or terms particularly relevant to this Verification Method and Acceptable Solution. The definitions for any other italicised words may be found in the New Zealand Building Code Handbook.

Adequate *Adequate* to achieve the objectives of the *Building Code*.

Amenity An attribute of a *building* which contributes to the health, physical independence, and well being of the *building's* users but which is not associated with disease or a specific illness.

Amend 2
Feb 2014

Building has the meaning given to it by sections 8 and 9 of the Building Act 2004.

Habitable space A space used for activities normally associated with domestic living, but excludes any bathroom, laundry, water-closet, pantry, walk-in wardrobe, corridor, hallway, lobby, clothes-drying room, or other space of a specialised nature occupied neither frequently nor for extended periods.

Amend 2
Feb 2014

Illuminance The luminous flux falling onto unit area of surface (lumen/m²).

Reflectance The ratio of the flux reflected from a surface to the flux incident on it.

Standard year For the purposes of determining natural lighting, the hours between 8 am and 5 pm each day with an allowance being made for daylight saving.

ARCHIVED

1.0 Illuminance

1.0.1 *Illuminance* may be assessed by using one of the BRE calculation methods described in NZS 6703, Appendix A.

ARCHIVED

Acceptable Solution G7/AS1

1.0 Vertical Windows in External Walls

1.0.1 Vertical windows in external walls shall have:

a) A window area of no less than 10% of the floor area,

COMMENT:

10% window area to floor area equates to approximately 33 lux at floor level for 75% of the standard year.

b) A glazing transmittance of no less than 0.7, and

c) A head height of at least:

i) half the room width for windows on the same side or adjacent sides of a room (see Figure 1), and

ii) one quarter the room width for windows on opposite sides of the room (see Figure 2).

COMMENT:

In large rooms where the suggested head height is impractical, a window area in excess of 10% of floor area may be necessary.

1.0.2 Where the natural light entering a *building* is restricted by other structures or natural land features, either the total window area shall be increased or interior surfaces of suitable *reflectance*, shall be provided.

1.0.3 Figure 3 shows the situation where parts of the floor fall beyond the no-sky line. In these cases and where only the minimum window area (see Paragraph 1.0.1 a)) is provided, high *reflectance* surfaces are required. In other cases with minimum window areas, medium *reflectance* surfaces are acceptable.

1.0.4 Reflectances of interior surfaces shall comply with Table 1. Table 2 gives approximate *reflectances* for some surface finishes.

Figure 1: Window Head Height for a Window on One Side or Adjacent Sides of a Room
Paragraph 1.0.1 c) i)

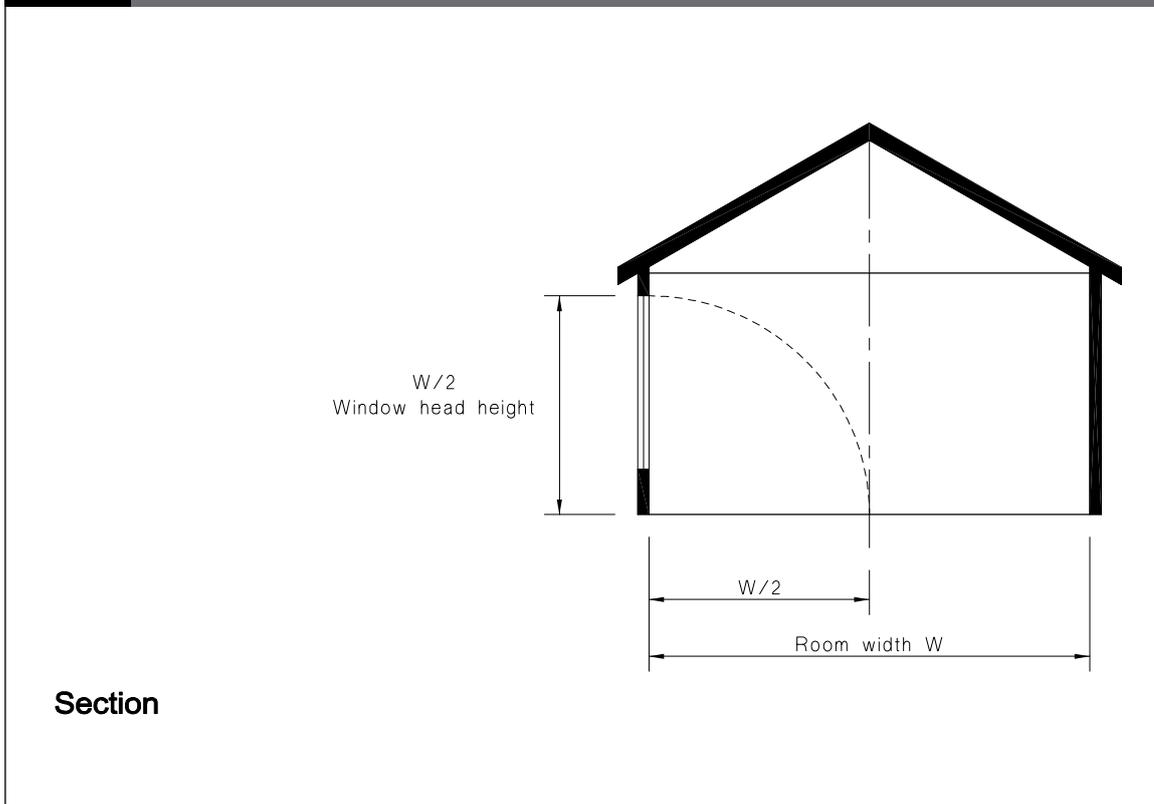


Figure 2: Window Head Heights for Windows on Opposite Side of a Room
Paragraph 1.0.1 c) ii)

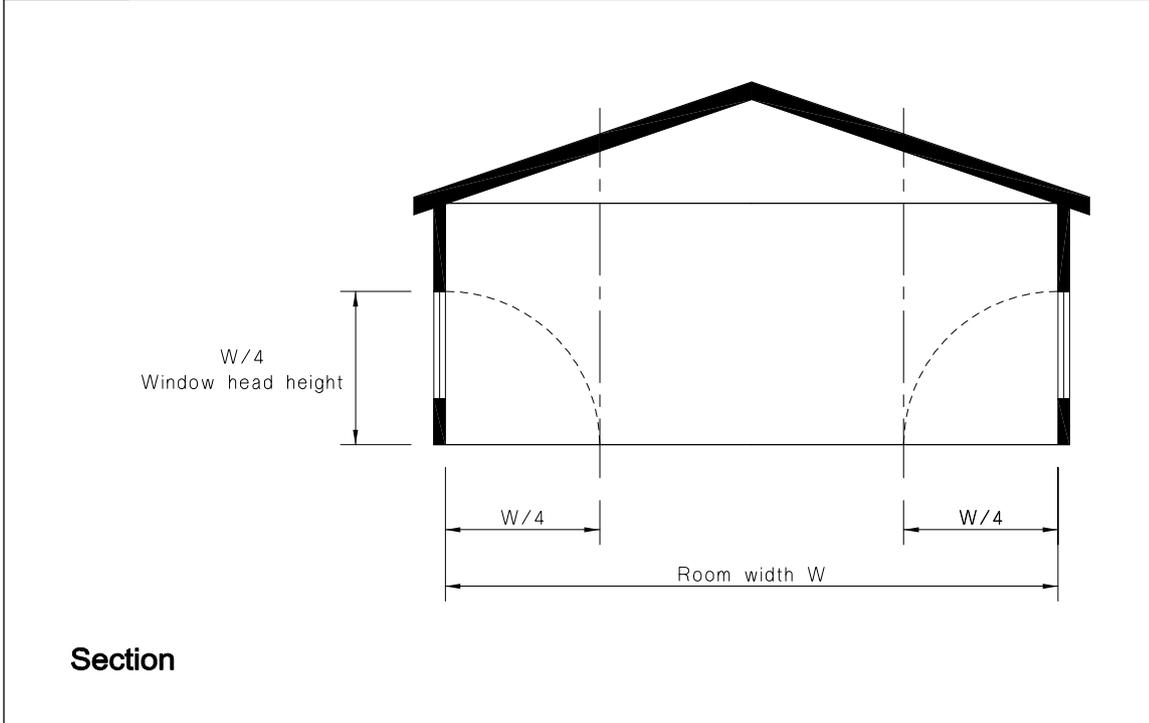


Figure 3: No-sky Line Condition
Paragraph 1.0.3

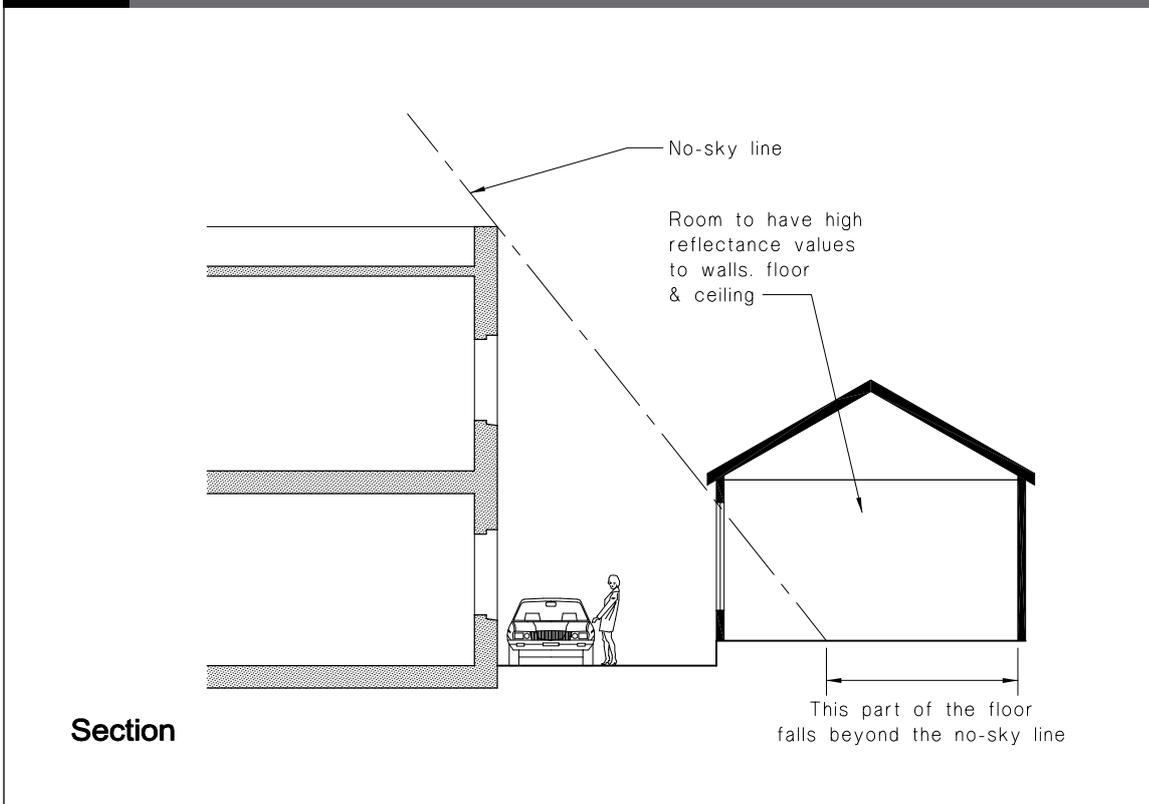


Table 1: Acceptable Reflectances for Interior Surface Finishes
Paragraph 1.0.4

Reflectance level required	Minimum surface reflectance		
	Ceilings	Walls ⁽¹⁾	Floor
Medium reflectance	0.7	0.4	0.2
High reflectance	0.7	0.6	0.4

Note:
1. Does not include windows.

Table 2: Approximate Reflectances of Typical New Zealand Building Finishes
Paragraph 1.0.4

Building finish	Approximate reflectance	Building finish	Approximate reflectance
White emulsion paint on plain plaster surface	0.8	Fibre cement sheet	0.4
White glazed tiles		Portland cement (smooth)	
White emulsion paint on acoustic tile	0.7	Natural rimu (dressed)	
White emulsion paint on no-fines concrete	0.6	Varnished Pinus radiata ⁽¹⁾	0.3
Natural pine plywood	0.55	Concrete (light grey)	0.25
White emulsion paint on wood-wool slab	0.5	Portland cement (rough)	
Varnished pine plywood ⁽¹⁾	0.45	Natural mahogany (dressed)	
Natural Pinus radiata		Varnished particle board	
		Varnished rimu (dressed) ⁽¹⁾	0.15
		Varnished mahogany (dressed) ⁽¹⁾	
		Quarry tiles:	0.1
		Red, heather brown	

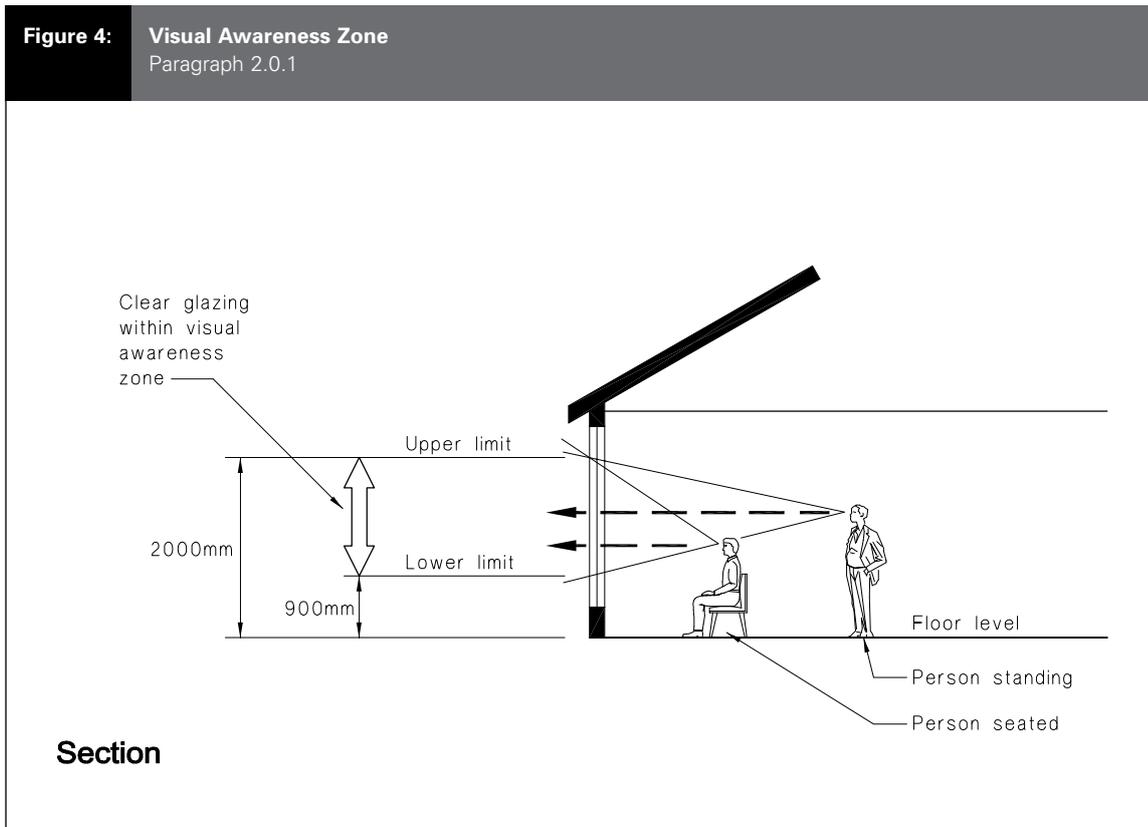
Note:
1. Typical varnishing would be two coats of clear gloss polyurethane varnish.
2. This table is reproduced from NZS 6703.

Amend 1
Dec 1995

2.0 Awareness of the Outside Environment

2.0.1 At least 50% of the glazed area provided for natural light in *habitable spaces* shall be clear glazed. The clear glazing shall be located in the zone between the levels 900 mm and 2000 mm from floor level (see Figure 4).

2.0.2 It is acceptable for awareness of the outside to be provided through another space.



Index G7/VM1 & AS1 **ARCHIVED**

All references to Verification Methods and Acceptable Solutions are preceded by **VM** or **AS** respectively.

Illuminance	VM1 1.0
Interior surfaces	AS1 1.0.2, 1.0.3, 1.0.4, Table 1
No-sky line condition	AS1 1.0.3, Figure 3
Outside environment	AS1 2.0
Reflectances	AS1 1.0.4, Table 2
high	AS1 1.0.3, 1.0.4, Table 1
medium	AS1 1.0.3, 1.0.4, Table 1
Windows	AS1 1.0.1, 1.0.2, 1.0.3, 2.0.1, Figures 1, 2

ARCHIVED