



MINISTRY OF BUSINESS,  
INNOVATION & EMPLOYMENT  
HĪKINA WHAKATUTUKI

# 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.

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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.

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## New Zealand Government

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**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](http://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.			



# 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	Building Regulations 1992	1992/150
FIRST SCHEDULE—continued		
Clause G7—NATURAL LIGHT		
Provisions		Limits on application
<b>OBJECTIVE</b>		
<b>G7.1</b> 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.		
<b>FUNCTIONAL REQUIREMENT</b>		
<b>G7.2</b> <i>Habitable spaces</i> shall provide <i>adequate</i> openings for natural light and for a visual awareness of the outside environment.		Requirement G7.2 shall apply only to <i>Housing</i> , old people's homes and early childhood centres.
<b>PERFORMANCE</b>		
<b>G7.3.1</b> 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> .		
<b>G7.3.2</b> Openings to give awareness of the outside shall be transparent and provided in suitable locations.		



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# References

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



# Definitions

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/m<sup>2</sup>).

**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.



# Verification Method G7/VM1

## 1.0 Illuminance

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



# 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:**

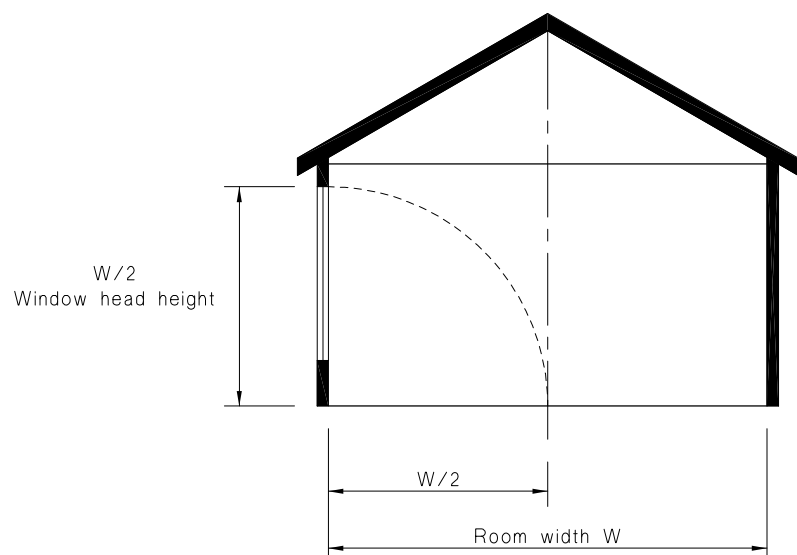
In large rooms where the suggested head height is impractical, a window area in excess of 10% of floor area may be necessary.

**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.

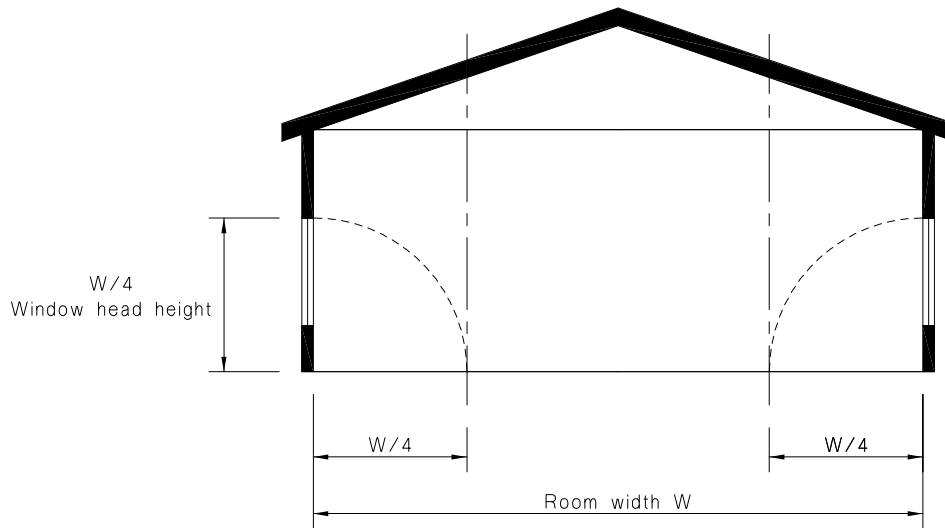
**1.0.4** Reflectances of interior surfaces shall comply with Table 1. Table 2 gives approximate *reflectances* for some surface finishes.

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



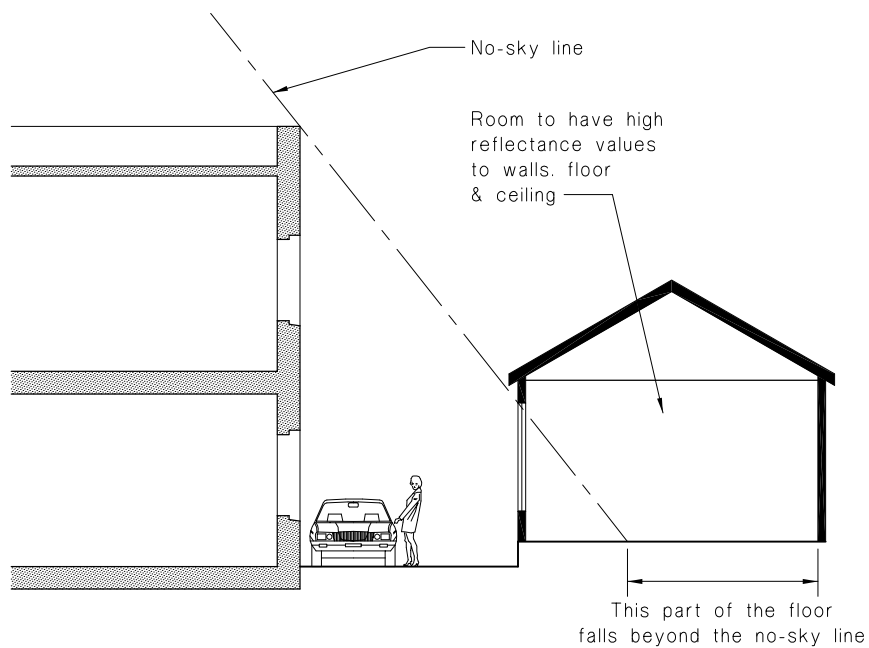
**Section**

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



**Section**

**Figure 3:** No-sky Line Condition  
Paragraph 1.0.3



**Section**



**Table 1: Acceptable Reflectances for Interior Surface Finishes**  
Paragraph 1.0.4

Reflectance level required	Minimum surface reflectance		
	Ceilings	Walls <sup>(1)</sup>	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 particle board	0.4
White emulsion paint on no-fines concrete	0.6	Natural rimu (dressed)	0.3
		Varnished Pinus radiata <sup>(1)</sup>	
Natural pine plywood	0.55	Concrete (light grey)	0.25
White emulsion paint on wood-wool slab	0.5	Portland cement (rough)	
		Natural mahogany (dressed)	
		Varnished particle board	
Varnished pine plywood <sup>(1)</sup>	0.45	Varnished rimu (dressed) <sup>(1)</sup>	0.15
Natural Pinus radiata		Varnished mahogany (dressed) <sup>(1)</sup>	
		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.

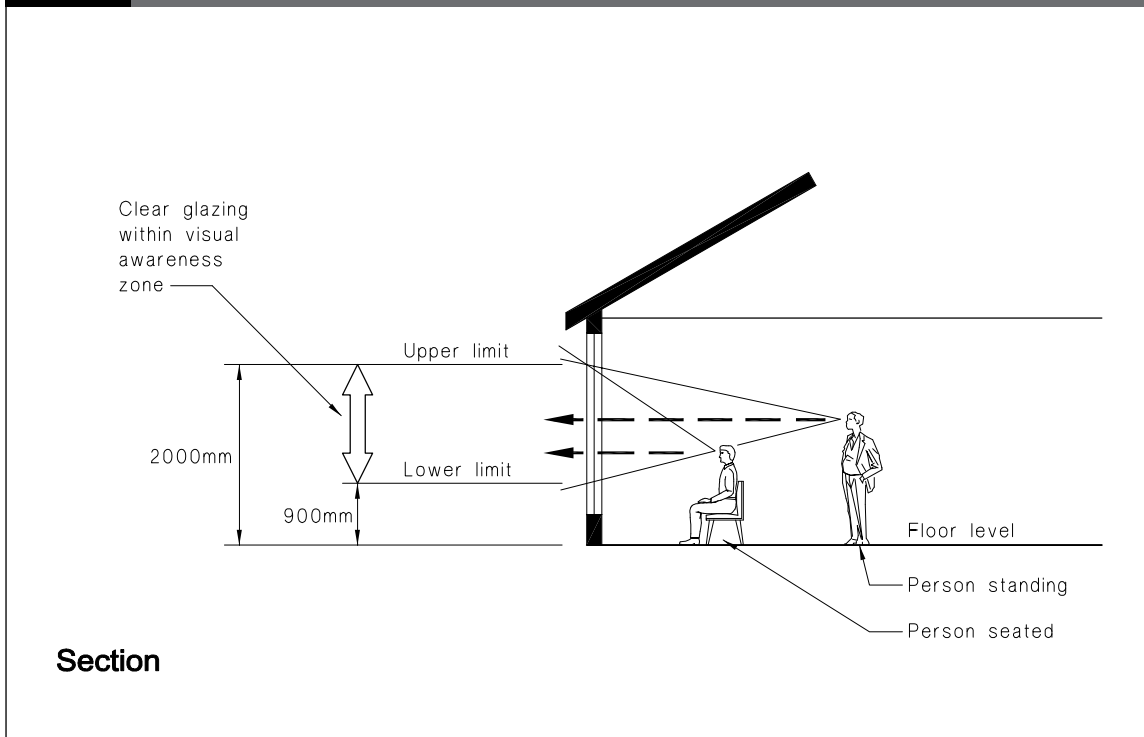
Amend 1  
Dec 1995

## 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.

**Figure 4:** Visual Awareness Zone  
Paragraph 2.0.1



# Index G7/VM1 & AS1

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

