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Compliance Document for New Zealand Building Code Clause G7 Natural Light

Prepared by the Department of Building and Housing

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

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

G7: Document History			
	Date	Alterations	
First published	July 1992		
Amendment 1	1 December 1995	pp. i and ii, Document History	p. 5, Table 2
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

Document Status

The most recent version of this document, as detailed in the Document History, is approved by the Chief Executive of the Department of Building and Housing. It is effective from 1 December 1995 and supersedes all previous versions of this document.

People using this Compliance Document should check for amendments on a regular basis. The Department of Building and Housing may amend any part of any Compliance Document at any time. Up-to-date versions of Compliance Documents are available from www.dbh.govt.nz

New Zealand Building Code

Clause G7 Natural Light

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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— <i>continued</i>		
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 adequate 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>	

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References

For the purposes of New Zealand Building Code compliance, referenced documents shall be deemed to include any amendments issued prior to the date of the Approved Document as displayed at the foot of the page on which the references are listed.

Standards Association of New Zealand

NZS 6703: 1984 Code of practice for interior lighting design

Where quoted

VM1 1.0.1,
AS1 Table 2

Definitions

This is an abbreviated list of definitions for words or terms particularly relevant to this Approved Document. 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.

Building has the meaning ascribed to it by the Building Act 1991.

Illuminance The luminous flux falling onto unit area of surface.

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.

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

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1.0 Illuminance

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

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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)

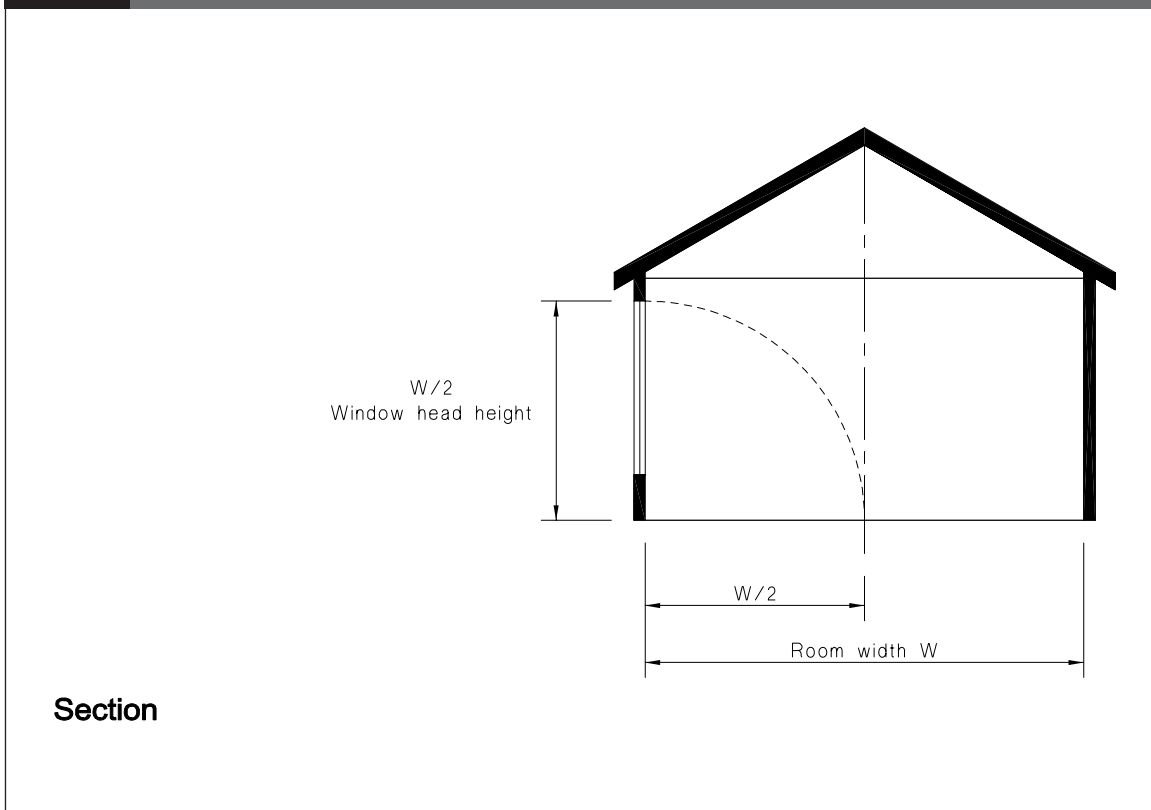


Figure 2: Window Head Heights for Windows on Opposite Side of a Room
Paragraph 1.0.1 c) ii)

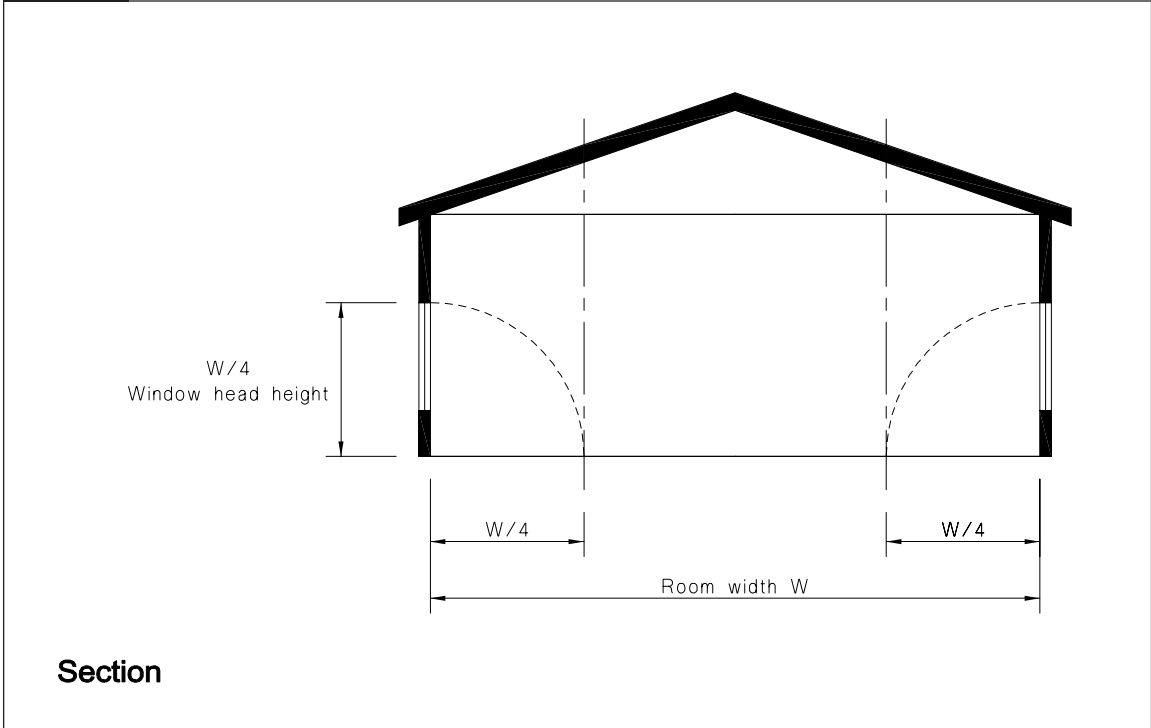


Figure 3: No-sky Line Condition
Paragraph 1.0.3

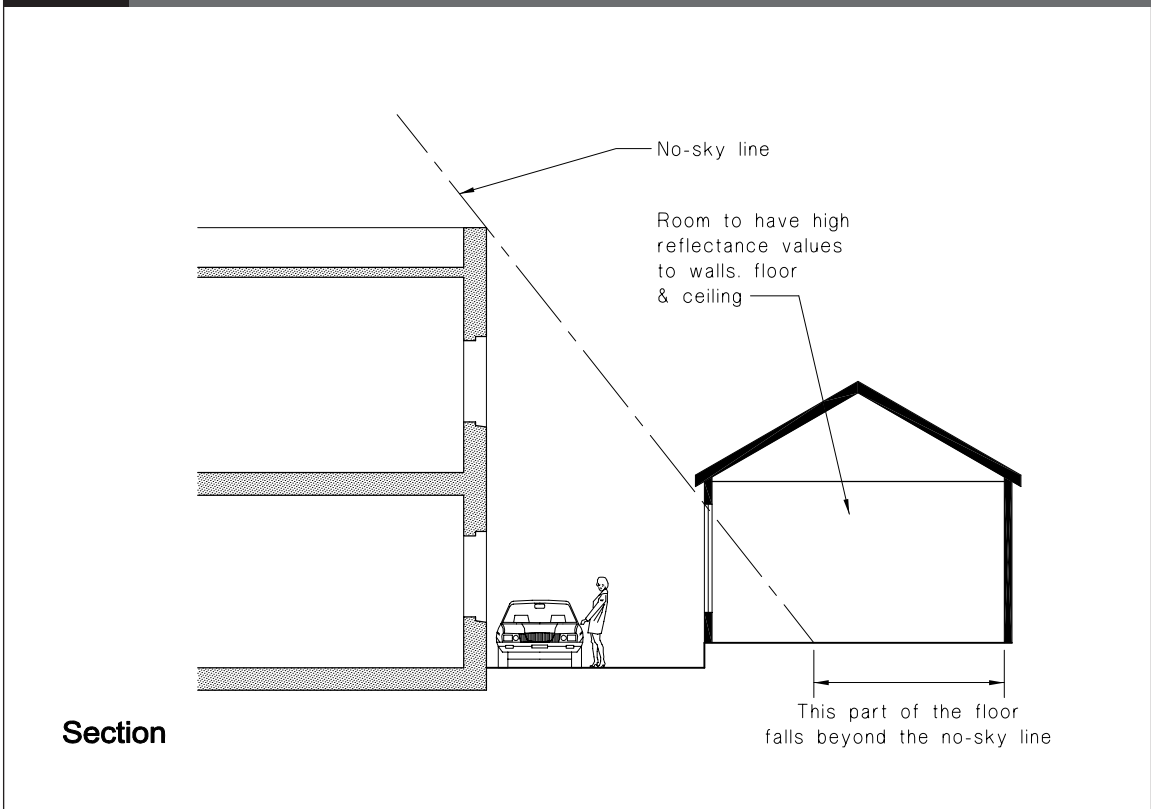


Table 1: Acceptable Reflectances for Interior Surface Finishes
Paragraph 1.0.4

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	

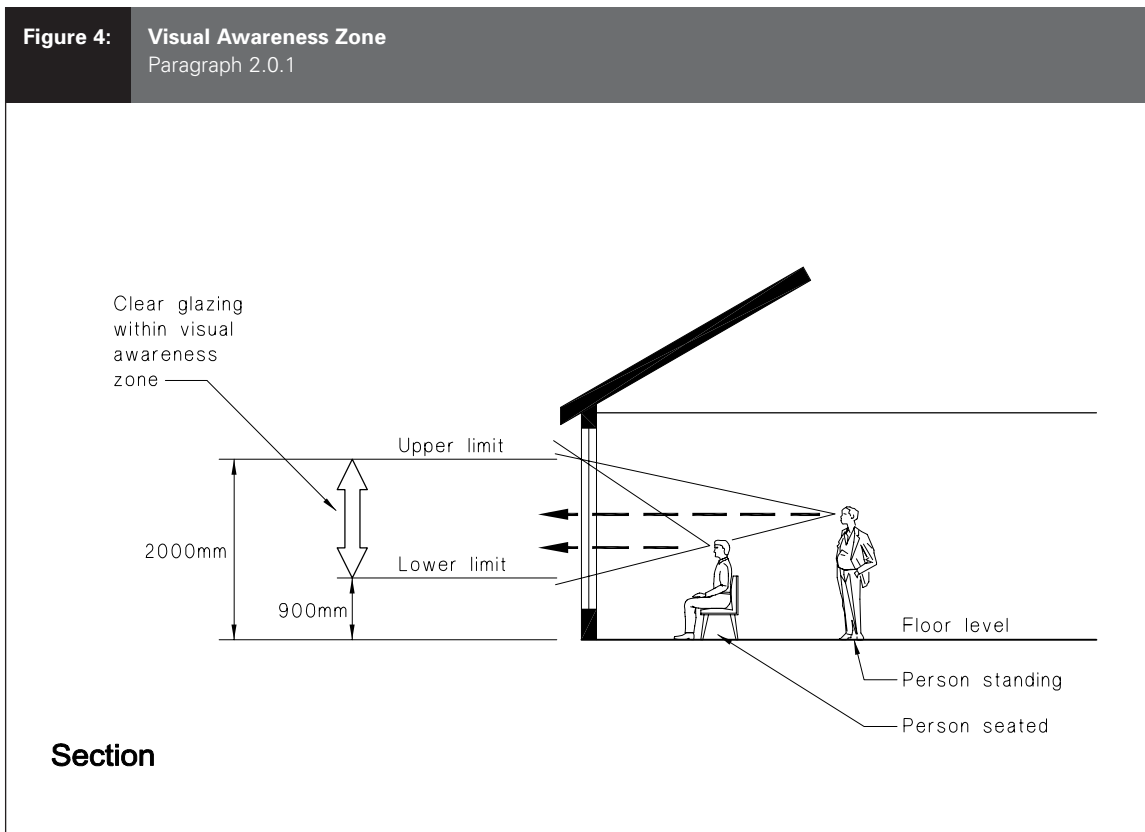
Note:
1. Typical varnishing would be two coats of clear gloss polyurethane varnish.
2. This table is reproduced from NZS 6703.

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

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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

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