OCULUS

NZBC H1 CHANGES
A BRIEF SUMMARY

WHICH COMPLIANCE PATH?

Schedule & Calculation Method
AS1 - All housing and < 300m2
AS2 - Commercial and > 300m2

Modelling Method
VM1 - All housing and < 300m2
VM2 - Commercial and > 300m2
VM3 - HVAC in Commercial and > 300m2

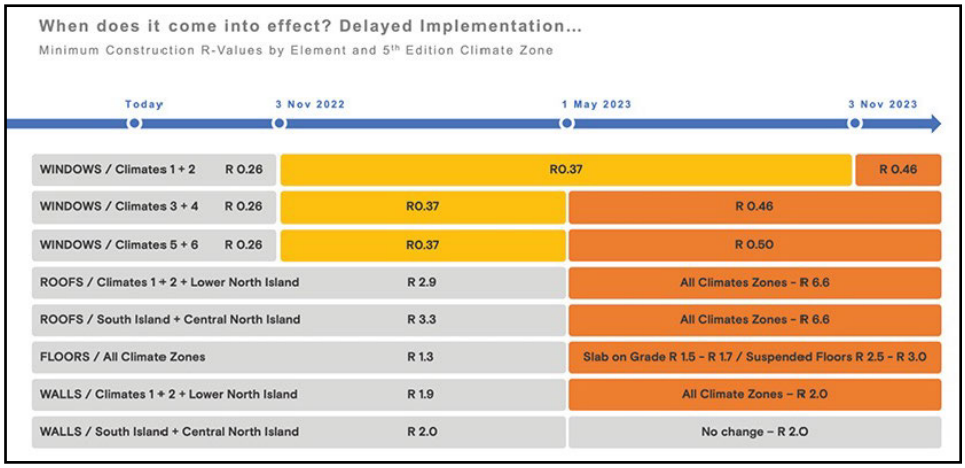


Image source: Context Architects

WHAT HAS CHANGED IN THE H1 UPDATE?

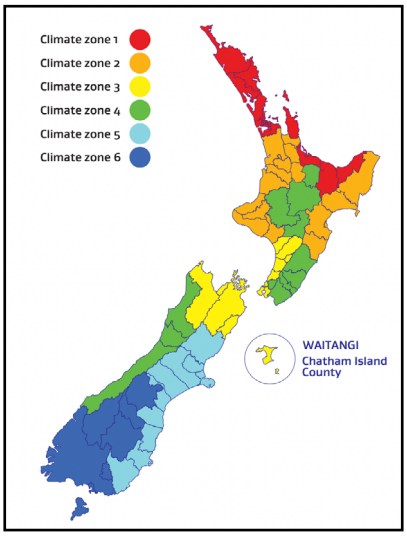
Thermal Envelope	HVAC	Lighting	Occupant Comfort
Increase of envelope R-Values	Increase Energy Efficiency of HVAC Systems & Components	Increase Artificial Lighting Efficiency	Natural Light
Refined Climate Zone			
Changed window calculation method			

HOW CAN OCULUS HELP WITH YOUR H1 COMPLIANCE?

- **Energy modelling**
- **H1 compliance reports for schedule/ calculation/modelling method**
- **Design review**
- **Peer review**
- **General advice**

Contact our team at info@oculusltd.co.nz to discuss your H1 requirements!

WHAT HAS CHANGED & WHAT ARE THE IMPACTS?



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Climate zones

- This acknowledges the complexity of NZ's climate and that temperatures, humidities, and weather patterns over the seasons differ greatly throughout the country.
- Schedule R-values for housing (AS1/VM1) do not vary too much between zones, but there is substantial variation in non-housing (AS2/VM2)

R-value increases

- Schedule R-values have increased.
- **Summary of R-Value increases for housing and small buildings (AS1/VM1) - see the tables below.**

OLD (NZS4218)

Table 2 – Construction R-values for buildings with any wall type

Building element	Construction R-values (m².°C/W)		
	Climate zone 1	Climate zone 2	Climate zone 3
Roof	R 2.9	R 2.9	R 3.3
Wall	R 1.9	R 1.9	R 2.0
Floor	R 1.3	R 1.3	R 1.3
Windows and glazing	R 0.26	R 0.26	R 0.26
Skylights	R 0.26	R 0.26	R 0.31

Table source: NZS4218

NEW (H1/AS1)

TABLE 2.1.2.2B: Minimum construction R-values for building elements that do not contain embedded heating systems

Paragraph 2.1.2.2 b), 2.1.3.1

Building element	Construction R-values (m²·K/W)[1]					
	Climate zone 1	Climate zone 2	Climate zone 3	Climate zone 4	Climate zone 5	Climate zone 6
Roof[2]	R6.6	R6.6	R6.6	R6.6	R6.6	R6.6
Wall	R2.0	R2.0	R2.0	R2.0	R2.0	R2.0
Floor						
Slab-on-ground floors	R1.5	R1.5	R1.5	R1.5	R1.6	R1.7
Floors other than *slab-on-ground*	R2.5	R2.5	R2.5	R2.8	R3.0	R3.0
Windows and doors[3]	R0.46[3]	R0.46[3]	R0.46	R0.46	R0.50	R0.50
Skylights	R0.46	R0.46	R0.54	R0.54	R0.62	R0.62

Table source: H1/AS1

- **Summary of R-Value increases for commercial and large buildings (AS2/VM2) - see the tables below.**

OLD (NZS4243)

Table 1 – Minimum *R*-values for schedule method (*WWR* ≤ 50 %)

Building thermal envelope component	Minimum *R*-values (m² °C/W)	
	Climate zone 1	Climate zones 2 & 3
Roof (average including glazing)	*R* 1.9	*R* 1.9
Wall	*R* 0.3	*R* 1.2
Floor	No requirement	*R* 1.3
Glazing	No requirement	No requirement

NOTE –
(1) The *R*-values given in this table are those applicable to the reference building as described in this Standard.
(2) Carpets or floor coverings are not included in the floor *R*-value. The floor *R*-value is met by concrete slab-on-ground and suspended floors with continuous enclosed perimeter with 100 mm drooped foil. Exposed floors will require additional treatment, e.g. office building with open car parking under.
(3) Climate zone boundaries are shown in Appendix A.

Table source: NZS4243

NEW (H1/AS2)

TABLE 2.1.2.2B: Minimum construction R-values for building elements that do not contain embedded heating systems

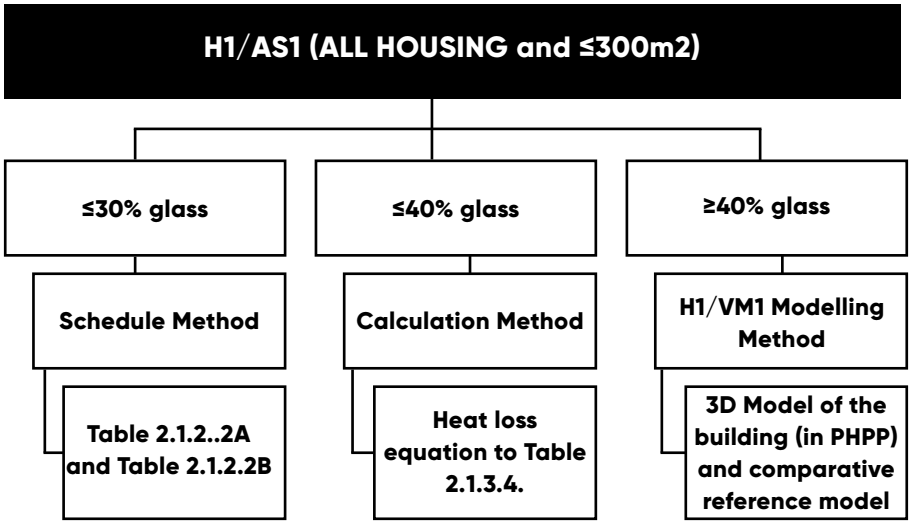
Paragraphs 2.1.2.2 b), 2.1.3.11

Building element	Construction R-values (m²·K/W)[1]					
	Climate zone 1	Climate zone 2	Climate zone 3	Climate zone 4	Climate zone 5	Climate zone 6
Roof	R3.5	R4.0	R5.0	R5.4	R6.0	R7.0
Wall	R2.2	R2.4	R2.7	R3.0	R3.0	R3.2
Floor	R2.2	R2.2	R2.2	R2.4	R2.5	R2.6
Windows and doors	R0.33	R0.33	R0.37	R0.37	R0.40	R0.42
Skylights	R0.42	R0.42	R0.46	R0.46	R0.49	R0.51

Table source: H1/AS2

- Overall, the biggest increases for housing are the windows/skylights and the roof
- For commercial, the increases have been substantial for all assemblies.

Glazing ratios for compliance pathways

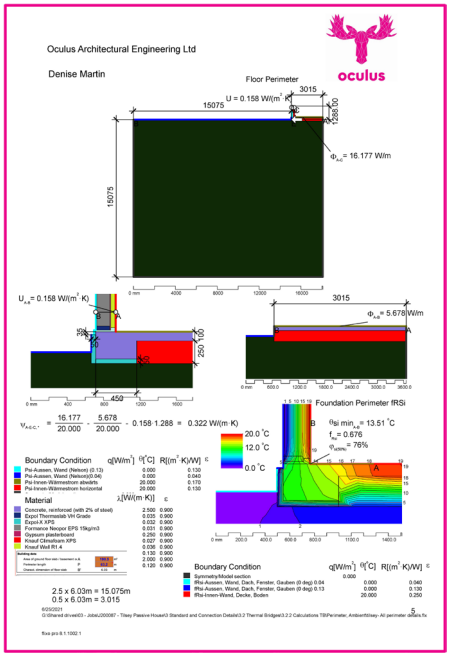


Window R-value calculation method has changed

- Window suppliers supply all of the values and calculations as a WEERS report
- For housing, H1/AS1 Schedule and calculation method allows use of table E1.1.1. for generic glazing/joinery R-values

Floor R-value calculation method

- There are now heaps of tables to choose R-values from, which account for:
  - 2 wall types (masonry veneer cladding or not)
  - Slab to perimeter ratio
  - Thickness of wall
- These tables provide compliance, but lack nuance and become increasingly skewed with larger slab to perimeter ratio
- H1/VM1 appendix F allows for a much more accurate calculation of slab R-value based on slab area R-value and slab edge Psi value
- **On the right you can see an example calculation**



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