



# Design Navigator H1 Compliance Report

## Project Summary

H1 Report created by:	Alter Architecture Limited
Project Name:	Townhouse Development - UNIT 1
Client:	GT Homes Ltd
Lot No:	76 Pererika Street, Rotorua
Comment:	
Project Id:	144354
Report Date:	09/06/2021

## Compliance Result

This report shows compliance of the design with Clause H1 Fourth edition Amendment 4 from November 2019 and the R-value targets of Clause E3 Second edition Amendment 7 from November 2020.

This building complies with H1 via the following methods:

- the Schedule Method in NZS4218:2009
- the Calculation Method in NZS4218:2009

## H1 Compliance Details

### NZS4218:2009 Schedule Method Compliance

The use of the Schedule Method is permitted .

In order to comply the R-values for all the construction elements must be the same or larger than the permitted minimum R-values. This design **complies** with the NZS4218:2009 Schedule Method.

<b>Non-Solid Construction</b>			
	Permitted Minimum	Proposed Minimum	
Floor:	1.3	1.3	✓
Non-solid Walls:	1.9	2.1	✓
Glazing in Non-solid Walls:	0.26	0.26	✓
Roof:	2.9	3.09	✓
Skylights:	0.26		✓

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### Notes:

If multiple solid wall types levels are used the table shows the requirements for the corresponding walls and windows in them. For solid timber and for other solid constructions two options are shown for each. But the components of these options can not be mixed, i.e. it is not permitted to use the solid timber wall R-value from option 1 and the solid timber window R-value from option 2.

### NZS4218:2009 Calculation Method Compliance

The use of the Calculation Method is permitted .

In order to comply the Actual Heat Loss must be the same or smaller than the Reference Heat Loss AND all component R-values must be the same or larger than 50% of the R-values in the '50% Rule' table below. This design **complies** with the NZS4218:2009 Calculation Method.

HeatLoss:

Reference building	Proposed building
388	336

Minimum R-values ("50% rule"):

	Permitted Minimum	Proposed Minimum	
Floor:	0.65	1.3	✓
Non-solid Walls:	0.95	2.1	✓
Roof:	1.45	3.09	✓

*The Reference building has the following areas and R-values.*

		Non-solid	Solid Timber	Other Solid
		100.0	0.0%	0.0%
Floor:	Area: 84 m <sup>2</sup> R-values:	1.3	1.3	1.5
Walls excl. glazing:	Area: 135.4 m <sup>2</sup> R-values:	1.9	1.2	1
Glazing (up to 30%):	Area: 58 m <sup>2</sup> R-values:	0.26	0.26	0.26
Glazing (surplus of 30%):	Area: 0 m <sup>2</sup> R-values:	0.4	0.34	0.31
Roof:	Area: 84 m <sup>2</sup> R-values:	2.9	3.5	3.5
<b>Heat Loss:</b>		388	425	439

For mixed constructions the heat loss of the reference building is calculated as the sum of the heat losses for each type of wall construction multiplied by the fraction of the wall area of each type. This approach is based on clause 4.2.6 of NZS4218:2009. There are no skylights in the reference building. The reference building roof area is the sum of the proposed building roof and skylight areas.

**Compliance with Clause E3**

This building complies with the R-value targets in NZBC Clause E3 .

Component	Minimum R-value	Project R-value
Framed wall constructions with cavities	1.5	2.1
Single skin masonry wall without a cavity	0.6	
Solid timber wall no less than 60 mm thick	0.6	
Roof or ceilings	1.5	3.09

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## Design Details

### Building Dimensions

Floor Area	<input type="text" value="84"/>	m <sup>2</sup>
Gross Wall Area	<input type="text" value="193.4"/>	m <sup>2</sup>
Net Wall Area	<input type="text" value="147.8"/>	m <sup>2</sup>
Wall (North) Area	<input type="text" value="40.3"/>	m <sup>2</sup>
Wall (East, South and West) Area	<input type="text" value="107.5"/>	m <sup>2</sup>
Gross Roof Area	<input type="text" value="84"/>	m <sup>2</sup>
Net Roof Area	<input type="text" value="84"/>	m <sup>2</sup>
Glazing Area	<input type="text" value="45.6"/>	m <sup>2</sup>
Window (North) Area	<input type="text" value="12.6"/>	m <sup>2</sup>
Window (East, South and West) Area	<input type="text" value="33"/>	m <sup>2</sup>
Skylight Area	<input type="text" value="0"/>	m <sup>2</sup>

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### Glazing Areas

Total Vertical Glazing Percentage	<input type="text" value="23.6"/>	%
East, South and West Window Percentage	<input type="text" value="23.5"/>	%
Total over 30%	<input type="text" value="no"/>	
East, South and West over 30%	<input type="text" value="no"/>	
Total over 50%	<input type="text" value="no"/>	
max. Skylight Area for Schedule Method	<input type="text" value="1.5"/>	m <sup>2</sup>
Skylights over Schedule Method Limit	<input type="text" value="no"/>	
Decorative Glazing	<input type="text" value="0"/>	m <sup>2</sup>
Decorative Glazing over 3m <sup>2</sup>	<input type="text" value="no"/>	

### Information required for BPI calculation

Living Floor Area	<input type="text" value="157.3"/>	m <sup>2</sup> Note: This includes also internal floors.
Average Room Height	<input type="text" value="2.4"/>	m
Thermal Mass Level	<input type="text" value="Medium weight"/>	<u>Slab floor with some carpeting or direct glued timber, timber framed walls.</u>
Climate		
Location	<input type="text" value="Rotorua"/>	
Climate Zone	<input type="text" value="2"/>	

**Heat Loss Details**

	ID	Or.	Width	Height	Gross Area	Net Area	R*	Heat Loss	Shad. Coeff **	Solid ***
<i>Floors</i>										
Floor 1	Entire Floor Sla				84.0	84.0	1.30	64.6		
<i>Walls</i>										
Wall 1	GF	E	8.9	2.4	21.3	13.4	2.10	6.4		C
Window 1-1	WD01		2.4	2.1		5.0	0.26	19.4	0.00	
Window 1-2	WD02		0.8	2.2		1.8	0.26	6.9	0.00	
Window 1-3	WD03		0.9	1.2		1.1	0.26	4.2	0.00	
Wall 2	GF	N	12.0	2.4	28.8	19.9	2.10	9.5		C
Window 2-1	WD104		1.2	0.8		1.0	0.26	3.7	0.00	
Window 2-2	WD105		1.8	2.2		4.0	0.26	15.2	0.00	
Window 2-3	WD106		1.8	2.2		4.0	0.26	15.2	0.00	
Wall 3	GF	W	8.9	2.4	21.3	12.9	2.10	6.1		C
Window 3-1	WD107		2.7	2.2		5.9	0.26	22.8	0.00	
Window 3-2	WD109		0.8	2.2		1.8	0.26	6.9	0.00	
Window 3-3	WD110		1.2	0.6		0.7	0.26	2.8	0.00	
Wall 4	GF INTERNAL	S	8.0	2.4	19.2	19.2	2.30	8.3		C
Wall 5	GF EXTERNAL	S	5.0	2.4	12.0	6.1	2.10	2.9		C
Window 5-1	WD108		2.7	2.2		5.9	0.26	22.8	0.00	
Wall 6	FF	E	8.9	2.4	21.3	16.7	2.10	7.9		C
Window 6-1	WD151		0.6	2.2		1.3	0.26	5.1	0.00	
Window 6-2	WD152		0.6	2.2		1.3	0.26	5.1	0.00	
Window 6-3	WD153		0.9	2.2		2.0	0.26	7.6	0.00	
Wall 7	FF	N	10.0	2.4	24.1	20.3	2.10	9.7		C
Window 7-1	WD154		1.8	0.8		1.4	0.26	5.5	0.00	
Window 7-2	WD155		0.4	2.2		0.9	0.26	3.4	0.00	
Window 7-3	WD156		1.8	0.8		1.4	0.26	5.5	0.00	
Wall 8	FF	W	8.9	2.4	21.3	15.2	2.10	7.2		C
Window 8-1	WD157		0.9	1.8		1.6	0.26	6.2	0.00	
Window 8-2	WD158		0.9	1.4		1.3	0.26	4.8	0.00	
Window 8-3	WD159		1.8	1.8		3.2	0.26	12.5	0.00	
Wall 9	FF INTERNAL	S	7.2	2.4	17.2	17.2	2.30	7.5		C
Wall 10	FF EXTERNAL	S	2.9	2.4	6.9	6.9	2.10	3.3		C
<i>Roofs</i>										
Roof 1	FF Roof Area				73.3	73.3	3.09	23.7		
Roof 2	GF Roof Area				10.6	10.6	3.09	3.4		
<b>Total Heat Loss</b>								<b>336.2</b>		

\* Any concrete slab-on-ground floor regardless of its dimensions can be assumed to have an R-value of at least R-1.3 (H1/AS1 2.1.5).

\*\* The Shading Coefficient is only required for BPI calculations.

\*\*\* C: Cavity Construction (any construction that is not solid). S: Solid Timber, S: Other Solid Construction (Note that the use of solid timber and other solid construction types is discretionary, i.e. solid timber walls and other solid walls can be treated as if they are non-solid (NZS4218:2009 section 4.1.3.))

### Floor Construction Details

<b>Name:</b>	Floortype 1	0.00 m <sup>2</sup> °C/W
	Type: Floor: Custom - enter R-value manually below	
	Insulation : <input style="width: 100px;" type="text"/>	

### Wall Construction Details

<b>Name:</b>	Stria Panel Cladding	2.10 m <sup>2</sup> °C/W
	Type: Wall: Timber Frame with vented Cavity	
	external surface 0.03	
	Cladding : James Hardie Stria Cladding 14mm <i>R-value: 0.10</i>	
	Air Barrier : Building paper <i>R-value: 0.01</i>	
	Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 600mm <i>Wall Frame Area: 16.2%      Cavity Area: 83.8%</i>	
	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
	Framing : <i>R-value: 0.75</i>	Insulation : 2.4
		still Airgap: none <i>R-value: 0.00</i>
	Wall Lining : Gypsum plasterboard 10mm <i>R-value: 0.04</i>	
	internal surface 0.09	

<b>Name:</b>	EZpanel Cladding	2.22 m <sup>2</sup> °C/W
	Type: Wall: Timber Frame with vented Cavity	
	external surface 0.03	
	Cladding : EZpanel 50mm <i>R-value: 0.28</i>	
	Air Barrier : Building paper <i>R-value: 0.01</i>	
	Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 600mm <i>Wall Frame Area: 16.2%      Cavity Area: 83.8%</i>	
	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08	15-90mm vented cavity (all R-values on ext. side of cavity will be halved), R: 0.08
	Framing : <i>R-value: 0.75</i>	Insulation : 2.4
		still Airgap: none <i>R-value: 0.00</i>
	Wall Lining : Gypsum plasterboard 10mm <i>R-value: 0.04</i>	
	internal surface 0.09	

Name:

Inter-Tenancy Wall

2.30  
m<sup>2</sup>C/W

Type: Wall: Timber Framed intertenancy Wall

internal surface 0.09	
Wall Lining : Gypsum plasterboard 10mm ▼ R-value: 0.04	
Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm ▼ Wall Frame Area: 14.4%      Cavity Area: 85.6%	
Framing : R-value: 0.75	Insulation : 2.4
still Airgap: 12mm airgap (non-reflective) ▼ R-value: 0.15	
Cladding : None (facing inside air, i.e. internal bulkhead into roof space) ▼ R-value: 0.09	
Timber Frame & Cavity : 90mm, studs @ 600mm, dwangs @ 800mm ▼ Wall Frame Area: 14.4%      Cavity Area: 85.6%	
Framing : R-value: 0.75	Insulation : 1
still Airgap: none ▼ R-value: 0.00	
Wall Lining : Double layer gypsum plasterboard 10mm+10mm ▼ R-value: 0.09	
internal surface 0.09	

### Roof Construction Details

Name:

Roof type 1

3.09  
m<sup>2</sup>C/W

Type: Roof: Timber framed truss Roof, direct fixed or battened flat Ceiling

external surface 0.03	
Roofing : Corrugate iron with building paper ▼ R-value: 0.01	
Insulation : 1	
Timber Frame & Cavity : 90mm rafters or joists @ 900mm, battens covered with insulation ▼ Roof Frame Area: 5.0%      Cavity Area: 95.0%	
Roof space (still air) 0.11	Roof space (still air) 0.11
Framing : R-value: 0.75	Insulation : 3.2
Roof Lining : Gypsum plasterboard 13mm ▼ R-value: 0.06	
internal surface 0.09	
Non-IC-rated recessed downlights	
Ceiling Area [m <sup>2</sup> ]: 1      Number of downlights: 1      Clearance from lamp holder side [m]: 1 	

### Glazing Details

Name:

Glazing type 1

0.26  
m<sup>2</sup>C/W

Type: Aluminium Frame

Glass Type : IGU Clear - 12mm gap ▼ R-value: 0.26 Solar Heat Gain Coefficient (SHGC): 0.74
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