

Schedule Method Summary Sheet

(H1 Energy Efficiency)

Address:	House/Flat/Unit No.: _____	
	Street: _____	
	Suburb: _____	
Climate Zone:	Climate Zone 2	Note: all Wellington Regions are Climate Zone 2)

Glazing Provisions : see guidance notes for commentary	
Total Area of Glazing less than 30% of Total Wall Area <u>Total Area of Glazing</u> Total Area of Walls x 100 = % Area of Glazing to Area of Wall (Note: Total Area of Glazing includes Skylights, glazed door panels, and windows Total Area of Wall is the perimeter dimension of the wall including glazed elements)	Total Area of Glazing: = _____ Total Area of Wall: = _____ % Glazing / Wall Area: = _____
Window area of East, South and West walls less than 30% of total wall area of these walls <u>Area Glazing East + Area Glazing South + Area Glazing West</u> Total Area of E+S+W facing Walls x 100% = % Glazing Ratio	Total E+S+W Glazing: = _____ Total E+S+W Wall Area = _____ % Glazing / Wall Area: = _____

Construction Type:	Solid Timber / Solid / Non Solid (Circle applicable Construction type)
Construction Details:	Eg: Particleboard on 150mm x 50mm timber floor joists @ 600 centres or refer section A-A drawing sheet 3B rev1
Roof: (describe or reference the proposed roof construction/s)	
Walls: (describe or reference the proposed wall construction/s)	
Floor: (describe or reference the proposed floor construction/s)	
Glazing Type: (describe or reference the proposed glazing fixtures)	

Product R Value Summary: see guidance notes for commentary				
Building Envelope Component	Minimum Required R Values <small>Values Shown are for Non Solid Construction Table 1 - H1/AS1 (insert correct construction type values as appropriate)</small>	Specified Product and R Value <small>(R Value from manufacturers specification or Accredited Appraisal)</small>	Constructed Building Envelope Component R Value <small>(R Value achieved once installed as specified)</small>	Supporting Technical Data <small>(Thermal performance references - product testing or appraisal documentation)</small>
Roof:	R2.9			
Walls:	R1.9			
Floors:	R1.3			
Glazing: (vertical)	R0.26			
Glazing: (Skylights)	R0.26			

Guidance Notes:

This form is for Building Consents that are to be assessed using the **Schedule Method** ([NZS 4218](#) section 3.1).

Special Note: R Value tables in [NZS 4218](#) are to be replaced with those in compliance document [clause H1](#).

The **Schedule Method** may be used where¹:

- Building components are of a singular construction type (eg: all non-solid construction)
- The Total Glazing² to Wall Area³ ratio is $\leq 30\%$
- The area of glazing on the East, South, and West facing walls is $\leq 30\%$ of the total area of these walls⁴.
- The Total Area of Skylights is $\leq 1.2\text{m}^2$ (allows for matching windows to existing)
- The Total Area of single glazed traditional leadlight glass $\leq 2.6\text{m}^2$ (allows for matching windows to existing)

Note:

1. Where the design exceeds these parameters, you can use the **Calculation** or **Modelling Method** (refer [NZS 4218](#) section 3.2 and 3.3) or alter the design to conform with the requirements.
2. This includes the area of skylights, glazed door panels and windows. The R value of a glazed element refers to the entire unit. The calculated area is to the outermost dimension of the internal frame.
3. Total wall area is calculated from the overall dimensions including glazing elements eg: $4\text{m} \times 5\text{m} = 20\text{m}^2$
4. This is to restrict the amount of glazing on these walls. It may also mean that the overall glazing will be less than the 30% provision where the North wall has no glazing eg against a hill or bank.

Glazing Provisions: This verifies that the **Schedule Method** can be used to show compliance.

- Where the glazing to wall ratio is $\leq 30\%$ the Schedule Method is simplest method to show compliance. (refer [NZS 4218](#) section 3.1) however the Calculation and Modelling methods may also be used.
- Where the glazing is $> 30\%$ but $\leq 50\%$ compliance may be shown using the Calculation Method (refer [NZS 4218](#) section 3.2) or an approved Modelling Method (refer [NZS 4218](#) section 3.3)
- Where the glazing to wall ratio is $> 50\%$ compliance can only be shown using the modelling Method (refer [NZS 4218](#) section 3.3)

Construction Type: This determines which R value tables are applicable.

- **Non Solid Construction:** Includes Timber/Metal frame, Brick Veneer and non Masonry Cavity based type building constructions (refer [H1/AS1](#) Table 1).
- **Solid Timber Construction:** Includes Lockwood and Log House type constructions (refer [H1/AS1](#) Table 2a)
- **Solid Construction:** Includes Masonry, Concrete, Earth Wall type constructions (refer [H1/AS1](#) Table 2b).
- **Heated Walls, Ceiling and Floors:** Includes embedded pipes, under floor electrical heating elements, but excludes floor coverings eg: carpet and underlay (refer [H1/AS1](#) Table 3).

Construction Details: These descriptions give a quick indication as to the construction method used and will be the reference for assessing the expected Component R value.

Product R Value Summary: This lists the thermally rated products being used and the R values achieved once the products are installed into the building.

Note:

The achieved R values of each building component will generally be less than individual product R value rating. This is because of the thermal losses introduced by the construction assembly, eg: the R value for a wall constructed of mineral fibre wool between timber studs with plasterboard lining and timber weatherboards (eg: $R=1.9$), is less than the R value of the mineral fibre wool installed (eg: $R=2.2$).

$$\text{Product R Value} \geq \text{Built Component R Value} \geq \text{Climate Zone R Value (H1 Requirement)}$$

Manufacturers should be providing standard details that have been tested to [NZS 4214](#) and meet the performance requirements of [clause H1](#) or [NZS 4218](#). Any tests or appraisals should be noted in the Supporting Technical Data Field, i.e. Appraisal #345 (2008).

R values for a number of common products and installation techniques can also be found in the [BRANZ: "House Insulation Guide"](#).

Replacement Table 1: Non-solid construction – minimum R-values for schedule method (only where area of glazing is 30% or less of total wall area)

Building thermal envelope component	Minimum R-values (m ² °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
Glazing (vertical)	R 0.26	R 0.26	R 0.26
Glazing (skylights)	R 0.26	R 0.26	R 0.31

NOTE:

- (1) The R-values given in this table are those applicable to the reference building as described in this Standard (NZS 4218).
- (2) Climate zone boundaries are shown in Appendix B (of NZS 4218).
- (3) If the sum of the area of glazing on the East, South and West facing walls (see Appendix H of NZS 4218) is more than 30% of the total wall area of all of these walls, then the calculation or modelling method shall be used.
- (4) 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 closed perimeter with 100 mm draped foil. Exposed floors will require additional treatment (e.g. pole houses).
- (5) The R-values for glazing refer to whole window R-values (glass and frame). The values in this table are for a standard WERS window (see Appendix G of NZS 4218). Any proposed area of glazing shall be considered to have an R-value as given in Appendix G (of NZS 4218).
- (6) There are no R-value requirements for the opaque parts of a door or a door set.
- (7) Total area of skylights must be no more than 1.2 m². The calculation or modelling methods must be used for designs where the total area of skylights is more than 1.2 m².
- (8) An R-value of 0.26 m² °C/W may be used for traditional leadlight glass when the total area of leadlight glass is no greater than 2.6 m² and either the schedule method or calculation method is used.

Replacement Table 2(a): Solid timber construction – alternative minimum R-values for schedule method (only where area of glazing is 30% or less of total wall area)

Building thermal envelope component	Minimum R-values (m ² °C/W)					
	Climate zone 1		Climate zone 2		Climate zone 3	
	Option 1a	Option 1b	Option 2a	Option 2b	Option 3a	Option 3b
Roof	R 3.5	R 3.5	R 3.5	R 3.5	R 3.5	R 3.5
Walls – external 75 mm thick and timber framed internal walls	R 1.3	R 1.0	R 1.4	R 1.1	R 1.6	R 1.2
Walls – external 60 mm thick and solid timber internal walls 45 mm thick	R 1.0	R 0.8	R 1.3	R 1.0	R 1.6	R 1.2
Walls – external 90 mm thick and solid timber internal walls 45 mm thick	R 1.0	R 0.8	R 1.2	R 0.9	R 1.4	R 1.1
Walls – external 60 mm thick and solid timber internal walls 60 mm thick	R 1.0	R 0.8	R 1.2	R 0.9	R 1.4	R 1.1
Floor	R 1.3	R 1.3	R 1.3	R 1.3	R 1.3	R 1.3
Glazing (vertical)	R 0.26	R 0.31	R 0.26	R 0.31	R 0.26	R 0.31
Glazing (skylights)	R 0.26	R 0.31	R 0.26	R 0.31	R 0.31	R 0.31

NOTE:

- (1) The R-values given in this table are those applicable to the reference building as described in this Standard (NZS 4218).
- (2) Climate zone boundaries are shown in Appendix B (of NZS 4218).
- (3) If the sum of the area of glazing on the East, South and West facing walls (see Appendix H of NZS 4218) is more than 30% of the total wall area of all of these walls, then the calculation or modelling method shall be used.
- (4) 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 closed perimeter with 100 mm draped foil. Exposed floors will require additional treatment (e.g. pole houses).
- (5) The R-values for glazing refer to whole window R-values (glass and frame). The values in this table are for a standard WERS window (Appendix G of NZS 4218). Any proposed area of glazing shall be considered to have an R-value as given in Appendix G (of NZS 4218).
- (6) There are no R-value requirements for the opaque parts of a door or a door set.
- (7) Total area of skylights must be no more than 1.2 m². The calculation or modelling methods must be used for designs where the total area of skylights is more than 1.2 m².
- (8) An R-value of 0.26 m² °C/W may be used for traditional leadlight glass when the total area of leadlight glass is no greater than 2.6 m² and either the schedule method or calculation method is used.
- (9) The R-values specified in Options 1b, 2b and 3b may only be used in the schedule method, i.e. shall not be used in the calculation or modelling methods.
- (10) When using R-values for either Options a or b, in relation to any of the three climate zones, all R-values for that option shall be used, i.e. roof, wall, floor and glazing. The R-values for a single building component shall not be substituted from one option to another.
- (11) At least 85% of internal walls must be solid timber when using the wall R-values for solid internal and external walls.
- (12) Table 2(a) allows buildings of solid timber construction to have lower R-values than buildings of non-solid construction, due to the benefits of appropriate use of thermal mass. Thermal mass must be used in conjunction with good passive design to increase comfort and reduce energy use. Use of the R-values in table 2(a) requires that the thermal mass is accessible, i.e. inside the insulated building envelope. If additional bulk insulation material is required to achieve the R-values in this table, this insulation must be installed on the outside of the wall.

Replacement Table 2(b): Solid construction (excluding solid timber) – alternative minimum R-values for schedule method (only where area of glazing is 30% or less of total wall area)

Building thermal envelope component	Minimum R-values ($\text{m}^2 \text{ }^\circ\text{C/W}$)					
	Climate zone 1		Climate zone 2		Climate zone 3	
	Option 1a	Option 1b	Option 2a	Option 2b	Option 3a	Option 3b
Roof	R 3.5	R 3.5	R 3.5	R 3.5	R 3.5	R 3.5
Wall	R 0.8	R 0.8	R 1.0	R 0.9	R 1.2	R 1.0
Floor	R 1.5	R 1.3	R 1.5	R 1.3	R 1.5	R 1.3
Glazing (vertical)	R 0.26	R 0.31	R 0.26	R 0.31	R 0.26	R 0.31
Glazing (skylights)	R 0.26	R 0.31	R 0.26	R 0.31	R 0.31	R 0.31

NOTE:

- (1) The R-values given in this table are those applicable to the reference building as described in this Standard (NZS 4218).
- (2) Climate zone boundaries are shown in Appendix B (of NZS 4218).
- (3) If the sum of the area of glazing on the East, South and West facing walls (see Appendix H of NZS 4218) is more than 30% of the total wall area of all of these walls, then the calculation or modelling method shall be used.
- (4) 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 closed perimeter with 100 mm draped foil. Exposed floors will require additional treatment (e.g. pole houses).
- (5) The R-values for glazing refer to whole window R-values (glass and frame). The values in this table are for a standard WERS window (Appendix G of NZS 4218). Any proposed area of glazing shall be considered to have an R-value as given in Appendix G (of NZS 4218).
- (6) There are no R-value requirements for the opaque parts of a door or a door set.
- (7) Total area of skylights must be no more than 1.2 m^2 . The calculation or modelling methods must be used for designs where the total area of skylights is more than 1.2 m^2 .
- (8) An R-value of $0.26 \text{ m}^2 \text{ }^\circ\text{C/W}$ may be used for traditional leadlight glass when the total area of leadlight glass is no greater than 2.6 m^2 and either the schedule method or calculation method is used.
- (9) The R-values specified in Options 1b, 2b and 3b may only be used in the schedule method, i.e. shall not be used in the calculation or modelling methods.
- (10) When using R-values for either Options a or b, all R-values for that option shall be used, i.e. roof, wall, floor and glazing. The R-values for a single building component shall not be substituted from one option to another.
- (11) Table 2(b) allows buildings of solid construction to have lower R-values than buildings of non-solid construction, due to the benefits of appropriate use of thermal mass. Thermal mass must be used in conjunction with good passive design to increase comfort and reduce energy use. Use of the R-values in table 2(b) requires that the thermal mass is accessible, i.e. inside the insulated building envelope. If additional bulk insulation material is required to achieve the R-values in this table, this insulation must be installed on the outside of the wall.

Replacement Table 3: Heated walls, ceilings or floors – minimum R-values for the schedule method

Building thermal envelope component	Minimum values for climate zones 1, 2 and 3 ($\text{m}^2 \text{ }^\circ\text{C/W}$)
Heated ceiling (R_{OUT})	R 3.5
Heated wall (R_{OUT})	R 2.6
Heated floor (R_{OUT})	R 1.9

where

$$R_{\text{IN}}/R_{\text{OUT}} < 0.1$$

and

R_{IN} is the thermal resistance between the heated plane and the inside air

R_{OUT} is the thermal resistance between the heated plane and the outside air.

NOTE:

Carpets or floor coverings are not included in the floor R-value. Floor coverings, e.g. carpet or cork, will reduce the efficiency of the heated floor.

Decision Tree for choosing appropriate method for H1 Compliance

