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

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum Required R Values</th>
<th>Specified Product and R Value</th>
<th>Constructed Building Envelope Component R Value</th>
<th>Supporting Technical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Envelope</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof</td>
<td>R2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walls</td>
<td>R1.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floors</td>
<td>R1.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glazing: (vertical)</td>
<td>R0.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glazing: (Skylights)</td>
<td>R0.26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product R Value Summary: see guidance notes for commentary

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)
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 where:

- Building components are of a singular construction type (eg: all non-solid construction)
- The Total Glazing to Wall Area ratio is ≤ 30%
- The area of glazing on the East, South, and West facing walls is ≤ 30% of the total area of these walls.
- The Total Area of Skylights is ≤ 1.2m² (allows for matching windows to existing)
- The Total Area of single glazed traditional leadlight glass ≤ 2.6m² (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: 4m x 5m = 20m²
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 ≤ 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 ≤ 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 loses 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).

Product R Value ≥ Built Component R Value ≥ 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”.

Form WCC 052 August 2008 Page 2 of 6
# 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)

<table>
<thead>
<tr>
<th>Building thermal envelope component</th>
<th>Minimum R-values (m² °C/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Climate zone 1</td>
</tr>
<tr>
<td>Roof</td>
<td>R 2.9</td>
</tr>
<tr>
<td>Wall</td>
<td>R 1.9</td>
</tr>
<tr>
<td>Floor</td>
<td>R 1.3</td>
</tr>
<tr>
<td>Glazing (vertical)</td>
<td>R 0.26</td>
</tr>
<tr>
<td>Glazing (skylights)</td>
<td>R 0.26</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Building thermal envelope component</th>
<th>Climate zone 1</th>
<th>Climate zone 2</th>
<th>Climate zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Option 1a</td>
<td>Option 1b</td>
<td>Option 2a</td>
</tr>
<tr>
<td>Roof</td>
<td>R 3.5</td>
<td>R 3.5</td>
<td>R 3.5</td>
</tr>
<tr>
<td>Walls – external 75 mm thick and timber framed internal walls</td>
<td>R 1.3</td>
<td>R 1.0</td>
<td>R 1.4</td>
</tr>
<tr>
<td>Walls – external 60 mm thick and solid timber internal walls 45 mm thick</td>
<td>R 1.0</td>
<td>R 0.8</td>
<td>R 1.3</td>
</tr>
<tr>
<td>Walls – external 90 mm thick and solid timber internal walls 45 mm thick</td>
<td>R 1.0</td>
<td>R 0.8</td>
<td>R 1.2</td>
</tr>
<tr>
<td>Walls – external 60 mm thick and solid timber internal walls 60 mm thick</td>
<td>R 1.0</td>
<td>R 0.8</td>
<td>R 1.2</td>
</tr>
<tr>
<td>Floor</td>
<td>R 1.3</td>
<td>R 1.3</td>
<td>R 1.3</td>
</tr>
<tr>
<td>Glazing (vertical)</td>
<td>R 0.26</td>
<td>R 0.31</td>
<td>R 0.26</td>
</tr>
<tr>
<td>Glazing (skylights)</td>
<td>R 0.26</td>
<td>R 0.31</td>
<td>R 0.26</td>
</tr>
</tbody>
</table>

**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 sealed 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 2.5 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 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 2a 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 2a 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.
### H1 Compliance Summary

**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)**

<table>
<thead>
<tr>
<th>Building thermal envelope component</th>
<th>Minimum R-values (m² °C/W)</th>
<th>Climatic zone 1</th>
<th>Climatic zone 2</th>
<th>Climatic zone 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Option 1a</td>
<td>Option 1b</td>
<td>Option 2a</td>
<td>Option 2b</td>
</tr>
<tr>
<td>Roof</td>
<td>R 3.5</td>
<td>R 3.5</td>
<td>R 3.5</td>
<td>R 3.5</td>
</tr>
<tr>
<td>Wall</td>
<td>R 0.8</td>
<td>R 0.8</td>
<td>R 1.0</td>
<td>R 0.9</td>
</tr>
<tr>
<td>Floor</td>
<td>R 1.5</td>
<td>R 1.3</td>
<td>R 1.5</td>
<td>R 1.3</td>
</tr>
<tr>
<td>Glazing (vertical)</td>
<td>R 0.26</td>
<td>R 0.31</td>
<td>R 0.26</td>
<td>R 0.31</td>
</tr>
<tr>
<td>Glazing (stylights)</td>
<td>R 0.26</td>
<td>R 0.31</td>
<td>R 0.26</td>
<td>R 0.31</td>
</tr>
</tbody>
</table>

**NOTE:**

(1) The R-values given in this table are those applicable to the reference building as described in this Standard (NZS 4216).

(2) Climatic 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 bases).

(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 C of NZS 4218). Any proposed area of glazing shall be considered to have an R-value as given in Appendix C 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) A 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, 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.

---

### Table 2: Heated walls, ceilings or floors – minimum R-values for the schedule method

<table>
<thead>
<tr>
<th>Building thermal envelope component</th>
<th>Minimum values for climatic zones 1, 2 and 3 (m² °C/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heated ceiling (R&lt;sub&gt;OUT&lt;/sub&gt;)</td>
<td>R 3.5</td>
</tr>
<tr>
<td>Heated wall (R&lt;sub&gt;OUT&lt;/sub&gt;)</td>
<td>R 2.6</td>
</tr>
<tr>
<td>Heated floor (R&lt;sub&gt;OUT&lt;/sub&gt;)</td>
<td>R 1.9</td>
</tr>
</tbody>
</table>

where

\[ R_{\text{N}} / R_{\text{OUT}} < 0.1 \]

and

\[ R_{\text{N}} \] is the thermal resistance between the heated plane and the inside air

\[ R_{\text{OUT}} \] 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

PROPOSED NEW BUILDING

Not covered by insulation standards

Building type?

Commercial etc.

Industrial etc.

Size?

≤ 300m²

>300m²

NZS 4218 Energy efficiency
Small building envelope

Decide climate zone

Design flexibility required?

None required (no Special features)

Maximum available (unusual design)

Limited degree (non Standard insulation)

Area of Glazing > 50% Of wall

Area of glazing > 30% of wall

Embedded Heating?

Component R-value from table 3

Roof and floor R-VALUES from table 1 Refer H1/AS1

Wall type?

R-VALUES from table 2A Refer H1/AS1

R-VALUES from table 2B Refer H1/AS1

R-VALUES from table 1 Refer H1/AS1

Mixture of solid and non-solid construction

Further option for solid construction (NON TIMBER)

(TIMBER)

Roof and floor R-VALUES from table 1 Refer H1/AS1