



Report:

Thermal Performance Specification

Project:

25-27 Warriewood Road, Warriewood

For:

J G Knowles and Associates

By:

Inhabit Australasia Pty Ltd.

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1. Material Specification

Inhabit has been appointed by J G Knowles and Associates to assess 25-27 Warriewood Road, Warriewood for compliance with Section J of the NCC of the Building Code of Australia (BCA) (2016). This development has been assessed by the NatHERS/BASIX pathway for the Class 1a and Class 2 buildings.

This analysis forms a compliance assessment, and is not necessarily an accurate representation of the proposed development's future energy consumption. The simulation is hypothetical as per the BCA's requirements for assessment.

Please refer to the following drawings in conjunction with the specification:-

- Plans DA 100- DA 106 Revision E 10/8/2017
- Elevations DA 200-201 Revision D 10/8/2017
- Sections DA 250-251 Revision B 10/8/2017
- Typical Layouts DA 110, DA 120 Revision D 10/8/2017; DA 120 Revision B 10/8/2017

The final certificates will need to be updated in the event the thermal performance deviates from those outlined in the remainder of this document. This includes the BASIX certificate.

1.1 Building Envelope Specification Town Houses

Table 1 outlines the building envelope specification for the Town House.

Table 1: Material Specification Town Houses

Construction Detail	Material	Minimum Thermal Performance*	External Colour
External Wall with Soil	Soil/ 40mm Air Cavity (unventilated non- reflective)/ 100mm Concrete (standard 2400kg/m ³)/ Insulation R2.0m ² K/W/ 10mm Plasterboard(Standard)	3.3 m ² K/W	Medium
Typical External Wall	Cladding/ 20mm Air Cavity (unventilated non- reflective)/ Waterproof Membrane/ Insulation R2.6m ² K/W / 10mm Plasterboard(Standard)	3.0 m ² K/W	Medium
Ground Floor Slab	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)	0.3 m ² K/W	Medium
Insulated Ground Floor Slab	** 8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ Insulation R1.5m ² .K/W/ Waterproof Membrane	1.8 m ² K/W	Medium
Floor-between conditioned zones	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ 10mm Plasterboard(Standard)	0.3 m ² K/W	Not Specified



Floor exposed to outdoor air or non-conditioned space (e.g. Garage)	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ Insulation 1.5m ² .K/W / 10mm Plasterboard(Standard)	1.8 m ² K/W	Medium
	10mm Plasterboard(Standard)/ 90mm Air Cavity (unventilated non-reflective)/ 10mm Plasterboard(Standard) (Internal Partition)	0.5 m ² K/W	Not Specified
Internal Wall	10mm Plasterboard(Standard)/ 75mm Rockwool loose fill (k = 0.04)/ 40mm Air Cavity (unventilated non- reflective)/ 75mm Rockwool loose fill (k = 0.04)/ 10mm Plasterboard(Standard) (Party Wall &Corridors Walls)	4.2 m ² K/W	Not Specified
Roof (To all apartments unless listed below)	200mm Concrete (standard 2400kg/m ³)/ Insulation R4.0m ² .K/W/ 10mm Plasterboard(Standard)	4.4 m ² K/W	Medium
Roof-Balcony with Conditioned Space Below	200mm Concrete (standard 2400kg/m ³)/ Insulation R1.5m ² .K/W/ 10mm Plasterboard(Standard)	1.9 m ² K/W	Medium
Shading	Neighbouring buildings have been modelled as per site plans.		
Lighting	Lighting arrangements have not been supplied, the default recessed down lights have been modelled throughout the dwellings as stipulated in BASIX Thermal Comfort Protocol 01 May 2013 Section 4.13.1. They have been modelled as sealed and insulated.		
Vents and Penetrations	Vents and penetration arrangements have not been marked on plans, as such it has been assumed that there are sealed and insulated exhaust fans in every kitchen, bathroom and ensuite.		

*This table represents the minimum performance and some apartments may require improvements upon this to generating a compliant solution.

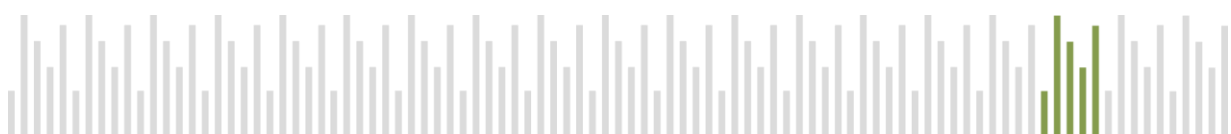
**This is an indicative make-up. Make-up can be different as long as the minimum thermal performance is met.

1.2 Building Envelope Specification for Apartments

Table 2 outlines the building envelope specification for the Apartments.

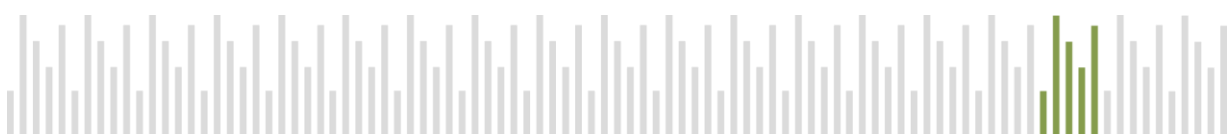
Table 2: Material Specification Apartments

Construction Detail	Material	Minimum Thermal Performance*	External Colour
Typical External Wall	Cladding/ 20mm Air Cavity (unventilated non- reflective)/ Waterproof Membrane/ Insulation R1.8m ² K/W / 10mm Plasterboard(Standard)	2.2 m ² K/W	Medium
Ground Floor Slab-	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ Insulation	1.8 m ² K/W	Not Specified



Carpark Below	1.5m ² .K/W / 10mm Plasterboard(Standard)		
Floor-between conditioned zones	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ 10mm Plasterboard(Standard)	0.3 m ² K/W	Not Specified
Floor exposed to outdoor air	8mm Ceramic tile/ 200mm Concrete (standard 2400kg/m ³)/ Insulation 1.5m ² .K/W / 10mm Plasterboard(Standard)	1.8 m ² K/W	Medium
Internal Wall	10mm Plasterboard(Standard)/ 90mm Air Cavity (unventilated non-reflective)/ 10mm Plasterboard(Standard) (Internal Partition)	0.5 m ² K/W	Not Specified
	10mm Plasterboard(Standard)/ 75mm Rockwool loose fill (k = 0.04)/ 40mm Air Cavity (unventilated non- reflective)/ 75mm Rockwool loose fill (k = 0.04)/ 10mm Plasterboard(Standard) (Party Wall &Corridors Walls)	4.2 m ² K/W	Not Specified
	200mm Concrete (standard 2400kg/m ³)/ 20 mm Air Cavity (unventilated non- reflective)/ 75mm Rockwool loose fill (k = 0.04)/ 10mm Plasterboard(Standard) (Internal Walls to Building Cores)	2.2 m ² K/W	Not Specified
Roof (To all apartments unless listed below)	200mm Concrete (standard 2400kg/m ³)/ Insulation R3.5m ² .K/W/ 10mm Plasterboard(Standard)	3.9 m ² K/W	Medium
Roof-Balcony with Conditioned Space Below	200mm Concrete (standard 2400kg/m ³)/ Insulation R1.5m ² .K/W/ 10mm Plasterboard(Standard)	1.9 m ² K/W	Medium
Shading	Neighbouring buildings have been modelled as per site plans.		
Lighting	Lighting arrangements have not been supplied, the default recessed down lights have been modelled throughout the dwellings as stipulated in BASIX Thermal Comfort Protocol 01 May 2013 Section 4.13.1. They have been modelled as sealed and insulated.		
Vents and Penetrations	Vents and penetration arrangements have not been marked on plans, as such it has been assumed that there are sealed and insulated exhaust fans in every kitchen, bathroom and ensuite.		

*This table represents the minimum performance and some apartments may require improvements upon this to generation a compliant solution.



2. Window Specification

Windows are modelled as per the WERS technical guidance. As non-standard window types have been used the U-values must be equal to or less than that specified and the SHGC $\pm 5\%$. Window constructions used in this analysis are shown in Table 3 and Table 4.

Refer to plan drawings included as appendix to this document for locations of window constructions.

2.1 Town House

Table 3 outlines the window constructions for the Town Houses.

Table 3: Project Window Constructions Town Houses

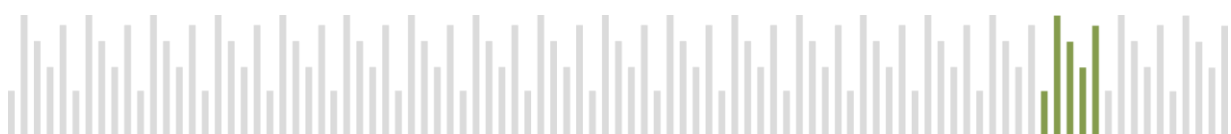
Window Construction	System U-Value (AFRC)	System SHGC (AFRC)	Colour
Sliding Doors (TH01- TH10 North, East and West Elevation) Glazing Centre pane <1.7 W/m ² K	4.3 W/m ² .K	0.26	Medium (frame)
Sliding Doors (TH11- TH12 North, East and West Elevation) Glazing Centre pane <1.7 W/m ² K	4.0 W/m ² .K	0.20	Medium (frame)
Sliding Doors (TH11- TH12 South Elevation) Glazing Centre pane <1.7 W/m ² K	4.3 W/m ² .K	0.53	Medium (frame)
Awning Windows, Fixed Glazing and Casement Doors (TH01- TH10 North, East and West Elevation) Glazing Centre pane <1.7 W/m ² K	4.3 W/m ² .K	0.31	Medium (frame)
Awning Windows, Fixed Glazing and Casement Doors (TH11- TH12 North, East and West Elevation) Glazing Centre pane <1.7 W/m ² K	4.0 W/m ² .K	0.20	Medium (frame)
Awning Windows, Fixed Glazing and Casement Doors (TH01- TH12 South Elevation) Glazing Centre pane <1.7 W/m ² K	4.3 W/m ² .K	0.47	Medium (frame)

2.2 Apartment

Table 4 outlines the window constructions for the Apartments.

Table 4: Project Window Constructions Apartments

Window Construction	System U-Value (AFRC)	System SHGC (AFRC)	Colour
All windows and doors Glazing Centre pane <1.7 W/m ² K	4.9 W/m ² .K	0.33	Medium (frame)



3. Window Operabilities

Table 5 outlines the window operability assumed for operable window systems across the town houses.

Table 5: Window Operabilities Town Houses

Glazed System	Operability	Apartment
Sliding Door (Double slider)	45%	See Stamped Drawing for Mark-up in Appendix
Sliding Door (Triple slider)	66%	
Casement Door	90%	
Awning Window	10%	

Table 5 outlines the window operability assumed for operable window systems across the town houses.

Table 6: Window Operabilities Apartments

Glazed System	Operability	Apartment
Sliding Door (Triple slider)	66%	See Stamped Drawing for Mark-up in Appendix
Casement Door	90%	
Awning Window (above 1700mm from FFL)	45%	
Awning Window (below 1700mm from FFL)	10%	

4. Appendix 1- Stamped Drawings

Appendix 1 6261-CER-ES0005(00) Stamped Drawings presents the mark-up of window operabilities that has been adopted in the analysis.

