

## **Quiet House Package A**

56-58 dB L<sub>Aeq(Day)</sub> & 51-53 dB L<sub>Aeq(Night)</sub>

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Element	Orientation	Room	
		Bedroom	Indoor Living and Work Areas
External Windows	Facing	<ul> <li>Up to 40% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 28):         <ul> <li>Sliding or double hung with minimum 10mm single or 6mm-12mm-10mm double insulated glazing;</li> <li>Sealed awning or casement windows with minimum 6mm glass.</li> </ul> </li> <li>Up to 60% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 31):         <ul> <li>Sealed awning or casement windows with minimum 6mm glass.</li> </ul> </li> </ul>	<ul> <li>Up to 40% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 25):         <ul> <li>Sliding or double hung with minimum 6mm single or 6mm-12mm-6mm double insulated glazing;</li> </ul> </li> <li>Up to 60% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 28);</li> <li>Up to 80% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 31).</li> </ul>
	Side On	As above, except $R_{\rm w}$ + $C_{\rm tr}$ values may be 3 dB less or max % area increased by 20%.	
	Opposite	No specific requirements	
External Doors	Facing	<ul> <li>Fully glazed hinged door with certified R<sub>w</sub> + C<sub>tr</sub> ≥ 28 rated door and frame including seals and 6mm glass.</li> </ul>	<ul> <li>Doors to achieve R<sub>w</sub> + C<sub>tr</sub> ≥ 25:</li> <li>35mm Solid timber core hinged door and frame system certified to R<sub>w</sub> 28 including seals;</li> <li>Glazed sliding door with 10mm glass and weather seals.</li> </ul>
	Side On	As above, except R <sub>w</sub> + C <sub>tr</sub> values may be 3 dB less.	
	Opposite	No specific requirements	
External Walls	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 45:</li> <li>Two leaves of 90mm thick clay brick masonry with minimum 20mm cavity; or</li> <li>Single leaf of 150mm brick masonry with 13mm cement render on each face; or</li> <li>One row of 92mm studs at 600mm centres with:</li> <li>Resilient steel channels fixed to the outside of the studs; and</li> <li>9.5mm hardboard or fibre cement sheeting or 11mm fibre cement weatherboards fixed to the outside;</li> <li>75mm thick mineral wool insulation with a density of at least 11kgkg/m³; and</li> <li>2 x 16mm fire-rated plasterboard to inside.</li> </ul>	
Roofs and Ceilings	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 35:</li> <li>Concrete or terracotta tile or metal sheet roof with sarking and at least 10mm plasterboard.</li> </ul>	
Outdoor Living Areas		At least one outdoor living area located on the opposite side of the building from the transport corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2 metres height above ground level.	

## **Quiet House Package B**

59-62 dB L<sub>Aeq(Day)</sub> & 54-57 dB L<sub>Aeq(Night)</sub>

Element	Orientation	Room	
		Bedroom Indoor Living and Work Areas	
External Windows	Facing	<ul> <li>Up to 40% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 31):         <ul> <li>Fixed sash, awning or casement with minimum 6mm glass or 6mm-12mm-6mm double insulated glazing.</li> <li>Up to 60% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 34):                  <ul></ul></li></ul></li></ul>	
	Side On	As above, except $R_{\rm w}$ + $C_{\rm tr}$ values may be 3 dB less or max % area increased by 20%.	
	Opposite	As above, except $R_{\rm w}$ + $C_{\rm tr}$ values may be 6 dB less or max % area increased by 20%.	
External Doors	Facing	• Fully glazed hinged door with certified $R_w + C_{tr} \ge 31$ rated door and frame including seals and 10mm glass.  • Doors to achieve $R_w + C_{tr} \ge 28$ :  • 40mm Solid timber core hinged door and frame system certified to $R_w 32$ including seals;  • Fully glazed hinged door with certified $R_w + C_{tr} \ge 28$ rated door and frame including seals and 6mm glass.	
	Side On	As above, except R <sub>w</sub> + C <sub>tr</sub> values may be 3 dB less or max % area increased by 20%.	
	Opposite	As above, except $R_w$ + $C_{tr}$ values may be 6 dB less or max % area increased by 20%.	
External Walls	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 50:</li> <li>Two leaves of 90mm thick clay brick masonry with minimum 50mm cavity between leaves and 25mm glasswool or polyester (24kg/m³). Resilient ties used where required to connect leaves.</li> <li>Two leaves of 110mm clay brick masonry with minimum 50mm cavity between leaves and 25mm glasswool or polyester insulation (24kg/m³).</li> <li>Single leaf of 220mm brick masonry with 13mm cement render on each face.</li> <li>150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face.</li> <li>Single leaf of 90mm clay brick masonry with:         <ul> <li>A row of 70mm x 35mm timber studs or 64mm steel studs at 600mm centres;</li> <li>A cavity of 25mm between leaves;</li> <li>50mm glasswool or polyester insulation (11kg/m³) between studs; and</li> <li>One layer of 10mm plasterboard fixed to the inside face.</li> </ul> </li> </ul>	
Roofs and Ceilings	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 35:</li> <li>Concrete or terracotta tile or metal sheet roof with sarking and at least 10mm plasterboard ceiling with R3.0+ fibrous insulation.</li> </ul>	
Outdoor Living Areas		At least one outdoor living area located on the opposite side of the building from the transport corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2.4 metres height above ground level.	

## **Quiet House Package C**

63-66 dB L<sub>Aeq(Day)</sub> & 58-61 dB L<sub>Aeq(Night)</sub>

External Windows	Orientation	Room	
		Bedroom Indoor Living and Work Areas	
	Facing Side On	<ul> <li>Up to 20% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 31):         <ul> <li>Fixed sash, awning or casement with minimum 6mm glass or 6mm-12mm-6mm double insulated glazing.</li> <li>Up to 40% floor area (R<sub>w</sub> + C<sub>tr</sub> ≥ 34):                 <ul></ul></li></ul></li></ul>	
	Opposite	As above, except $R_w + C_{tr}$ values may be 6 dB less or max % area increased by 20%.	
External Doors	Facing	<ul> <li>Not recommended.</li> <li>Doors to achieve R<sub>w</sub> + C<sub>tr</sub> ≥ 30:         <ul> <li>Fully glazed hinged door with certified R<sub>w</sub> + C<sub>tr</sub> ≥ 31 rated door and frame including seals and 10mm glass;</li> <li>40mm Solid timber core side hinged door, frame and seal system certified to R<sub>w</sub> 32 including seals. Any glass inserts to be minimum 6mm.</li> </ul> </li> </ul>	
	Side On	As above, except $R_w$ + $C_{tr}$ values may be 3 dB less or max % area increased by 20%.	
	Opposite	As above, except $R_w$ + $C_{tr}$ values may be 6 dB less or max % area increased by 20%.	
External Walls	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 50:         <ul> <li>Two leaves of 90mm thick clay brick masonry with minimum 50mm cavity betwee leaves and 25mm glasswool or polyester insulation (24kg/m³). Resilient tie used where required to connect leaves.</li> <li>Two leaves of 110mm clay brick masonry with minimum 50mm cavity between leave and 25mm glasswool or polyester insulation (24kg/m³).</li> <li>Single leaf of 220mm brick masonry with 13mm cement render on each face.</li> <li>150mm thick unlined concrete panel or 200mm thick concrete panel with one layer of 13mm plasterboard or 13mm cement render on each face.</li> <li>Single leaf of 90mm clay brick masonry with:</li></ul></li></ul>	
Roofs and Ceilings	All	<ul> <li>R<sub>w</sub> + C<sub>tr</sub> ≥ 40:</li> <li>Concrete or terracotta tile roof with sarking, or metal sheet roof with foil backed R2.0+ fibrous insulation between steel sheeting and roof battens;</li> <li>R3.0+ insulation batts above ceiling;</li> <li>2 x 10mm plasterboard ceiling or 1 x 13mm sound-rated plasterboard affixed using steel furring channel to ceiling rafters.</li> </ul>	
Outdoor I	Living Areas	At least one outdoor living area located on the opposite side of the building from the transpor corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2.4 metres height above ground level.	

## **Mechanical Ventilation requirements**

In implementing the acceptable treatment packages, the following mechanical ventilation / air-conditioning considerations are required:

- Acoustically rated openings and ductwork to provide a minimum sound reduction performance of R<sub>w</sub> 40 dB into sensitive spaces;
- Evaporative systems require attenuated ceiling air vents to allow closed windows;
- Refrigerant based systems need to be designed to achieve National Construction Code fresh air ventilation requirements;
- Openings such as eaves, vents and air inlets must be acoustically treated, closed or relocated to building sides facing away from the corridor where practicable.