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THIS IS TO CERTIFY THAT

Hebel® Houses and Low Rise Multi Residential PowerPanel^{XL} External Walls System
Hebel® Houses and Low Rise Multi Residential PowerProfile® External Walls System
Hebel® Houses and Low Rise Multi Residential PowerPattern® External Walls System

Type and/or use of product:

Wall Cladding System for Houses & Low Rise Multi-Residential External Walls.

Description of product:

Houses and Low Rise Multi-Residential External Wall Systems comprising several proprietary components including 75mm non load bearing steel reinforced Autoclaved Aerated Concrete (AAC) panels. Refer A2 below.

COMPLIES WITH THE FOLLOWING BCA PROVISIONS AND STATE OR TERRITORY VARIATION(S) BCA 2019 (Amdt. 1)

	Volume One	Volume Two
Performance Requirement(s)	BP1.1(a),(b) (i),(ii),(iii),(iv)	P2.1.1(a),(b) (i),(ii),(iii),(iv)
	Structural reliability	Structural stability and resistance
	FP1.4	P2.2.2
	Weatherproofing – Refer <i>Limitation and condition 7 & 12</i>	Weatherproofing – Refer <i>Limitation and condition 7 & 12</i>
Deemed-to-Satisfy Provision(s):	C1.1(b)	3.7.2.4(b)
	Fire resistance and stability – FRL varies, dependant of the configuration of the wall. Refer <i>Limitation and condition 2</i> .	Fire separation of external walls – Construction of external walls. FRL varies, dependant of the configuration of the wall. Refer <i>Limitation and condition 2</i> .
	J1.5	3.12.1.4
	Energy efficiency – External walls. Can be used in conjunction with other building elements to achieve a Total R Value. Refer to A3	Energy efficiency – External walls. Can be used in conjunction with other building elements to achieve a Total R Value. Refer to A3
	F6.2(a)(i)	3.8.7.2(a)(i)
	Condensation management – Pliable building membrane. Subject to <i>Limitation and condition 10</i>	Condensation management – Pliable building membrane. Subject to <i>Limitation and condition 10</i> .
State or territory variation(s):	Not Applicable	Part 3.12 (NSW, NT, SA, Qld, Tas, ACT); 3.8.7.2 (Tas, ACT)

SUBJECT TO THE FOLLOWING LIMITATIONS AND CONDITIONS AND THE PRODUCT TECHNICAL DATA IN APPENDIX A AND EVALUATION STATEMENTS IN APPENDIX B

Limitations and conditions:

- Where the NCC requires building elements and/or ancillary elements to be non-combustible or achieve specific fire resisting performance requirements, the Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems must be constructed to satisfy such requirements as relevant to the determined building class(es).

Building classification/s:

Class 1,2,3,4,5,6,7,8,9 & 10


 Richard Donarski - CMI


 Don Grehan – Unrestricted Building Certifier

Date of issue: 29/04/2022

Date of expiry: 29/04/2025



Certificate of Conformity

2. Compliance with FRL is dependent on the system components being as specified in A3. Any deviation from the tested specimen does not form part of this Certificate of Conformity.
3. Reference to the use of timber framing systems in Section A3 is strictly limited to Class 1 & 10 Buildings and structures, Class 2 – 9 Buildings of Type C Construction or otherwise where concession for timber framed construction apply.
4. Timber stud framing must be constructed in accordance with AS1684: National Timber Framing Code & steel stud framing must be constructed in accordance with the Nash Standard for residential and low rise steel framing.
5. Construction methods for external walls required to be fire resisting in relation to class 1 and 10 buildings and structures must comply with part 3.7.2.4 of the NCC Volume 2.
6. The Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems have not been tested and certified for impact loading from windborne debris in Region C and D as denoted in AS 1170.2:2011 (R2016). The building designer should take into consideration internal pressure resulting from dominant openings.
7. To satisfy FP1.4 & P2.2.2 via verification, the relevant design is required to meet the criteria of FV1.1 and/or V2.2.1 to the satisfaction of the Appropriate Authority as defined by the NCC. The site specific building must;
 - (a)(i) have a risk score of 20 or less, when the sum of all risk factor scores is determined in accordance with Table FV1.1/V2.2.1a; and
 - (a)(ii) not be subjected to an ultimate limit state wind pressure of more than 2.5kPa; and
 - (a)(iii) include only windows that comply with AS 2047.
 Compliance with Weatherproofing is limited to the tested specimen detailed in A3, deviations from this specimen, is subject to site specific design and approval by the regulatory authority.
8. Design certification for earthquake loading compliance in accordance with AS1170.4:2007 excludes Meckering Regions and Island Regions. Components approved under this certificate are not part of the seismic-force-resisting system.
9. This Certificate of Conformity is reliant on system components specified in A3. Substitution or omission of any component listed in A3 will void this Certificate of Conformity.
10. Where a pliable building membrane is recommended or required it must be installed in accordance with AS/NZS 4200.2:2017 and [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#).
11. Installation must be in accordance with [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#) subject to any other Condition & Limitation listed herein.
12. Clearance from the underside of the panel to the finished surface level below must comply with Part 3.5.4.7 of NCC Vol. 2 however, may be reduced to a minimum of 25mm where the design wind speed does not exceed N3 and the product is installed in accordance with [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#), incorporating Hebel PowerPanel^{XL} External Walls Slab Edge Rebate Technical Update TU-033 dated 17/08/2020.
13. Other than the items and information listed, the remainder of the information contained in the product's literature is outside the Scope of Certification.
14. The use of the certified product/system is subject to these Limitations and Conditions and must be read in conjunction with the Scope of Certification below.

Scope of certification: The CodeMark Scheme is a building product certification scheme. The rules of the Scheme are available at the ABCB website www.abcb.gov.au. This Certificate of Conformity is to confirm that the relevant requirements of the Building Code of Australia (BCA) as claimed against have been met. The responsibility for the product performance and its fitness for the intended use remain with the Certificate Holder. The certification is not transferrable to a manufacturer not listed on Appendix A of this certificate.

Only criteria as identified within this Certificate of Conformity can be used for CodeMark certification claims. Where other claims are made in a client's Installation Manual, Website or other documents that are outside the criteria on this Certificate of Conformity, such criteria cannot be used or claimed to meet the requirements of this CodeMark certification.

The NCC defines a Performance Solution as one that complies with the Performance Requirements by means other than a Deemed-to-Satisfy Solution. A Building Solution that relies on a CodeMark Certificate of Conformity that certifies a product against the Performance Requirements cannot be considered as Deemed-to-Satisfy Solution.



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This Certificate of Conformity may only relate to a part of a Performance Solution. In these circumstances other evidence of suitability is needed to demonstrate that the relevant Performance Requirements have been met. The relevant provisions of the Governing Requirements in Part A of the NCC will also need to be satisfied.

This Certificate of Conformity is issued based on the evidence of compliance as detailed herein. Any deviation from the specifications contained in this Certificate of Conformity is outside of this document's scope and the installation of the certified product will not be covered by this Certificate of Conformity. This may result in the product being classified as a non-conforming building product.

Disclaimer: The Scheme Owner, Scheme Administrator and Scheme Accreditation Body do not make any representations, warranties or guarantees, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained within this certificate; and the Scheme Owner, Scheme Administrator and Scheme Accreditation Body disclaim to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this certificate.

When using the CodeMark logo in relation to or on the product/system, the Certificate Holder makes a declaration of compliance with the Scope of Certification and confirms that the product is identical to the product certified herein. In issuing this Certificate of Conformity, CertMark International has relied on the experience and expertise of external bodies (laboratories and technical experts). Nothing in this document should be construed as a warranty or guarantee by CMI, and the only applicable warranties will be those provided by the Certificate Holder.

APPENDIX A – PRODUCT TECHNICAL DATA

A1 Type and intended use of product

As per page 1.

A2 Description of product

Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems Components

Product	Description
Hebel® PowerPanel ^{XL}	Thickness: 75mm
	Standard Width: 600mm
	Standard Length: 2400, 2550, 2700, 2800, 2850, 3000, 3300mm, tolerance: ±5mm
	Reinforcement: 4 x 4mm longitudinal steel bars
	Nominal Dry Density: 400 kg/m ³
Hebel® PowerProfile®	Thickness: 75mm
	Standard Width: 600mm
	Standard Length: 2400, 2550, 2700, 2800, 2850, 3000, 3300mm, tolerance: ±5mm
	Reinforcement: 4 x 4mm longitudinal steel bars
	Nominal Dry Density: 400 kg/m ³
Hebel® PowerPattern®	Thickness: 75mm
	Standard Width: 600mm
	Standard Length: 2400, 2700, 2850, 3000, 3300mm, tolerance: ±5mm
	Reinforcement: 4 x 4mm longitudinal steel bars
	Nominal Dry Density: 510 kg/m ³
"V" grooves:	Hebel® PowerPattern® Track routed with "V" groove lines are available in: 100mm, 150mm, 200mm and 300mm spacing. Also available as a plain panel with no groove (bevelled long edges)
Universal Backing Clip:	Fixed to the Hebel® PowerProfile® Panel and a powder coated aluminium profile snaps onto the clip
Top Hat	The Top Hats are used to fix the Hebel® PowerPanel ^{XL} , PowerProfile® and PowerPattern® panels to the structural support framing. There are two nominal widths available: 24mm and 35mm - incorporating perforated flanges for ease of installation onto external wall frames.
Fasteners & Fixing	Fixing of Top Hat to timber stud frame; 12-11x35mm Hex Head Type 17 screw.
	Fixing of Top Hat to steel framing; 10-16x16mm Hex Head Tek screw.
	Fixing of Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® panels to top hat 14-10x90mm Hex Head Type 17 screw.
	Fixing of Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® panels to Top Hat from inside of buildings 14-10x65mm Hex Head Type 17 Screw (Boundary walls only). Fixing of Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® panels to Top Hat from inside of buildings 14-10x65mm Hex Head Type 17 screw (Zero Boundary walls only).
Hebel® Mortar	Hebel® Mortar when required is used as a thick bed mortar base to provide a level base for Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® panels installation as well as providing acoustic and fire protection at the base of the panels.
Hebel® Adhesive	Hebel® Adhesive is used for gluing the Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems panels together at vertical and horizontal joints.
Hebel® Patch	Minor Chips or damage to Hebel® PowerPanel ^{XL} , PowerProfile® or PowerPattern® panels are to be repaired using Hebel® Patch.

Hebel® Anti Corrosion Protection Paint	To coat reinforcement steel that has been exposed during cutting of the panels.
Hebel external Aluminium Render Bead (optional)	Hebel® external Aluminium Render Bead is used to provide neat and consistent horizontal control joints. *Note; this option is not a Fire Rated option.
Wall Wrap	Thermoseal Wall Wrap XP, Enviroseal ProctorWrap RW, Thermoseal Wall Wrap PRIME, Polyair Performa 4.0 XHD.

A3 Product specification

The properties of the Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems, as described herein, vary with the configuration of the wall structure. It is therefore considered essential that this certificate be read in conjunction with Installation requirements in A5.

Structural Reliability - Structural Reliability and Resistance

Hebel® PowerPanel^{XL} & Hebel® PowerProfile® Systems	Structural capacity design calculations for strength and serviceability requirements were carried out in accordance with the current relevant building and structural engineering codes in particular; AS 1170.2:2011 (R2016), AS 1170.4:2007, AS 4055:2012 and AS 5146.2:2018. Structural compliance BP1.1(b)(iii) & P2.1.1(b)(iii) covers wind classifications N1-N5 & C1-C3 as per Table 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6 and 1.2.7 of Hebel Houses and Low Rise Multi Residential PowerPanel^{XL} External Walls – Design and Installation Guide (HELIT016 FEB21) <i>Source: PACE Structural, Reports No. PS 18153 dated 03 May 2021 & PS20153 dated 26 May 2021.</i>
Hebel® PowerPattern® System	Structural capacity design calculations for strength and serviceability requirements were carried out in accordance with the current relevant building and structural engineering codes in particular; AS 1170.2:2011 (R2016), AS 1170.4:2007, AS 4055:2012 and AS 5146.2:2018. Structural compliance BP1.1(b)(iii) & P2.1.1(b)(iii) covers wind classifications N1-N5 & C1-C3 as per Table 1.3, 1.4, 1.5, 1.6 & 1.7 of Hebel® Houses and Low Rise Multi Residential PowerPanel External Walls – Design and Installation Guide (HELIT178 AUGUST20) . <i>Source: PACE Structural, Report No. PS20177 dated 26 May 2021.</i>

Fire resistance and stability - Fire separation of external walls

Hebel® PowerPanel^{XL} & Hebel® PowerProfile® Systems - Depending on the system configuration; Refer [Hebel Houses and Low Rise Multi Residential PowerPanel^{XL} External Walls – Design and Installation Guide \(HELIT016 FEB21\)](#) the following FRLs can be achieved.

HELIT016_FEB21 Figures	Fire Resistance Level (FRL)	
3.6.5.7	180/180/180 *	
3.6.7.1	-/120/120	*For an FRL of 180/180/180 when using the PowerPattern® System, the internal lining must consist of a minimum of 1 x 16 mm Fyrchek plasterboard. If a reduced FRL of 120/120/120 is required to be achieved, standard grade plasterboard may be used as per the tested system. <i>Source: SGA; Report No. 2013-277.93 R1.4 dated 09 October 2020.</i>
3.6.7.2	-/120/120	
3.6.7.5	-/120/120	
3.6.7.9	-/120/120	
3.6.7.10	-/120/120	

Source: CSIRO Ref No. FCO-3003/SP3672 dated 13 April 2016 (180/180/180 only) and Warringtonfire Report No, 27915, Revision RIR27.2 dated 11/11/2021.

Variations to linings and framing

Frame	Orientation of panel	Interior Lining	Direction of Fire	FRL
Timber or Steel	Vertical fixed to frame*	Standard grade plasterboard	Outside Only	-/60/60 or 60/60/60
Timber	Vertical fixed to frame*	1 x 16mm Fyrchek	Inside and Outside	-/60/60 or 60/60/60

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Steel	Vertical fixed to frame*	1 x 13mm or 1 x 16mm Fyrchek	Inside and Outside	-/60/60 or 60/60/60
Timber or Steel	Vertical fixed to frame*	Standard grade plasterboard	Outside Only	-/90/90 or 90/90/90
Timber or Steel	Vertical fixed to frame*	2 x 13mm or 1 x 16mm Fyrchek	Inside and Outside	-/90/90 or 90/90/90
Timber or Steel	Vertical fixed to frame*	Standard grade plasterboard	Outside Only	-/120/120 or 120/120/120
Timber or Steel	Vertical fixed to frame*	2 x 13mm or 2 x 16mm Fyrchek	Inside and Outside	-/120/120 or 120/120/120

*Installation requirements as per A5 of this Certificate of Conformity.

Note: Stud Spacings at 450mm or 600mm centres dependent on applied loading including wind.

Source: IGNIS Solutions Pty Ltd; Report No. IGNS-8349 I02R04 Hebel Wall Compliance dated 17/03/2021. (Report is available upon request, contact Hebel Technical Services).

Fire resistance Level (FRL 180/180/180)

Compliance with FRL 180/180/180 subject to the following conditions:

- The panel wall is constructed using 3000mm x 600mm x 75mm thick CSR Hebel® PowerPanel^{XL} panels with a minimum nominal density of 400 kg/m³;
- The timber framed wall system is designed for a load calculated in accordance with the requirements of the relevant timber frame design codes, with no load shedding permitted to the Hebel® PowerPanel^{XL};
- The maximum wall height per level is restricted to 3300-mm, with the steel tophat sections spaced at maximum 1200mm centres over the panel height;
- An approved fire rated mastic may be substituted for the Hebel thick bed mortar for gaps larger than 3mm in width at the base of the panels when used in conjunction with a concrete slab rebate;
- Where Hebel® PowerPanel^{XL} panels are provided with a steel shelf angle fixed to the vertical face of the concrete slab as shown in Figure 2 to provide protection to the wall cavity, an approved fire rated mastic is to be applied to all gaps at the base of the panels and between the steel shelf angle and the vertical face of the concrete slab. The steel shelf angle is required to have a horizontal angle leg length of 75-mm (BMT 1.2-mm) with a minimum of 40-mm cover to the bottom of the Hebel® PowerPanel^{XL}. The steel shelf angle is to be kept a minimum of 15-mm clear of the timber bottom plate;
- All footing and wall junction details are to be as shown in [Hebel Houses and Low Rise Multi Residential PowerPanel^{XL} External Walls – Design and Installation Guide \(HELIT016 FEB21\)](#), Footing Junction detail, Suspended Base Detail, Typical Roof Eaves detail and Typical Eaves detail (No Eave Overhang) Roof Parapet Wall Detail.
- All soffit and eaves linings are to be designed to maintain the FRL of the external wall system.
- The maximum wall height per level may be either supported at the base by a slab edge rebate, shelf angle or similar, and upper storey panels may be considered to be suspended from the frame.

Source: CSIRO Ref No. FCO-3003/SP3672 dated 13 April 2016 reaffirmed CSIRO Ref No. FCO-3003 Review Letter dated 28/05/ 2018.

Thermal Properties of Hebel® PowerPanel^{XL} and PowerProfile® Systems

75mm Hebel® 413kg/m ³ PowerPanel ^{XL} System Assumes 75mm Hebel® PowerPanel ^{XL} thermal resistance is R0.60 m ² .K/W for 4.0% moisture content				Insulation path		Overall (Pine Framing 12.13% area)		Overall (Steel Framing 5.8% area)				
Stud Frame	Top Hat Cavity	Wall thickness mm	Batts	Wall Wrap	Summer	Winter	Summer	Winter	Summer	Winter		
64mm Stud Frame	24mm	173	None	None	1.0	1.0	1.0	1.0	1.0	1.0		
		173	None	Thermoseal Wall Wrap XP Plus	1.9	2.0	1.9	2.0	1.9	2.0		
		173	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2		
		173	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.1	3.3	3.1	3.3	3.1	3.3		
	35mm	64mm Stud Frame	173	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.8	2.9	2.8	2.9	2.8	2.9	
			184	None	None	1.0	1.0	1.0	1.0	1.0	1.0	
			184	None	Thermoseal Wall Wrap XP Plus	1.9	2.0	1.9	2.0	1.9	2.0	
			184	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2	
		35mm	64mm Stud Frame	184	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.1	3.3	3.1	3.3	3.1	3.3
				184	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.8	2.9	2.8	2.9	2.8	2.9

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70mm Stud Frame	24mm	179	None	None	1.0	1.0	1.0	1.0	1.0	1.0
		179	None	Thermoseal Wall Wrap XP Plus	2.0	2.1	2.0	2.1	2.0	2.1
		179	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2
		179	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.3	3.4	3.3	3.4	3.3	3.4
		179	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.9	3.1	2.9	3.1	2.9	3.1
	35mm	190	None	None	1.0	1.0	1.0	1.0	1.0	1.0
		190	None	Thermoseal Wall Wrap XP Plus	1.9	2.0	1.9	2.0	1.9	2.0
		190	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2
		190	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.3	3.4	3.3	3.4	3.3	3.4
		190	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.9	3.1	2.9	3.1	2.9	3.1
90mm or 92mm Stud Frame	24mm	199	None	None	1.0	1.0	1.0	1.0	1.0	1.0
		199	None	Thermoseal Wall Wrap XP Plus	2.0	2.0	2.0	2.0	2.0	2.0
		199	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2
		199	90mm Bradford Gold Wall Batts R2.0	Thermoseal Wall Wrap XP	3.2	3.4	3.2	3.4	3.2	3.4
		199	90mm Bradford Gold Wall Batts R2.5	Enviroseal ProctorWrap RW	3.4	3.6	3.4	3.6	3.4	3.6
	35mm	199	90mm Bradford Polymax Walls Batts R2.5	Enviroseal ProctorWrap RW	3.4	3.6	3.4	3.6	3.4	3.6
		199	90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.6	3.8	3.6	3.8	3.6	3.8
		210	None	None	1.0	1.0	1.0	1.0	1.0	1.0
		210	None	Thermoseal Wall Wrap XP Plus	1.9	2.0	1.9	2.0	1.9	2.0
		210	None	Polyair Performa 4.0 XHD	2.2	2.2	2.2	2.2	2.2	2.2
35mm	210	90mm Bradford Gold Wall Batts R2.0	Thermoseal Wall Wrap XP	3.2	3.4	3.2	3.4	3.2	3.4	
	210	90mm Bradford Gold Wall Batts R2.5	Enviroseal ProctorWrap RW	3.4	3.6	3.4	3.6	3.4	3.6	
	210	90mm Bradford Polymax Walls Batts R2.5	Enviroseal ProctorWrap RW	3.4	3.6	3.4	3.6	3.4	3.6	
	210	90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.6	3.8	3.6	3.8	3.6	3.8	

- Notes:**
- Above all for 10mm Plasterboard Plus lining.
 - The above results are for 75mm HEBEL PowerPanel^{XL} (dry density 413kg/m³) external wall system with assumed thermal resistance of R0.60 m².K/W for 4.0% moisture content.
 - For 6mm skim render, Total R-values are R0.04 more than those above.

Source: James M Fricker; Report i107e; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 01/10/2020.

Thermal Properties of Hebel® PowerPanel^{XL} and PowerProfile® System with Thermoseal wall wrap PRIME

PowerPanel ^{XL} and Thermoseal wall wrap PRIME					Insulation path Total R, m ² K/W		Overall (Timber Framing 12.13% area) Total R, m ² K/W		Overall (Steel Framing 5.8% area) Total R, m ² K/W	
Panel	Frame	Insulation	Wall Wrap	Batten	Summer	Winter	Summer	Winter	Summer	Winter
PowerPanel ^{XL}	90mm stud frame	No batts	Thermoseal wall wrap PRIME	24mm top hat	1.53	1.57	1.56	1.59	1.45	1.48
	70mm stud frame				1.53	1.57	1.54	1.57	1.44	1.48
	90mm stud frame	90mm Gold Batts R2.0			2.82	3.02	2.63	2.79	2.35	2.49
	70mm stud	75mm R1.5 batt			2.29	2.44	2.17	2.29	2.00	2.11

- Notes:**
- System Total R determinations based upon AS/NZS 4859 Parts 1&2:2018, Thermal insulation materials for buildings.
 - Assumes thermal resistance of 75mm Hebel® PowerPanel^{XL} (dry density 413kg/m³) is R0.52 m².K/W for 4.0% moisture content.
 - Bradford Thermoseal Wall Wrap PRIME e0.9/0.05 assumed to have normal infrared emittances as stated.
 - Timber framing assumed to be 45mm wide and studs 600mm centres + top and bottom plates and one noggin.
 - Steel framing assumed to be 35mm wide and studs 600mm centres + top and bottom plates and one noggin. (No thermal break present)

Source: James M Fricker; Report i107f; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 04/03/2020.

Thermal Properties of Hebel® PowerPattern® System

75mm Hebel® 510kg/m ³ PowerPattern® System					Insulation path		Overall (Pine Framing 12.13% area)		Overall (Steel Framing 5.8% area)	
Assumes Hebel® PowerPattern® thermal resistance is R0.35 m ² .K/W for 4.0% moisture content.					Summer	Winter	Summer	Winter	Summer	Winter
Stud Frame	Top Hat Cavity	Wall thickness mm	Batts	Wall Wrap	Summer	Winter	Summer	Winter	Summer	Winter
64mm Stud Frame	24mm	173	None	None	0.7	0.8	0.7	0.8	0.7	0.8
		173	None	Thermoseal Wall Wrap XP Plus	1.7	1.7	1.7	1.7	1.7	1.7
		173	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0
		173	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	2.9	3.0	2.9	3.0	2.9	3.0
		173	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.5	2.7	2.5	2.7	2.5	2.7
	35mm	184	None	None	0.7	0.8	0.7	0.8	0.7	0.8
		184	None	Thermoseal Wall Wrap XP Plus	1.7	1.7	1.7	1.7	1.7	1.7
		184	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0
		184	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	2.9	3.0	2.9	3.0	2.9	3.0
		184	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.5	2.7	2.5	2.7	2.5	2.7
70mm Stud Frame	24mm	179	None	None	0.7	0.8	0.7	0.8	0.7	0.8
		179	None	Thermoseal Wall Wrap XP Plus	1.8	1.8	1.8	1.8	1.8	1.8
		179	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0
		179	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.0	3.2	3.0	3.2	3.0	3.2
		179	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.7	2.8	2.7	2.8	2.7	2.8
	35mm	190	None	None	0.7	0.8	0.7	0.8	0.7	0.8
		190	None	Thermoseal Wall Wrap XP Plus	1.7	1.7	1.7	1.7	1.7	1.7
		190	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0
		190	70mm Bradford Soundscreen Batts R2.0	Thermoseal Wall Wrap XP	3.0	3.2	3.0	3.2	3.0	3.2
		190	70mm Bradford Soundscreen Batts R2.0	Enviroseal ProctorWrap RW	2.7	2.8	2.7	2.8	2.7	2.8

	199	None	None	0.7	0.8	0.7	0.8	0.7	0.8	
24mm	199	None	Thermoseal Wall Wrap XP Plus	1.7	1.8	1.7	1.8	1.7	1.8	
	199	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0	
	199	90mm Bradford Gold Wall Batts R2.0	Thermoseal Wall Wrap XP	3.0	3.2	3.0	3.2	3.0	3.2	
	199	90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.2	3.3	3.2	3.3	3.2	3.3	
	199	90mm Bradford Polymax Walls Batts R2.5	Enviroseal ProctorWrap RW	3.2	3.3	3.2	3.3	3.2	3.3	
	90mm or 92mm Stud Frame	199	90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.4	3.5	3.4	3.5	3.4	3.5
		210	None	None	0.7	0.8	0.7	0.8	0.7	0.8
		210	None	Thermoseal Wall Wrap XP Plus	1.7	1.8	1.7	1.8	1.7	1.8
		210	None	Polyair Performa 4.0 XHD	1.9	2.0	1.9	2.0	1.9	2.0
		35mm	210	90mm Bradford Gold Wall Batts R2.0	Thermoseal Wall Wrap XP	3.0	3.2	3.0	3.2	3.0
210			90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.2	3.3	3.2	3.3	3.2	3.3
210			90mm Bradford Polymax Walls Batts R2.5	Enviroseal ProctorWrap RW	3.2	3.3	3.2	3.3	3.2	3.3
210			90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	3.4	3.5	3.4	3.5	3.4	3.5

Notes: Above all for 10mm Plasterboard Plus lining. The above results are for Hebel® PowerPattern® (dry density 510kg/m³). It is 75mm Hebel® PowerPanel with 10mm deep routing. For 6mm skim render, Total R-values are R0.04 more than those above.

Source: James M Fricker; Report i107e; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 02/06/2021.

A4 Manufacturer and manufacturing plant(s)

CSR Hebel®
112 Wisemans Ferry Rd,
Somersby NSW 2250.

A5 Installation requirements

- Installation of the Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems must be in accordance with the following appropriate in Installation Guide;
 - PowerPanel^{XL} System: [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#), incorporating Hebel PowerPanel^{XL} External Walls Slab Edge Rebate Technical Update TU-033 dated 17/08/2020.
 - PowerProfile® System: [HELIT194 FEB21 Houses and Low Rise Multi Res PowerProfile External Walls IGuide](#) and [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#)
 - PowerPattern® System: [HELIT206 FEB21 Houses and Low Rise Multi Res PowerPattern External Walls IGuide](#) and [Hebel® Houses and Low Rise Multi Residential PowerPanel External Walls – Design and Installation Guide \(HELIT178 AUGUST20\)](#) and [HELIT016 FEB21 Houses and Low Rise Multi Res PowerPanel^{XL} External Walls DIGuide](#)
- The Hebel® PowerPanel^{XL}, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems are only to be installed by a suitably qualified tradesperson or a builder.
- The walls are constructed in accordance with AS 5146.3:2018.
- Stud wall support frame to be designed and certified by others.
- External coating system to be in accordance with AS 5146.3:2018 and comply with AS/NZS 4548.5-1999 and must be suitable and compatible with AAC substrate (with priming where required).
- The first (texture) coat and second (finish) coats must be acrylic latex coatings complying with AS/NZS 4548.5-1999.

7. The coatings must be suitable and compatible with AAC Hebel substrate (with priming where required).
8. Coating manufacturer to specify minimum coating dry film thickness to comply with AS/NZS 4548.5-1999.
9. Coatings to comply with AS/NZS 4548.5-1999.
10. AECOM validated the system to vary the minimum clearance from the bottom of the wall cladding under the BCA requirement 3.5.4.7 to a minimum of 25mm provided the coating at the base of 50 and 75mm Hebel panels shall return to the underside of panel to ensure continuity of the weather tightness layer.

When Hebel® PowerPanelXL, PowerProfile® or PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems are installed with their base below ground, the following conditions must apply:

- The maximum depth of embedment of Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems panels below ground is 100mm (i.e. no more than 100mm above the lowest part of the Hebel® PowerPanelXL, PowerProfile® or PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems).
- Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems must not be used to retain garden beds, earth, soil or other organic matter, Hebel® PowerPanelXL, PowerProfile® or PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems is not to be used as a retaining wall structure.
- The base of the Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems must be coated with “Hebel Base Sealer” prior to installation.
- The lower 150mm of the rear face of the Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems may be coated with “Hebel Base Sealer” prior to installation, however, this is not essential.
- The lower 200mm of the front / external face of the Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems must be coated with “Hebel Base Sealer” after installation but prior to render coating, covering the panel to panel joints.
- To promote drying of the soil and subsurface adjacent to the external wall, drainage of the Finished Ground Level (and pavements) must fall away from the building at a minimum grade of 1:100.
- Even when coated, the builder must ensure external walls are not constantly wet.
- CSR Hebel details shown on drawings CSR-03 Rev C & CSR-05 Rev B apply.
- DPC must be installed to maintain a continuous damp barrier around the perimeter of the building.
- Suitable Termite protection must be installed in accordance with AS 3660.1:2014 and maintained in accordance with AS 3660.2:2017.

Source: Clarkson Consulting Services Pty Ltd report date 11/12/2019.

A6 Other relevant technical data

PowerPanelXL/PowerProfile® System	Stud Frame	Top Hat Cavity	Hebel Panel	Plasterboard	Batts	Wall Wrap	RW	Ctr	
Acoustic Properties	64mm Steel	24mm	PowerPanelXL	10mm Light Weight	None	Thermoseal wall wrap XP Plus	40	-10	
						Polyair Performa 4.0 HXD	40	-10	
	64mm Steel	35mm	PowerPanelXL	10mm Light Weight	70mm Bradford Soundscreen Batts R _m	2.0	Thermoseal wall wrap XP	43	-11
							Enviroseal ProctorWrap RW	43	-11
	64mm Steel	35mm	PowerPanelXL	10mm Light Weight	None	None	Thermoseal wall wrap XP Plus	40	-9
							Polyair Performa 4.0 HXD	40	-9
	64mm Steel	35mm	PowerPanelXL	10mm Light Weight	70mm Bradford Soundscreen Batts R _m	2.0	Thermoseal wall wrap XP	44	-11
							Enviroseal ProctorWrap RW	44	-11
	92mm Steel	24mm	PowerPanelXL	10mm Light Weight	None	None	Thermoseal wall wrap XP Plus	40	-9
							Polyair Performa 4.0 HXD	40	-9

Certificate of Conformity

			90mm Bradford Gold Wall Batts R2.0	Thermoseal wall wrap XP	44	-11
			90mm Bradford Gold Wall Batts R2.5	Enviroseal ProctorWrap RW	44	-11
			90mm Bradford Polymax Wall Batts R2.5	Enviroseal ProctorWrap RW	44	-11
			90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	44	-11
			None	Thermoseal wall wrap XP Plus	40	-9
				Polyair Performa 4.0 HXD	40	-9
35mm	PowerPanel ^{XL}	10mm Light Weight	90mm Bradford Gold Wall Batts R2.0	Thermoseal wall wrap XP	44	-11
			90mm Bradford Gold Wall Batts R2.5	Enviroseal ProctorWrap RW	44	-11
			90mm Bradford Polymax Wall Batts R2.5	Enviroseal ProctorWrap RW	44	-11
			90mm Bradford Gold Wall Batts R2.7	Enviroseal ProctorWrap RW	44	-11

Source: Acoustic Logic Report No. 20140366.34/1909A/R3/GW dated 19/07/2017.

Bushfire The 75mm Hebel® PowerPanelXL, PowerProfile® and PowerPattern® Houses and Low Rise Multi-Residential External Wall Systems can contribute to satisfying the NCC Performance Requirements for the construction of buildings in bushfire prone areas up to BAL - FZ, where the configuration achieves an FRL of 30/30/30 or -/30/30 in accordance with AS 3959:2018 clause (9.4.1). Refer to Installation requirements in A5 for further information.

Non Combustibility **75mm Hebel® PowerPanel^{XL} Panel**
 The certificate holder has provided the Certificate of Test for Combustibility for Materials in accordance with AS 1530.1:1994 for 75mm Hebel® PowerPanel^{XL} Panel – Autoclaved Aerated Concrete (AAC) of density 400kgm³.

The material is NOT deemed combustible - Limited to the panel only.
Source: CSIRO; NATA Accreditation No. 165; Report No. FNC12490 dated 11/11/2019.

75mm Hebel® PowerPattern® Panel
 The certificate holder has provided the Certificate of Test for Combustibility for Materials in accordance with AS 1530.1:1994 for 75mm Hebel® PowerPattern® Panel – Autoclaved Aerated Concrete (AAC) of density 510kgm³.

The material is NOT deemed combustible - Limited to the panel only.
Source: CSIRO; NATA Accreditation No. 165; Report No. F-FNC12427A; dated 02/09/2019.

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

1. Fire safety provision A5.2(1)(d) & (e). Reports from Accredited Testing Laboratories and Qualified Professional Engineer.
2. Structural Provision A5.2(1)(e). Reports from Qualified Professional Engineer.
3. Thermal provision A5.2(1)(e). Reports from Qualified Professional Engineer.
4. Weatherproofing A5.2(1)(e). Reports from Qualified Professional Engineer.

B2 Reports

1. AECOM; Letter dated 08 April 2021; Hebel 50mm and 75mm Panels –External Cladding for Low and High Rise Buildings; Dated 08/04/2021.
2. Clarkson Consulting Services Pty Ltd; Assessment of Hebel Wall Systems – Installation Below Ground; Dated 11/12/2019.
3. CSIRO; NATA Accreditation No. 165; Ref No. FCO-3003/CO4942; Assessment Review renewal letter for report FCO-3003/SP3672; Dated 28/05/2018, Expires 31/05/2023.
4. CSIRO; NATA Accreditation No. 165 (not accredited testing for this standard); Report number DTF1021; Weatherproofing testing to AS/NZS 4284:2008; Dated 27/01/2015.
5. IGNIS Solutions Pty Ltd; Report No. IGNS-8349 I02 R04; Hebel External Wall Compliance; Dated 17/03/2021. *(Report is available upon request, contact Hebel Technical Services)*
6. James M Fricker Pty Ltd; Report i107e; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 02/06/2021.
7. James M Fricker Pty Ltd; Report i107f; Thermal performance calculations to AS/NZS 4859 Parts 1 & 2:2018; Dated 04/03/2020.
8. PACE Structural; File PS18153; Structural Design Certificate – Hebel® PowerPanel^{XL} External Wall System; Dated 03/05/2021.
9. PACE Structural; File PS20153; Structural Design Certificate – Hebel® PowerProfile® External Wall System; Dated 26/05/2021.
10. PACE Structural; File PS20177; Structural Design Certificate – Hebel® PowerPattern® Hebel PowerPattern External Wall System; Dated 26/05/2021.
11. The Coatings Consultancy Pty Ltd; Reference No. TCC20049-20200820; Clearance between external Hebel® PowerPanel^{XL} Walls and Finished Ground Level; Dated 20/08/2020.
12. The Coatings Consultancy Pty Ltd; Reference No. TCC18056-20201201; NCC Non-Combustibility Requirements for External Coatings of Hebel High Rise Facade Systems; Dated 01/12/2020.
13. WarringtonFire; NATA Accreditation No. 3277; Report No. 27915.27.2; FRL assessment of penetrations; Dated 11/11/2021.

The Certificate Holder has chosen not to make the above evidence of compliance publicly available, due to the documents being considered commercial in confidence.