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THIS IS TO CERTIFY THAT

Hebel® High Rise Façade Wall System

Type and/or use of product:

Hebel® High Rise Façade Wall System is certified as a non-loadbearing external wall system to be used where deemed appropriate by state and territory specific applications using this system.

Description of product:

Hebel® High Rise Façade Wall System comprises 75mm steel reinforced autoclave aerated concrete (AAC) Panel (PowerPanel™) secured vertically to structural (cold formed) steel or timber support framing.

The PowerPanel™ can also be custom routed (PowerPattern) in various decorative patterns to a maximum depth of 10mm.

Refer to A2 below for Panel properties and list of full components applicable to the Wall System.

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) Structure – Resistance to actions – Limited to wind action	P2.1.1(a), (b)(i)(ii)(iii)(iv) Structural stability and resistance
	FP1.4 Weatherproofing	P2.2.2 Weatherproofing
Deemed-to-Satisfy Provision(s):	C1.1(b) Fire resistance and Stability – refer A3	3.8.7.2 Condensation management
	C1.9 Non-combustible building elements – Refer A3 – Refer Limitation and Condition 2	3.12.1.4(b) Energy Efficiency – External walls – R values vary with installation configurations. Contributes to the performance of the wall.
	C1.14 Ancillary Elements – Refer A3	
	F6.2 Condensation management	
	J1.5 Energy Efficiency – External walls – R values vary with installation configurations. Contributes to the performance of the wall.	
State or territory variation(s):	Not applicable	Part 3.12 (NSW, NT, Qld, Tas, ACT)


 Richard Donarski - CMI


 Don Grehan – Unrestricted Building Certifier

Date of issue: 18/12/2020

Date of expiry: 08/10/2022



Certificate of Conformity

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

Limitations and conditions:

1. Compliance with FRL is dependant on the system components being as specified in A3. Any deviation from the tested specimen does not form part of this certificate of conformity.
2. The non-combustibility requirements of C1.9 only apply where this system is installed using steel stud frames. Where timber stud frames are used, this system may only be installed where concession for timber framed construction apply, in the NCC.
3. The Hebel® Routed PowerPanel™ must be used as external wall only.
4. 75mm Hebel PowerPanel™ and 75mm Hebel PowerPattern with 10mm routed depth has not been tested and certified for impact loading from windborne debris in Region C and D as denoted in AS 1170.2:2011. The building designer should take into consideration internal pressure resulting from dominant openings.
5. Construction methods for external walls required to be fire resisting in relation to class 1b buildings and structures must comply with part 3.7.2.4 of the NCC Volume 2.
6. The installation of the 75mm Hebel PowerPanel™ & 75mm Hebel PowerPattern with 10mm routed depth system on site must be in accordance with Section 2.1 of the [CSR Hebel High Rise Apartments Student Accommodation Hotels and Commercial Facades & Balcony Blades – Design and Installation Guide \(HELIT015 March 2020\)](#).
7. Design certification for earthquake loading compliance in accordance with AS1170.4:2007 excludes Meckering Regions and Island Regions as stipulated in Table 3.2
8. Components approved under this certificate are not part of the seismic-force resisting system.
9. A 5mm thick galvanised continuous shelf angle; grade G250 is required fixed to the edge of the Hidden Slab Edge system with the distance between the external face of the panel and the slab face not exceeding 125mm.
10. Hebel® High Rise Façade Wall System wall studs may be installed at maximum 600mm centres in lieu of 450mm centres, only when one way FRL required (from PowerPanel™ side).
11. For Hebel panels routed to a maximum depth of 10mm, a layer of 16 mm thick CSR Fyrchek™ plasterboard sheet is to be used for internal wall lining as per manufacturer’s requirements for Visible Slab Edge variation when -/180/180 FRL is required from the Hebel Side only.
12. In order to achieve compliance with weatherproofing in accordance with FV1.1 and V2.1.1, all windows must comply with AS 2047:2014.

Building classification/s:

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

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.

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.



Certificate of Conformity

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

PowerPanel™ Physical Properties

Hebel® PowerPanel™ is a 75mm thick steel reinforced Autoclaved Aerated Concrete (AAC) Panel. The panel is manufactured in a range of stock sizes as detailed below.

The custom routed panel (PowerPattern) is a 75mm thick PowerPanel™ which includes a 10mm deep routed face. With a 10mm routed face, the effective thickness of the panels is considered to be 65mm

- Panel reinforcement is a single layer of steel mesh with 4 longitudinal wires of 4mm diameter for panels up to 3300mm.
- Nominal dry density = 510 kg/m³
- Average working density = 663 kg/m³ at 30% moisture content.
- Average service life density = 561 kg/m³ at 10% moisture content.

Panel Type	Profile	Reinforcement	Length (mm)	Width (mm)	Weight (kg/m ²)
Standard Sizes (stock)	Square Edge (nil profile)	Single Mesh	1200	600	49
			2400	600	49
			2550	600	49
	Square Edge (nil profile) AND Tongue & Groove	Single Mesh	2700	600	49
			2800	600	49
			2850	600	49
			3000	600	49
3300			600	49	
Made-to-length sizes (5mm increments)			Caged Mesh	3600	600
	4200	600		53	
Square Edge (nil profile) AND Tongue & Groove	Single Mesh	3300 Max	600	49	
	Caged Mesh	Up to 4800	600	53	

Note:

*Average panel weight calculated 30% moisture content.

^Panels over 3300mm use caged mesh.

A3 Product specification

Fire

System Component	Hidden Slab Edge	Exposed Slab Edge	Combustibility*
FRAMING SYSTEM			
RONDO 92 x 50 x 1.15mm BMT deflection head track (or approved equivalent)	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of light gauge steel.
RONDO 92 x 32 x 1.15mm BMT base track (or approved equivalent)	✓	✓	
RONDO 92 x 32 x 1.15mm BMT lipped studs (or approved equivalent)	✓	✓	
Cleats: Rondo MAXIframe cleats 201, 201	✓	✓	
Timber stud framed construction (for class 1a & 10a structures), or where permitted under concessions where timber framing can be used for the specified building class(es).	✓	✓	In accordance with BCA Vol 1 Concessions. Refer Specification C1.1- 3.10 & 4.3.
WALL SYSTEM COMPONENTS			
Waterproof membrane		✓	<u>Combustible</u> Complies with BCA Clause C1.9
Bradford Enviroseal ProctorWrap™ or DuPont™ Tyvek® HomeWrap®	✓	✓	
Hebel® Facade Top Hat 50mm x 0.75mm BMT (also used as cavity baffle)	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of light gauge steel
10-16mm x 16 hex head tek Top Hat fastener	✓	✓	
Shelf angle: 150mm x 100mm x 3m x 6mm	✓		
M12 Hilti HVU galvanised chemical anchors at 900mm centres	✓		
M10 Hilti HVU galvanised chemical anchors at 450mm centres.	✓		
Galvanised mechanical anchors at 600mm centres: Hilti HSA-F M10 (to fix shelf angle to slab edge)	✓		<u>Non-Combustible</u> Complies with BCA Clause C1.9
Non-compressible packers to suit	✓	✓	
Backing Rod	✓	✓	
Selleys Fireblock XT	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of Autoclaved Aerated Concrete.
Hebel® PowerPanel™	✓	✓	
Hebel Anti-Corrosion Protection Paint	✓	✓	<u>Combustibility unknown</u> Complies with BCA Clause C1.14
Hebel® Adhesive	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of Portland cement, fine sand aggregate and calcium carbonate filler.
14-10mm x 100 bugle head timber screw PowerPanel™ fastener	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of light gauge steel
Pressure equalization slots	✓	✓	Combustibility requirements not applicable
Screw: 14-10 x 90 hex head type 17 OR	✓	✓	<u>Non-Combustible</u> Complies with BCA Clause C1.9
Screw: 14-10 x 100 bugle head type 17 OR	✓	✓	

Screw: 14-10 x 150 bugle head type 17 OR Screw: 12-11 x 35 hex head for fastening top hats to timber stud frames Hebel® patch	✓	✓	<u>Non-Combustible</u> Subject component is constructed out of Portland cement, Calcium sulfoaluminate cement and calcium carbonate filler.
Flashing / DPC - not supplied by CSR	✓	✓	<u>Combustible</u> Complies with BCA Clause C1.9
Gyprock plasterboard	✓	✓	
Bradford insulation	✓	✓	
COATING SYSTEM Dulux Acratex or Rockcote Acrylic coating systems as per section 4.2 of AECOM report dated 02/04/2020	✓	✓	<u>Combustibility unknown</u> Complies with BCA Clause C1.14

Fire Resistance for various configurations of CSR Hebel panels

An assessment of the fire resistance of wall system comprising 75mm thick Hebel® PowerPanel™ tongue and groove panel or nil profile with various steel stud plasterboard lined wall systems on one side has been conducted in accordance with AS 1530.4-2014 based on the following schedule of assessed components:

Schedule of Components to achieve FRL as per Exova Warringtonfire report

Item	Description	
Hebel® PowerPanel™	Size	300mm wide and 75mm thick with single reinforcement or 600mm wide and 75mm thick with single reinforcement.
	Installation	Panels fitted together with either tongue and groove or nil profile arrangement in vertical orientation and laterally restrained at wall junctions and at panels ends with steel angles. Fixed through Hebel façade top hat and connected with steel stud framed wall using two 14-10 x 100mm MP Bugle head screws per 300mm wide panel and three screws per 600mm wide panel. For nil profile PowerPanel™ panel arrangement, the panel joint shall be maximum 3mm wide and fully filled with CSR Hebel thin bed adhesive.
Sealant	Material	Selleys Fireblock XT sealant.
	Installation	Max. 20mm wide x 16mm deep on external side of Hebel® PowerPanel™ panel along top edges, between panels and bottom edge.
Polyethylene Backing Rod	Installation	Placed between panels and support construction leaving the required recess depth for the Selleys Fireblock XT sealant.
Steel Stud	Material	Rondo 92mm x 32mm x 1.15mm BMT lipped studs.
	Installation	Installed at maximum 450mm centres and nogging shall be installed at mid wall height. (Refer below 'CSR Hebel PowerPattern panels' for assessed modifications for routed PowerPanel™ panels (PowerPattern) and Limitation and condition '4'.)
Hebel Façade Top Hat	Material	50mm x 4.8m x 0.75mm BMT steel top hat.
	Installation	Fixed to steel studs max. 150mm from ends of Hebel® PowerPanel™ panel top and bottom and max. 900mm centres in between.
Plasterboard Lining	Material	CSR Fyrchek™ plasterboard (Refer below table 'Assessed modifications to Wall System' for 75mm panel and 'CSR Hebel PowerPanel™ panels (PowerPattern)s' for assessed modifications for routed panels)
	Installation	Linings shall be horizontally fixed to one side of steel wall framing.

Sealant	Material	CSR Fireseal sealant.
	Installation	Max. 10mm wide and full depth of plasterboard lining at perimeter.
Shelf steel angle	Material	Min. 5mm thick hot rolled steel angle.
CSR Hebel thin bed adhesive	Material	Proprietary Cementitious Mortar.
	Installation	Applied to the joint in the panels to full depth of panel.

The test specimen comprised a non-loaded timber frame of 70mm x 35mm F5 soft wood studs at 430mm centres. The top plate was bolted to the specimen-containing frame. The bottom plate was fixed with masonry anchors to the brick infill at the lower edge of the specimen. Steel top hat sections, BHP top span 22 ceiling baton, were fixed horizontally to the timber frame. The PowerPanel™'s, 75mm thick and 600mm wide were fixed to the top hat section with 14 gauge-10 x 65 hex head type 17 class 3 screws. The individual panels were fixed with two screws through the top, three screws through the middle and two screws through the lower top hat section. The unexposed face was clad with 10mm CSR plasterboard.

Assessed modifications to Hebel Façade Wall System (without routed panels):

The following linings are subject to installation in accordance with the Plasterboard fixing requirements detailed below.

Lining on Side 1	Lining on Side 2	Wall Framing	FRL
75mm thick Hebel® PowerPanel™ panel	1 x 16mm CSR Fyrchek™	92mm deep steel framing at max. 450mm centres, (Subject to amended variation in <i>Stephen Grubits & Associates; Rep. 2013/277.82 R1.4; Determination of FRL By Calculation; Dated 01/05/2019.</i> See limitation and Condition '4'.)	-/60/60
	2 x 13mm CSR Fyrchek™		-/90/90
	2 x 16mm CSR Fyrchek™		-/120/120
	3 x 16mm CSR Fyrchek™		-/180/180
	1 x 10mm CSR non fire rated plasterboard		-/180/180 (From Hebel side only)
	1 x 13mm CSR non fire rated plasterboard		-/180/180 (From Hebel side only)

Plasterboard Fixing Requirements

Wall Lining Thickness	No. of Layers	Plasterboard installation		
		1 st Layer (inner layer)	2 nd Layer	3 rd Layer (outer layer)
16mm	1	Screw type: S 6-18 x 30 DP screws Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed staggered at max. 200mm centres.	-	-
13mm	2	Screw type: S 6-18 x 25 DP screws Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed staggered at max. 200mm centres.	Screw type: S 6-18 x 40 DP screws Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed at max. 200mm centres and staggered at 100mm.	-
16mm	2	Screw type: S 6-18 x 30 DP screws Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed staggered at max. 200mm centres.	Screw type: S 6-18 x 45 DP screws Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed at max. 200mm centres and staggered at 100mm.	-
16mm	3	Screw type: S 6-18 x 30 DP screws	Screw type: S 6-18 x 45 DP screws	Screw type: 10 x 40mm laminating screw Fixed at max. 400 x 400mm grid. The butt joints shall be screwed at max. 200mm centres,

Certificate of Conformity

	Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed at max. 200mm centres, staggered at 100mm and 50mm spacing between the vertical joint and the screws.	Fixed at max. 300mm centres in steel studs. The butt joints shall be screwed at max. 200mm centres, staggered at 100mm and 50mm spacing between the vertical joint and the screws.	staggered at 100mm and 50mm spacing between the vertical joint and the screws.
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Source: Exova Warringtonfire; NATA Accreditation 3277; Report number 43090900.2; Fire resistance in accordance with AS 1530.4:2014; Dated 16/11/2018.

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
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 16mm Fyrchek	Inside and Outside	-/120/120 or 120/120/120

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

Source: IGNIS Solutions Pty Ltd; Report No. IGNS-8349 I02R02 Hebel Wall Compliance dated 16/12/2020. (Report is available upon request, contact Hebel Technical Services)

CSR Hebel PowerPattern panels (Routed PowerPanel™)

The assessment conducted by Stephen Grubits and Associates confirms that the report has demonstrated that the CSR Hebel® 75 mm PowerPanel™ system with a 10mm deep routed face, could be expected to achieve the desired FRLs as per the following table, if it were tested to AS 1530.4-1999.

Variation	FRL	Lining as per EWFA 43090900.2	Lining (SGA requirement)	Total lining	Stud spacing
Hidden Slab Edge (HEBEL 1347)	-/120/120 (two way)	2 x 16mm CSR Fyrchek™	-	2 x 16mm CSR Fyrchek™	450mm
Visible Slab Edge (HEBEL 1349)	-/180/180 (two way)	3 x 16mm CSR Fyrchek™	-	3 x 16mm CSR Fyrchek™	450mm
Hidden Slab Edge (HEBEL 1347)	-/120/120 (one way)	1 x 10mm or 1 x 13mm non-fire-grade plasterboard.	-	1 x 10mm or 1 x 13mm non-fire-grade plasterboard.	600mm or 450mm
Visible Slab Edge (HEBEL 1349)	-/180/180 (one way)	1 x 10mm or 1 x 13mm non-fire-grade plasterboard.	Non-fire-grade plasterboard to be replaced with 1 x 16mm CSR Fyrchek™	1 x 16mm CSR Fyrchek Fyrchek™	600mm or 450mm

Source: Stephen Grubits & Associates; Rep. 2013/277.82 R1.4; Determination of FRL By Calculation; Dated 01/05/2019.

Thermal Properties

Hebel® Vertically Installed Facade Wall System incorporating 75mm Hebel PowerPanel™ (4% M.C)

The below table gives Total R & Total U values for the thermally bridged whole wall surface (no glazing). The All Wall (bridged) results do not have any thermal break product present, and metal tophats cross metal studs. Assumes thermal resistance of 75mm Hebel PowerPanel™ (dry density 510kg/m³) is R0.52 m².K/W for 4.0% M.C. R-Values calculated per AS/NZS 4859 Parts 1 & 2:2018, Thermal insulation materials for buildings. Framing details with 92 x 32mm metal studs.

Description of Specimen	Insul Path		All Wall			
	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W
	Winter	Summer	Winter	Summer	Winter	Summer
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.7 HP, and steel studs at 600mm centres (13mm Gyprock Plasterboard)	R3.75	R3.56	R3.21	R3.07	U0.311	U0.326
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.5 HP, and steel studs at 600mm centres (13mm Gyprock Plasterboard)	R3.56	R3.36	R3.08	R2.93	U0.325	U0.342
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.7 HP, and steel studs at 450mm centres (16mm Fyrcheck Plasterboard)	R3.77	R3.58	R3.09	R2.96	U0.323	U0.338
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.5 HP, and steel studs at 450mm centres (16mm Fyrcheck Plasterboard)	R3.57	R3.37	R2.97	R2.83	U0.337	U0.353
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.7 HP, and steel studs at 450mm centres (2x13mm Fyrchek Plasterboard)	R3.83	R3.64	R3.18	R3.04	U0.315	U0.329
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.5 HP, and steel studs at 450mm centres (2x13mm Fyrchek Plasterboard)	R3.63	R3.43	R3.05	R2.91	U0.327	U0.343
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.7 HP, and steel studs at 450mm centres (2x16mm Fyrchek Plasterboard)	R3.87	R3.67	R3.23	R3.09	U0.310	U0.324
75MM HEBEL POWERPANEL (4% M.C.) SYSTEM with 50mm tophat and Bradford Gold Wall Batt R2.5 HP, and steel studs at 450mm centres (2x16mm Fyrchek Plasterboard)	R3.67	R3.47	R3.10	R2.96	U0.323	U0.338

Source: James M Fricker; Report No. i107g; Determination of R values by calculation in accordance with AS/NZS 4859.1:2018, 75mm thickness; Dated 05/07/2019.

Hebel Vertically Installed Façade Wall System with Horizontal top hats incorporating 75mm Hebel PowerPattern (10mm routed panel) (4% M.C)

Description of Specimen	Insul Path		All Wall			
	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W	Total R, m ² ·K/W
	Winter	Summer	Winter	Summer	Winter	Summer
75MM HEBEL POWERPATTERN (10mm routed panel) (4% M.C.) SYSTEM with 50mm tophat and Acoustigard 14 R2.2 90mm, 14kg/m ³ , and steel studs at 600mm centres (1x16mm Gyprock Fyrchek plasterboard)	R3.22	R3.02	R2.82	R2.66	U0.355	U0.376
75MM HEBEL POWERPATTERN (10mm routed panel) (4% M.C.) SYSTEM with 50mm tophat and Acoustigard 14 R2.2 90mm, 14kg/m ³ , and steel studs at 600mm centres (2x13mm Gyprock Fyrchek plasterboard)	R3.28	R3.08	R2.89	R2.73	U0.346	U0.366

75MM HEBEL POWERPATTERN (10mm routed panel) (4% M.C.) SYSTEM with 50mm tophat and Acoustigard 14 R2.2 90mm, 14kg/m ³ , and steel studs at 600mm centres (2x16mm Gyrock Fyrchek plasterboard)	R3.32	R3.11	R2.94	R2.77	U0.341	U0.360
75MM HEBEL POWERPATTERN (10mm routed panel) (4% M.C.) SYSTEM with 50mm tophat and Acoustigard 14 R2.2 90mm, 14kg/m ³ , and steel studs at 600mm centres (13mm Gyrock Plasterboard)	R3.21	R3.00	R2.79	R2.64	U0.358	U0.379

Source: James M Fricker; Report No. i107g; Determination of R values by calculation in accordance with AS/NZS 4859.1:2018, 75mm thickness (10mm routed panel); Dated 11/03/2020.

Frame Thermal Bridging Performance

Thermal bridging from timber framing results in higher Total R than thermal bridging from steel framing, even if thermal breaks are used with steel framing. This is because 70 to 90mm timber framing is typically R0.7 to R0.9 whereas equivalent steel framing is less than R0.1. As a consequence, overall surface Total R for timber framed structures is higher than equivalent steel framed structures.

Source: James M Fricker letter dated 01/12/2020.

A4 Manufacturer and manufacturing plant(s)

CSR Hebel®
112 Wisemans Ferry Road
Somersby NSW 2250.

A5 Installation requirements

- The installation of the 75mm Hebel PowerPanel™ & 75mm Hebel PowerPattern with 10mm routed depth system on site must be in accordance with Section 2.1 of the CSR Hebel High Rise Apartments Student Accommodation Hotels and Commercial Facades & Balcony Blades – Design and Installation Guide (HELIT015 March 2020).
- RONDO steel stud framing (or approved equivalent) must be specified in accordance with the project wind loads as determined by the project design engineer. A design certificate prepared by the stud frame manufacturer or project engineer in regards to the stud framing specification must be provided to CSR Hebel®.
- The wall studs shall be 92mm deep steel studs installed at maximum 450mm or 600mm (as applicable) centres and installed in accordance with the manufacturer's or project engineer's specification.
- 75mm Hebel® PowerPanel™ panel shall fixed to steel studs through 50mm × 4.8m × 0.75mm BMT steel tophats which fixed to steel studs at max. 150mm from ends of top and bottom and max. 900mm centres in between.
- Include a maximum 20mm wide horizontal control joint within 75mm thick Hebel® PowerPanel™ and sealed with minimum 16mm deep Selleys Fireblock XT sealant backed with backing rod.
- The 75mm thick Hebel® PowerPanel™ shall be either supported on the concrete slab or on a continuous steel shelf angle fixed to the face of the concrete slab.
- The PowerPanel™ shall optionally be nil profile and the panel joints shall be maximum 3mm wide and fully sealed with CSR Fireseal sealant.
- The 75mm thick Hebel® PowerPanel™ shall be extended to a height of up to 4.2 m.
- All construction details of the CSR HEBEL® 75mm PowerPattern system must be identical to CSR Hebel® 75mm PowerPanel™ detailed in Exova Warringtonfire report ref. EWFA 43090900.2 with the only exceptions being the following, - overall or partial thickness of the PowerPanel™ may be reduced from 75mm to 65mm by way of routing (PowerPattern); AND - The wall studs spacing can be increased from 450mm centres to 600mm centres for one way FRL only (from PowerPanel™ side).
- Where required a layer of 16mm thick CSR Fyrchek plasterboard sheet has to be fixed to the internal face of the CSR Hebel® 75mm PowerPattern system. This plasterboard sheet must be affixed as specified in the paragraph B.1.2.31 of EWFA 43090900.2.

11. The walls are constructed in accordance with AS 5146.3:2015.
12. External coating system to be in accordance with AS 5146.3:2015.
13. The first (texture) coat and second (finish) coats must be acrylic latex coatings complying with AS/NZS 4548:1999.
14. The coatings must be suitable and compatible with AAC Hebel substrate (with priming where required).
15. Coatings to comply with AS/NZS 4548.5:1999.
16. Coating manufacturer to specify minimum coating dry film thickness to comply with AS/NZS 4548.5:1999.
17. Aecom also list the following as acceptable coating systems to be applied in accordance with advice from The Coatings Consultancy:
 - Rockcote Armorflex
 - Dulux AcraTex

A6 Other relevant technical data

Acoustic Properties

Panel only with no plasterboard or other lining RW = 36dB, RW+Ctr = 33dB.

Coatings

The following coating types are classified as paints and therefore fall under the exemption in NCC Volume 1; Part C1 Fire Resistance and Stability Clause C1.14 Ancillary elements(l):

- AS/NZS 4548.1:1999 Part 1: Wall coatings—Latex extensible
- AS/NZS 4548.2:1999 Part 2: Latex finish coatings—High-build, low profile
- AS/NZS 4548.3:1999 Part 3: Latex—Textured coatings—Non-aggregate
- AS/NZS 4548.3:1999 Part 3: Latex—Textured coatings—Aggregate filled

Source: *The Coatings Consultancy letter dated 17 February 2020.*

APPENDIX B – EVALUATION STATEMENTS

B1 Evaluation methods

1. Structural Provision – A5.2(1)(e). Reports from qualified professional engineer.
2. Thermal Properties – A5.2(1)(e). Reports from qualified professional engineer.
3. Fire Assessment – A5.2(1)(d). Reports from accredited test laboratories.
4. Weatherproofing – A5.2(1)(e). Reports from qualified professional engineer.
5. Condensation Management – A5.2(1)(e). Reports from qualified professional engineer.

B2 Reports

1. AECOM; Letter dated 2 April 2020; Expert opinion validating Report No DTF 1021' by CSIRO testing to the FV1 And V2.2.1 dated 27 Jan 2015; Dated 02/04/2020.
2. CSIRO; NATA Accreditation No. 165; Report number DTF1021; Water penetration testing to the Verification Methods FV1 & V2.2.1; dated 27/01/2015.
3. CSIRO; NATA Accreditation No. 165; Report number FCO-2532; Assessment on the likely fire performance in accordance with AS1530.4-2014; Dated 09/06/2015.
4. CSIRO; NATA Accreditation No. 165; Report number FCO-3039; Assessment on the likely fire performance in accordance with AS1530.4-2014; Dated 24/06/2014; validated by CSIRO review dated 30/04/2019.
5. CSIRO; NATA Accreditation 165: Report number FNC12427A; Certificate of Test for Combustibility Test for Materials in accordance with as 1530.1:1994; Dated 24/07/2019
6. CSR Hebel; HELI015March20: Design and Installation guide provides directives for Condensation Management; Dated March 2020.
7. Exova Warringtonfire; NATA Accreditation 3277; Report number 43090900.2; Fire resistance in accordance with AS 1530.4:2014; Dated 16/11/2018.
8. IGNIS Solutions Pty Ltd; Report No. IGNS-8349 I02 R02; Hebel External Wall Compliance; Dated 16/12/2020. **(Report is available upon request, contact Hebel Technical Services)**
9. James M Fricker; Report No. i107g; Determination of R values by calculation in accordance with AS/NZS 4859.1:2018, 75mm thickness; Dated 05/07/2019.
10. James M Fricker; Report No. i107g; Determination of R values by calculation in accordance with AS/NZS 4859.1:2018, 65mm thickness (routed panel); Dated 11/03/2020.
11. James M Fricker; Frame Thermal Bridging Performance; Date 01/12/2020.
12. PACE Structural; File PS18151; Structural Design Certificate; Dated 17/04/2020.
13. PACE Structural; File PS19042; Structural Design Capacity Calculations; Dated 17/04/2020.
14. Stephen Grubits & Associates; Rep. 2013/277.82 R1.4; Determination of FRL By Calculation; Dated 01/05/2019.
15. Stephen Grubits & Associates; Rep. 2013/277.53 R2.4; Determination Non-Combustibility of the tested wall system; Dated 13/03/2020.
16. The Coatings Consultancy; NCC Fire Resistance Deemed-to-Satisfy Provisions C1.14, Classification of latex membrane and textured coatings as paints; Dated 27/02/2020.
17. 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.

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