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Report No. 22-04

Testing of ‘Kaycan’, Eco clad horizontal bevel back weatherboard cladding on cavity, Class-2 details in accordance with E2/VM1

Tested by: John Burgess, IANZ Signatory. Checked by: Richard Gibbs

Client:	PSP Ltd, 320 Rosedale Rd, Albany, Auckland
Project:	Kaycan - Eco clad horizontal
Specifier:	PSP Ltd
Sample designer:	PSP Ltd
Manufacturer	The Building Business (tbb)
Installer	The Building Business
Test date:	4 April 2022
Test Schedule	Water penetration to NZ Building Code, E2/VM1, Class 2
People present	Carpenter - (Manrebo Holdings) Terry deRuiter, Carpenter assistant)- (Manrebo Holdings) Alali Pisi, Consultant observer - (TBB)- Kevin Brunton, LabTechnician - (BRANZ) John Burgess (IANZ KTP), Company representative - (PSP) Vaughan Brown, Richard Gibbs, Managing Director, FaçadeLab
Test facility:	FacadeLab, 320 Rosedale Rd, Albany, Auckland

Figure 1: Weather-face of sample showing balustrade/parapet, internal and externa corners of cladding

Figures and Photos

Contents

1. Description

A test sample of size 3700 mm wide by 3400 mm high was built by The Building Business to test the weathertightness of the cladding and jointing systems.

The system is known as 'Kaycan' Eco Clad horizontal barrier system.

The system was erected using 90 x 45 studs and dwangs, with a nominal 20 mm cavity, flexible building wrap, a window, a meter box, a parapet, internal and external corners, butt joints between boards, with flashings and inseal tape to suit.

1.1. Mandatory details

E2/VM1 requires that there are a required minimum set of mandatory details that are listed below as Class 1 and Class 2.

Class 1: vertical joints, internal and external corners of the external wall junctions, and footer and header termination systems.

Class 2: vertical and horizontal control joints, internal and external wall junctions, windows and/or doors, a parapet or enclosed balustrade capping with a saddle flashing, a large pipe penetration, and footer and header termination systems.

It is noted in E2/AS1 that test specimens may also include other details relevant to the use of the cladding system on the building.

The list of details included in the sample is noted below.

Table 1: Details for Class 1, Class 2 and extra for E2/VM1 testing

Detail name	Class 1	Class 2	Extra
Window head		Y	
Window jamb		Y	
Window sill		Y	
Cavity closer	Y		
Internal corner	Y		
External corner	Y		
Flat soffit	Y		
Meterbox head			Y
Meterbox jamb			Y
Meterbox sill			Y
Large pipe penetration		Y	
Midfloor horizontal (expansion) joint		Y	
Board jointer		Y	
Board soaker jointer			Y
Parapet/balustrade capping		Y	
Saddle flashing		Y	
Parapet external corner		Y	
Parapet internal corner		Y	

1.1. Sample

The weather-face of the cladding system is shown in Figure 1

The entire ‘dry’ interior face of the system was lined with polycarbonate sheet, to facilitate easy viewing of the back of the sample as can be seen in Figure 2

Figure 2: Dry (interior) side of sample under test.

1.2. Materials used in construction

The following materials were used in the construction of the system:

1.2.1. Timber structural framing

- Framing: H1.2, SG 8, 90mm x 0 mm Studs at maximum 600 crs, nogs at 800 crs
- Batten: H3.1, F/J, 40 mm x 19mm solid timber battens
- Watergate flexible building wrap
- 3M 8067 All weather flashing tape
- 6mm polycarbonate as simulated lining

1.2.2. Kaycan Eco-side system components:

- Kaycan horizontal 20 mm x 60 mm cavity closer
- Kaycan aluminium 90 external corner flashing
- Kaycan aluminium 90 internal corner flashing
- Kaycan composite 85 mm x 85 mm, 90 external corner
- Kaycan composite 25 mm x 25 mm, 90 internal corner
- Kaycan powdercoated aluminium flat jointer
- Kaycan colour-match 65 mm x 2.5 mm flathead nails

1.2.3. Standard components:

- PSP 2-part external aluminium corner flashing
- PSP 2-part internal aluminium corner flashing
- Pre-folded metal 20 mm x 60 mm edge ‘J-mould’
- Danco compressed medium density foam tap (15 mm a 10 mm thick)
- Perforated foam rod
- WANZ window support bar
- Window head flashing with 15 degree fall with proprietary stop ends
- 100 x 100 DynaFlash
- 50 x 30 mm eave wall angle
- Masons 100 mm penetration seal
- Chesters PVC protective flange
- Pre-assembled meter box with propriety flashing kit
- Standard 35mm suite window

For full details refer to attached drawings, and the diagram in Figure 6 showing the details included in the system.

2. Testing

The testing was performed using the procedures from NZBC E2/VM1 in the cladding test facilities of Facadelab Limited, North Shore, Auckland.

2.1. Pre-conditioning

A pre-conditioning load of 1515 Pa, then -1515 Pa for 1 minute was applied to the sample to ensure that the system would hold pressure.

Given the large area of the façade (about twice the standard 2.4 x 2.4 m sample size), a second 15 mm diameter hole was formed in the (simulated) interior lining (polycarbonate). The first hole was under the window in the left hand side panel of the system and the second hole was in the right hand side of the panel under the large pipe penetration.

2.2. Series 1 Static pressure water penetration

The Series 1 (Static Pressure Water Penetration) test was performed, in accordance with clause 8.5 of AS/NZS 4284 at the maximum test pressure of 455 Pa. This was followed by the ‘Cyclic Pressure Water Penetration’ test in accordance with stage 3 of clause 8.6 of AS/NZS 4284 between the test pressures of 455 and 910 Pa.

2.3. Series 2 Water Management testing

The Series 2 “Water Management Testing’ was then performed again following the formation of 6 mm diameter holes through the wetwall. This part of the test is as prescribed in AS/NZS 4284 clause 9.9. The holes were formed in the following locations:

- Through the jamb of the meterbox
- Through the window/wall joint in the jamb joints
- Immediately above the head flashing of the windows and meterbox
- Through the internal and external corners
- Through the cladding immediately above the balustrade/parapet
- Above the (large) pipe penetration
- Above the inter-storey joint
- Through the vertical expansion joint

Immediately upon the conclusion of the water management testing, the layers behind the wetwall were removed (within 30 minutes). This allowed any penetrating water to be viewed and ensured that any air pressure drop applied across the sample would be across the wetwall for the next test.

The photos in Figure 3 through to Figure 6 show the location of the 6mm holes drilled for the water management tests.

2.4. Series 3 'Wetwall test'

Testing continued with the application of water, and an air pressure of 50 Pa across the wetwall for 15 minutes. The system complied with the requirements of the test.

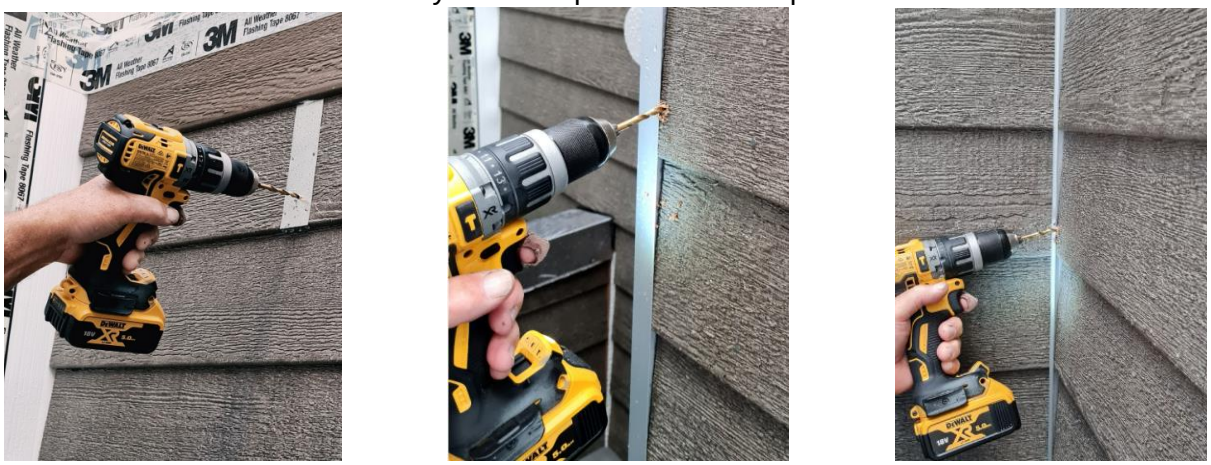

Figure 3: Holes of 6mm diameter drilled in the horizontal jointer, vertical jointer and an internal corner

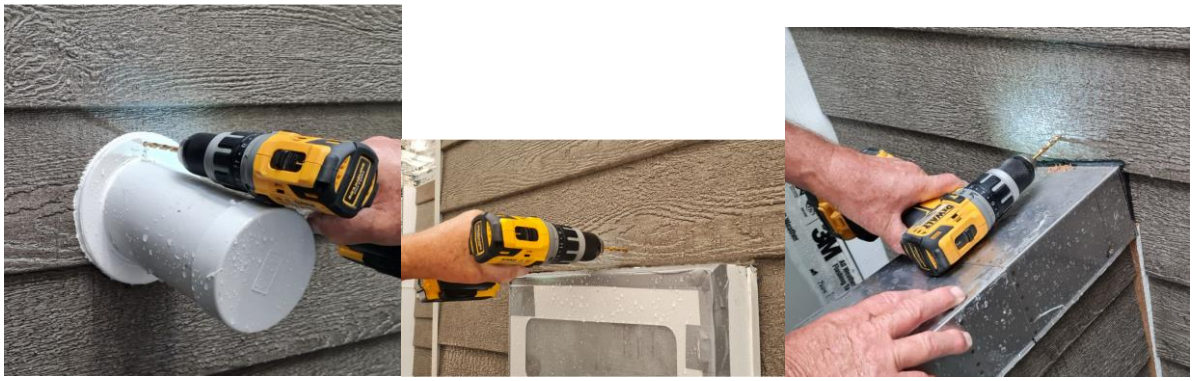

Figure 4: Holes of 6 mm diameter drilled above the pipe penetration, meterbox and balustrade/parapet capping

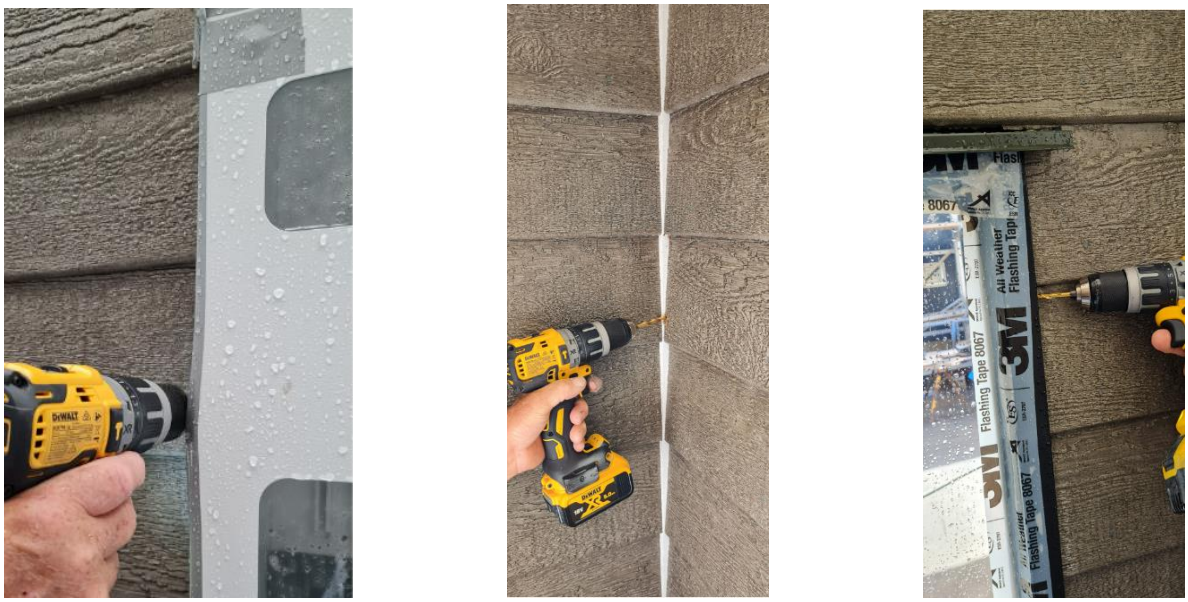

Figure 5: Holes of 6 mm diameter drilled through the meterbox jamb, the internal corner and the window jamb

Tested by: John Burgess, IANZ Signatory. Checked by: Richard Gibbs

3. Results

E2/VM1 test results	
	Observations
Series 1: Static Water Penetration	
Test Pressure 455 Pa Duration 15 minutes	No water visible. COMPLIES.
Series 1: Cyclic water	
Test Pressure 455 – 910 Pa Duration 5 minutes	No water visible. COMPLIES.
Series 2: Water management tests. Static water penetration	
Test Pressure 455 Pa Duration 15 minutes	No water visible. COMPLIES.
Series 2: Water management tests. Cyclic water penetration	
Test Pressure 227 to 455 Pa, then 455 – 910 Pa Duration 5 minutes	No water visible. COMPLIES.
Series 3: Wetwall test Static water penetration	
Test Pressure: 50 Pa Duration: 15 minutes	No water visible. COMPLIES.

The system complied with the requirements, being the Class 2 E2/VM1 method.

Note: Details of the construction are included in the drawings following. These were prepared after the test, and the client has verified that they match the system tested.

Lab operates according to ISO17025.

All queries should be directed to the organisation named on the report.

John Burgess
IANZ Authorised signatory

6 September 2022
IANZ accreditation number 1091 for testing, including E2/VM1.

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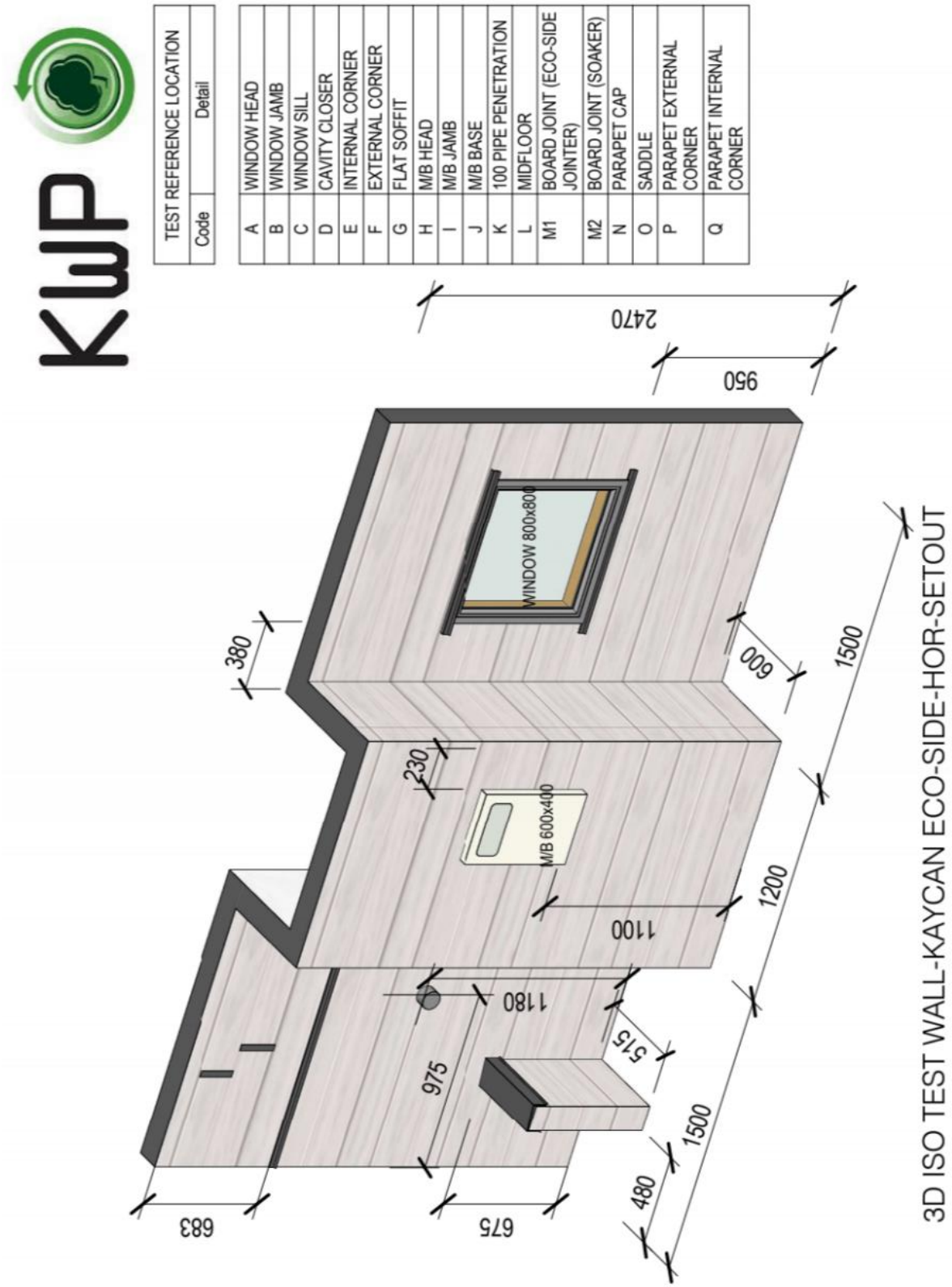
4. Drawings



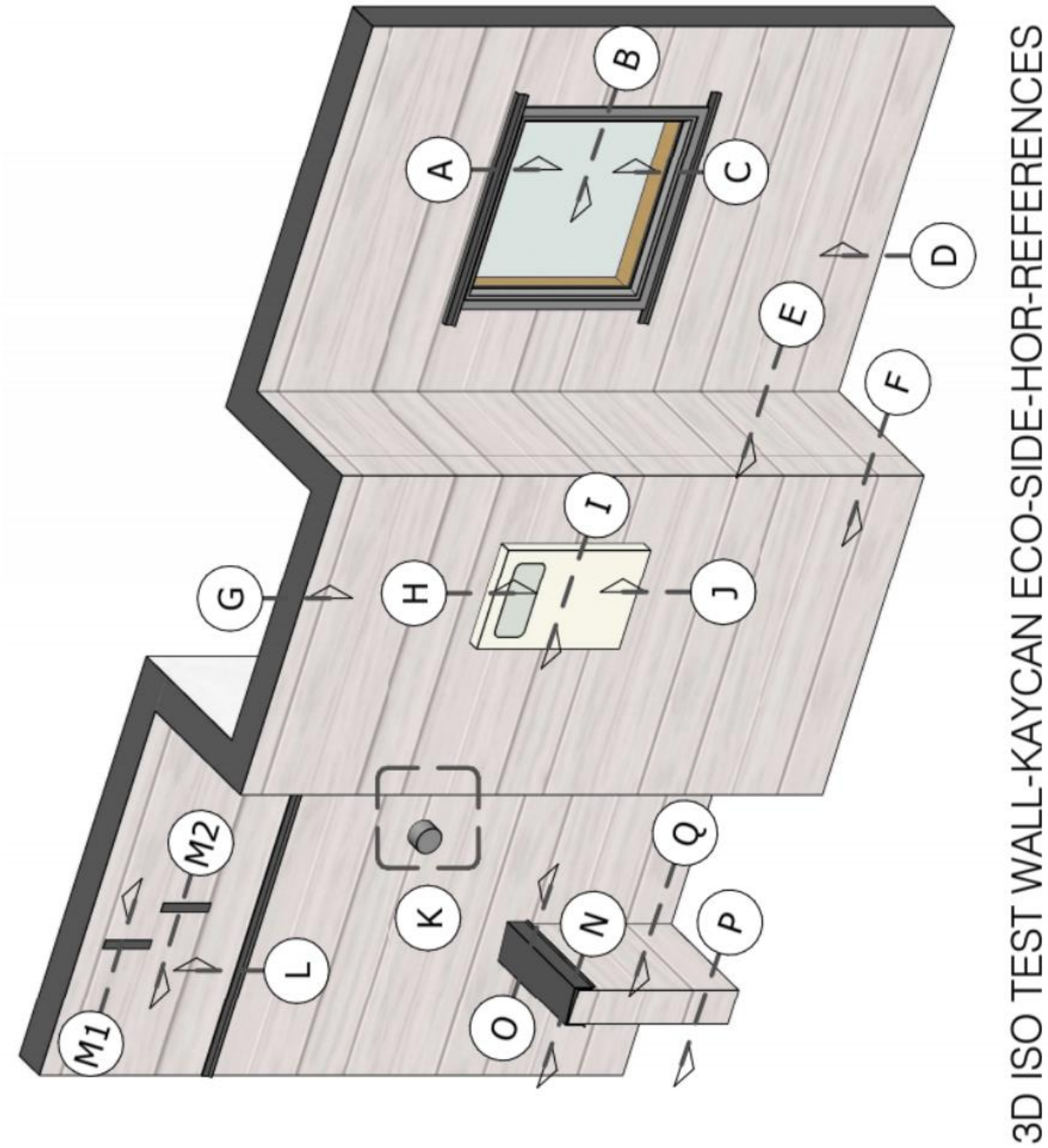
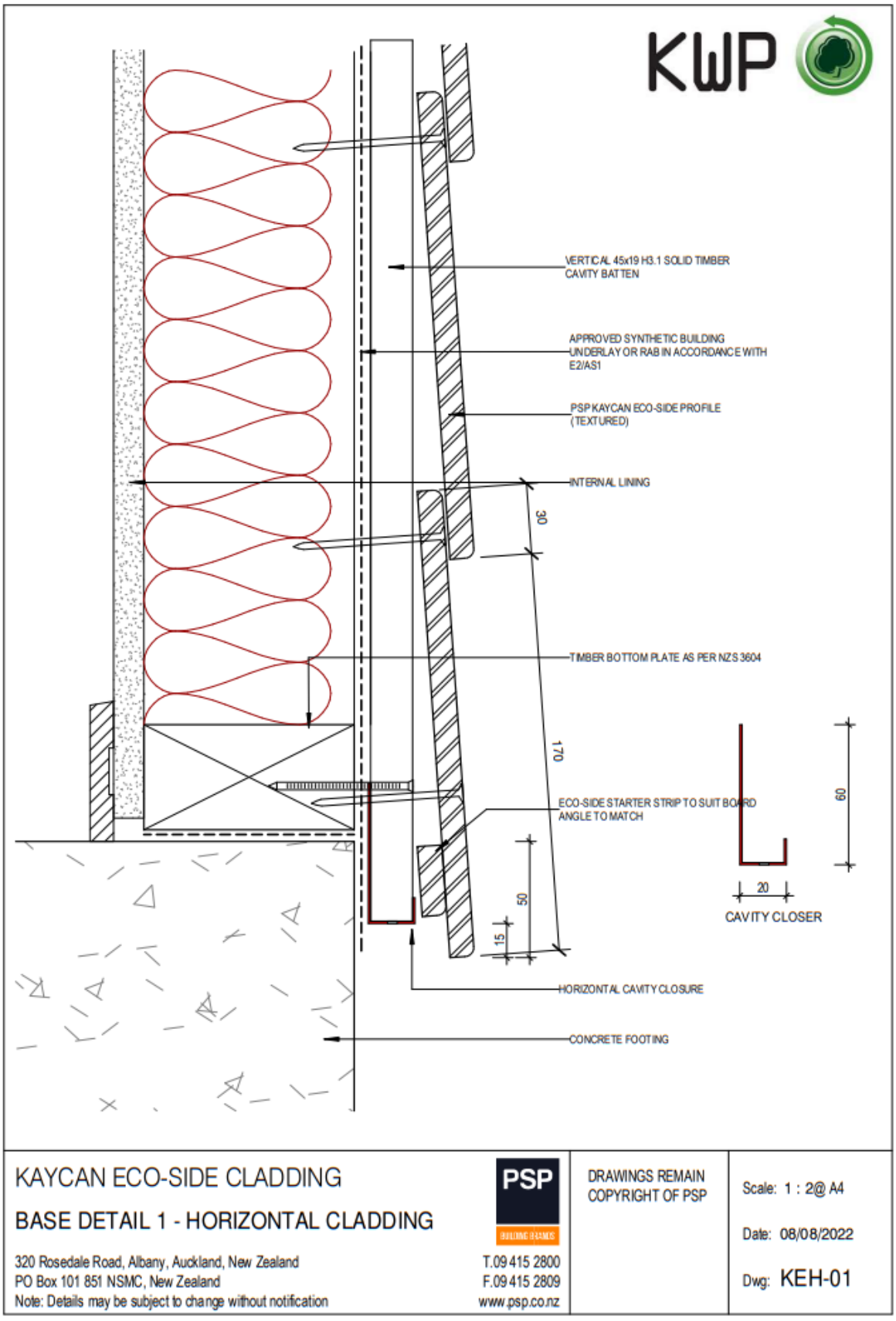


Figure 6: Exterior face of system showing detail identifiers



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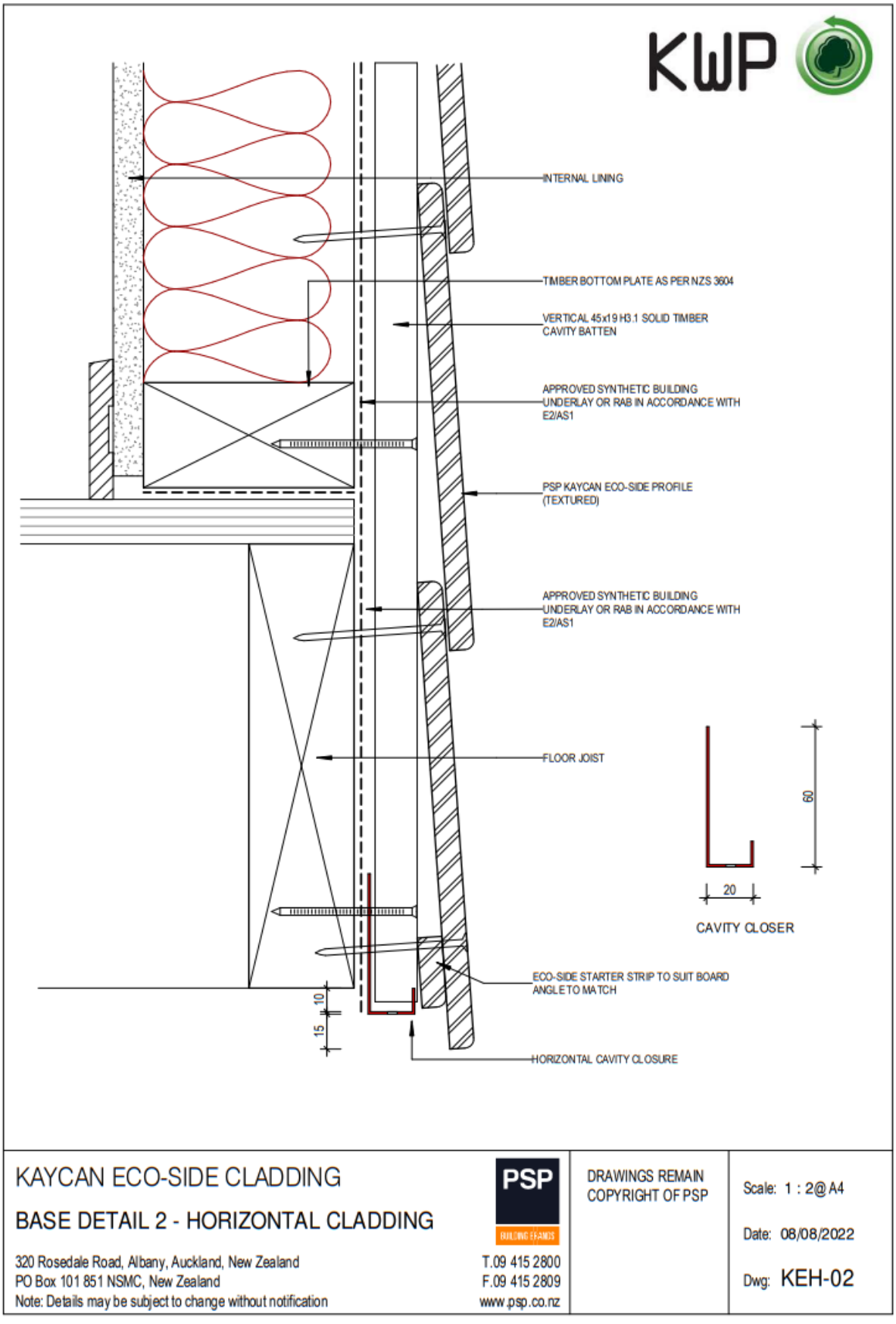

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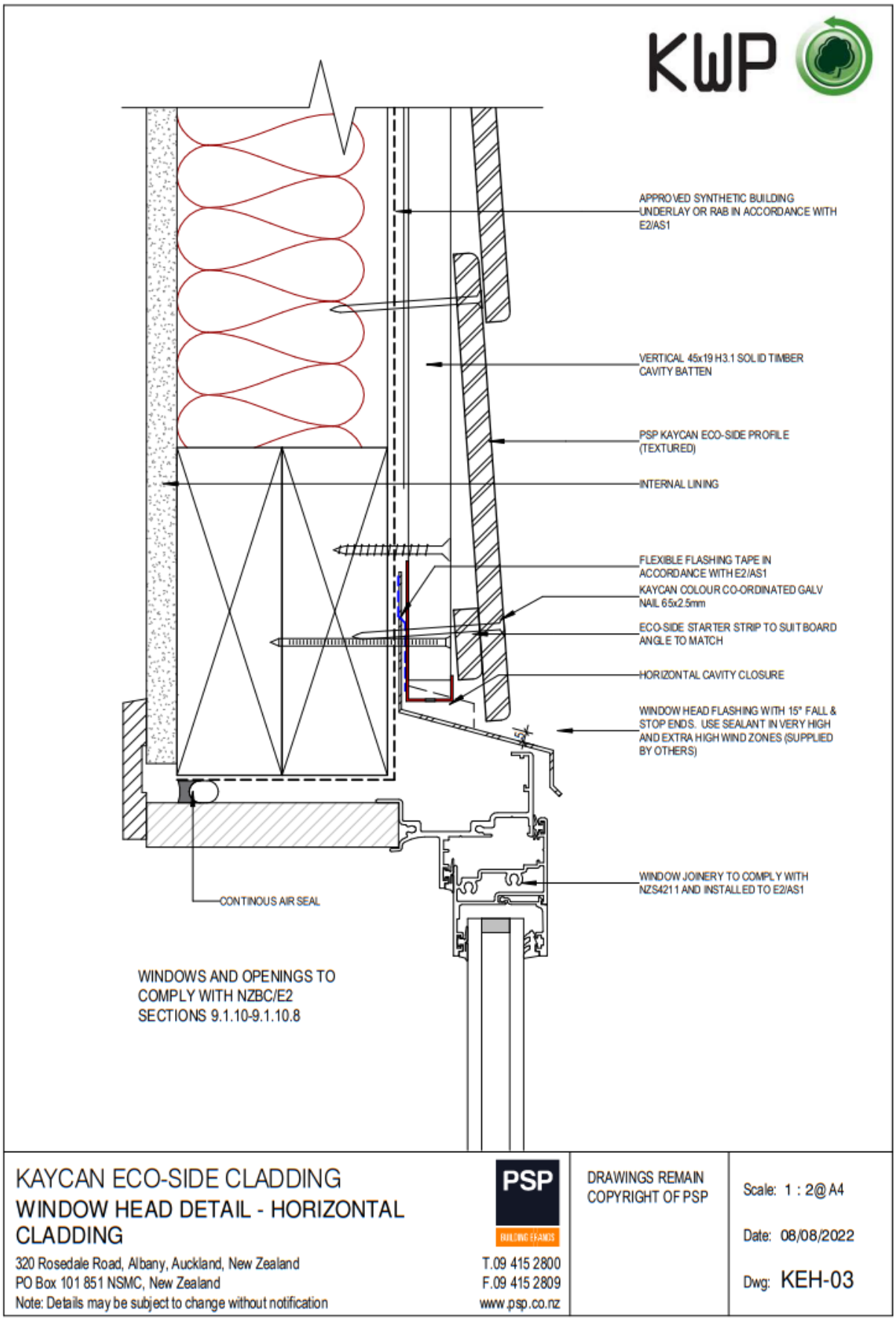

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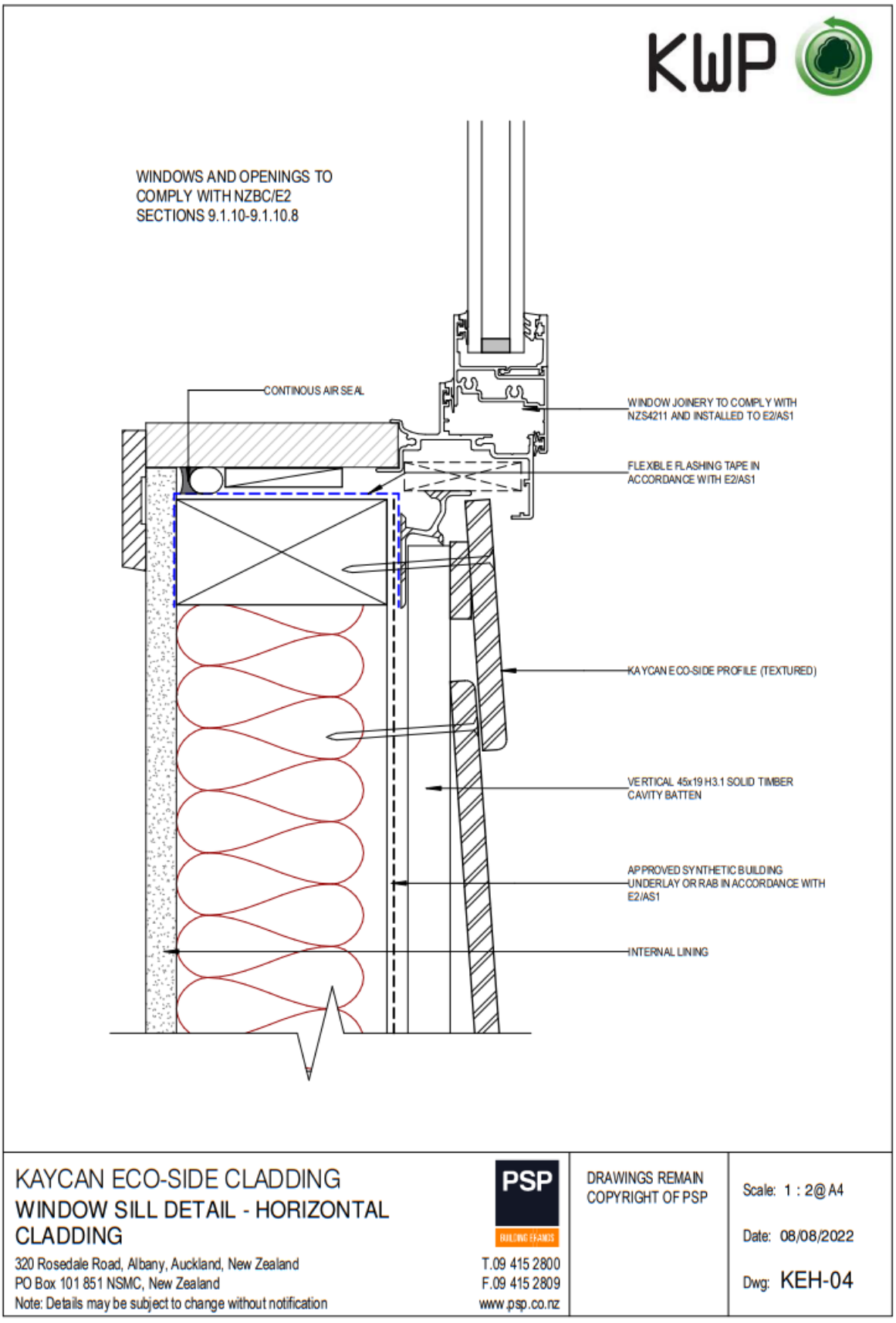

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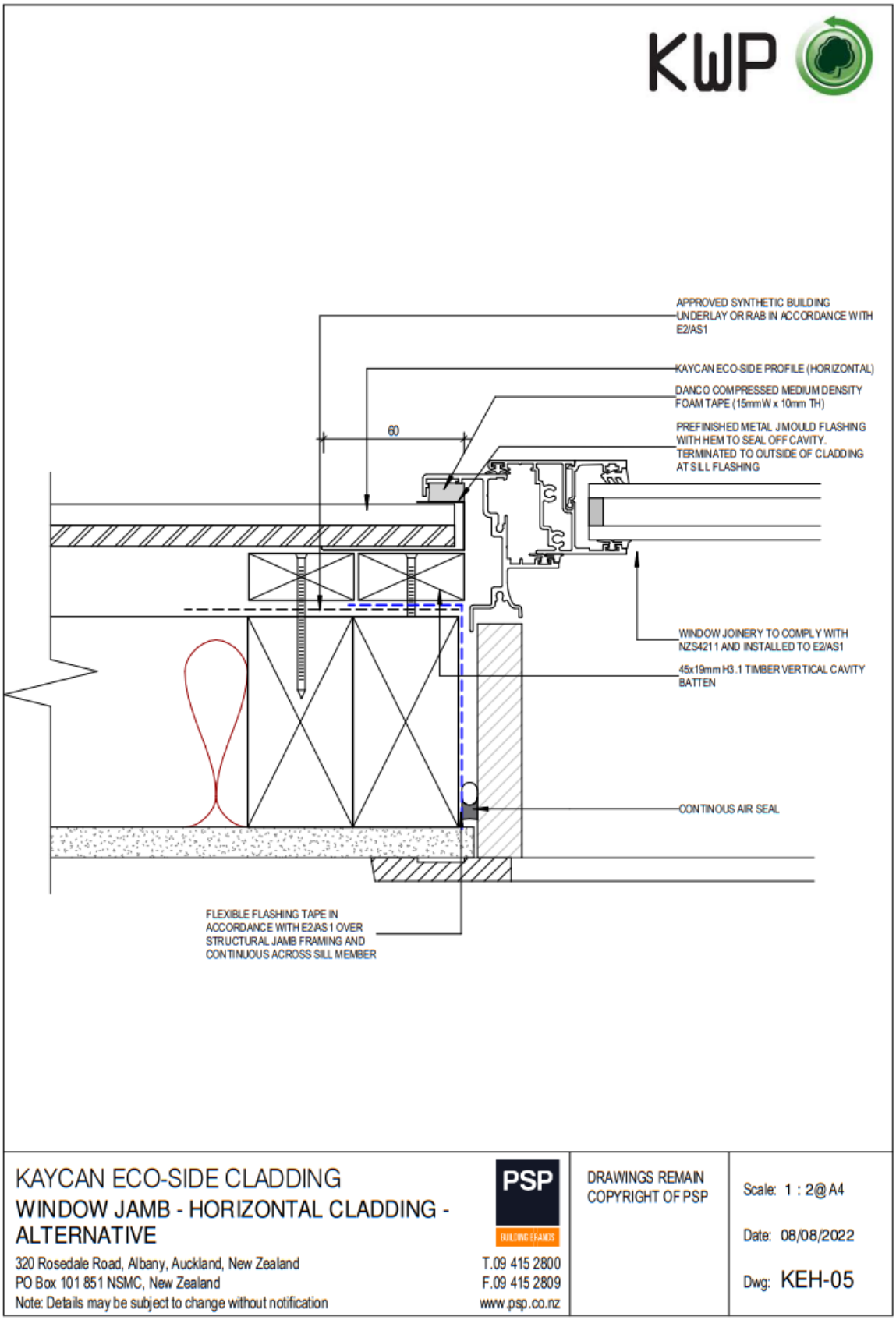

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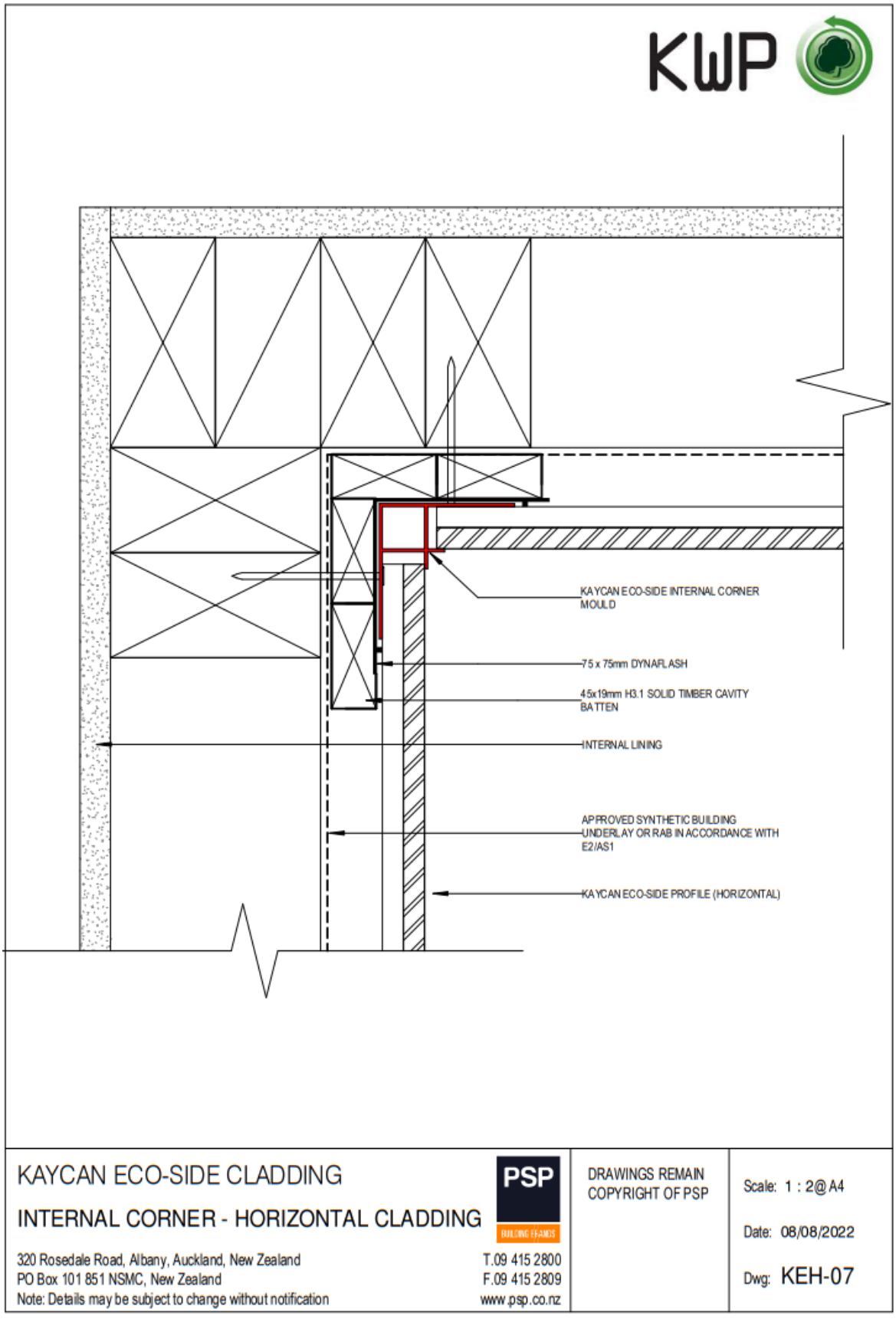

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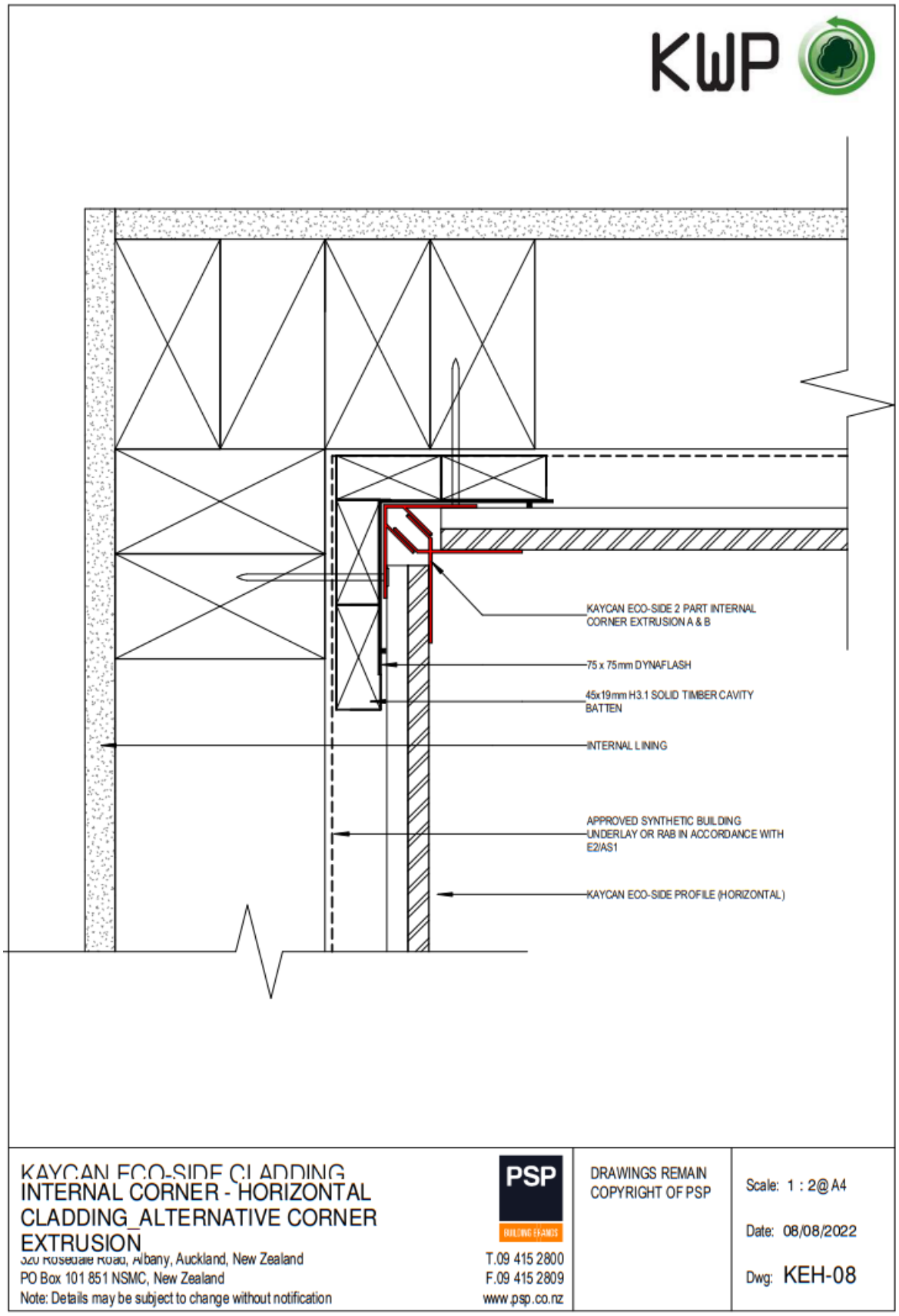

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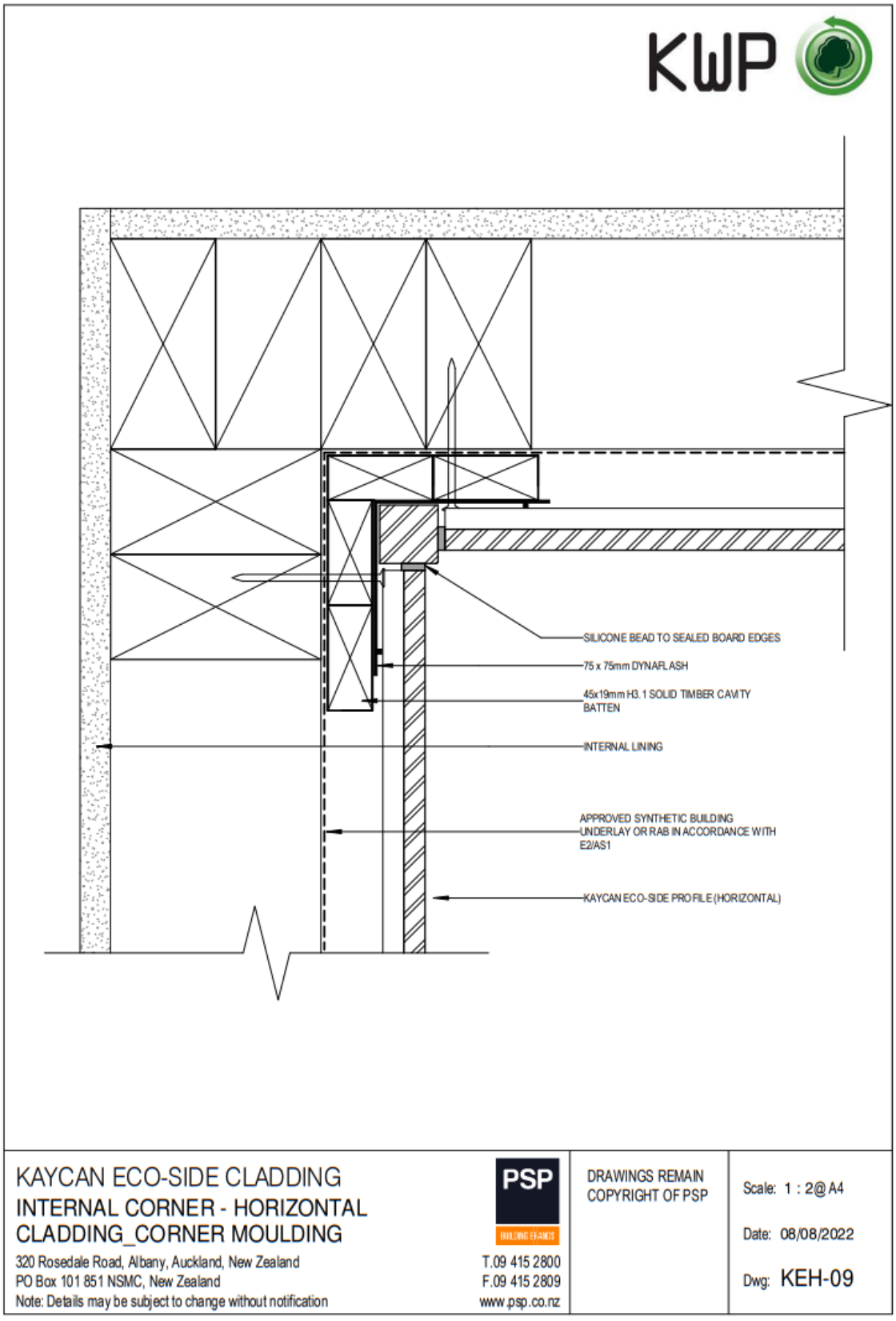

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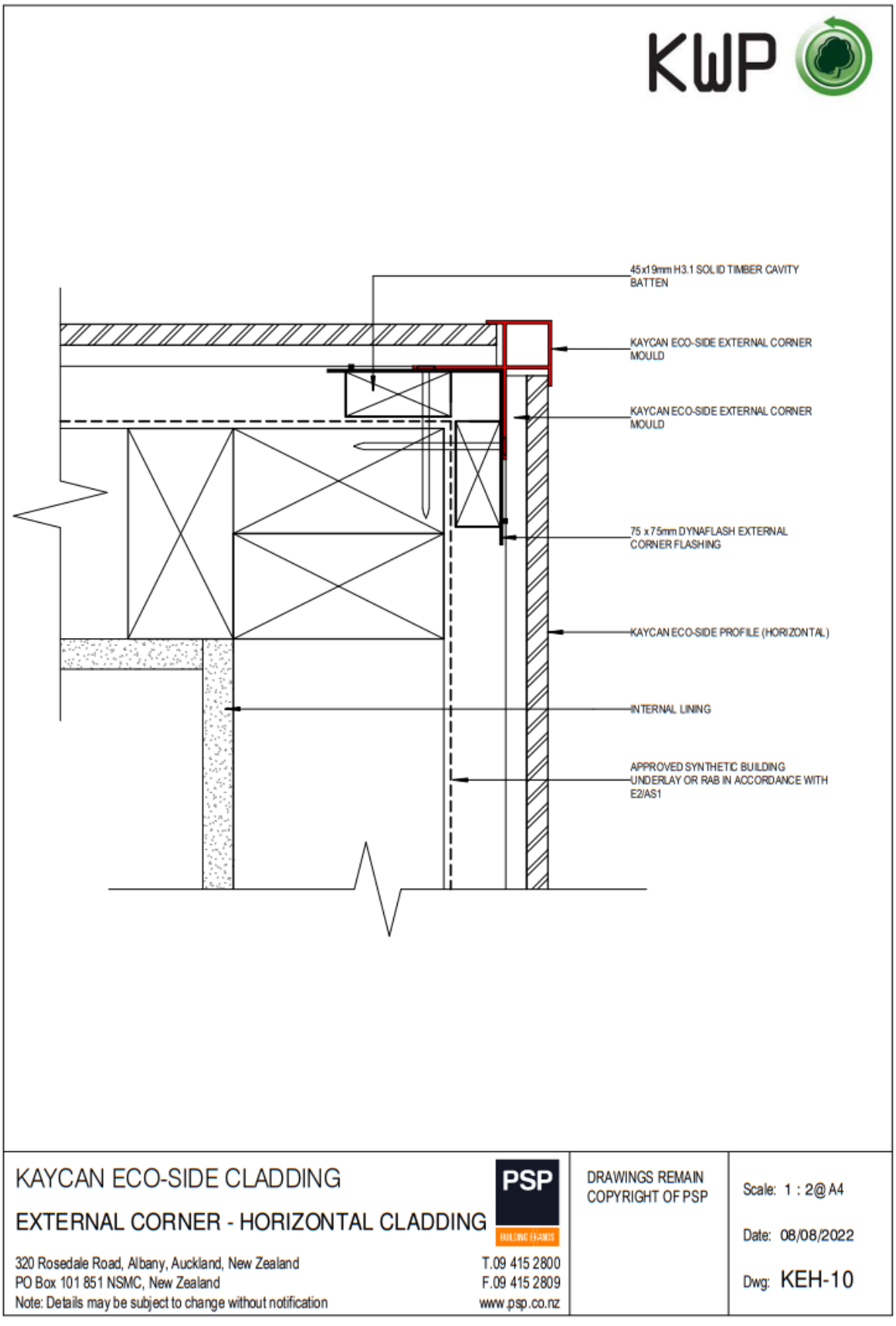

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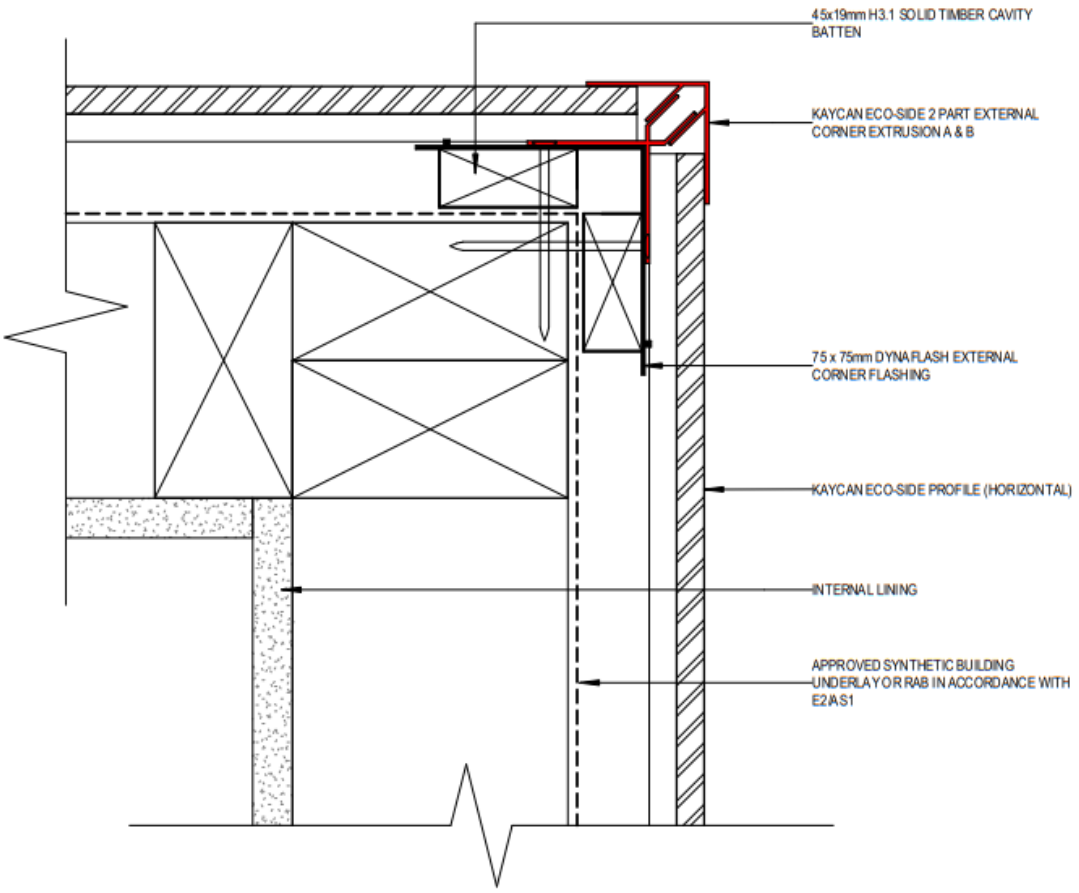
KWP



KAYCAN ECO-SIDE CLADDING
EXTERNAL CORNER - HORIZONTAL CLADDING_ALTERNATIVE CORNER EXTRUSION

320 Rosedale Road, Albany, Auckland, New Zealand
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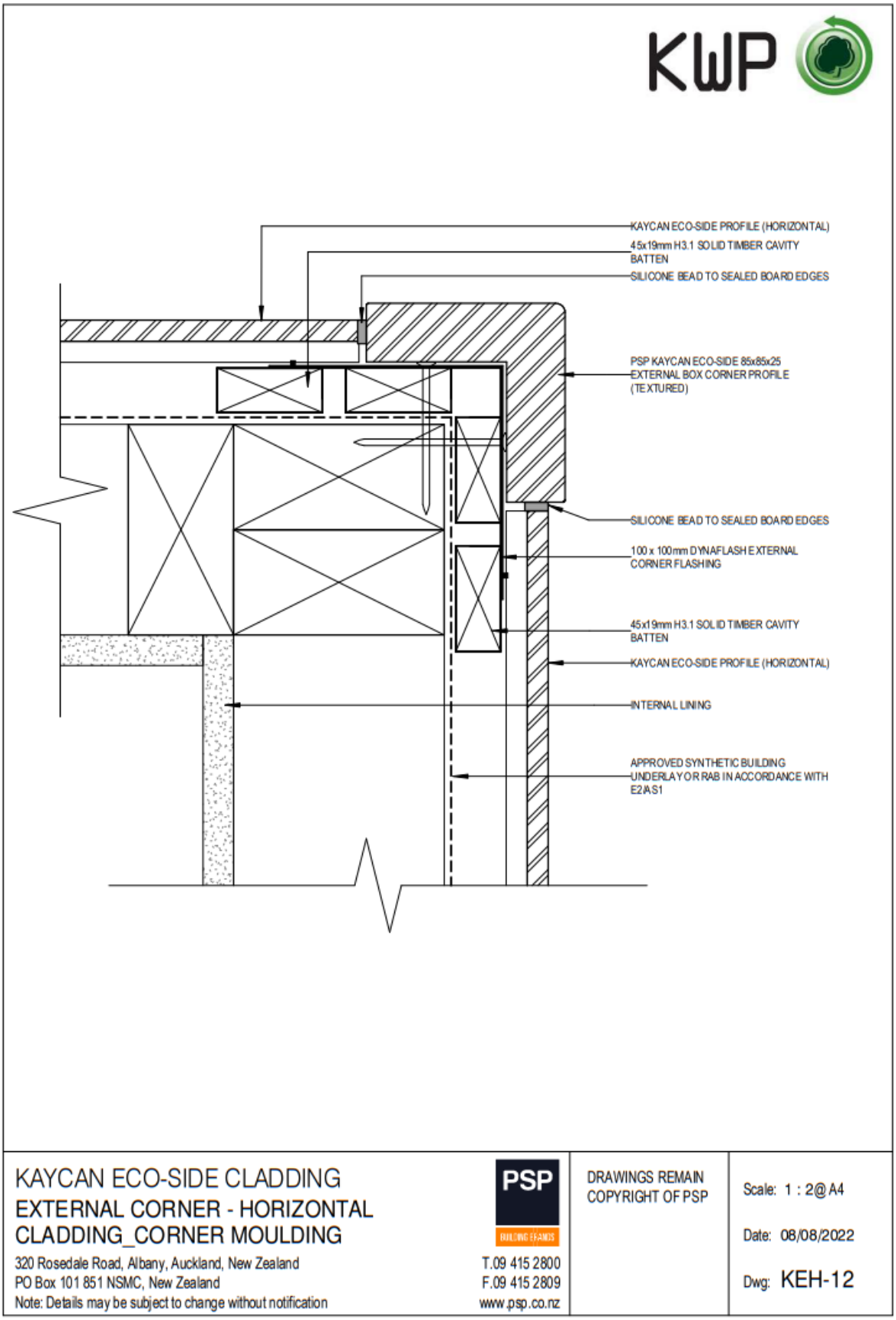

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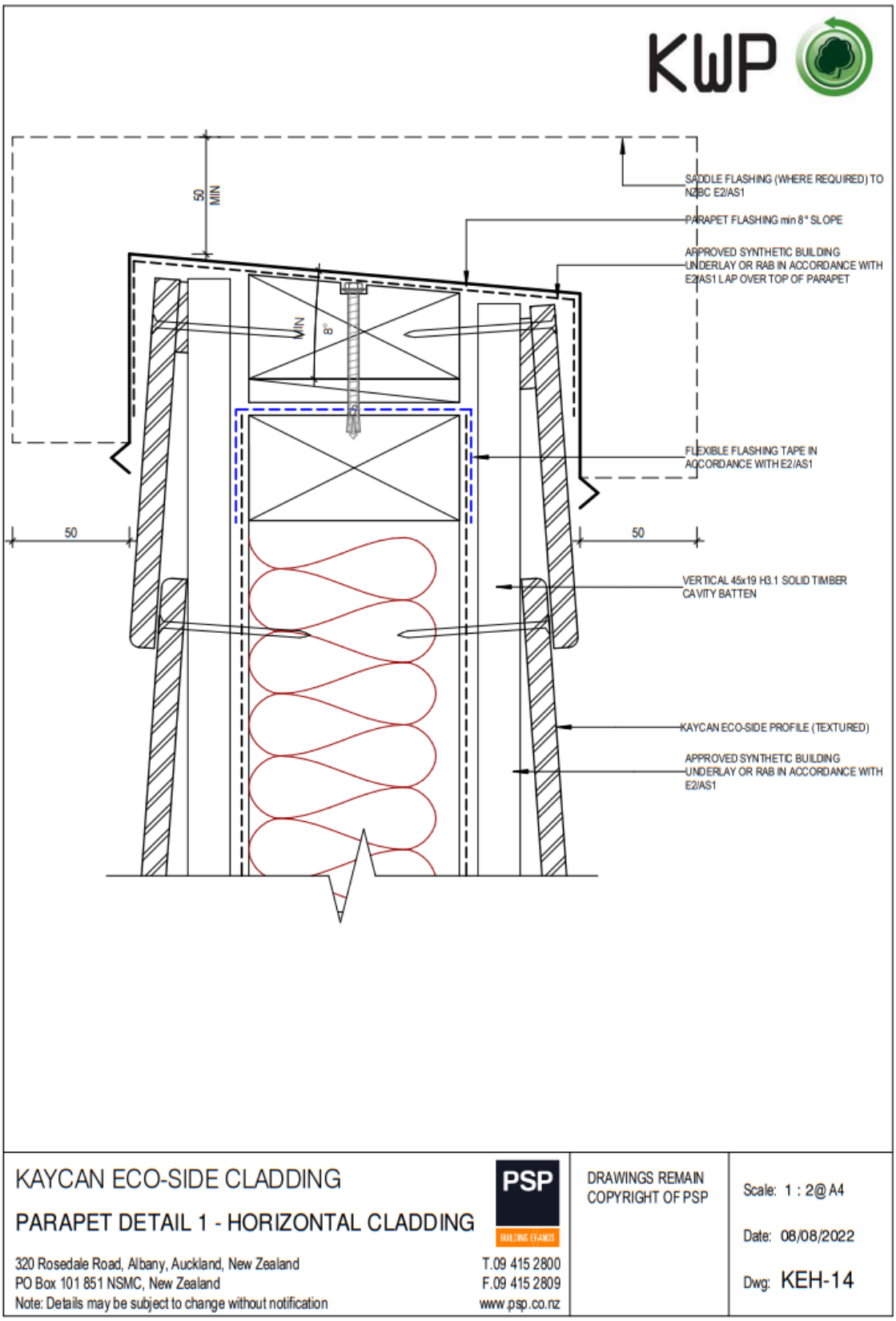

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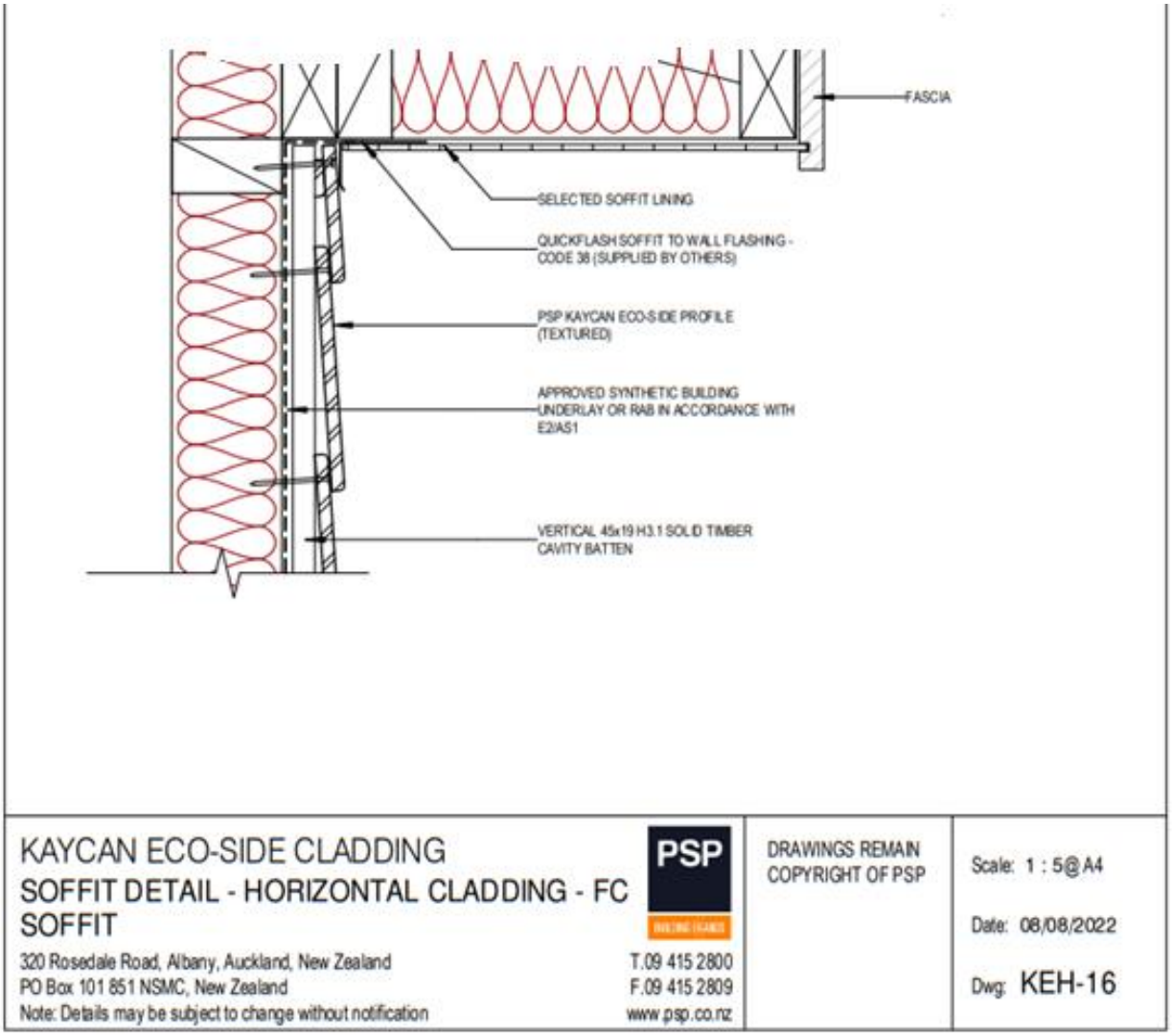

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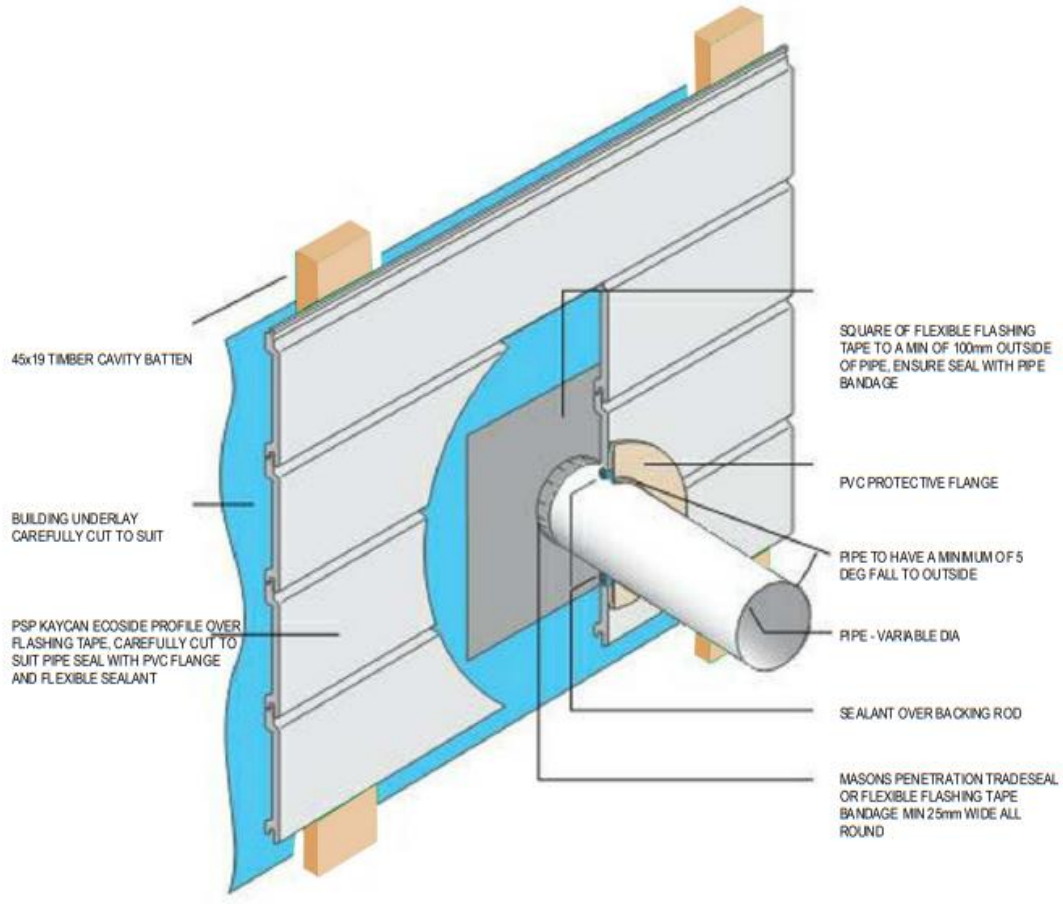

KAYCAN ECO-SIDE CLADDING

PIPE PENETRATION - HORIZONTAL CLADDING

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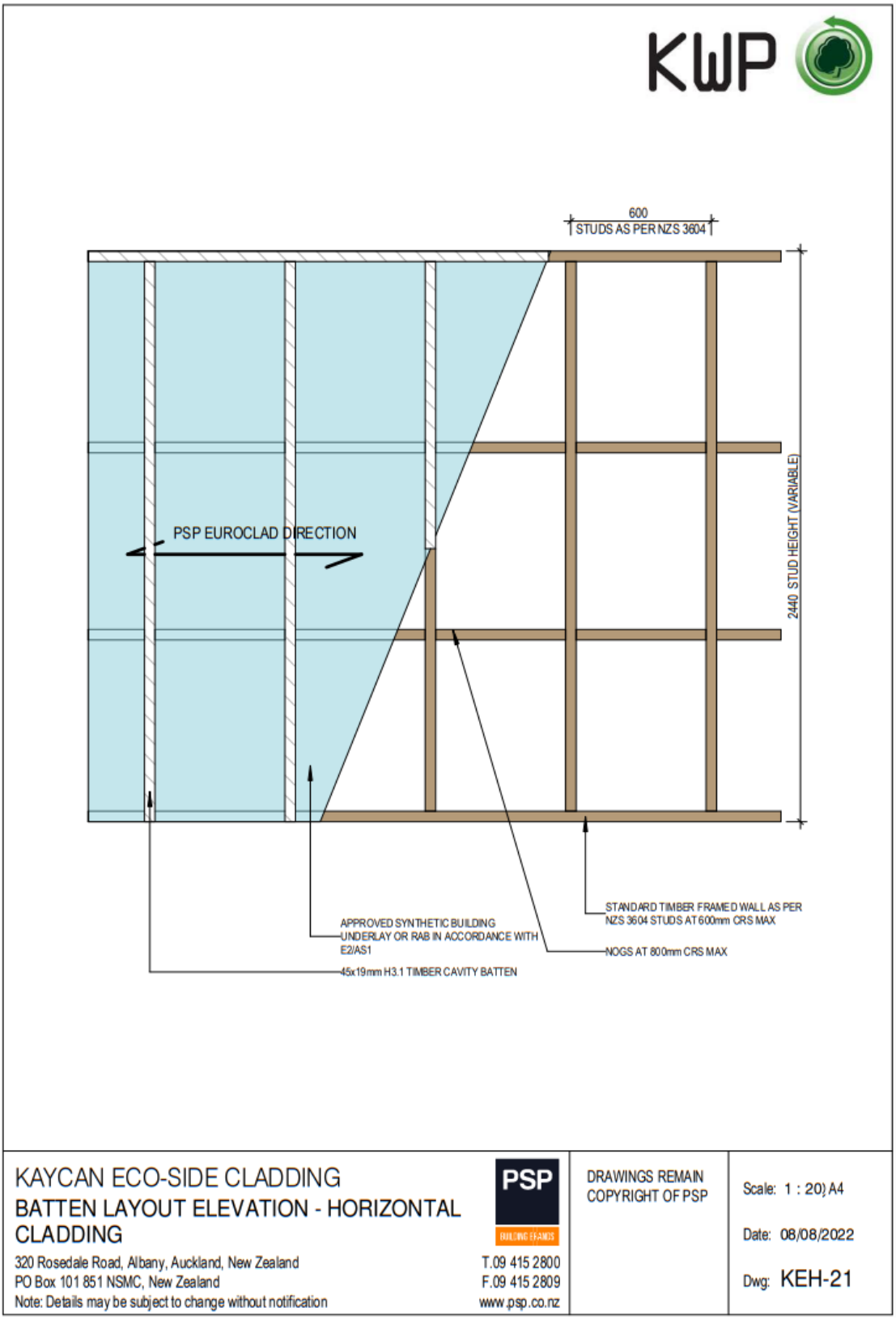

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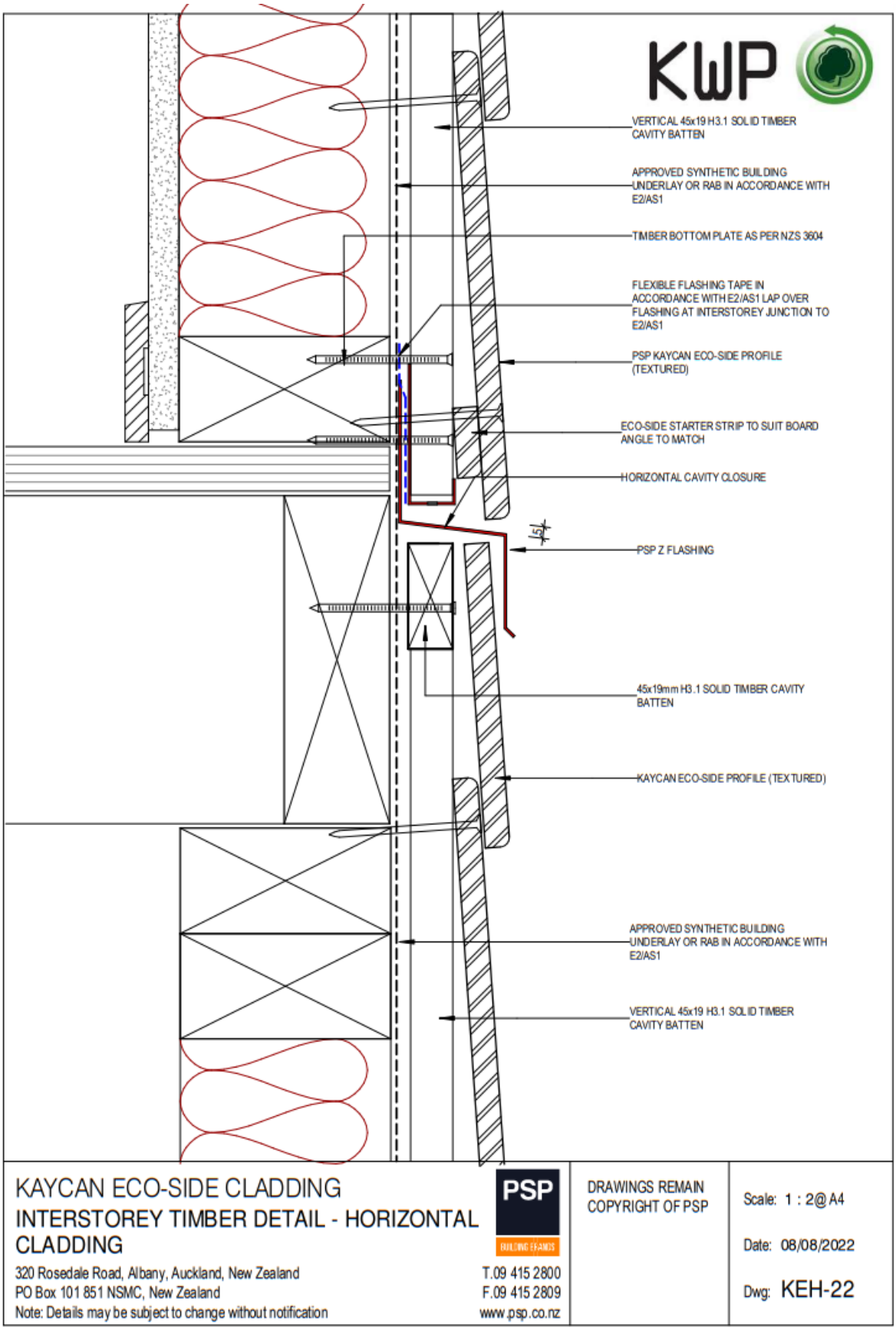

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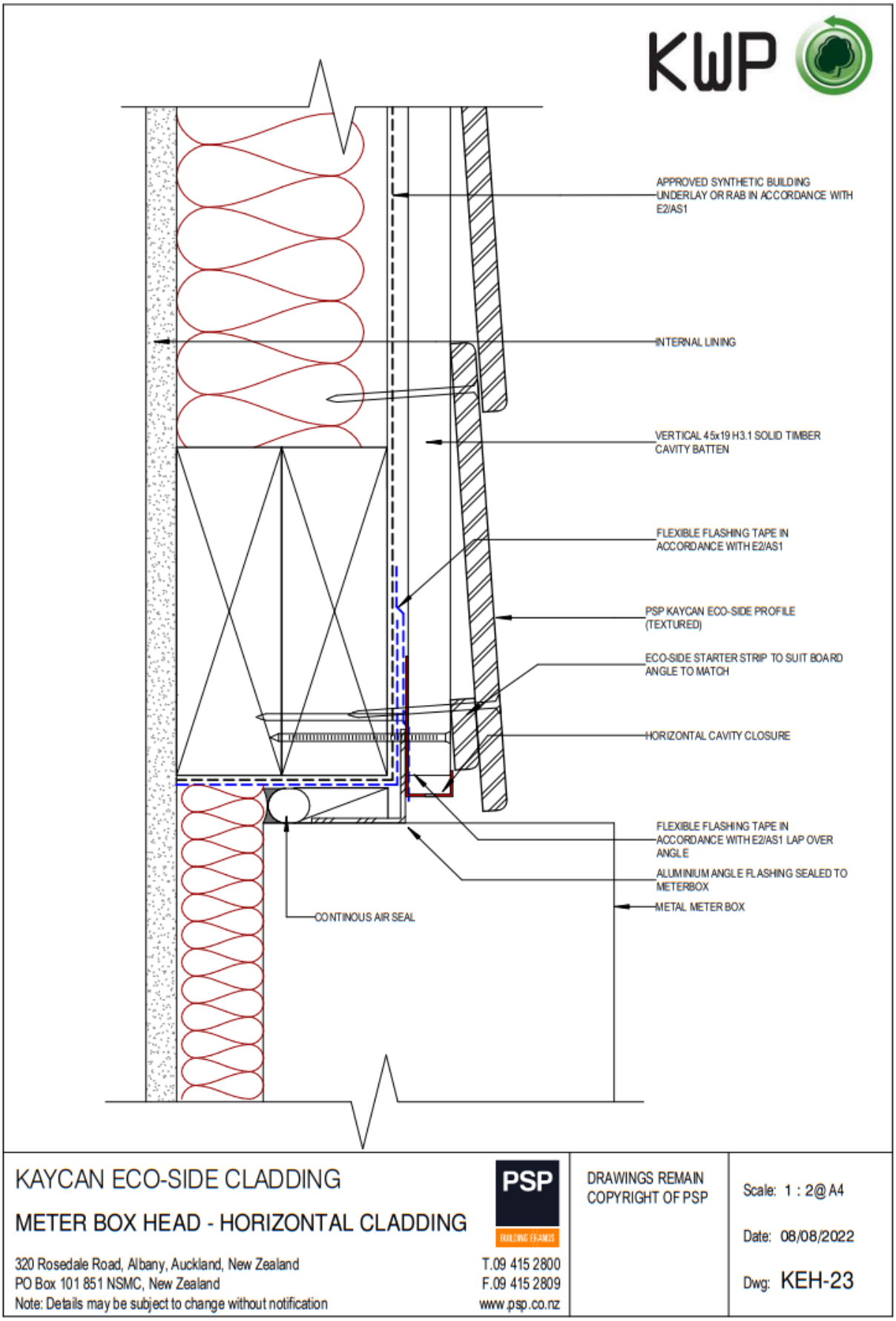

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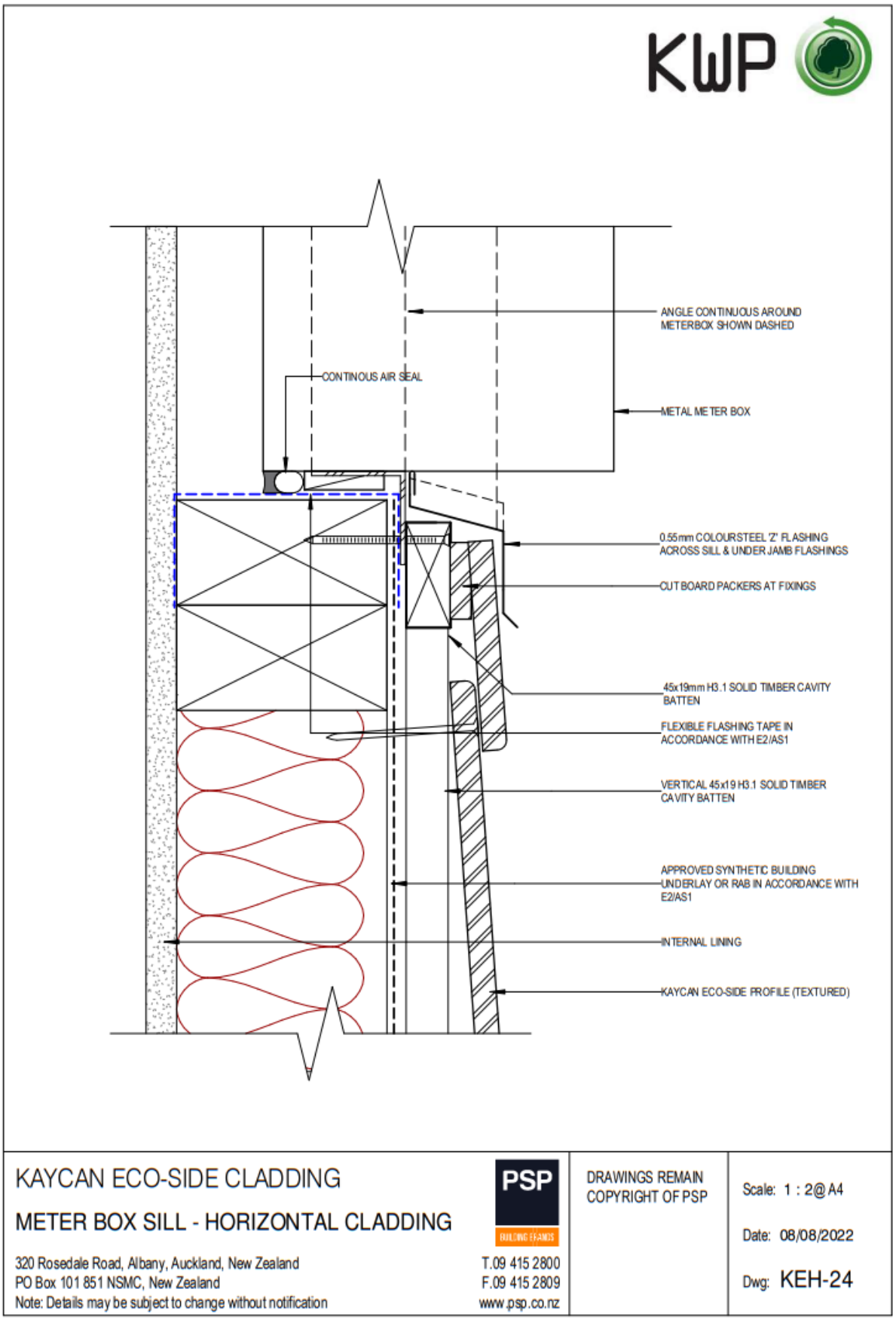

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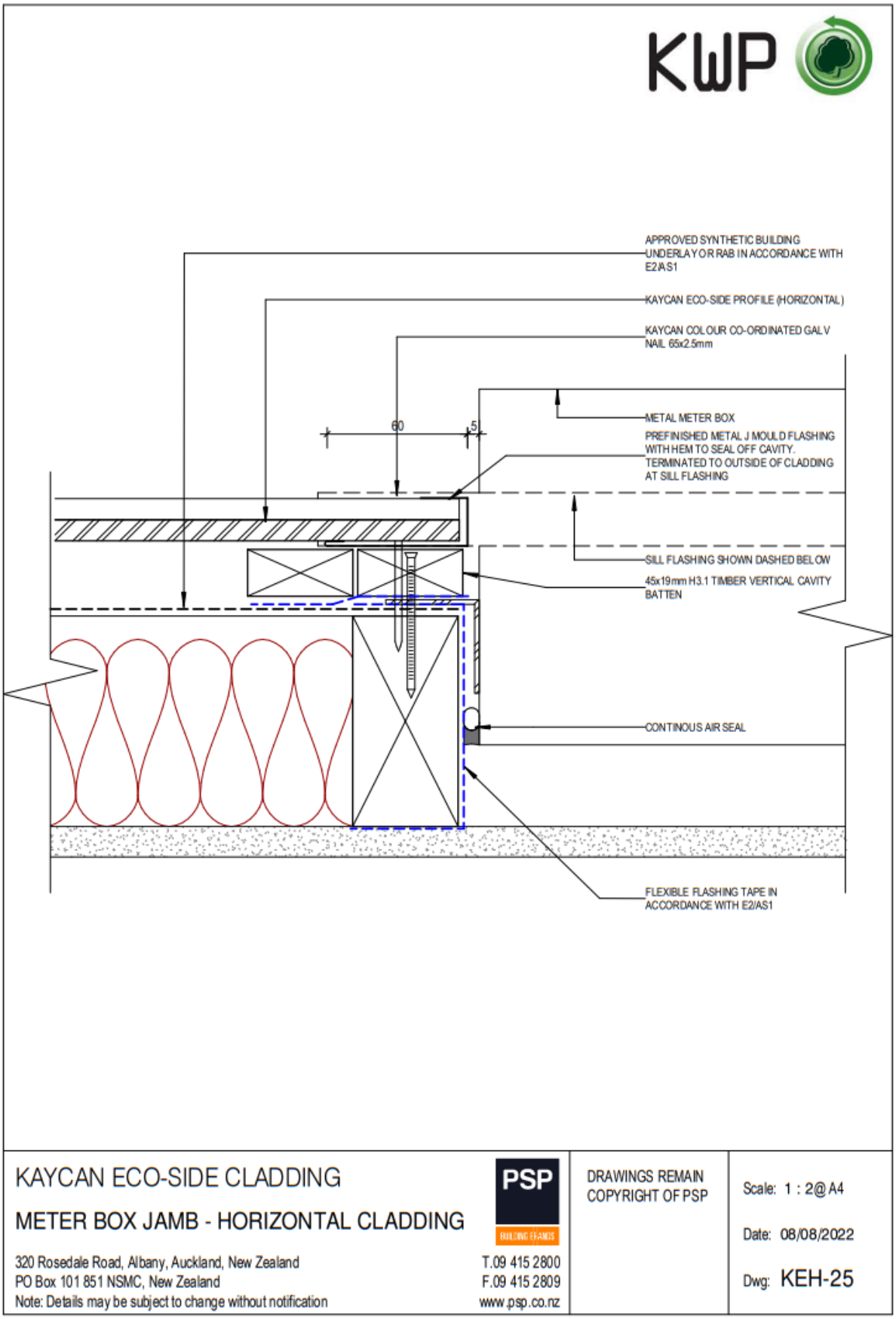

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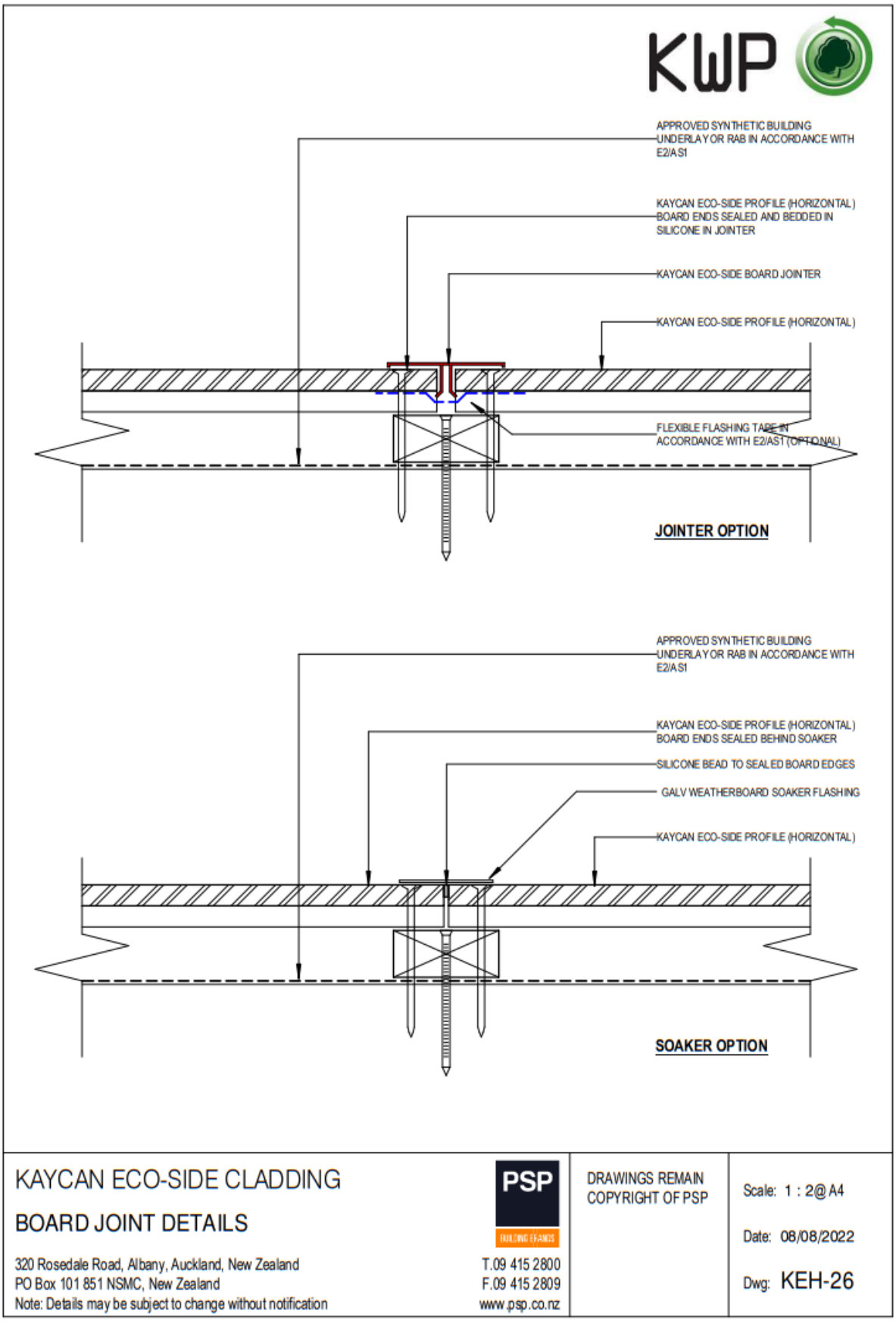

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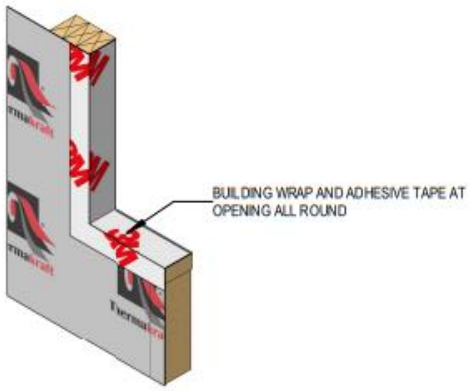
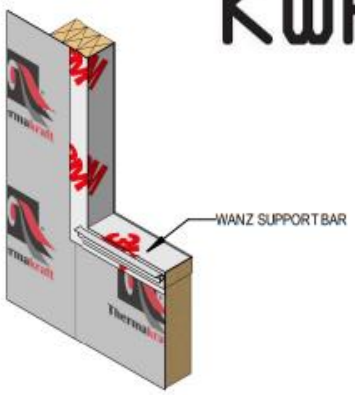


3D Jamb Flashing Stage 1



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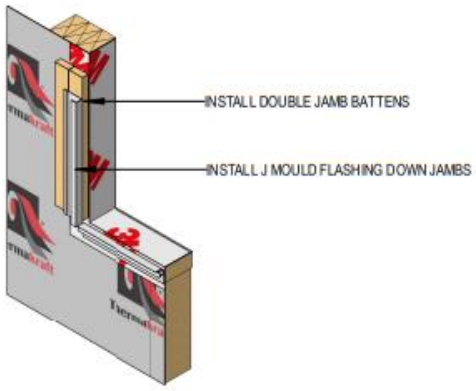

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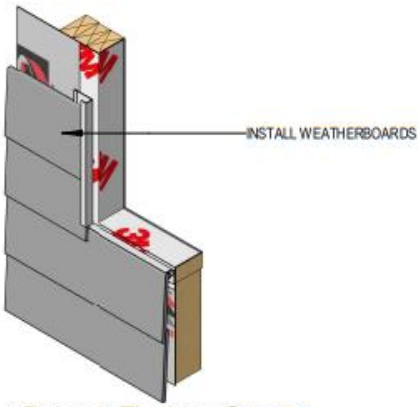
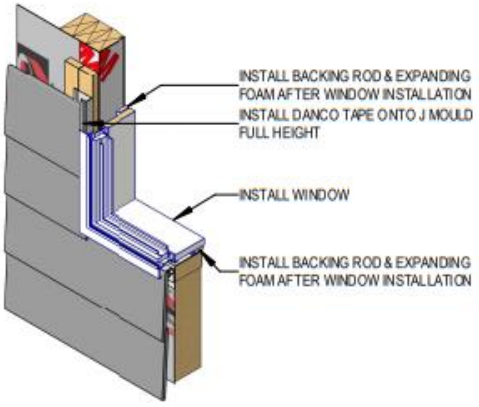


3D Jamb Flashing Stage 4



3D Jamb Flashing Stage 5

KAYCAN ECO-SIDE CLADDING
WINDOW JAMB/SILL FLASHING INSTALLATION SEQUENCE

PSP BUILDING FRAMES

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