

Project Documentation Gebäude-Dokumentation

Abstract | Zusammenfassung



Taupaki House in Auckland, New Zealand

Data of building | Gebäudedaten

Year of construction Baujahr	2024	Space heating Heizwärmebedarf	11.9 kWh/(m²a)
U-value external wall U-Wert Außenwand	0.287 W/(m ² K)		
U-value basement U-Wert Kellerdecke	0.538 W/(m ² K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	34 kWh/(m ² a)
U-value roof U-Wert Dach	0.136 W/(m ² K)	Generation of renewable Energy Erzeugung erneuerb. Energie	0 kWh/(m ² a)
U-value window U-Wert Fenster	1.5 W/(m ² K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	83 kWh/(m ² a)
Heat recovery Wärmerückgewinnung	88 %	Pressurization test n ₅₀ Drucktest n ₅₀	0,6 h ⁻¹
Special features Besonderheiten	Sonnenkollektoren für die Warmwasserbereitung, Grauwasser-Wärmerückgewinnung, Regenwassernutzung		

Brief Description

Passive House Taupaki, Auckland

Located on a rural site, in north west Auckland, this is a single family home.

A simple single storey structure, constructed of timber framing, and using timber windows.

Views are to the south, to which the building has glazing, which assisted in mitigating the overheating concern.

Airtightness is achieved simply on the inside within this simple form.

Responsible project participants Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	Marc Lithgow, Space Division http://www.spacedivision.com
Implementation planning Ausführungsplanung	
Building systems Haustechnik	
Structural engineering Baustatik	Sullivan Hall Engineers
Building physics Bauphysik	Marc Lithgow, Space Division http://www.spacedivision.com
Passive House project planning Passivhaus-Projektierung	Sustainable Engineering
Construction management Bauleitung	Rusa Construction

Certifying body Zertifizierungsstelle

Passivhaus Institut Darmstadt
www.passiv.de

Certification ID Zertifizierungs ID

7570

Project-ID (www.passivehouse-database.org)
Projekt-ID (www.passivhausprojekte.de)

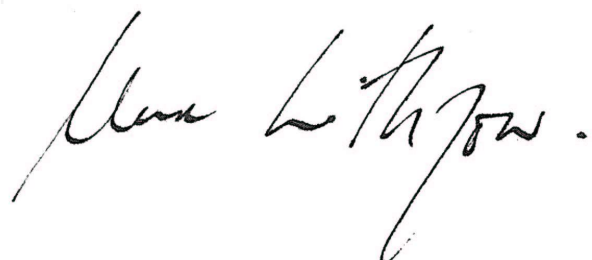
Author of project documentation Verfasser der Gebäude-Dokumentation

Passivhaus Institut Darmstadt
www.passiv.de

Date
Datum

03.02.2026

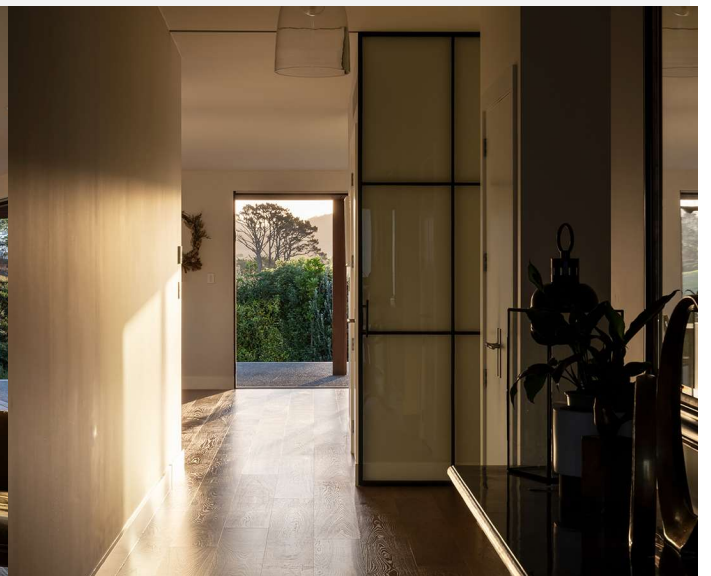
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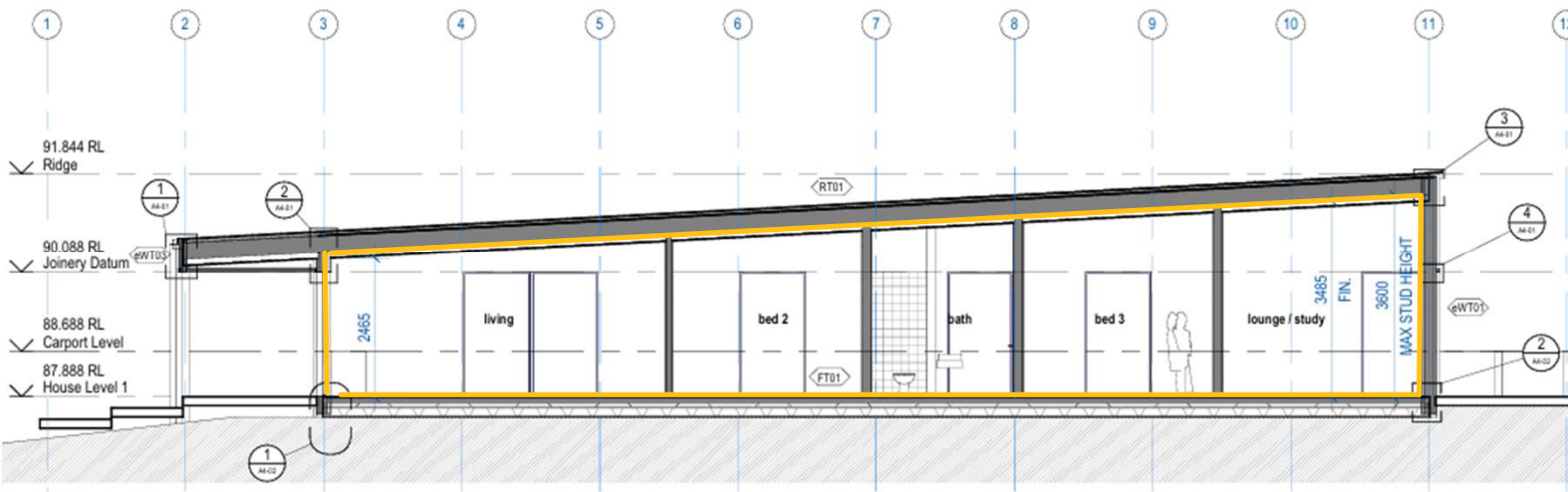
1. Ansichtsfotos



2. Innenfoto exemplarisch

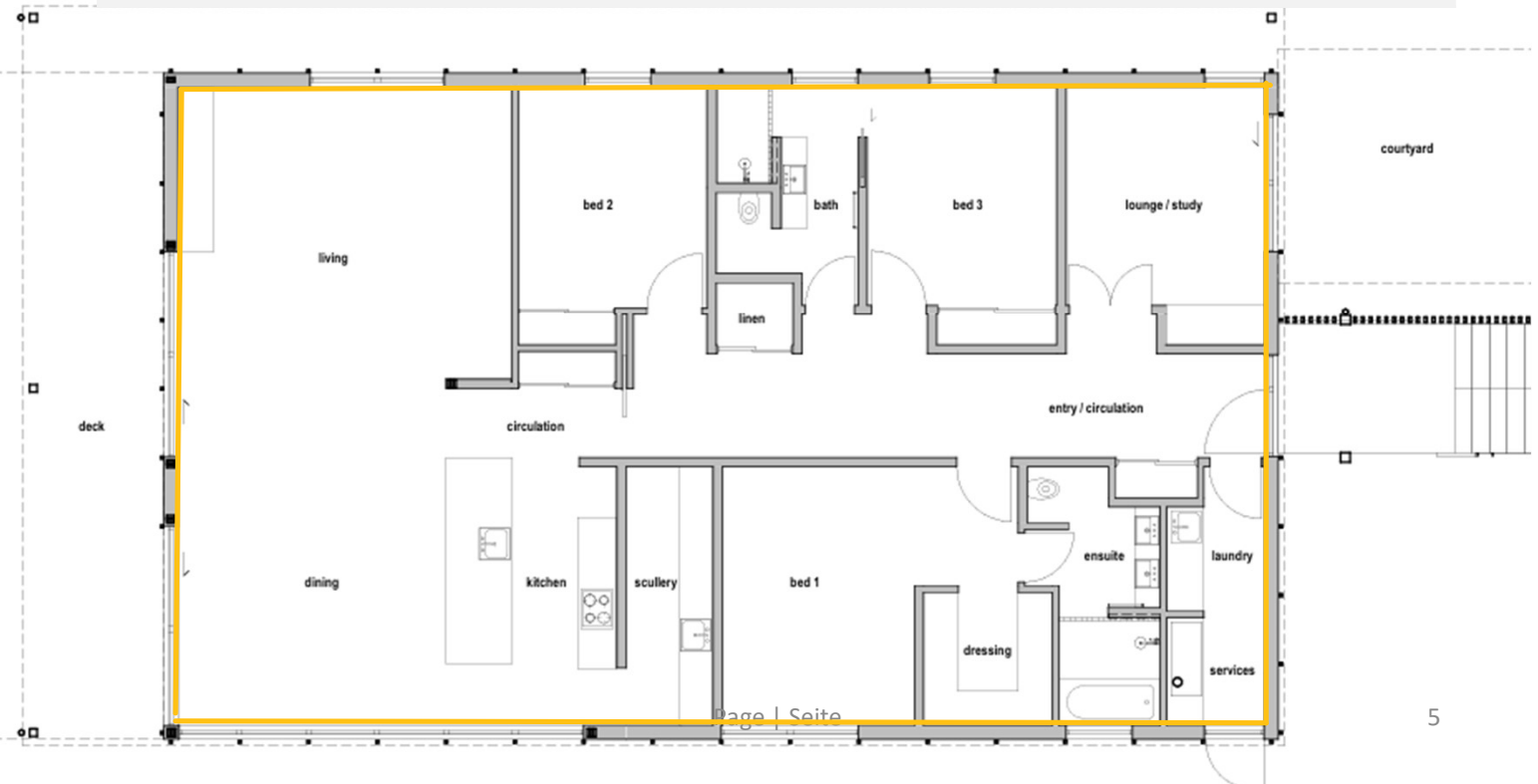


3. Schnittzeichnung

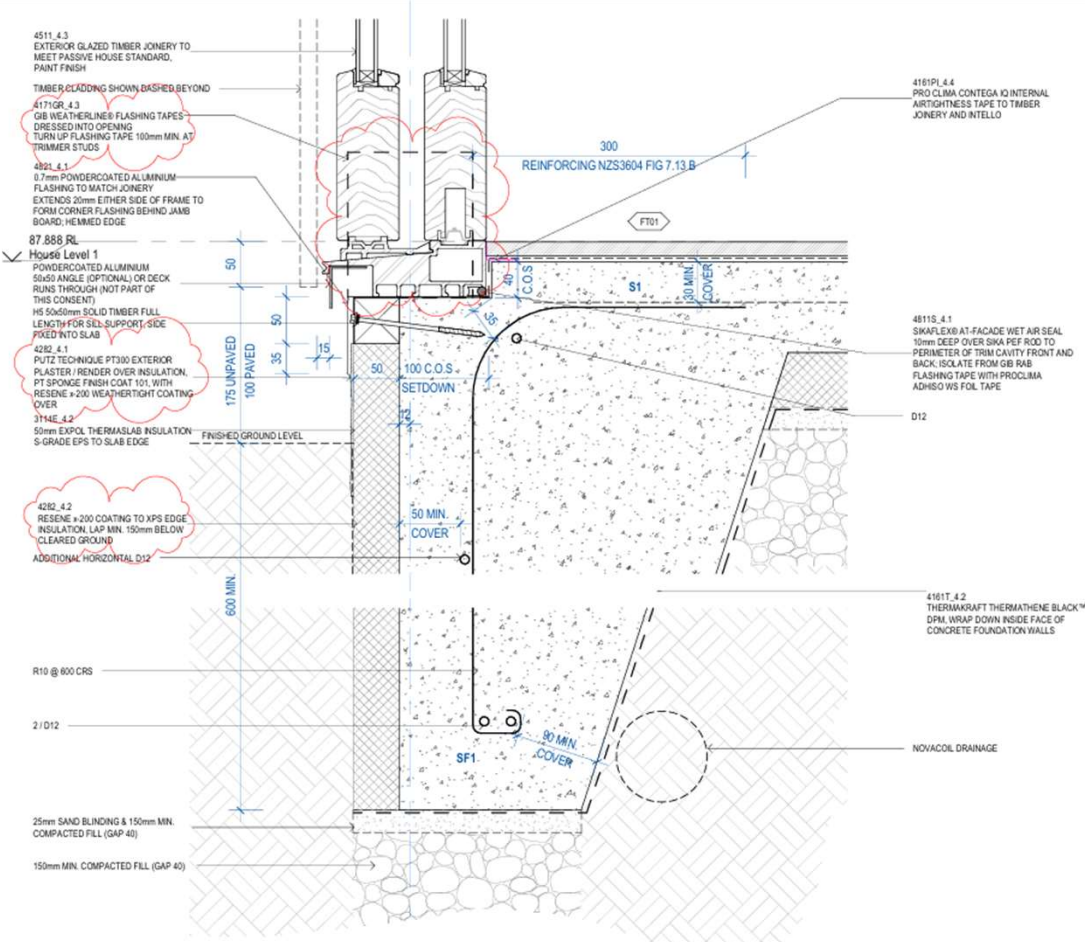


Airtightness was achieved on the internal/warm side.

4. Grundrisse



5. Konstruktion der Bodenplatte

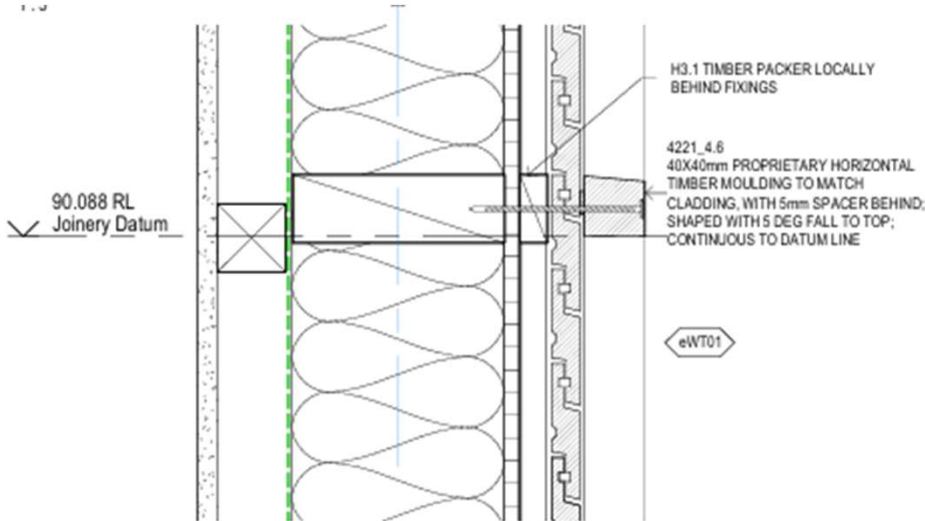


Concrete slab, insulated to the perimeter and underside with EPS.

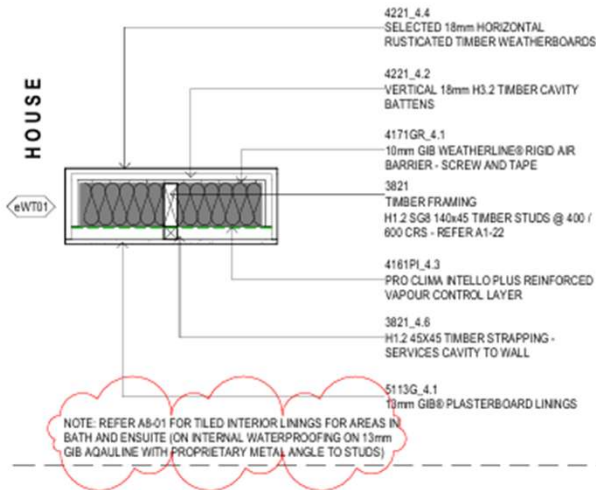
Description of building assembly						Assembly no.	
FT01-Insulated slab						14ud	
Orientation of building assembly (or R_{si})		0.13		Interior insulation?			
Adjacent to (or R_{se})		0		U-value supplement [W/(m²K)]			
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]	
Hardwood	0.180					15	
Separation layer	0.170					3	
Concrete (reinforced)	2.100					100	
EPS ExpolThermaSlabS (S-grade)	0.038					60	
Percentage of sec. 1:	100%	Percentage of sec. 2:		Percentage of sec. 3:			
Heat transmission resistance coefficients						Total thickness [cm]: 17.8	
Interior R_{si} :		0.13		m²K/W			
Exterior R_{se} :		0.00		m²K/W		U-value [W/(m²K)]: 0.538	



6. Konstruktion der Außenwände



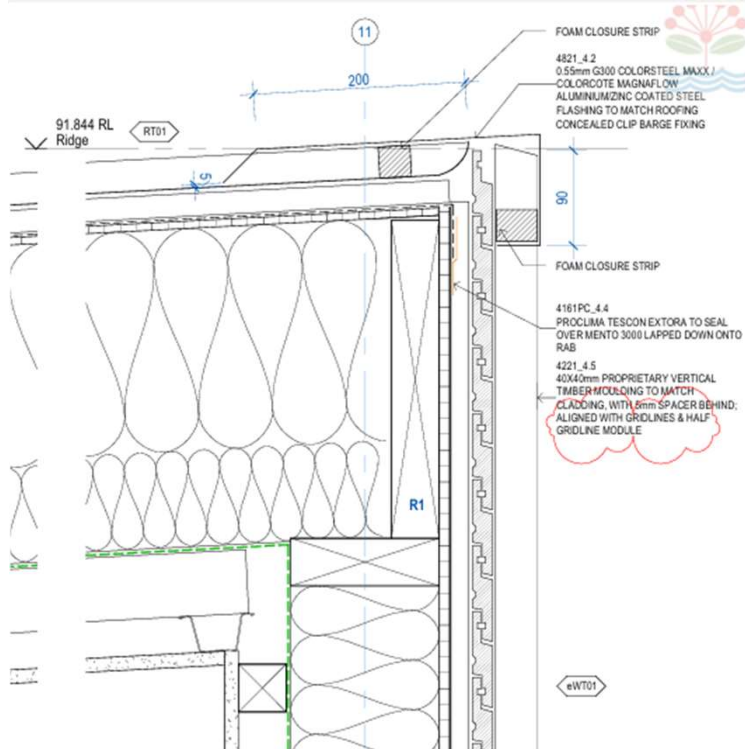
EXTERNAL TIMBER FRAME WALLS 140mm
GLASS WOOL INSULATION 140mm R3.2, FILL FULL DEPTH OF WALL FRAMING CAVITY



150mm timber framed wall, filled with glasswool, airbarrier over.

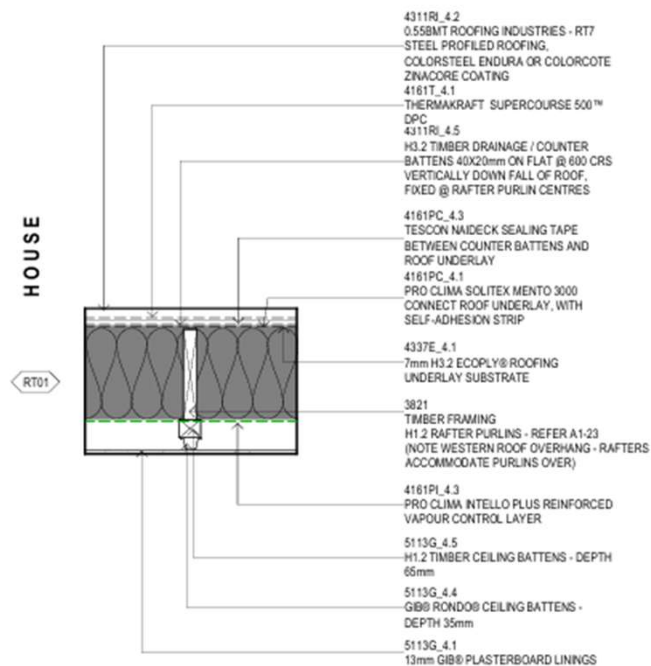
Description of building assembly						Assembly no.	
eWT01-140x45@400cncr						12ud	
Orientation of building assembly (or R _s)				Interior insulation?			
Adjacent to (or R _s)				U-value supplement [W/(m²K)]			
2-Wall		3-Ventilated					
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]	
GIB	0.250					13	
Air	0.244	45x45 Timber @400cnrs	0.130			45	
Intello							
GlassfibreKnauf WallR3.6@140mm	0.039	140x45 Timber@400cnrs	0.130			140	
GIB Weatherline	0.250					10	
Cavity							
Percentage of sec. 1:	89%	Percentage of sec. 2:	11.3%	Percentage of sec. 3:			
Heat transmission resistance coefficients						Total thickness [cm]:	
Interior R _{si} :		0.13		m²K/W		20.8	
Exterior R _{se} :		0.13		m²K/W		U-value [W/(m²K)]:	
						0.287	

7. Konstruktion des Daches



Insulation - Roof

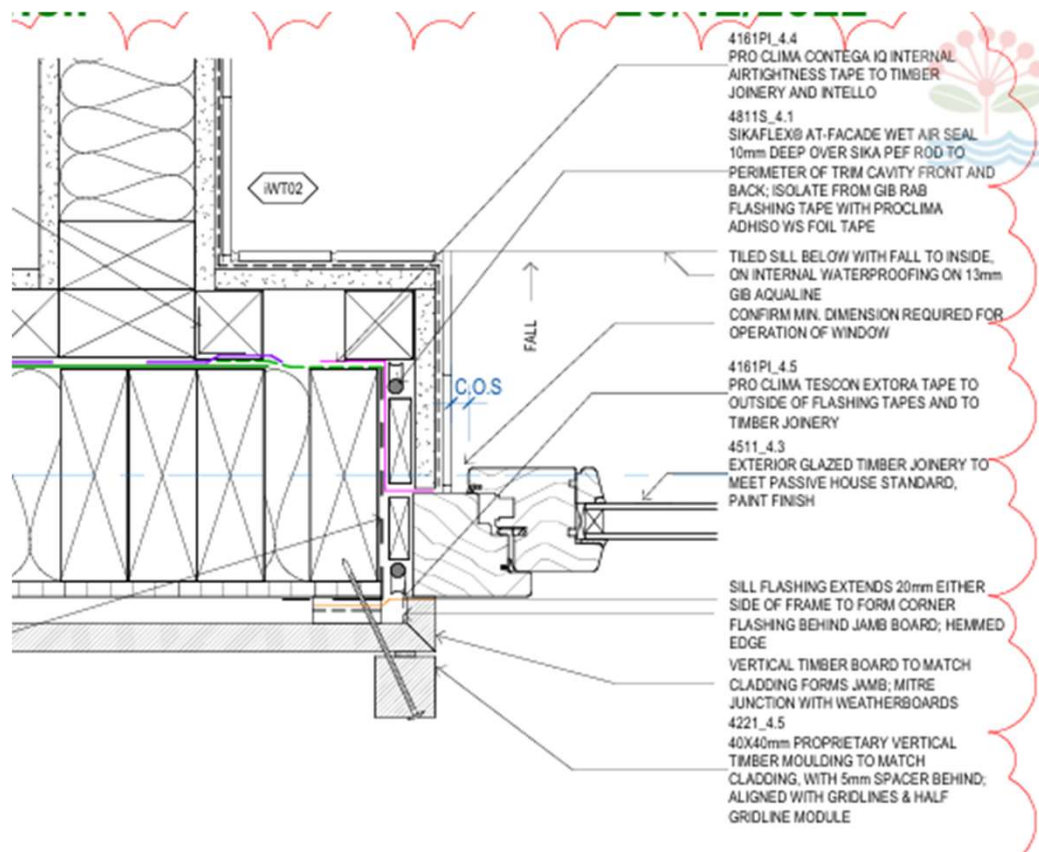
EXTERNAL ROOF FRAMING INSULATION 300mm
 GLASS WOOL INSULATION 210mm R5.2 + 90mm R2.2
 (TOTAL R7.4), FILL FULL DEPTH OF RAFTER FRAMING CAVITY



210mm timber framed, filled with glasswool, airbarrier under.

Description of building assembly						Assembly no.	
RT01-300x45 Rafter/Purlins						13ud	
Orientation of building assembly (or R_{si})			0.13			Interior insulation?	
Adjacent to (or R_{se})			0.13			U-value supplement [W/(m ² K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]	
Gib	0.250					13	
Air	0.612	Rondo battens/timber batten	0.130			100	
GlassfibreKnaufCeilingBattR5.2	0.040	Timber rafters	0.130			210	
GlassfibreKnaufWallR2.2	0.041	Timber rafters	0.130			90	
Ecoply	0.130					7	
Percentage of sec. 1:	95%	Percentage of sec. 2:	5.0%	Percentage of sec. 3:			
Heat transmission resistance coefficients						Total thickness [cm]: 42.0	
Interior R_{si} :		0.13		m ² K/W		U-value [W/(m ² K)]: 0.136	
Exterior R_{se} :		0.13		m ² K/W			

8. Fenster und Fenster-Einbau



Beschreibung der Fenster (rahmen)-Konstruktion, Hersteller	Optimal Windows
Fabrikat Fenster (rahmen; Produktname)	Multipane, Timber, Thermally modified pine
Rahmen-U-Wert U_f	1.4 W/(m ² K)
Bauart der Verglasung	Argon filled ; 6 14 6
Glas-U-Wert U_g	1.14 W/(m ² K)
g-Wert der Verglasung	0,59

Timber, thermally modified windows, with double glazing.

9. Beschreibung der luftdichten Hülle

The final blower door test was undertaken on 26 March 2024. The airtightness strategy was to simply wrap the interior, warm side of the house with proclima wrap.

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Enveloped Solutions Limited
150 Foundry Road, Silverdale, Auckland 0932
www.enveloped.co.nz | info@enveloped.co.nz

Blower Door Test Report

Category	Result
Date Issued	26th March 2024
Date of Test	26th March 2024
Technician	Murray Durbin (Enveloped Director)
Address of Test	98 Amreins Rd, Taupaki, Auckland 0782
Test Equipment Used	Minneapolis Blower Model 4 22V Fan, DG1000, Serial Number 7254 Calibration Date 21st Jan 2021
Purpose of Test	ISO Multi-Pt Env. Leakage Completion test for Passive House Certification
Tested to Standard	ISO 9972 Multi-Point
Areas Taped Up / Covered	One penetration through wall for MVHR One penetration through roof for MVHR
Internal Volume	597.1.7m ³ (As supplied by the Client)
Results Depressurised	n50 (1/h): 0.54 (+/- 3.3%)
Results Pressurised	n50 (1/h): 0.57 (+/- 3.4%)
Average	n50 (1/h): 0.555 (+/- 3.35%)
Required Pass Level	n50 (1/h): <0.649
Pass or Fail	Pass
Supporting Documents	See Attached

Signed:

Murray Durbin
Director

12. Heatsupply/ Cooling

A air source heat pump is used for both heating and cooling. Cooling being more of an issue in This climate.

A bulkhead unit as below was used and concealed at high level centrally within the building. We understand the owners have not used it for either heating or cooling as yet, as it hasnt been needed for their comfort.



15. PHPP-Ergebnisse

Passive House-Verification

10.3 EN

Building:	Taupaki House	
Street:	98 Amreins Road	
Postcode/City:	0782	
Province/Country:	Auckland	NZ-New Zealand
Building type:	1-Freestanding single family house	
Climate data set:	NZ1001a-Auckland, Altitude corrected	
Climate zone:	5: Warm	Altitude of location: 87.88 m
Home owner / Client:	Rusa Construction	
Street:	PO Box 423, Kumeu	
Postcode/City:	0841	Auckland
Province/Country:	Auckland	NZ-New Zealand
Mechanical engineer:	(Builder) Rusa Construction	
Street:	PO Box 423, Kumeu	
Postcode/City:	0841	Auckland
Province/Country:	Auckland	NZ-New Zealand
Certification:	Sustainable Engineering	
Street:	65B Hungerford Road, Houghton Bay	
Postcode/City:	6023	
Province/Country:	Wellington	NZ-New Zealand

Architecture:	Space Division
Street:	1/77 The Strand, Parnell
Postcode/City:	1010 Auckland
Province/Country:	Auckland NZ-New Zealand
Energy consultancy:	Space Division
Street:	1/77 The Strand, Parnell
Postcode/City:	1010 Auckland
Province/Country:	Auckland NZ-New Zealand

Year of construction:	2023	Interior temperature winter [°C]:	20.0	Interior temp. summer [°C]:	25.0
No. of dwelling units:	1	Internal heat gains (IHG) winter [W/m²]:	2.3	IHG summer [W/m²]:	2.3
No. of occupants:	3.1	Specific heat capacity [Wh/K per m² TFA]:	84	Mechanica cooling:	x

Specific building characteristics with reference to the treated floor area		Criteria	Alternative criteria	Fulfilled? ²	
Space heating	Treated floor area m²	206.3			
	Heating demand kWh/(m²a)	11.9	≤ 15	Yes	
	Heating load W/m²	9.1	≤ -	10	
Space cooling	Cooling & dehum. demand kWh/(m²a)	4.2	≤ 15	Yes	
	Frequency of overheating (> 25 °C) %	-	≤ -	-	
	Frequency of excessively high humidity (> 12 g/kg) %	0.9	≤ 10	Yes	
Airtightness	Pressurisation test result n ₅₀ 1/h	0.56	≤ 0.6	Yes	
Moisture protection	Smallest temperature factor f _{Rp0.25 m²KW} -	0.7	≥ 0.52	0.20	Yes
Thermal comfort	All requirements fulfilled? -				Yes
	U-value W/(m²K)		≤ 1.67		
	U-value W/(m²K)		≤ 1.30		
	U-value W/(m²K)		≤ 1.40		
	U-value W/(m²K)		≤ 0.91		
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	83.0	≤ -	-	-
Primary Energy Renewable (PER)	PER demand kWh/(m²a)	33.6	≤ 60	60	Yes
	Generation of renewable energy (in relation to projected)	0.0	≥ -	-	

I confirm that the values given here have been determined following the PHPP methodology and based on the characteristic values of the building. The PHPP calculations are attached to this verification.

Task:	First name:	Surname:
2-Certification	Jason	Quinn
Certificate-ID	Issued on:	City:
42637_SENZ_PH_20240513_JEQ	May 13, 2024	Wellington

Passive house Classic? Yes

Signature:

Project data imported from designPH 2.1.11 2022-09-27 12:26:07 +1300