

Abstract | Zusammenfassung



BRICK HOUSE

Data of building | Gebäudedaten

Year of construction Baujahr	2023	Space heating Heizwärmebedarf	15 kWh/(m²a)
U-value external wall U-Wert Außenwand	0.146 W/(m²K)		
U-value basement U-Wert Kellerdecke	0.171 W/(m²K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	28 kWh/(m²a)
U-value roof U-Wert Dach	0.124 W/(m²K)	Generation of renewable Energy Erzeugung erneuerb. Energie	47 kWh/(m²a)
U-value window U-Wert Fenster	0.86 W/(m²K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	65 kWh/(m²a)
Heat recovery Wärmerückgewinnung	83.3 %	Pressurization test n_{50} Drucktest n_{50}	0.5 h ⁻¹
Special features Besonderheiten	Use of brick over Structurally Insulated Panels for the walls. Timber framed suspended floor. Verwendung von Ziegeln über strukturellen isolierten Paneelen für die Wände. Holzrahmen-Hängeboden.		

Brief Description

BRICK HOUSE

This house was designed for a family of 4, with 2 bunk rooms to have visitors to stay on holidays. Finely balanced views to the northwest towards Lake Wānaka, with sheltered outdoor areas to the south. Use of brick inside the house adds a dampening to the interior temperature up and downs.

Kurzbeschreibung

Ziegelhaus

Dieses Haus wurde für eine vierköpfige Familie konzipiert und verfügt über zwei Schlafräume, in denen Besucher im Urlaub übernachten können. Fein ausgewogene Aussicht nach Nordwesten in Richtung Lake Wānaka, mit geschützten Außenbereichen im Süden. Die Verwendung von Ziegeln im Inneren des Hauses trägt dazu bei, die Temperaturschwankungen im Inneren des Hauses zu dämpfen.

Responsible project participants Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	Rafe Maclean, www.rafemaclean.co.nz
Implementation planning Ausführungsplanung	Rafe Maclean, www.rafemaclean.co.nz
Building systems Haustechnik	Dunlop Builders, www.dunlopbuilders.co.nz
Structural engineering Baustatik	-
Building physics Bauphysik	Rafe Maclean, www.rafemaclean.co.nz
Passive House project planning Passivhaus-Projektierung	Rafe Maclean, www.rafemaclean.co.nz
Construction management Bauleitung	Dunlop Builders, www.dunlopbuilders.co.nz

Certifying body Zertifizierungsstelle

Sustainable Engineering Ltd
www.sustainableengineering.co.nz

Certification ID Zertifizierungs ID

ID 6899

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

Author of project documentation Verfasser der Gebäude-Dokumentation

Rafe Maclean
www.rafemaclean.co.nz

Date
Datum

Signature
Unterschrift

27.06.23



1. Exterior photos - Ansichtsfotos



South Elevation



East Elevation



North elevation



West Elevation

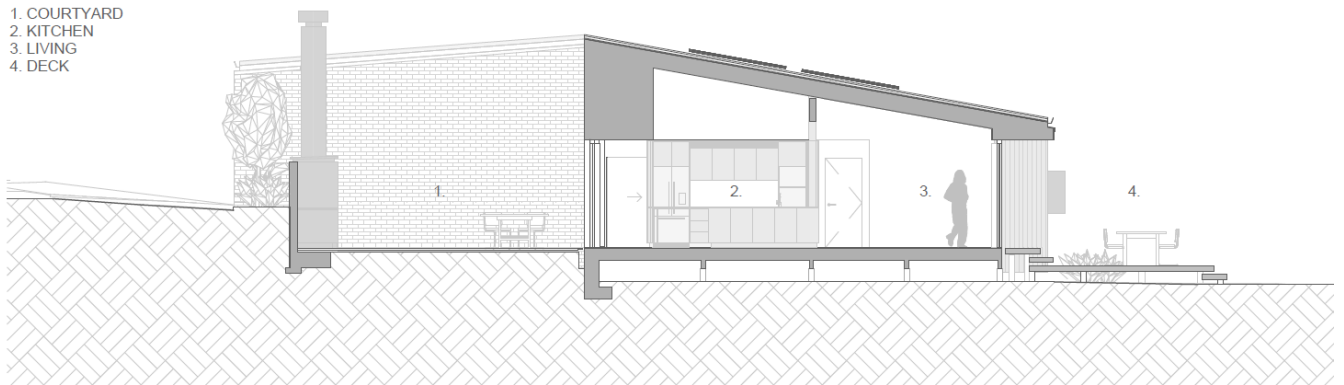
2. Interior photos - Innenfoto exemplarisch



3. Sections - Schnittzeichnung

KEY:

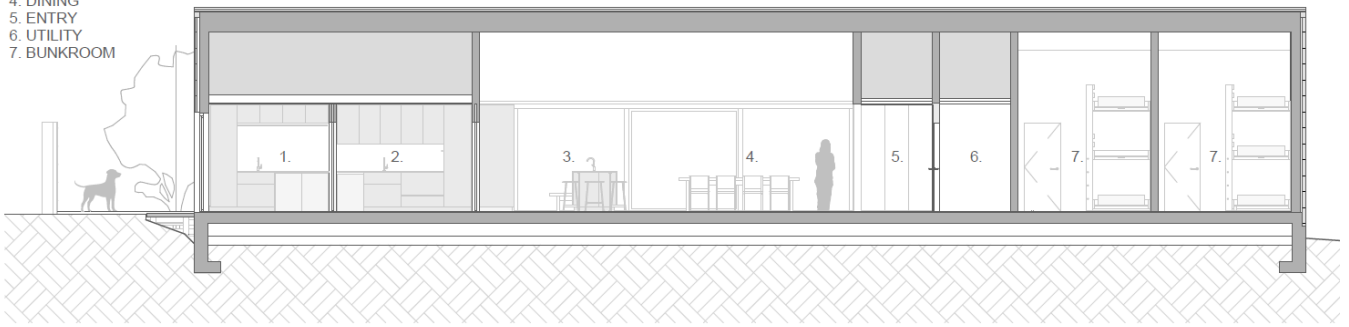
- 1. COURTYARD
- 2. KITCHEN
- 3. LIVING
- 4. DECK



SECTION A

KEY:

1. LAUNDRY
2. PANTRY
3. KITCHEN
4. DINING
5. ENTRY
6. UTILITY
7. BUNKROOM



SECTION B

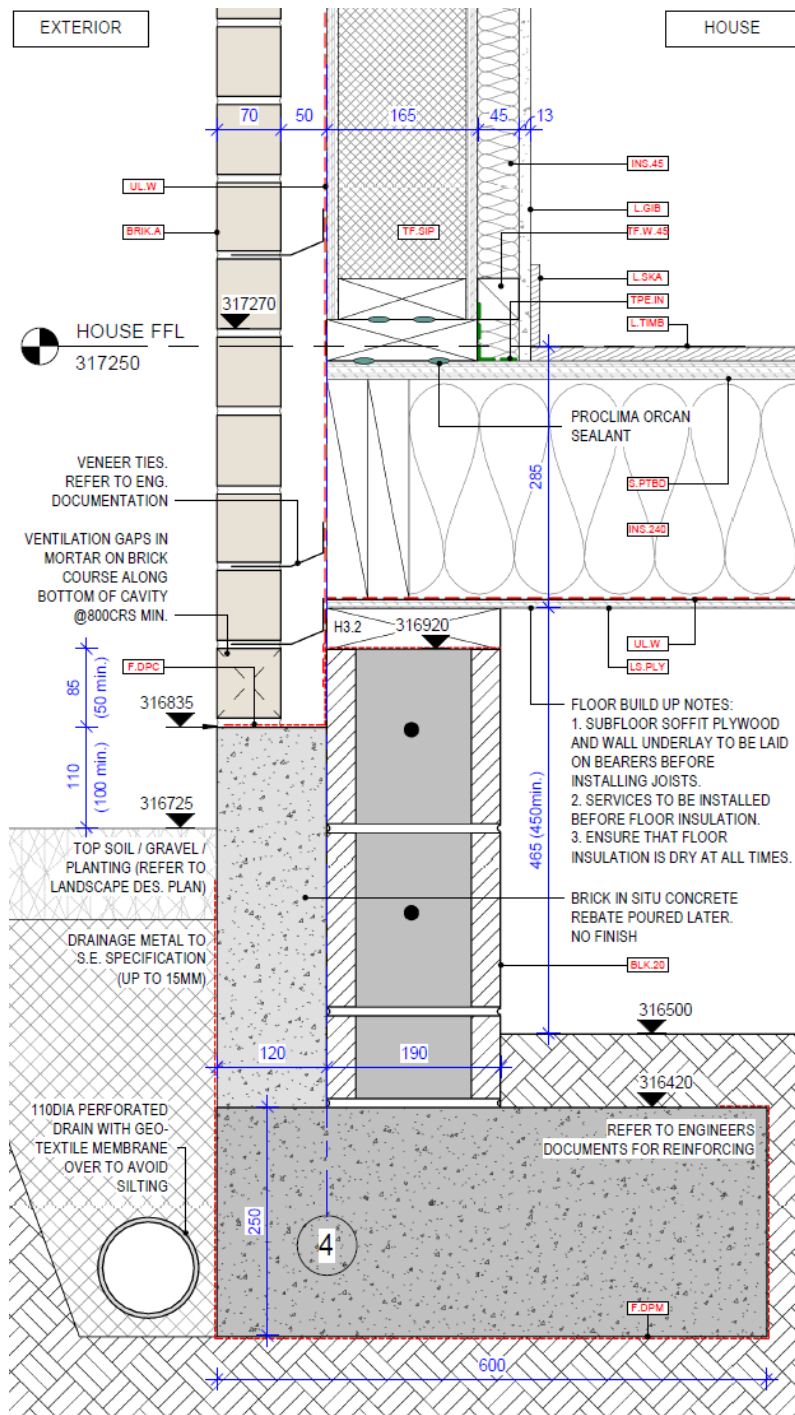
4. Floor plans - Grundrisse

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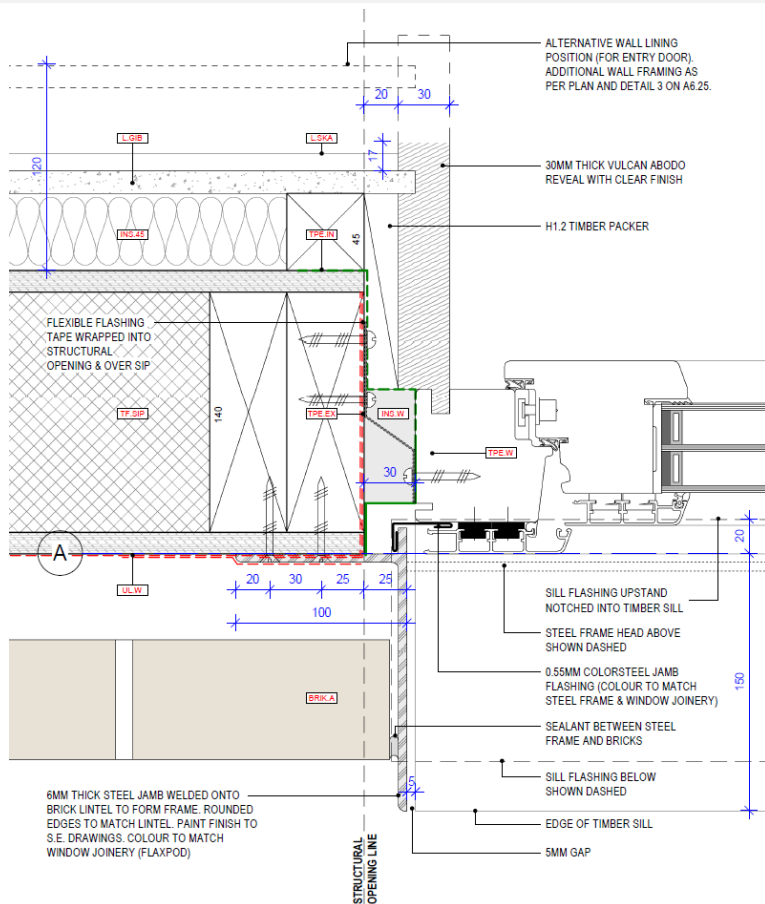
1. ENTRY
2. DINING
3. KITCHEN
4. PANTRY
5. LAUNDRY
6. BEDROOM
7. ENSUITE
8. ROBE
9. STUDY
10. LIVING
11. TV ROOM
12. BATHROOM
13. BUNKROOM
14. W/C
15. UTILITY ROOM
16. DECK
17. COURTYARD
18. GARAGE
19. DRIVE



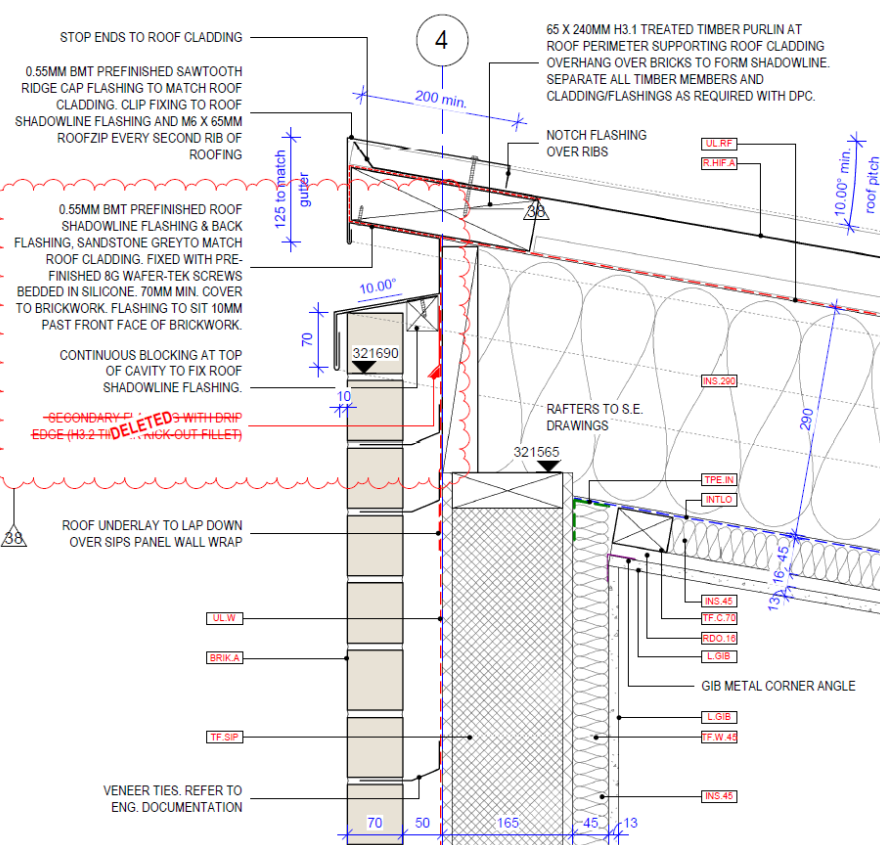
5. Floor slab/ basement ceiling construction including insulation Konstruktion der Bodenplatte



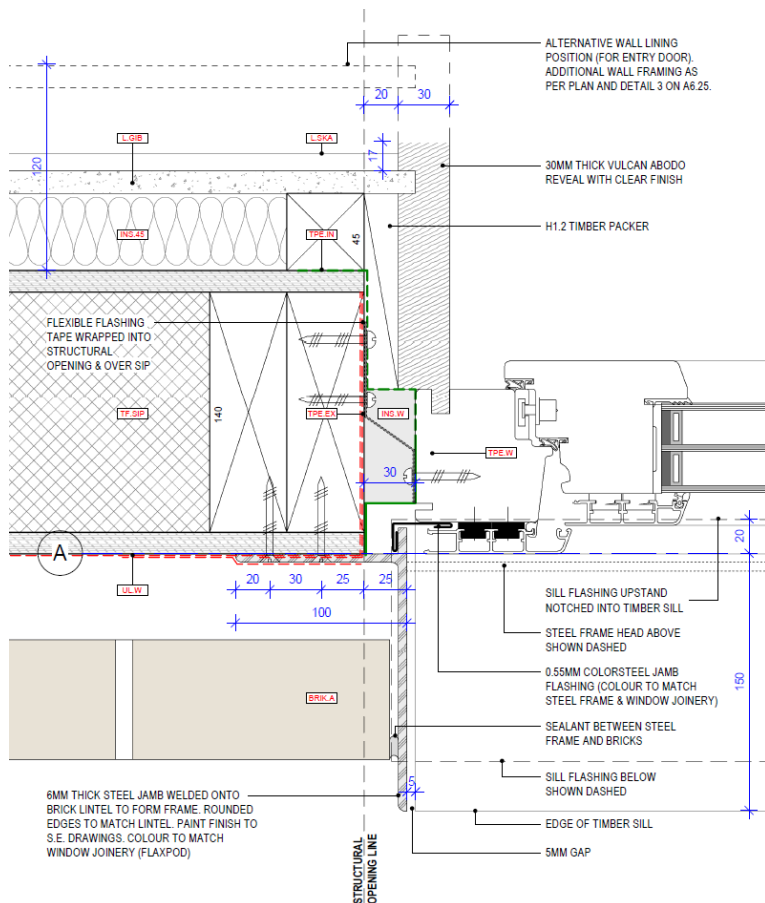
6. Wall construction including insulation - Konstruktion der Außenwände



7. Roof construction including insulation - Konstruktion des Daches



8. Window and window installation including glass Ug / g-value and frame performance - Fenster und Fenster-Einbau



Description	left	right	bottom	above	left	right	bottom	above	Ψ _{Glazing edge left}	Ψ _{Glazing edge right}	Ψ _{Glazing edge bottom}	Ψ _{Glazing edge top}	Ψ _{Insulation left}	Ψ _{Insulation right}	Ψ _{Insulation bottom}	Ψ _{Insulation top}
	W/(m²K)	W/(m²K)	W/(m²K)	W/(m²K)	m	m	m	m	W/(mK)	W/(mK)	W/(mK)	W/(mK)	W/(mK)	W/(mK)	W/(mK)	W/(mK)
Abodo UF - average of larch & spruce frames																
TD_ABODO_FIXED_thermadura Designline 90 Larch	1.16	1.16	1.14	1.16	0.080	0.080	0.080	0.080	0.030	0.030	0.030	0.030	0.024	0.024	0.024	0.024
TD_ABODO_TILT TURN_thermadura Designline 90 Larch	1.16	1.16	1.14	1.16	0.128	0.128	0.128	0.128	0.030	0.030	0.030	0.030	0.024	0.024	0.024	0.024
TD_ABODO_Fixed Sash Lift-Slide Single Sliding Sashes (Sash 5)	1.05	1.74	1.11	1.05	0.191	0.055	0.175	0.202	0.030	0.030	0.030	0.030	0.040	0.040	0.040	0.040
TD_ABODO_Sliding Sash Lift-Slide Single Sliding Sashes (Sash 6)	1.74	1.07	1.14	1.20	0.055	0.175	0.175	0.202	0.030	0.030	0.030	0.030	0.040	0.040	0.040	0.040
TD_ABODO_triple pane_FIXED	1.05	1.74	1.11	1.05	0.191	0.055	0.175	0.202	0.030	0.030	0.030	0.030	0.040	0.040	0.040	0.040
TD_ABODO_triple pane_SLIDING	1.74	1.74	1.14	1.20	0.055	0.191	0.175	0.202	0.030	0.030	0.030	0.030	0.040	0.040	0.040	0.040
TD_LARCH_FIXED_fixed panel to wall joining tilt turn	1.16	1.16	1.21	1.16	0.069	0.128	0.080	0.080	0.030	0.030	0.030	0.030	0.024	0.024	0.024	0.024
TD_LARCH_FIXED_tilt turn to wall joining fixed panel	1.16	1.16	1.21	1.16	0.128	0.069	0.128	0.128	0.030	0.030	0.030	0.030	0.024	0.024	0.024	0.024

Description	g-Value	U _g -Value
		W/(m²K)
Thermadura - Isophon Glas EN2plus (4:/20/4/20/:4 90% Ar)	0.53	0.52
Thermadura - Isophon Glas EN2plus (6:/18/6/16/:6 90% Ar)	0.52	0.55
Thermadura - Silverstar EN2plus (8:/14/8/14/:8 90% Ar)	0.51	0.64
Thermadura door panel	0.00	0.79

9. Air leakage testing - Beschreibung der luftdichten Hülle

Test Results at 50 Pascals:	<u>Depressurization</u>	<u>Pressurization</u>	<u>Average</u>
q ₅₀ : m ³ /h (Airflow)	245 (+/- 3.2 %)	299 (+/- 3.0 %)	272
n ₅₀ : 1/h (Air Change Rate)	0.40	0.49	0.45

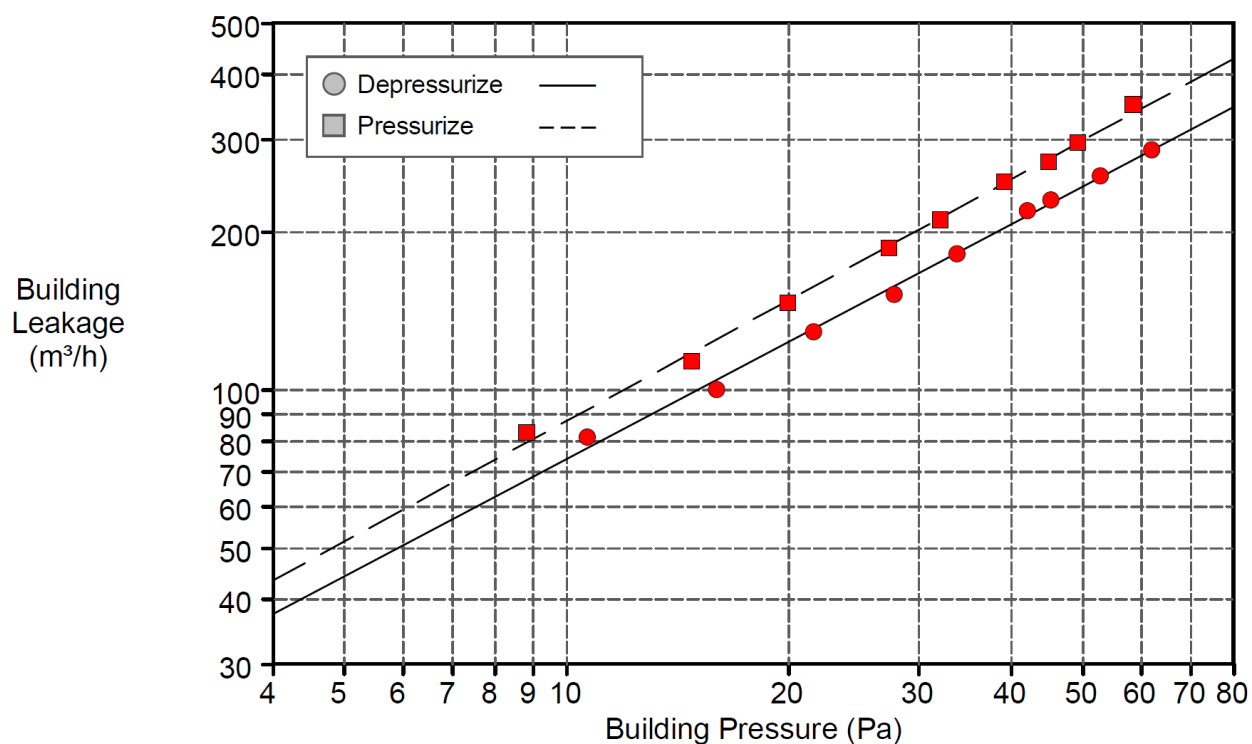


Photo showing Intello airtightness layer to ceiling.

10. MVHR - Lüftungsgerät

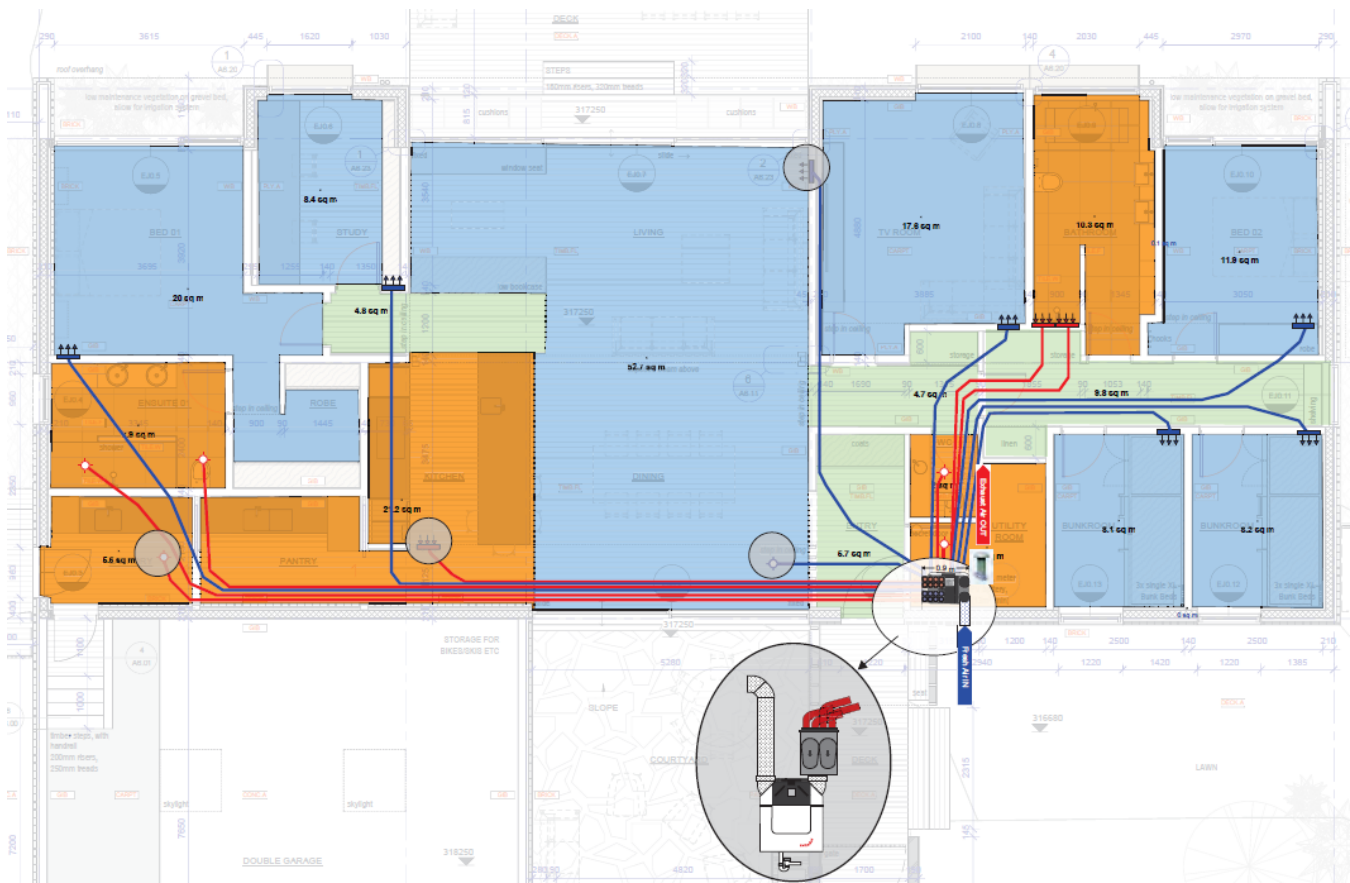
Zehnder ComfoAir Q350,

Heat Recovery Efficiency: 83.3%

Electrical Efficiency: 0.24 Wh/m³



11. Ventilation ductwork - Lüftungsplanung Kanalnetz



Floor Plan showing ventilation zoning.

All internal doors have 10mm undercut for ventilation.

12. Heating systems - Wärmeversorgung

Heating & cooling is provided by a Air-to-Air Heatpump. The internal unit is located central in the living area.

13. Building costs - Baukosten

Not Supplied

14. Publications featuring the building - Literatur

- Not at this point in time

15. PHPP-Ergebnisse

Passive House Verification									
				Building: Brick House Street: 6 Jade Drive Postcode/City: 9305 Wanaka Province/Country: Otago NZ-New Zealand Building type: Residential Climate data set: NZ0006b-Queenstown Climate zone: 4: Warm-temperate Altitude of location: 317.25 m Home owner / Client: Jenny Cooper & Jason Haggitt Street: 6 Jade Drive Postcode/City: 9305 Wanaka Province/Country: Otago NZ-New Zealand Builder: Dunlop Builders Ltd Street: 21D Gordon Road Postcode/City: 9305 Wanaka Province/Country: Otago NZ-New Zealand Certification: Sustainable Engineering Ltd. Street: 65B Hungerford Road, Postcode/City: 6023 Houghton Bay Province/Country: Wellington NZ-New Zealand					
Architecture: Rafo Maclean Architects Street: 83d Black Peak Road Postcode/City: 9362 Wanaka Province/Country: Otago NZ-New Zealand Energy consultancy: Rafo Maclean Architects Street: 83d Black Peak Road Postcode/City: 9362 Wanaka Province/Country: Otago NZ-New Zealand Year of construction: 2022 No. of dwelling units: 1 No. of occupants: 1				Interior temperature winter [°C]: 20.0 Internal heat gains (IHG) heating case [W/m²]: 2.3 Specific capacity [Wh/K per m² TFA]: 93		Interior temp. summer [°C]: 25.0 IHG cooling case [W/m²]: 2.3 Mechanical cooling: x			
Specific building characteristics with reference to the treated floor area									
		Treated floor area m²	207.1			Criteria		Alternative criteria	Fulfilled?²
Space heating	Heating demand kWh/(m²a)	15.40	≤	15	-			yes	
	Heating load W/m²	12.14	≤	-	10				
Space cooling	Cooling & dehum. demand kWh/(m²a)	3.7	≤	15	15			yes	
	Cooling load W/m²	7.6	≤	-	10				
	Frequency of overheating (> 25 °C) %	-	≤	-	-			-	
	Frequency of excessively high humidity (> 12 g/kg) %	0	≤	10	-			yes	
Airtightness	Pressurization test result n ₅₀ 1/h	0.5	≤	0.6	-			yes	
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	65	≤	-	-			-	
Primary Energy Renewable (PER)	PER demand kWh/(m²a)	28	≤	45	30			yes	
	Generation of renewable energy (in relation to projected building footprint area)	47	≥	60	47				
² Empty field: Data missing; -/-: No requirement									
I confirm that the values given herein 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:		Passive House Plus?		Signature:	
2-Certifier		Jason		Quinn		yes			
34233_SENZ_PH_20220519_JEQ		Certificate ID		Issued on:		City:			
		19.05.2022		Wellington					