

Project Documentation Gebäude-Dokumentation



Abstract | Zusammenfassung



Froggy Bottom

Data of building | Gebäudedaten

Year of construction Baujahr	2022		
U-value external wall U-Wert Außenwand	0.17 W/(m ² K)	Space heating Heizwärmebedarf	13.61 kWh/(m²a)
U-value basement U-Wert Kellerdecke	0.10 W/(m ² K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	43.3 kWh/(m ² a)
U-value roof U-Wert Dach	0.10 W/(m ² K)	Generation of renewable Energy Erzeugung erneuerb. Energie	78 kWh/(m ² a)
U-value window U-Wert Fenster	0.85 W/(m ² K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	98.2 kWh/(m ² a)
Heat recovery Wärmerückgewinnung	78.3 %	Pressurization test n ₅₀ Drucktest n ₅₀	0.26 h ⁻¹
Special features Besonderheiten	Prefabricated straw panel walls, reclaimed hardwood cladding and linings. Owner-builder		

Brief Description

Froggy Bottom

This Passive House Plus Project was designed for an owner-builder, a Passive House tradesperson. They wanted to use natural materials such as straw, reclaimed hardwoods and sheep's wool insulation.

Kurzbeschreibung

Froggy Bottom

Dieses Passivhaus Plus-Projekt wurde für einen Bauherrn und Passivhaus-Handwerker konzipiert. Der Bauherr wollte natürliche Materialien wie Stroh, wiederverwertetes Hartholz und Schafwolldämmung verwenden.

Responsible project participants Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	Hiberna Ltd https://hiberna.co.nz/
Implementation planning Ausführungsplanung	Hiberna Ltd https://hiberna.co.nz/
Building systems Haustechnik	Hedley Wilton and Brooke Harding
Structural engineering Baustatik	eZED
Building physics Bauphysik	Jessica Winter Hiberna Ltd
Passive House project planning Passivhaus-Projektierung	Jessica Winter Hiberna Ltd
Construction management Bauleitung	Hedley Wilton and Brooke Harding

Certifying body Zertifizierungsstelle

Sustainable Engineering Ltd
www.sustainableengineering.co.nz

Certification ID Zertifizierungs ID

7863

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

Author of project documentation Verfasser der Gebäude-Dokumentation

[#name] Jessica Winter (Eyers) Hiberna Ltd
[#website] <https://hiberna.co.nz/>

Date
Datum

Signature
Unterschrift

25/06/2025



1. Exterior photos - Ansichtsfotos



North and east elevation



West elevation

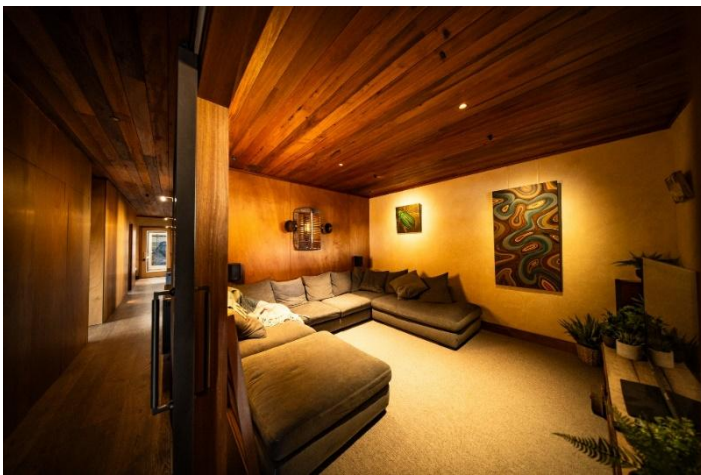


North elevation

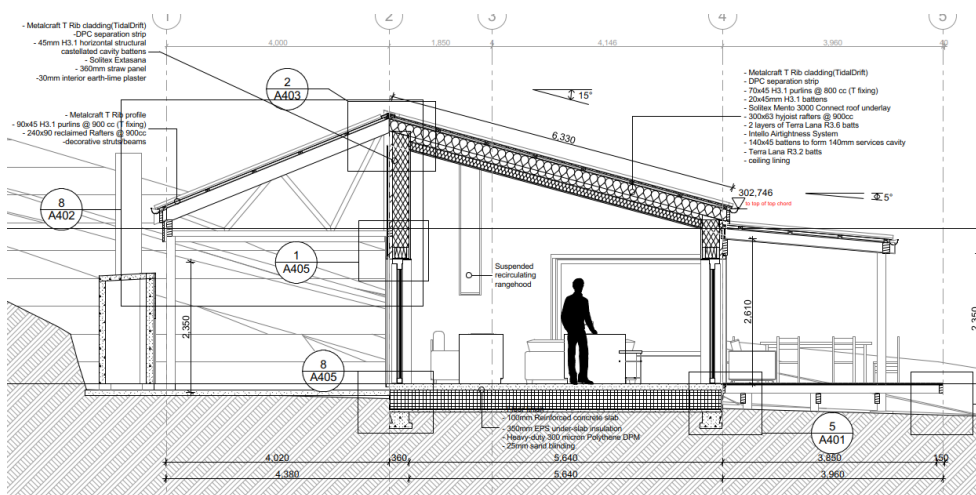


West and South elevation

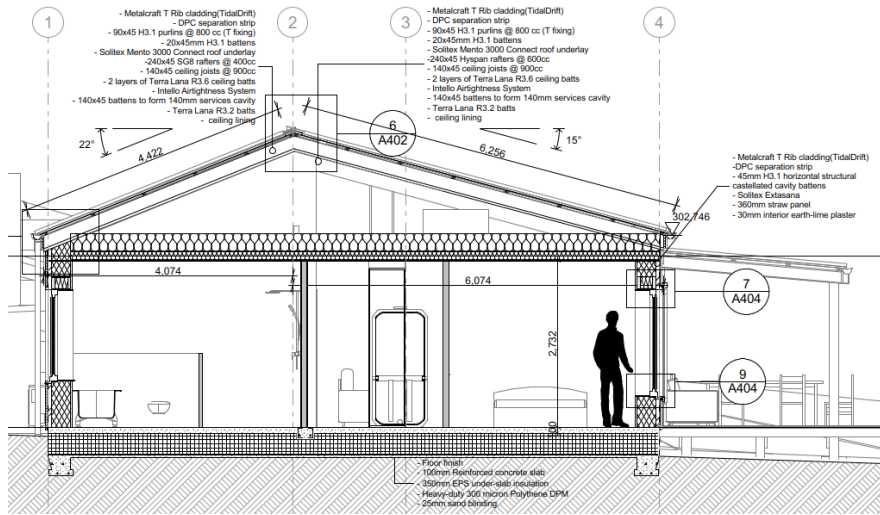
2. Interior photos - Innenfoto exemplarisch



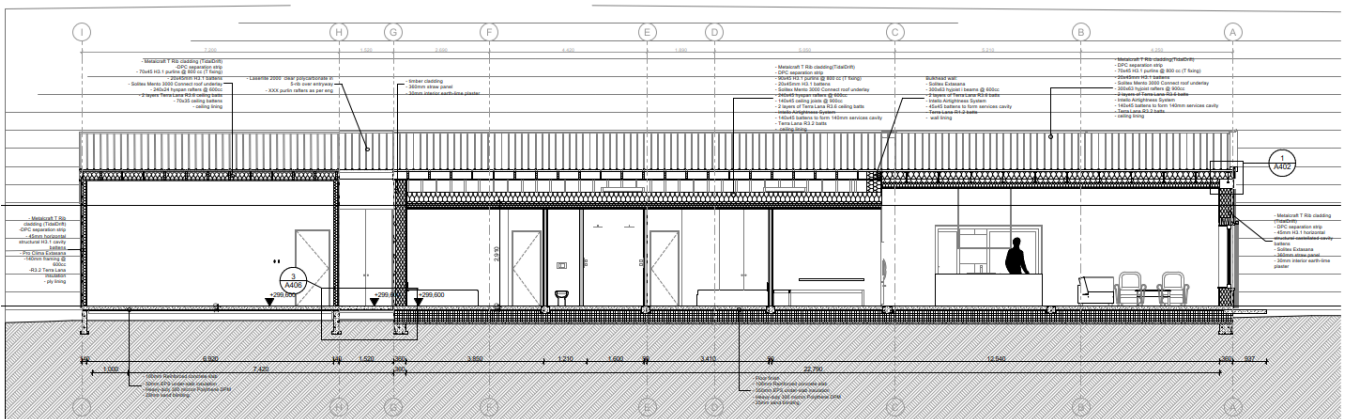
3. Sections - Schnittzeichnung



Section through lounge



Section through bedroom and bathroom



Long section

4. Floor plans - Grundrisse



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



The floor is comprised of the following:

20mm timber floor
100mm concrete
350mm EPS

Der Boden besteht aus Folgendem:

20 mm Holzboden
100 mm Beton
350 mm EPS

This photo shows the expanded polystyrene under the concrete slab.

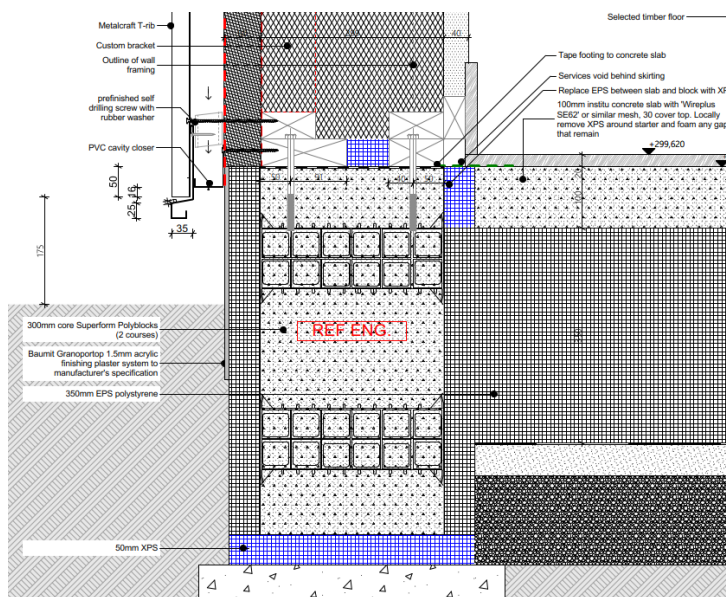
Auf diesem Foto ist das expandierte

Polystyrol unter der Betonplatte zu sehen.



This photo shows the air sealing of the straw panels to the foundation.

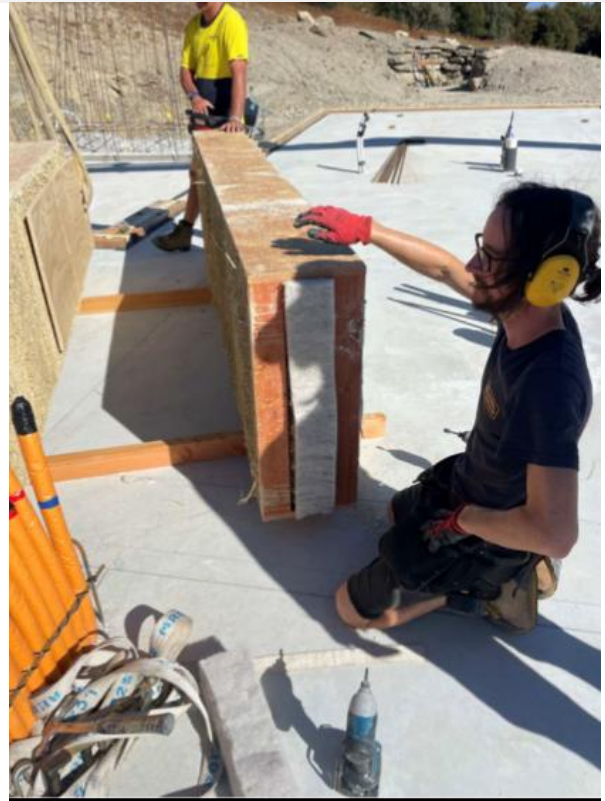
Dieses Foto zeigt die Luftabdichtung der Strohplatten zum Fundament.



This detail shows the connection of the wall to the floor foundation

Dieses Detail zeigt den Anschluss der Wand an den Bodenunterbau

6. Wall construction including insulation - Konstruktion der Außenwände



The walls are comprised of prefabricated straw panels with earth plastered interior and wood fibre board and cladding externally.

30mm earth plaster
300mm prefabricated straw panel
5mm plaster
60mm wood fibre board
Cavity
Cladding

Die Wände bestehen aus vorgefertigten Strohplatten mit Lehmputz an der Innenseite und Holzfaserplatten und -verkleidung an der Außenseite.

30 mm Lehmputz
300 mm vorgefertigte Strohplatte
5 mm Putz
60 mm Holzfaserplatte
Hohlraum
Verkleidung

The photo above left shows the installation of the Steico wood fibre board. The airtight layer is on the exterior of the wall.

Das Foto über links zeigt die Montage der Steico Holzfaserplatte. Die luftdichte Ebene befindet sich auf der Außenseite der Wand.

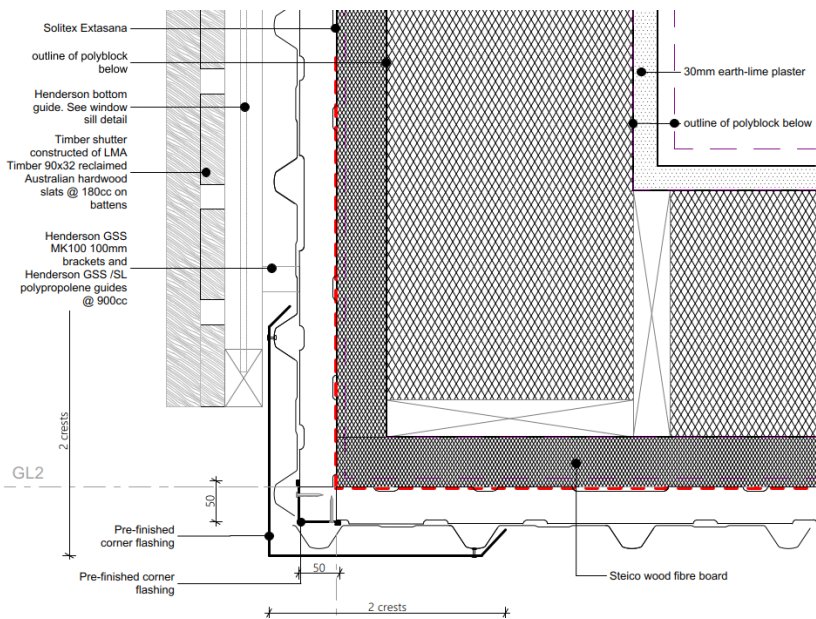
The photo above right shows the individual panels.

Das Foto über rechts zeigt die Platte.



The photo to the left shows the connection of the ceiling joists to the wall. The photo below shows the connection of the rafters to the wall.

Das Foto links zeigt die Verbindung der Deckenbalken zur Wand. Das Foto unten zeigt die Verbindung der Sparren zur Wand



This detail shows the standard wall corner

Dieses Detail zeigt die Standard-Wanddecke

7. Roof construction including insulation - Konstruktion des Daches



The timber framed ceiling is comprised of the following:

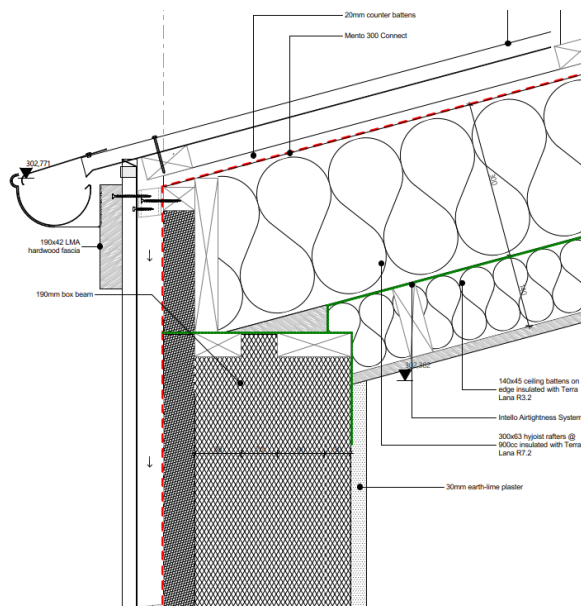
- 20mm timber lining
- 140mm insulated services cavity
- 300mm timber I joists with sheep's wool insulation
- Cavity
- Roofing

Die Fachwerkdecke besteht aus folgenden Elementen:

- 20 mm Holzverkleidung
- 140 mm isolierter Versorgungshohlraum
- 300 mm Holz-I-Träger mit Wollämmung
- Hohlraum

This photo shows the insulated services cavity and the connection to the straw panel walls.

Auf diesem Foto sind der isolierte Versorgungshohlraum und der Anschluss an die Strohpneelwände zu sehen.



This detail shows the standard connection between the wall and the roof

Dieses Detail zeigt den Standardanschluss zwischen Wand und Dach

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



Bayerwald 90mm spruce frames /Fichte rahmen

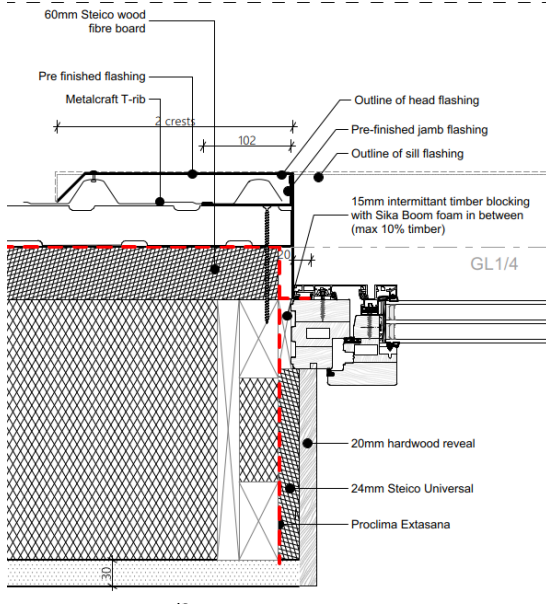
Uw average 0.85

Uf 0.84 – 1.50

Triple glazing with argon and low-E
Dreifachverglasung mit Argon und Low-E

g-value 0.52

Ug 0.55



This detail shows the standard connection between the wall and the window

Dieses Detail zeigt den Standardanschluss zwischen Wand und Fenster

9. Air leakage testing - Beschreibung der luftdichten Hülle

Airtightness is achieved with Pro Clima Extasana to the exterior of the straw panel, with Pro Clima Intello to the interior of the timber framed roof, and the concrete slab floor. (See photos below)

Die Luftdichtheit wird mit Pro Clima Extasana an der Außenseite der Strohplatte und mit Pro Clima Intello an der Innenseite des Fachwerkdachs und des Betonplattenbodens erreicht. (Siehe Fotos unten)



BUILDING LEAKAGE TEST

Date of Test: 24/06/2024 Test File: Tectite BD 2053 Wilton Hse Final PH

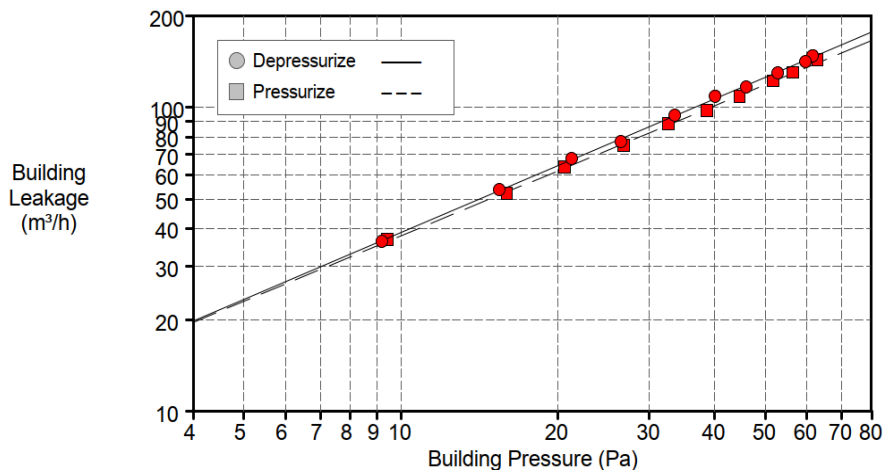
Technician: NRM
Project Number: 2053

Customer: H & E Wilton
3475
Luggate-Cromwell Hwy
Luggate
Wanaka, Otago 9383
Phone: 021 355 459
Fax:
Email: hedleywilton@gmail.com

Building Address: Wilton House
3475
Luggate-Cromwell Hwy
Wanaka, Otago 9383

Test Results at 50 Pascals:	Depressurization	Pressurization	Average
q ₅₀ : m ³ /h (Airflow)	125 (+/- 1.3 %)	119 (+/- 1.2 %)	122
n ₅₀ : 1/h (Air Change Rate)	0.27	0.25	0.26
qF50 : m ³ /(h·m ² Floor Area)	0.76	0.72	0.74
qE50 : m ³ /(h·m ² Envelope Area)	0.19	0.18	0.19
Leakage Areas:			
ELA ₅₀ : m ²	0.0038 (+/- 1.2 %)	0.0036 (+/- 1.2 %)	0.0037
ELA _{F50} : m ² /m ²	0.0000231	0.0000219	0.0000225
ELA _{E50} : m ² /m ²	0.0000058	0.0000055	0.0000057
Building Leakage Curve:			
Air Flow Coefficient (C _{env}) m ³ /(h·Pa ⁿ)	7.1 (+/- 6.1 %)	7.3 (+/- 5.8 %)	
Air Leakage Coefficient (C _L) m ³ /(h·Pa ⁿ)	7.2 (+/- 6.1 %)	7.3 (+/- 5.8 %)	
Exponent (n)	0.731 (+/- 0.017)	0.712 (+/- 0.017)	
Coefficient of Determination (r ²)	0.99916	0.99918	

Test Standard: ISO 9972
Test Mode: Depressurization and Pressurization
Type of Test Method: Method 1 - Test of Building in use
Purpose of Test: Completion PH compliance n₅₀ ≤ 0.6 1/h





Exterior airtight membrane on straw panel walls and concrete slab

Luftdichte Außenmembran auf Strohlattenwänden und Betonplatten



Internal airtight membrane to roof and wall corner

Luftdichte Membran innen am Dach und Wände Ecke

10. MVHR - Lüftungsgerät

The ventilation comprises the following unit plus associated ducting and vents as shown in section 11. Fresh air duct through roof, exhaust duct to south wall as shown to the right.

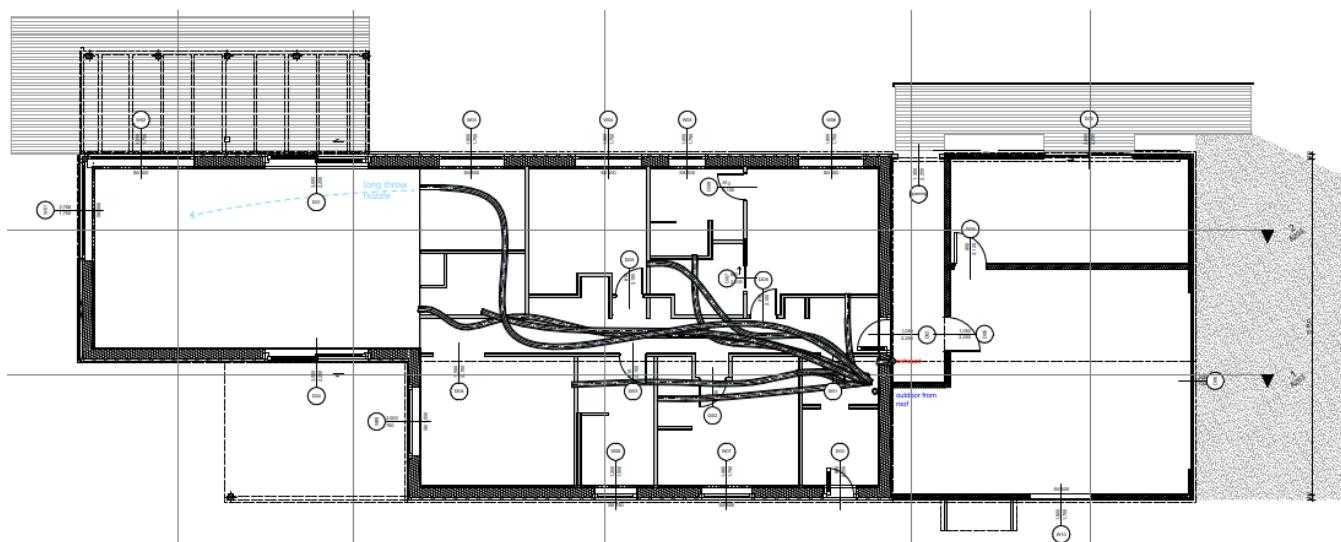
Die Belüftung besteht aus der folgenden Einheit sowie den zugehörigen Leitungen und Lüftungsöffnungen, wie in Abschnitt 11 dargestellt. Frischluftkanal durch das Dach, Abluftkanal zur Südwand, wie rechts dargestellt.



Stiebel Eltron LWZ180 unit efficiency 84%
0.25Wh/m³ as shown to the right / wie rechts
dargestellt



11. Ventilation ductwork - Lüftungsplanung Kanalnetz



Supply air is provided in the living room and the bedrooms. Extraction is provided in the kitchen, pantry, bathrooms and laundry. Transfer between zones achieved via door undercuts.

Im Wohnzimmer und in den Schlafzimmern ist Zuluft vorhanden. In der Küche, Speisekammer, den Badezimmern und der Waschküche ist eine Abluft vorhanden. Luftaustausch zwischen den Zonen erfolgt über Türunterschnidungen.

12. Heating systems - Wärmeversorgung

Heating is provided via hot water radiators using a heat pump.

Die Beheizung erfolgt über Warmwasserradiatoren mittels Wärmepumpe.

Heat pump – Stiebel Eltron WPL-A 07 HK Premium



Heat pump exterior unit



Hot water unit



Example of radiator


13. Building costs - Baukosten

N/A

14. Publications featuring the building - Literatur

N/A

15. PHPP-Ergebnisse

Passive House Verification																																																																								
																																																																								
Architecture: Hiberna Ltd Street: 10 Pisa Road Postcode/City: 9383 Wanaka Province/Country: Otago New Zealand	Building: Froggy Bottom Street: Postcode/City: Province/Country: NZ-New Zealand Building type: Residential building Climate data set: NZ0006b-Queenstown Climate zone: 4: Warm-temperate Altitude of location: 299 m																																																																							
Energy consultancy: Hiberna Ltd Street: 10 Pisa Road Postcode/City: 9383 Wanaka Province/Country: Otago New Zealand	Home owner / Client: Hedley and Emily Wilton Street: Postcode/City: Province/Country: NZ-New Zealand																																																																							
Year of construction: 2022 No. of dwelling units: 1 No. of occupants: 3.0	Mechanical engineer: (Builders) Hedley Wilton and Brooke Harding Street: Postcode/City: Province/Country: NZ-New Zealand																																																																							
Interior temperature winter [°C]: 20.0 Internal heat gains (IHG) heating case [W/m²]: 2.4 Specific capacity [Wh/K per m² TFA]: 124	Certification: Sustainable Engineering Ltd Street: 65B Hungerford Road, Houghton Bay Postcode/City: 6023 Province/Country: Wellington NZ-New Zealand																																																																							
Interior temperature summer [°C]: 25.0 IHG cooling case [W/m²]: 2.7 Mechanical cooling:																																																																								
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<p>² Empty field: Data missing; -: No requirement</p>																																																																								
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: 2-Certifier First name: Jason Surname: Quinn Certificate ID: 45062_SENZ_PH_20241014_JEQ Issued on: 14/10/24 City: Wellington	Passive House Plus? yes Signature: 