



Building type:	Detached single-family house (Passive House Plus new build)
Project description & Characteristics of Building:	<p>This home is the product of pure dedication and relentless determination of a homeowner prepared to overcome many challenges and setbacks to reach the goal of building a sustainable and comfortable place to call home.</p> <p>The building consists of a insulated concrete slab on ground, prefabricated wall and roof cassette and double glazing. The required energy consumption of the home is generated on site by a solar photovoltaic with integrated battery system that has been installed on the adjoining shed.</p>
Location:	AU-2666 Gidginbung (New South Wales) - Warm
Number of apartments/ units:	
Treated Floor Area according to PHPP:	168 m ²
Construction type:	timber construction
Exterior wall:	Prefabricated Timber Cassette U-value = 0,313 W/(m ² K)
Basement floor/ floor slab:	Reinforced Concrete Slab with EPS atop U-value = 0,336 W/(m ² K)

Roof:	Prefabricated Timber Cassette U-value = 0,229 W/(m ² K)
Frame:	Kneer Sud Fenster, AHF95CL Timber with Aluminium Cladding Uw-value = 1,2 W/(m ² K)
Glazing:	U _g -value = 1,34 W/(m ² K) g-value = 63 %
Entrance door:	U _d -value = 1,5 W/(m ² K)
Ventilation:	Stiebel Eltron GmbH & Co. , LWZ 180 Heat recovery level up to 94% Power consumption, fan 65W Air flow rate 60-250m ³ /h
Heating installation:	Mitsubishi AC, MSZ-LN25VG-A1
Domestic hot water:	Sanden Eco 315L
Air tightness:	n50 = 0,4/h (Pressurization test result)
Ecological aspects:	Rainwater Tank, Solar Photovoltaic Panels, Battery Storage.
Annual heating demand:	9 kWh/(m ² a) calculated according to PHPP
Heating load:	11 W/(m ²) calculated according to PHPP
Cooling load:	11 kWh/(m ² a) calculated according to PHPP
Cooling and dehumidification demand:	3 kWh/(m ² a) calculated according to PHPP
PE demand:	60 kWh/(m ² a) total demand on heating installation, domestic hot water, household electricity and auxiliary electricity calculated according to PHPP
PER demand:	28 kWh/(m ² a) calculated according to PHPP
Generation of renewable energy:	48 kWh/(m ² a) calculated according to PHPP
Construction costs (gross):	
Building structure costs (gross):	
Year of construction:	2024

Architecture:	Sewell Design - Anthony Santini
Building services:	Eclipse Passive House - Darryn Parkinson
Building physics:	Sewell Design - Anthony Santini
Structural Design	Design 2 Consulting – Gerard Wilson
Certification:	Grun Consulting - Clare Parry
Craftsperson / parties involved:	Eclipse Passive House - Darryn Parkinson
Video:	
Building documentation:	
Miscellaneous:	Photo credits to Cut Above Production.
Certificate ID:	45310_CP_PH_20241126_CP

Photos

North-Eastern elevation



Eastern elevation showing alfresco and shed



North-Western elevation



South-Western elevation

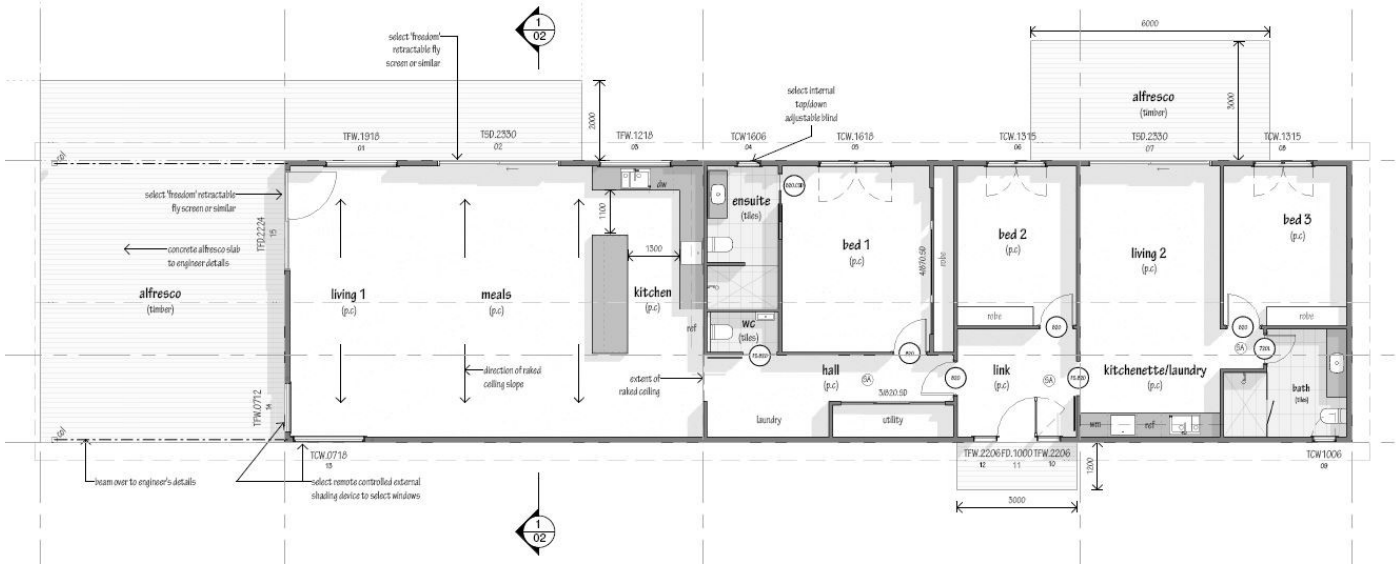


Southern elevation showing alfresco and living room window

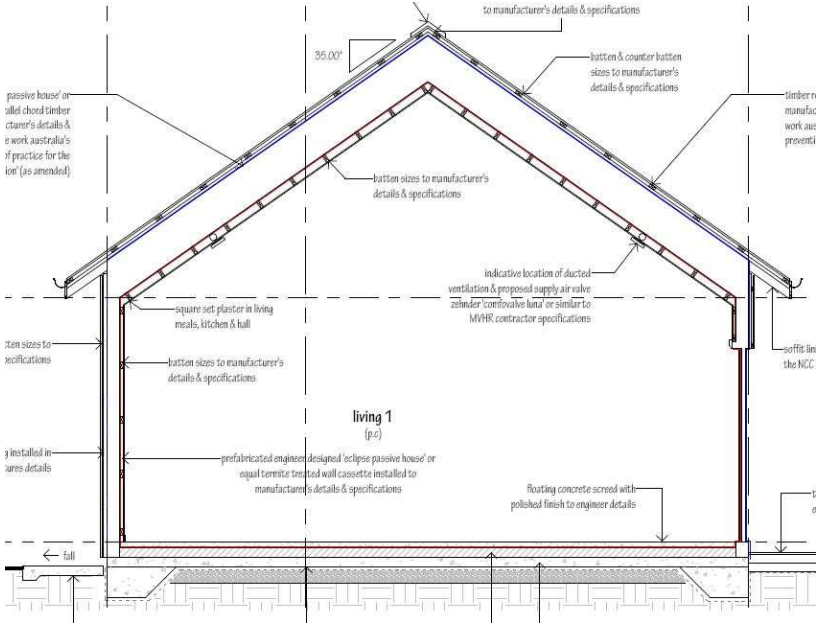


Internal view of living room, dining & kitchen





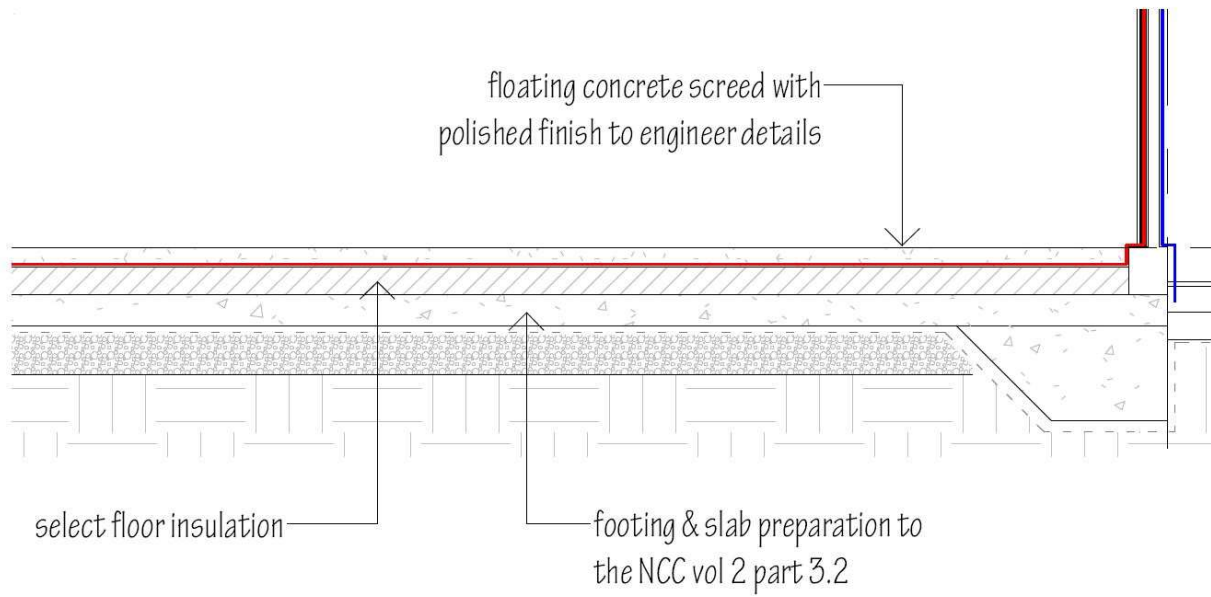
Floor Plan



Section Plan

Construction of floor slab:

The floor construction consists of standard reinforce concrete slab on ground, placed on top of the slab is a layer of EPS rigid foam insulation.

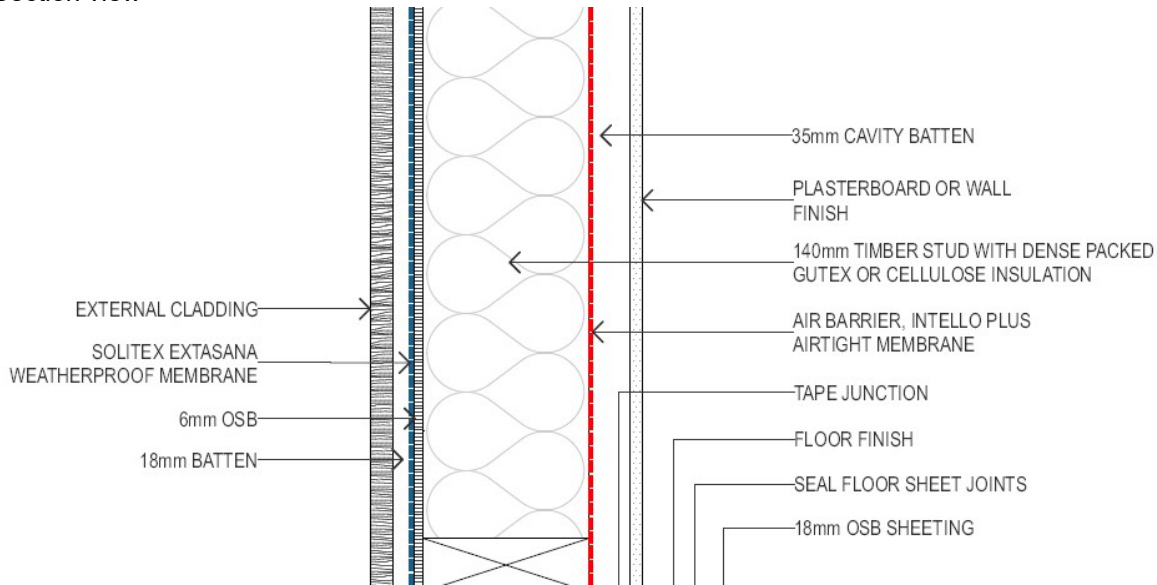


Assembly no.		03ud				Floor		Interior insulation?	
Orientation of building element		0.17		Heat transmission resistance [m ² K/W]		interior R _{si}		0.17	
Adjacent to		0				exterior R _{se}		0.00	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]			
Reinforced Concrete Screed	2.100					75			
(EPS) Rigid Foam Insulation	0.037					100			
Reinforced Concrete Slab	2.100					110			
Percentage of sec. 1		Percentage of sec. 2		Percentage of sec. 3		Total			
100%						28.5 cm			
U-value supplement				U-value:		0.336 W/(m ² K)			

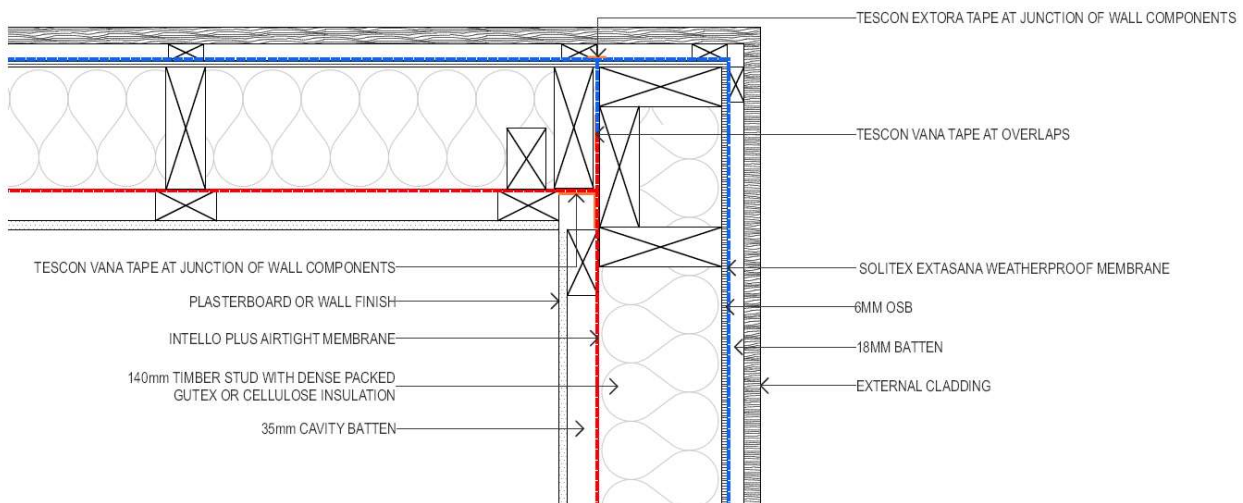
Construction of wall:

The wall construction consists of a prefabricated insulated wall cassette built using OSB panels, timber studs & blown-in cellulose insulation.

Section view



Floor plan view



D-02

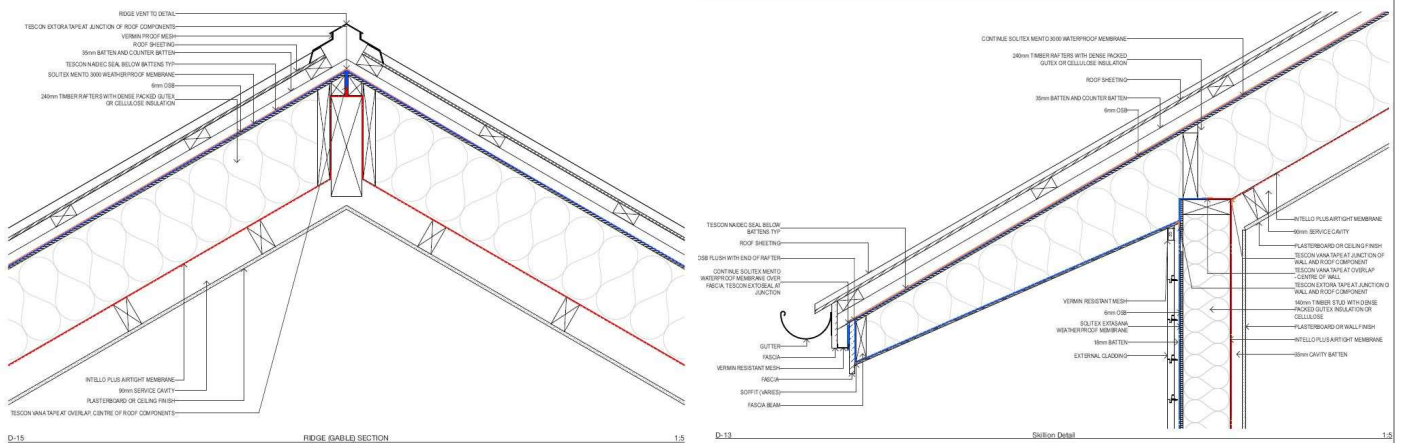
CORNER EXTERNAL WALL DETAIL (PLAN VIEW)

1:5

Assembly no.	Building assembly description		Interior insulation?			
01ud	Wall		<input type="checkbox"/>			
Heat transmission resistance [m ² K/W]						
Orientation of building element		0.13	interior R _{si}		0.13	
Adjacent to		0.04	exterior R _{se}		0.04	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Gypsum Plasterboard	0.250					10
Service Cavity + Timber Batten	0.190					35
Air Barrier						
Wall Insulation	0.042	Timber Columns (140x140) ≈ 3m centres	0.130	Timber Stud (140x45) ≈ 900mm centres	0.130	140
Vapour Permeable Barrier						
Ventilated Steel Cladding						
Percentage of sec. 1		Percentage of sec. 2		Percentage of sec. 3		Total
90%		3.0%		7.0%		18.5 cm
U-value supplement		W(m ² K)		U-value:		0.313 W/(m ² K)

Construction of roof:

The roof construction consists of a prefabricated insulated roof cassette built using OSB panels, timber rafters & blown-in cellulose insulation.



Assembly no. **02ud** **Roof** Interior insulation?

Heat transmission resistance [m²K/W]

Orientation of building element: **1-Roof** interior R_{ti} **0.13**
 Adjacent to: **1-Outdoor air** exterior R_{te} **0.04**

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Gypsum Plasterboard	0.250					10
Service Cavity + Timber Batten						90
Air Barrier						
Roof Insulation	0.048	Timber Rafter Beams (2x240x45) ≈ 3m centres	0.150	Timber Stud (240x45) ≈ 900mm centres	0.150	240
Vapour Permeable Barrier						
Ventilated Steel Cladding						
Percentage of sec. 1	90%	Percentage of sec. 2	3.0%	Percentage of sec. 3	7.0%	Total
						34.0 cm

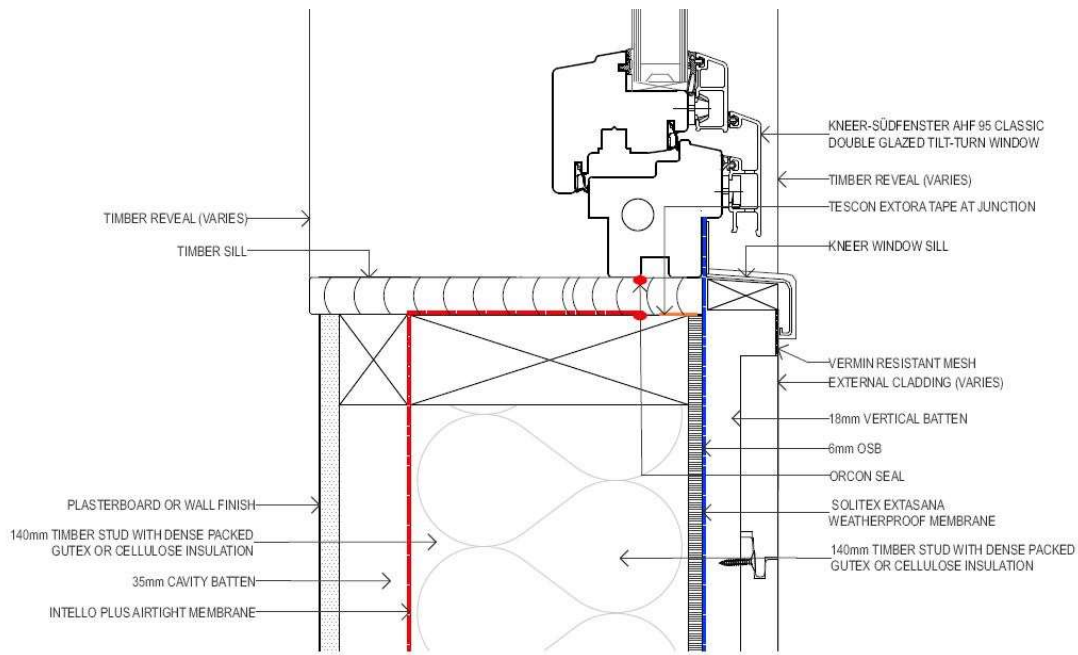
U-value supplement W/(m²K)

U-value: **0.229** W/(m²K)

Windows:

Frame: Kneer Sud Fenster, AHF95CL Timber with Aluminium Cladding U_w -value = 1,2 W/(m²K)

Glazing: Kneer Sud Fenster, WSSI0046, U_g -value = 1,34 W/(m²K) g -value = 63 %



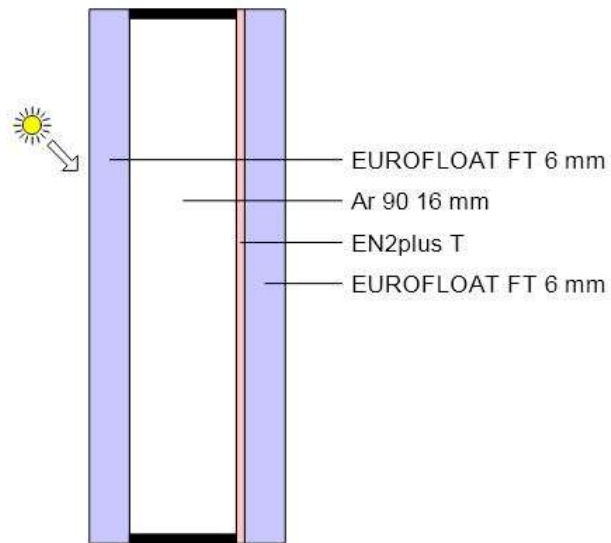
D-017

95 CLASSIC WINDOW SILL DETAIL

1:2

Glazing:

Window tilt angle: 90°



Airtightness:

The airtightness layer of the building consists of 'intello plus' membrane to the walls and roofs and the solid reinforced concrete slab for the floor.

BUILDING LEAKAGE TEST



Date of Test: 04/09/2022 Test File: 20240412-Stimson-Gidginbung-BDT-testfinal-pressdepress

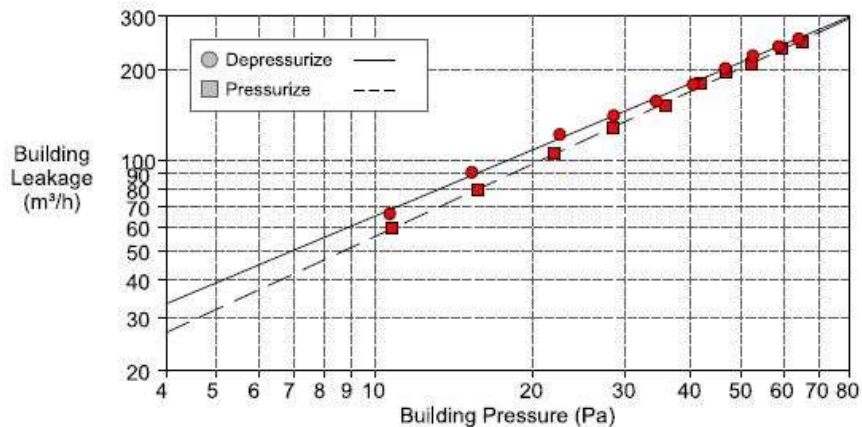
Technician: JDS
Project Number: C23095

Customer: Maree Stimson
Hartwigs Rd
Gidginbung, NSW
Phone:
Fax:

Building Address: Unit 1
46 Hartwigs Rd
Gidginbung, NSW

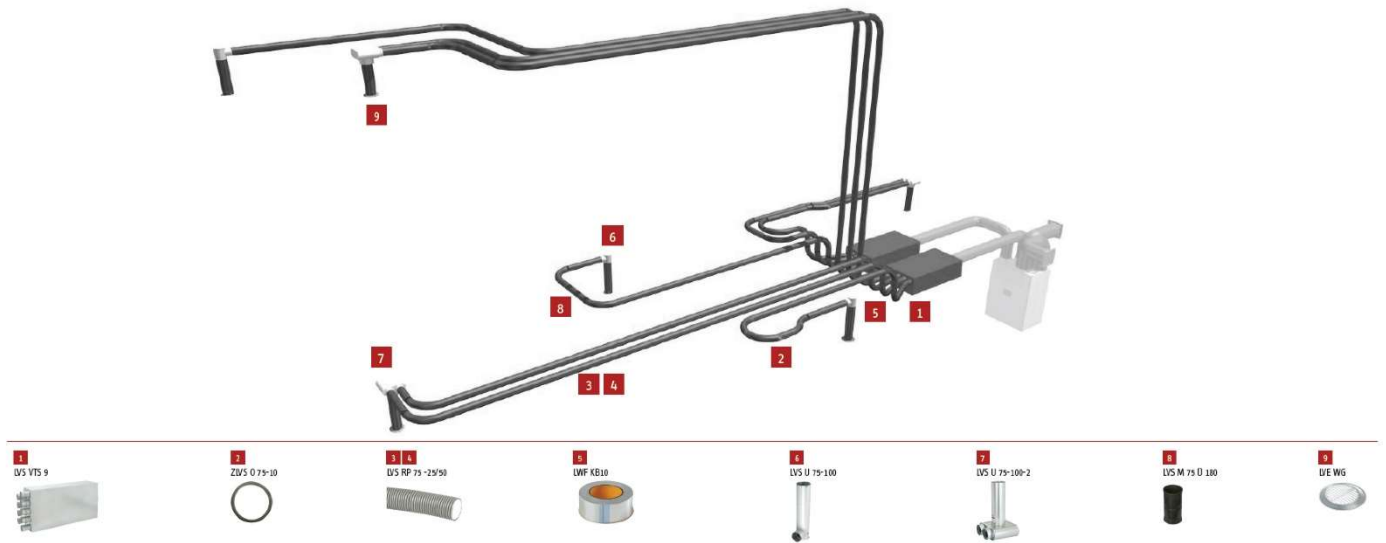
Test Results at 50 Pascals:	Depressurization	Pressurization	Average
q ₅₀ : m ³ /h (Airflow)	212 (+/- 1.9 %)	202 (+/- 1.5 %)	207
n ₅₀ : 1/h (Air Change Rate)	0,32	0,31	0,32
q _{F50} : m ³ /(h·m ² Floor Area)	1,21	1,16	1,19
q _{E50} : m ³ /(h·m ² Envelope Area)	0.36	0.34	0.35
Leakage Areas:			
ELA ₅₀ : m ²	0.0065 (+/- 1.5 %)	0.0062 (+/- 1.5 %)	0.0063
ELA _{F50} : m ² /m ²	0.0000370	0.0000353	0.0000362
ELA _{E50} : m ² /m ²	0.0000110	0.0000105	0.0000107
Building Leakage Curve:			
Air Flow Coefficient (C _{env}) m ³ /(h·Pa ⁿ)	12,1 (+/- 9,5 %)	8,8 (+/- 7,5 %)	
Air Leakage Coefficient (C _L) m ³ /(h·Pa ⁿ)	12,0 (+/- 9,5 %)	8,8 (+/- 7,5 %)	
Exponent (n)	0,733 (+/- 0,027)	0,801 (+/- 0,021)	
Coefficient of Determination (r ²)	0,99798	0,99895	

Test Standard: ISO 9972
Test Mode: Depressurization and Pressurization
Type of Test Method: Method 1 - Test of Building in use
Purpose of Test: Airtightness Test n₅₀ ≤ 2 1/h



Ventilation:

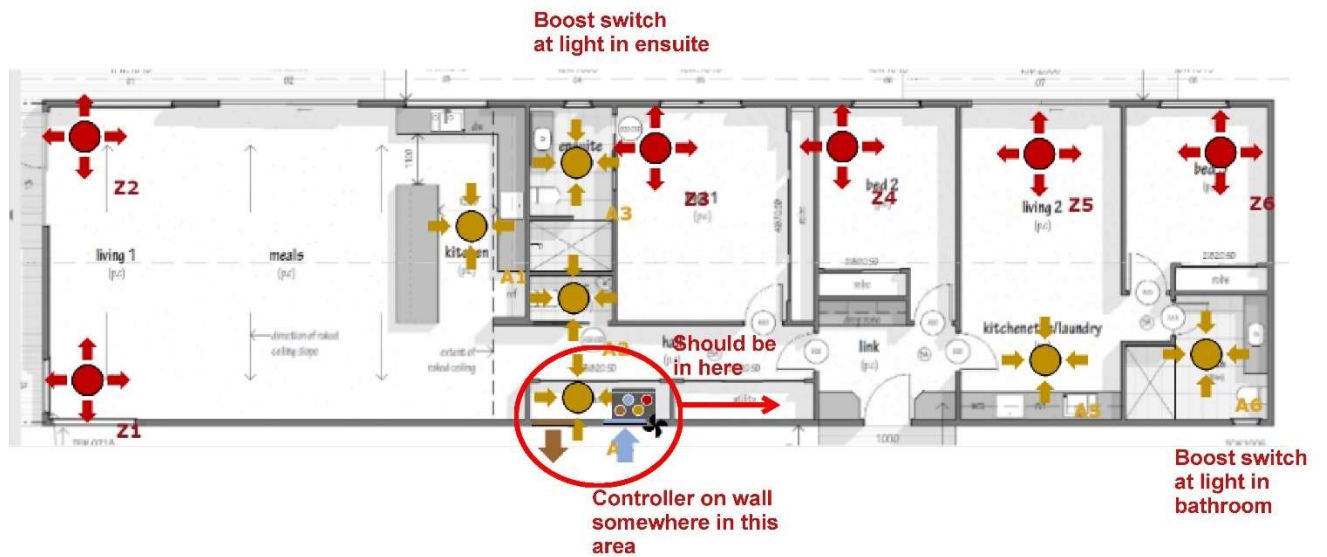
Ducting of the ventilation is achieved by flexible pipes made of PE plastic. The following diagram demonstrates the items utilized for the air handling of the ventilation system.



Ventilation throughout the building is achieved by the mechanical ventilation with heat recovery system: Stiebel Eltron LWZ 180.

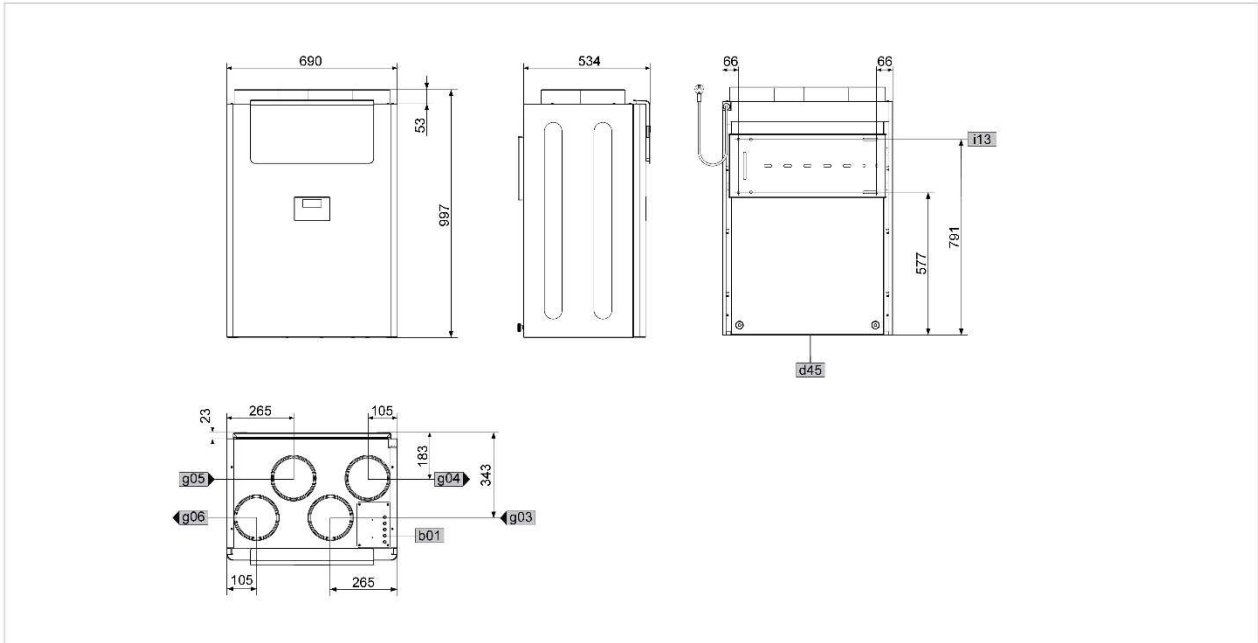
Heat recovery level up to 94%

Power consumption, fan 65W Air flow rate 60-250m³/h

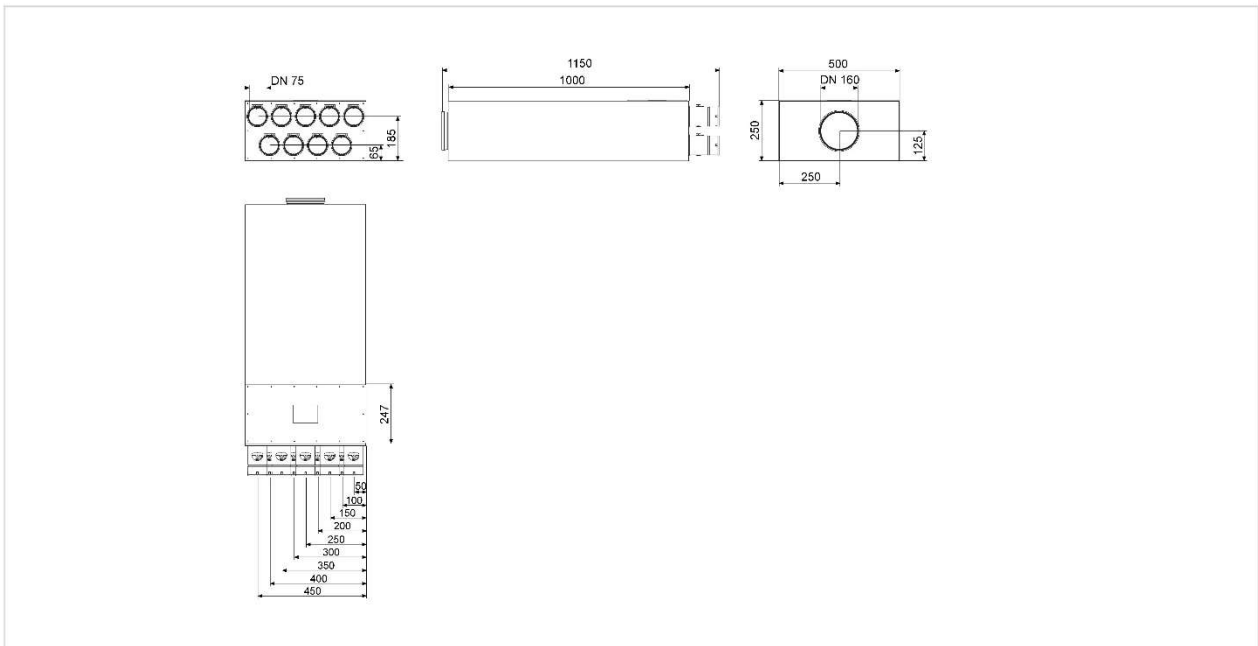


Dimension drawings

Dimensional drawings Central Ventilation device LWZ 180

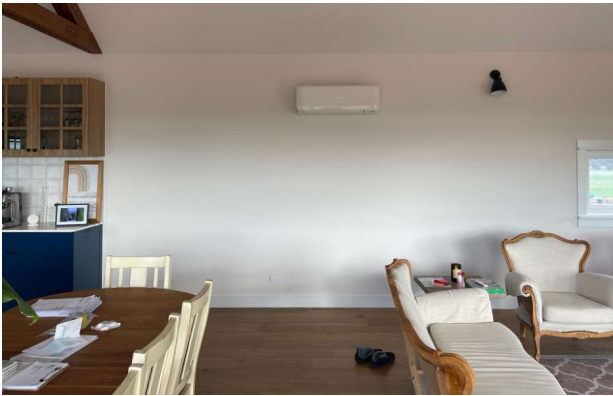


Dimensional drawings LVS Central air distributor with silencer VTS 9



Heat Supply:

Heat supply is achieved by 2 x Mitsubishi reverse cycle air conditioners. 1 placed in the living room on the eastern end of the building and the other placed in the living room at the western end of the building.



PHPP Results:

Passive House Verification



Building:	Farm Hill Dwelling	
Street:	46 Hartwigs Road	
Postcode/City:	2666	Gidginbung
Province/Country:	NSW	AU-Australia
Building type:	RESIDENTIAL	
Climate data set:	ud...03-West Wyalong v10	
Climate zone:	5: Warm	Altitude of location: 292 m
Home owner / Client:	M. & P. Stimson	
Street:	1157 Slingers Lane	
Postcode/City:	2666	Gidginbung
Province/Country:	NEW SOUTH WALES	AU-Australia
Mechanical engineer:	Eclipse Passive House	
Street:	Station Road	
Postcode/City:	2147	Seven Hills
Province/Country:	New South Wales	AU-Australia
Certification:	Clare Parry	
Street:	Magnolia Road	
Postcode/City:	3185	GARDENVALE
Province/Country:	VICTORIA	
Year of construction:	2021	Interior temperature winter [°C]: 20.0
No. of dwelling units:	1	Interior temp. summer [°C]: 25.0
No. of occupants:	3.0	Internal heat gains (IHG) heating case [W/m²]: 2.4
		IHG cooling case [W/m²]: 2.4
		Specific capacity [Wh/K per m² TFA]: 84
		Mechanical cooling: x

Architecture:	Sewell Design	
Street:	57 Trail Street	
Postcode/City:	2650	Wagga Wagga
Province/Country:	NSW	AU-Australia
Energy consultancy:	Sewell Design	
Street:	57 Trail Street	
Postcode/City:	2650	Wagga Wagga
Province/Country:	NSW	AU-Australia

Specific building characteristics with reference to the treated floor area

Characteristic	Value	Comparison	Alternative criteria		Fulfilled? ²
			Criteria	Alternative criteria	
Space heating	Treated floor area m²: 167.9				
	Heating demand kWh/(m²a): 9	≤	15	-	yes
	Heating load W/m²: 11	≤	-	10	yes
Space cooling	Cooling & dehum. demand kWh/(m²a): 3	≤	15	15	yes
	Cooling load W/m²: 11	≤	-	10	yes
	Frequency of overheating (> 25 °C) %: -	≤	-	-	-
	Frequency of excessively high humidity (> 12 g/kg) %: 0	≤	10	-	yes
Airtightness	Pressurization test result n ₅₀ 1/h: 0.4	≤	0.6	-	yes
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a): 58	≤	-	-	-
	PER demand kWh/(m²a): 27	≤	45	30	yes
Primary Energy Renewable (PER)	Generation of renewable energy (in relation to projected building footprint area) kWh/(m²a): 48	≥	60	47	yes

² Empty field: Data missing; '-': No requirement

User Opinion:

The users of the building have reported total satisfaction with the product and have advised the level of comfort whilst living in the building has exceeded their expectations.