

Project Documentation Gebäude-Dokumentation

Abstract | Zusammenfassung



Corbel House, 59 Rock Road, Cambridge

Data of building | Gebäudedaten

Year of construction Baujahr	2025	Space heating Heizwärmebedarf	24 kWh/(m²a)
U-value external wall U-Wert Außenwand	0,144 W/(m ² K)		
U-value floor U-Wert Kellerdecke	0,171 W/(m ² K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	53 kWh/(m ² a)
U-value roof U-Wert Dach	0,097 W/(m ² K)	Generation of renewable Energy Erzeugung erneuerb. Energie	25 kWh/(m ² a)
U-value window U-Wert Fenster	0,88 W/(m ² K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	63 kWh/(m ² a)
Heat recovery Wärmerückgewinnung	Unit - 91 % Effective - 88.5 %	Pressurization test n ₅₀ Drucktest n ₅₀	0,84 h ⁻¹
Special features Besonderheiten	3.24 kWp of Solar PV, ASHP		

Brief Description

EnerPhit Cambridge, Cambridgeshire

This is a single-family home in Cambridge, UK, retrofitted to the EnerPHit Standard. Originally a 2 storey semidetached house with a single storey garage, it has been converted to double storey throughout with the existing garage converted into a workshop and utility area. It has a treated floor area of 147.50m² with the ground floor comprising of a workshop, utility, WC, kitchen, living room, hallway and gym and upstairs including 3 bedrooms, an ensuite and washroom.

The dwelling uses a mix of different build types throughout, with the section above the garage being new build timber frame and the existing walls using an ESP EWI system on the insulated cavity wall. The roof is timber frame with PIR between and above the rafters and the ground floor is foam glass aggregate.

Responsible project participants

Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	Rock Architects https://www.rockarchitects.co.uk/
Implementation planning Ausführungsplanung	Rock Architects https://www.rockarchitects.co.uk/
Building systems Haustechnik	Greengauge Building Energy Consultants https://ggbec.co.uk/
Structural engineering Baustatik	Gawn Associates https://www.gawnassociates.com/
Building physics Bauphysik	Greengauge Building Energy Consultants https://ggbec.co.uk/
Passive House project planning Passivhaus-Projektierung	Greengauge Building Energy Consultants https://ggbec.co.uk/
Construction management Bauleitung	Arnold & Willis Construction https://www.arnoldwillis.co.uk/

Certifying body

Zertifizierungsstelle

Etude Consulting	https://etude.co.uk/
------------------	---

Certification ID

Zertifizierungs ID

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

Author of project documentation

Verfasser der Gebäude-Dokumentation

James Clifford
ggbec.co.uk

Date
Datum

09.02.2026

Signature
Unterschrift

James Clifford

1. View Photos

Ansichtsfotos



East



West



South



North

2. Interior Photo

Innenfoto exemplarisch

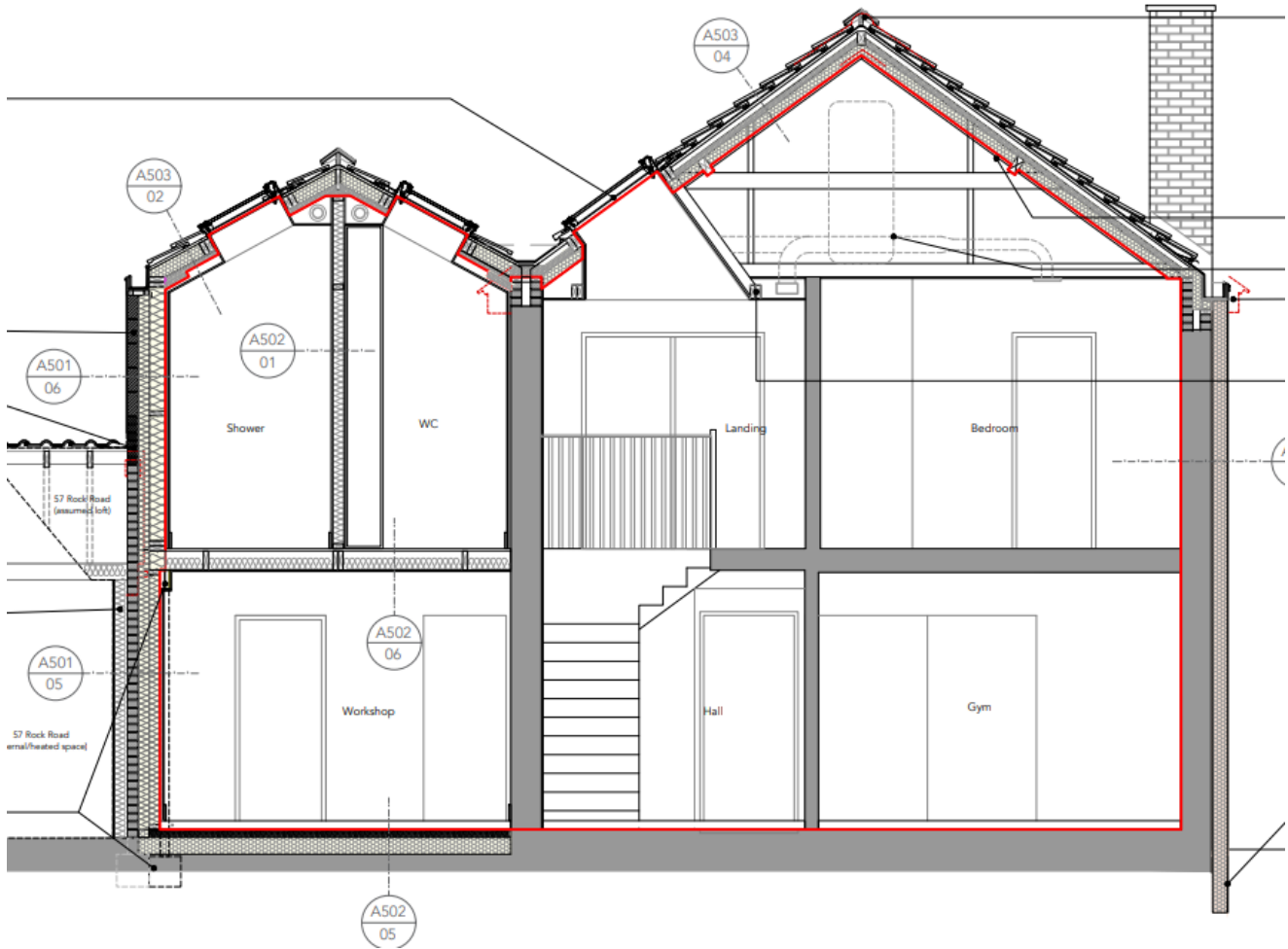




Interior photography by building narratives - <https://www.instagram.com/buildingnarratives/>

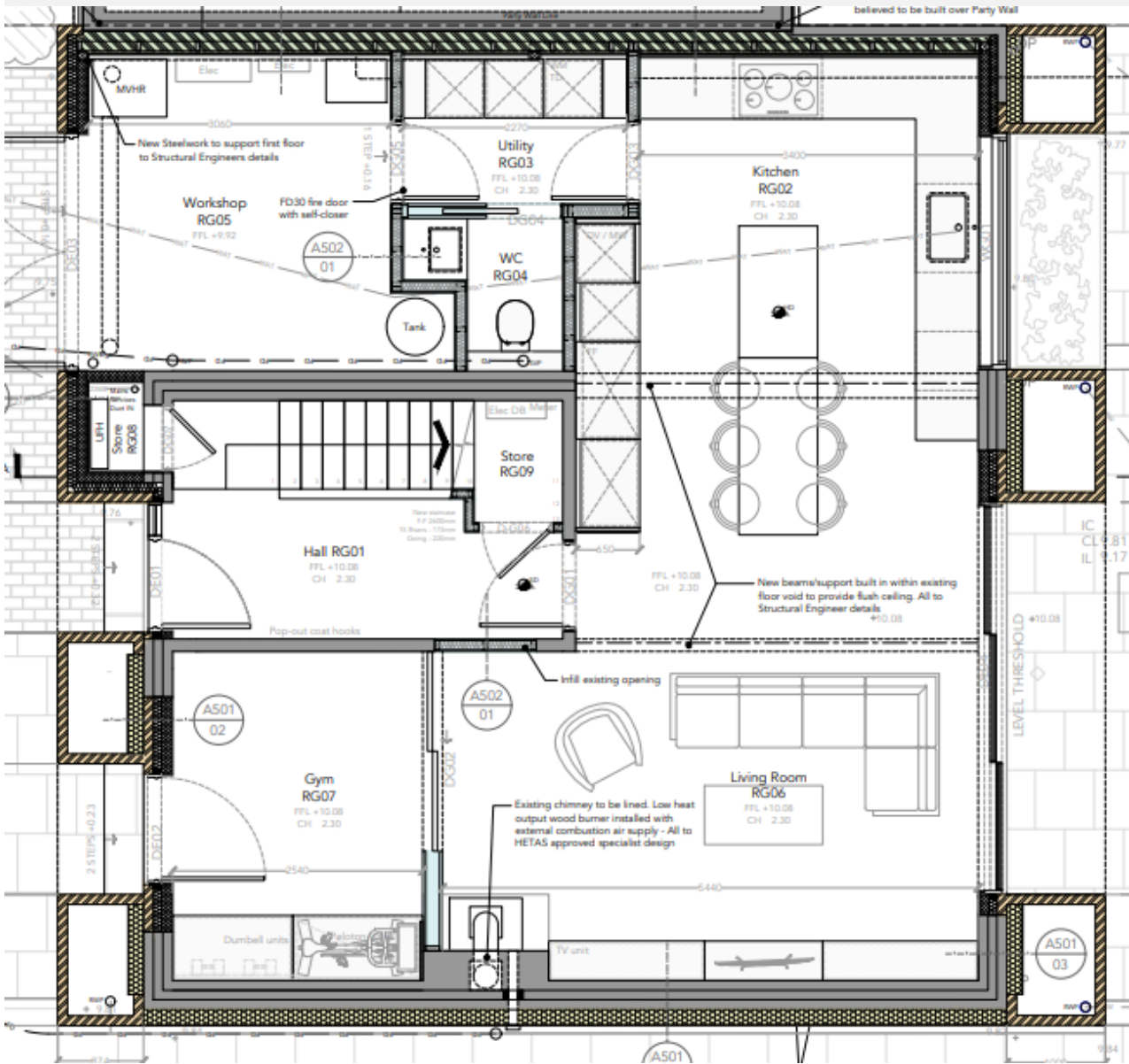
3. Cross Section Drawing

Schnittzeichnung

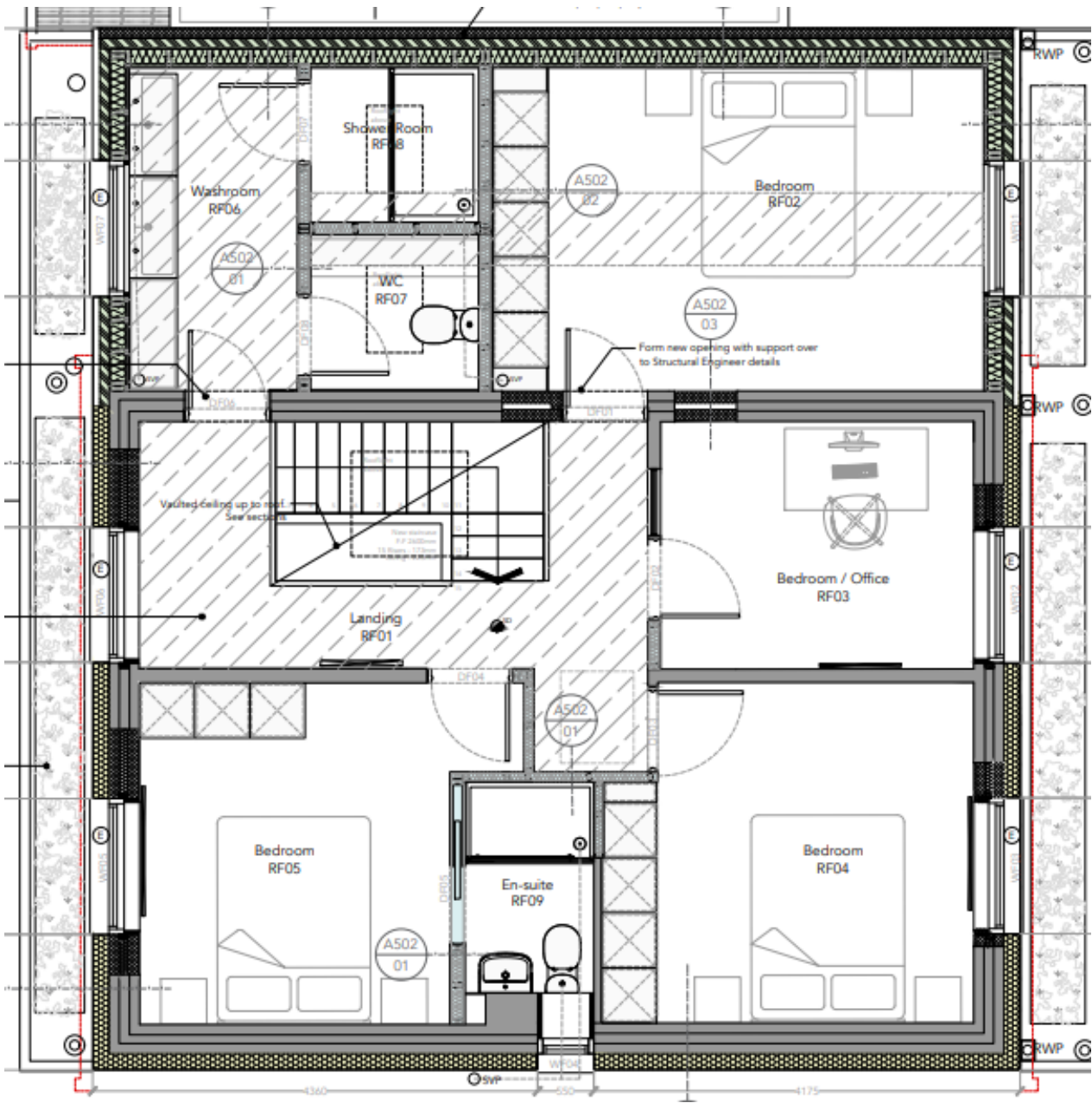


4. Floor Plans

Grundrisse



Ground floor

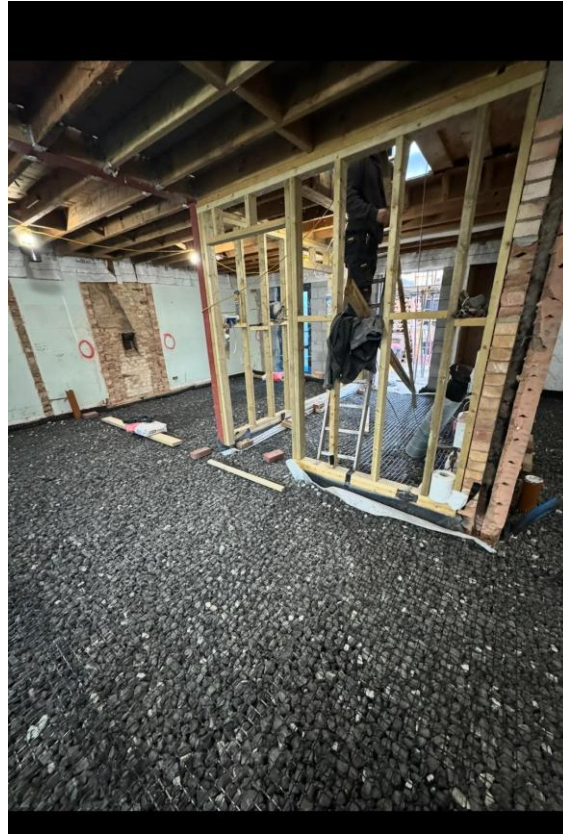
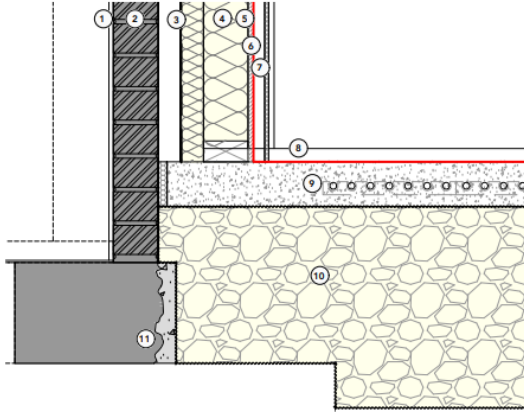


1st floor

5. Floor Construction

Konstruktion der Bodenplatte

Floor insulation is 450 mm Geocell foamed glass aggregate. Thermal bridging at the floor edge is mitigated with an Marmox Thermoblock and cavity insulation as well as a cork perimeter strip between the slab edge and brick/blockwork.



02 Party wall to ground floor 1:10 at A3

External to Internal

- ① Render to match first floor
- ② Existing single skin brickwork party wall.
- ③ 60-100mm void (voids), fully filled with flexible wood fibre insulation batts
- ④ 100mm Timber Stud Wall to Engineers specification, full filled with flexible wood fibre insulation batts.
- ⑤ Airtight layer. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑥ 25mm Battered service void - Ensure integrity of airtight layer when fixing battens
- ⑦ 9mm OSB and 12.5mm standard wallboard with plaster skim.
- ⑧ Airtight layer taped to screed below floor finishes, to manufacturers instructions.
- ⑨ 100mm NHL/aggregate screed (up to Existing FSL) with 30mm Cork Board edging & Geogrid for UFH pipes, to manufacturers specification.
- ⑩ 450mm well compacted GEOCELL foamed glass aggregate insulation, to manufacturers specification.
- ⑪ No existing footings to party wall brickwork, laid directly onto slab. Slab made good to No. 59 side and all structure fixed back to independent steel frame.

Description of building assembly

Assembly no.

2207 A502 04 Ground Floor Build Up - RC Slab

10ud

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
NHL screed	1.000					100
Geocell	0.080					450
Percentage of sec. 1:	100%	Percentage of sec. 2:		Percentage of sec. 3:		

Heat transmission resistance coefficients

Interior R_{si} :	0.17	m ² K/W
Exterior R_{se} :	0.00	m ² K/W

Total thickness [cm]: **55.0**

U-value [W/(m²K)]: **0.170**

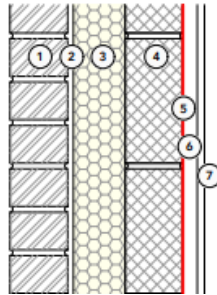
6. Wall Construction

Konstruktion der Außenwände

The wall construction is a mix of timber frame with NyRock mineral wool (with an EPS EWI at the kitchen) for the existing party wall. At FF the timber frame wall continues using a Gutex woodfibre insulation. There is new build facing brick cavity walls with Celotex Thermaclass insulation and infill sections (where previous openings had been removed) using Isover cavity wall slab and external EPS EWI. The existing cavity walls are EPS EWI with a topped up mineral wool insulation in the cavity.

01 New Facing Brick Walls 0.17 W/m²K
 1:10 at A3

- External to Internal**
- ① 100mm Approved Facing brick
 - ② 10mm low emissivity cavity
 - ③ Celotex Thermaclass Cavity Wall 21 90mm
 - ④ 100mm H+H - Celcon Solar blockwork (lambda = 0.11)
 - ⑤ Pro Clima Intello Plus Airtightness membrane/MCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
 - ⑥ 25mm Battered service void - Ensure integrity of airtight layer when fixing battens
 - ⑦ 12.5mm Gyproc Wallboard with plaster skim.



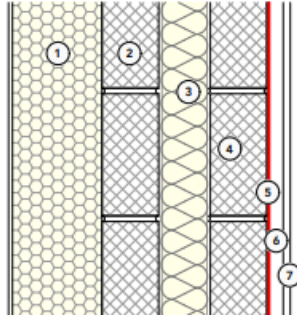
Description of building assembly		Assembly no.				
2207 A501 01 - New facing brick wall		06ud				
Orientation of building assembly (or R _{si}) 2-Wall		Interior insulation?				
Adjacent to (or R _{se}) 1-Outdoor air		U-value supplement [W/(m ² K)] 0.001				
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Brick outer	1.500					100
10mm cavity	0.150					10
Celotex thermaclass cavity wall 21	0.021					90
Celcon solar block	0.110			mortar joints	0.800	100
service cavity	0.140	bridging	0.130			25
plasterboard	0.190					15
Percentage of sec. 1: 68%		Percentage of sec. 2: 25.0%		Percentage of sec. 3: 6.6%		
Heat transmission resistance coefficients				Total thickness [cm]: 34.0		
Interior R _{si} : 0.13 m ² K/W		U-value [W/(m ² K)]: 0.180				
Exterior R _{se} : 0.04 m ² K/W						

02 New Infill walls - External Wall insulation

1:10 at A3

External to Internal

- ① 150mm Baumit OpenTherm Reflectair breathable external wall insulation render system to manufacturers specification
- ② 100mm H+H - Celcon Solar blockwork ($\lambda = 0.11$)
- ③ Fully filled cavity with Isover Cavity Wall Slab (CWS) 36
- ④ 100mm H+H - Celcon Solar blockwork ($\lambda = 0.11$)
- ⑤ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑥ 25mm Battered service void - Ensure integrity of airtight layer when fixing battens
- ⑦ 12.5mm Gyproc Wallboard with plaster skim.



Description of building assembly

Assembly no.

2207 A501 02 - New Infill Walls-External Wall Insulation

05ud

Orientation of building assembly (or R_{si})		2-Wall		Interior insulation?		
Adjacent to (or R_{se})		1-Outdoor air		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]
Plasterboard	0.190					15
service cavity	0.140	bridging	0.130			25
Celcon solar block	0.110			mortar joints	0.800	100
Knauf Supafil	0.034					80
Celcon solar block	0.110			mortar joints	0.800	100
Baumit Opentherm Reflectair	0.031					150
Baumit render system	0.800					20
Percentage of sec. 1:	68%	Percentage of sec. 2:	25.0%	Percentage of sec. 3:	6.6%	

Heat transmission resistance coefficients

Interior R_{si} :	0.13	m ² K/W
Exterior R_{se} :	0.04	m ² K/W

Total thickness [cm]: **49.0**

U-value [W/(m²K)]: **0.109**

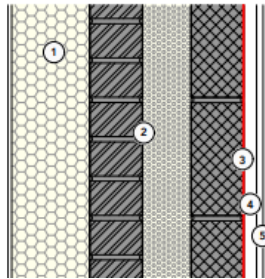
03 Existing walls - External Wall insulation

<0.13 W/m²K

1:10 at A3

External to Internal

- ① 150mm Baumit OpenTherm breathable external wall insulation render system to manufacturers specification
- ② Existing masonry wall - Fully filled cavity with blown-in insulation. Existing cavity wall insulation to remain. Matching insulation blown-in locally following camera survey and then subject to approval via thermographic imaging.
- ③ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ④ 25mm Battered service void - Ensure integrity of airtight layer when fixing battens
- ⑤ 12.5mm Gyproc Wallboard with plaster skim.



Description of building assembly

Assembly no.

2207 A501 03 - Existing Walls - External Wall Insulation

04ud

Orientation of building assembly (or R_{si})		2-Wall		Interior insulation?		
Adjacent to (or R_{se})		1-Outdoor air		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]
Baumit render system	0.800					20
Baumit Opentherm Reflectair	0.031					150
Brickwork	1.200					99
Exg Cavity fill topped up with Knauf Supafil	0.042					95
Blockwork	1.200					99
service cavity	0.140	timber bridging	0.130			25
plasterboard & skim	0.190					15
Percentage of sec. 1:	75%	Percentage of sec. 2:	25.0%	Percentage of sec. 3:		

Heat transmission resistance coefficients

Interior R_{si} :	0.13	m ² K/W
Exterior R_{se} :	0.04	m ² K/W

Total thickness [cm]: **50.3**

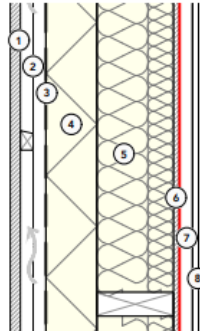
U-value [W/(m²K)]: **0.131**

04 New Walls - First Floor Timber Framed Extension <math><0.17 \text{ W/m}^2\text{K}</math>

1:10 at A3

External to Internal

- 1 Baunit render on backing board, with movement joints and components to manufacturers specification
- 2 Cross-battened 50mm ventilated cavity
- 3 Pro Klima - Solitex Fronta WA Breather membrane
- 4 100mm Gutex Multitherm woodfibre rigid insulation or approved alternative.
- 5 150mm Structural Timber Wall to Engineers specification, full filled with Gutex Thermoflex flexible woodfibre insulation batts.
- 6 Finsa Superpan Vapourstop airtight racking board. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- 7 25mm Battened service void - Ensure integrity of airtight layer when fixing battens
- 8 12.5mm Gyproc Wallboard with plaster skim.



Description of building assembly

Assembly no.

2207 A501 04 - First Floor Timber Framed Extension

03ud

Orientation of building assembly (or R_{se})		2-Wall		Interior insulation?		
Adjacent to (or R_{si})		3-Ventilated		U-value supplement $[W/(m^2K)]$		
Area section 1	λ $[W/(mK)]$	Area section 2 (optional)	λ $[W/(mK)]$	Area section 3 (optional)	λ $[W/(mK)]$	Thickness [mm]
Naturheld 140	0.043					100
Steicoflex 036	0.036	Timber bridging	0.130			150
Finsa Superpan racking board	0.150					12
service void	0.140			timber bridging	0.130	25
plasterboard	0.190					15
Percentage of sec. 1:	59%	Percentage of sec. 2:	15.7%	Percentage of sec. 3:	25.0%	

Heat transmission resistance coefficients

Interior R_{si} :	0.13	m^2KW
Exterior R_{se} :	0.13	m^2KW

Total thickness [cm]: **30.2**

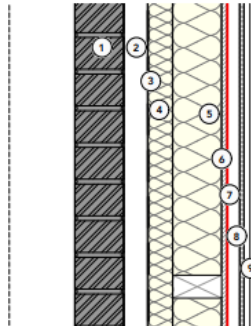
U-value $[W/(m^2K)]$: **0.169**

05 Party Wall to Ground Floor - Workshop, Utility (Adjoining Internal Heated Space)

1:10 at A3

Internal to Internal

- 1 Existing single skin brickwork party wall.
- 2 50mm existing unventilated cavity
- 3 Breather membrane
- 4 50mm Rockwool NyRock Rainscreen 032
- 5 100mm Timber Stud Wall, full filled with Rockwool NyRock Frame Stab 032 or approved alternative.
- 6 12mm OSB
- 7 Pro Klima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- 8 25mm Battened service void - Ensure integrity of airtight layer when fixing battens
- 9 12mm OSB & 12.5mm Gyproc Wallboard with plaster skim.



Description of building assembly

Assembly no.

2207 A501 05 - Party Wall to Ground Floor - Kitchen

02ud

Orientation of building assembly (or R_{se})		2-Wall		Interior insulation?		
Adjacent to (or R_{si})		1-Outdoor air		U-value supplement $[W/(m^2K)]$		
Area section 1	λ $[W/(mK)]$	Area section 2 (optional)	λ $[W/(mK)]$	Area section 3 (optional)	λ $[W/(mK)]$	Thickness [mm]
Baunit render system	0.800					20
Brickwork	1.200					99
Steicoflex 036	0.036					60
Steicoflex 036	0.036	timber	0.130			100
Finsa Superpan racking board	0.150					12
service void	0.140			timber bridging	0.130	25
plasterboard	0.190					15
Percentage of sec. 1:	59%	Percentage of sec. 2:	15.7%	Percentage of sec. 3:	25.0%	

Heat transmission resistance coefficients

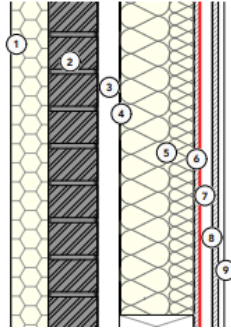
Interior R_{si} :	0.13	m^2KW
Exterior R_{se} :	0.04	m^2KW

Total thickness [cm]: **33.1**

U-value $[W/(m^2K)]$: **0.226**

External to Internal

- ① 60mm Baunit OpenTherm Reflectair breathable external wall insulation render system to manufacturers specification
- ② Existing single skin brickwork.
- ③ 50mm existing unventilated cavity
- ④ Breather membrane
- ⑤ 150mm Timber Stud Wall, full filled with Rockwool NyRock Frame Slab 032 or approved alternative.
- ⑥ 12mm OSB
- ⑦ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑧ 25mm Battened service void - Ensure integrity of airtight layer when fixing battens
- ⑨ 12mm OSB & 12.5mm Gyproc Wallboard with plaster skim.



Description of building assembly

Assembly no.

2207 A501 06 - Party/Boundary wall to External (First Floor)

01ud

Orientation of building assembly (or R _{se})		2-Wall		Interior insulation?				
Adjacent to (or R _{se})		1-Outdoor air		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]		
Baunit render system	0.800					20		
Celcon solar block	0.110			Mortar Joints	0.800	100		
Steicoflex 036	0.036					60		
Steicoflex 036	0.036	timber	0.130			150		
Finsa Superpan racking board	0.150					12		
service void	0.140			timber bridging	0.130	25		
plasterboard	0.190					15		
Percentage of sec. 1:		78%	Percentage of sec. 2:		15.7%	Percentage of sec. 3:		6.6%

Heat transmission resistance coefficients

Interior R _{si} :	0.13	m²K/W
Exterior R _{se} :	0.04	m²K/W

Total thickness [cm]: **38.2**

U-value [W/(m²K)]: **0.163**

7. Roof Construction

Konstruktion des Daches

The existing pitched roof is insulated at rafter level with 90mm PIR between joists, and 150mm above. The New build pitched roof uses the same buildup but with a 120mm PIR between rafters. There is also a small section of flat roof to the front that is insulated with 125mm PIR

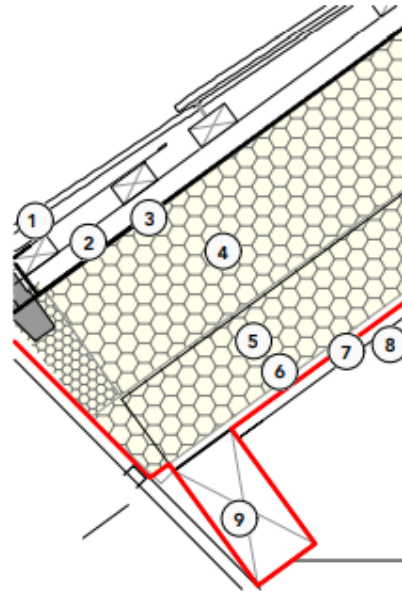
04 Pitched Roof Build up - Existing Loft (Section BB)

0.10 W/m²K

1:10 at A3

External to Internal

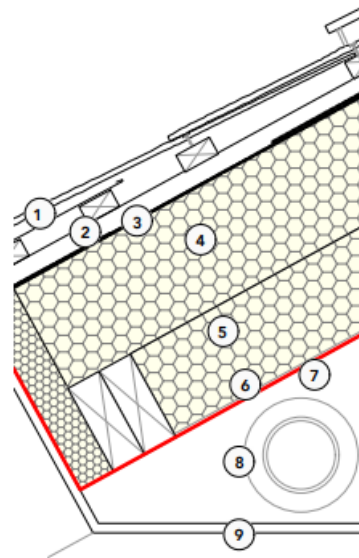
- ① New tiles fixed to battens
- ② 38mm minimum counter batten fixing through insulation to rafters to create ventilated cavity
- ③ New breather membrane
- ④ 150mm Celotex XR4000 over existing 100mm rafters or approved alternative
- ⑤ 90mm Celotex GA4000 between existing 100mm rafters or approved alternative
- ⑥ 10mm Cavity (low emissivity) between existing rafters
- ⑦ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑧ 12.5mm standard plasterboard ceiling & skim, battened if necessary to fix membrane.
- ⑨ Airtight membrane taped around existing roof structure as necessary.



Description of building assembly						Assembly no.	
2207 A503 04 - Existing Loft						09ud	
Orientation of building assembly (or R _{si})			1-Roof		Interior insulation?		
Adjacent to (or R _{se})			3-Ventilated		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]							
Tiling including batten space							
counter batten							
Breather membrane							
Eurothane GP over rafters							
Eurothane GP between rafters							
Cavity (low emissivity) between rafter							
Gyproc Wallboard							
Percentage of sec. 1:		88%	Percentage of sec. 2:		11.8%	Percentage of sec. 3:	
Heat transmission resistance coefficients						Total thickness [cm]:	
Interior R _{si} :		0.10	m ² K/W		26.5		
Exterior R _{se} :		0.10	m ² K/W		U-value [W/(m ² K)]:		
						0.097	

External to Internal

- ① New tiles fixed to battens
- ② 38mm minimum counter batten fixing through insulation to rafters to create ventilated cavity
- ③ New breather membrane
- ④ 150mm Celotex XR4000 over new 125mm rafters or approved alternative
- ⑤ 120mm Celotex GA4000 between new 125mm rafters or approved alternative
- ⑥ 5mm Cavity (low emissivity) between new 125mm rafters
- ⑦ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑧ Services zone with MF suspended ceiling to landing
- ⑨ 12.5mm standard plasterboard ceiling & skim.



Description of building assembly

Assembly no.

2207 A503 02 - Sheet 3 - Pitched roof build up - extension roof

08ud

Orientation of building assembly (or R _{si})	1-Roof	Interior insulation?	
Adjacent to (or R _{se})	3-Ventilated	U-value supplement [W/(m²K)]	0.001
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]
Tiling including batten space			
counter batten			
Breather membrane			
Eurothane GP over rafters	0.022		
120mm Eurothane GP between rafters	0.022	Rafters	0.130
Low emissivity cavity	0.026	Rafters	0.130
Gyproc Wallboard	0.190		
Percentage of sec. 1:	88%	Percentage of sec. 2:	11.8%

Heat transmission resistance coefficients

Interior R _{si} :	0.10	m²K/W
Exterior R _{se} :	0.10	m²K/W

Total thickness [cm]: 29.0

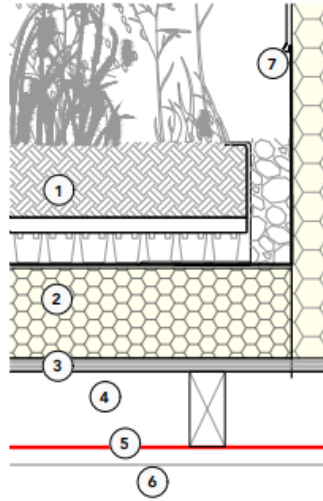
U-value [W/(m²K)]: 0.090

01 Flat Roof Build up - Single Ply, Sedum

1:10 at A3

External to Internal

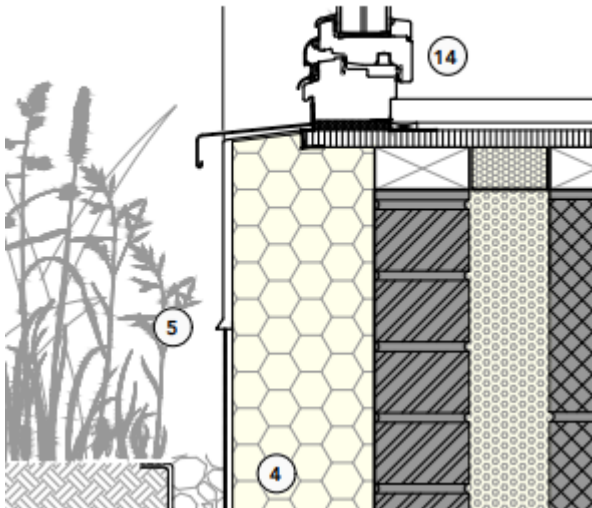
- ① Bauder wildflower sedum roof. Seed mix 5. With 50mm washed stone perimeter and drip irrigation system to specialist contractors design.
- ② BauderTHERMOFOL PVC Single Ply System adhered to BauderPIR tapered insulation to Bauder drawings & specifications.
- ③ 18mm WBP plywood deck
- ④ Flat roof joists to structural engineers specification.
- ⑤ Pro Clima Intello Plus Airtightness membrane/VCL. Ensure all joints, junctions and service penetrations are taped with airtight tape and grommets as necessary.
- ⑥ MF Suspended ceiling as necessary to required height, 12.5mm standard plasterboard ceiling & plaster skim.
- ⑦ Upstand from Bauder single ply flashed into Drip bead to EWI render to manufacturers approved detail

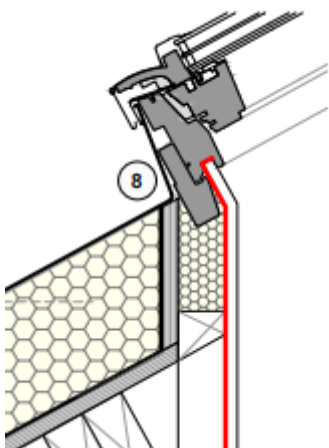


Description of building assembly						Assembly no.	
2207 A503 01 - Sheet 3 - Flat Roof Build up - Single Ply, Sedum						11ud	
Orientation of building assembly (or $R_{s,i}$)		1-Roof		Interior insulation?			
Adjacent to (or $R_{s,e}$)		1-Outdoor air		U-value supplement [$W/(m^2K)$]			
Area section 1	λ [$W/(mK)$]	Area section 2 (optional)	λ [$W/(mK)$]	Area section 3 (optional)	λ [$W/(mK)$]	Thickness [mm]	
Bauder PIR	0.024					125	
Ply deck	0.130					18	
Joist zone	0.610	Joists	0.130			100	
Plasterboard	0.190					15	
Percentage of sec. 1:	75%	Percentage of sec. 2:	25.0%	Percentage of sec. 3:			
Heat transmission resistance coefficients						Total thickness [cm]: 25.8	
Interior $R_{s,i}$:		0.10				m^2K/W	
Exterior $R_{s,e}$:		0.04				m^2K/W	
						U-value [$W/(m^2K)$]: 0.172	

8. Windows and Windows Installation

Fenster und Fenster-Einbau





Description of the window (frame) manufacturer	21 Degrees/Green Building Store & Velux
Window make (frame; product name)	GBS98 & GGU/GGL (Velux)
Frame-U-Value Uf (mean)	GBS98 - 1,04 W/(m ² K) Velux - 1,68 W/(m ² K)
Glazing type	GBS - Argon filled; 6-20-4-22-4 4-22-4-22-4 12 pine ply-2 EPDM-30 xps-12 pine ply 6-20-6-18-6 Velux – Argon Filled; 6-13-3-13-4
Glass-U-Value Ug	GBS98 - 0,52 / 0.52 / 0.52 / 0.58 / 0.52 W/(m ² K) Velux – 0,80 W/(m ² K) (adjusted for inclination +0,20)
g-value of glazing	GBS98 - 0,52 / 0.53 / 0.53 / 0.00 / 0.52 Velux – 0.44

9. Airtightness

Beschreibung der luftdichten Hülle

The air pressure tests were carried out by Anglia Air testing, with the overall result being 0.84 ach.

Dwelling	50 Pa-Pressure test $n_{50} \text{ h}^{-1}$
Rock Road	0,84 h

Airtightness measures

Floor – Limecrete Slab

Wall – Pro Clima Intello Plus

Roofs – Pro Clima Intello Plus

Windows – Compriband foam tape & Tescon Vana tape

Junctions – Connected with Tescon Vana tape airtight tape.

General – AeroBarrier air sealing system used to further improve airtightness.

10. Ventilation

Lüftungsgerät

The mechanical ventilation unit is Zehnder ComfoAir Q350. This is a Passivhaus Certified units, with high heat recovery and summer bypass. The ducts are insulation with 50 mm Armaflex insulation.



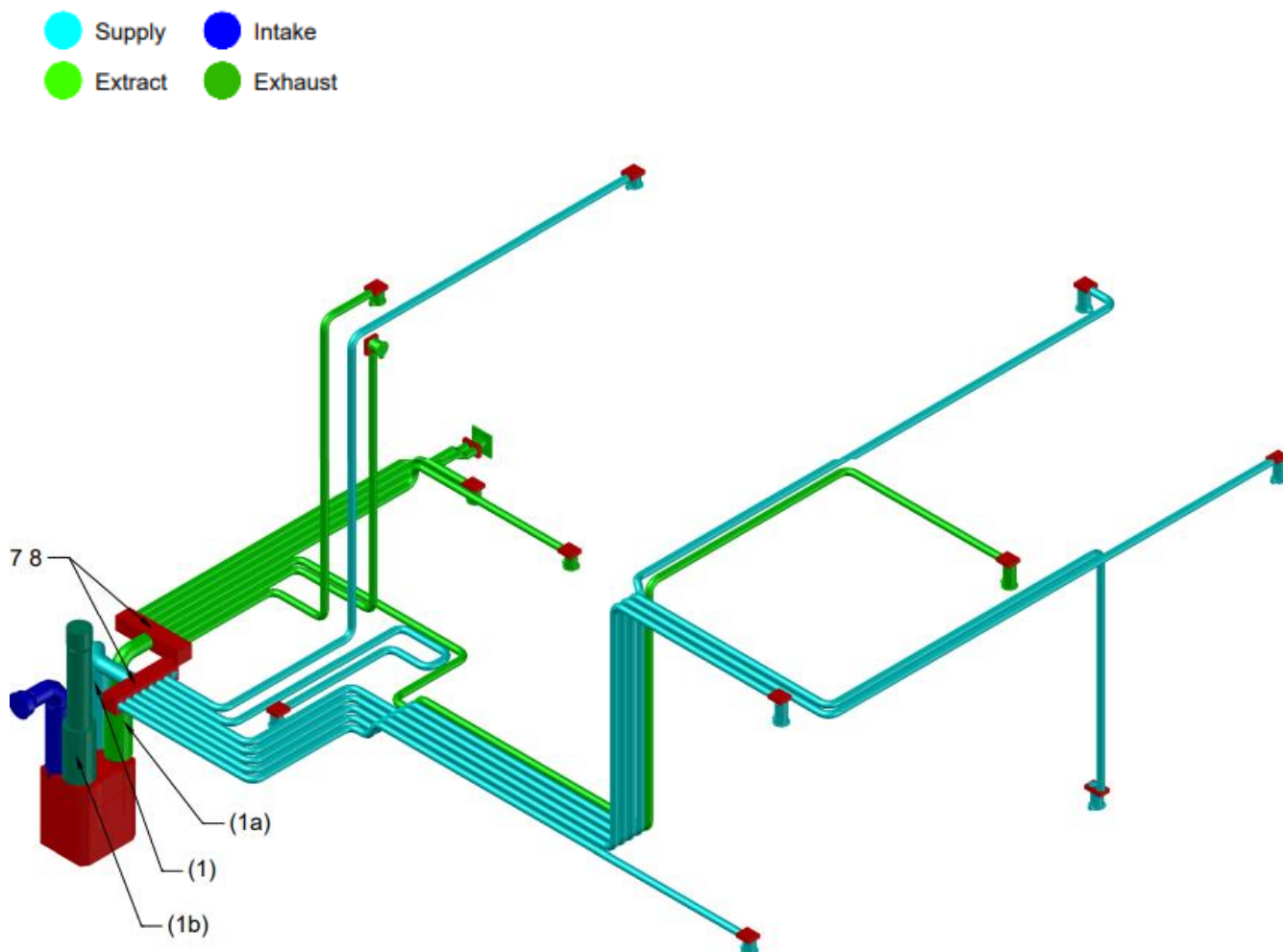
Ventilation Unit	Zehnder ComfoAir Q350
Unit Heat Recovery Efficiency	91 %
Effective Heat Recovery Efficiency	88.5%
Electrical Efficiency	0,24 Wh/m ³

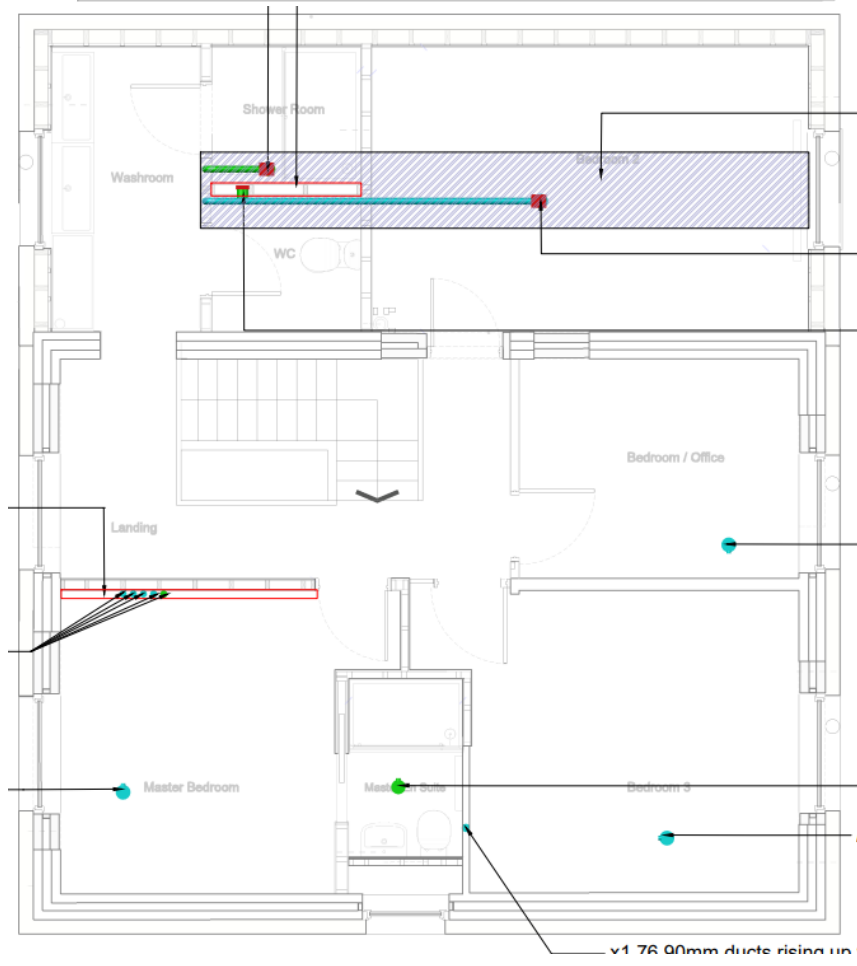
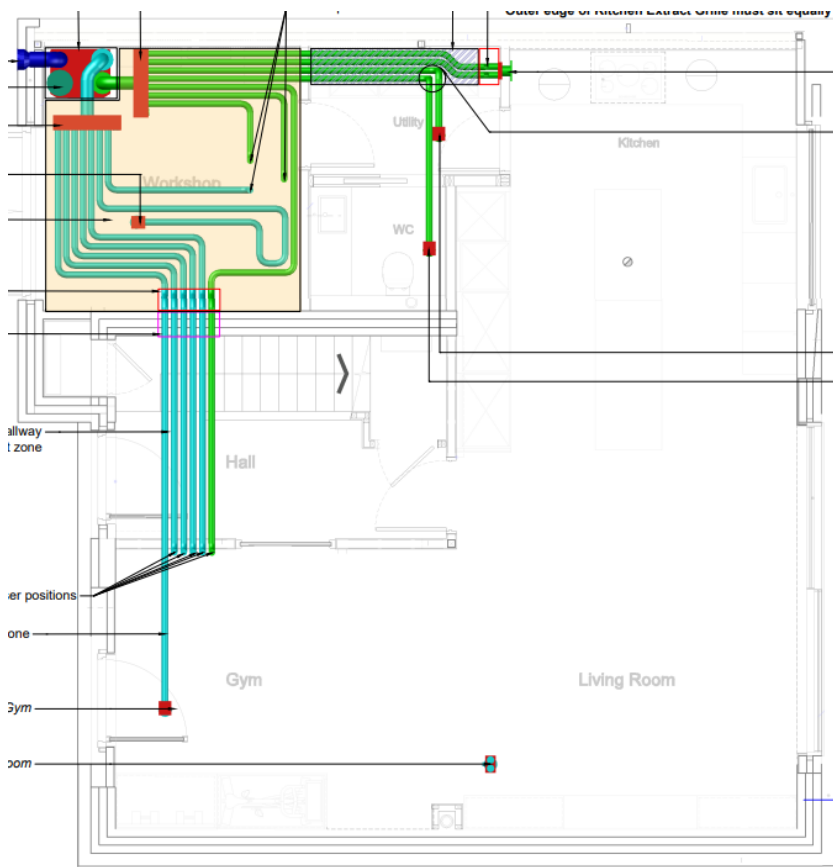
11. Ventilation Ductwork

Lüftungsplanung Kanalnetz

Below shows the ventilation layout. Supply ducts are shown in light blue (living rooms and bedrooms) and extract ducts are shown in green (kitchens, bathrooms/WCs and some storage areas). Circulation areas are ventilated by air transfer with door undercuts. The ventilation unit is located on the ground floor in the workshop.

Intake and exhaust ducts are shown in dark blue and dark green. The unit is located against an external wall and below the flat roof, so duct lengths are kept short. Heat loss from ducts is kept low with 50 mm insulation.





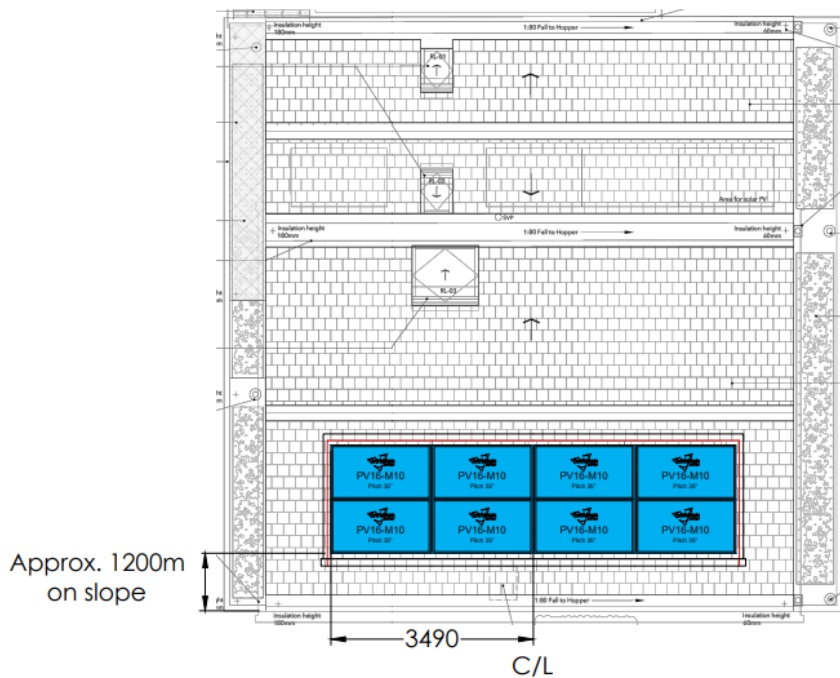
12. Heating

Wärmeversorgung

Heating is provided by an Arotherm air source heat pump and underfloor heating with an electric towel radiator in the bathroom.

The main DHW is via the ASHP with a smaller electric cylinder supplying the guest ensuite

The house has 8no. 405 W solar PV panels, giving a total of 3.24 kWp. PHPP estimates this to provide 2.363 MWh/a



13. Construction Costs

Baukosten

Not available

15. PHPP-Results

Ergebnisse

EnerPHit-Verification

10.4a EN



Architecture:	Rock Architects
Street:	Norfolk House, Station Road
Postcode/City:	PE27 5AF St Ives, Cambridge
Province/Country:	Cambridgeshire GB-United Kingdom/Britain
Energy consultancy:	Greengauge Building Energy Consultancy
Street:	Suite 4 Second Floor, The Old Brewery, Newtown,
Postcode/City:	BA15 1NF Bradford-on-Avon
Province/Country:	Wiltshire GB-United Kingdom/Britain
Year of construction:	2024
No. of dwelling units:	1
No. of occupants:	2.9

Building:	59		
Street:	Rock Road		
Postcode/City:	CB1 7UG Cambridge		
Province/Country:	Cambridgeshire GB-United Kingdom/Britain		
Building type:	1-Freestanding single family house		
Climate data set:	GB0002a-Silsoe, Altitude corrected		
Climate zone:	3: Cool-temperate		
Altitude of location:	13.5 m		
Home owner / Client:	Alegra Orozco-Word and Emerson Ferrey		
Street:	59 Rock Road		
Postcode/City:	CB1 7UG Cambridge		
Province/Country:	Cambridgeshire GB-United Kingdom/Britain		
Mechanical engineer:	Infinite Heating & Energy		
Street:	70 Gladiator Rd		
Postcode/City:	CB23 6JQ Cambridge		
Province/Country:	Cambridgeshire GB-United Kingdom/Britain		
Certification:	Etude		
Street:	The Foundry, 5 Baldwin Terrace		
Postcode/City:	N1 7RU London		
Province/Country:	GB-United Kingdom/Britain		
Interior temperature winter [°C]:	20.0	Interior temp. summer [°C]:	25.0
Internal heat gains (IHG) winter [W/m²]:	2.4	IHG summer [W/m²]:	2.4
Specific heat capacity [Wh/K per m² TFA]:	100	Mechanical cooling:	

Specific building characteristics with reference to the treated floor area				Criteria	Alternative criteria	Fulfilled?²
Space heating	Treated floor area m²	147.5				
	Heating demand kWh/(m²a)	24	≤	25	-	Yes
	Heating load W/m²	13	≤	-	-	
Space cooling	Cooling & dehum. demand kWh/(m²a)	-	≤	-	-	-
	Frequency of overheating (> 25 °C) %	1	≤	10	-	Yes
	Frequency of excessively high humidity (> 12 g/kg) %	0	≤	20	-	Yes
Airtightness	Pressurisation test result n ₅₀ 1/h	0.8	≤	1.0	-	Yes
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	63	≤	-	-	-
Primary Energy Renewable (PER)	PER demand kWh/(m²a)	53	≤	75	75	Yes
	Renew. energy generation (in rel. to projected building footprint area) kWh/(m²a)	25	≥	-	-	

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.			EnerPHit (Energy demand method) Classic?	Yes
Task:	First name:	Surname:	Signature:	
2-Certification	Naomi	Grint		
Certificate-ID	Issued on:	City:		