



19-23 Cannock Mill Cohousing Colchester, Essex, United Kingdom

Data of building | Gebäudedaten

Year of construction Baujahr	2019	Space heating Heizwärmebedarf	15 kWh/(m²a)
U-value external wall U-Wert Außenwand	0,108 W/(m²K)		
U-value ground floor U-Wert	0,135 W/(m²K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	0 kWh/(m²a)
U-value roof U-Wert Dach	0,111 W/(m²K)	Generation of renewable Energy Erzeugung erneuerb. Energie	0 kWh/(m²a)
U-value window U-Wert Fenster	0,94 W/(m²K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	83 kWh/(m²a)
Heat recovery Wärmerückgewinnung	88 %	Pressurization test n ₅₀ Drucktest n ₅₀	0,56 h ⁻¹
Special features Besonderheiten	One of three buildings of the cohousing scheme, and all three buildings were PH certified. The garage is used as workshop.		

Brief Description

Passive House Cannok Mill Cohousing Colchester

This terraced housing is a part of a large scheme, which consists of 23 homes a mixture of one, two and three bed houses and flats, which overlook the Mill pond. The second Passive House cohousing scheme in the UK. This building in subject is for 5 dwellings, 3-storey, 3 bedroom each.

The five terraced housing units each with TFA of 130 m² and identical or mirrored floor layouts was built in the Town of Colchester and on North-facing slope, with graded landscape and retaining walls, which are set back from the building itself. These houses have been inhabited since the completion by the members of the cohousing group who commissioned the architectural firm Anne Thorne Architects LLP. The Certified Passivhaus Designer Junko Suetake, now Suetake Studio 2, was an employee of the firm and in the design team to design and draw as well as being responsible to the Passivhaus Planning and PHPP.

After the evaluation of a year of monitoring, the building has met the expectations with regard to energy efficiency.

The houses have deep green roofs and a Suds system which is focused on the central Mill pond. As far as possible the scheme uses natural building materials. The construction is timber frame and uses recycled newspaper and wood fibre insulation with lime render.

The brief was defined at workshops held on the 25th and 26th February 2011, followed by workshops on the 5th March and on 4th June 2011. After more than ten years of discussion, debate and planning, the group owns the site. Anne Thorne is a founding member of the cohousing group and the practice was involved from the start, finding the land and initial feasibility studies. November 2015 Planning Approval.

July 2016 Tender, November 2016 Enabling Work.

The members moved in December 2019.

Responsible project participants Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	Anne Thorne Architects LLP https://www.annethornearchitects.com/
Implementation planning Ausführungsplanung	-
Building systems Haustechnik	-
Structural engineering Baustatik	Ellis+Moore Consulting Engineers Ltd
Building physics Bauphysik	Alan Clarke Passivhaus Service Design
Passive House project planning Passivhaus-Projektierung	Ms Junko Suetake www.suetake.co.uk
Construction management Bauleitung	-
Certifying body Zertifizierungsstelle	
Warm Passivhaus Certifier http://peterwarm.co.uk/	
Certification ID Zertifizierungs ID	
6273	Project-ID (https://passivehouse-database.org/#k_6273)

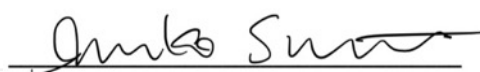
Author of project documentation Verfasser der Gebäude-Dokumentation

<https://www.passivhaustrust.org.uk/projects/detail/?cId=121>

Date
Datum

Signature
Unterschrift

13.08.2022



1. Ansichtsfotos

© Adelina Iliev



Süd

© Adelina Iliev

Nord



Nord



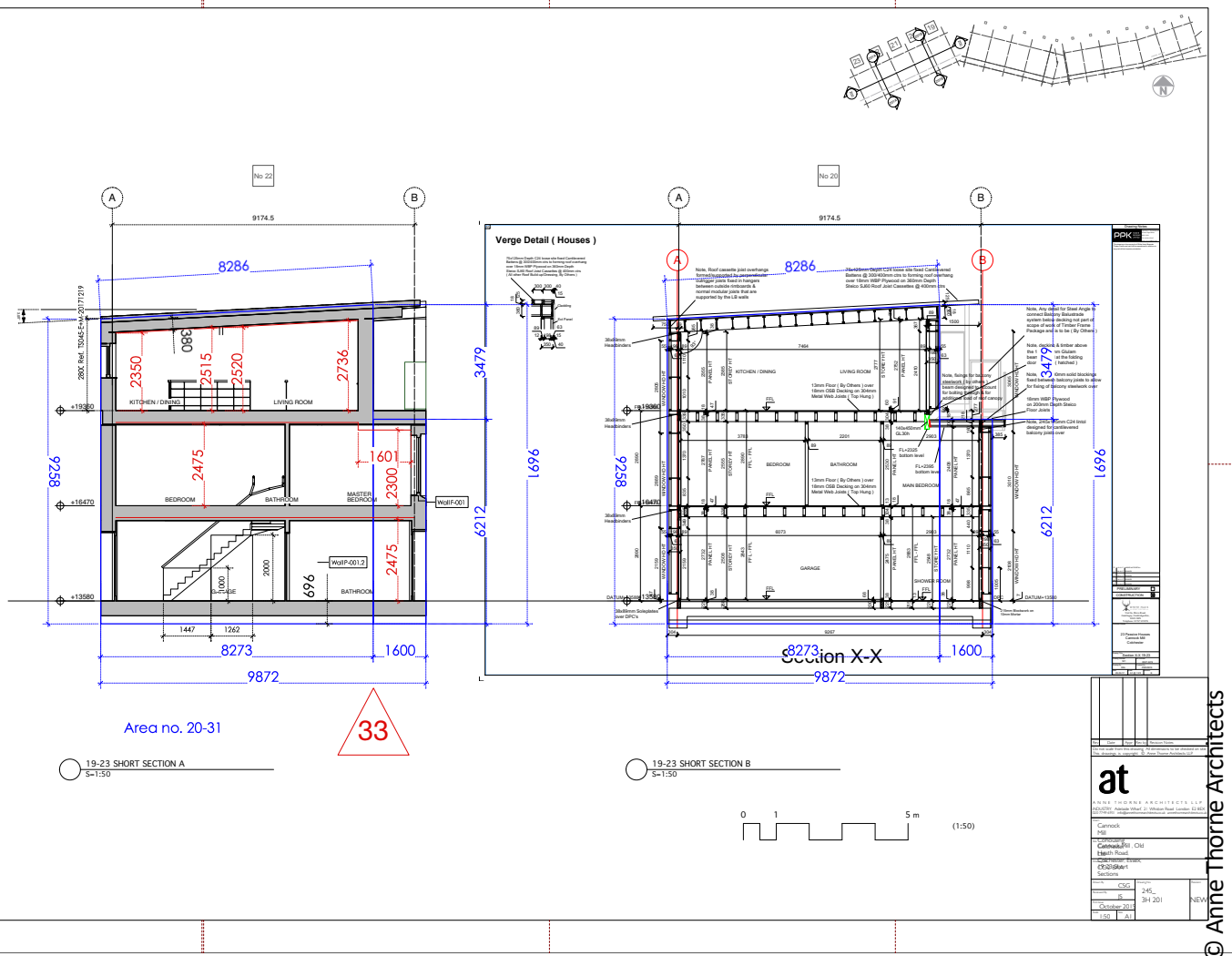
© Adelina Iliev

2. Innenfoto exemplarisch

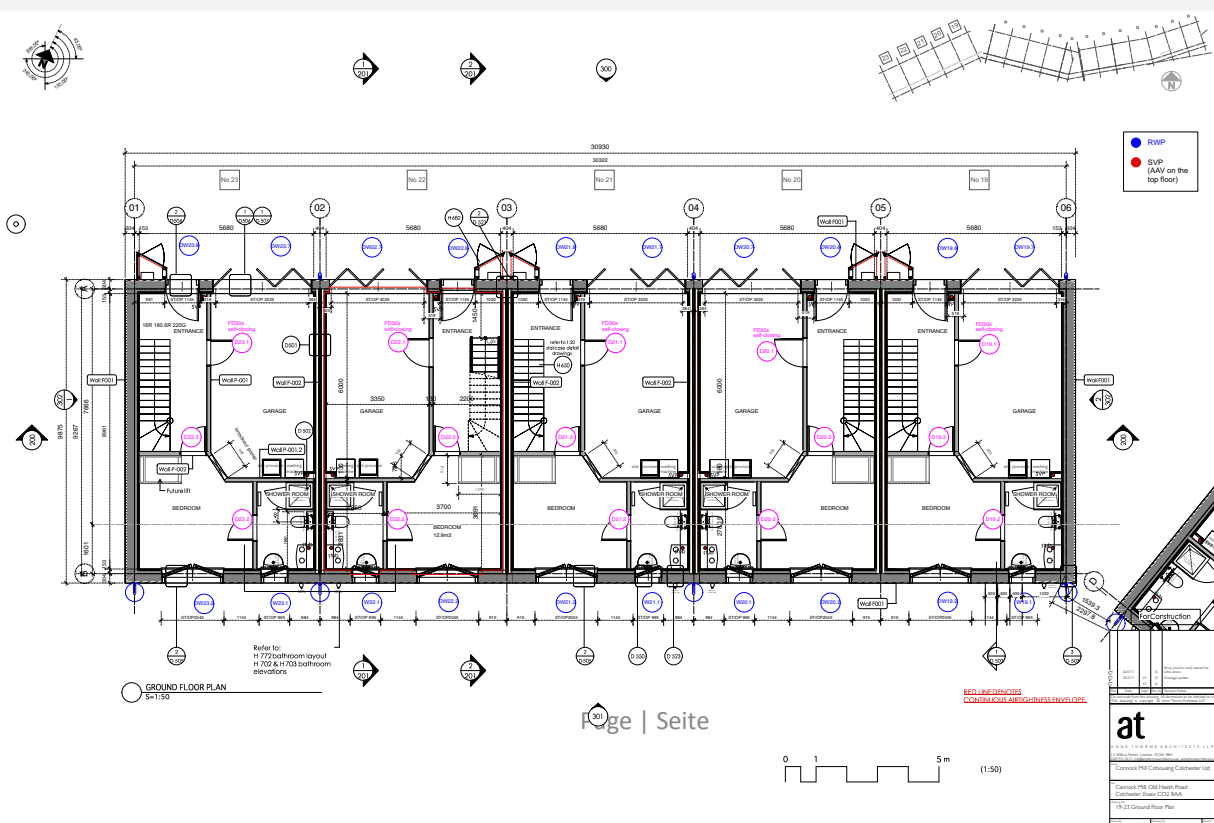
© Adelina Iliev



3. Schnittzeichnung



4. Grundrisse



5. Konstruktion der Bodenplatte

The pale blue part is the structural timber on the drawing right hand side. The concrete block is AAC concrete.

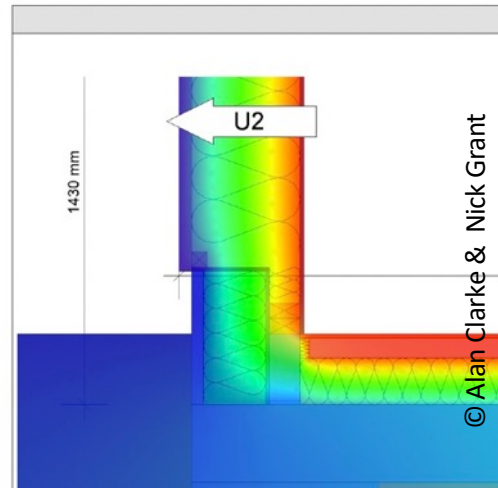
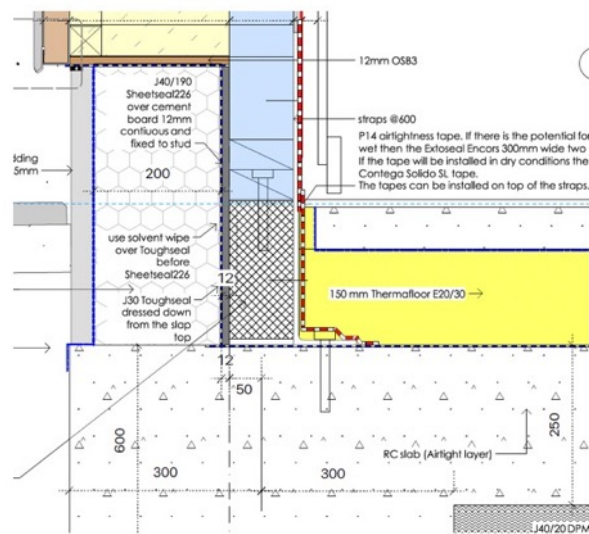
10mm bamboo flooring +
65mm screed + 150mm Kingspan
ThermafloorTF70
insulation+ 250mm
reinforced concrete +
225mm Cellcore HX S9/13
board



D500 rev - house perimeter

Psi = +0.023 W/(mK) (note wall height reduced by around 200mm for PHPP ;

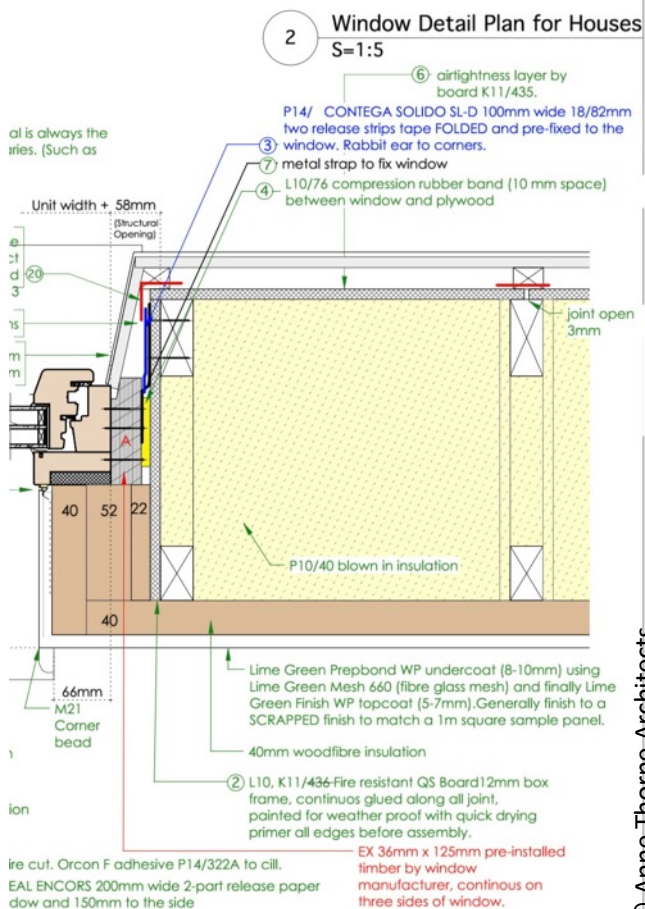
Thickness and type of screed edge insulation is important, any service void in



Assembly no.	Building assembly description	Heat transmission resistance [m²KW]	Interior insulation?
01ud	floor slab		
Orientation of building element:	3-Floor	interior R _{si} 0.17	
Adjacent to:	2-Ground	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]
Flooring	0.180					10
Foil underlay	0.170					3
screed	1.400					65
Kingspan ThermafloorTF70	0.023					150
concrete	2.100					250
cellcore HX S 9/13 plastic	0.040					10
still air void	0.948					215
Percentage of sec. 1	100%	Percentage of sec. 2		Percentage of sec. 3		Total
						70.3 cm
U-value supplement:	W/(m²K)	U-value:	0.135	W/(m²K)		

6. Konstruktion der Außenwände



© Anne Thorne Architects

Fraction of the timber frame was calculated from timber framing shop drawings. Plasterboard and finish+ 25mm service zone + 12mm airtight OSB board + 350mm Cellulose fibre insulation Warmcel between structural timber frame and sub-frame + 40mm wood fibre insulation + 15mm lime render



Assembly no.

03ud External Wall

Interior insulation?

Orientation of building element: 2-Wall

Adjacent to: 1-Outdoor air

Heat transmission resistance [m²K/W]

interior R_{si} 0.13
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)]
Skim plaster board	0.250				
service void	0.140	timber	0.130	service void	0.140
OSB SmartPly	0.130				
loadbearing part		timber	0.130	plywood	0.130
insulation Warmcel	0.038			plywood	0.130
Warmcel	0.038			plywood	0.130
Batten part insulation	0.038	timber	0.130	plywood	0.130
Steico Protect	0.048				
Lime render	0.500				

Thickness [mm]

15
25
12
89
198
63
40
15

Percentage of sec. 1
73%

Percentage of sec. 2
26.5%

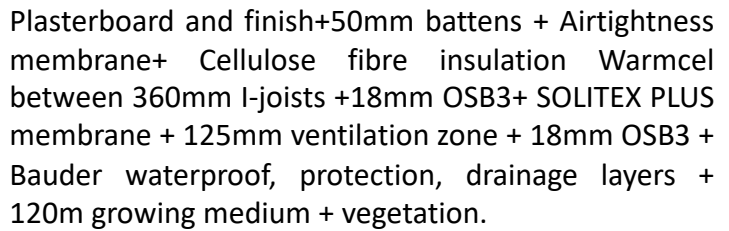
Percentage of sec. 3
0.5%

Total
45.7 cm

U-value supplement: W/(m²K)

U-value: 0.108 W/(m²K)

7. Konstruktion des Daches



Canopy to the south facing balcony for summer shading.



Interior insulation?

Heat transmission resistance [m²K/W]U-value supplement: $W/(m^2K)$


U-value: **0.111** W/(m²K)

8. Fenster und Fenster-Einbau




© Anne Thorne Architects

Beschreibung der Fenster (rahmen)-Konstruktion, Hersteller	Certified PH window from Slavona
Fabrikat Fenster (rahmen; Produktname)	Progression Timber frame / frameless.
Rahmen-U-Wert Uf	0,82 W/(m²K)
Bauart der Verglasung	Argon; 4 18 4 18 4
Glas-U-Wert Ug	0,53 W/(m²K)
g-Wert der Verglasung	0,54



27 Nov 2019



SGG CLIMATOP 4 (18 ARGON 90) 4 (18 ARGON 90) 4
PLANITHERM XN F2 PLANITHERM XN F5

Pane 1	PLANICLEAR 4 mm
Coating 2	PLANITHERM XN
Cavity 1	18 ARGON 90%
Pane 2	PLANICLEAR 4 mm
Cavity 2	18 ARGON 90%
Coating 5	PLANITHERM XN
Pane 3	PLANICLEAR 4 mm

Name : Paul Smith
Country : United Kingdom

Notes:

Majority of the windows are progression. Lacuna folding door for garage/workshop and the balcony door.

9. Beschreibung der luftdichten Hülle

The first pressure test was carried out by Paul Jennings on February 26, 2019 after the completion of the airtight shell. Final test was on 25 September 2019 after completion of the building.



Messung	50 Pa-Drucktest-luftwechsel $n_{50} h^{-1}$
Haus 19 Final at completion	0,55
Haus 20 Final at completion	0,57
Haus 21 Final at completion	0,54
Haus 22 Final at completion	0,57
Haus 23 Final at completion	0,58

Konzept Luftdichtheit

Wände: internal side airtightness board. Separating walls are Intello Plus membrane on both sides.

Bodenplatte: Concrete

Verbindung Fenster: with board edges with airtightness tapes.

Dach: Intello Plus membrane on the ceiling

Verbindung Putz-Folie: Airtightness tapes

Stoß von gegen	Ground floor	Separating wall	Window frame	External wall	Roof
Roof	Not applicable	Internally taped between intello Plus membrane	n/a	Internally taped between board and membrane	n/a
External wall	Internally taped between concrete and airtight board	Internally taped between airtight board and membrane	Internally taped between frame and airtight board	n/a	Internally taped between airtight board and Intello Plus membrane
Door frame	Internally taped between threshold and concrete	n/a	n/a	Internally taped between frame and airtight board	n/a

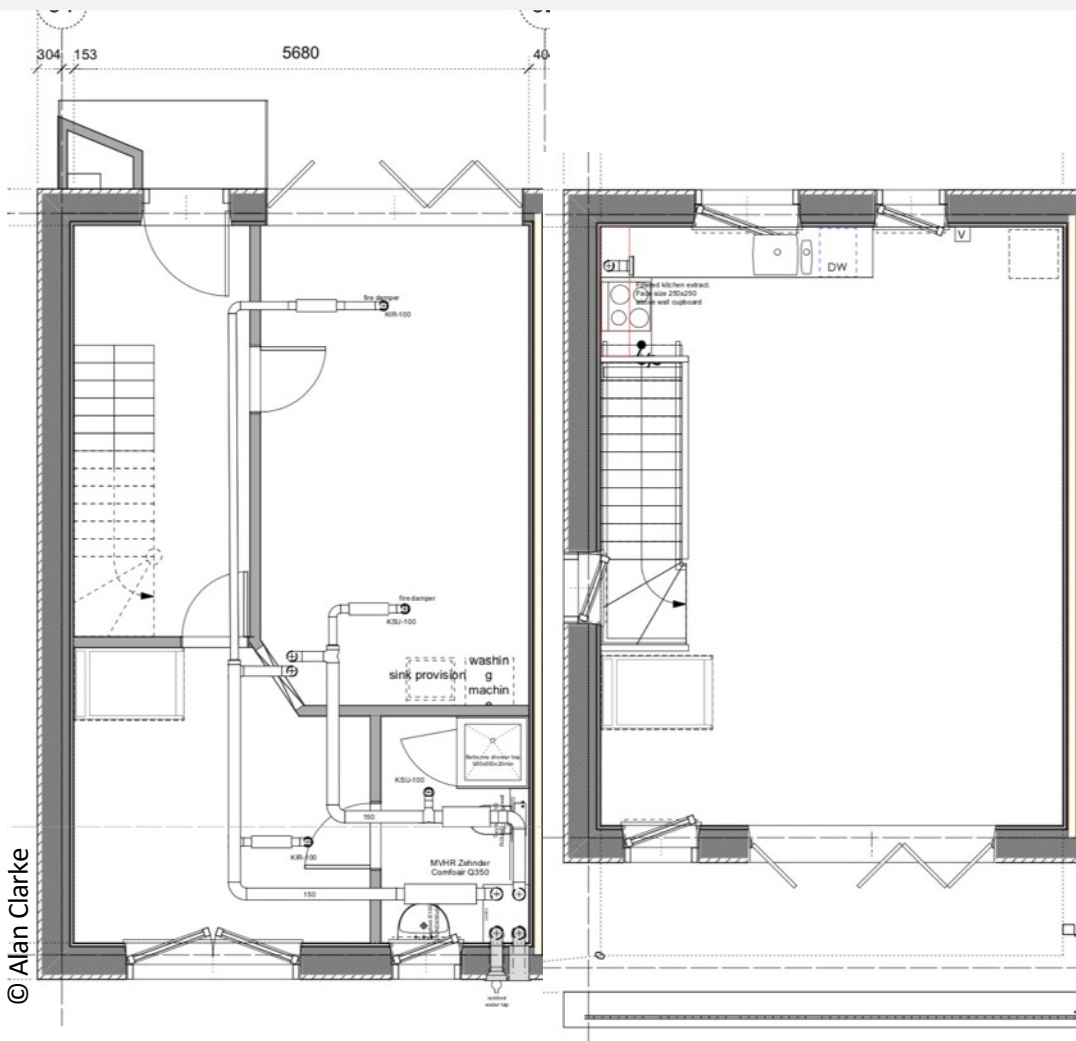
10. Lüftungsgerät

A balanced supply/exhaust air system with a highly efficient heat exchange was used for each house. This unit is automatically working at the summer bypass mode with a little of cold recovery. I think that there is no fixed point of external temperature to trigger the mode but it works intelligently with the humidity, temperature and the algorithm to optimise the effect on comfort.



Fabrikat Lüftungsanlage	Certified Zehnder ComfoAir Q 350
effektiver Wärmebereitstellungsgrad	90 %
Elektroeffizienz	0,24 Wh/m³

11. Lüftungsplanung Kanalnetz




Supply air rooms are all bed rooms. Extract are from shower rooms and kitchen. The exception is in the garage/workshop, which has extract and supply both.

The overflow takes place through undercut of the interior doors.

The top floor is an open plan kitchen, dining and living room. The air is drawn from down stairs through the open staircase and reaches to the extract at the kitchen space.

15. PHPP-Ergebnisse

Passive House Verification

		Building: Numbers 19-23	
		Street: Cannock Mill Rise	
		Postcode/City: CO2 8YY Colchester	
		Province/Country: Essex GB-United Kingdom/ Britain	
Building type: Terrace		Climate data set: GB0013a-Hemsby	
Climate zone: 4: Warm-temperate		Altitude of location: 14 m	
Home owner / Client: Cannock Mill Cohousing Colchester Ltd			
Street: 117 Old Heath Road			
Postcode/City: CO2 8AA Colchester			
Province/Country: Essex GB-United Kingdom/ Britain			
Mechanical system: Alan Clarke			
Street: Woodlands, Woodland Close, Whitecroft			
Postcode/City: GL15 4PL Lydney			
Province/Country: Gloucestershire GB-United Kingdom/ Britain			
Certification: WARM: Low Energy Building Practice			
Street: 3 Admirals Hard			
Postcode/City: PL1 3RJ Plymouth			
Province/Country: Devon GB-United Kingdom/ Britain			
Architecture: Anne Thorne Architects LLP		Interior temperature winter [°C]: 20.0	
Street: Adelaide Wharf 21 Whiston Road		Interior temp. summer [°C]: 25.0	
Postcode/City: E2 8EX London		Internal heat gains (IHG) heating case [W/m²]: 2.5	
Province/Country: GB-United Kingdom/ Britain		IHG cooling case [W/m²]: 2.5	
Energy consultancy: Junko Suotake, Anne Thorne Architects LLP		Specific capacity [Wh/K per m² TFA]: 60	
Street: Adelaide Wharf 21 Whiston Road			
Postcode/City: E2 8EX London			
Province/Country: GB-United Kingdom/ Britain			
Year of construction: 2019			
No. of dwelling units: 5			
No. of occupants: 13.8			

Specific building characteristics with reference to the treated floor area


		Treated floor area m²		Criteria	Alternative criteria	Fulfilled? ²
Space heating	Heating demand kWh/(m²a)	650.4	≤	15	-	yes
	Heating load W/m²	10.4	≤	-	10	yes
	Frequency of overheating (> 25 °C) %	0	≤	10		yes
	Frequency excessively high humidity (> 12 g/kg) %	0	≤	20		yes
Airtightness	Pressurization test result n ₅₀ 1/h	0.6	≤	0.6		yes
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	83	≤	120		yes

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.

Passive House Classic?

yes

Certificate **WARM** 

Authorised by: Dr. Wolfgang Feist 64283 Darmstadt Germany

Numbers 1-6
Cannock Mill Rise, CO2 8YY Colchester, United Kingdom/ Britain

Client: Cannock Mill Cohousing Colchester Ltd
117 Old Heath Road
CO2 8AA Colchester, United Kingdom/ Britain

Architect: Anne Thorne Architects LLP
Adelaide Wharf 21 Whiston Road
E2 8EX London, United Kingdom/ Britain

Building Services: Alan Clarke
Woodlands, Woodland Close, Whitecroft
GL15 4PL Lydney, United Kingdom/ Britain

Energy Consultant: Junko Suotake, Anne Thorne Architects LLP
Adelaide Wharf 21 Whiston Road
E2 8EX London, United Kingdom/ Britain

Passive House buildings offer excellent thermal comfort and very good air quality all year round. Due to their high energy efficiency, energy costs as well as greenhouse gas emissions are extremely low.


The design of the above-mentioned building meets the criteria defined by the Passive House Institute for the 'Passive House Classic' standard:

Building quality	This building	Criteria	Alternative criteria
Heating	Heating demand [kWh/(m²a)] Heating load [W/m²]	15 ≤ 15 10 ≤ 10	-
Cooling	Frequency of overheating (> 25 °C) [%]	4 ≤ 10	
Airtightness	Pressurization test result (n ₅₀) [1/h]	0.6 ≤ 0.6	
Non-renewable primary energy (PE)	PE demand [kWh/(m²a)]	108 ≤ 0	

The associated certification booklet contains more characteristic values for this building.

Plymouth, 25 February 2020
Certifier: Peter Warm, WARM: Low Energy Building Practice

www.passivehouse.com 25421-25426_WARM_PH_20200225_PW

Certificate **WARM** 

Authorised by: Dr. Wolfgang Feist 64283 Darmstadt Germany

Numbers 7-18
Cannock Mill Rise, CO2 8YY Colchester, United Kingdom/ Britain

Client: Cannock Mill Cohousing Colchester Ltd
117 Old Heath Road
CO2 8AA Colchester, United Kingdom/ Britain

Architect: Anne Thorne Architects LLP
Adelaide Wharf 21 Whiston Road
E2 8EX London, United Kingdom/ Britain

Building Services: Alan Clarke
Woodlands, Woodland Close, Whitecroft
GL15 4PL Lydney, United Kingdom/ Britain

Energy Consultant: Junko Suotake, Anne Thorne Architects LLP
Adelaide Wharf 21 Whiston Road
E2 8EX London, United Kingdom/ Britain

Passive House buildings offer excellent thermal comfort and very good air quality all year round. Due to their high energy efficiency, energy costs as well as greenhouse gas emissions are extremely low.


The design of the above-mentioned building meets the criteria defined by the Passive House Institute for the 'Passive House Classic' standard:

Building quality	This building	Criteria	Alternative criteria
Heating	Heating demand [kWh/(m²a)] Heating load [W/m²]	10 ≤ 15 9 ≤ 10	-
Cooling	Frequency of overheating (> 25 °C) [%]	2 ≤ 10	
Airtightness	Pressurization test result (n ₅₀) [1/h]	0.6 ≤ 0.6	
Non-renewable primary energy (PE)	PE demand [kWh/(m²a)]	81 ≤ 0	

The associated certification booklet contains more characteristic values for this building.

Plymouth, 25 February 2020
Certifier: Peter Warm, WARM: Low Energy Building Practice

www.passivehouse.com 25427-25438_WARM_PH_20200225_PW

Certificate **WARM** 

Authorised by: Dr. Wolfgang Feist 64283 Darmstadt Germany

Numbers 19-23
Cannock Mill Rise, CO2 8YY Colchester, United Kingdom/ Britain

Client: Cannock Mill Cohousing Colchester Ltd
117 Old Heath Road
CO2 8AA Colchester, United Kingdom/ Britain

Architect: Anne Thorne Architects LLP
Adelaide Wharf 21 Whiston Road
E2 8EX London, United Kingdom/ Britain

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Building quality	This building	Criteria	Alternative criteria
Heating	Heating demand [kWh/(m²a)] Heating load [W/m²]	15 ≤ 15 10 ≤ 10	-
Cooling	Frequency of overheating (> 25 °C) [%]	0 ≤ 10	
Airtightness	Pressurization test result (n ₅₀) [1/h]	0.6 ≤ 0.6	
Non-renewable primary energy (PE)	PE demand [kWh/(m²a)]	83 ≤ 0	

The associated certification booklet contains more characteristic values for this building.

Plymouth, 25 November 2019
Certifier: Peter Warm, WARM: Low Energy Building Practice

www.passivehouse.com 24969-24973_WARM_PH_20191125_PW