

Howe Park PassivHaus

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Director

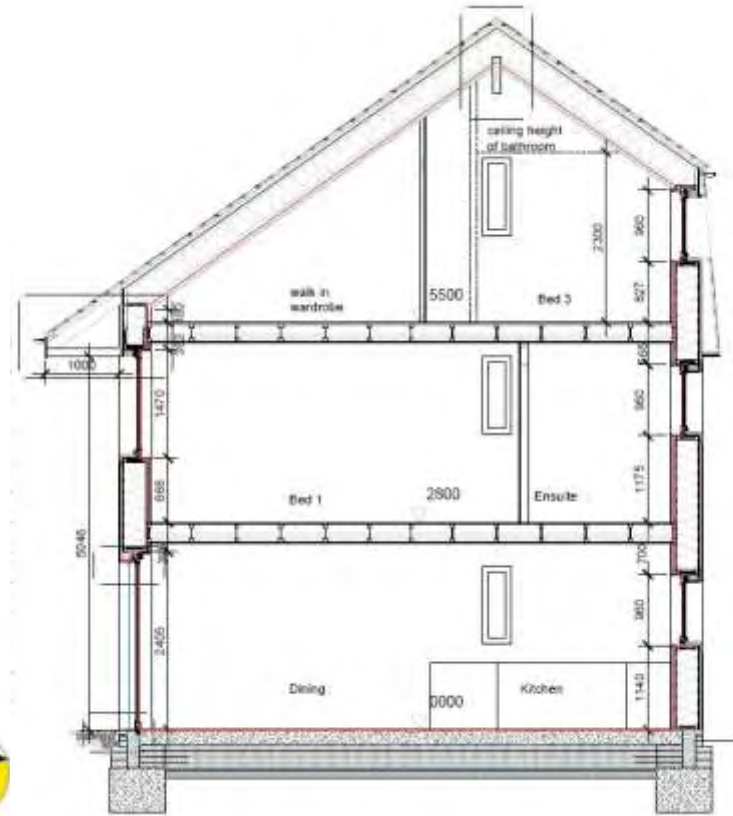
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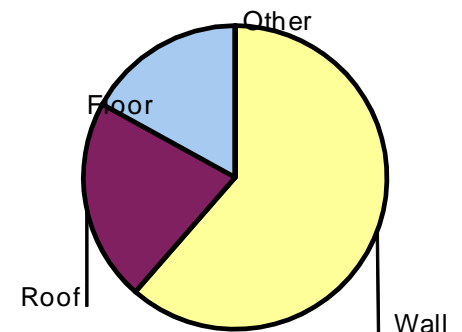
Compact Form



Form Factor 2.77

182 m² of usable floor area
453 m² of surface area

Heat loss form factor	
Wall	1.7
Roof	0.6
Floor	0.5
Other	0.0
Total	2.77



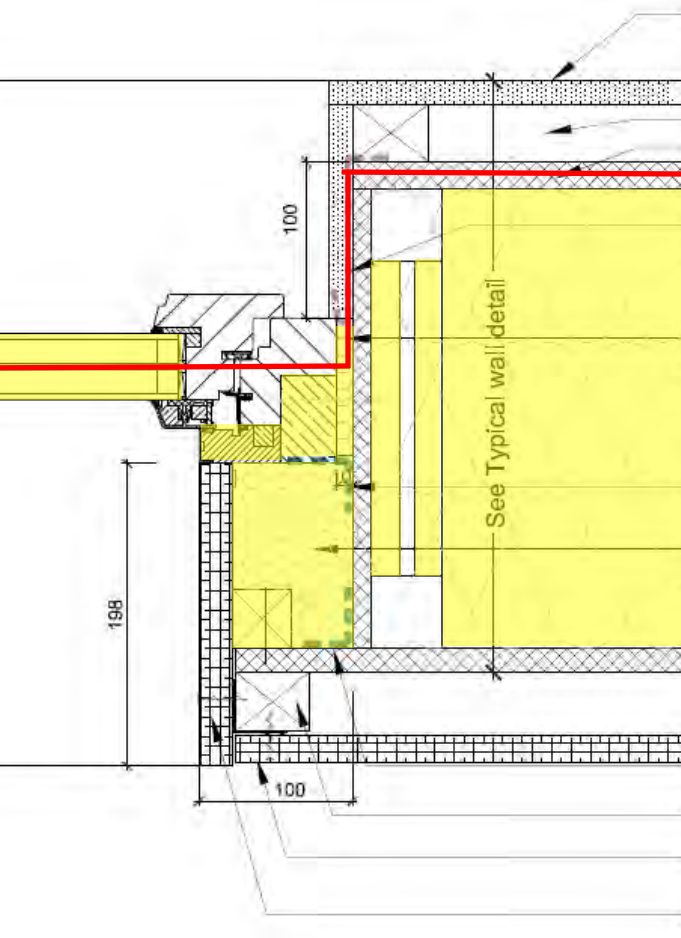
Good Orientation



Avoid over shading – particularly low winter sun



Good Windows



High Levels of Insulation

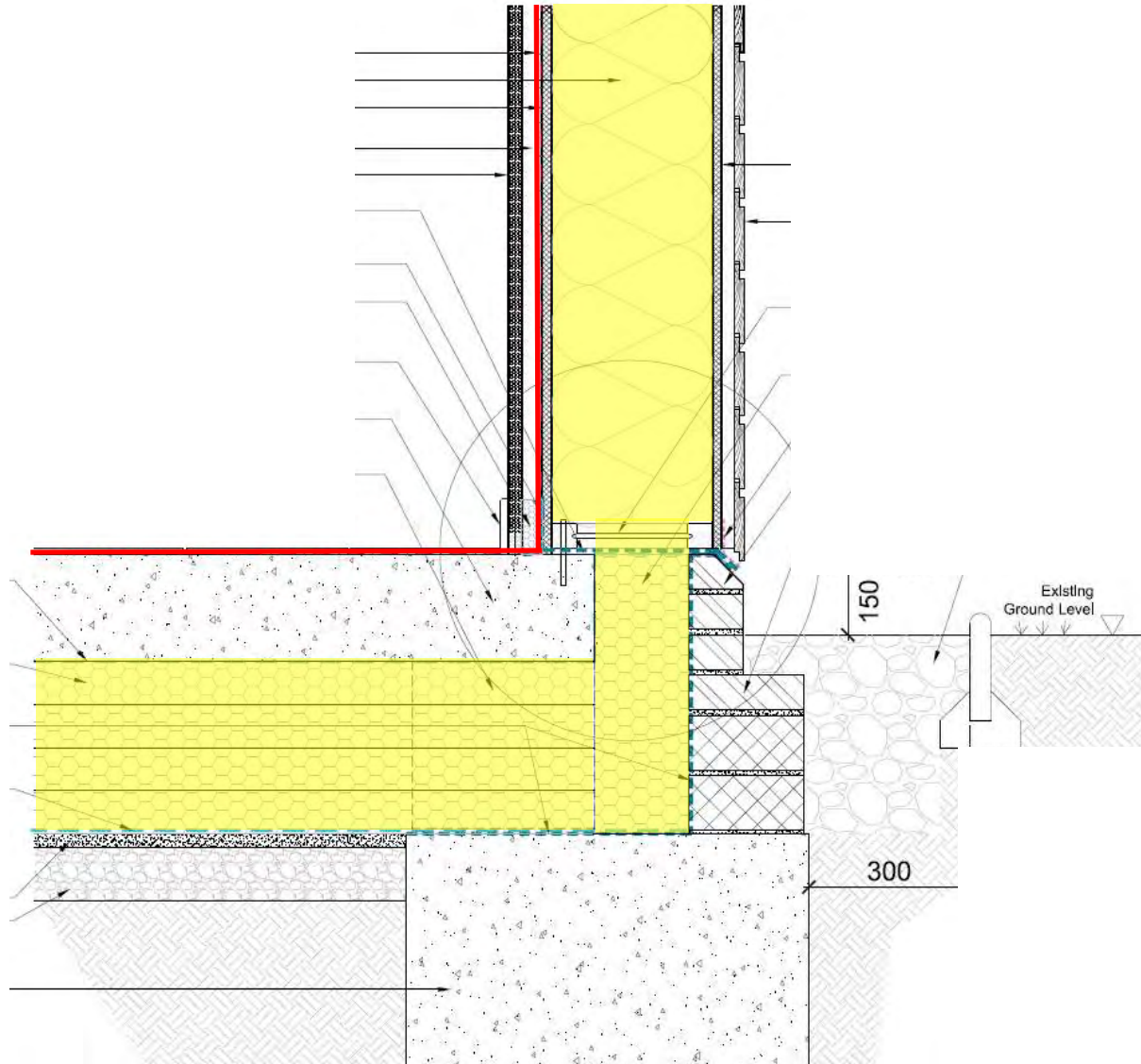


U Values , W/(m²K)

- Walls – 0.137
- Roof – 0.113
- Floor – 0.122
- Window glass – 0.6 & 0.7
- Window frame – 0.97



No Cold Bridges



















2022
100%
100%
100%

100%
100%
100%

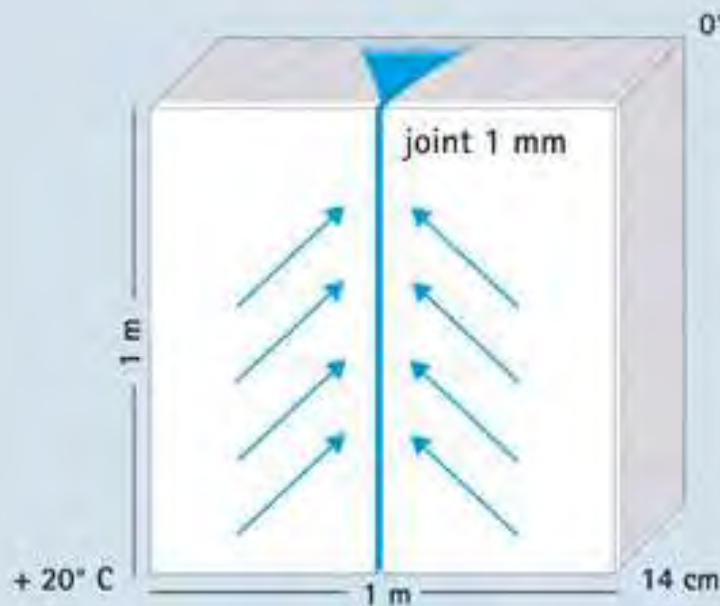
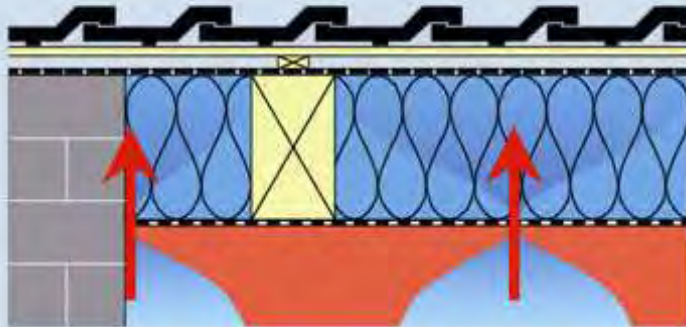


Why not Air tightness layer on outside only?

Advantages

- Easy to apply – no problems at floor junctions?
- No problems with service penetrations
- No need for OSB or tapes on inside

Gaps in Vapour Control layer



No joints: $0.5 \text{ g water/m}^2 \times 24\text{h}$
(diffusion)

With 1 mm joint: $800 \text{ g water/m}^2 \times 24\text{h}$
(convection)

Moisture increase by a factor of **1600**

Measurement carried out by:
Institute for Building Physics, Stuttgart;
+20° C indoors and
0° C outdoors
a pressure difference of 20 Pa
(equivalent to wind force 3-4)
using conventional, fibrous insulating material
Source: DBZ 12/89, pp 1639

Why not Air tightness layer on outside only?

Disadvantages

- Need a good vapour check on inside
- Vapour check needs to be airtight
- No air gaps between vapour check and insulation
- So why have 2 airtightness layers?
- Wind barrier on outside will stop thermal bypass

The requirements

Air changes per hour

$N_{50}(\text{ACH}) = 0.6 \text{ h}^{-1} @ 50 \text{ Pa}$

Average of Positive & Negative

Effective leakage area 0.01 m^2

100mm x 100mm

(3 bed house)

