

AIRTIGHTNESS POW-WOW

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Outline of presentation

1. Who we are
2. Our projects
3. Case study project
4. Where did it go wrong
5. What we did to rectify
6. Results
7. Conclusion
8. Questions

Themes

1. Scale
2. Complexity



1. Who we are

- Borisa Ristic & Co are a family owned construction company
- Small team of operatives with focus on airtight construction
- Qualified architect
- Spent last 3 years in project management
- Certified Passive House Tradesperson
- Seen first hand the effort required to achieve high levels of airtightness.
- Offer consultancy and management services
- Sub-contract on larger projects
- Act as main contractors on projects up to £1mil.
- Provide Design and Build services



2. Our projects

Our first sustainable project in 2005
Superhomes project
Chester Road, London

Work included;

Wood fibre roof insulation
Internal wood fibre wall insulation
Insulated suspended timber floor
Triple glazed windows
Solar panel



2. Our projects

Our last project in 2005
Enerphit project
Hensford Gardens, London
Airtightness 0.65 a.c.h

Work included;

Internal wall insulation
EPS floor insulation
Phenolic roof insulation
Timber construction
Airtightness taping

Project is on our page on the AECB website



3. Case study project

Involvement

- Brought in as consultants and sub-contractors to oversee remedial work on failing Passive Houses

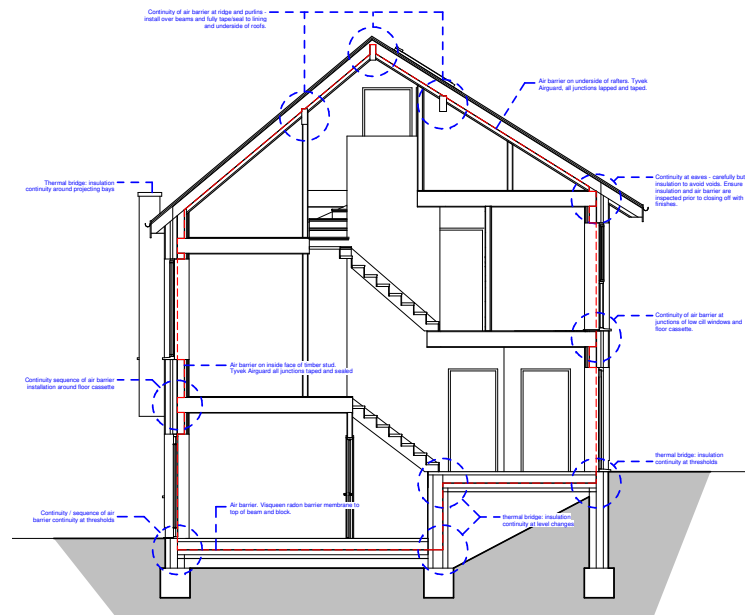
Project

- Large multi-national contractor
- Typical D&B contract with a novated architect
- New build development
- Brief for 4 Passive Houses within scheme of 60 homes



4. Where did it go wrong

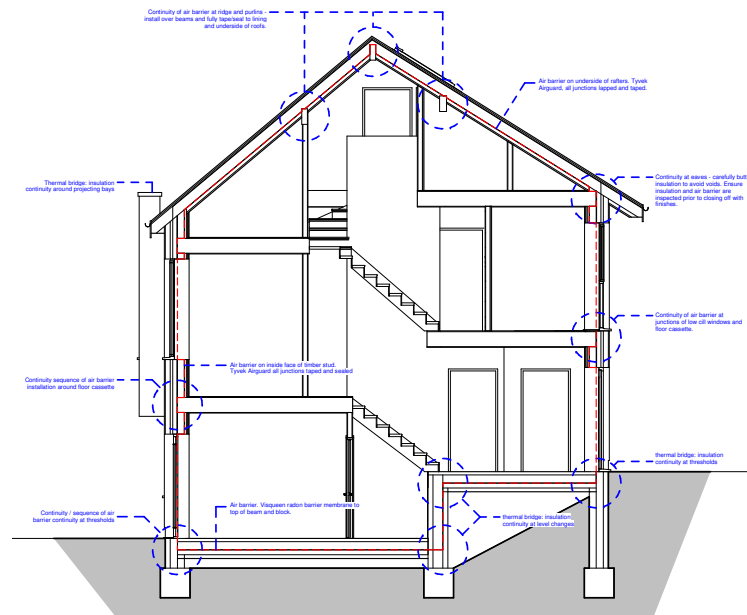
a) Architectural design and information



Scheme was not initially designed for Passive House

4. Where did it go wrong

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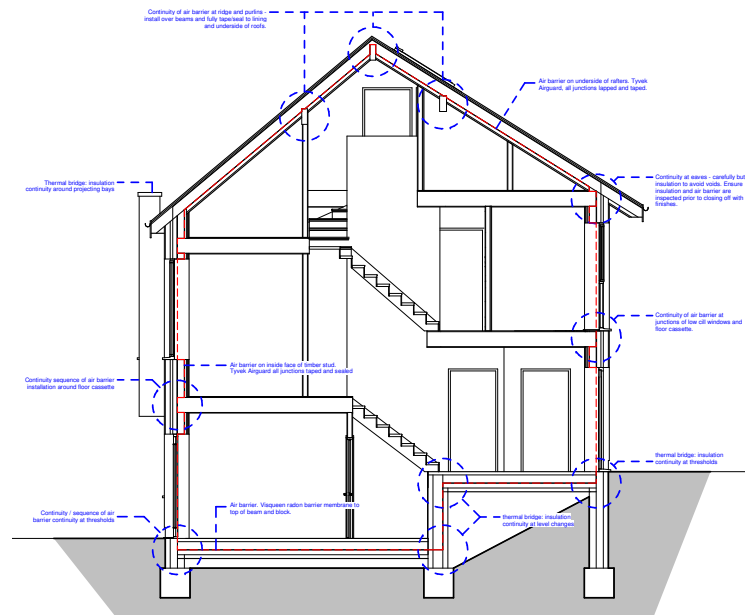
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Construction approach was not clear to people building it

4. Where did it go wrong

a) Architectural design and information



Scheme was not initially designed for Passive House



Construction approach was not clear to people building it



Airtightness designed in inaccessible place once closed off

4. Where did it go wrong

b) Planning



D&B contract with architect novated

4. Where did it go wrong

b) Planning



D&B contract with architect novated



Sub-contracts let to individual companies with no inter-linking

4. Where did it go wrong

b) Planning



D&B contract with architect novated



Sub-contracts let to individual companies with no inter-linking



Subcontractors were not initiated on Passive House approach

4. Where did it go wrong

c) Consequence



Scheme not tested in correct sequence

4. Where did it go wrong

c) Consequence



Scheme not tested in correct sequence



No quality checks undertaken during construction

4. Where did it go wrong

c) Consequence



Scheme not tested in correct sequence



No quality checks undertaken during construction



Necessary remedial work took undertaken by inexperienced people

5. How we attempted to rectify

We have three options

- a) Demolish everything inside and start again
- b) Repair existing airtightness membrane
- c) Install new airtightness membrane



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We chose option C

For 3 reasons

- 1) Option A was the most likely to reach Passive House standards but also most expensive, time intensive and client not really willing to entertain it.
- 2) Between Option B and Option C, Option C most likely to reach airtightness continuity
- 3) Option B had too many unknowns prior to commencement. Clients had no photographs during construction phase



5. How we attempted to rectify – Option C



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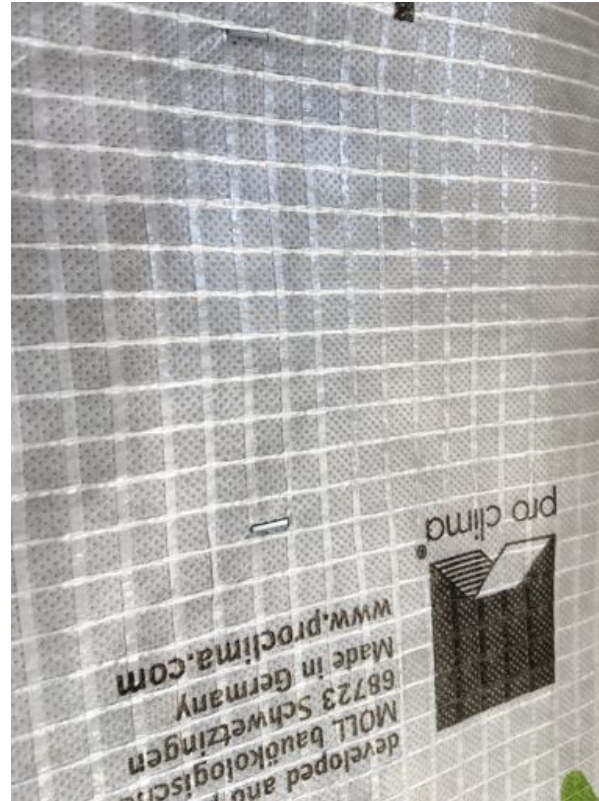
5. How we attempted to rectify – Option C



6. Results

- a) All 4 houses reached between 1 to 1.5 a.c.h @ 50 pascals.
- b) AECB Silver standard
- c) Targets had to be revised by main contractor and the client settled.

6. Results – Leaks through staple holes and damaged membrane



6. Results – Leaks through missed taping and non-airtight layers



6. Results – Leaks through penetrations



6. Results – Leaks through OSB



6. Results – Leaks through OSB – remedial work



6. Results – Leaks due to poor service installation



6. Results – Leaks due to poor quality windows/doors



6. Results – Summary

Airtightness loss:	Cumulative total
Windows + Doors – 0.1 a.c.h	0.1 a.c.h
Poor/Missing taping – 0.1 a.c.h	0.2 a.c.h
Staples – 0.1 a.c.h	0.3 a.c.h
Inaccessible areas – 0.2 a.c.h	0.5 a.c.h
OSB in joists – 0.4 a.c.h	0.9 a.c.h
Screed floor - 0.1 a.c.h	1.0 a.c.h
Behind staircase where inaccessible - 0.1 a.c.h	1.1 a.c.h

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- d) Performance based contracts pose the greatest risk and the risk must be borne by the airtightness subcontractor if it becomes a field in the industry
- e) Other subcontractors are willing to adept their techniques to suit Passive House buildings as long as the approach is clear and somebody is on hand to explain process. Builders are willing to learn



7. Questions?

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