

UK Passivhaus Conference 2017

Procurement, Costs and Risks

October 2017

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Introduction & Context

- Who are Baker Ruff Hannon?
- What are we doing?
 - Exeter City Council, Passivhaus residential projects.
 - Exeter City Council, Passivhaus leisure project.
 - Residential development, non-Passivhaus.
- Across the UK construction sector, it is generally accepted that building to certified Passivhaus standards costs more than building to UK Building Regulations.
- Cost vs Price?
- What is less certain is why and where those costs are.
 - Costs per square metre of GIFA are quoted.
 - Site specific conditions are varied.
 - There is rarely a control sample to measure against.
- There is limited cost data available and that which does exist is often based on analysis of 'stand-alone' projects – the research focuses on price data.

The need for further research into the costs associated with building to certified Passivhaus standards in the UK is clear.

Facts & Figures

Research indicates 145,000 home starts in 2016 in the UK.



BCIS range for estate housing is £500-2,100/m²

Passivhaus accounts for 1% of new home starts

Research Basis

We have built upon



Exeter
City Council



RANDALL SIMMONDS



Not everyone was willing or able to provide data

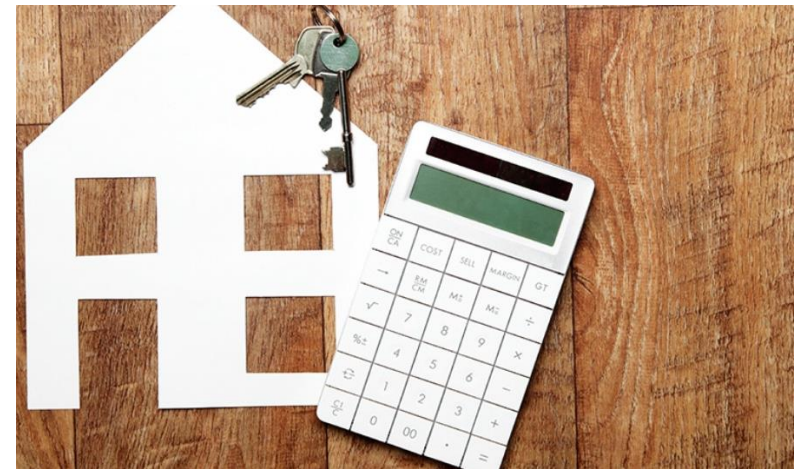
Cost Overview – Existing Research

10-25% uplift – Home Building and Renovating Magazine

10-23% uplift – Aecom Cost Report

15% uplift to Building Regs 2010 – Passivhaus Institute

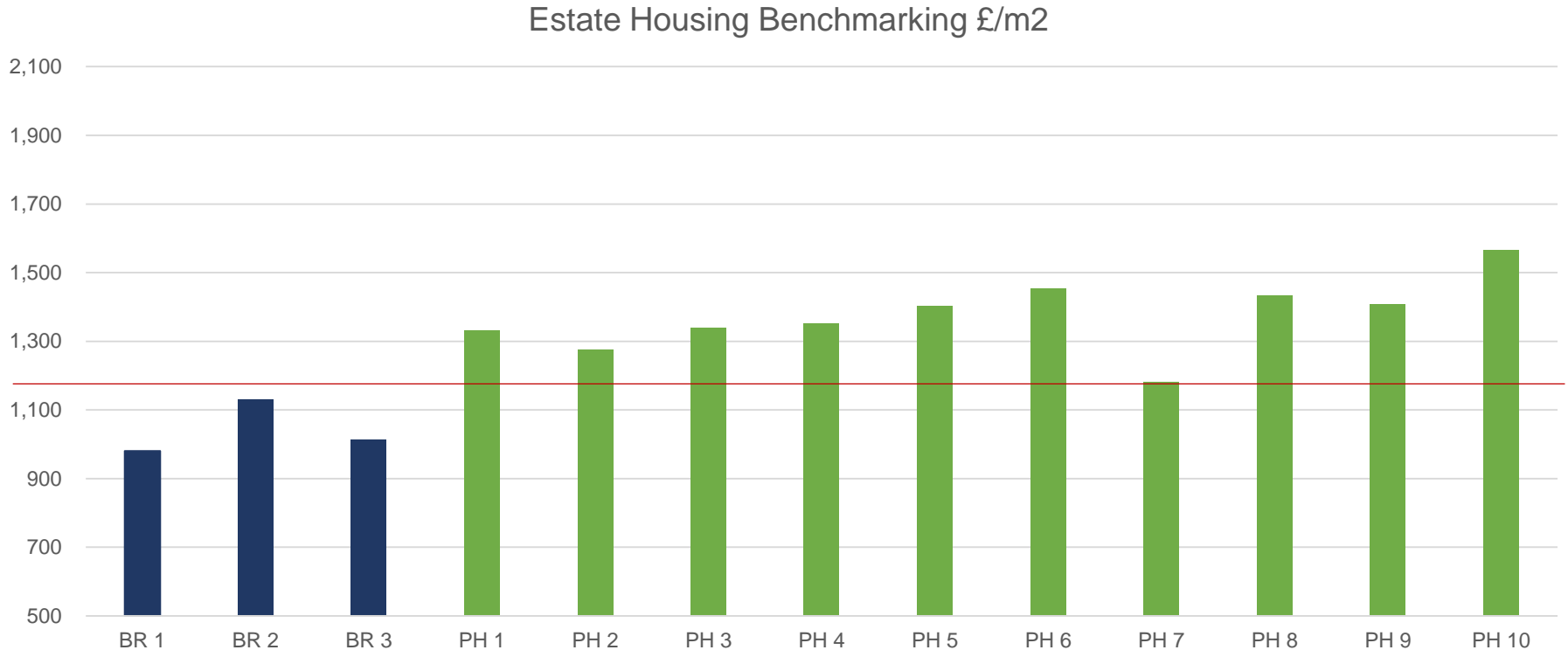
0-15% uplift – Passive House+ Magazine



The uplift can be anywhere between 0-25% depending on the base cost data used and key characteristics of the project.

Cost Overview – Benchmarking to Date

BCIS cost data indicates that the building works cost for estate housing ranges from £500 to £2,100/m² of the gross internal floor area excluding external works, contingencies and fees.



The price uplift for the PH projects reviewed is typically 10-20% on the median for UK estate housing.

Median
5,359
sample



Cost Overview – What are the reasons for this?

Technical reasons

Market reasons



Cost Overview – What are the reasons for this?

Technical Reasons

- + Thermally efficient windows and doors.
- + Insulation and equipment.
- + Air tightness products – membranes, tapes etc.
- + Add-ons



Cost Overview – Combination of initiatives

- Passivhaus projects tend to combine other initiatives;
 - Building Biology – 2 to 5% cost premium.
 - Renewable technologies.
 - Enhanced materials for life cycle performance.



The price data for Passivhaus has not been adjusted to reflect this

Cost Overview – What are the reasons for this?

Market Reasons

- + What we build
- + How we build it
- + Who builds it

Cost Overview – What we build



Comparing apples with...



Cost Overview – How we build it?



House Builder – 100,000+ units

- System build approach.
- Standardised units.
- Economies of scale.
- Established operational model.
- Risk recovered in sales prices.



Cost Overview – Bespoke one-off projects



Low volume products attract a premium – We need to drive the market and volumes

Sample sizes are significant

Cost Overview – Who builds it?

Passivhaus	Non-Passivhaus
Self builders.	Mass home builders.
Local authorities.	Local authorities.
Housing associations.	Housing associations.
Environmental champions.	Self builders.
Niche developers.	Developers.

* Risk recovery and payment

Most Passivhaus units are ultimately self owned by the builder / developer

Risk

- Inherent in every project.
- Passivhaus risk sits in two main areas;

1. Compliant design

Finish the design (at least key Passivhaus elements and strategy) before tendering.

2. Compliant construction

Focus contractor selection on contractor methodology and experience in quality control.

Undertake workshops with contractors and their supply chain to encourage a team / collaborative approach to addressing risk.

Client side clerk of works.

Procurement

The benefits of a cost effective design can be compromised if the incorrect procurement strategy and contract form is used as the contracting industry is still relatively unfamiliar with the standard.

This unfamiliarity together with trying to fix the price with a contractor before the design is finalised can attract large risk premiums or contractor drop outs in the tender process.

The procurement strategy needs;


1. Sufficient time.
2. Access to the client and design team.
3. Flexibility to accommodate contractors input / advice.
4. Enough control to ensure the client objectives and requirements are delivered.

Careful consideration of the procurement strategy and contract form is required to lower risk premiums.

Summary

- The cost uplift can be anywhere between 10-20% depending on the base cost data used and key characteristics of the project.
- This is influenced by key drivers such as air tightness, high quality products, add-ons and lack of economies of scale.
- With the increasing demand for housing there is an opportunity to improve the volume, standardisation and economies of scale of constructing to Passivhaus standards, reducing the cost premium.
- There are risks inherent in all projects but these can be managed with appropriate controls and processes.
- Procurement strategy and contract form requires careful consideration to lower risk premiums.

Any Questions?



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