

# Innovative construction solutions to deliver better value in social housing



Offsite - the route to cost effective,  
energy efficient housing?

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12<sup>th</sup> November 2013

The logo for buildoffsite, with "build" in blue and "offsite" in red, all in a lowercase sans-serif font.

The logo for Lloyd's Register, with "Lloyd's" in a large blue serif font and "Register" in a smaller blue serif font below it, all enclosed in a blue rectangular border.



# Innovative construction solutions to deliver better value in social housing



Need for More Housing

Capacity of House Builders

Skills



# Innovative construction solutions to deliver better value in social housing



## Characteristics of Offsite Product Supply

- Predictable quality
- Predictable performance
- Low waste
- Fast construction
- Good health and safety and better working conditions
- Good sustainability
- New technical skills and multi-skills



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‘In practice purchasers have no way of directly influencing any quality, spatial or design aspect of new housing other than deciding whether or not in the circumstances they wish to purchase. This almost complete disconnect with consumer choice does not seem to have an obvious parallel in any other modern manufacturing industry.’



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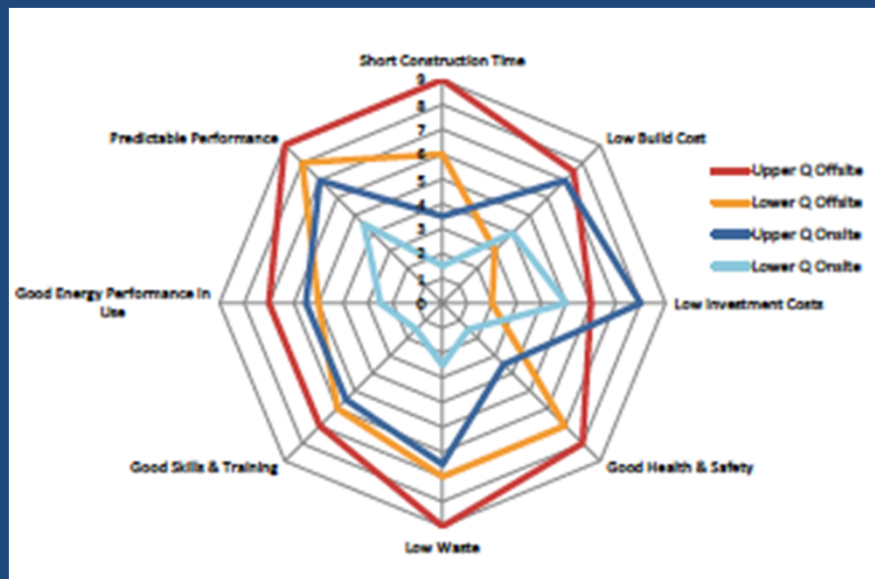
'RSLs and LAs will have a long term interest in the management of homes and therefore have a particular interest in the build quality of the asset, the cost of ownership over time and achieving performance standards for the structure that will minimise the cost of space heating. This wider view will we believe tend to encourage such clients to be prepared to invest more up front to achieve a superior and better performing asset. In turn this may create opportunities for the offsite sector to promote the overall business case for the selection of offsite solutions over traditional methods of construction.'



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## Higher Sustainability Aspirations - Offsite v Onsite



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A 'perfect combination' of key drivers for greater take-up of offsite construction in home building is beginning to emerge in the UK – build rates need to increase significantly to meet rising demand for housing, and quality (performance) standards are set to rise as the Government pursues reduced carbon emissions.





# Case Study - Rainham



## New Road, Rainham – Circle Housing

Site Acquired from Greater London Authority

Planning consent (inc. S.106) in 6 months

51 Units (34 houses & 17 apartments)

Largest 'Passive House standard' all affordable scheme in the UK

Working closely with adjacent Havering College, Construction Skills Centre on training opportunities

Start on Site - July 2013

Completion (Final Phase) - July 2014





# Case Study - Rainham



## Structural Insulated Panel System – SIPS

- Reduced site construction time
- Controlled manufacturing environment ensures consistent quality
- Designed to meet Code 4 – 6, Passive House and Zero-Carbon Homes
- Improved health & safety during construction process
- Easy installation of services, conduits and back-boxes installed in factory
- Lifting straps attached for ease of transportation and installation
- Suitable for houses and low level apartments
- Eliminates need for highly skilled labour on site
- Constructed from timber and sustainable materials
- Chain of custody certified
- Ability to control and account for waste



# Case Study - Rainham



## Floor Cassettes

- Robust detail compliant / Part E (sound) compliant
- Reduced site construction time
- Controlled manufacturing environment ensures consistent quality
- Stability of an instant working platform
- Improved health & safety during construction process
- Easy installation of services, particularly MVHR systems
- Lifting straps attached for ease of transportation and installation
- Suitable for houses and low level apartments
- Eliminates need for highly skilled labour on site
- Firebreak characteristics can be incorporated into the design
- Constructed from timber and sustainable materials
- Chain of custody certified
- Ability to control and account for waste
- Cassettes can be sequentially loaded to speed up erection process



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# Case Study - Rainham



## Roof Cassettes

Improved health and safety during construction process

Ease of installation saves on site labour costs

Ability to achieve enhanced energy performance levels

Manufactured in controlled environment to ensure consistent quality

Reduced site construction time (single day installation)

Chain of custody certified

Incorporating an optional panelised floor

Dormer windows/rooflights can be fitted

Weathertight in hours rather than days

Suitable for both masonry and timber frame constructed buildings

Tile ready state within one day

Reduced air leakage and thermal bridging

Utilising 100% of the loft space as usable living space



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## ecoTECH Passiv Build System comparison against traditional CfSH Level 4 benchmark schemes

Item	EC Harris CfSH Level 4 Benchmark	
	Cost	Rate
Demolition	£ 43,549	£ 8
Substructure	£ 440,932	£ 81
Superstructure		
Build System incl installation	£ 2,547,605	£ 468
Other	£ 2,297,199	£ 422
External Works	£ 555,247	£ 102
Services	£ 163,308	£ 30
<b>Net Works Cost</b>	<b>£ 6,047,840</b>	<b>£ 1,111</b>
Preliminaries @ 13% - on net works cost	£ 786,219	£ 144
Fees (Post Contract) @ 3% - on net works cost	£ 181,435	£ 33
OH&P @ 3%	£ 210,465	£ 39
Contingency @ 3%	£ 216,779	£ 40
<b>Total</b>	<b>£ 7,442,738</b>	<b>£ 1,367</b>
<b>Cost Saving</b>	<b>£ -</b>	<b>£ -</b>
Programme Duration (months)	12	

ecoTECH CfSH Level 4 Build System			
Cost	Rate	Difference to ECH Benchmark	% Diff to ECH Benchmark
£ 43,549	£ 8	£ -	
£ 440,932	£ 81	£ -	
£ 2,144,724	£ 394	(£ 74)	-16%
£ 2,297,199	£ 422	£ -	
£ 555,247	£ 102	£ -	
£ 163,308	£ 30	£ -	
£ 5,644,959	£ 1,037	(£ 74)	-7%
£ 526,219	£ 97	(£ 48)	-33%
£ 169,349	£ 31	(£ 2)	
£ 190,216	£ 35	(£ 4)	
£ 195,922	£ 36	(£ 4)	
£ 6,726,665	£ 1,236	(£ 132)	-10%
(£ 716,073)	(£ 132)		-10%
6		(6)	-50%

ecoTECH Passiv Build System			
Cost	Rate	Difference to ECH Benchmark	% Diff to ECH Benchmark
£ 43,549	£ 8	£ -	
£ 440,932	£ 81	£ -	
£ 2,362,468	£ 434	(£ 34)	-7%
£ 2,297,199	£ 422	£ -	
£ 555,247	£ 102	£ -	
£ 163,308	£ 30	£ -	
£ 5,862,703	£ 1,077	(£ 34)	-3%
£ 526,219	£ 97	(£ 48)	-33%
£ 175,881	£ 32	(£ 1)	
£ 196,944	£ 36	(£ 2)	
£ 202,852	£ 37	(£ 3)	
£ 6,964,599	£ 1,279	(£ 88)	-6%
(£ 478,138)	(£ 88)		-6%
6		(6)	-50%

GIFA	5,443.60
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### Notes

ecoTECH Passiv Build System - Supply (£/m2)	£ 399
ecoTECH Passiv Build System - Installation (£/m2)	£ 35
ecoTECH Passiv Build System reduction to CfSH Level 4 (reduction in insulation) (£/m2)	(£ 40)

### Preliminaries

Benchmark Cost of Preliminaries	£ 786,219
52 weeks	£ 15,120 per week
This includes for start up and removal costs so say running cost of	£ 10,000 per week
Time saving of ecoTECH Build System over benchmark schemes	26 weeks
Reduction on preliminaries costs	£ 260,000

### Headlines

50% saving on programme duration for ecoTECH solutions when compared to traditional

33% saving on preliminaries costs for ecoTECH solutions when compared to traditional

ecoTECH CfSH Level 4 Build System and installation is 16% cheaper when compared to similar components in traditional form  
ecoTECH Passiv Build System and installation is 7% cheaper when compared to similar components in traditional form

Overall scheme cost for ecoTECH CfSH Level 4 is 10% cheaper when compared to similar schemes in a traditional form benchmark costs, and similarly the ecoTECH Passiv Build is 6% cheaper than traditional schemes benchmarked costs.

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# Case Study - Rainham



## Conclusions

Faster Build Programme

Lower Build Costs

High Quality Design & Build

Lifetime Homes

'Future Proof'

C. 70% Lower Heating Bills

BOPAS Warranty



# Case Study - Rainham



“This is a great example of how public land can be brought back into use for much needed affordable housing. With its excellent green credentials, this development showcases what is possible with innovative, intelligent design.”



“Off-site construction is an industry with untapped potential in this country, and could in time revolutionise the way we deliver our housing, providing a swift, high quality solution to creating cost effective, zero carbon homes.



“I’ve seen for myself the benefits this method can bring, both to builders and to local communities, creating the jobs and training opportunities local people need.”



# Contact Details



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