

STEWART MILNE CONSTRUCTION

Sigma II Block 3 4 x 2 Bedroom Cottage Flats



Stewart Milne Construction, part of the Stewart Milne Group, will deliver four low carbon homes at the Housing Innovation Showcase using the Group's award winning Sigma II Build System as well as a range of other complementary, innovative technologies.

The company will be focusing on higher levels of offsite prefabrication to deliver greater onsite efficiency and speed of build and reduce other elements such as site prelim costs and waste. Offsite construction also enables a fabric-first approach, concentrating on the energy performance of a building's core structure and materials, including the Sigma II Build System. This will ensure the homes at the Housing Innovation Showcase are capable of meeting significant efficiency standards even before renewable technologies are introduced.

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Developed by Stewart Milne Timber Systems, the Sigma II Build System will provide the properties with significant levels of energy efficiency including a U-Value as low as 0.12 W/m²/k, air tightness of 2 and 0.02 thermal bridging. The system's innovative insulation, which carries a Green Guide A rating, will also provide the homes with high water resistance, long term durability and thermal bypass prevention within the panel cavities.

Commenting on the project, Bill Imlach, managing director of Stewart Milne Construction said: "As the demand for sustainable, affordable housing grows, it is imperative for the industry to continue working on the development of homes which meet both financial and performance requirements.

"We have a strong history of delivering major affordable housing projects and the Housing Innovation Showcase is a great opportunity to demonstrate our knowledge and expertise of the sector as well as our sustainability and innovation credentials."

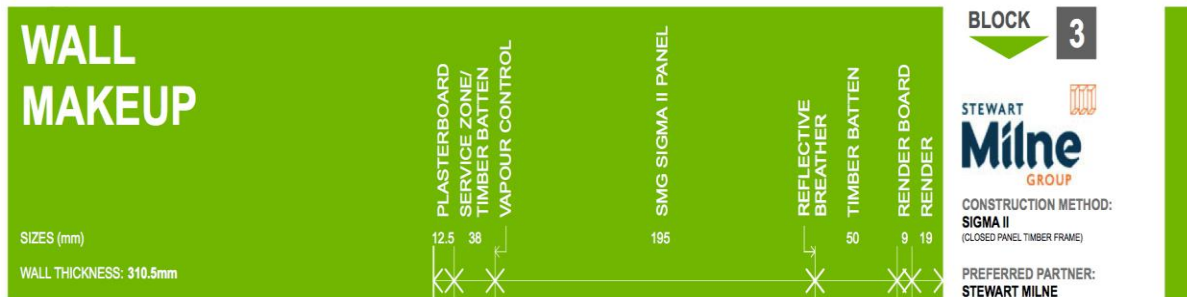
From a Stewart Milne Construction perspective, the most important aspect of the project is the ability to demonstrate the benefits of its low carbon homes and fabric-first approach which include:

- Lower whole life costs to clients
- Low maintenance with less reliance on untried and untested technologies
- Quality built-in with minimal reliance on site skills and supervision
- Proven energy savings through fabric testing
- Strong focus on the occupants with a user-friendly approach
- High levels of comfort and air quality for occupants
- Reliable materials, easy to repair and replace if required
- Low dependency on solar solutions and intermittent fuel sources
- Simple approach to future electricity generation and metering using Micro CHP Fuel Cell
- Good quality, simplistic house designs, reflecting local vernacular and traditional housing styles
- Scalable and affordable for mass delivery

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DESIGN OUTPUTS	PLOT 9	PLOT 10	PLOT 11	PLOT 12
	GF FLAT	FF FLAT	FF FLAT	GF FLAT
CONSTRUCTION	Sigma II Closed Panel Timber Frame			
GROSS INDICATIVE FLOOR AREA M²	77.90	85.50	85.50	77.90
AVERAGE SUPERSTRUCTURE COSTS PER UNIT (INCLUDING RENEWABLES / EXCLUDING PRELIMS)	£53,637	£59,629	£67,729	£61,737
AVERAGE M² SUPERSTRUCTURE COSTS PER UNIT	£689	£697	£792	£793
CONSTRUCTION PERIOD (SUPERSTRUCTURE)	NUMBER OF WORKING DAYS OFF / PRE SITE :			15
	NUMBER OF WORKING DAYS ON SITE :			111



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DESIGN OUTPUTS	PLOT 9	PLOT 10	PLOT 11	PLOT 12
	GF FLAT	FF FLAT	FF FLAT	GF FLAT
SAP RATING (BASED ON 09 SAP)	86B	86B	87B	86B
C02 RATING (BASED ON 09 SAP)	90B	90B	89B	88B
<u>U VALUES</u>				
WINDOWS	0.8	0.8	0.8	0.8
DOORS	1.4	1.4	1.4	1.4
EXTERNAL WALLS	0.15	0.15	0.15	0.15
FLOORS	0.15	-	-	0.15
ROOF	-	0.1	0.1	-
RENEWABLES	Not Applicable		Gas Micro Combined Heat & Power	
ELECTRICITY GENERATED	Not Applicable		Figure not provided.	
AIR PERMEABILITY (Design Stage)	2.0	3.0	3.0	2.0
AIR PERMEABILITY (Actual)				
VENTILATION SYSTEM	Mechanical Ventilation Heat Recovery (92%)			
BOILER EFFICIENCY	92%	92%	91%	91%
<u>ENERGY USE</u>				
SPACE HEATING (KWH/YEAR)	1897.02	1850.80	495.75	835.82
WATER HEATING (KWH/YEAR)	2539.78	2635.12	3090.20	2998.71
LIGHTING (KWH/YEAR)	348.66	380.62	391.28	348.66
ANCILLARY (KWH/YEAR)	168.22	184.63	359.63	343.22
TOTAL (KWH/YEAR)	4953.68	5051.17	4336.86	4526.41
<u>ENERGY COSTS</u>				
SPACE HEATING (£/YEAR)	£58.81	£57.37	£15.37	£25.91
WATER HEATING (£/YEAR)	£78.73	£81.69	£95.80	£92.96
LIGHTING (£/YEAR)	£16.18	£17.66	£18.16	£16.18
ANCILLARY (£/YEAR)	£113.81	£104.57	£122.69	£121.93
TOTAL ENERGY COST (£/YEAR) EXCLUDING SAVING FROM ENERGY GENERATED	£267.53	£261.29	£252.02	£256.98

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