

Bryn Bragl Housing. Pioneering Energy- Positive Social Housing





#14 'Energy positive' social home in
Bridgend, South Wales. Built by
Wales & West Housing Association

X4 1-bed apartments.

X10 2-bed houses.

X2 4-bed houses.

Innovative Housing Programme

- IHP launched in February 2017.
- Initially a 3-year programme with a budget of £90m.
- Target of building 1,000 affordable homes and accelerate industry learning on sustainable housing for the future.
- Funding pays for 'innovative' elements of design.
- All supported projects to be independently performance monitored.
- IHP was extended for an additional year in 2020 with a further £35m funding, to support Modern Methods of Construction (MMC) projects.



Llywodraeth Cymru
Welsh Government

The Concept Design



Britain's first 'energy positive' house opens in Wales

Powered by the sun, this low cost three-bedroom house is the first in the country to produce and sell more energy than it uses



 The Solcer House at Cenin in Stormy Down, Wales, was built as part of the Low Carbon Research Institute programme. For every £100 spent on electricity used, it should be able to generate £175 in electricity exports. Photograph: Cardiff University

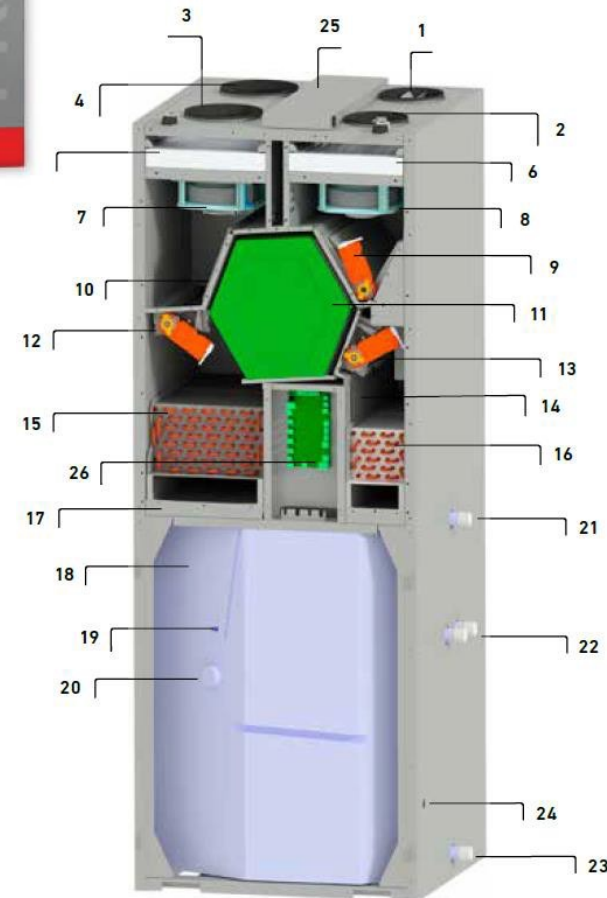
The Design

- A well-balanced blend of passive design and technology.
- Passivhaus levels of insulation
- Permeability not as extreme.
- Integrated MVHR & Exhaust Air Source Heat Pump (EAHP), provides heating & hot water.
- MVHR intake pre-heated by Transpired Solar Collector (TSC).
- Large building-integrated PV (BIPV) systems.
- Battery storage.

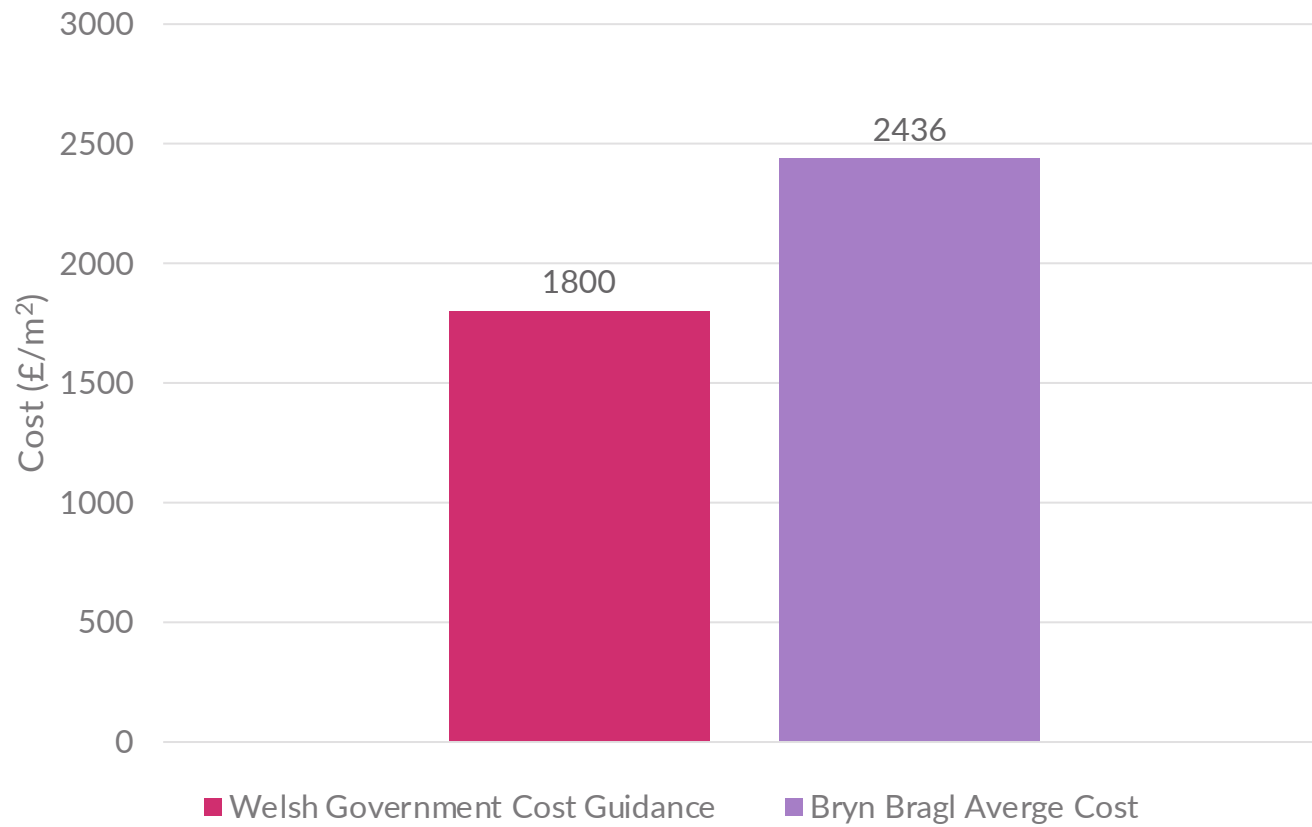


The Technology

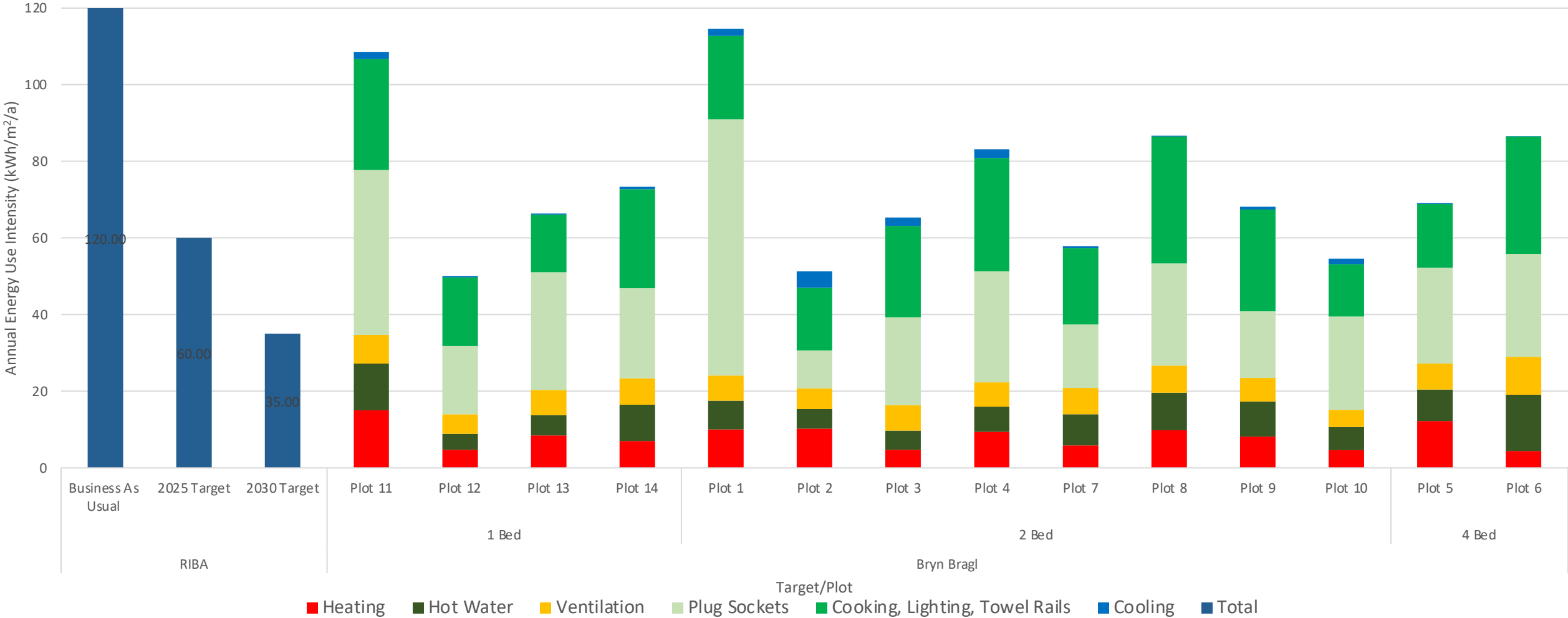
- Two heat pumps to allow simultaneous space and hot water heating.
- Heat pump is reversible – cooling in the summer
- Exceptionally high efficiency heat recovery – 88%.
- Integrated 212 litre hot water tank.
 - 50°C storage off heat pump alone.
 - Uses immersion for weekly legionella cycle.
- Remote access by mobile phone app.
- Beware! It's BIG. 750 x 750 x 2,000 tall.



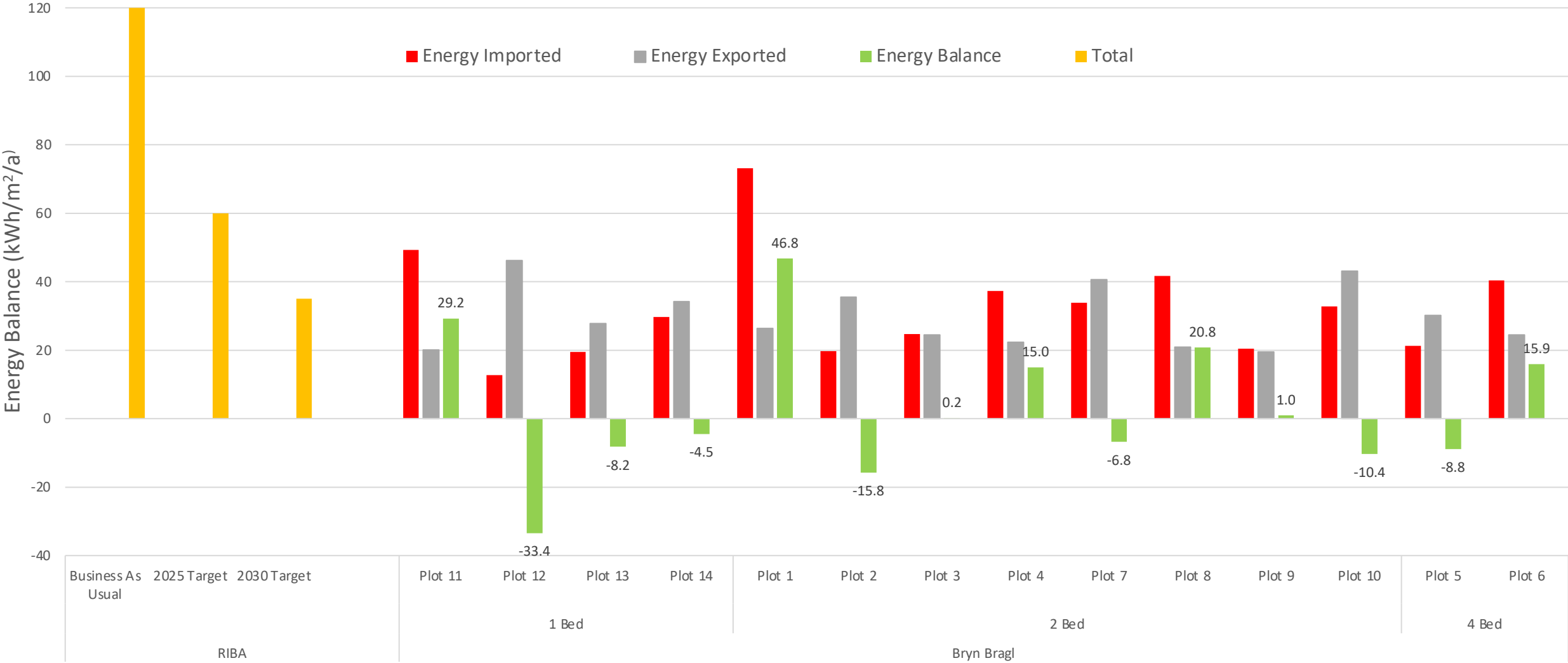
The Costs



The Performance

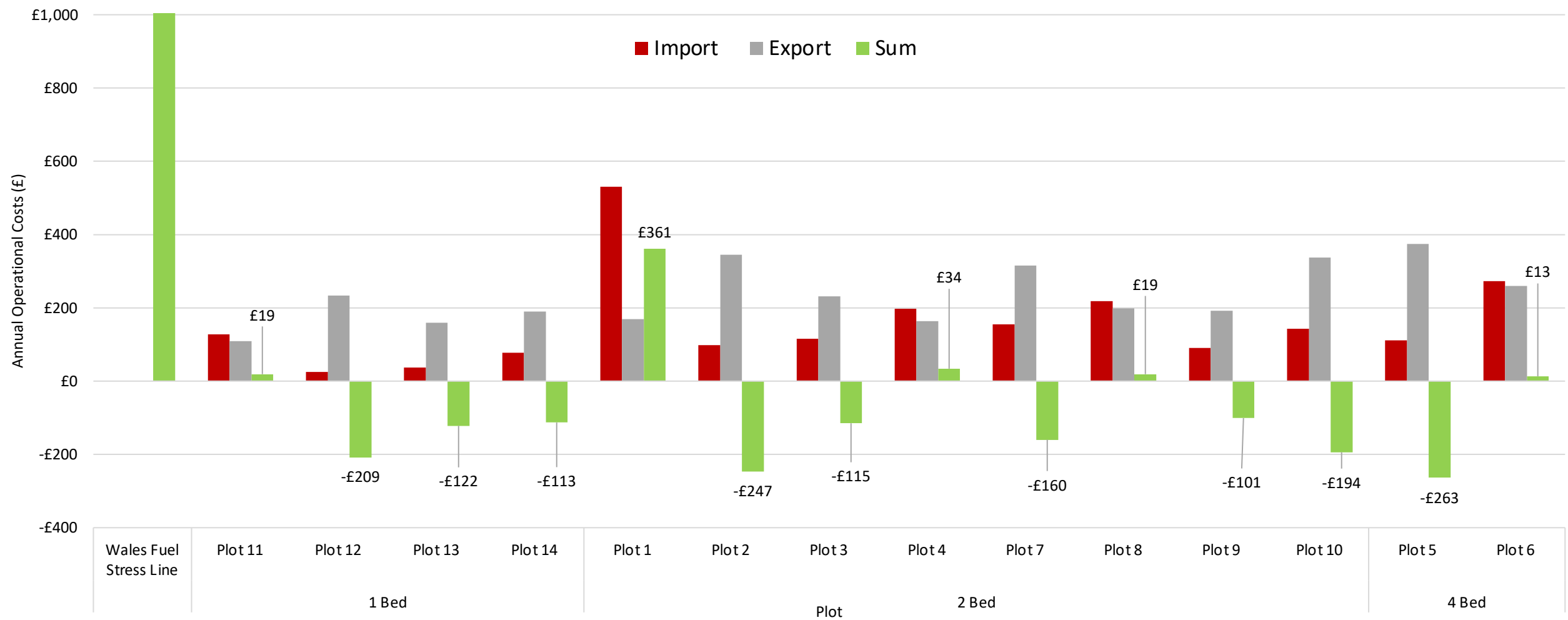


The Performance



The Performance

Operational Costs on a Octopus Tesla Tariff



The Reasons

One house has a hydrotherapy pool in their kitchen

Significant differences in heating set-points across the homes. Average internal temps ranging from 19°C to 30°C.

Some tenants are running their heating 24 hours.

Electricity demand in the homes are on average around 60% higher than expected. Mainly due to duct heaters & set-points.



Importance of POE

- designer feedback
- match real world data
- provides lessons

The Lessons

It's very difficult to predict the energy consumption of an individual property because of its susceptibility to individuals behaviour. The average however should tend towards what was predicted.

Clear and concise information for the occupants is vital so there's an understanding of how to control technology

Energy positive social housing is achievable – this proves it. For a small cost it can be completed and this cost will only decrease as contractors and designers become more familiar with this manor of working.

BUILT ENVIRONMENT SUMMIT

28 - 29 October

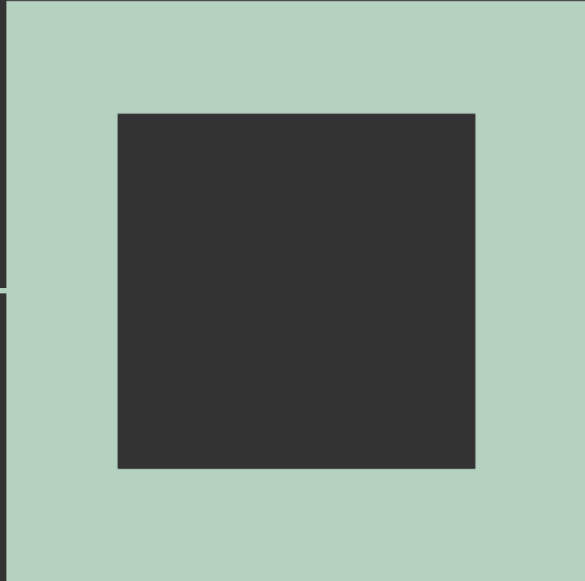


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