



# Jerramfalkus

Low energy building and Passivhaus  
The future for construction

July 2021



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## Low energy and Passivhaus - The future for construction

In June 2019 the United Kingdom (UK) became the first major economy in the world to pass a net zero emissions law. This new target will mean bringing all greenhouse gas emissions to net zero by 2050, in turn this means **100% of all building processes must operate at net zero by 2050.**

As a company with experience working with Modern Methods of Construction (MMC) such as Cross Laminated Timber projects (CLT), Modular, Passivhaus and Low Energy construction, Jerram Falkus is seeing an ever increasing demand from our clients for properties to be designed and constructed with the new zero carbon targets in mind.

Although local authorities are only directly responsible for 2-5% of local emissions, through their policies and partnerships they have strong influence over more than a third of emissions in their area.

Consequently at a local level, many Councils around the UK, including the Greater London Authority (GLA), have started to adopt more aggressive targets to achieve carbon neutrality by 2030.

### Where to begin?

Local authorities and registered housing providers can directly shape emissions in many ways, such as;

- Ensuring all buildings are designed to be low energy and/or meet Passivhaus Standards.
- Retrofitting existing building stock.
- Minimising the need for transport and ensuring that low carbon methods of transport are encouraged and infrastructure is enabled.

### Why choose Jerram Falkus?

- We are already equipped and experienced to deliver projects to this level and have a dedicated team, specialist supply chain and consultants on hand.
- We recognise that collaboration between clients, consultants and all stakeholders, together with the wider construction industry will lead to a decarbonised environment.
- We are introducing renewable energy on our sites and pursuing more projects of this nature and reviewing our internal processes to make a contribution to the 2050 target.

# Build to *last*

# Working to Passivhaus Standards - what are your options?

## The fabric first approach

Overall, a whole-building system approach can assist with meeting Passivhaus requirements, particularly as the pre-fabricated components should have good performance characteristics and their use can reduce construction time, resulting in lower labour costs, and minimise on-site delays due to adverse weather conditions. However, whole-building systems do not remove the need for effective design input. Orientation, services, design and other factors will all have a significant effect on the cost, efficiency and successful delivery of a project using a whole-building system.

## Building services

Whilst building fabric is the key to Passivhaus performance, it is important to pay attention to building services. Mechanical ventilation with heat recovery (MVHR) poses the most challenges but it is also important to design heating systems appropriate to the level of heat demand so they run smoothly and economically. Air Source Heat Pumps can also be used bespoke to individual properties or run from a communal energy centre.

## Advantages

A whole-building system can remove some of the complexities of ensuring that different materials and components can be combined to achieve Passivhaus requirements.

- Prefabricated components can speed up construction time, resulting in lower labour costs.
- Construction programme is less affected by bad weather.
- The mechanisation used in construction increases conformity to the Passivhaus standard.
- Materials are protected from exposure to the elements during construction.
- Quality control and factory airtight sealing ensures better quality control.

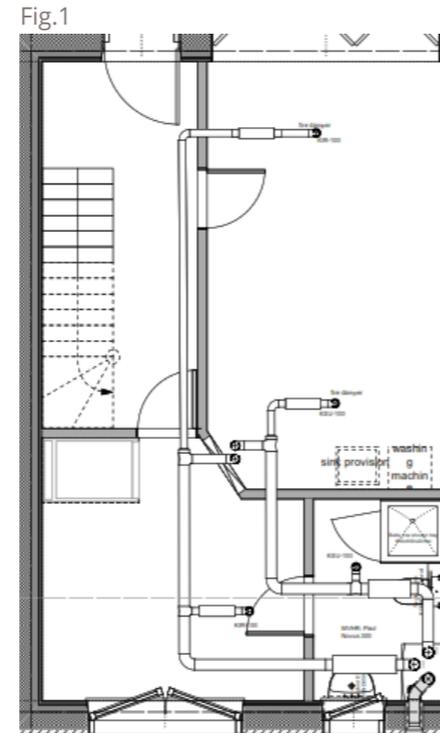


Fig.1

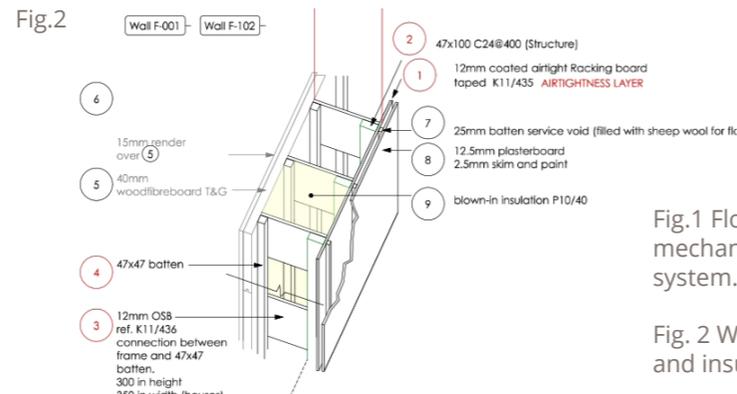


Fig.2

Fig.1 Floorplan with mechanical ventilation system.

Fig. 2 Wall build up and insulation.

# Working towards the “Future Homes Standard”

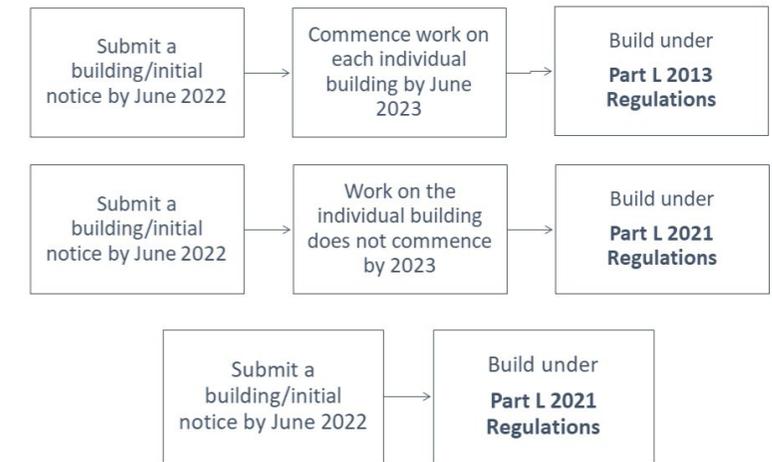
In January 2021 the Ministry of Housing, Communities & Local Government (MHCLG) published its long-awaited response to the Future Homes Standard consultation which closed in March 2020.

## What does this mean for your project?

- For Part L 2021 the site wide approach for transitioning will change to a plot/building specific approach, therefore plots/buildings that do not start within a year of the regulations application, even if on the same site, would need to be built to the latest standards.
- Commencement does not change from the existing 2013 definitions – excavation for strip/ trench foundations, digging out and preparation of ground for raft foundations, piling or drainage works specific to building concerned.

Early engagement during the design period is crucial for any new project commencing this year and onwards in order to comply, and also exceed the new required targets coming into place.

Fig.3 Information provided by Whitecode Design Associates



## Part L 2021 is a stepping stone to the FHS in 2025 - what can we expect?

- Gas boilers may still be used up until 2025 when gas is phased out.
- GLA schemes will already be using heat pumps.
- Triple glazing at 0.8 U-value expected by 2025.

## Performance metrics for Part L 2021

1. Primary energy target
2. O2 emission target
3. Fabric energy efficiency target (FEES – DFEE/TFEE)
4. Minimum standards for fabric and fixed building services

## Our experience and initiatives

### Cannock Mill, Colchester

A unique Passivhaus Co-housing project. The works included the residential construction of 23 new build homes, a mixture of one and two bed flats and 17 houses with up to three bedrooms with garages and useful storage space in the undercroft of the six flats in addition to refurbishment of a Grade II listed Mill.

The buildings are designed to and certified as 'Passivhaus' registered on the Passivhaus database. The project was built to achieve exceptionally low running costs, sustainable comfort and health, including to Lifetime Homes standards.

Features include;

- environment-friendly paints and stains, self-coloured render that never needs painting and renewable bamboo flooring.
- high levels of thermal insulation and the absence of thermal bridging, highly insulated triple glazed windows and doors, a high degree of air tightness (windows still open but only when you want them to, i.e. no draughts).
- recovery of heat from the ventilation system – referred to as mechanical ventilation and heat recovery (MVHR)



*"The pre-construction and site management teams made a huge effort to understand and respond to the Passivhaus requirements, including training key subcontractors and changing procurement strategy during the project. The team responded quickly to a subcontractor issue with airtightness on site and delivered a challenging and unique certified Passivhaus scheme for the co-housing group."*

**Will South, Etude  
(Passivhaus Consultant)**



*"Jerram Falkus developed their quality inspections to include Passivhaus requirements and the site team communicated this to the subcontractors right from procurement. The work included mock up sample details for insulation, and a quality champion on site. The project achieved the Passivhaus construction quality and airtightness requirements and is pending Passivhaus certification."*

**Will South, Etude  
(Passivhaus Consultant)**



### New Ark, St Benedict's Ealing

St Benedict's is a leading independent catholic co-educational school providing education from nursery through to sixth form.

We were appointed following the success of previous school construction work for the Sixth Form and Art Design & Technology Building.

The New Ark, provides classrooms for the Junior School and brings the Nursery on to the school site in a single, high performance, very low energy building, built to the very demanding 'Passivhaus' standard.

The work involved the demolition of the existing single-storey brick-built structure and the construction of a new three-storey cross-laminated timber structure with brick cladding to form a new teaching space, totalling 1600m2.

The project took place whilst the school was in occupation and access and safety of the staff and students had to be managed accordingly.

### East End Thames View, Barking

276 affordable homes for the Thames Partnership for Learning and Regeneration in partnership with the London Borough of Barking and Dagenham and Explore Investments.

All units were supplied with hot water from a permanent Energy Centre located on site, with highly insulated ducted flow and return pipework supplying Heat Interface Units (HIU's) within each dwelling. Each dwelling also incorporated MVHR systems and PV panels.



### Whitmore Road, Hackney

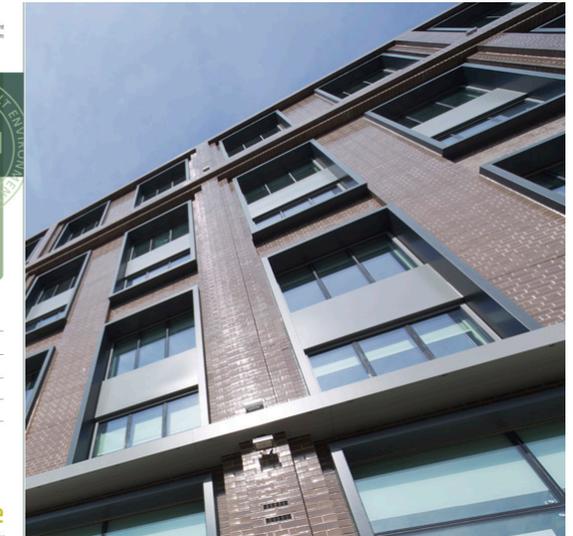
Construction of a new six-storey mixed-use building including offices, live-work studios and three duplex penthouses. The canal-side lower ground floor was constructed in reinforced concrete and with the upper floors constructed off of the podium deck being entirely cross laminated timber (CLT), including floors, walls, roof deck, balconies, stairs and internal partitions. The building was highly insulated and clad in cedar rainscreen and render.

A fabric-first approach to the design and construction provides a highly energy efficient building, both in terms of heating and cooling demand.



### Yotel, Clerkenwell

A new build hotel comprising 212 rooms managed by hotelier Yotel, front and back of house areas, two retail shell and core units, five private residential apartments. BREEAM Excellent features were designed into the construction process including reduction in CO2 emissions, and low carbon technologies. Materials and services were procured from organisations committed to working to this standard which included materials and transportation for the build process. The building also has energy efficient lifts that operate in stand-by mode during off peak conditions .



### EKO Pathways School, Newham

A special educational needs school in the London Borough of Newham for children and young people with social, emotional and mental health difficulties (SEMH). It provides generous, flexible classrooms and specialist teaching resource areas, with breakout spaces and extensive external landscaping

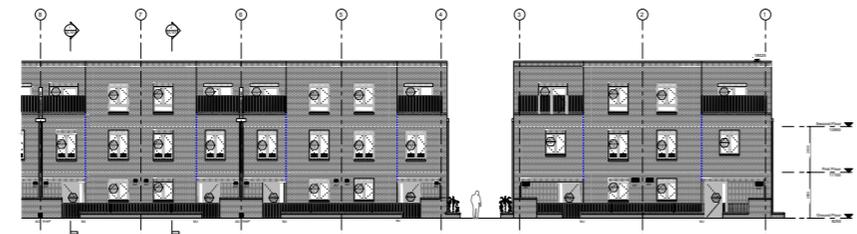
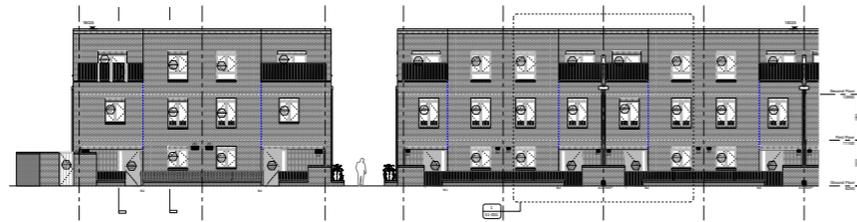
The new building has been constructed in **cross laminated timber (CLT)** with highly insulated external walls, clad in coloured cementitious panels. There are roof mounted photo-voltaic (PV) panels and a mechanical ventilation heat recovery integrated in to the ventilation system.



## Current low energy projects

### David & Anne Street, Landseer Avenue and Forest View Road, Newham

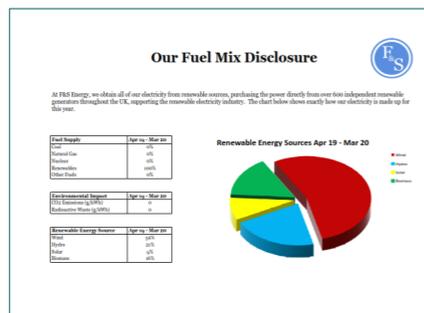
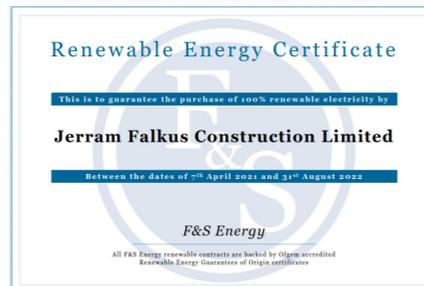
We have been appointed to deliver the construction of affordable housing for the London Borough of Newham's Wave 1 of infill sites identified for the affordable home programme 2018-2022. All of the projects are specified to be low-energy homes and designed to Passivhaus Standards. Space and water heating is provided by Air Source Heat Pumps (ASHP's) and all dwellings have MVHR ventilation and roof-mounted PV arrays.



David Street

### Ark Soane Development, Acton

We have secured a contract with Countryside and the Department for Education, to deliver a £52m design and build project, constructing a combined education and residential development in Acton. A centralised Energy Centre powers the site and both the school and the residential units are facilitated by Ground Source Heat Pumps, and MVHR ventilation systems. There are also PV panels on the roofs and all residential dwellings have Heat Interface Units serving space heating and hot water. We have sourced a renewable energy supplier to provide our site with renewable energy for the duration of the project in order to keep our operations and emissions as low as possible.



Ark Soane, Acton

## Working together



*"Jerram Falkus understand the impact of the construction industry on the environment, not only through minimising their environmental impacts on site but also through their commitment to delivering sustainable buildings.*

*They advocate the fabric first approach and Passivhaus principles focusing on U-values, thermal bridging and air tightness to ensure energy efficiency is intrinsic to the building, before the addition of low carbon and renewable technologies.*

*With the upcoming Future Homes Standard and the drive for zero carbon Jerram Falkus know that sustainability starts from excellent low carbon design and must be carried through to completion."*

**Ellen Huelin**  
Associate Director, Whitecode Design Associates

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*"It was a pleasure to work alongside Jerram Falkus, Cullinan Studio, Price & Myers and Long & Partners in developing the detailed technical design for this \*project.*

*The design and preconstruction work completed was to a high quality and demonstrated that EnerPHit would be possible for the refurbishment of the University teaching building."*

**Will South, Etude**  
(Passivhaus Consultant)  
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## Company information



Jerram Falkus is an established, family-run construction business that has been operating in London and the South-East since 1884. We work with both the public and private sectors on projects with average values between £2m and £30m. Our specialisms include; Education, Housing, Healthcare, Heritage and Sport & Leisure.

The Jerram Falkus Group also comprises a development and joinery division which also operate from our offices and workshop in Shoreditch, London.

The businesses can either be deployed together to deliver integrated, end-to-end projects or engaged individually.

### Our foundations

Founded on core values that still underpin everything we do, we aim to take a long-view, create the best possible experience for every stakeholder, and deliver enduring quality.

When James William Jerram founded the company in 1884 he may not have realised he was starting a construction business that would be thriving 135 years later. That said, he did know that an organisation built on the right foundations, would prosper over time.

To this day those founding principles still represent the core of our business; always adhering to the highest standards, anticipating

change to future-proof our work, putting our clients at the heart of everything we do and ensuring we deliver projects of enduring quality.

It is this commitment to excellence that has not only ensured the we have built long term relationships with our clients and provided a nurturing environment within which our team can thrive, learn and do their best work. It is these principles that we have embedded in our values.

*Jerram Falkus always Build to Last.*

## Contact us

We would welcome the opportunity to discuss and become involved with your future projects.

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