MERRYWEATHER PLACE – GREENWICH SE10

DEVELOPER
Galliard Homes

ABOUT
Galliard is a property development, hospitality and management group overseeing mixed-use, residential, hotel and commercial projects across London and southern England.

COMPLETED
2012

OVERVIEW

Since our formation in 2008, the Zero Carbon Hub continues to work with Government and industry to identify risks, remove barriers to innovation and help demonstrate that energy efficient, healthy new homes can be delivered by the mainstream house building industry.

This series of building profiles gives examples of manufacturers, developers and clients who have embraced the challenge and are developing practical, commercially viable ways of delivering the next generation of homes in preparation for the nationwide introduction of Nearly Zero Energy Homes from 2020.

SUMMARY

Greenwich Commercial Centre is one of several of Galliard’s contributions to the renewal of the Greenwich High Road area. It is a diverse mixed-use development, uniting commercial and residential builds. The mix of 156 commercial units and 150 room hotel, 164 private and affordable apartments, is spread over 3 1/2 acres.

The development was subject to the requirements of Approved Document L 2006, the London Plan and Code for Sustainable Homes Level 3.

As a result the development was required to achieve a 25% reduction in carbon emissions over the requirements of AD L 2006 and offset 10% of annual carbon emissions from renewable technology.

SPECIAL FEATURES

Community biomass boiler provided to meet 55% of space heating and hot water demand.
PROJECT STRATEGY

KEY PLANNING CHALLENGES

Merryweather place was subject to the requirements of the London Plan 2011, which, at the time, required a reduction in carbon emissions over the Approved Document L 2006 Target Emission Rate of 25%. This standard applied to both the domestic and non-domestic elements on the development site. In addition to this requirement, 10% of the development's carbon dioxide emissions needed to be offset from renewable energy systems. All dwellings on site were required to meet Level 3 of the Code for Sustainable Homes.

Carbon dioxide use on site was offset by the use of the communal biomass boiler; it was calculated that in order to do this it needed to provide approximately 850,000kWh annually.

DESIGN AND CONSTRUCTION

Due to the higher level of noise pollution on the side of the site located next to the Dockland Light Railway (DLR) network, a number of dwellings within the development were designed with integrated whole house ventilation. This process ensures that the noise levels within the dwellings would remain comfortable for occupants while also allowing the required level of air changes.

Due to a low static pressures requirement across the blocks all heat interface units could be domestic hot water (DHW) single plate type, allowing the heating runs into the apartments radiators directly with no secondary circuit necessary.

PRODUCTS AND SYSTEMS

BUILDING SERVICES

- To offset Carbon dioxide emissions heating and hotwater was provided by a 300kW wood-pellet boiler. Providing base load at 90% efficiency.

CONTROLS

- Thermostatic radiator valves
- Integrated Building Management Systems
- Individual Room programmers

FORWARD THINKING

Despite the development being designed to the performance standards of L1A 2006 and the London Plan at the time, compliance with the proposed ZCH standard is nearly achieved. Focus on improved building fabric, thermal bridging heat loss, air permeability and party wall heat loss, would be sufficient to ensure compliance.

It is likely that lower g-values for glazing systems would need to be considered to mitigate overheating risk and ensure occupant comfort when assessed against more advanced building regulations.
### Fabric Energy Efficiency

**Fabric Energy Efficiency**

<table>
<thead>
<tr>
<th>WALL</th>
<th>ROOF</th>
<th>GROUND FLOOR</th>
<th>GLAZING</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 w/m²K</td>
<td>0.13 w/m²K</td>
<td>0.2 w/m²K</td>
<td>1.8 w/m²K</td>
</tr>
</tbody>
</table>

45.3 Kwh/m²/yr

In line with the targets at the time of development the above U-values were implemented within the development.

A default psi value of 0.15 was used in the assessment. Due to the bespoke nature of the construction, Approved or Accredited Details were not applicable at this time.

Although the development falls short of the Fabric Energy Efficiency Standard of 39 kWh/M²/year proposed by the ZCH, the site was not subject to the performance standards of current regulations.

### Carbon Compliance

**Carbon Compliance**

15.45 kg/CO₂/m²

**SPACE AND DOMESTIC HOT WATER (DHW)**

The site is served by a community heating system consisting of a biomass boiler delivering 55% of space heating and domestic hot water demand. The remaining demand is met by high efficiency gas fired boilers.

**AIRTIGHTNESS AND VENTILATION**

**AIRTIGHTNESS**

5.7 m³/h/m²(@50Pa)

System 3 Ventilation was used in the dwellings to ensure compliance with Part F and reduce the risk of condensation and mould growth. A design air permeability of 7 m³/m²/hour was targeted. However, test results demonstrated that a figure of 5.7 m³/m²/hour was achievable across the dwellings.

In line with current regulations whole house mechanical ventilation with heat recovery could also be considered to all blocks to ensure good indoor air quality and manage any potential overheating risk within dwellings.

### MEETING THE CARBON COMPLIANCE STANDARD

The following would need to be considered to ensure Carbon Compliance could be achieved (subject to finalisation of targets for high rise apartments):

- Improved fabric U-values and fully filled and sealed party walls
- Bespoke modelling of psi values to reflect theoretical performance
- Reduction in glazing and wall U values

**OVERHEATING RISK**

To limit solar gain across the development glazing g-values were closely assessed. In addition, the shading provided by apartment balconies provides some reduction in solar gains at peak times. To allow excess heat build up to be purged, windows were designed to allow adequate openings and cross ventilation where possible.
KEY LESSONS

DESIGN STAGE

Community heating at the development was adopted without sufficient parallel renewal and updating of associated national standards. This resulted in inadequately insulated pipework distribution losses and inefficient systems throughout the development. Although identified this problem has yet to be addressed.

The low energy, cold cathode lighting that was utilised throughout all flats and common areas later became obsolete following completion of the project. The driver is not compatible with other lamps meaning once the lamp reaches its end of life, both the driver and lamp must be replaced with 230V GU10 fittings. This oversight demonstrates the need for greater technical research before a policy is implanted.

To ensure that systems could be operated correctly within the apartments, all occupants were provided with a detailed step-by-step user guide to operating the heating and hot water systems. This guide was written to cover operating instructions from the very moment the user steps into the apartment and wishes to use the system. This aided in not only in keeping the user as comfortable as possible, but also helped ensure the system ran as efficiently as possible and reduced the need for external input from maintenance engineers.

Merryweather Place also conducted POE evaluations on the biomass boiler’s fuel consumption and output since commissioning, in doing so the development was also able to monitor actual carbon saving compared to the predicted levels. This allowed the development to recognise any potential drops in the efficiency of the boiler over time.