Small scale housing

Operational energy
Implement the following indicative design measures:

<table>
<thead>
<tr>
<th>Fabric U-values (W/m².K)</th>
<th>Window areas guide (% of wall area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>North 10-15% East 10-15% South 20-25% West 10-15%</td>
</tr>
<tr>
<td>Floor</td>
<td></td>
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<tr>
<td>Roof</td>
<td></td>
</tr>
<tr>
<td>Exposed ceilings/floors</td>
<td></td>
</tr>
<tr>
<td>Windows</td>
<td></td>
</tr>
<tr>
<td>Doors</td>
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</tr>
</tbody>
</table>

Efficiency measures
- Air tightness <1 (m³/h. m²@50Pa)
- Thermal bridging 0.04 (y-value)
- G-value of glass 0.90 (efficiency)
- MVHR 52m (duct length from unit to external wall)

Maximise renewables so that 100% of annual energy requirement is generated on-site
- Form factor of 1.7 - 2.5

Embodied carbon
Focus on reducing embodied carbon for the largest uses:
- Products/materials (A1-A3) 30% - Superstructure
- Transport (A4) 27% - Substructure
- Construction (A5) 20% - Internal finishes
- Maintenance and replacements (B1-B5) 17% - Façade
- End of life disposal (C1-C4) 8% - MEP

Heating and hot water
Implement the following measures:

- Fuel
  Ensure heating and hot water generation is fossil fuel free
- Heating
  Maximum 10 W/m² peak heat loss (including ventilation)
- Hot water
  Maximum dead leg of 1 litre for hot water pipework
  'Green' Euro Water Label should be used for hot water outlets (e.g.: certified 6 L/min shower head – not using flow restrictors).

Demand response
Implement the following measures to smooth energy demand and consumption:
- Peak reduction
  Reduce heating and hot water peak energy demand
- Active demand response measures
  Install heating set point control and thermal storage
- Electricity generation and storage
  Consider battery storage
- Electric vehicle (EV) charging
  Electric vehicle turn down
- Behaviour change
  Incentives to reduce power consumption and peak grid constraints.

Data disclosure
Meter and disclose energy consumption as follows:

- Submeter renewables for energy generation
- Submeter electric vehicle charging
- Submeter heating fuel (e.g. heat pump consumption)
- Continuously monitor with a smart meter
- Consider monitoring internal temperatures
- For multiple properties include a data logger alongside the smart meter to make data sharing possible.

London Energy Transformation Initiative