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55 CUMBERLAND TERRACE

COOLING HEIRARCHY
11 March 2021

Revision P1

This report addresses the Camden Local Plan Policy CC2 – Adaptation to Climate Change. This requires measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

The cooling hierarchy includes the following steps:

1. **Minimise internal heat generation through energy efficient design**

   Internal heat gains will be reduced by the following measures:
   - Low energy lights throughout
   - Insulated and sealed heat generation and heat distribution equipment (boilers, hot water cylinder pipework)
   - High efficiency white goods

2. **Reduce the amount of heat entering a building in summer**

   As this is an existing listed building, the usual design measures limiting external heat gains are not applicable, i.e.: window orientation and sizes, low g-values, external shading, adequate insulation, green roofs, reflective external materials.
   New glazing in the new extension will be low-e coated and has been sized to provide a balance between adequate daylighting and acceptable solar gains.

3. **Manage the heat within the building through exposed internal thermal mass and high ceilings**

   The building as existing already benefits from relatively high ceilings and thermal mass from solid brick walls and party walls to adjacent buildings. It is not technically possible to increase the thermal mass or ceiling heights.

4. **Passive ventilation**

   The building as existing already benefits from relatively good natural ventilation through openable windows. Cross-ventilation is possible in most areas of the building. Due to existing listed status of the building, it is not possible to increase the window areas or change the window configuration.

5. **Mechanical ventilation**

   Approved Document F System 1 Intermittent Mechanical Extract Fans are provided for the wet rooms and Laundry room. End vent terminations via existing air bricks. This system is proposed as the most suitable ventilation type for this type of property (given the building size and high air permeability through existing fabric)

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6. Active cooling

After implementing all possible measures in the previous steps of the cooling hierarchy, it is also proposed to provide a mechanical cooling system, in order to ensure the maximum occupants comfort. The mechanical cooling system will be an air-source heat pump multi-split VRF system with high efficiency A-rated condenser units and variable speed compressors. This will be the most efficient active cooling system that is feasible in this existing building.

Existing
There is currently only one existing condenser located in the Courtyard at Lower Ground floor; this serves the Ground Floor Kitchen (E.G.02) room. This was manufactured circa 2007 and installed subsequently.

Proposed
For the current development it is proposed to provide comfort cooling to all habitual rooms to achieve comfort levels to the Occupiers.
A total of 3 no Roof mount condensers within respective acoustic enclosures have been proposed to serve the house. They will be Mitsubishi Electric's Slim-line Condensing units from their PUMY-P series outdoor inverter heat pumps allows up to 10-11 number indoor units to be connected to a single outdoor unit which makes it an economic and efficient solution for multi-room applications and offers space saving benefits.
Mitsubishi Electric's current range of outdoor inverter heat pumps are manufactured in line to their pioneering technology with advances made in energy efficiency through invertor technology, refrigerant and compressor design and control solutions. Their current outdoor inverter heat pumps offers excellent seasonal energy efficiency, low running costs and reduced CO2 emissions. Refer to the COP/EER information contained within the Data Sheets.

Manufactures data sheets are enclosed to this document.

Conclusion

The requirements of Camden Local Plan Policy CC2 on Cooling Hierarchy have been fully followed in the design of 55 Cumberland Terrace. All potential measures in each step of the hierarchy which are technically and functionally feasible are implemented.

Ondrej Gajdos
KUT LLP