100 NOS - Camden Planning Guidance

Energy Efficiency & Adaption – Cooling Hierarchy Addendum

Paragraph 10.7

Atelier Ten comments in GREEN text

Spratley & Partners comments in RED text

Issued: 21st October 2024, 06th November 2024- Rev 02

Introduction:

This Addendum has been prepared to address the requirements of Camden Local Plan (2017), Policy CC1, which encourages all developments to meet the highest feasible environmental standards that are financially viable and under criterion (d), supports sensitive energy efficiency improvements to existing buildings (our underlining emphasis)

The 100NOS building was built in 1931 by Gunton & Gunton. Refurbished in 1996–1997, when its fourth, fifth and sixth floors were added, as well as a rear elevation.

Further works took place between 2013–2015, with the lobby, common areas and all above-ground floors undergoing comprehensive enhancements to provide a new, Class A office space.

Freehold building comprises 106,404 sq ft of office, retail and restaurants accommodation.

The roof is currently used almost exclusively for MEP services plant and equipment, which include external air handling units, external fans and heat rejection chillers, a roof mount boiler rooms and tenants external heat rejection condensers. All enclosed on both east and west wings of the roof by a louvred plant enclosure.

The current back to CAT A works being carried out are the first phase of decarbonising the building. As the tenanted floors become available at their lease ends, the floors heating and comfort cooling systems will change for the current 4 pipe fan coil systems served via the existing roof mounted gas fired boiler plant and chiller plant, to refrigerant based fan coil systems with roof mounted condensers similar to those tenant's units already present.

The existing roof mounted air handling units will be replaced with new units complete with integral DX heating and cooling of the fresh air and completed with improved higher efficiency integral heat recovery. The new units will be betterment on operating efficiencies but the units will be larger to supply higher rates of fresh air.

This will leave only the condenser heat rejection units for each floor in a specific area of the roof on the east wing. There are no other external plant spaces associated with the building to accommodate these units.

It should be noted that under a separate landlord exercise, a smart energy management and monitoring system has been installed to ensure energy usage is kept to a minimum by the site FM team.

1. **Minimise internal heat generation through energy efficient design, considering the following:**

☐ Layout and uses: locate any spaces that need to be kept cool or that generate heat on cooler sides of developments. Fitout floors on 3rd and part 4th floors are open plan arrangement with not specific areas which generate more heat than others.
☐ Reducing heat gains e.g. including low energy lighting. Heat gains are being reduced by use of LED lighting throughout the fitout areas.
☐ Seal/ insulate heat generating processes. The proposed heat recovery refrigerant based heating and comfort cooling systems have thermal insulation applied to all system pipework.
☐ Reduce the distance heat needs to travel and insulate pipework. All refrigerant based distribution pipework routes are optimised to ensure shortest routes used.
☐ Design layouts to promote natural ventilation e.g. shallow floor plans and high floor to ceiling heights. All windows are reused existing units to save embodied carbon and cost.
☐ Consider evaporation cooling which cools air through the evaporation of water. Evaporative cooling is not appropriate for VRV/VRF external condensers.
☐ Consider 'free cooling' or 'night cooling', which uses the cooling capacity of ambient air to directly cool the space. Free cooling is being considered via BMS on central air plant controls. This falls outside of the current 3rd and part 4th floor fitout works.

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

☐ Consider the angle of the sun and optimum daylight and solar gain balance. Building is existing and orientation cannot be altered.
☐ Orientate and recess windows and openings to avoid excessive solar gain. Building is existing and orientation cannot be altered.
☐ Consider low g-values and the proportion, size and location of windows. All windows are reused existing units to save embodied carbon and cost under the 3rd and part 4th floor fitout works.
☐ Make use of shadowing from other buildings. Building is existing and orientation cannot be altered, shadowing from other buildings will bring betterment during the day on sun facing facades
☐ Include adequate insulation. Architect to advise. Building is existing, no work was proposed to the external wall, internally or externally, other than decoration.

☐ Design in shading: e.g. include internal courtyards, large shade-providing trees and vegetation, balconies, louvers, internal or external blinds, and shutters. Blinds will be provided as required on solar facing windows under tenants fitout.
☐ Make use of the albedo effect (use light coloured or reflective materials to reflect the sun's rays). Internal finishes are generally white or light in colour, this helps with sun ray reflection and reduces the demand for artificial lighting.
☐ Include green infrastructure e.g. green wall, green/blue roofs and landscaping, to regulate temperatures. This item not appropriate for these CAT A works.

☐ Reduce the amount of heat entering a building in summer. Building is existing and orientation cannot be altered. All windows are reused existing units to save embodied carbon and cost under the 3rd and part 4th floor fitout works.

Manage the heat within the building through exposed internal thermal mass and high ceilings, (see 'Thermal performance' Chapter 3 of this CPG). Free cooling is being considered via BMS on central air plant controls. This falls outside of the current 3rd and part 4th floor fitout works.

3. **Passive ventilation:**

☐ Natural ventilation, openable windows, the 'stack effect' system (see Chapter 3 of this guidance). Existing windows do not open.
☐ Design layouts to promote natural ventilation e.g. shallow floor plans and high floor to ceiling heights. Existing windows do not open.
☐ Consider evaporation cooling which cools air through the evaporation of water. Evaporative cooling not appropriate for Mitsubishi R32 roof condensers.
☐ Consider 'free cooling' or 'night cooling' which uses the cooling capacity of ambient air to directly cool the space Free cooling is being considered via BMS on central air plant controls. This falls outside of the current 3rd and part 4th floor fitout works.

4. **Mechanical ventilation:**

☐ Ensuring the most efficient system possible. Existing central air handling plant is being reused but a recent Smart Technology addition to the MEP services controls system will manage its use and monitor for best operational efficient working under the guidance of the site FM team.
☐ Consider mechanical ventilation with heat recovery. Existing central roof mounted air plant is complete with heat recovery.

5. **Active cooling:**

☐ Ensuring they are the lowest carbon options. Active cooling for the back to CAT A NIA floors is by Mitsubishi R32 heat recovery system. These systems are split one system for the east wing and one for the west wing for each floor, (2 external roof condenser units per floor for effective and efficient metering) and that the floors that can accommodate two tenants per floor.
This solution allows the phased works to progress in line with end of lease dates and allows the non-project floors to remain in operation.
☐ Ground Source Heat Pumps and Air Source Heat Pumps can be used in reverse to provide cooling to buildings. This item not appropriate for this existing building.
☐ Water based cooling systems also reduce the need for air conditioning by running cold water through pipes in the floor and/or ceiling to cool the air. This item not appropriate for this existing building.

In conclusion, the above outlines the only feasible, economic and efficient option of decarbonising this building under a series of phases whilst in occupation. The amount of

roof mounted plant has been kept to a minimum whilst keeping the floors flexible for up to two tenants per floor.

This phased works will result in the decarbonising of the building once all floors have been refurbished by the landlord, and gas will no longer be required to serve the building. The existing roof boiler plantroom will then be cleared, the roof chiller plant can be removed and all associated LTHW & CHW pipework can be removed for the roof and from within the risers.