

Friday 3rd October 2014

1 SUSTAINABILITY

1.1 CONTEXT / INTRODUCTION

31-34 Alfred Place is located in Fitzrovia, London, within the Borough of Camden. The Site/development essentially consists of joining two existing buildings – 31/32 Alfred Place & 33/34 Alfred Place into a single ownership/operation.

The primary use of the new development is providing serviced office accommodation serving multiple tenants, offering a high quality service in particular on power & IT services facilities, as well as creating a lively and creative atmosphere through a special zone defined as 'Hub Space', located at both Ground & Basement Level.

The development is essentially a refurbishment of the existing two buildings coupled with some distinctive architectural interventions, in particular between Basement & Ground Floor level, with the addition of a new office floor at existing Roof Level (referred to as Level 7). The focus of the redevelopment/refurbishment is geared primarily on the internal spaces, creating a very high quality office environment, meeting both current and future needs in terms of use and focus less on upgrading the external elevations/appearance of the existing building fabric, thereby being honest to the historical legacy of these buildings – this intentionally aims to differ from the larger Corporate Office environments and is geared towards more of smaller creative industries.

Whilst the objectives of Policy DP22 are being followed as well as those defined in the London Plan policy on sustainability, given the very limited intervention on the existing building fabric (for details refer to section 1.2 below), it is not possible to achieve a 40% reduction in carbon emissions compared to 2010 Building Regulations. In fact the focus of reduction in emissions is thus primarily limited to the specification of the technical systems associated with the servicing of the various functional areas within the existing buildings.

1.2 BUILDING FABRIC (LEAN - PASSIVE)

Virtually the entire existing building fabric will be retained, only repair works will be undertaken to the existing fabric/glazing elements. In some localised/isolated cases where new fenestration is provided at Basement and Ground Floor Level, a higher thermal performance façade is introduced (refer to Architect's drawings for specific information/details as to where this new fenestration is being implemented).

There are proposed extension works being carried out to introduce a new 7th floor to the existing building on 31/32 Alfred Place. For this extension and the aforementioned localised areas of new fenestration (on the Basement and Ground Floor levels), the following U-values (W/m²K) have been assumed for the thermal calculations (in the absence of specific thermal performance data from the architect and window manufacturer):

Wall 0.26 W/m²K

Roof 0.18 W/m²K

Glazing 1.6 W/m²K

Infiltration 0.20 (ach)

For the rest of the building, which constitutes the majority of the building fabric, the existing building fabric is being retained, the thermal calculations and associated plant sizing takes into account the existing performance of the building – single glazing, leaky façade, uninsulated walls and roofs, etc.

Given the intent not to interfere with the existing fabric, there will be no external solar shading applied to the external envelope of the two buildings; consequently internal blinds will be provided, offering some form of solar and daylight control.

1.3 EFFICIENT TECHNICAL SYSTEMS (LEAN - ACTIVE)

Given the minimal fabric intervention and consequential thermal performance of the existing facades, the building services systems will have to deal with the residual cooling/heating loads and these are higher than normal.

The base engineering scheme that impacts the ‘regulated’ loads (i.e. heating, cooling, ventilation/auxiliary, hot water and lighting) and corresponding energy consumption/emissions can be generally summarised as follows:

- **Cooling** – centralised roof mounted air cooled chillers located within a dedicated acoustic enclosure on Level 5 (33/34 Alfred Place). These provide chilled water (CHW) to primary roof handling units (AHU's) and fan coil units (FCU'S), majority of which serve the offices and meeting rooms plus Hub Space. The chillers are specified to be able to operate at relatively high COPs even with variable load profiles, due to demand fluctuations.
- **Heating** – centralised gas fired boilers, located within a dedicated Boiler Room at Roof level of 33/34 Alfred Place providing low temperature hot water (LTHW) to the roof mounted AHU's and an FCU's (majority of which are designated to offices and meeting rooms) and radiators (serving all other areas). The boilers shall have condensing operation, direct weather compensation (with override when producing domestic hot water) and low NOx emission. These features minimise both energy consumption and associated emissions.

The energy consumption of the various circuits feeding off the primary LTHW circuit (e.g. heating to offices, domestic hot water usage, heating to Landlord areas, ventilation plant, etc.) will be individually metered.

- **Ventilation** – as the entire existing building fabric will be retained, the existing single glazed windows will offer the ability for the office areas to be naturally ventilated. During the warmer summer months, the end users are able to activate comfort cooling (via individual FCUs) to their individual offices. The office areas, as well as the central Hub Space can thus be said to benefit from a ‘mixed-mode’ ventilation/cooling system, in that they can operate either in passive mode (natural ventilation) or active mode (comfort cooling).

Roof mounted AHUs supply tempered fresh air to all the permanently, occupied spaces; one unit serves all cellular and open plan offices plus supporting meeting rooms with a second unit allocated to the, Ground Floor Reception & Hub Space across both Ground & Basement. All AHUs are equipped with heat recovery (thermal wheel) and variable speed fans so as to adjust the volume flow rates to suit individually occupied floors.

Separate ventilation systems are provided to the following areas – general toilet & shower areas, café area located in the central Hub Space, plantroom areas and furniture store all located at Basement Level (general basic background ventilation).

No mechanical ventilation is provided to the existing stairwells.

- **Cold water** – A new metered supply will serve water storage tanks. Potable water will be pumped from the tanks to serve toilet blocks, showers, café and calorifiers. All toilets, sinks and showers will

be fitted with low water consuming fixtures and fittings. Given the relatively low water consumption, the introduction greywater and rainwater harvesting system and has been assessed but cannot be justified.

- **Hot Water** – Hot water will be supplied from storage calorifiers to serve showers, basins, sinks etc. The central gas boilers will provide LTHW to the calorifiers as necessary to satisfy the hot water demand. This is a more energy efficient approach to generate hot water than conventional instantaneous electrical hot water heaters.
- **Refrigeration** – A separate refrigeration circuit is provided to serve both the various on-floor 'Comms Rooms' as well as the main 'Central Comms Server Room' located at Basement Level. All condensing units are located on the level 5 terrace, adjacent to the chiller compound.
- **LV Distribution** – power is distributed from Basement LV Switchroom to the upper offices via rising busbars. On-floor distribution boards (DBs) will be provided with split metering; each section board will be equipped with sub metering for both lighting and power final circuit distribution boards. The physical power distribution is via wall mounted trunking system only
- **Lighting** – lighting provided by a mixture of linear fluorescent fittings, downlighters, bulk head fittings to suit offices fit-out layouts (both cellular and open plan, as well as other areas such as meeting rooms, toilets, circulation spaces and others back of house and support areas. The use of LEDs is a priority so as to minimise the demand for electrical energy. Given the need to be able to cellularise majority of the office floors, all of these areas are fitted with a high level of individual lighting control. This, in turn, offers good potential to minimise energy consumption.

The deliberate strategy to subdivide the building services systems into sub-systems tailored to suit the various functional areas, offers a high level of individual control and sub-divisibility of use, thus enabling areas of the building to be taken out of operation when not in use and thereby minimise energy consumption. This high level of individual control is not only conducive to saving energy but also offers a good level of flexibility and comfort to end users.

1.4 RENEWABLE TECHNOLOGIES (GREEN)

Given the design intent of not interfering with the existing building fabric, BIPV (Building Integrated Photovoltaics) is not being considered for this project.

The application of other renewable technologies could not be justified economically for the scale and type of this redevelopment.