Cooling Hierarchy Covering Letter (Planning Application)

Project Name:	38A Monmouth Street		
Project No:	P1988	Rev:	00
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As part of the planning application for the air conditioning installation at 38A Monmouth Street, QuinnRoss have undertaken an assessment of the internal heat losses and heat gains associated with the potential usage of the space.

The assessment of heat losses is a relatively simple steady state calculation based on fabric data and the external design criteria during winter. Based on this calculated load various heat generating sources were reviewed and air source (air-to-air) heat pumps were considered the most optimal solution in terms of their efficiency, lack of contribution to local air pollution (no use of fossil fuels), and their minimal external plant space requirements. As set out in the Environmental Noise Assessment, 2 no. Toshiba RAS-3M18S3AV-E units and 1 no. Toshiba RAS-3M26S3AV-E are proposed for heating and cooling which are a type of air source heat pump. These units have therefore been specified as the most appropriate and sustainable means of heating/cooling for the proposed office space.

With regards to heat gains and the provision of comfort cooling, the cooling hierarchy under the London Plan is thoroughly considered, and as with all our projects we only recommend active cooling where necessary.

As the fabric is all existing and being retained the 'lean' measures applicable to the refurbishment are largely restricted to the building services design. Whilst a major refurbishment is not being undertaken at this time, as lighting is replaced LED type lighting is proposed to reduce internal heat gains slightly.

As the fabric is existing, with no proposed change to the overall building height proposed, it is not possible to provide high floor to ceiling levels. Existing fabric elements with high thermal mass however shall be left exposed and this has been considered within our heating and cooling assessment.

Natural ventilation is proposed for the office space, which have the ability for some cross-ventilation via windows in adjacent façades. However, whilst natural ventilation is sufficient to meet the fresh air requirements for the occupants it is insufficient to meet the peak cooling load and must therefore be supplemented. Refer to Figures 1 & 2 below for maximum cooling capacity of natural ventilation and cooling loads of office spaces.

Description	Rule of thumb	Comments
	Measurement of ventilation system area	
Maximum cooling capacity of a natural ventilation system	40 W/m^2	A natural ventilation system is unlikely to cope with heat gains exceeding 40 W/m^2

Figure 1 - Extract from BSRIA Rules of Thumb 5th Ed. (Table 15)

Description	Rule of thumb
	Cooling load (W/m^2)
Offices	87

Figure 2 - Extract from BSRIA Rules of Thumb 5th Ed. (Table 16)

Due to the limited floor to ceiling heights, mechanical ventilation with high level ductwork is not considered suitable and natural ventilation only shall be provided.

As 38A Monmouth Street is currently and is also proposed to remain as office use, the heat gains are high and based on the above it is deemed that there is a requirement for active cooling to be provided to meet the peak summer conditions, with the tenant additionally raising complaints. The cooling will allow the spaces to be suitable for ongoing use by the tenants and their staff.

As air source heat pumps are proposed to provide space heating, QuinnRoss have proposed utilising the same systems in reverse to provide cooling benefit during peak summer conditions. In addition, openable windows will be utilised where free cooling is viable, to minimise the annual cooling demand.

The air source heat pumps used for heating, and also providing the benefit of cooling during peak summer conditions, shall be located on the roof of the building. The heat pumps have been sized to meet the heating loads and are among the most space efficient available on the market.

The units proposed are of the current generation with the latest energy efficient technology and feature a refrigerant with zero ozone depletion potential (ODP) and low global warming potential (GWP).

All works will be undertaken to the highest standards and 'best practice' procedures to ensure the highest environmental and EPC energy efficiency rating (including improvement over the existing).

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