Heritage Response to Camden Council Comments Dated 8th June 2021

- *Water based cooling systems reduce the need for air conditioning by running cold water through pipes in the floor and/or ceiling to cool the air;*

The scheme proposes air source heat pumps which are highly efficient and use refrigerant in pipework that is half the size of the equivalent water based pipework. Existing notches are used to route this pipework. Water based cooling pipework would not fit into these notches and therefore additional fabric builders work would be required - this is contrary to the normal listed building requirement to reduce and avoid unnecessary disturbance of the fabric.

- *Evaporation cooling could also be investigated, this cools air through the simple evaporation of water.*

Evaporative cooling requires pipework that is large and less flexible than that of air source heat pumps. The additional area required for plant and the need for anti - legionella water treatment plant makes the incorporation of this type of system impossible in the narrow confines of the plant areas found in this listed building.

- *Ground source cooling. Ground source cooling is provided by a 'ground source heat pump' in the summer the ground stays cooler than the air and the difference in temperature can be harnessed for cooling;*

The consideration of this under a Central London listed building is not favourable in terms of the space and access needed due to the length of the requisite bore holes (50M). They could be installed externally; however, this leads to the ownership issues where they are remote form the building. The boreholes are also very dependent upon the geology in the local area. Air source heat pumps are very efficient with a 4:1 energy rating.

- *Exposed concrete slabs can provide natural cooling. This leaves internal thermal mass (concrete slabs, stone or masonry which form part of the construction) inside a building exposed so that it can absorb excess heat in the day and slowly release it at night, and;*

Passively cooling a building using dense construction (concrete) can be used favourably where the material exists or can be incorporated. This listed Georgian building is constructed generally form brickwork and timber.

- *Developments could adopt a natural 'stack effect' which draws cool air from lower levels whilst releasing hot air.*

Internal atriums and lightwells can be used to provide a stack effect enhancing ventilation and providing a cooling effect. This Grade l listed Georgian townhouse does not have the opportunity to provide such large openings through the building without significant loss of original fabric.

The above measures and technologies have been considered at design stage and the submission reflects the optimal solution for this building. This proposed design is principally the same as the original approved application, and mirrors that of the adjacent approved and completed installations at both 22 and 23 Bedford Square.

Dominic Gibberd - The Bedford Estates, 9th June 2021