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Mr Joe Oakden
Savills
33 Margaret Street
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2 Templewood Avenue

Dear Joe,
Please find attached a letter outlining how the London Plan's 'cooling hierarchy' has informed the building design. Ref. 8.41-8.43 Chapter 8. Sustainability and Climate Change. Camden Local Plan.

1.0 Project Description

No. 2 Templewood Avenue is a large detached house, constructed circa 1910. It is located near the South Western end of Templewood Avenue, and faces North. It is flanked with two similar sized properties and the risk of overheating would ordinarily be due to the effect of solar radiation on the South / South East (rear) elevation.

However there is a magnificent ancient oak tree (that pre-dates the house by a hundreds of years) located approx 15 metres to the rear of the house. This tree is both as wide and high as the house, and will not only provide extensive shading to the rear facing elevation, but together with the proposed green roof will absorb solar radiation thus improving the thermal performance of the building and reducing the urban heat island effect.

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2.0 Strategic Approach

No. 2 Templewood Avenue as built in the early 20th Century, incorporates many inherent passive measures to reduce overheating. Driven no doubt by the desire to provide generous and comfortable accommodation for an Edwardian family that once lived there. The exterior is constructed with thick masonry walls with towering chimney stacks and, reasonably well proportioned windows (small in todays expectation), high ceilings, significant thermal mass and flanked on either side by similar sized dwellings.

No doubt these design decisions had little regard to overheating and the impacts of climate change. However the house provides a reasonable starting point to further mitigate against the effect of overheating.

No. 2 Templewood had in many respects, been a house within a house. The Edwardian family would have occupied the two principal floor plates, ground and first, with staff and servicing needs located above and below. One major benefit we have brought to project is by extending the stair and stair void, from lower ground floor up to second floor, this will result in a passive stack through ventilation shaft, drawing in air through windows at a lower level. This provides in effect cross ventilation, dramatically increasing the movement of air throughout the property.

We also propose retaining the historic window and door openings, not only to the front elevation were we are limited due to the Conservation Area, but also to the rear, due to our desire to conserve and respect the property. Where we do propose additional windows is at the lower ground floor, which we believe architecturally wants to appear ‘of its time’ rather than mimic that past and subsequently alter the proportion of the existing fenestration. However this additional glazing at lower ground floor level is entirely shaded by the Oak tree, and we anticipate that in the winter when the tree loses its leaves, any minimal solar gain will be welcome.

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Rather than seek to actively cool the entire house, we believe that through good design (20th & 21st centuries) and the location, we will not require mechanical assistance to prevent overheating to the majority of the property. It will remain comfortable on all but the most extreme weather conditions, through the many passive measures that are inherent in the design, materiality and construction, and the additions that we propose.

However we do need assistance with three rooms, namely, the Laundry, the Gym and the Kitchen. Both the Laundry and the Gym are ‘landlocked' within the proposed Lower ground floor level, and neither have the opportunity for an openable window. Through our tests we can demonstrate that even with three times more ventilation that might be expected, both rooms overheat due to the usage, the laundry with both washing and drying equipment, and the gym, with mechanical gym equipment and exercising 'heat generating' bodies.

3.0 Architects Comment

2 Templewood Avenue, has provided generous and comfortable accommodation for well over 100 years, well before we understood the need to protect our environment.
But times have changed, and we are having to adapt, to the impacts of climate change, and one of the most significant issues is overheating.

Clearly we have the mechanical means to reduce heat, and increase heat within the building, but thats goes with additional carbon emissions, and further heat being generated at a micro environmental level and of course cost. So it is right to prioritise passive measures, and only then after implementing those passive measures, should we seek to rely on mechanical means with the inherent downsides.

My client is hugely aware of such choices and are intent to do everything reasonable to respect the world we live in, and to seek to mitigate passively.

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We are not thoughtlessly proposing active cooling in every part of this large house. We have worked through the passive opportunities, we have sought the best advice from our learned Mechanical and Electrical consultants, and we have relentlessly modelled the house using a number of methods available. But despite our best efforts we know that the Laundry, the Gym and the Kitchen fail every test, and will overheat and cause discomfort.

Therefore we propose installing active cooling in these three rooms.

We understand why these rooms overheat, both the Laundry and Gym are within the lower ground floor, landlocked with no opportunity for openable window, and both have high process loads that will inevitably result in overheating. The kitchen is on the Hall floor level, and does have openable windows to the South elevation, were we propose an extendable awning to reduce solar gain, but due to the process loads generated by the kitchen appliances, we do require mechanical assistance to prevent overheating

We trust that we have sufficiently demonstrated the need, and indeed our desire to implement every reasonable passive measure.

Yours faithfully,

Simon Templeton **Architect**
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We have prepared a table to show each step of the cooling hierarchy and the various design measures that have been taken to mitigate the potential overheating.

‘Cooling Hierarchy’ Design Measures. Laundry, Gym & Kitchen

	Cooling Hierarchy element	Design Measure	
1	Minimise internal heat generation through energy efficient design.	LED lighting throughout, ‘A’ rated appliances proposed throughout, to reduce internal gains.	
2	Reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls.	Orientation-The existing building faces North West, and is flanked to the East and West with similarly sized properties. The rear elevation faces South East and there is an ancient Oak tree as tall and wide as the house approximately 15 metres from the rear elevation, providing extensive shading to the vulnerable South facing rear elevation. Shading - External blinds are proposed to the rear elevation to both the Kitchen and the Pool. These will dramatically reduce the solar radiation before its enters the building. Internal blinds are proposed for all South facing window openings. Fenestration - The glazing percentage above Hall floor level remains as existing in this historic house. We propose additional glazing only to the additional accommodation being proposed at lower ground floor level. Insulation - The glass proposed is Low G glass to reduce the impact of solar radiation, and we propose adding additional insulation to all external walls and internal reveals to window / door openings.	
3	Manage the heat within the building through exposed internal mass and high ceilings.	Thermal mass - The house was built circa 1910, and is constructed from solid masonry external walls, therefore there is considerable thermal mass within the outer skin of the building. We propose further insulating all external walls and internal window / door reveals to improve insulation, and we propose exceeding the current regulations for insulation to the existing roof and new built parts. High Ceilings - Due to the period of construction we have high ceilings throughout, especially in Lower ground floor and Hall floor, both being over 3 metres.	
4	Passive ventilation.	General arrangement - The house is square in plan, rooms being arranged externally around a central core. Cross ventilation - The rooms on the upper floors all benefit from openable windows. We propose extending the existing stair and stair well from lower ground floor to second floor. This will generate a passive stack through ventilation shaft promoting air flow from the habitable rooms (with openable windows) at a lower level, in effect resulting in cross ventilation. However the Laundry and the Gym have no openable windows due to their location below ground level, and therefore will require active cooling.	
5	Mechanical ventilation	Having completed the thermal modelling, based on mechanical ventilation at triple the expected air change rate, the Laundry, Gym and Kitchen will overheat, despite all passive measures being implemented, simply due to the ‘high process loads’ consistent with the intended use of the rooms. This is despite the oversized MVHR.	
6	Active cooling systems (the lowest carbon options).	All reasonable passive measures to reduce the cooling demand have been adopted, yet the Laundry, Gym and Kitchen will still overheat, hence our proposed use of active cooling in these three spaces.	

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