

		Our ref: HGY/2022/4552 Contact: Valerie Okeiyi Date: 27/10/2023
Town and Country Act 1990 (As amended)		
Location:	Braemar Avenue Baptist Church, Braemar Avenue, Wood Green, London, N22 7BY	
Proposal:	Demolition of existing Church Hall and 1950's brick addition to rear of main Church building and redevelopment of site to provide new part 1, part 4 storey building (plus basement), comprising a new church hall and associated facilities at ground and basement level and self-contained residential units at ground to fourth floor level with associated refuse, recycling storage, cycle parking facilities including landscaping improvements.	

Carbon Management Response 25/08/2023

In preparing this consultation response, we have reviewed:

- Energy Statement prepared by Energylab Consulting Ltd. (dated 21 Dec 2022)
- Sustainable Design and Construction Statement prepared by Energylab Consulting Ltd. (dated 21 Dec 2022)
- Urban Greening Factor Calculation
- Other relevant supporting documents.

1. Summary

The development achieves a reduction of 64% carbon dioxide emissions on site, which is supported in principle. However, Carbon Management cannot currently support this application as the development fails to demonstrate carbon reduction for both residential and non-residential uses separately and the baseline heating strategy for both uses is not clear. The development does not currently meet London Plan Policy SI2 and Local Plan SP4: 20% carbon dioxide emission reduction from on-site renewable energy generation as well as the London Plan Policy SI4 and Local Plan DM21: insufficient dynamic thermal modelling was undertaken to adequately assess the overheating risk throughout the development, mitigate the risk and reduce the impact on the urban heat island.

Appropriate planning conditions will be recommended once this information has been provided.

2. Energy Strategy

Policy SP4 of the Local Plan Strategic Policies, requires all new development to be zero carbon (i.e. a 100% improvement beyond Part L 2021). The London Plan (2021) further confirms this in Policy SI2.

The overall predicted reduction in CO₂ emissions for the development shows an improvement of approximately 64% in carbon emissions with SAP10 carbon factors, from the Baseline development model (which is Part L 2021 compliant). This represents an annual saving of approximately 7.86 tonnes of CO₂ from a baseline of 12.33 tCO₂/year.

London Plan Policy SI2 requires major development proposals to calculate and minimise unregulated carbon emissions, not covered by Building Regulations.

<i>Site-wide (SAP10 emission factors)</i>			
	Total regulated emissions (Tonnes CO₂ / year)	CO₂ savings (Tonnes CO₂ / year)	Percentage savings (%)
Part L 2021 baseline	12.33		
Be Lean	11.15	1.18	10%
Be Clean	6.14	5.01	41%

Be Green	4.47	1.67	13%
Cumulative savings		7.86	64%
Carbon shortfall to offset (tCO₂)	4.47		
Carbon offset contribution	£95 x 30 years x 4.47 tCO ₂ /year = £12,739.5		
10% management fee	£1,273.95		

Actions:

- Please submit the GLA's Carbon Emission Reporting Spreadsheet.
- Please provide the carbon reduction summary tables for both residential and non-residential part of the development. Also, report the unregulated emissions.
- Summary tables should be provided alongside bar graphs as per Tables 3, 5, 6 & 7 in section 6 of the GLA guidance (although this should split out by outline and detailed, and residential and non-residential uses).
https://www.london.gov.uk/sites/default/files/gla_energy_assessment_guidance_april_2020.pdf
- Please submit SAP and BRUKL sheets for a representative selection of the development for the Baseline, Be Lean and Be Green scenarios.
- What is the calculated Primary Energy Factor?

Energy Use Intensity / Space Heating Demand

Applications are required to report on the total Energy Use Intensity and Space Heating Demand, in line with the GLA Energy Assessment Guidance (June 2022). The Energy Strategy should follow the reporting template set out in Table 5 of the guidance, including what methodology has been used. EUI is a measure of the total energy consumed annually, but should exclude on-site renewable energy generation and energy use from electric vehicle charging.

Building type	EUI (kWh/m²/year)	Space Heating Demand (kWh/m²/year)	Methodology used

Actions:

- What is the calculated Energy Use Intensity (excluding renewable energy)? How does this perform against GLA benchmarks, i.e. at 35 and 55 kWh/m²/year for residential and non-residential respectively? Please submit the information in line with the GLA's reporting template.
- What is the calculated space heating demand? How does this perform against the GLA benchmark of 15 kWh/m²/year? Please submit the information in line with the GLA's reporting template.

Energy – Lean

The applicant has proposed a saving of 1.18 tCO₂ in carbon emissions (10 %) site-wide through improved energy efficiency standards in key elements of the build, based on SAP10 carbon factors.

The development needs to demonstrate that energy efficiency measures alone will reduce regulated carbon emissions for residential uses by 10% and for non-residential uses by 15% against Part L 2021. The development must demonstrate this target has been achieved for residential and non-residential uses separately.

The following u-values, g-values and air tightness are proposed:

Floor u-value	0.10 W/m ² K
External wall u-value	0.14 W/m ² K
Roof u-value	0.11 W/m ² K
Door u-value	1.00 W/m ² K
Window u-value	1.00 W/m ² K

G-value	0.35
Air permeability rate	3 m ³ /hm ² @ 50Pa
Ventilation strategy	Mechanical ventilation with heat recovery (MVHR 90% efficiency;
Thermal bridging	Accredited Construction Details
Low energy lighting	100%
Thermal mass	Medium
Improvement from the target fabric energy efficiency (TFEE)	-8% improvement, from 28.11 to 30.54 kWh/m ²

Actions:

- Please specify the heating strategy and ventilation system assumed under the Baseline and Be Lean scenarios (including the gross efficiency figure(s)). For residential applications the baseline should be a gas boiler. For non-residential applications the baseline should align with the proposed heating system, i.e. if proposing an air source heat pump, this should be specified with the efficiency values set out in Part L 2021 for that system under Be Lean.
- Please identify on a plan where the MVHR units will be located within the dwellings. The units should be less than 2m away from external walls. This detail can also be conditioned.
- Model the energy demand for the active cooling. Then include these energy demands into the carbon footprint of the development and update any offsetting requirements based on this.

Overheating is dealt with in more detail below.

Energy – Clean

London Plan Policy SI3 calls for major development in Heat Network Priority Areas to have a communal low-temperature heating system, with the heat source selected from a hierarchy of options (with connecting to a local existing or planned heat network at the top). Policy DM22 of the Development Management Document supports proposals that contribute to the provision and use of Decentralised Energy Network (DEN) infrastructure. It requires developments incorporating site-wide communal energy systems to examine opportunities to extend these systems beyond the site boundary to supply energy to neighbouring existing and planned future developments. It requires developments to prioritise connection to existing or planned future DENs.

The applicant is not proposing any Be Clean measures. The site is not within reasonable distance of a proposed Decentralised Energy Network (DEN). A Combined Heat and Power (CHP) plant would not be appropriate for this site.

Energy – Green

The application has reviewed the installation of various renewable technologies. The report concludes that solar photovoltaic (PV) panels are the most viable options to deliver the Be Green requirement. A total of 1.67 tCO₂ (13%) reduction of emissions are proposed under Be Green measures for the domestic part of the development.

The solar array peak output is proposed to be 12.7kWp, which is estimated to produce around 11,277kWh/year of renewable electricity per year equivalent to a reduction of 1.67 tCO₂/year. The array of 38/40 panels (would be mounted on a roof area of 62 m², at a 5° angle, facing south.

Actions:

- Have you assessed the overshadowing of the tree canopy existing at the south-east corner of the development?
- Has your feasibility shown the other roof above the church entrance hall will not be viable?
- How will the solar energy be used on site (before surplus is exported onto the grid)?
- Please provide a cost comparison (capital, operational and carbon cost) between the use of electric boiler and Air-source heat pumps.
- It is recommended to make use of ASHP that can further reduce the on-site emissions and the running cost of heating than electric boiler.

Energy – Be Seen

London Plan Policy SI2 requests all developments to 'be seen', to monitor, verify and report on energy performance. The GLA requires all major development proposals to report on their modelled and measured operational energy performance. This will improve transparency on energy usage on sites, reduce the performance gap between modelled and measured energy use, and provide the applicant, building managers and occupants clarity on the performance of the building, equipment and renewable energy technologies.

The applicant should install metering equipment on site, with sub-metering by dwelling and non-residential unit. A public display of energy usage and generation should also be provided in the main entrance area to raise awareness of residents/businesses.

- Please confirm that sub-metering will be implemented for residential and non-residential units.
- What are the unregulated emissions and proposed demand-side response to reducing energy: smart grids, smart meters, battery storage?
- Demonstrate that the planning stage energy performance data has been submitted to the GLA webform for this development: (<https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance/be-seen-energy-monitoring-guidance/be-seen-planning-stage-webform>)

3. Carbon Offset Contribution

A carbon shortfall of 4.47 tCO₂/year remains. The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

4. Overheating

London Plan Policy SI4 requires developments to minimise adverse impacts on the urban heat island, reduce the potential for overheating and reduce reliance on air conditioning systems. Through careful design, layout, orientation, materials and incorporation of green infrastructure, designs must reduce overheating in line with the Cooling Hierarchy.

In accordance with the Energy Assessment Guidance, the applicant has undertaken a dynamic thermal modelling assessment in line with CIBSE TM59 with TM49 weather files, and the cooling hierarchy has been followed in the design. The report has modelled 26 habitable rooms, 16 homes/spaces and 0 corridors.

The noise impact assessment reports an average noise level of 44dB during sleep hours in the proposed spaces which is higher than the 40dB limit. Due to this TM59 criteria for predominantly mechanically ventilated dwellings apply (assuming windows need to remain closed).

The assessment has reported the results of Model A and Model B.

Model A utilises solely passive measures with natural ventilation. All windows were modelled to open with 15% free area when temperatures exceeded 22°C.

Model B utilises continuous mechanical ventilation with heat recovery (MVHR). This allows for stale air to be extracted from spaces when humidity and temperature rise above a certain threshold, whilst supplying fresh air to the occupied spaces. Mitigation measure suggests active cooling which is not supported.

Results are listed in the table below.

	TM59 – criterion A (<3% hours of overheating)	TM59 – criterion B hours >26°C (pass <33 hours)	Number of habitable rooms pass TM52	Number of spaces pass TM52	Number of corridors pass
Model A: DSY1 2020s	29/42	20/26	20/26	3/16	0/0
Model A:	36/42	21/26	21/26	15/16	0/0

DSY1 2020s					
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For Model A, predominantly naturally ventilated rooms, 29 out of 42 rooms pass the overheating requirements for 2020s DSY1. In order to pass this, the following measures will be built:

- Natural ventilation, All windows to open 15% free area
- Glazing g-value of 0.35
- MVHR with summer bypass (XX l/s)

For Model B, predominantly mechanical ventilated rooms, 36 out of 42 rooms pass the overheating requirements for 2020s DSY1. In order to pass this, the following measures will be built:

- Glazing g-value of 0.35
- MVHR with 0.15 air changes per hour (ACH)
- Comfort cooling

Proposed future mitigation measures include:

- Active cooling

Overheating Actions:

- It is unclear which weather file is used for the assessment. Redo the overheating modelling with the Central London weather file for both residential and non-residential part of the development, which will more accurately represent the urban heat island effect following the guidelines as per [the Haringey's Key Overheating Planning Application Requirements](#).
- Please perform the overheating assessment following the London Plan's cooling hierarchy and report results setting out the baseline scenario and additional modelled scenarios to test mitigation measure(s) required to pass the overheating assessment:
 - o Baseline Scenario
 - o Baseline Scenario + mitigation measure 1 i.e external shading
 - o Baseline scenario + mitigation measure 1 + mitigation measure 2, etc
- Demonstrate the cooling hierarchy has been followed, and specify which overheating mitigation measures are proposed to reduce the overheating risk within the proposed design:
 - o Internal heat generation, i.e. heat distribution infrastructure
 - o Heat entering building, i.e. shutters, trees, vegetation, blinds
 - o Manage heat through thermal mass and high ceilings
 - o Passive ventilation, i.e. openable windows, shallow floorplates, dual aspect, stack effect
 - o Mechanical ventilation, i.e. free cooling from outside air in shade, by-pass for summer mode
- The applicant has not modelled DSY 2 or 3 for the development. Please also model these and ensure the design has incorporated as many mitigation measures to pass DSY 2 and 3 as feasible. Any remaining overheating should inform the future retrofit plan.
- Specify the shading strategy, including technical specification and images of the proposed shading feature (e.g. overhangs, Brise Soleil, external shutters), elevations and sections showing where these measures are proposed. Internal blinds cannot be used to pass the weather files but can form part of the delivered strategy to reduce overheating risk for occupants (as long as it does not compromise any ventilation requirements).
- Include images indicating which sample dwellings were modelled and floorplans showing the modelled internal layout of dwellings.
- Undertake further modelling:
 - o Model the 2020s DSY 2 and 3 and DSY1 for the 2050s and 20280s. Ensure the design has incorporated as many mitigation measures to pass these more extreme and future weather files as far as feasible. Any remaining overheating risk should inform the future retrofit plan.
 - o All single-aspect rooms facing west, east, and south;
 - o At least 50% of rooms on the top floor;
 - o 75% of all modelled rooms facing South or South/West;

- Rooms closest to any significant noise and / or air pollution source, with windows closed at all times (with cross reference to the Noise and the Air Quality Assessments to demonstrate the most sensitive receptors and the [AVO Residential Design Guide](#));
- Habitable communal spaces (e.g. communal living/dining rooms in care homes);
- Communal corridors, where pipework runs through;
- Commercial/office areas, particularly where they will be occupied for a longer period of time. Assuming that active cooling will be provided is not sufficient. If the proposed uses are not yet clear, this aspect can be conditioned to ensure that the modelling is based on the potential future occupiers.;
- Specify the active cooling demand (space cooling, not energy used) on an area-weighted average in MJ/m² and MY/year? Please also confirm the efficiency of the equipment, whether the air is sourced from the coolest point / any renewable sources.
- The applicant must demonstrate that the risk of overheating has been reduced as far as practical and that all passive measures have been explored, including reduced glazing and increased external shading. The applicant should also outline a strategy for residents to cope in extreme weather events, e.g. use of fans.
- Set out a retrofit plan for future and more extreme weather files, demonstrating how these measures can be installed, how they would reduce the overheating risk, what their lifecycle replacement will be, and who will be responsible for overheating risk.
- Identify communal spaces (indoor and outdoor) where residents can cool down if their flats are overheating.
- Confirm who will own the overheating risk when the building is occupied (not the residents).
- This development should have a heatwave plan / building user guide to mitigate overheating risk for occupants.

5. Sustainability

Policy DM21 of the Development Management Document requires developments to demonstrate sustainable design, layout and construction techniques. The sustainability design and construction report sets out the proposed measures to improve the sustainability of the scheme, including transport, health and wellbeing, materials and waste, water consumption, flood risk and drainage, biodiversity, climate resilience, energy and CO2 emissions and landscape design.

A SuDs system has been considered and proposed for the development, specifying water butts to harvest rainwater from the domestic roof area. This water will then be utilised for gardening purposes within the proposed amenity spaces.

All site waste is proposed to be collected by a licensed waste carrier and to be taken to a registered waste transfer station for sorting and recycling and reuse. A Site Waste Management Plan (SWMP) is proposed to be implemented to encourage the principles of the waste hierarchy which are to reduce, reuse and recycle waste.

Action:

- Set out what urban greening and biodiversity enhancement measures will be proposed (e.g. green infrastructure, bird boxes, bat boxes etc to connect to the green spaces around the site, living roofs, living walls, etc.)
- A target (%) for responsible sourced, low-impact materials used during construction.
- Set out how surface water runoff will be reduced, that it will be separated from wastewater and not discharged into the sewer.
- Climate change mitigation should also be considered for the external spaces (shading, etc) and the impact of the increase in severity and frequency of weather events on the building structures.

Urban Greening / Biodiversity

All development sites must incorporate urban greening within their fundamental design and submit an Urban Greening Factor Statement, in line with London Plan Policy G5. London Plan Policy G6 and Local Plan Policy DM21 require proposals to manage impacts on biodiversity and aim to secure a

biodiversity net gain. Additional greening should be provided through high-quality, durable measures that contribute to London's biodiversity and mitigate the urban heat island impact. This should include tree planting, shrubs, hedges, living roofs, and urban food growing. Specifically, living roofs and walls are encouraged in the London Plan. Amongst other benefits, these will increase biodiversity and reduce surface water runoff.

The development achieves an Urban Greening Factor of 0.4, which complies with the interim minimum target of 0.4 for predominantly residential developments in London Plan Policy G5.

Action:

- Please provide the biodiversity net-gain calculation.

Living roofs

All development sites must incorporate urban greening within their fundamental design, in line with London Plan Policy G5.

The development is proposing living roofs in the development. All landscaping proposals and living roofs should stimulate a variety of planting species. Mat-based, sedum systems are discouraged as they retain less rainfall and deliver limited biodiversity advantages. The growing medium for extensive roofs must be 120-150mm deep, and at least 250mm deep for intensive roofs (these are often roof-level amenity spaces) to ensure most plant species can establish and thrive and can withstand periods of drought. Living walls should be rooted in the ground with sufficient substrate depth.

Living roofs are supported in principle, subject to detailed design. Details for living roofs will need to be submitted as part of a planning condition.

Non-Domestic BREEAM Requirement

Policy SP4 requires all new non-residential developments to achieve a BREEAM rating 'Very Good' (or equivalent), although developments should aim to achieve 'Excellent' where achievable.

The applicant has not submitted a BREEAM Pre-Assessment Report for the non-residential part of the development. Although, the Sustainable design and construction statement addresses the required topics, the policy requires a quality assurance standard.

Actions:

- Submit the BREEAM Pre-Assessment report.
- A table should be submitted to demonstrate which credits will be met, how many are met out of the total available, under which category, which could be achieved, and which will not be met. This needs to include justification where targets are not met or 'potential' credits (where they are available under the Shell and Core assessment). This will enable better assessment of which credits.

Carbon Management Response 12/10/2023

In preparing this consultation response, we have reviewed:

- Energy Statement - Issue 3 prepared by Energylab Consulting Ltd. (dated 19 Sep 2023)
- Sustainable Design and Construction Statement - Issue 2 prepared by Energylab Consulting Ltd. (dated 19 Sep 2023)
- Overheating Risk Assessment Issue 2 – prepared by Energylab Consulting Ltd. (dated 19 Sep 2023)
- Other relevant supporting documents.

1. Summary

The development achieves a reduction of 64% carbon dioxide emissions on site, which is supported in principle. However, Carbon Management cannot currently support this application as it is not clear how the non-residential part of the development complies to be zero carbon following the energy hierarchy in line with Policy SI 2 and Policy SP4. The development does not currently meet London Plan Policy SI2, Local Plan SP4, London Plan Policy SI4 and Local Plan DM21.

Furthermore, Carbon Management cannot support the overheating strategy of this application as it does not satisfactorily follow the Cooling Hierarchy or propose any retrofit plan for future overheating risk.

Some further clarifications must be provided with regard to the Energy Strategy and Overheating Strategy detailed below.

Appropriate planning conditions will be recommended once this information has been provided.

2. Energy Strategy

Policy SP4 and DM21 requires all new development to be net-zero carbon following the energy hierarchy and exceed the minimum carbon reduction requirements. The GLA Energy Assessment Guidance (Chapter 5.2, 6.2 p.11 & p.12) requires the results to be presented separately and demonstrate compliance with the energy hierarchy and the carbon targets for both residential and non-residential separately as set out in Policy SI 2 for residential uses, non-residential uses, and the entire site.

<i>Site-wide (SAP10.2 emission factors)</i>			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2021 baseline			
Be Lean			
Be Clean			
Be Green			
Cumulative savings			
Carbon shortfall to offset (tCO ₂)			
Carbon offset contribution	£95 x 30 years x 30.30 tCO ₂ /year =		
10% management fee			
Total			

<i>Residential (SAP10.2)</i>			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2021 baseline	12.33		
Be Lean	11.15	1.18	10%

Be Clean	6.14	5.01	41%
Be Green	4.47	1.67	13%
Cumulative savings		7.86	64%
Carbon shortfall to offset (tCO ₂)	4.47		

Non-residential (SAP10.2)			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2021 baseline	6.95		
Be Lean			
Be Clean			
Be Green			
Cumulative savings			
Carbon shortfall to offset (tCO ₂)	6.28		

Actions:

- Please provide the carbon reduction summary tables for residential, non-residential, and site-wide of the development. Also, report the unregulated emissions.
- What is the calculated Primary Energy Factor?

Energy Use Intensity/Space Heating Demand

The EUI and space heating demand for residential part of the development is shared, while it is missing for the non-residential part.

Building type	EUI (kWh/m ² /year)	Space Heating Demand (kWh/m ² /year)	Methodology used
Residential	38.6	11.82	Part L1 - SAP 10.2 & none dwellings/& Landlord Circulation
Non-Residential	TBC	TBC	TBC

Actions:

- What is the calculated Energy Use Intensity (excluding renewable energy) for the non-residential use? How does this perform against GLA benchmarks, i.e. 55 kWh/m²/year?
- What is the calculated space heating demand? How does this perform against the GLA benchmark of 15 kWh/m²/year?

Energy – Lean

The carbon reduction for non-residential part of the development is missing.

The development needs to demonstrate that energy efficiency measures alone will reduce regulated carbon emissions for residential uses by 10% and for non-residential uses by 15% against Part L 2021. The GLA Energy Assessment Guidance (Chapter 6.2, p.12) requires the results to be presented separately for residential uses, non-residential uses, and the entire site, to demonstrate compliance with the energy hierarchy and the carbon targets as set out in Policy SI 2. The development must demonstrate this target has been achieved for residential and non-residential uses separately.

The following u-values, g-values and air tightness are proposed:

Air permeability rate	<u>3 & 5 m³/hm² @ 50Pa (ref. Be Lean SAP sheet)</u>
Heating strategy (Be Lean only)	Gas Boiler with efficiency <u>66% and 92.4%</u>

Improvement from the target fabric energy efficiency (TFEE)	8% improvement, from 30.48 to 28.14 kWh/m ²
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Actions:

- Please provide the carbon reduction values under Be Lean for the non-residential part of the development and its compliance with the targets set in Policy SI2.
- The air permeability of 3 and 5 are used for the Be Lean modelling which is not consistent. Similarly, the efficiency of the gas boiler used for Be Lean modelling is 66% and 92.4% which is also not consistent. Please amend this inconsistency for all the values.
- Please identify on a plan where the MVHR units will be located within the dwellings. The units should be less than 2m away from external walls. The applicant has requested this to be conditioned. However, it is recommended to plan this at an earlier stage if possible.

Overheating is dealt with in more detail below.

Energy – Clean

No further comments.

Energy – Green

The applicant confirms the trees are below the proposed height of the building, and therefore will not obstruct the proposed PV panels. Also, due to the potential for significant overshading, panels are not proposed on top of the roof area above the church. The PV is proposed to serve all landlord and communal spaces and any additional energy production to be exported back to the grid.

Actions:

- Please provide a cost, embodied carbon comparison (capital, operational (for occupants) and carbon cost) between the use of electric boiler and air-source heat pumps (both individual and communal). Whilst the space heating demand for the residential dwellings is fairly low, using an electric heating solution should only be progressed where a quality-assured construction method and design delivers the low space heating demand as modelled.
- Please set out how the existing church could be decarbonised as part of this application, or in the future. There is a good opportunity to include the decarbonisation of the main church within this development project, helping to reduce the church's carbon footprint and respond to the climate emergency.

Energy – Be Seen

The applicant has proposed installing monitoring devices for energy usage and PV arrays, like smart meters, to provide operational data. The metering equipment should be installed with sub-metering by dwelling and non-residential unit. A public display of energy usage and generation should also be provided in the main entrance area to raise awareness of residents/businesses.

Actions:

- Please confirm that sub-metering will be implemented for residential and non-residential units.

3. Carbon Offset Contribution

A carbon shortfall of 4.47 tCO₂/year remains. The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

4. Overheating

The applicant has confirmed using the London Weather Centre files for the overheating assessment.

Residential

In accordance with the Energy Assessment Guidance, the applicant has undertaken a dynamic thermal modelling assessment in line with CIBSE TM59 with TM49 weather files, and the cooling hierarchy has been followed in the design. The report has modelled 26 habitable rooms, 16 homes and 0 corridors.

The noise impact assessment reports an average noise level of 44dB during sleep hours in the proposed spaces which is higher than the 40dB limit.

The assessment has reported the results of Model A, Model B and Model C. TM59 criteria for predominantly mechanically ventilated dwellings have been applied to the duplex ground/lower ground floor flats due to potential security risks associated with openable windows.

1. Model A utilises solely passive measures with natural ventilation. All windows were modelled to open with 15% free area when temperatures exceeded 22°C except the ground floor flats where TM59 criteria for predominantly mechanically ventilated rooms was applied.
2. Model B utilises the above passive measures with continuous mechanical ventilation with heat recovery (MVHR) with 0.15 air changes per hour (ACH).
3. Model C utilises the above measures with active cooling via a split-system for remaining high-risk spaces.

Results are listed in the table below.

	TM59 – criterion A (<3% hours of overheating)	TM59 – criterion B hours >26°C (pass <33 hours)	Number of habitable rooms pass TM59	Number of corridors pass
Model A: DSY1 2020s	25/42	15/26	15/26	Not modelled
Model B: DSY1 2020s	36/42	26/26	26/26	
Model C: DSY1 2020s	42/42	26/26	26/26	
Model C: DSY2 2020s	2/42	2/26	2/26	
Model C: DSY3 2020s	0/42	0/26	0/26	
DSY1 2050s	Not modelled			
DSY1 2080s	Not modelled			

Non-Residential

The applicant has also undertaken, a CIBSE TM52 Overheating Assessment for the proposed non-domestic church building. The assessment has been developed in line with the London Plan Cooling Hierarchy principles to mitigate overheating risk utilising a passive approach. Three models were assessed using the London Weather Centre files.

	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Criteria failing
Model A: DSY1 2020s	1/3	0/3	2/3	1/3
Model B: DSY1 2020s	2/3	1/3	2/3	2/3
Model C: DSY1 2020s	3/3	3/3	3/3	3/3

Overheating Actions:

Mitigation measures

- Please demonstrate the cooling hierarchy has been followed meaningfully by incorporating the installation of further passive measures, particularly solar shading (overhangs, external shutters, brise soleil) throughout the development. This is especially important for the top floor dwellings, south-facing window openings and single-aspect dwellings.
- Specify the shading strategy, including technical specification and images of the proposed shading feature (e.g. overhangs, Brise Soleil, and external shutters).
- Provide the elevations and sections plans to show where these measures are proposed.

- Revise the ventilation strategy for the ground and lower ground floor dwellings, incorporating night-time natural ventilation with security features to meet the Part O requirements. Re-model those dwellings accordingly.
- Specify the ventilation strategy, including floorplans showing which habitable spaces will be predominantly naturally ventilated or mechanically ventilated, specification of the proposed mechanical ventilation (efficiency and air changes), window opening areas.
- Include images indicating which sample dwellings were modelled and floorplans showing the modelled internal layout of dwellings.
- Confirm on an annotated plan within the statement which residential and non-residential spaces will require active cooling, after responding to the comments within this response. Include specification for the active cooling in the dwellings, if still required. Confirm whether the church reception will have active cooling.

Future weather file modelling

- The applicant has not modelled DSY 1 for the 2050s and 2080s. Please also model these and ensure the design has incorporated as many mitigation measures to pass these as feasible. Any remaining overheating risk should inform the future retrofit plan.
- The applicant must demonstrate that the risk of overheating has been reduced as far as practical and that all passive measures have been explored, including reduced glazing and increased external shading. The applicant should also outline a strategy for residents to cope in extreme weather events, e.g. use of fans.

Retrofit plan

- Set out a retrofit plan for future and more extreme weather files, demonstrating how these measures can be installed at a later date within the proposed design, how they would reduce the overheating risk, what their lifecycle replacement will be, and who will be responsible for overheating risk.
- Identify communal spaces (indoor and outdoor) where residents can cool down if their flats are overheating.
- Confirm who will own the overheating risk when the building is occupied (not the residents).
- This development should have a building user guide to mitigate overheating risk for occupants. Please make sure the building user guide clearly mentions the windows can be opened 15° if there are any noise issues during occupation, and opened further when there are no noise issues.

5. Sustainability

In addition to the sustainability proposals in the response above, the applicant has proposed to provide biodiversity enhancement measures such as:

- New native hedgerows and trees (of local provenance) to be planted along plot/site boundaries, as specimen trees
- Areas of the amenity grass within communal areas will be seeded with a species rich turf e.g. Wildflower Native Enriched Turf or Species Rich Lawn Turf to enhance diversity within the grassland sward (which will in turn attract insects, birds and bats)
- The inclusion of green or brown roofs to enhance the biodiversity of the site post development. These roofs could be planted with species rich turf or alternatively different sized brown roof substrates and dead wood habitat which can also be planted with sedum Species.

The following targets for circular economy have been proposed:

- 100% reuse of demolition waste on site,
- 95% construction waste to be diverted from landfill for reuse, recycling or recovery,
- 95% excavation waste to be diverted from landfill for beneficial use,
- 85% municipal waste rate by 2030,
- 50% building materials to incorporate recycled content.

The proposed new trees will not only provide additional greenery and boost biodiversity, but will form an externally shaded space for the residents.

Urban Greening / Biodiversity

London Plan Policy G6 and Local Plan Policy DM21 require proposals to manage impacts on biodiversity and aim to secure a biodiversity net gain. Additional greening should be provided through high-quality, durable measures that contribute to London's biodiversity and mitigate the urban heat island impact. This should include tree planting, shrubs, hedges, living roofs, and urban food growing. Specifically, living roofs and walls are encouraged in the London Plan. Amongst other benefits, these will increase biodiversity and reduce surface water runoff. The biodiversity net-gain calculation is missing.

Action:

- Please provide the biodiversity net-gain calculation. It is recommended to use the Biodiversity Metric 4.0. The calculation tools and user guide for the biodiversity metric are published on Natural England's Access to Evidence website. The user guide describes how to gather the information needed for the metric calculations.
<https://nepubprod.appspot.com/publication/6049804846366720>

Living roofs

No further comments.

Non-Domestic BREEAM Requirement

The applicant has not submitted a BREEAM Pre-Assessment Report for the non-residential part of the development. Although, the Sustainable design and construction statement addresses the required topics, the policy requires a quality assurance standard.

Actions:

- Submit the BREEAM Pre-Assessment report demonstrating that the development meets a 'Very Good' standard as a minimum, aiming for 'Excellent'.
- A table should be submitted to demonstrate which credits will be met, how many are met out of the total available, under which category, which could be achieved, and which will not be met. This needs to include justification where targets are not met or 'potential' credits (where they are available under the Shell and Core assessment). This will enable better assessment of which credits.

Carbon Management Response 27/10/2023

In preparing this consultation response, we have reviewed:

- Energy Statement - Issue 4 prepared by Energylab Consulting Ltd. (dated 19 Oct 2023)
- Sustainable Design and Construction Statement - Issue 2 prepared by Energylab Consulting Ltd. (dated 19 Sep 2023)
- Overheating Risk Assessment Issue 3 – prepared by Energylab Consulting Ltd. (dated 20 Oct 2023)
- BREEAM Pre-Assessment prepared by EnergyLab Consulting Ltd. (dated 16th Oct 2023)
- Other relevant supporting documents.

1. Summary

The applicant has remodelled the carbon emissions for the development, using consistent building parameters and has now reported carbon reduction summary for both residential and non-residential uses as per the GLA energy assessment guidance. The applicant has also remodelled the overheating risks and included external blinds into their overheating mitigation strategy.

The development now achieves a site-wide reduction of 58% in on-site carbon dioxide emissions calculated with Part L 2021. Electric boilers are proposed for heating the new build dwellings which will require a quality-assured construction method and design to deliver the low space heating demand in later stage as currently modelled.

Suitable planning conditions have been recommended to secure the benefits of the scheme.

2. Energy Strategy

The revised overall predicted reduction in CO₂ emissions for the development shows an improvement of approximately 58% in carbon emissions with SAP10.2 carbon factors, from the Baseline development model (which is Part L 2021 compliant). This represents an annual saving of approximately 8.06 tonnes of CO₂ from a baseline of 13.09 tCO₂/year.

<i>Site-wide (SAP10.2 emission factors)</i>			
	Total regulated emissions (Tonnes CO₂ / year)	CO₂ savings (Tonnes CO₂ / year)	Percentage savings (%)
Part L 2021 baseline	13.09		
Be Lean	12.49	1.41	10%
Be Clean	7.71	4.78	34%
Be Green	5.84	1.87	13%
Cumulative savings		8.06	58%
Carbon shortfall to offset (tCO₂)	5.84		
Carbon offset contribution	£95 x 30 years x 5.84 tCO ₂ /year = £16,644		
10% management fee	£1,664.4		
Total	£18,308.4		

<i>Residential (SAP10.2)</i>			
	Total regulated emissions (Tonnes CO₂ / year)	CO₂ savings (Tonnes CO₂ / year)	Percentage savings (%)
Part L 2021 baseline	11.86		
Be Lean	10.73	1.13	10%
Be Clean	5.95	4.73	40%
Be Green	5.06	0.89	8%
Cumulative savings		6.80	53%

Carbon shortfall to offset (tCO ₂)	5.06		
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Non-residential (SAP10.2)			
	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2021 baseline	2.04		
Be Lean	1.76	0.28	14%
Be Clean	1.76	0	0%
Be Green	0.79	0.97	48%
Cumulative savings		1.26	61%
Carbon shortfall to offset (tCO ₂)	0.79		

Energy Use Intensity/Space Heating Demand

Building type	EUI (kWh/m ² /year)	Space Heating Demand (kWh/m ² /year)	Methodology used
Residential	46.6	10.9	Part L1 - SAP 10.2 & none dwellings/& Landlord Circulation
Non-Residential	23.54	2.7	

Energy – Lean

The applicant has proposed a saving of 1.41 tCO₂ in carbon emissions (10%) through improved energy efficiency standards in key elements of the build, based on SAP10.2 carbon factors. The residential part of the development achieves 10% carbon reduction which marginally complies with the minimum 10% reduction set in London Plan Policy SI2. The non-residential part of the development achieves 14% carbon reduction which is below the 15% reduction set in London Plan Policy SI2. It is recommended to further improve the building fabric in later stages.

The following u-values, g-values and air tightness are proposed:

Floor u-value	0.09 W/m ² K
External wall u-value	0.14 W/m ² K
Roof u-value	0.10 W/m ² K
Door u-value	0.90 W/m ² K
Window u-value	0.90 W/m ² K
G-value	0.4
Air permeability rate	3 m ³ /hm ² @ 50Pa
Ventilation strategy	Mechanical ventilation with heat recovery (MVHR 90% efficiency;
Thermal bridging	Accredited Construction Details, ψ -value = 0.04
Low energy lighting	100%
Thermal mass	Medium
Improvement from the target fabric energy efficiency (TFEE)	-8% improvement, from 28.11 to 30.54 kWh/m ²

Actions:

- It is recommended that the building fabric is further improved following the fabric first approach of the energy hierarchy.

Overheating is dealt with in more detail below.

Energy – Clean

No further comments.

Energy – Green

The applicant confirms ASHP strategy is not feasible and viable option due to space, visual and noise impact on the adjacent residential buildings. The cost comparison between the use of electric boiler and ASHP presented in the report focuses on the capital costs, and embodied carbon concluding electric boiler to be viable option. This is further supported by the reduced running costs with low space heating demand than the GLA benchmark. Whilst the space heating demand for the residential dwellings is fairly low, using an electric heating solution should only be progressed where a quality-assured construction method and design delivers the low space heating demand as modelled.

Actions:

- Please make sure a quality-assured construction method and design delivers the low space heating demand in later stage as currently modelled. This will be conditioned.

Energy – Be Seen

The applicant confirms sub-metering to be implemented for residential and non-residential units.

3. Carbon Offset Contribution

A carbon shortfall of 5.84 tCO₂/year remains. The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

4. Overheating

Following discussion, the application has confirmed that external shading will form part of the overheating mitigation strategy. External shading will help reduce the overheating risks and ventilation demand. Updated elevations have been submitted.

The assessment has reported the results of Model A, Model B and Model C. TM59 criteria for predominantly mechanically ventilated dwellings have been applied to the duplex ground/lower ground floor flats due to potential security risks associated with openable windows.

1. Model A utilises solely passive measures with natural ventilation. All windows were modelled to open with 15% free area when temperatures exceeded 22°C except the ground floor flats where TM59 criteria for predominantly mechanically ventilated rooms was applied.
2. Model B utilises the above passive measures with continuous mechanical ventilation with heat recovery (MVHR) with 0.15 air changes per hour (ACH).
3. Model C utilises the above measures with active cooling via a split-system for remaining high-risk spaces.

Results are listed in the table below.

	TM59 – criterion A (<3% hours of overheating)	TM59 – criterion B hours >26°C (pass <33 hours)	Pre-dominantly mechanically ventilated criteria	Number of habitable rooms pass TM59
Model A: DSY1 2020s	15/27	5/16	2/15	17/42
Model B: DSY1 2020s	27/27	16/16	10/15	37/42
Model C: DSY1 2020s	27/27	16/16	15/15	42/42
Model C: DSY2 2020s	19/27	0/16	13/15	16/42
Model C: DSY3 2020s	18/27	0/16	1/15	2/42
DSY1 2050s	20/27	0/16	2/15	6/42
DSY1 2080s	0/27	0/16	0/15	0/42

Non-Residential

The applicant has also undertaken, a CIBSE TM52 Overheating Assessment for the proposed non-domestic church building. The assessment has been developed in line with the London Plan Cooling Hierarchy principles to mitigate overheating risk utilising a passive approach. Three models were assessed using the London Weather Centre files.

	Criteria 1 (%Hrs Top-Tmax>=1K)	Criteria 2 (Max. Daily Deg.Hrs)	Criteria 3 (Max. DeltaT)	Number of spaces pass
Model A: DSY1 2020s	1/3	0/3	2/3	1/3
Model B: DSY1 2020s	2/3	1/3	2/3	2/3
Model C: DSY1 2020s	3/3	3/3	3/3	3/3

All rooms pass the overheating requirements for 2020s DSY1. In order to pass this, the following measures will be built:

- Natural ventilation, with openable areas restricted to opening angle of 15° due to noise impacts.
- Glazing g-value of 0.4
- External shading for a number of dwellings utilising balcony
- External shading devices/buildups and external louvres to all windows facing the main road and rooms facing south.
- MVHR with summer overpass
- A water-cooled split cooling system for spaces at high risk of overheating without the requirement of an external unit i.e. ground floor flats.

Future mitigation measures:

- The potential to include/install external windows shutters
- Installation of tinted windows and/or applying tinted films to window's glass
- Update the proposed MVHR to provide comfort cooling with minimal extension to the existing kit (does not need any external outdoor units installation and all can be done within the utility cupboard)
- Planting additional trees where potentially possible

Overheating Actions:

- Identify communal spaces (indoor and outdoor) where residents can cool down if their flats are overheating.
- Confirm who will own the overheating risk when the building is occupied (not the residents).
- This development should have a building user guide to mitigate overheating risk for occupants. Please make sure the building user guide clearly mentions the windows can be opened 15° if there are any noise issues during occupation, and opened further when there are no noise issues.

5. Sustainability

No further comments.

Urban Greening / Biodiversity

The biodiversity net-gain calculation is missing.

Action:

- Please provide the biodiversity net-gain calculation. It is recommended to use the Biodiversity Metric 4.0. The calculation tools and user guide for the biodiversity metric are published on Natural England's Access to Evidence website. The user guide describes how to gather the information needed for the metric calculations.
<https://nepubprod.appspot.com/publication/6049804846366720>

Living roofs

No further comments.

Non-Domestic BREEAM Requirement

The applicant has now submitted a BREEAM Pre-Assessment Report for the non-residential units. Based on this report, a score of 61.53 % is expected to be achieved, equivalent to 'Very Good' rating. A potential score of 79.37 % could be achieved which should be aimed.

6. Planning Obligations Heads of Terms

- Be Seen commitment to uploading energy data
- Energy Plan
- Sustainability Review
- Estimated carbon offset contribution (and associated obligations) of £12,739.5 (indicative), plus a 10% management fee; carbon offset contribution to be re-calculated at £2,850 per tCO₂ at the Energy Plan and Sustainability Review stages.

7. Planning Conditions

Energy strategy

The development hereby approved shall be constructed in accordance with the Energy statement – Issue 4 prepared by Energylab Consulting Ltd. (dated 19 Oct 2023) delivering a minimum 58% improvement on carbon emissions over 2021 Building Regulations Part L, with SAP10.2 emission factors, high fabric efficiencies, and a minimum 12.7 kWp solar photovoltaic (PV) array.

(a) Prior to above ground construction, details of the Energy Strategy shall be submitted to and approved by the Local Planning Authority. This must include:

- *Confirmation of how this development will meet the zero-carbon policy requirement in line with the Energy Hierarchy;*
- *Confirmation of the necessary fabric efficiencies to achieve a minimum 10% reduction with SAP10.2 carbon factors*
- *Details to reduce thermal bridging;*
- *Location, specification and efficiency of the proposed ASHPs (Coefficient of Performance, Seasonal Coefficient of Performance, and the Seasonal Performance Factor), with plans showing the ASHP pipework and noise and visual mitigation measures;*
- *Specification and efficiency of the proposed Mechanical Ventilation and Heat Recovery (MVHR), with plans showing the rigid MVHR ducting and location of the unit;*
- *Details of the PV, demonstrating the roof area has been maximised, with the following details: a roof plan; the number, angle, orientation, type, and efficiency level of the PVs; how overheating of the panels will be minimised; their peak output (kWp); and how the energy will be used on-site before exporting to the grid;*
- *Specification of any additional equipment installed to reduce carbon emissions;*
- *Confirmation of the quality assured method to ensure the energy efficiency of the fabric is delivered as approved;*
- *A metering strategy*

The development shall be carried out strictly in accordance with the details so approved prior to first operation and shall be maintained and retained for the lifetime of the development. The solar PV array shall be installed with monitoring equipment prior to completion and shall be maintained at least annually thereafter.

(b) The solar PV arrays and ASHPs must be installed and brought into use prior to first occupation of the relevant block. Six months following the first occupation of that block, evidence that the solar PV arrays have been installed correctly and are operational shall be submitted to and approved by the Local Planning Authority, including photographs of the solar array, installer confirmation, an energy generation statement for the period that the solar PV array has been installed, and a Microgeneration Certification Scheme certificate.

(c) Within six months of first occupation, evidence shall be submitted to the Local Planning Authority that the development has been registered on the GLA's Be Seen energy monitoring platform.

Reason: To ensure the development reduces its impact on climate change by reducing carbon emissions on site in compliance with the Energy Hierarchy, and in line with London Plan (2021) Policy SI2, and Local Plan (2017) Policies SP4 and DM22.

Overheating

Prior to the above ground commencement of the development, an updated Overheating Report shall be submitted to and approved by the Local Planning Authority. The submission shall assess the overheating risk and propose a retrofit plan. This assessment shall be based on the Overheating Risk Assessment Issue 3 – prepared by Energylab Consulting Ltd. (dated 20 Oct 2023).

This report shall include:

- Revised modelling of units modelled based on CIBSE TM59, using the CIBSE TM49 London Weather Centre files for the DSY1-3 (2020s) and DSY1 2050s and 2080s, high emissions, 50% percentile;*
- Demonstrating the mandatory pass for DSY1 2020s can be achieved following the Cooling Hierarchy and in compliance with Building Regulations Part O, demonstrating that any risk of crime, noise and air quality issues are mitigated appropriately evidenced by the proposed location and specification of measures;*
- Modelling of mitigation measures required to pass future weather files, clearly setting out which measures will be delivered before occupation and which measures will form part of the retrofit plan;*
- Confirmation that the retrofit measures can be integrated within the design (e.g., if there is space for pipework to allow the retrofitting of cooling and ventilation equipment), setting out mitigation measures in line with the Cooling Hierarchy;*
- Confirmation who will be responsible to mitigate the overheating risk once the development is occupied.*

(b) Prior to occupation of the development, details of internal blinds to all habitable rooms must be submitted for approval by the local planning authority. This should include the fixing mechanism, specification of the blinds, shading coefficient, etc. Occupiers must retain internal blinds for the lifetime of the development, or replace the blinds with equivalent or better shading coefficient specifications.

(c) Prior to occupation, the development must be built in accordance with the approved overheating measures and retained thereafter for the lifetime of the development:

- Natural ventilation, with openable areas restricted to opening angle of 15°;*
- Glazing g-value of 0.4;*
- External shading for a number of dwellings utilising balcony;*
- External shading devices/buildups and external louvres to all windows facing the main road and rooms facing south;*
- Any further mitigation measures as approved by or superseded by the latest approved Overheating Strategy.*

REASON: In the interest of reducing the impacts of climate change, to enable the Local Planning Authority to assess overheating risk and to ensure that any necessary mitigation measures are implemented prior to construction, and maintained, in accordance with London Plan (2021) Policy SI4 and Local Plan (2017) Policies SP4 and DM21.

Building user guide for overheating

Prior to occupation, a Building User Guide for new residential occupants shall be submitted in writing to and for approval by the Local Planning Authority. The Building User Guide will advise residents how to operate their property during a heatwave, setting out a cooling hierarchy in accordance with London Plan (2021) Policy SI4 with passive measures being considered ahead of cooling systems for different heatwave scenarios. The Building User Guide should be easy to understand, and will be issued to any residential occupants before they move in, and should be kept online for residents to

refer to easily. The building user guide should clearly mention the windows can be opened 15° if there are any noise issues during occupation, and opened further when there are no noise issues.

Reason: In the interest of reducing the impacts of climate change and mitigation of overheating risk, in accordance with London Plan (2021) Policy SI4, and Local Plan (2017) Policies SP4 and DM21.

Living roof

(a) Prior to the above ground commencement of development, details of the living roof must be submitted to and approved in writing by the Local Planning Authority. Living roof must be planted with flowering species that provide amenity and biodiversity value at different times of year. Plants must be grown and sourced from the UK and all soils and compost used must be peat-free, to reduce the impact on climate change. The submission shall include:

- i) A roof plan identifying where the living roof will be located;*
- ii) A section demonstrating settled substrate levels of no less than 120mm for extensive living roofs (varying depths of 120-180mm), and no less than 250mm for intensive living roofs (including planters on amenity roof terraces);*
- iii) Roof plans annotating details of the substrate: showing at least two substrate types across the roof, annotating contours of the varying depths of substrate*
- iv) Details of the proposed type of invertebrate habitat structures with a minimum of one feature per 30m² of living roof: substrate mounds and 0.5m high sandy piles in areas with the greatest structural support to provide a variation in habitat; semi-buried log piles / flat stones for invertebrates with a minimum footprint of 1m², rope coils, pebble mounds of water trays;*
- v) Details on the range and seed spread of native species of (wild)flowers and herbs (minimum 10g/m²) and density of plug plants planted (minimum 20/m² with root ball of plugs 25cm³) to benefit native wildlife, suitable for the amount of direct sunshine/shading of the different living roof spaces. The living roof will not rely on one species of plant life such as Sedum (which are not native);*
- vi) Roof plans and sections showing the relationship between the living roof areas and photovoltaic array; and*
- vii) Management and maintenance plan, including frequency of watering arrangements.*
- viii) A section showing the build-up of the blue roof and confirmation of the water attenuation properties, and feasibility of collecting the rainwater and using this on site;*

(b) Prior to the occupation of 90% of the dwellings, evidence must be submitted to and approved by the Local Planning Authority that the living roof has been delivered in line with the details set out in point (a). This evidence shall include photographs demonstrating the measured depth of substrate, planting and biodiversity measures. If the Local Planning Authority finds that the living roof has not been delivered to the approved standards, the applicant shall rectify this to ensure it complies with the condition. The living roof shall be retained thereafter for the lifetime of the development in accordance with the approved management arrangements.

Reason: To ensure that the development provides the maximum provision towards the creation of habitats for biodiversity and supports the water retention on site during rainfall. In accordance with London Plan (2021) Policies G1, G5, G6, SI1 and SI2 and Local Plan (2017) Policies SP4, SP5, SP11 and SP13.

Biodiversity Measures

(a) Prior to the commencement of development, details of ecological enhancement measures and ecological protection measures shall be submitted to and approved in writing by the Council. This shall detail the biodiversity net gain, plans showing the proposed location of ecological enhancement measures, a sensitive lighting scheme, justification for the location and type of enhancement measures by a qualified ecologist, and how the development will support and protect local wildlife and natural habitats.

(b) Prior to the occupation of development, photographic evidence and a post-development ecological field survey and impact assessment shall be submitted to and approved by the Local Planning Authority to demonstrate the delivery of the ecological enhancement and protection measures is in accordance with the approved measures and in accordance with CIEEM standards.

Development shall accord with the details as approved and retained for the lifetime of the development.

Reason: To ensure that the development provides the maximum provision towards the creation of habitats for biodiversity and the mitigation and adaptation of climate change. In accordance with London Plan (2021) Policies G1, G5, G6, SI1 and SI2 and Local Plan (2017) Policies SP4, SP5, SP11 and SP13.

BREEAM Pre-Assessment

(a) Prior to commencement on site, a design stage accreditation certificate for non-residential category must be submitted to the Local Planning Authority confirming that the development will achieve a BREEAM "Very Good" outcome (or equivalent), aiming for "Excellent". This should be accompanied by a tracker demonstrating which credits are being targeted, and why other credits cannot be met on site.

The development shall then be constructed in strict accordance with the details so approved, shall achieve the agreed rating and shall be maintained as such thereafter for the lifetime of the development.

(b) Prior to occupation, a post-construction certificate issued by the Building Research Establishment must be submitted to the local authority for approval, confirming this standard has been achieved.

In the event that the development fails to achieve the agreed rating for the development, a full schedule and costings of remedial works required to achieve this rating shall be submitted for our written approval with 2 months of the submission of the post construction certificate. Thereafter the schedule of remedial works must be implemented on site within 3 months of the Local Authority's approval of the schedule, or the full costs and management fees given to the Council for offsite remedial actions.

Reason: In the interest of addressing climate change and securing sustainable development in accordance with London Plan (2021) Policies SI2, SI3 and SI4, and Local Plan (2017) Policies SP4 and DM21.

Water Butts

No dwelling shall be occupied until details of the location of a water butt of at least 120L internal capacity to be installed to intercept rainwater draining from the roof of each dwelling has been submitted to and approved in writing by the Local Planning Authority and subsequently provided at each dwelling. The approved facilities shall be retained.

Reason: To reduce the risk of flooding and demand for water, increase the level of sustainability of the development and in line with Haringey Local Plan Policy SP5, DM21, DM24 and DM25.