

		Our ref: HGY/2022/3846 Contact: Valerie Okeiyi Date: 05/06/2023
Town and Country Act 1990 (As amended)		
Location:	30-36, Clarendon Road Off Hornsey Park Road, Wood Green, London, N8 0DJ	
Proposal:	Demolition of the existing buildings and construction of a part two, six, eight and eleven storey building plus basement mixed use development comprising 51 residential units and 560 sqm of commercial floorspace, with access, parking and landscaping.	

Carbon Management Response 10/05/2023

In preparing this consultation response, we have reviewed:

- Energy Statement prepared by XCO2 (dated May 2023)
- Overheating Risk Assessment prepared by XCO2 (dated 7 October 2022)
- Sustainability/BREEAM Statement prepared by XCO2 (dated 19 October 2022)
- Whole Life Cycle Carbon Assessment prepared by XCO2 (dated 17 October 2022)
- Circular Economy Statement prepared by XCO2 (dated 17 October 2022)
- Relevant supporting documents.

1. Summary

The development achieves a reduction of 63.3% on site, which is supported in principle. The applicant should provide further clarifications with regards to the Energy Strategy and Overheating Strategy as mentioned in the following sections. 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 2013). 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 63.3% in carbon emissions with SAP10 carbon factors, from the Baseline development model (which is Part L 2013 compliant). This represents an annual saving of approximately 42.7 tonnes of CO₂ from a baseline of 67.5 tCO₂/year.

London Plan Policy SI2 requires major development proposals to calculate and minimise unregulated carbon emissions, not covered by Building Regulations. The calculated unregulated emissions are: 30.8 tCO₂.

	Residential		Non-residential		Site-wide	
<i>(SAP10 emission factors)</i>	tCO ₂	%	tCO ₂	%	tCO ₂	%
Baseline emissions	57.1		10.4		67.5	
Be Lean savings	5.7	10%	4.0	38.6%	9.7	14.3%
Be Clean savings	0.0	0%	0	0%	0.0	0%
Be Green savings	30.6	53.7%	2.4	22.9%	33.0	48.9%
Cumulative savings	36.3	63.6%	6.4	61.4%	42.7	63.3%
Carbon shortfall to offset (tCO₂)	24.8					
Carbon offset contribution	£95 x 30 years x 24.8 tCO ₂ /year = £70,680					
10% management fee	£7,068					

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.

The overall energy use intensity (EUI) of the proposed development is 448,040 kWh/year. The average proposed space heating demand is 29.59 kWh/m²/year.

Building type	EUI (kWh/m ² /year)	Space Heating Demand (kWh/m ² /year)	Methodology used
Residential			
Non-Residential			

Actions:

- What is the calculated Energy Use Intensity (excluding renewable energy) for the residential and non-residential build? How does this perform against the GLA benchmarks, i.e. at 35 (residential) and 55 (non-residential) kWh/m²/year? Please re-submit the information in line with the GLA's reporting template and specify the methodology used to calculate these figures.
- What is the calculated space heating demand for the residential and non-residential build? 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 and specify the methodology used to calculate these figures.

Energy – Lean

The applicant has proposed a site-wide saving of 9.7tCO₂ in emissions (14.3%) through improved energy efficiency standards in key elements of the build, based on SAP10 carbon factors. A total of 5.7 tCO₂ (10%) and 4.0 tCO₂ (38.6%) reduction of emissions are proposed for residential and non-residential part of the development respectively. This goes beyond the minimum 10% and 15% reduction for residential and non-residential development respectively set in London Plan Policy SI2, so this is supported.

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

Elements:	Residential	Non-Residential
Floor u-value	0.10 W/m ² K	0.10 W/m ² K
External wall u-value	0.15 W/m ² K	0.15 W/m ² K
Roof u-value	0.10 W/m ² K	0.10 W/m ² K
Door u-value	1.30 W/m ² K	1.20 W/m ² K
Window u-value	1.20 W/m ² K	1.20 W/m ² K
G-value	0.50	0.40
Air permeability rate	3 m ³ /hm ² @ 50Pa	2.5 m ³ /hm ² @ 50Pa
Ventilation strategy	Mechanical ventilation with heat recovery (MVHR 95% efficiency; Specific Fan Power)	Mechanical ventilation with heat recovery (MVHR 80% efficiency; 0.8 W/l/s Specific Fan Power)
Thermal bridging	TBC	TBC
Low energy lighting	100%	100%
Heating system (efficiency / emitter)	Gas boiler with 90% efficiency	Gas boiler with 90% efficiency
Thermal mass	TBC	TBC
Improvement from the target fabric energy efficiency (TFEE)	21.4% improvement, from 53.9 to 42.4 kWh/m ² .yr	

Actions:

- 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.
- The fabric efficiencies and thermal bridging should be improved upon to reduce heat losses.
- What is the construction of the building and what is the assumed thermal mass?

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 development is within 500 meters of a planned future DEN, so the development is expected to secure connection subject to demonstration of technical feasibility and financial viability. The applicant proposes a site-wide heat network utilising ASHP allowing future connection including a single point of connection, capped off connections to non-domestic spaces and a single plant room.

The applicant will need to demonstrate that they will provide the following details prior to the commencement of construction:

- a) Buried pipe (dry and filled with nitrogen) to our specification from the GF plant room to a manhole at the boundary of their site and evidence of any obstructions in highway adjacent to connection point;
- b) A good quality network within the building – 60/40 F&R, <50W/dwelling losses from the network – ideally to an agreed standard in the S106;
- c) A clear plan for QA of the network post-design approval through to operation, based on CP1;
- d) A clear commercial strategy identifying who will sell energy to residents and how prices/quality of service will be set.

Actions:

- Please provide a Connection to the DEN scenario that shows the carbon reduction following the Energy Hierarchy, and state what carbon factor has been used.
- Please submit a site plan showing the connection point at the edge of the site, location of a pipe between the connection point and plant room, and plant room layout and schematics.

Energy – Green

As part of the Be Green carbon reductions, all new developments must achieve a minimum reduction of 20% from on-site renewable energy generation to comply with Policy SP4.

The application has reviewed the installation of various renewable technologies. The report concludes that air source heat pumps (ASHPs) and solar photovoltaic (PV) panels are the most viable options to deliver the Be Green requirement. A total of 27.7 tCO₂ (47.7%) reduction of emissions are proposed under Be Green measures.

The solar array peak output would be 16.69 kWp, with 2.8 kWp attributed to commercial area and 13.89kWp to the residential, which is estimated to produce around 12,482 kWh of renewable electricity per year, equivalent to a reduction of 2.9 tCO₂/year. The array of panels of 83.45m² will cover the roof with a southern orientation.

A communal air-to-water ASHP system (COP of 2.6) will provide hot water and heating to the residential spaces for 100% of the demand. Individual ASHP systems (COP heating 2.6 & cooling 6.0) will provide space heating, hot water and space cooling to the non-residential spaces for 100% of demand. In total the ASHP technology will save 30.4 tCO₂/year in the development.

Actions:

- Please provide some commentary on how the available roof space has been maximised to install solar PV.
- A living roof should be installed under the solar PV, or if this is not feasible, the roof should be light coloured to reduce solar heat gains and the improve efficiency of the solar panels.
- Please identify on the plans where the air source heat pumps will be located and how the units will be mitigated in terms of visual and noise impact.
- What analysis has been undertaken to assess the costs to occupants at peak demand, and what alternative options were explored to meet some of the peak demand with other heating sources?
- What thermal storage capacity will be provided within the plant room, and how much will be provided for the non-domestic spaces? Thermal storage capacity should be maximised to reduce the cost to generate heat during peak periods.

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 & 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 and businesses.

- Please confirm that sub-metering will be implemented for residential and commercial units.
- What are the unregulated emissions and proposed demand-side response to reducing energy: smart grids, smart meters, battery storage?

3. Carbon Offset Contribution

A carbon shortfall of 24.8 tCO₂/year remains (based on a low-carbon heating solution). The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

A deferred carbon offset contribution mechanism will apply to this scheme as it is expected to connect to the DEN when this has been built.

The applicant should present two carbon reduction table scenarios:

- Scenario 1: Connection to the DEN scenario (residual tCO₂ over 30 years)
- Scenario 2: Low-carbon alternative heating solution (residual tCO₂ over 30 years)

Action:

- Energy modelling of the two scenarios is needed to calculate the deferred carbon offset contribution. Please provide the energy modelling for these scenarios.

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 and TM52 with TM49 weather files, and the cooling hierarchy has been followed in the design. The report has modelled 6 retail spaces and 42 habitable spaces including 26 habitable rooms (22 double bedroom and 4 single bedroom), 16 spaces (7no. 1-bed KLDs, 8no. 2-bed KLDs and 1no. 3-bed KLDs) and 1 corridor under the London Weather Centre files.

The acoustic assessment has set out that all bedrooms are expected to experience increased risk of noise. Therefore, the TM59 criteria for predominantly mechanically ventilated dwellings apply (assuming windows need to remain closed).

Results are listed in the table below.

Residential:

	TM59 – criterion A (<3% hours of overheating)	TM59 – criterion B hours >26°C (pass <33 hours)	Number of habitable rooms pass TM59	Number of spaces pass TM52	Number of corridors pass
DSY1 2020s	42/42	26/26	26/26	16/16	1/1
DSY2 2020s	0/42	0/26	0/26	0/16	0/1
DSY3 2020s	0/42	0/26	0/26	0/16	0/1
DSY1 2050s	0/21	13/13	13/13	0/8	0/0
DSY1 2080s	1/21	8/13	1/8	0/13	0/0

Non-residential:

	Mechanical Ventilation	g-value	Design Change	Number of retail spaces pass TM52
DSY1 2020s	10 l/s/p	0.5	Natural Ventilation	0/6
DSY1 2020s	10 l/s/p	0.3	Trim cooling MVHR with cooling coil	6/6
DSY2 2020s	20 l/s/p	0.25	Trim cooling MVHR with cooling coil	6/6
DSY3 2020s	20 l/s/p	0.25	Trim cooling MVHR with cooling coil	6/6
DSY1 2050s	20 l/s/p	0.25	Trim cooling MVHR with cooling coil	6/6
DSY1 2080s	20 l/s/p	0.25	Active cooling MVHR	6/6

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

- Ensure a minimum opening equivalent areas of the windows as proposed in the Table 9 of the report.
- Glazing g-value of 0.50 for all residential windows and glazed doors.
- Use of internal shading devices e.g., curtains or blinds of low shading co-efficient to be recommended to the future tenants.
- External fins at level 1
- Natural ventilation option (but not for the purposes of the modelling) – side hung by 90 degrees, inward opening.
- Corridors to have 10 L/s mechanical extract fans in AOV riser.
- MVHR ‘trim cooling’ for all residential apartments

In the event of overheating, residents should make use of their balconies or the communal outdoor space at Level 6.

Proposed future mitigation measures include:

- 800mm deep external shading (to achieve 1m in total) as a horizontal feature on south and south-west glazing
- G-value of 0.40
- Higher flow rates from MVHR at night, and air conditioning for the 3-bedroom flats

Further retrofit plans are suggested for the more extreme weather files:

- Juliet balconies with railing to replace fixed glazing at the end of their life;
- External automated blinds;
- Ceiling fans on the dwellings;
- Active cooling for 2080s weather file.

Overheating Actions:

- Why is the shading not proposed on higher levels? Why is it not integrated within the current design?
- What heat loss has been assumed for the pipework?
- How would the lower g-value be achieved?
- To what extent MVHR is being taken into consideration?
- 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).
- 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.
- 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.
- 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 section in the 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.

The applicant proposes 100% of the timber used during construction to be sourced from accredited Forest Stewardship Council (FSC) or Programme for the Endorsement of forestry Certification (PEFC) source. Sustainable urban drainage systems (SUDS) is proposed, comprising blue roofs and below ground attenuation tanks incorporated on site. The discharge rate from the development to be restricted and achieving an 84.2% reduction on existing peak flows for the 100-year storm event.

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 prepared a BREEAM Pre-Assessment Report for the commercial portion of the development. Based on this report, a score of 65.94% is expected to be achieved, equivalent to 'Very Good' rating.

Actions:

- The submitted table should specify which targets 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.

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 aims to achieve an Urban Greening Factor of 0.4 in line with Policy G5 of the London Plan for residential-led sites.

Actions:

- Provide Urban Greening Factor calculation showing it achieves the minimum 0.4 for residential-led sites.
- 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.

Whole Life-Cycle Carbon Assessments

Policy SI2 requires developments referable to the Mayor of London to submit a Whole Life-Cycle Carbon Assessment and demonstrate actions undertaken to reduce life-cycle emissions.

The total calculated emissions based on the GIA (without grid decarbonisation) is estimated at:

	Estimated carbon emissions	GLA benchmark RESIDENTIAL	Embodied carbon rating (Industry-wide)
Product & Construction Stages Modules A1-A5 (excl. sequestration)	633 kgCO ₂ e/m ²	Meets GLA benchmark (<850 kgCO ₂ e/m ²) but misses the aspirational target (<500 kgCO ₂ e/m ²).	Modules A1-A5 achieve a band rating of 'D', not meeting the LETI 2020 Design Target.
Use and End-Of-Life Stages Modules B-C (excl. B6 and B7)	395 kgCO ₂ e/m ²	Does not meet GLA target (<350 kgCO ₂ e/m ²) and aspirational benchmark (<300 kgCO ₂ e/m ²).	
Modules A-C (excl B6, B7 and incl. sequestration)	973 kgCO ₂ e/m ²	Meets GLA target (<1200 kgCO ₂ e/m ²) and the aspirational benchmark (<800 kgCO ₂ e/m ²).	Modules A1-B5, C1-4 (incl sequestration) achieve a letter band rating of 'D', not meeting the LETI 2020 Design Target.
Use and End-Of-Life Stages Modules B6 and B7	738 kgCO ₂ e/m ²	N/A	
Reuse, Recovery, Recycling Stages Module D	150 kgCO ₂ e/m ²	N/A	

This shows that the majority of carbon emissions (42%) are associated with Module B6-B7 with Module A1-A5 contributing the second highest amount at 36% of WLC emissions.

The highest embodied carbon in Modules A1-A5 is attributed to the superstructure (65%) and substructure (24%). In Modules B-C (excl B6 & B7) the highest contributors in embodied carbon are superstructure (50%), internal finishes (29%) and the services (14%). A number of areas have been identified to calculate more accurately and to reduce the embodied carbon of the buildings.

The GLA requested further actions to be taken on whole-life carbon, which we support.

Circular Economy

Policy SI7 requires applications referable to the Mayor of London to submit a Circular Economy Statement demonstrating how it promotes a circular economy within the design and aim to be net zero waste. Haringey Policy SP6 requires developments to seek to minimise waste creation and increase recycling rates, address waste as a resource and requires major applications to submit Site Waste Management Plans.

The principles used for this development are:

- Building in Layers
- Designing Out Waste
- Designing for longevity, circa 50 years of building life, and disassembly at end of life
- Designing for flexibility and adaptability
- Design for Disassembly
- Using Systems, Elements or Materials that can be Reused and Recycled

The report sets Circular Economy Design Out Waste (Table 2-5), Design for Longevity (Table 6), Designing for adaptability or flexibility (Table 7), Strategies to promote the use of reusable or recyclable systems, elements or materials (Table 9), key commitments and implementation plan (Table 12). This is a fairly high level of information, and the applicant expects this to become more detailed as the detailed design progresses following permission.

The GLA requested further actions to be taken on Circular Economy, which we support.

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 £70,680 (indicative), plus a 10% management fee; carbon offset contribution to be re-calculated at £2,850 per tCO₂ at the Energy Plan and Sustainability stages.
- DEN connection (and associated obligations)
- Heating strategy fall-back option if not connecting to the DEN

7. Planning Conditions

To be secured, however amendments are expected to be submitted and outstanding items resolved before the conditions can be drafted.

Carbon Management Response 17/05/2023

In preparing this consultation response, we have reviewed:

- Energy Statement prepared by XCO2 (dated 11th May 2023)
- Overheating Risk Assessment prepared by XCO2 (dated 15th May 2023)
- BREEAM Summary of Performance & Rating dated 24th May 2023
- Biodiversity New Gain Calculation prepared by Ecology and Land Management (dated October 2022)
- Basement Level Plans including District Heating.
- Relevant supporting documents.

1. Summary

The development achieves a reduction of 63.3% on site, which is supported.

2. Energy Strategy

Energy Use Intensity / Space Heating Demand

The energy use intensity (EUI) and space heating demand of the proposed development is as follows:

Building type	EUI (kWh/m ² /year)	Space Heating Demand (kWh/m ² /year)	Methodology used
Residential	111.2	34.1	Part L Calculation (SAP)
Non-Residential	54.8	1.2	Part L Calculation (BRUKL)

The applicant has clarified that the scheme has gone beyond the Building Regulations Part L 2013 and 2021 standards, low thermal bridging y-values and efficient MVHR systems. It is recommended to explore more options to decrease the Energy Use Intensity.

Energy – Lean

The applicant has proposed to meet and exceed the Part L 2013 thermal bridging y-value target of 0.15 by achieving a value of 0.08-0.10. An indicative thermal mass parameter of 250 kJ/m²K has been applied to all dwellings, this is based on a proposed steel frame construction with brick façade. The detail of MVHR is requested to be conditioned.

Energy – Clean

Applicant to provide the following information on DEN in later stage. The applicant will need to demonstrate that they will provide the following details prior to the commencement of construction:

- a) Buried pipe (dry and filled with nitrogen) to our specification from the GF plant room to a manhole at the boundary of their site and evidence of any obstructions in highway adjacent to connection point;
- b) A good quality network within the building – 60/40 F&R, <50W/dwelling losses from the network – ideally to an agreed standard in the S106;
- c) A clear plan for QA of the network post-design approval through to operation, based on CP1;
- d) A clear commercial strategy identifying who will sell energy to residents and how prices/quality of service will be set.

In order to calculate the carbon-offset a connection to DEN scenario must be calculated. The site plan that shows the connection point and the location between the connection point and plant room is required.

Actions:

- Please provide a Connection to the DEN scenario that shows the carbon reduction following the Energy Hierarchy, and state what carbon factor has been used. This can be conditioned.

Energy – Green

The development does not propose living roofs to minimise the distance between PV arrays maximising the overall on-site renewable energy generation. The roof area is proposed to be painted in a light colour to minimise the temperature of the areas below the panels.

The ASHP units is proposed at roof level as per the plan in appendix H of the energy statement, and acoustic attenuation is proposed to minimise noise and sheltering of the units to minimise their visual impact.

Smart energy meters are proposed as part of the proposed scheme. The feasibility to incorporate demand side flexibility measures is proposed to be explored at the next stages.

The applicant proposed to confirm the technical details of thermal stores during the technical design stage.

Energy – Be Seen

The applicant confirms a monitoring strategy to be put in place ensuring monitoring and reporting of the actual energy performance of the development post-occupation which will include sub-metering for both the domestic and non-domestic spaces individually.

3. Carbon Offset Contribution

A carbon shortfall of 24.8 tCO₂/year remains (based on a low-carbon heating solution). The remaining carbon emissions will need to be offset at £95/tCO₂ over 30 years.

A deferred carbon offset contribution mechanism will apply to this scheme as it is expected to connect to the DEN when this has been built.

The applicant should present two carbon reduction table scenarios:

- Scenario 1: Connection to the DEN scenario (residual tCO₂ over 30 years)
- Scenario 2: Low-carbon alternative heating solution (residual tCO₂ over 30 years)

Action:

- Energy modelling of the two scenarios is needed to calculate the deferred carbon offset contribution. Please provide the energy modelling for these scenarios. This can be conditioned.

4. Overheating

An updated overheating assessment is submitted which follows the cooling hierarchy which includes external shading, lower g-value and cooling coil capacity as mitigation measures consecutively.

The report has modelled all south and west facing windows including a 500mm overhang, plus all west facing windows including an additional 500mm side fin to the south side. These mitigation proposals have reduced the number of overheating hours by approximately 5%.

The applicant has confirmed that the model accounts for 12.19 W/m heat loss per metre run of pipe. The MVHR system is proposed for all dwelling with a trim-cooling capacity of 2.2kW for the largest 3-bed flats and be able to provide constant air at 18.9°C with a flow rate of 60/90/120 l/s for the 1Bed/2Bed/3Bed respectively, for the whole flat.

The efficiency and air changes of the proposed mechanical ventilation are as follows:

Balanced whole flat MVHR: 0.7 (70%) heat recovery efficiency. SFP (1/2/3 wet rooms) = 0.42 / 0.50 / 0.61 W/l.s, respectively.

Air source heat pumps (ASHP) is proposed for both heating and cooling of the non-residential portions of the development (e.g., for the 3 no. commercial units at ground level). The specification of the proposed ASHP is COP = 2.6 / EER = 6.0.

Applicant confirms to provide building user guide or a formal heatwave plan at later stage and requests to condition this.

5. Sustainability

Non-Domestic BREEAM Requirement

The applicant has prepared a BREEAM Pre-Assessment Report for the commercial portion of the development. Based on this report, a score of 64.72% is expected to be achieved, equivalent to 'Very Good' rating and a potential score of 72.47% can be achieved, equivalent to 'Excellent' rating.

Urban Greening / Biodiversity

The development aims to achieve an Urban Greening Factor of 0.431 in line with Policy G5 of the London Plan for residential-led sites.

The bio-diversity net gain calculation is submitted which shows that the development will make a net contribution of habitat biodiversity units of 431.26% and a net loss of linear biodiversity units of -100%.

Living roofs

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.

Whole Life-Cycle Carbon Assessments

The GLA requested further actions to be taken on whole-life carbon, which we support.

Circular Economy

The GLA requested further actions to be taken on Circular Economy, which we support.

6. Planning Obligations Heads of Terms

- Be Seen commitment to uploading energy data
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- DEN connection (and associated obligations)
- Heating strategy fall-back option if not connecting to the DEN

7. Planning Conditions

To be secured:

Energy strategy:

The development hereby approved shall be constructed in accordance with the Energy Statement prepared by XCO2 (dated May 2023) delivering a minimum 63.3% improvement on carbon emissions over 2013 Building Regulations Part L, with SAP10 emission factors, high fabric efficiencies, communal ASHP and future connection to the Decentralised Energy Network, and a minimum 16.69kWp solar photovoltaic (PV) array.

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

- *Carbon reduction following the energy hierarchy for future connection to DEN and ASHP scenario;*
- *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 carbon factors;*
- *Details to reduce thermal bridging;*
- *Location, specification and efficiency of the proposed ASHP system (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;
- 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 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.

DEN Connection:

Prior to the above ground commencement of construction work, details relating to the future connection to the DEN must be submitted to and approved by the local planning authority. This shall include:

- *Further detail of how the developer will ensure the performance of the DEN system will be safeguarded through later stages of design (e.g. value engineering proposals by installers), construction and commissioning including provision of key information on system performance required by CoP1 (e.g. joint weld and HIU commissioning certificates, CoP1 checklists, etc.);*
- *Peak heat load calculations in accordance with CIBSE CP1 Heat Networks: Code of Practice for the UK (2020) taking account of diversification.*
- *Detail of the pipe design, pipe sizes and lengths (taking account of flow and return temperatures and diversification), insulation and calculated heat loss from the pipes in Watts, demonstrating heat losses have been minimised together with analysis of stress/expansion;*
- *A before and after floor plan showing how the plant room can accommodate a heat substation for future DEN connection. The heat substation shall be sized to meet the peak heat load of the site. The drawings should cover details of the phasing including any plant that needs to be removed or relocated and access routes for installation of the heat substation;*
- *Details of the route for the primary pipework from the energy centre to a point of connection at the site boundary including evidence that the point of connection is accessible by the area wide DEN, detailed proposals for installation for the route that shall be coordinated with existing and services, and plans and sections showing the route for three 100mm diameter communications ducts;*
- *Details of the location for building entry including dimensions, isolation points, coordination with existing services and detail of flushing/seals;*
- *Details of the location for the set down of a temporary plant to provide heat to the development in case of an interruption to the DEN supply including confirmation that the*

structural load bearing of the temporary boiler location is adequate for the temporary plant and identify the area/route available for a flue;

- *Details of a future pipework route from the temporary boiler location to the plant room.*

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 SI3, and Local Plan (2017) Policies SP4 and DM22.

Overheating

Prior to the above ground commencement of the development, revised 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 TM52 and TM59 Overheating modelling undertaken by XCO2 (Overheating Risk Assessment dated 15th May 2023).

This report shall include:

- *Revised modelling of units modelled based on CIBSE TM52/59, 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 distribution heat losses, external shading, crime, noise and air quality issues are assessed and mitigated appropriately evidenced by the proposed location and specification of measures;*
- *Modelling of mitigation measures required to pass future weather files including external shading, 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 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 fully inward openable windows;*
- *Infiltration rate of 0.15 ACH*
- *Window g-values of 0.4;*
- *External shading – overhangs and side fins;*
- *Mechanical ventilation with summer bypass (40l/s);*
- *Hot water pipes insulated to high standards.*
- *Any further mitigation measures as approved by or superseded by the latest approved Overheating Strategy.*

Active cooling is not permitted in this development.

If the design of Blocks is amended, or the heat network pipes will result in higher heat losses and will impact on the overheating risk of any units, a revised Overheating Strategy must be submitted as part of the amendment application.

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.

Overheating Building User Guide

Prior to occupation of the residential dwellings, 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. The Building User Guide will be issued to residential occupants upon first occupation.

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.

BREEAM Certificates

(a) Prior to commencement on site, a design stage accreditation certificate for every type of 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.

Living roof(s)

(a) Prior to the above ground commencement of development, details of the living roofs must be submitted to and approved in writing by the Local Planning Authority. Living roofs 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 roofs 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 roofs, 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 roofs 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 roofs 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 development, evidence must be submitted to and approved by the Local Planning Authority that the living roofs have 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 roofs have not been delivered to the approved standards, the applicant shall rectify this to ensure it complies with the condition. The living roofs 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.

Circular Economy (Post-Completion report)

Prior to the occupation of development, a Post-Construction Monitoring Report should be completed in line with the GLA's Circular Economy Statement Guidance.

The relevant Circular Economy Statement shall be submitted to the GLA at: circulareconomystatements@london.gov.uk, along with any supporting evidence as per the guidance. Confirmation of submission to the GLA shall be submitted to, and approved in writing by, the Local Planning Authority, prior to the occupation of development.

Reason: In the interests of sustainable waste management and in order to maximise the re-use of materials in accordance with London Plan (2021) Policies D3, SI2 and SI7, and Local Plan (2017) Policies SP4, SP6, and DM21.

Whole-Life Carbon

Prior to the occupation of each building, the post-construction tab of the GLA's Whole Life Carbon Assessment template should be completed in line with the GLA's Whole Life Carbon Assessment Guidance. The post-construction assessment should provide an update of the information submitted at planning submission stage. This should be submitted to the GLA at: ZeroCarbonPlanning@london.gov.uk, along with any supporting evidence as per the guidance. Confirmation of submission to the GLA shall be submitted to, and approved in writing by, the Local Planning Authority, prior to occupation of the relevant building.

Reason: In the interests of sustainable development and to maximise on-site carbon dioxide savings in accordance with London Plan (2021) Policy SI2, and Local Plan (2017) Policies SP4 and DM21.

Biodiversity

(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, S11 and S12 and Local Plan (2017) Policies SP4, SP5, SP11 and SP13.

Carbon Management Response 05/06/2023

In preparing this consultation response, we have reviewed:

- Context elevations: ref. 3572 PL(20) 210e P0 - East and West Context Elevations; ref. 3572 PL(20) 211e P0 North and South Context Elevations
- Scheme elevations: ref. 3572 PL(20) 202 P0 – West Elevation; ref. 3572 PL(20) 202 P0 – South Elevation
- Images of the south-facing and west-facing elevations
- Bay studies
- Typical details

Response

Details were submitted to evidence the addition of external shading measures. These were introduced to reduce the demand on active ventilation and cooling, reducing the urban heat island effect and energy costs. The Carbon Management Team are satisfied that the overheating concerns have been adequately addressed. The proposed overheating condition has been amended to reflect the updated information.

Revised Overheating Condition

Additional wording is underlined.

Overheating

Prior to the above ground commencement of the development, revised 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 TM52 and TM59 Overheating modelling undertaken by XCO2 (Overheating Risk Assessment dated 15th May 2023), which includes external shading measures to the east, south and west windows as shown on the approved elevations.

This report shall include:

- *Revised modelling of units modelled based on CIBSE TM52/59, 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 distribution heat losses, external shading, crime, noise and air quality issues are assessed and mitigated appropriately evidenced by the proposed location and specification of measures;*
- *Modelling of mitigation measures required to pass future weather files including external shading, 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 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 fully inward openable windows;*
- Infiltration rate of 0.15 ACH*
- Window g-values of 0.4;*
- External shading – overhangs and side fins;*
- Mechanical ventilation with summer bypass (40l/s);*
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- Any further mitigation measures as approved by or superseded by the latest approved Overheating Strategy.*

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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.

Conclusion

The application can be supported subject to the previously recommended conditions.