PLANNING SERVICES

TOWN & COUNTRY PLANNING (DETERMINATION BY INSPECTORS)

(INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

PROOF OF EVIDENCE

Gabriel Berry-Khan, Senior Sustainability Officer (Planning) - London Borough of Camden

FOR PUBLIC INQUIRY COMMENCING ON

15th January 2019

APPEAL SITE

Gondar Gardens Reservoir, Gondar Gardens, London, NW6 1QF

APPELLANT

Life Care Residences

SUBJECT OF APPEAL

Appeal against London Borough of Camden's refusal of Planning Permission for the *'Partial demolition of the existing reservoir, including the roof and most of the internal structure, and the erection of six 4-6 storey buildings and four 2-3 storey link buildings with common basement levels within the retaining walls of the existing reservoir to include 82 Self contained extra care apartments (class C2); a 15 bed nursing home (Class C2). Associated communal facilities including reception area, guest suite, lounge, restaurant, café, bar, library, exercise pool, gym, therapy rooms and cinema; Associated support facilities including staff offices, welfare and training spaces, storage, laundry, kitchen, cycle storage, car parking and plant areas and a site-wide biodiversity-led landscaping and planting scheme including external amenity space, drop off area, retention pond and slope stabilization and associated engineering works'.*

COUNCIL REFERENCE: 2017/6045/P

PLANNING INSPECTORATE REFERENCE: APP/X5210/W/18/3198746

INTRODUCTION

i. I, Gabriel Berry-Khan, have prepared this proof of evidence for presentation at the Public Inquiry into the appeal. I hold a Bachelor of Science degree (with Second Class Honours, First Division) in Physics and Philosophy from the University of Bristol and a Master of Science degree (with Merit) in Renewable Energy and the Environment from the University of Reading.

ii. I have over fifteen years' experience working in sustainable energy, including eight years as a Technical Advisor and Analyst in renewable energy technologies. From 2011-13, I was the Energy Officer at Wokingham Borough Council. Since February, 2013 I have been employed as a Senior Sustainability Officer by the London Borough of Camden. I have held my current role as lead sustainability officer for Planning matters for more than a year.

iii. I am a full Member of the Institute of Environmental Management and Assessment (Associate since 2010; Practitioner Member since 2016) and of the Institute of Physics (Associate Member since 2003; Member since 2010).

iv. This proof of evidence gives my professional view on issues relating to sustainable design and construction of the appeal, arising from the following reasons for refusal for 2017/6045/P:

Reason 10 (updated to accord with SoCG)

The proposed development, *~~in the absence of details regarding the feasibility of providing a CHP unit on the site, opportunities to reduce water consumption, drainage calculations and details relating to SuDs, along~~* ***with the failure to reach CO_2 reduction targets, and due to the absence of a legal agreement to secure any of the above, would fail to be sustainable in its use of resources, contrary to policies CC1 (Climate Change mitigation)*** *~~and CC3 (Water and Flooding)~~ of London Borough of Camden Local Plan 2017 and Policies 5.2, ~~5.12 and 5.13~~ of the London Plan 2016.*

Reason 16

The proposed development, in the absence of a legal agreement to secure an Energy Efficiency and Renewable Energy Plan, including the submission of post

construction reviews demonstrating compliance with BREEAM Multi Residential and including a contribution to off-site allowable solutions, would fail to be sustainable in its use of resources, contrary to policies CC1 (Climate change mitigation), CC2 (Adapting to climate change), CC3 (Water and flooding) CC4 (Air quality), C1 (Health and wellbeing) and DM1 (Delivery and monitoring of the London Borough of Camden Local Plan 2017.

v. The evidence that I have provided for this appeal is accurate to the best of my ability and I confirm that any professional opinions expressed are my own.

ASSESSMENT OF CASE

1. RELEVANT LEGISLATION, POLICY AND GUIDANCE

1.1. The Council's Statement of Case, sets out the relevant Local Plan (2017) policies. I do not therefore propose to repeat them in full here and have instead briefly reviewed the national, regional and local policy and guidance of greatest relevance to the issues that are the focus of this Proof.

National Planning Policy Framework (NPPF) 2018

1.2. The NPPF establishes that planning should follow a presumption in favour of sustainable development. At paragraph 8, three overarching objectives for achieving sustainable development are laid out. These include an economic; social and environmental objectives. The environmental objective is defined as follows:

"to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy".

1.3. Section 14 (Meeting the challenge of climate change, flooding and coastal change) sets out the national expectations for policies and decision making in relation to climate change. It seeks to ensure that the planning system supports a transition to a low carbon future in a changing climate. It states, at para.148. that planning "*should shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including*

the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure" (para.148). Paragraph 150 sets out how development should help to reduce greenhouse gas emissions, such as through its location, orientation and design. Paragraph 153 states that in determining applications, LPAs should expect new developments to comply with the local development plan in relation to decentralised energy supply and minimising energy consumption.

London Plan 2016 and Draft London Plan (consultation draft)

1.4. The London Plan is the overall strategic plan for London. The most relevant policies include 5.1 (Climate change mitigation); 5.2 (Minimising carbon dioxide emissions) and 5.3 (Sustainable design and construction).

1.5. Policy 5.1 seeks to achieve an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025. Policy 5.2 sets out that developments should make the fullest contribution to minimising carbon dioxide emissions in accordance with the 'energy hierarchy'. This policy seeks to ensure that all major developments meet the targets for carbon dioxide emissions reduction in buildings and provides the technical standards to which schemes should be assessed. Criteria E of this policy states that '*The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere'.* Policy 5.3 seeks to ensure that developments demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that accord with minimum standards outlined in the Mayor's supplementary planning guidance.

1.6. The preamble to the above chapter notes that responding to climate change has to be an integral and essential part of the development process and not a set of 'bolt-ons' – increasingly, this will be seen as a key part of ensuring buildings are fit for purpose into the future. Preventative and adaptive measures will generate long term savings (particularly for energy and water use), and over time the inclusion of such measures should have positive impacts on property values as occupiers become more aware of the impacts of climate change on their environment (para.5.8).

1.7. Chapter 9 of the draft New London Plan (Sustainable Infrastructure) outlines the emerging preferences of the Mayor in relation to sustainable development. Emerging Policy SI2

(Minimising greenhouse gas emissions) is particularly relevant. In its draft form, this policy seeks all major development to be net zero-carbon. This means reducing carbon dioxide emissions from construction and operation, and minimising both annual and peak energy demand in accordance with the energy hierarchy. In meeting the zero-carbon target, this policy sets an expectation that developments will reach a minimum on-site reduction of at least 35 per cent beyond Building Regulations.

Camden Local Plan (2017)

1.8. The Council aims to tackle the causes of climate change in the borough by ensuring developments use less energy and assess the feasibility of decentralised energy and renewable energy technologies. If we are to achieve local, and support national, carbon dioxide reduction targets, it is crucial that planning policy limits carbon dioxide emissions from new development wherever possible and supports sensitive energy efficiency improvements to existing buildings.

1.9. Local Plan Policy CC1 (Climate change mitigation) seeks to require that all development minimises the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. To achieve this, it sets out a number of criteria to which developments must accord (a – f). The following clauses are of particular relevance in this case:
[The council will:]

a) promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;

b) require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;

1.10. Policy CC2 (Adapting to climate change) supports the aims of CC1 by also seeking to ensure that developments are designed to remain resilient to climate change. The policy sets out a range of sustainable design and construction as well as climate change adaptation measures that are expected to be adopted.

2. DOCUMENTS REVIEWED

2.1. The following documents have been reviewed in the assessment of the case:

- Appendix A 'Persephone Gardens - Energy Statement' dated 18/10/17, prepared by Cudd Bentley Consulting Ltd on behalf of the appellant

- Appendix B ‘Persephone Gardens - Briefing Note’ dated 21/12/17, prepared by Cudd Bentley Consulting Ltd on behalf of the appellant
- Appendix C ‘Gondar Gardens Briefing Note - Sustainability’ dated 29/10/18, prepared by Cudd Bentley Consulting Ltd on behalf of the appellant
- Appendix D ‘Energy Memo: Stage I consultation Gondar Gardens 05/12/2017’, dated 2017, Greater London Authority

3. DETAILED ASSESSMENT OF SUBMITTED REPORTING

3.1. Throughout the application and appeal process, officers have attempted to work with the appellants to improve the sustainability credentials of the build. Though no further reporting was provided until November 2018, updated reports were eventually forthcoming. As outlined in the SoCG, the recent submissions have provided officers with sufficient information as to be confident that full details in relation to SuDS, CHP provision (if) and water saving measures may now reasonably be secured by condition. As noted above, the outstanding matters in dispute in relation to Reason for Refusal 10 therefore relate to the failure to reach minimum CO2 reduction targets, and the subsequent lack of a legal agreement to secure matters relating to sustainable design and construction (Reason for Refusal 16).

3.2. There follows a description of my assessment of the shortcomings in the appellant’s proposals under RfR 10. A summary for RfR 16 follows thereafter. The whole is supported by more detailed discussion in Table 1 below.

4. Summary of Reason for Refusal 10

4.1. The submissions have significantly or substantially fallen short of achieving a number of clear Camden Local Plan and London Plan policy targets. In my view, a modern new-build development with relatively minor site constraints ought to be able to meet or exceed these targets. That this scheme does not, indicates to me that it has not been conceived from the ground up with sustainable design principles in mind, as would be expected by regional and local policy.

4.2. This view is in no way in contradiction with the scheme’s proposed ‘Excellent’ score under the Building Research Establishment Environmental Assessment Method (BREEAM) pre-assessment of the commercial parts. Firstly the energy portion of this assessment method this is not aligned with Building Regulations or planning policy, and measures a separate set of. Secondly energy is only one amongst the many environmental assessment themes that feed into a BREEAM score. Thirdly, targeting BREEAM Excellent is required under our Local Plan policy CC2, and the scheme has in fact been pre-assessed with a score of less than the usually recommended minimum of 75% in order to allow for later score slippage.

4.3. My overall impression is that despite a relatively ‘blank canvas’ for designing a scheme of this nature at this site, the opportunity has been missed to build sustainable energy performance in to the plans. Without appropriate justification therefore, the scheme is seen to have failed to address one of the most basic aims of the National Planning Policy Framework, promoting sustainable development, contrary to paragraphs 148, 150 and 153 (see paragraph 1.3).

4.4. The scheme performance against targets including provision of evidence, are discussed in the sections that follow.

5. Target for overall CO_2 reduction in the commercial parts

5.1. The relevant Local Plan policy is the London Plan 35% target for non-residential new-build:

> 6.6 …the emission reduction targets the GLA will apply to applications are as follows:
>
> • …35% below Part L 2013 for commercial development. *Source: 'ENERGY PLANNING Greater London Authority guidance on preparing energy assessments (March 2016)'*

5.2. The refused application proposed a 22.0% commercial CO_2 reduction, the remaining 13.0% to be met by a carbon offset payment. The GLA's relevant Stage 1 comments for this application confirmed that:

> The carbon dioxide savings fall short of the target within Policy 5.2 of the London Plan. The applicant should consider the scope for additional measures aimed at achieving further carbon reductions.

5.3. A minor improvement was made in the appellant's latest proposed commercial reductions, now up to 24.3%. However, this appears largely to have been achieved purely by adjusting the residential baseline. The appellant did not take the opportunity to revise the designs in order to meet the target.

6. 'Non-offsettable' sub-target for on-site CO_2 reduction in residential parts

6.1. Camden's Local Plan policy refers to the London Plan zero carbon homes (100% CO_2 reduction) target, and 35% on-site 'sub-target', for residential new-build. The reductions to achieve 'zero carbon' may be achieved via allowable off-site CO_2 reductions including carbon offset fund payments.

> 5.1 London Plan policy 5.2B sets a 'zero carbon' target for residential development….
> 5.3 'Zero carbon' homes are… where the residential element of the application achieves at least a 35 per cent reduction in regulated carbon dioxide emissions (beyond Part L 2013) on-site. The remaining regulated carbon dioxide emissions, to 100 per cent, are to be off-set through a cash in lieu contribution…[1]

6.2. The refused application proposed a 30.8% residential CO_2 reduction on site, the remaining 4.2% to be met by an offset payment. The GLA's relevant Stage 1 comments for this application confirmed that:

> The carbon dioxide savings fall short of the on-site target within Policy 5.2 of the London Plan. The applicant should consider the scope for additional measures aimed at achieving further carbon reductions before agreeing to meet any shortfall through a contribution to the borough's offset fund.[2]

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[1] Source: 'ENERGY PLANNING Greater London Authority guidance on preparing energy assessments (March 2016)', GLA 2016

[2] Source: 'Energy Memo: Stage I consultation Gondar Gardens 05/12/2017', GLA 2017

6.3. A minor improvement was shown in the appellant's latest proposed residential CO_2 reductions, now up to 31.6%. However, this appears largely to have been achieved purely by adjusting the non-residential baseline. The appellant had not taken the opportunity to revise designs to meet the target.

6.4. Although not directly comparable owing to changes in planning policy and building regulations, the following are examples of proposals with higher performance in terms of percentage reductions:

- A previous wholly residential planning proposal at the same site, 2011/0395/P, targeted a 91.1% overall CO_2 reduction from the baseline (against Building Regulations 2010) through on-site measures. The GLA policy target was minimum 44% reduction on site.
- Another residential planning proposal at the site, reference 2013/7585/P, targeted a 34.7% on-site overall CO_2 reduction from the baseline.

7. 'Non-offsettable' targets for renewable energy in both parts

7.1. The Local Plan policy CC1 states that:

> 8.11 The Council will expect developments of five or more dwellings and/or more than 500 sqm of any gross internal floorspace to achieve a 20% reduction in carbon dioxide emissions from on-site renewable energy generation (which can include sources of site related decentralised renewable energy), unless it can be demonstrated that such provision is not feasible.

7.2. The refused application proposed zero (residential parts) and 1.2% (commercial parts) CO_2 reductions via on-site renewables. These were to be delivered through a small solar photovoltaics (PV) system, equivalent in my judgment to between two and four solar PV systems of the size typically installed on private houses.

7.3. A minor improvement for the commercial parts was made in the appellant's latest submission Appendix C, now up to 3.1% stage reduction. This was through an almost 50% increase in solar photovoltaics generating capacity.

7.4. Although not directly comparable owing to changes in planning policy targets and building regulations, the following are examples of proposals with higher performance in terms of percentage reductions:

- The residential planning proposal 2011/0395/P at this site targeted a 71.7% stage reduction through renewables (against Building Regulations 2010).
- The residential planning proposal 2013/7585/P at this site targeted an 18.8% stage reduction through renewables (against Building Regulations 2010).

8. Evidence to justify shortfalls

8.1. On a case by case basis, development proposals failing to achieve the energy and sustainability goals set by policy may still be recommended for approval. Within certain policies, such as the renewable energy targets, feasibility is explicitly allowed for in policy. In others, the importance of technical achievability may rather be implied; officers' professional judgement is usually exercised, taking into account the attributes, opportunities and constraints of the scheme and the site, and the quality of the evidence provided

8.2. In my opinion, even in the context of case by case flexibility, the appellant's submissions have overall failed to provide sufficient details to verify that policy has been met. In particular they have not submitted adequate information to demonstrate:

- The non-feasibility of improving standards of fabric efficiency and air-tightness over the current designs. The purpose would be to justify the Be Lean shortcomings and hence shortfall on CO_2 targets.

8.3. The Be Lean CO2 reductions of 2.4% (residential) to 3.1% (commercial) are low compared to current typical expectations, and very low compared to the draft new London Plan minimum standards (10% residential and 15% commercial). This has not been justified. The refused scheme fails to justify not meeting all the specific efficiency standards cited in Camden Planning Guidance CPG3.

- The necessity of installing mechanical cooling for all residential units for the claimed overheating reasons. The purpose would be to justify the cooling-related Be Lean shortcomings, and hence shortfall on CO_2 targets.

8.4. The refused scheme does not show how it meets the Local Plan's policy on active cooling systems for residential, which requires detailing of the assessed overheating risk for any unit where active cooling is proposed. They have not backed up their specific claims for needing active cooling for more vulnerable residents by providing detailed study results and assumptions.

- The feasibility and financial viability of the gas-engine combined heat and power (CHP) system as proposed for this scale and type of scheme. The purpose would be to justify a reliance on the Be Clean stage to make the proposed CO_2 reductions, in contrast to preferred Be Lean measures; to justify discounting heating options from renewable sources that in my view would not compete with the CHP heating strategy.

8.5. Although design-stage CHP study details would be further secured by condition, the appellant has not yet provided a full and convincing picture of how the scheme can make an efficient and viable CHP scheme. This is the more necessary in the context of falling short of the typical minimum residential scale for efficient CHP as cited in London Plan guidance, their proposal for four CHP engines instead of the usual more efficient single engine, and the absence of robust modelling results of heat profile and supply.

- The non-feasibility of alternative or additional renewable energy capacity options (to justify the Be Green shortcomings and hence the shortfalls on the CO_2 and renewable energy targets).

8.6. Along with other less persuasive arguments, the original energy statement cited roof space constraints for further solar photovoltaics, lack of space for heat pump collectors, and a potential technical conflict of renewable heat sources with the CHP heating system. Detailed figures and studies were not forthcoming.

8.7. Latest submissions in Appendix C found nearly 50% more roof space to increase the solar PV capacity. Further commentary and figures for their reasons for discounting additional PV and alternative heating sources were provided. However these comments and their previous justifications still did not meet my view of a sufficiently detailed set of feasibility studies, given the extent of derogation from policy targets.

9. **Reason for Refusal 16**

9.1. In the absence of a legal agreement, the scheme is unable to have the necessary planning obligations secured. These are needed to permit the appellant to achieve and demonstrate achievement of policy targets, as follows:

- Overall CO_2 reduction targets for the residential and commercial parts (via payments to Camden's carbon offset fund)

- Pre-implementation and pre-occupation obligations relating to an Energy Efficiency and Renewable Energy Plan, designed to show achievement of the approved:
    - CO_2 targets and sub-targets
    - Renewable energy targets
    - Passive design and construction techniques
    - Combined heat and power system details
    - Details of renewable energy systems

- Pre-implementation and pre-occupation obligations relating to a Sustainability Plan designed to show achievement of the approved:
    - BREEAM targets and sub-targets (commercial parts)
    - Water efficiency targets (residential parts)

9.2. Land use classes and residential versus non-residential definitions have been discussed in connection with the refused scheme. There follows brief discussion about the sustainability implications.

9.3. Within submission B, the appellant declared the development as three elements, all stated as C2 use class. However, they have assigned a domestic Building Regulations baseline to one of the elements, termed by the appellant the "residential parts", and a non-domestic baseline to the other two termed by the appellant the "commercial parts". I have used this terminology here and in my earlier observations without prejudice.

9.4. The extra care apartments are currently modelled and presented as the 'domestic' or residential parts for Building Regulations and planning purposes. The remainder of the development is assessed and presented as 'non-domestic' or commercial. The implications for the policies and proposals are as follows

9.4.1.1. Baseline. Buildings classed as 'non-residential' start each assessment with a lower energy performance and a higher rate of emissions.

9.4.1.2. Policy targets. Policies in some aspects expect more demanding energy standards to residential, e.g. the zero carbon homes requirement and restrictions on domestic mechanical cooling.

9.5. In my observations to the case officer throughout the process, I have in good faith evaluated the extra care apartments according to residential planning policies and the remainder under non-residential policy. Regardless of use class, in general the current submissions are not considered adequate to meet either residential or non-residential policy, even if these were to be changed in either direction.

9.6. Furthermore, if either use class or residential/non-residential classification were changed at a later date for any part of the scheme, it would not be possible properly to assess or approve the relevant details in the existing submissions against planning policy. A new Energy Statement and strategy would need to be requested if any such

changes were to be made. This also applies to the relevant details within any legal agreement such as the carbon offset contributions are likely to change significantly.

9.7. Considering that the development involves new-build construction where limiting factors such as re-using existing build fabric are not the case, the above shortfalls are not acceptable in the absence of robust justification. This has been made clear to the appellants in submissions for over a year and this objection was shared by the GLA within their stage one review of the proposal. There will be certain constraints on design choices or presented by the concrete base of the reservoir should this be retained.

9.8. Given the technical nature of the assessment, a more in-depth analysis has been laid out below in Table 1, so as to aid discussions and for clarity.

Table 1. More in-depth discussion of the proposals versus policy.

<table>
<tr><th>Policy reference</th><th>Policy supporting text and targets</th><th>Summary of appellant's proposals</th><th>Witness comments</th></tr>
<tr>
<td>CC1
b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;</td>
<td>8.12
All major developments will also be expected to demonstrate how relevant London Plan targets for CO_2 reduction, including targets for renewable energy, have been met. Where it is demonstrated that the required London Plan reductions in carbon dioxide emissions cannot be met on site, the Council will require a financial contribution to an agreed borough wide programme to provide for local low carbon projects.</td>
<td>Appendix C - the latest proposals include the following total reductions against Building Regulations standards, for the residential and non-residential parts respectively. The reductions, percentages, shortfalls and offsets as presented below have been calculated by the Council in line with GLA guidance, using the appellant's declared
<table>
<tr><th>Residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Baseline</td><td>114.34</td><td>n/a</td><td>n/a</td></tr>
<tr><td>TOTAL</td><td>78.26</td><td>36.08</td><td>31.6%</td></tr>
<tr><td>Target</td><td>0.00</td><td>114.34</td><td>100.0%</td></tr>
<tr><td>Shortfall</td><td>n/a</td><td>78.26</td><td>68.4%</td></tr>
<tr><td>Offset payment</td><td>n/a</td><td colspan="2">£140,868</td></tr>
</table>
emissions figures (column one)::
<table>
<tr><th>Non-residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Baseline</td><td>195.3</td><td>n/a</td><td>n/a</td></tr>
<tr><td>TOTAL</td><td>147.79</td><td>47.51</td><td>24.3%</td></tr>
<tr><td>Target</td><td>126.95</td><td>68.36</td><td>35.0%</td></tr>
<tr><td>Shortfall</td><td>n/a</td><td>20.85</td><td>10.7%</td></tr>
</table>
</td>
<td>The reduction for the residential parts falls far short of the London Plan policy target of 100% (zero carbon homes) for major new-build.

Further, the residential sub-target of a minimum reduction of 35% through on-site measures falls short by 3.4 percentage points. Note that, unlike the reductions above 35%, there is no policy allowing a shortfall in the on-site sub-target to be offset via carbon-fund payments. See GLA Energy Planning Guidance (March 2016) "14.4 …In the case of the zero carbon target for homes, a minimum of 35% carbon savings are expected to be delivered on site. The remaining savings to reach zero carbon can be achieved either on site or via a cash in lieu contribution, although savings on site would be preferable."

The reduction for the commercial parts falls short of the London Plan policy target of 35% for major new-build schemes. The shortfall is 10.7 percentage points, nearly one-third shy of the minimum target.

In the Council's experience this represents an unusually low performance for a major new-build development. This is especially unusual given an application which could be argued to have relatively modest site and technical design</td>
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<table>
<tr><td>Offset payment</td><td>n/a</td><td>£37,521</td></tr>
</table>
</td>
<td>constraints, seen in the broader Camden and London urban context.</td>
</tr>
<tr>
<td>Policy CC1
Climate change mitigation
a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;</td>
<td>Be lean 8.9 Proposals should demonstrate how passive design measures including the development orientation, form, mass, and window sizes and positions have been taken into consideration to reduce energy demand, demonstrating that the minimum energy efficiency requirements required under building regulations will be met and where possible exceeded. This is in line with stage one of the energy hierarchy ‘Be lean’.</td>
<td>
<u>Be Lean stage CO_2 reductions</u>
Appendix C - the latest proposals include the following ‘Be Lean’ stage reductions against Building Regulations standards, for the residential and non-residential parts respectively. The reductions and percentages presented in columns two and three below have been calculated by the Council, in line with GLA guidance, using the appellant’s declared emissions figures (column one):
<table>
<tr><td>Residential parts</td><td>Total tCO_2</td><td colspan="2">Reduction at each stage (tCO_2 ; %)</td></tr>
<tr><td>Baseline</td><td>114.34</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Lean</td><td>111.63</td><td>2.71</td><td>2.4%</td></tr>
</table>
<table>
<tr><td>Non-residential parts</td><td>Total tCO_2</td><td colspan="2">Reduction at each stage (tCO_2 ; %)</td></tr>
<tr><td>Baseline</td><td>195.3</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Lean</td><td>189.19</td><td>6.11</td><td>3.1%</td></tr>
</table>
<u>U-values and air permeability</u>
Appendix C - The proposals include the following for residential parts:
</td>
<td>
<u>Be Lean stage CO_2 reductions</u>
In the context of the scheme failing to meet the overall CO2 targets, the proposed design standards are considered low for new buildings. By comparison, the draft London Plan (in consultation) would set targets of 10% (residential) and 15% (commercial) CO_2 reduction for the same stage of the hierarchy.

According to London Plan policy and supporting guidance, developer should prioritise reductions at the Be Lean stage in preference to those at later stages. By contrast here, the scheme’s reductions in the following stage of the hierarchy – Be Clean – are as high as 29.9% and 18.2%.

<u>U-values and air permeability</u>
Camden Planning Guidance CPG3 states that the following standards apply to both residential and commercial new-build schemes.
</td>
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		• External Walls - U = 0.18 W/m².K; • Exposed Floors - U = 0.13 W/m².K; • Exposed Roofs - U = 0.13 W/m².K; • Glazing - U = 1.4 W/m².K; G' value of 0.63; • Air Permeability - 4 m³/hr/m²@ 50 Pa. And the following for the commercial parts: • External Walls - U = 0.22 W/m².K; • Exposed Floors - U = 0.20 W/m².K; • Exposed Roofs - U = 0.16 W/m².K; • Glazing - U = 1.4 W/m².K; G' value of 0.43; • Air Permeability - 4 m³/hr/m²@ 50 Pa. <u>Passive measures and mechanical cooling</u> A number of passive efficiency measures are proposed. However, it includes mechanical cooling as per Appendix A: "Cooling is to be provided for the commercial and residential areas via a high efficiency chiller. Due to the potential vulnerability of the residential tenants, cooling is provided to the lounges and bedrooms within the residential areas, however the measures outlined in section 7.0 shall minimise the amount of cooling required."	**Standards** External wall 0.20 Roof 0.13 Floor 0.20 Windows 1.50 British Fenestration Rating Council band B or better Doors 1.00 (solid) 1.50 (glazed) Air tightness 3.00 (m3/h.m2 at 50 Pa) The following aspects of proposals do not meet the CPG3 minimum standards: -Exposed Roofs (commercial parts) - Air permeability (both residential and commercial parts) <u>Passive measures and mechanical cooling</u> The cooling demand will have increased the CO_2 emissions at the Be Lean stage, making it harder to achieve overall reductions. The applicant has not adequately demonstrated, according to London and Camden policy, the need for cooling of all bedrooms and lounges. Refer to the separate line below concerning cooling in Local Plan Policy CC2. They detail no mechanism that could limit use of active cooling to high-risk scenarios involving vulnerable occupants, thus reducing the possibility of routine or casual use of the systems for 'comfort cooling'.
Camden Local Plan Policy CC1 Climate change mitigation a. promote zero carbon development and	**Be clean** 8.10 The second stage of the energy hierarchy 'Be clean' should demonstrate how the development will supply energy efficiently through decentralised energy.	<u>Be Clean stage CO_2 reductions</u> Appendix C - the latest proposals include the following 'Be Clean' stage reductions against the 'Be Lean' stage, for the residential and non-residential parts respectively. The reductions and percentages	<u>Be Clean stage CO_2 reductions</u> The modelled Combined Heat & Power (CHP) contributes 95% (residential) and 75% (commercial) of the overall proposed CO2 reductions for each part. As the pivotal contribution, therefore, it is critical that the claims

<table>
<tr>
<td>require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;</td>
<td>Please refer to the section below on decentralised energy generation.</td>
<td>presented in columns two and three below have been calculated by the Council, in line with GLA guidance, using the appellant's declared emissions figures (column one):

<table>
<tr><th>Residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Be Lean</td><td>111.63</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Clean</td><td>78.26</td><td>33.37</td><td>29.9%</td></tr>
</table>

<table>
<tr><th>Non-residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Be Lean</td><td>189.19</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Clean</td><td>154.80</td><td>34.39</td><td>18.2%</td></tr>
</table>

<u>Gas-engine CHP proposals and evidence</u>
A site-wide heating distribution system, heated by gas boilers and four gas-fired Combined Heat & Power (CHP) engines, each rated 40 kilowatt (thermal) and 20 kilowatt (electricity) is proposed. A monthly heat demand profile analysis has been carried out.
No detailed CHP model was submitted to support the economic viability of CHP, the heating strategy and CO_2 savings.</td>
<td>made for CHP be substantiated in line with policy, guidance and best practice.

<u>Gas-engine CHP proposals and evidence</u>
The proposal to install four small gas-engine CHP units is deemed likely to produce inefficiency on energy and cost grounds. Gas-engine CHP efficiency is partly determined by engine size and is usually optimal when a single unit is sized with sufficient thermal storage to maximise heat supply. There is a risk that some of these CHP units may not be operated year-round, or may be mothballed or even removed for operational or economic reasons. In any case whether only partially operated, or run simultaneously, net CO_2 emissions are likely to be higher than necessary or higher than modelled.</td>
</tr>
</table>

			Further, the detailed claims in regard to CO_2 emissions savings from the gas-engine CHP are considered unsubstantiated, in the absence of any results from a detailed CHP model which takes into account detailed heat profiles (such as at least daily heat and power demand profile analysis). My original internal consultation observation was: "*Stated heat-load running hours are arguably borderline ref. viability and are apparently based on Part L software modelling only. Given scale and mix of [heat load], would tend to consider unsuitable/requiring further demonstration.*"
'Energy Planning: Greater London Authority guidance on preparing energy assessments (March 2016)'	11.30 …Small-medium residential developments (e.g. containing fewer than 500 apartments). At this scale it is generally not economic to install CHP in residential led, mixed use developments (and where CHP is installed it tends to have lower electrical efficiencies). … the administrative burden of managing CHP electricity sales at this small scale where energy service companies (ESCOs) are generally not active, and the low unit price available for small volumes of exported CHP electricity, means it is generally uneconomic for developers to pursue. This can lead to CHP	*Refer to the Be Clean description above*	The submissions were not sufficiently detailed to demonstrate the commercial viability and technical feasibility of the proposed gas-engine CHP, in relation to: - the disparity between the number of apartments in the proposed residential part of the scheme (82 extra-care units) versus the example scale given in the Guidance (350 units) - the external sale of the power (electricity) from the CHP or its usage on site - the long-term management and ownership; the proposed mechanism for recovering financial savings from heat and power supplied to the private units; - the inclusion, or otherwise, of thermal storage options in order to maintain the system's efficient operation.

	being installed but not operated. Note: There may be particular circumstances where CHP is justified in smaller mixed developments (e.g. 350 units) where there is a more substantial non-domestic building space. This provides an on-site electricity demand which can straightforwardly be supplied by CHP electricity, leading to improved economics of the scheme. In situations such as this, where CHP is proposed in small developments, evidence should be provided to demonstrate that the long-term ownership model and management arrangements for the system have been fully considered. For example, this may include evidence of communication with ESCOs or management companies, or evidence that a similar approach has been applied successfully on other schemes of a similar size and type. 11.16 Heat network solutions will usually benefit from the inclusion of thermal storage: this provides useful balancing if CHP is used		

'Energy Assessment Guidance: Greater London Authority guidance on preparing energy assessments as part of planning applications (October 2018)'	1.6 Carbon emission factors Grid electricity has significantly decarbonised since the last update of Part L in April 2014 and in July 2018 the Government published updated carbon emission factors (SAP 10) demonstrating this. …The impact of these new emission factors is significant in that technologies generating on-site electricity (such as gas-engine CHP and solar PV) will not achieve the carbon savings they have to date." Appendix 3 …Guidance and details required in relation to Combined Heat and Power (CHP) As the electricity grid decarbonises the carbon savings achieved from gas-engine CHP will decrease and with growing concerns of the impact of the technology on air quality, applicants will be expected to utilise other low carbon technologies that make use of local secondary heat sources using heat pumps.	*Refer to 'Be Clean' and 'Be Green' stage descriptions above and below*	New GLA guidance supporting the London Plan caveats and downgrades gas-engine CHP as a carbon-saving option for developers and puts specific requirements on referable schemes from January 2019. This guidance was published after the application, refusal and appeal dates. However, I consider it relevant to the Council's case since it lends further context to the appellant's predominant reliance on gas-engine CHP in reducing the scheme's CO_2 emissions.
Camden Local Plan Policy CC1 Climate change mitigation a. promote zero carbon	**Be green** 8.11 The Council will expect developments of five or more dwellings and/or more than 500 sqm of any gross internal floorspace to achieve a	Be Green stage CO_2 reductions Appendix C - the latest proposals include the following 'Be Green' stage reductions against the 'Be Clean' stage, for the residential and non-residential parts respectively:	Be Green stage CO_2 reductions In the context of the scheme failing to meet overall CO_2 policy targets, it also falls far short of the Camden and London target for reduction of CO_2 through renewable energy technologies. Residential and commercial parts being treated

<table>
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<td>development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;</td>
<td>20% reduction in carbon dioxide emissions from on-site renewable energy generation (which can include sources of site related decentralised renewable energy), unless it can be demonstrated that such provision is not feasible. This is in line with stage three of the energy hierarchy ‘Be green’. The 20% reduction should be calculated from the regulated CO_2 emissions of the development after all proposed energy efficiency measures and any CO_2 reduction from non-renewable decentralised energy (e.g. CHP) have been incorporated.</td>
<td>
<table>
<tr><th>Residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Be Clean</td><td>78.26</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Green</td><td>78.26</td><td>0</td><td>0.0%</td></tr>
</table>
<table>
<tr><th>Non-residential parts</th><th>Total tCO_2</th><th colspan="2">Reduction at each stage (tCO_2 ; %)</th></tr>
<tr><td>Be Clean</td><td>154.80</td><td>n/a</td><td>n/a</td></tr>
<tr><td>Be Green</td><td>150.09</td><td>4.79</td><td>3.1%</td></tr>
</table>
<u>Feasibility of renewable energy</u>
In Appendices A, B and C, the appellant discounts all renewable energy except a 13.4 kilowatt solar photovoltaics (PV) array. This is justified on the basis of variously site capacity, economics, and economic/technical compatibility with a CHP-driven heating system.

Potential for further solar PV is qualified as dependent on suitable roof area, as Submission B: “This shall be investigated further during detailed design. The amount of PV that was proposed was based on an assumption regarding the planned intention of green roofs, amenity space and plant space. The use of PV panels shall be maximised based on the amount of free roof space.”
</td>
<td>separately as per the London Plan supporting guidance, the former parts see a zero contribution from renewables while the latter parts gain a 3.1% reduction. These are considered unusually low for a contemporary new-build on a site with relatively modest technical constraints. There is no provision in policy to offset shortfalls against the distinct renewable energy target by means of carbon offset payments.

<u>Feasibility of renewable energy</u>
Given the significant shortfall, the assumptions made in their high-level desktop studies require further testing. I would expect this would best be achieved by means of more detailed feasibility investigations conducted by suitably qualified advisers to a high standard (such as equivalent to a BREEAM Low & Zero Carbon Technologies study).

I found their reasons for discounting further solar PV or ASHPs variously insufficient or unconvincing.
As a minimum I would expect more analysis of the following under-examined technologies:
- Solar photovoltaics – additional on-site provision, through more sustainably-designed buildings, investigating additional roofs, and exploring solutions not wholly dependent on roof spaces e.g. standalone structures;
</td>
</tr>
</table>

		Air source heat pumps (ASHP) have been ruled out on efficiency grounds and that they "would not have the ability to connect to a district heating network in the future as it will be an electrically driven system."	- ASHPs and GSHPs – I would prefer both individual and network connected air source and ground source heat pumps to have been looked at a potential alternative to CHP
Camden Local Plan Policy CC2 Adapting to climate change d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.	8.42 Active cooling (air conditioning) will only be permitted where dynamic thermal modelling demonstrates there is a clear need for it after all of the preferred measures are incorporated in line with the cooling hierarchy.	Appellant has proposed mechanical cooling for all areas: "in order to ensure a thermally comfortable environment for the potentially vulnerable and elderly residential tenants, mechanical cooling has been deemed a necessity." In Appendix C they provided results of an overheating study carried out to CIBSE TM52. The results show the sample units passing the overheating tests.	By reducing active cooling, the associated additional CO_2 emissions could be reduced, mitigating the shortfall in overall and CO_2 targets (see above). The submissions have not clearly stated whether the declared overheating study results are for the "with mechanical cooling" or "without" scenario. It is assumed to be the former, but it is possible that the sample units passed the overheating test prior to application of the mechanical cooling inputs. The appellant has not stated the parameters applied when they "deemed" mechanical cooling "a necessity". They have not stated their criteria and assumptions. They have not attempted to justify these with reference to policy, guidance or industry practice. The Council would expect the appellant to submit the key results and assumptions of the relevant overheating studies. These should have been carried out to the CIBSE methodologies TM52 (commercial parts, published October 2013) and TM59 (for residential parts, published June 2017) in line with good industry practice. This was recently confirmed in the GLA energy planning

			guidance (October 2018). Only TM52 was used, not the most appropriate method for homes. As implied by policy CC2 and London Plan supporting guidance, the dynamic modelling should be undertaken both with and without the mechanical cooling option for each unit modelled, and the results presented in order to demonstrate the unit by unit need (or otherwise) for mechanical cooling in specific units. We would expect only the specific units at greatest risk of overheating (in relation to the demonstrated needs of occupant vulnerability) to have active cooling proposed. It is surprising to me that all units sampled, regardless of exposure, orientation and glazing attributes, are declared to require mechanical cooling, despite the application of the passive cooling measures they have stated.

10. CONCLUSIONS

10.1. My view is that the comments above show how the proposals:

- do not meet the applicable local and regional policy targets,
- do not contain the necessary measures and standards in order to contribute adequately towards these targets, and
- have not sufficiently demonstrated that these targets, measures and standards are in fact unachievable in this scheme.

10.2. Reason for Refusal 10 cannot be secured by condition because:

4.2.1 the energy and CO_2 strategy is integral to the building design proposals. The changes necessary to help the scheme reach the required standards are likely to necessitate a substantial fundamental re-design of parts of the scheme. This would not be appropriate at the Approval of Details stage;

4.2.2 any revised and approved Energy and CO_2 strategy would be expected to generate a number of specific associated pre-implementation conditions and planning obligations. These would require securing at full planning decision stage, and hence this could not be achieved at an Approval of Details or pre-implementation stage.

4.3 Finally, Reason for Refusal 16 cannot be secured by condition because.

11. List of Appendices

APPENDIX A 'Persephone Gardens - Energy Statement' dated 18/10/17

APPENDIX B 'Persephone Gardens - Briefing Note' dated 21/12/17

APPENDIX C 'Gondar Gardens Briefing Note - Sustainability' dated 29/10/18

APPENDIX D 'Energy Memo: Stage I consultation Gondar Gardens' dated 05/12/2017