envision

Energy Statement

Frognal Rise House

ESL 25-0580

04 APRIL 2025

Revision History

Revision	Date
Rev C	04th April 2025

Author	Signature
William Newall Senior Consultant	

cChecked and authorised	Signature
Charlie Curry Associate Director	

London Office 0207 486 0680

Oxford Office 01865 598698

www.envisioneco.com

contact@envisioneco.com

Table of Contents

Executive Summary

ES 1.1 This Energy Statement has been prepared by Envision on behalf of the Applicant and is submitted in support of a planning application seeking consent for a number of alterations and extensions in order to modernise and revitalise the existing site which has been in gentle decline since at least the immediate post war era.

ES 1.2 Alterations relevant to this energy statement include a subservient basement extension to provide a wellness suite and in turn creating an internal link to the rebuilt garage space and improved interlinking Garden Hall. Extensions to the ground floor are proposed to reinstate a garden room in its original position, and to improve both horizontal and vertical circulation and connections to the gardens. The proposal aims create a new improved garden hall to allow better access between the lower ground floor garden, existing building and garden room.

ES 1.3 The primary purpose of this document is to explain how the scheme can meet with London Borough of Camden's energy policies. Envision has undertaken a review of the relevant policies and worked with the design team to determine and agree the relevance and approach that should be taken to fulfil each policy.

ES 1.4 The proposed development is a Grade II listed building within the Hampstead Archaeological Priority Area, and thus stringent heritage considerations must be adhered to.

ES 1.5 The proposed development is being taken forward to address energy policies of the Camden Local Plan (2017).

Summary of the Energy Strategy

ES 1.6 The applicant has sought to make the fullest contribution to minimising CO_2 emissions in line with the Energy Hierarchy and Camden Policy CC1. Envision has followed guidance as laid out in the GLA Guidance on Preparing Energy Assessments (2022) and paragraph 10.10 of Part L Approved Document, Volume 1.

ES 1.7 To minimise energy consumption by the new basement, garden hall and garden room the following design measures are proposed and will need to be incorporated into the detailed design:

- Building fabric construction U-values meeting, and in some cases exceeding, the new and replacement U-value requirements in Part L;
- Reduced Air Permeability, lower than standard Buildings Regulations;
- Reducing thermal bridging heat loss in new elements with an overall y-value of 0.08 (requires confirmation at detailed design);
- Reduction in solar gain through the use of lower g-values on all glazing in the development;
- High efficiency LED lighting to new areas;
- Heating, hot water and cooling will be provided to new areas by highly efficient air-source heat pumps;

ES 1.8 It is important to note this energy statement is assessing an extension in line with paragraph 10.10 of Part L Volume 1, which requires a comparison between the existing house with a notional extension against the existing house against with the proposed extension.

ES 1.9 The above measures will result in the development achieving an overall **14.85% reduction in CO_2 emissions** over the notional baseline. Thereby complying with Policy CC1 of the Camden Local Plan.

ES 1.10 The new elements represent 24% of the modelled floor area, with the remaining 76% remaining unchanged from the baseline model, this diminishes the savings compared to if the notional and proposed extensions were directly compared.

1 Introduction

1.1 Envision has been appointed by the Applicant produce an Energy Statement in support of a planning application seeking consent for a number of alterations and extensions in order to modernise and revitalise the existing site which has been in gentle decline since at least the immediate post war era.

1.2 Alterations relevant to this energy statement include a subservient basement extension to provide a wellness suite and in turn creating an internal link to the rebuilt garage space and improved interlinking gallery/ LGF Garden Hall. Extensions to the ground floor are proposed to reinstate a garden room in its original position, and to improve both horizontal and vertical circulation and connections to the gardens. The proposal aims create a new improved garden hall to allow better access between the lower ground floor garden, existing building and garden room.

Scope

1.3 The primary purpose of this statement is to explain how energy efficiency and low carbon energy measures have been incorporated into the proposed design, to ensure alignment with local planning policy and Approved Document L, Volume 1.

1.4 This statement is structured as follows:

- The remainder of this section provides a description of the site and the development proposals;
- Section 2 provides a description of the main energy policies relevant to the application;
- Section 3 encompasses the Energy Statement, which outlines the measures proposed to decrease energy demand and carbon dioxide emissions during operation, as well as an assessment of overheating;
- Section 4 provides a concluding summary.

Site Location and Existing Situation

1.5 The Site Frognal Rise House is a Grade II listed building within the Hampstead Archaeological Priority Area. Frognal Rise House occupies a site on the corner of Lower Terrace and Frognal Rise, on rising ground above the centre of Hampstead. Hampstead Heath is 200m or so to the north. Frognal Rise is 'one of Hampstead's oldest roads' (Conservation Area Statement, p.38) leading from Hampstead and Frognal (at one time a separate settlement) to Child's Hill via the West Heath.

1.6 The house stands at the north-west corner of a triangle of land bounded by Lower Terrace, Windmill Hill and Frognal Rise, which formed its grounds for a century or so up until the late 1930s. At the southern tip of this area are no.s 2–4 Frognal Rise, which were the stables and coachman's cottage to Frognal Rise House (although both are much-altered). To the east of Frognal Rise House are two houses – 'Kyk-over-al' (14 Lower Terrace) and 'Windrush' (21 Windmill Hill) – which were built in its former garden in the late 1930s. To the south, occupying the central part of the historic grounds of Frognal Rise, is a large modernist house, 22 Windmill Hill, of 1968-71. In places, remnants of the old boundary walls around the property survive.

1.7 The area is characterised by an informal street pattern of winding lanes and small open green spaces, which developed through a series of enclosures of land on the heath. The conservation area describes development in Lower Terrace and Upper Terrace as a 'relaxed sprawl of houses in big gardens

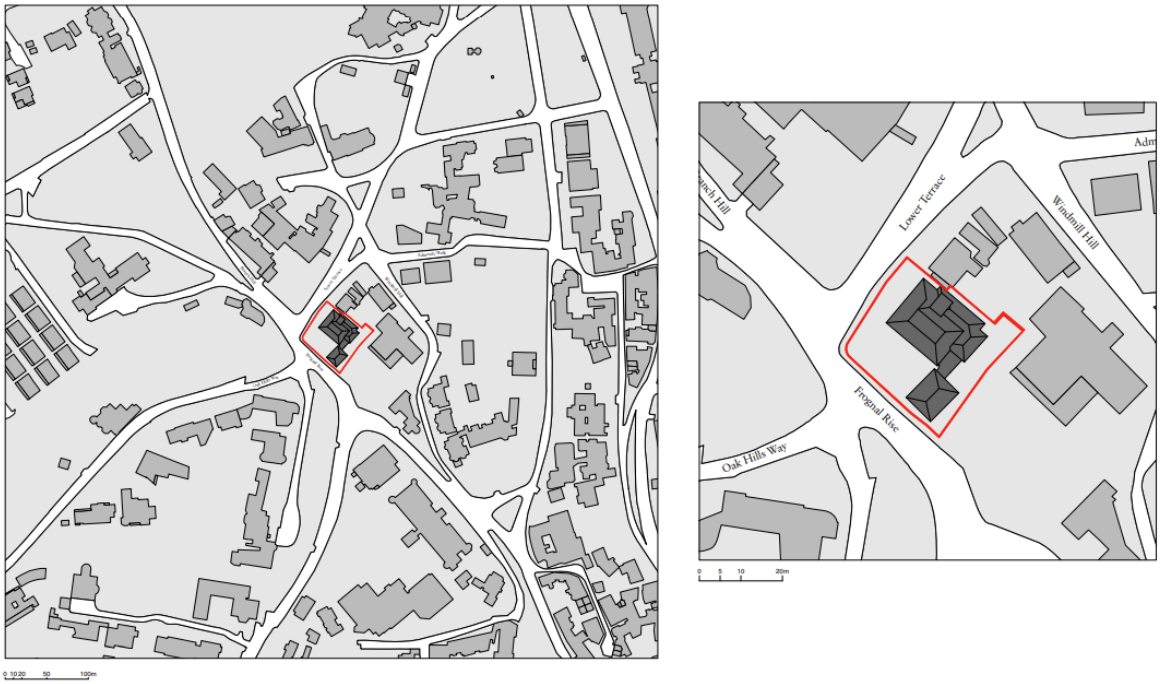

Figure 1-1 Site location plan

The Proposed Development

1.8 This application is proposing a number of alterations and extensions in order to modernise and revitalise the existing site which has been in gentle decline since at least the immediate post war era. These alterations have been set out below:

1.9 **Basement & Lower Ground Floor:** Additions include proposing a subservient basement extension to provide a wellness suite and in turn creating an internal link to the rebuilt garage space and improved interlinking gallery/LGF Garden Hall.

1.10 **Ground Floor:** Extensions to the ground floor are proposed to reinstate a garden room in its original position, and to improve both horizontal and vertical circulation and connections to the gardens. The proposal aims create a new improved garden hall to allow better access between the lower ground floor garden, existing building and garden room.

2 Policy Context

2.1 Many definitions of sustainable development exist, although the common objective for all is the integration of economic, social and environmental issues to ensure a better quality of life for people today, without compromising the needs of future generations. A key mechanism for delivering the principles of sustainable development lies within the UK planning system, which is implemented through national guidance and local planning policies. A review of all the relevant policy, regulatory and energy guidance documents was undertaken to gain an understanding of the guiding requirements for sustainability.

National Planning Policy Framework

2.2 The National Planning Policy Framework was updated in December 2024 and sets out the government's planning policies for England and how these are expected to be applied. The NPPF sets out a presumption in favour of sustainable development, and the need to support economic growth through the planning system. Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

2.3 The NPPF notes that the planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: 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.

2.4 Furthermore, the NPPF sets out how local authority development plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures

2.5 Planning plays a key role in helping shape places to achieve radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic,

social and environmental dimensions of sustainable development. The NPPF does not include detailed measures on sustainable design codes and standards to apply, although expects that when setting any local requirement for a building's sustainability, local planning authorities should do so in a way consistent with the national technical standards.

2.6 Recent changes have essentially rendered the Deregulation Act 2015 and the Written Ministerial Statement (WMS) ineffective, both of which previously restricted local planning authorities (LPAs) in their ability to establish independent energy efficiency standards. Additionally, the government has affirmed that there will be no amendments to the Planning and Energy Act 2008. Consequently, local councils now possess the authority to define and enforce their energy efficiency standards without violating government policy. Recent Planning Inspector reports, such as those for the Bath & North East Somerset Council in December 2022 and Cornwall Council in January 2023, confirm the diminishing relevance of the WMS dated March 25, 2015, suggesting that it has been superseded by subsequent developments.

London Borough of Camden Planning Policy

2.7 The development site is located within the London Borough of Camden and is subject to the Policy Requirements within LB Camden's Local Plan (2017).

2.8 Key policies within Camden's Local Plan relevant to this energy statement include:

Policy CC1 (Energy and Carbon Reduction)

2.9 The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

- Promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy.

3 Energy Statement

3.1 Camden Policy CC1 requires all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. This includes promoting zero carbon development and requiring all development to reduce carbon dioxide emissions through the steps in the energy hierarchy:

a. Use less energy and manage demand during operation;
b. Use Energy Efficiently: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly;
c. Use Renewable Energy: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.

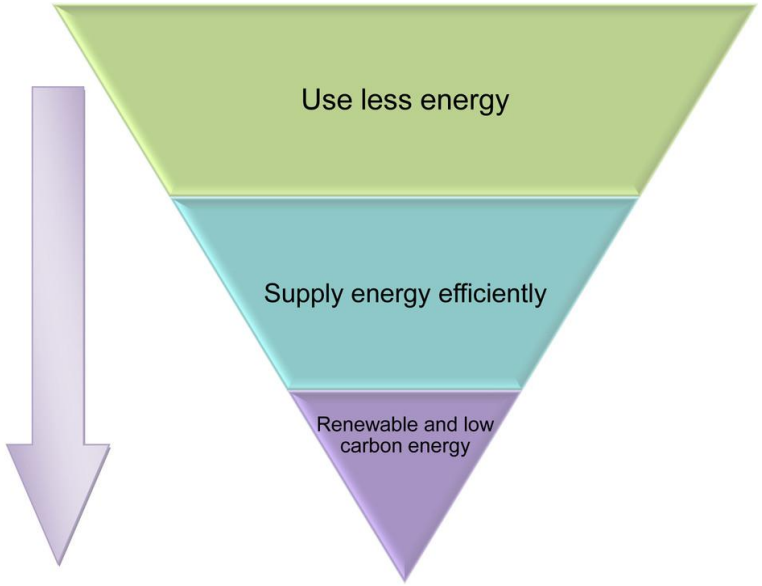

Figure 3-1 – Energy Hierarchy

Modelling Methodology

3.2 In accordance with NCM guidance, the appropriate methodology for calculating the energy performance of the domestic development is "The Government's Standard Assessment Procedure for Energy Rating of Dwellings". This procedure was undertaken using Elmhurst SAP10 Software which is a Department of Communities and Local Government (DCLG) approved methodology and software for undertaking SAP assessments.

3.3 Envision has produced a Part L-compliant SAP model in order to determine the energy and CO2 emissions for the proposed development. These have been calculated using SAP 10 emission factors, with detailed calculations provided in the Appendix.

3.4 In line with Part L Volume 1, paragraph 10.10 has been followed to compare the proposed extension to a notional baseline. In line with Part L guidance the existing dwelling and proposed extension have been compared to the existing dwelling and a notional extension.

3.5 The existing elements have been modelled in line with table 12 of the GLA's energy assessment guidance, these elements were unchanged between the notional, Be Lean and Be Green models. Thereby demonstrating the energy savings of the proposed extensions.

Establishing the Baseline

3.6 The total emissions savings calculated for the proposed development are expressed against a Notional Building Target Emission Rate, which has been calculated in line with the methodology described above. This is the baseline against which the measures implemented must show an improvement.

3.7 The inputs for the Notional Building have been derived from guidance as laid out in Appendix 3 of the *GLA Guidance on Preparing Energy Assessments* as well as table 1.1 *of Part L Volume 1*, which details the minimum performance levels for thermal elements and building services to be used in a Notional Building as follows:

Table 3.1 - Appendix 3 Notional Specification

Element	Unit	Existing Dwelling (in line with table 12 of the GLA's energy assessment guidance)	New-elements (in line with Part L's notional specification for new builds)
External Wall	W/m²K	0.55	0.18
Roof	W/m²K	0.16	0.11
Floor	W/m²K	0.25	0.13
Glazing	W/m²K	1.6	1.6
Vision Element	g-value	0.63 (Frame factor 0.7)	0.63 (Frame factor 0.7)
Air Permeability	(m³ /h.m² @ 50 Pa)	25	5
Thermal Bridging	W/m²K	Default	Default
HVAC System	Type	Gas Boiler (as per existing building)	Gas Boiler (notional building system type for new build)
Heating & Hot Water	%	Gas Boiler (as per existing building)	Gas Boiler (notional building system type for new build)
Lighting	Lm/watt	75	80

3.8 Using the inputs as detailed above the following notional building baseline has been calculated:

Table 3.2 - Baseline Emissions

Unit	Floor Area (m^2)	TER	Total Target CO_2 ($tn.CO_2.yr$)	TPER	Target Primary Energy (kWh.yr)
FRH	793.92	24.37	19.35	132.51	105,202

3.9 The figure of **19.35tn.CO2.yr** and **105,202 kWh.yr** the targets that must be reached and improved upon by the proposals in this Energy Assessment in order to comply with Building Regulations Volume 1 2021 and Camden Policy CC1.

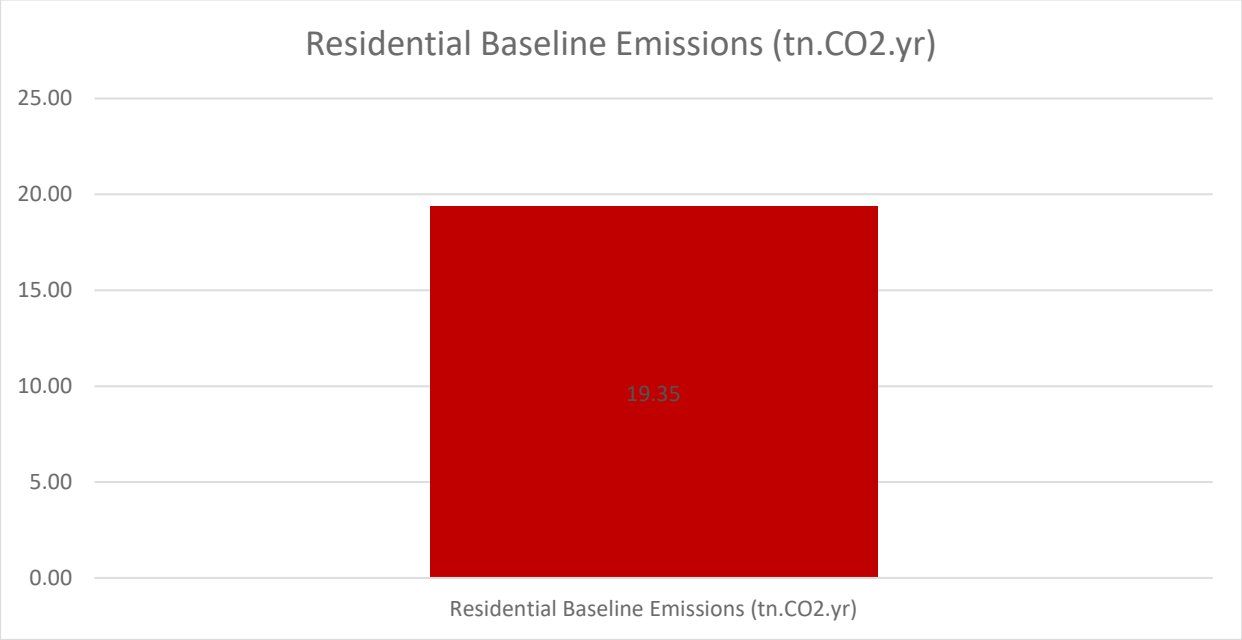

Figure 3-2 - Baseline Emissions

Be Lean: Fabric Efficiency

3.10 A 'fabric first' approach has been adopted to reduce the carbon footprint of the development. This is achieved through buildings using less energy by improving u-values, air-tightness and lighting efficiency amongst others. This is the first step to consider in reducing a building's carbon emissions before the efficient delivery of power, heat or renewables are considered by a design-team.

3.11 Whilst fabric performance has been pushed as far as practicably possible, heritage considerations also played a role in determining the fabric performance. Most notably, due to heritage restrictions, thermally efficient single glazing has been proposed. Whilst this performs better than standard single glazing, it cannot achieve as low u-values as double or triple glazed windows, therefore limits the fabric performance of glazed elements.

Fabric Efficiency

3.12 U-Values, are used to measure how effective elements of a building's fabric are as insulators. That is, how effective they are at preventing heat from transmitting between the inside and the outside of a building. Very broadly, the better (i.e. lower) the U-value of a buildings fabric, the less energy is required to maintain comfortable conditions inside the building. U-values in the existing house have remained unchanged, enabling a comparison between a notional extension and the proposed extensions. The following U-Values are proposed for the new-build elements, all of which are in line with Part L requirements;

Table 3.3 - Proposed U-Values

Elements	C3 (New-Build)	Comment
External Wall U-Value	0.2	-
Ground Floor U-Value	0.18	-
Roof U-Value	0.15	-
External Glazing U-Value	1.6	Thermally treated single glazed windows, due to heritage restrictions G-value 0.4 (subject to glass selection)
External Doors U-Value	1.6	n/a
Air Permeability	5	-
Therma Bridging Y-Value	0.08	-

Lighting Strategy

Internal light fittings in the new elements will be specified as LED, low-energy with local manual switching and if appropriate, occupancy sensing. The light fittings have been specified to have a 110 lm/W efficiency.

Ventilation Strategy

3.13 The development will be naturally ventilated, with extract fans serving bathroom and utility areas.

Space & Water Heating

3.14 In line with the 'GLA guidance on preparing Energy Assessments', the heating element for each system assumed at 'Be Lean' stage is as per the notional heating system: *'applicants should use the notional building system type and performance values specified in the Part L 2021 baseline.'*

Be Lean Stage Results

3.15 The following tables represent the Be-Lean results against the notional baseline's emissions.

Table 3.4 - Be-Lean Emissions

Unit	Floor Area (m^2)	DER	Total CO_2 ($tn.CO_2.yr$)	DPER	Dwelling Primary Energy (kWh.yr)
FRH	793.92	25.5	20.24	138.54	109,990
Difference over baseline			- 0.88		- 4,787
% Difference			- **4.64%**		- **4.55%**

3.16 As detailed above, the measures as taken at 'Be Lean' stage would not result in a reduction in regulated CO_2 emissions over the notional existing building baseline. Heritage restrictions have severely impacted savings at the Grade II listed building.

3.17 The council have clearly expressed the importance of retaining heritage in this application. Therefore, the new fabric has been designed to be in keeping with existing 19th century house. A high glazing percentage has been designed incorporated into the design, with thermally treated single glazing being proposed which significantly hinders savings at the Be Lean stage.

3.18 At this stage low g-values have been prudently selected. The final g-value is subject to glass selection, glass will be specified to maintain a heritage-appropriate appearance while maximising thermal efficiency. Increasing the g-value would improve the Be Lean results.

Be Clean: Use Energy Efficiently

3.19 Aligned with the energy hierarchy, the next stage of the hierarchy (Be Clean Stage) requires that consideration is given to the use of energy-efficient equipment, heat networks and community heating. As this development is a single residential dwelling, district heating networks are not viable. As a result, no savings are made at the Be Clean stage. Notwithstanding this, the scheme puts forward an air source heat pump solution. As this is considered a renewable energy system, the savings of this are expressed in the next section.

Be Green: Apply Renewable Energy

3.20 Following a review of the scheme the renewable system deemed to be the most suitable for the development is the use of an Air-Source Heat Pump system providing renewable heating and hot water to the new basement, garden hall and garden room.

Low-Carbon/Renewable Technology System – Air-Source Heat Pumps

3.21 The low-carbon/renewable energy proposed for development is an air-source heat pump (ASHP) system providing space heating and hot water. ASHPs with the following specifications have been assumed to supply heating and hot water:

- Mitsubishi Electric EcoDan 8.5kW PUZ-W85VHA
- Programmer, room thermostat and TRVs;

3.22 The hot water will be provided by the ASHP system. In the Elmhurst SAP software, only one hot water system can be entered. The hot water system has been kept as per the existing building (gas boiler). As the new elements represent 24% of the building's floor area, applying the ASHP hot water system to the whole building would provide unjustified savings.

3.23 Whilst this approach has been chosen to not over exaggerate savings from the ASHP hot water system, this will hinder the carbon savings at the be green stage, as the energy model assumes a gas boiler hot water system to the new-elements.

CO2 Reductions associated with Renewable Energy

3.24 The following tables and graphs represent the Be-Green improvements for the development over the Baseline emissions.

Table 3.5 – Be Green savings

Unit	Floor Area (m^2)	DER	Total CO_2 ($tn.CO_2.yr$)	DPER	Dwelling Primary Energy (kWh.yr)
FRH	793.92	20.75	16.47	118.15	93,801
Difference over baseline			2.9		11,401
% Difference			**14.85%**		**10.84%**

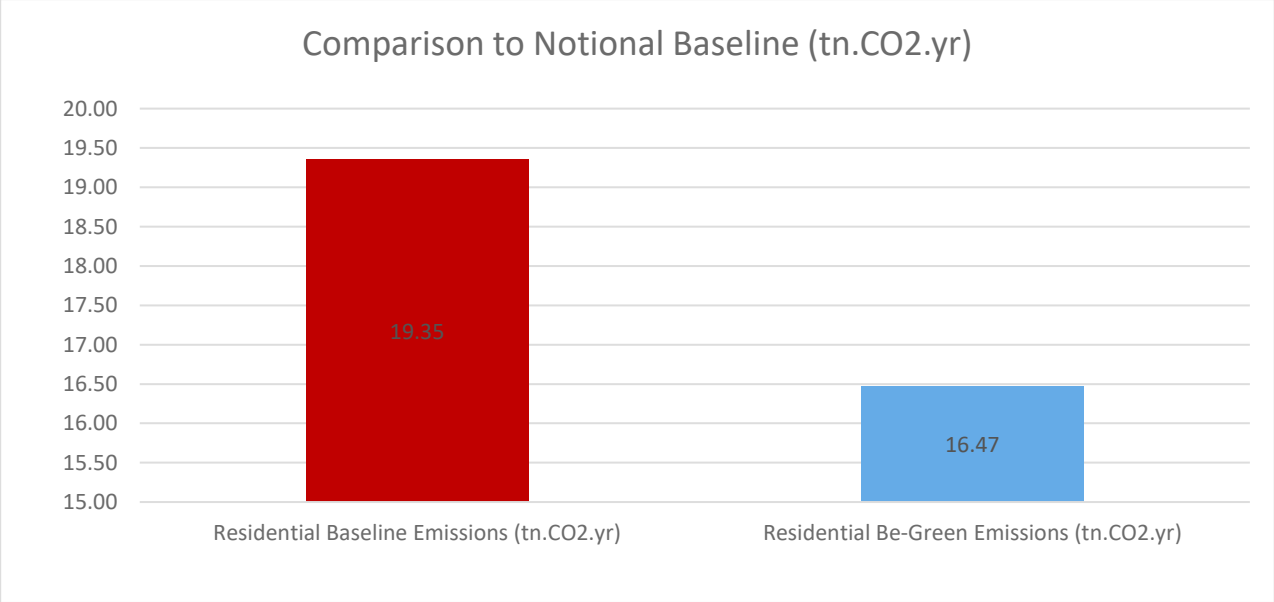

Figure 3-3 – Overall comparison to Notional Baseline

3.25 It should be noted that, as the new elements only represent 24% of the modelled floor area results, with the remaining 76% staying unchanged from the baseline model, this diminishes the savings compared to if the notional and proposed extensions were directly compared.

3.26 Furthermore, due to limitations in the Elmhurst SAP software the ASHP hot water system could not be modelled to the new extension elements. This would provide additional savings to those shown in table 3.5.

3.27 Despite these limitations in the modelling methodology, the proposed results still demonstrate an **14.85% reduction in CO_2 emissions**, thereby complying with the LB Camden's Policy CC1 requirements.

4 Conclusion

4.1 This Energy Statement has been prepared by Envision on behalf of the Applicant and is submitted in support of a full planning application seeking consent for a number of alterations and extensions in order to modernise and revitalise the existing site which has been in gentle decline since at least the immediate post war era.

4.2 Alterations relevant to this energy statement include a subservient basement extension to provide a wellness suite and in turn creating an internal link to the rebuilt garage space and improved interlinking gallery/ LGF Garden Hall. Extensions to the ground floor are proposed to reinstate a garden room in its original position, and to improve both horizontal and vertical circulation and connections to the gardens. The proposal aims create a new improved garden hall to allow better access between the lower ground floor garden, existing building and garden room.

4.3 The Energy Statement presented in Section 3 of this report explains the approach which has been taken to minimise carbon emissions in line with the requirements in Policy CC1 of Camden's Local Plan. The scheme will incorporate a range of energy-saving measures including the introduction of Air Source Heat Pumps, and energy efficient fabric, whilst balancing the stringent heritage considerations of this development.

4.4 It is important to note that as this energy statement is assessing an extension in line with paragraph 10.10 of Part L Volume 1, which requires a comparison between the existing house plus a notional extension against the existing house against the proposed extension.

4.5 The new elements represent 24% of the modelled floor area, with the remaining 76% unchanged from the baseline model, this diminishes the savings compared to if the notional and proposed extensions were directly compared.

4.6 The proposed results still demonstrate an **14.85% reduction in CO_2 emissions** over the notional baseline, thereby complying with the LB Camden's Policy CC1 requirements.

4.7 There is potential for further sustainability enhancements in the proposed development. For example via refurbishment of the existing dwelling's building fabric, and extending the ASHP space heating and hot water system to serve the whole house.