MARCH 2022

Energy and Sustainability Statement

3 – 6 Spring Place, Kentish Town

Iceni Projects Limited on behalf of

SEGRO plc

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ICENI PROJECTS LIMITED
ON BEHALF OF SEGRO PLC

Energy and Sustainability Statement
3 – 6 SPRING PLACE, KENTISH TOWN

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1. EXECUTIVE SUMMARY

1.1 Iceni Projects Ltd was commissioned by SEGRO plc to produce an Energy and Sustainability Statement to support the planning application for the proposed refurbishment of 3 – 6 Spring Place, Kentish Town.

1.2 This application proposes internal and external refurbishment works at the existing property, with the proposed works to include improvements to the appearance and thermal performance of the property, and to create a high-quality modern employment unit.

1.3 Consideration has been given to the London Borough of Camden Local Plan in the formulation of this strategy, aiming to minimise the environmental impact of the proposed development during construction and operation, and ensure the development is constructed to rigorous sustainability standards.

1.4 The proposed strategy has been based around the objectives of the London Borough of Camden Local Plan. In summary, based on this strategy, the proposed development;

- will aim to achieve BREEAM certification, targeting a rating of 'Excellent';
- makes efficient use of land by reusing an existing building;
- will incorporate measures to improve site biodiversity, including the provision of an external and internal living wall;
- will include measures to reduce potable water consumption, including rainwater harvesting;
- will minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
- will minimise energy demand through the specification of low U-values to reduce heat loss;
- will employ air source heat pump technology to serve the space heating demand of the internal spaces;
- will utilise rooftop photovoltaic panels to generate renewable electricity on site; and
- will follow the Energy Hierarchy methodology to achieve an 88% reduction in carbon dioxide emissions when compared with the PartL2A:2013 baseline.

1.5 This demonstrates that the proposed refurbishment works will provide a building with a level of carbon dioxide emissions significantly reduced over that required for a new building, demonstrating

the applicant's commitment to sustainable design principles and proactively responding to the climate emergency.

1.6 Overall, the proposals constitute sustainable development in accordance with national and local policy requirements and will provide a development that seeks to promote these principles in operation.

2. INTRODUCTION

2.1 Iceni Projects Ltd was commissioned by SEGRO plc to produce an Energy and Sustainability Statement to support the planning application for the proposed refurbishment of 3 – 6 Spring Place, Kentish Town.

Report Objective

2.2 This document details the sustainable design and construction measures adopted by the proposed development and gives an overview of the design proposals that will ensure the development operates in a sustainable manner over the lifespan of the scheme. The Energy and Sustainability Statement report headlines will provide a framework for the project team to operate consistently within the sustainability guidelines set out by the London Borough of Camden.

2.3 The report is structured to meet these guidelines as follows:

- Section 3 discusses the planning context and policies which are relevant to sustainability and energy;
- Section 4 discusses the development response to the policy drivers for sustainability;
- Section 5 discusses the development response to the policy drivers for energy; and
- Section 6 summarises the development's design response.

Site and Surroundings

2.4 The proposed development site is 0.2ha in size, and is located on the south west side of Spring Place. The site is bisected by an active railway line running north to south. The Veolia depot is located to the east of the proposed site, whilst Autograph Sound Ltd (Visual Audio Equipment Hire) neighbours the site to the south. On the west side of the railway line is office accommodation and residential dwellings fronting onto Grafton Road.

2.5 The site itself comprises an industrial building within Class B2 (general industrial), and is currently vacant. The building has a façade which extends up to two storeys in height along Spring Place. The site also has access onto Grafton Road to the west via a single storey entrance point extending beyond the railway.

The Proposed Development

2.6 The application for development seeks permission for internal and external refurbishment works at the property known as 3 – 6 Spring Place, Kentish Town, London, NW5 3BA.

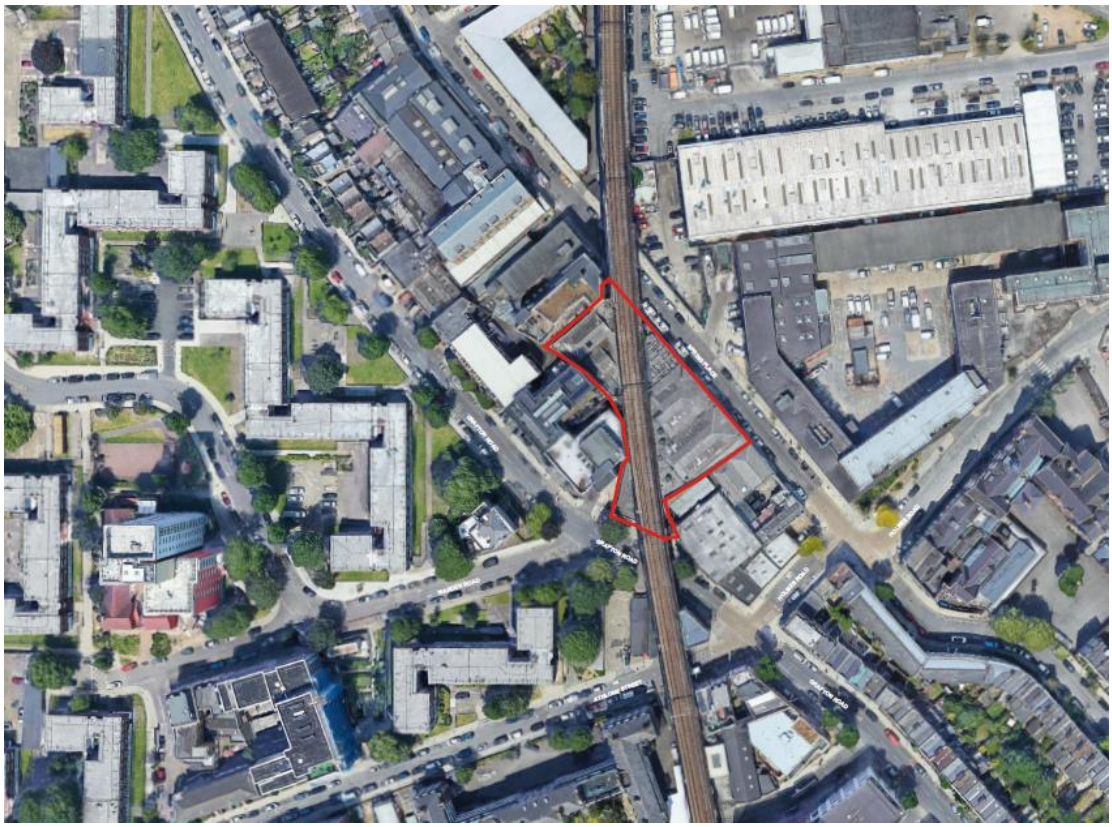
2.7 The description of the proposed development is as follows:

"Refurbishment of existing building including replacement roof; installation of PV panels; widening of loading doors; installation of wood cladding to parts of Grafton Road and Spring Place elevation; and installation of living wall and alteration to entrance on Grafton Road elevation."

2.8 As part of the refurbishment works, numerous measures will be undertaken to improve the energy efficiency of the existing building, including improved building fabric insulation and the installation of rooftop photovoltaic panels.

2.9 The image below shows the approximate location of the scheme, whilst a detailed site plan is provided in Appendix A1.

Figure 2.1 Approximate site location



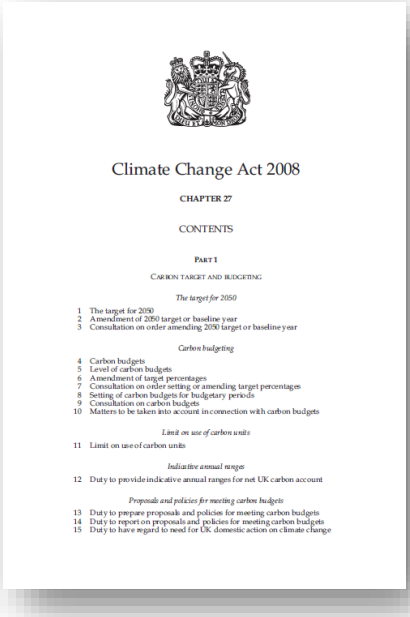
3. PLANNING AND REGULATORY CONTEXT

3.1 Built environment sustainability is incorporated within policy and regulation at a national and local level, as set out below.

National

Climate Change Act 2008

3.2 On 26th November 2008, the UK Government published the Climate Change Act 2008; the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to increase greenhouse gas emission reductions through action in the UK and abroad from the 60% target set out in the Energy White Paper, to 80% by 2050.



Climate Change Act 2008

CHAPTER 27

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PART 1

CARBON TARGET AND BUDGETING

The target for 2050

1 The target for 2050
2 Amendment of 2050 target or baseline year
3 Consultation on order amending 2050 target or baseline year

Carbon budgeting

4 Carbon budgets
5 Level of carbon budgets
6 Amendment of target percentages
7 Consultation on order setting or amending target percentages
8 Setting of carbon budgets for budgetary periods
9 Consultation on carbon budgets
10 Matters to be taken into account in connection with carbon budgets

Limit on use of carbon units

11 Limit on use of carbon units

Indicative annual ranges

12 Duty to provide indicative annual ranges for net UK carbon account

Proposals and policies for meeting carbon budgets

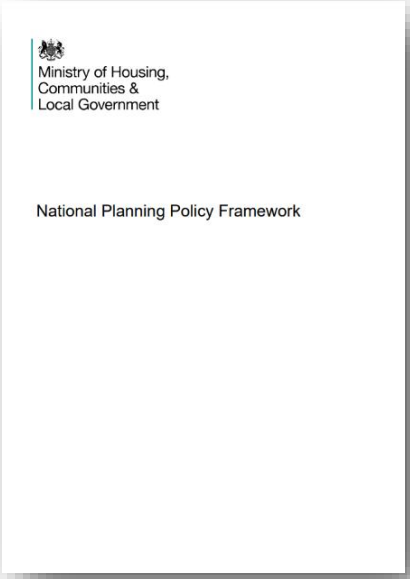
13 Duty to prepare proposals and policies for meeting carbon budgets
14 Duty to report on proposals and policies for meeting carbon budgets
15 Duty to have regard to need for UK domestic action on climate change

3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.

3.4 Following a commitment in June 2019, the Climate Change Act has been amended to target net zero carbon emissions by 2050.

National Planning Policy Framework

3.5 The Ministry of Housing, Communities & Local Government determines national policies on different aspects of planning and the rules that govern the operation of the system. Accordingly, the National Planning Policy Framework (NPPF), which came into force in March 2012 and was updated in February 2019, aims to strengthen local decision making. Additional updates have since been made through the latter half of 2020 and in January and July 2021 to reflect changes related to use classes, permitted development rights, the calculation of housing need, and requirements to achieve beauty alongside sustainability.



Ministry of Housing, Communities & Local Government

National Planning Policy Framework

3.6 Paragraphs 10 and 11 of the NPPF confirms that the heart of this document is a "*presumption in favour of sustainable development*", and that development proposals that accord with an up-to-date development plan should be approved without delay.

3.7 Paragraph 7 states that the purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

3.8 Achieving sustainable development means that the planning system has three overarching activities, 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:

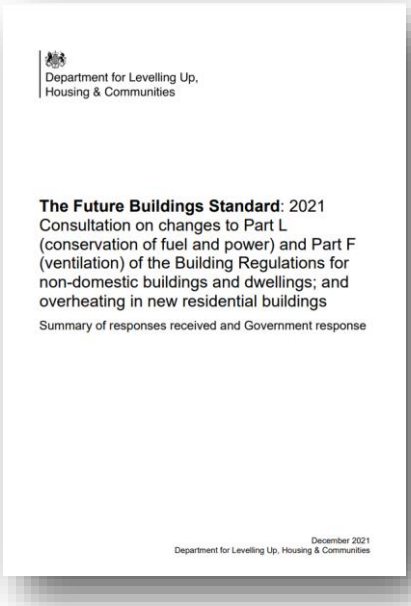
- **An Economic Role –** ensuring the provision of land and infrastructure needed to help build a *strong, responsive and competitive economy.*

- **A Social Role –** supplying the required amount of housing while at the same time ensuring and building *strong, vibrant and healthy communities.* Ensuring that the built environment is sited around accessible local services which help support a community's *health, social and cultural well-being.*

- **An Environmental Role –** ensuring development contributes to the protection and enhancement of the *natural, built and historic environment* through the improvement of biodiversity, minimising the use of natural resources and production of pollution / waste, and guaranteeing sufficient adaptation to climate change.

Future Buildings Standard

3.9 On 19th January 2021, the government announced the future introduction of the Future Buildings Standard. The Standard will deliver new non-domestic buildings that are zero-carbon ready from 2025 onward, which use low-carbon heat, and which have the best fabric standards possible. As the electricity grid continues to decarbonise, homes built to the Standard will become net zero carbon over time, with no need for further energy efficiency retrofit work as they will rely on fossil fuels for heating and hot water.


Department for Levelling Up, Housing & Communities

The Future Buildings Standard: 2021 Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for non-domestic buildings and dwellings; and overheating in new residential buildings

Summary of responses received and Government response

December 2021
Department for Levelling Up, Housing & Communities

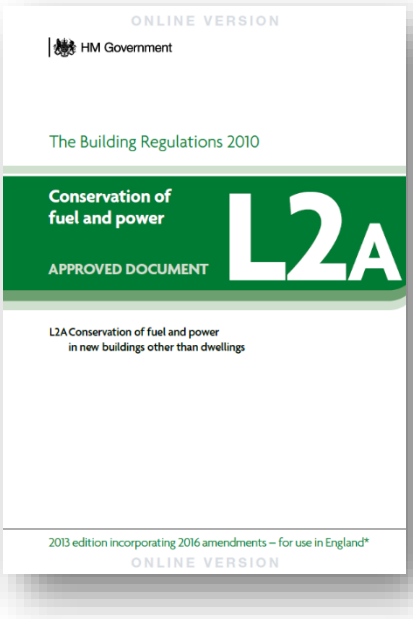
3.10 This Standard is expected to build on the Prime Minister's Clean Growth Grand Challenge mission, which aims to at least halve the energy usage of new buildings by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

Building Regulations Part L

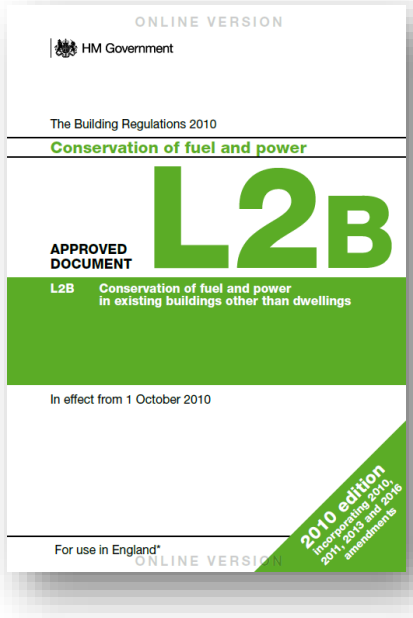
3.11 Part L of the Building Regulations relates to the conservation of fuel and power, and applies to both new and existing buildings. The current edition covers the energy efficiency requirements of the building regulations as set out in Part L of Schedule 1 to the Building Regulations. Technical guidance is contained in four Part L Approved Documents, and two Building Services Compliance Guides.

3.12 The documents of relevance to this scheme include:

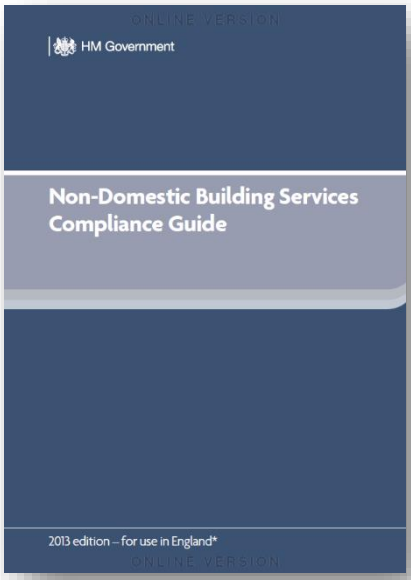
- **Approved Document L2A:2013.** This provides the methodology for new build, non-domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from other equipment (computers, for example), are considered to be unregulated emissions, and are excluded from the analysis.



- **Approved Document L2B:2013.** Issued by the Secretary of State, The Approved Document L2B: Conservation of fuel and power in existing buildings other than dwellings, came into effect on 1st October 2010. The document provides practical guidance on ways to comply with the energy efficiency requirements of the Building Regulations 2010. Part L2B outlines the requirements for both the renovation or replacement of thermal elements (Regulation 23) and the consequential improvements to energy performance (Regulation 28). Section 4 provides guidance relating to building work for the material change of use and change of energy status, work on controlled fittings and services, and the commissioning of fixed building services. Section 5 provides guidance on both new and retained thermal elements.



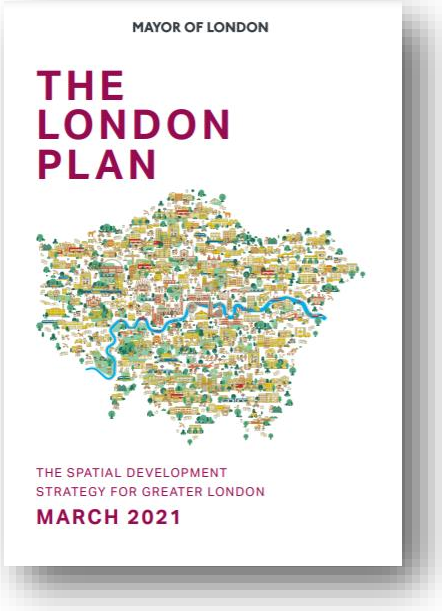
- **Non-Domestic Building Services Compliance Guide.** This provides minimum building services efficiencies for non-domestic buildings.



Regional

3.13 Within Greater London, key sustainable development principles for economic, environmental and social improvement are set out below:

The London Plan (March 2021)



3.14 The London Plan is the overall strategic plan for London and includes policies for sustainable development and energy within Chapter 9 (London's response to climate change). Key policies of relevance to this scheme are as follows:

- **Policy SI2 Minimising Greenhouse Gas Emissions.** This states that major development proposals should be net zero-carbon, by reducing greenhouse gas emissions in operation and minimising both annual and park energy demand in accordance with the following energy hierarchy:

    1. Be lean: use less energy
    2. Be clean: supply energy efficiently
    3. Be green: use renewable energy
    4. Be seen: monitor, verify and report on energy performance

- **Policy SI3 Energy Infrastructure.** This policy recognises that combined heat and power installations can have negative effects on London's air quality and shifts the focus of decentralised energy networks to the use of waste or secondary heat sources, where available. The policy also recognises that, compared to increasingly decarbonised electricity generation, gas-fired heat will become comparatively more carbon intensive as the electricity grid is further decarbonised.

- **Policy SI4 Managing Heat Risk.** This policy sets states that development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

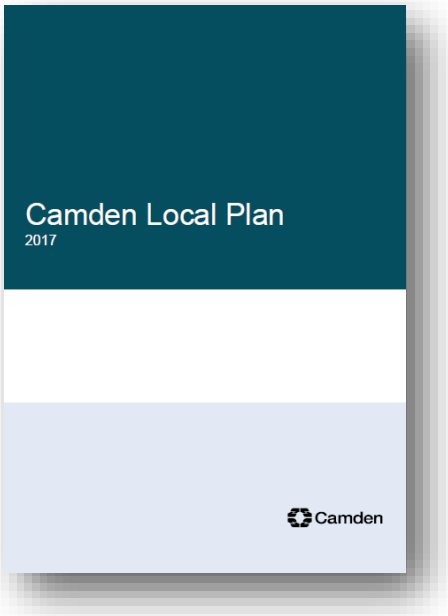
- **Policy SI5 Water Infrastructure.** This states that major development proposals should achieve at least the BREEAM excellent standard for the 'WAT 01' water category or equivalent (commercial development).

- **Policy SI7 Reducing Waster and Supporting the Circular Economy.** This states that resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved, in part, through designing developments with adequate, flexible and easily accessible storage space and collection systems.

Local

3.15 In determining the local context, the Camden Local Plan (July 2017) sets out policy relevant to sustainable development.

Camden Local Plan (July 2017)



3.16 The Camden Local Plan is the key strategic document in Camden's development plan. It sets out the vision for shaping the future of the Borough and contains policies for guiding planning decisions. Policies of relevance to this project in the context of sustainability are as follows:

3.17 **Policy D1: Design Principles** states that in order to secure high quality design, the Council will require that development:

- Respects local context and character;
- Is sustainable in design and construction, incorporating best practice in resource management and climate change mitigation and resilience;
- Is of sustainable and durable construction and adaptable to different activities and land uses;
- Comprises details and materials that are of high quality and complement the local character;
- Is inclusive and accessible to all; and
- Carefully integrates building services equipment.

3.18 **Policy CC1 (Climate change mitigation)** states that 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. To do this, the Council will:

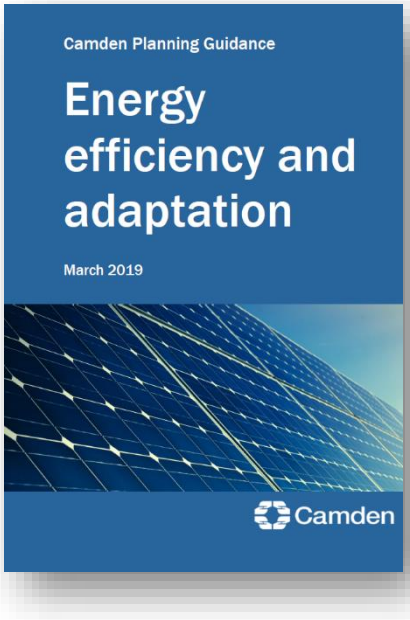
- Promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;
- Requires all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;

- Ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;
- Support and encourage sensitive energy efficiency improvements to existing buildings; and
- Expect all developments to optimise resource efficiency.

3.19 **Policy CC2 (Adapting to climate change)** states that the Council will require development to be resilient to climate change. All development should adopt appropriate climate change and adaptation measures. The Council will promote and measure sustainable design and construction by:

- Ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation; and
- Expecting non-domestic developments of 500sqm of floorspace or above to achieve 'Excellent' in BREEAM assessments and encouraging zero carbon in new development from 2019.

Camden Planning Guidance – Energy Efficiency and Adaptation (March 2019)



3.20 This document supports the policies outlines in the Camden Local Plan 2017. This planning guidance document provides information on key energy and resource issues within Camden, and supports Local Plan Policies CC1 (Climate change mitigation) and CC2 (Adapting to climate change).

3.21 The document states that refurbishment works to non-domestic buildings should aim to achieve a minimum 20% reduction in carbon dioxide emissions through the use of renewable technologies.

Declaration of a Climate Emergency (April 2019)

3.22 In April 2019, Camden Council declared a Climate Emergency, alongside a commitment to achieve a target of net zero carbon emissions by 2030. In July 2019, Camden held the UK's first Citizens' Assembly on the climate crisis. The Assembly proposals will inform a new Climate Action Plan for Camden, which will be published in 2020.

Building Regulations Part L:2021 (January 2021)

3.23 On 19th January 2021, the government announced the proposed changes to Part L of the Building Regulations that are set to be approved in early 2022. In order to achieve the national 2050 net zero

greenhouse gas emissions target, it is anticipated that an uplift to the current energy performance requirements in the Building Regulations will be introduced. As a stepping stone to the Future Buildings Standard being implemented in 2025, a 2021 interim uplift to Part L is expected to be implemented in early 2022, coming into force in mid-2022. Buildings built to the Part L:2021 standard will aim to emit 27% less carbon dioxide when compared to the current standard set out in Part L:2013.

4. SUSTAINABILITY STATEMENT

4.1 The sustainability strategy for the proposed development has been assessed in line with the guidance set out within relevant policies of the Camden Local Plan. This enables a holistic sustainability approach to be set out for the proposed development. The Camden Local Plan requires that all new development provides sustainable, high quality and inclusive design, and this therefore represents best practice guidance to meet high standards of sustainable design and construction.

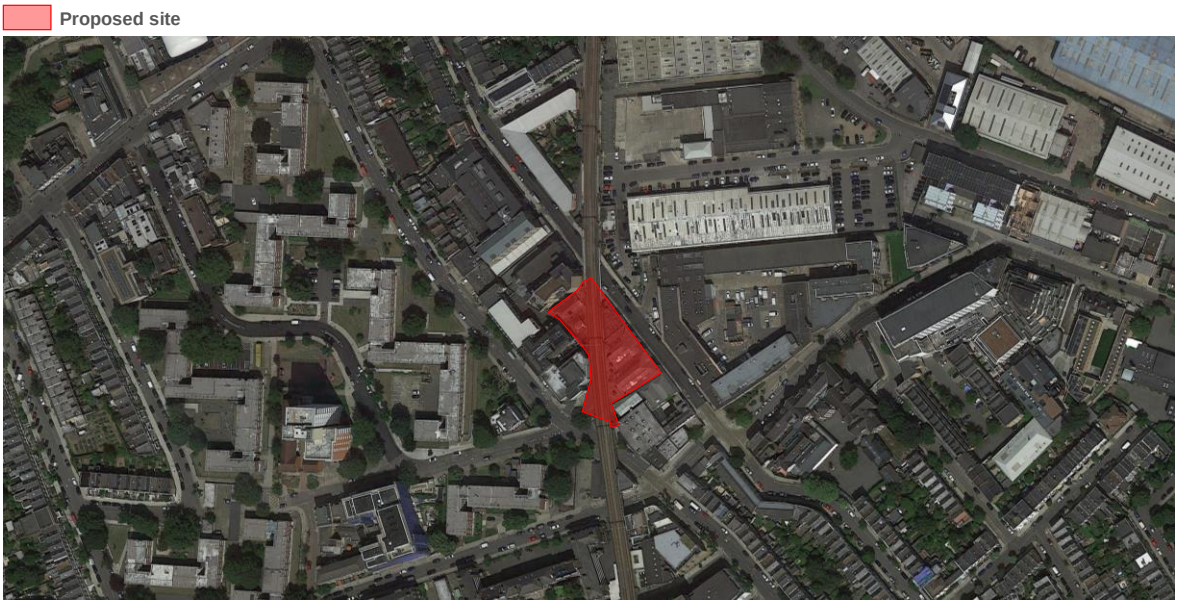
4.2 In addition, a BREEAM Pre-Assessment has been carried out by Harley Haddow to accompany this application. The Pre-Assessment shows that the proposed development has the potential to achieve a BREEAM rating of 'Excellent', based on the 2014 Refurbishment and Fit Out methodology, with an anticipated BREEAM score of 78.91%.

4.3 In line with the guidance detailed within the Camden Local Plan, the sustainability features of the proposed development are outlined below.

Making Effective Use of Land

4.4 As shown below in Figure 4.1, the proposed scheme will re-use the existing building, which was formerly used by Addison Lee for the servicing and repair of their car fleet. The refurbishment will increase the unit's appeal to a wider range of businesses that operate in the industrial sectors.

Figure 4.1 Site and location



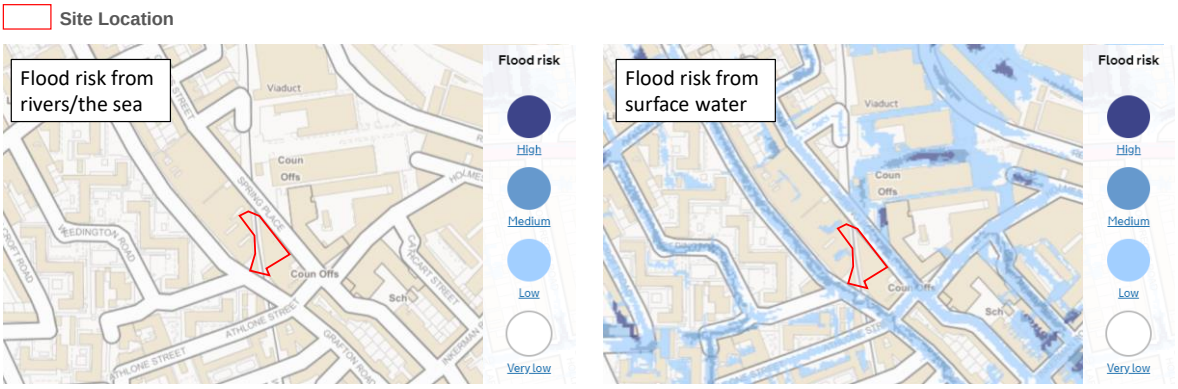
4.5 The proposed scheme will therefore re-use the existing building at 3 – 6 Spring Place, making efficient use of land and existing structures, minimising the need to construct new buildings to meet local business needs.

4.6 The design of the development incorporates industrial floorspace beneath the railway line which bisects the site, effectively utilising this piece of land twice.

Reducing Flood Risk and Surface Water Run-off

4.7 Figure 4.2 below confirms that the proposed site is located wholly within Flood Zone 1, indicating a very low risk of flooding from tidal and fluvial sources. The entirety of the site is also shown to be at very low risk of flooding from pluvial (surface water) sources.

Figure 4.2 Extract from the Environment Agency's online flood map



4.8 As the proposed scheme involves a refurbishment without increasing the building footprint, it is considered that the development will not increase the risk of flooding from surface water sources either on the site, or in the surrounding area.

Reducing Water Consumption

4.9 The majority of England is under water stress, with more water often being consumed than is available during dry weather. As the population continues to grow, and with changes to the frequency of rainfall events projected as a result of climate change, this situation will be further exacerbated, with even greater pressure exerted on the supply of potable water.

4.10 In order to reduce internal water consumption within the proposed scheme, it is intended that water-efficient fittings, such as low volume dual flush toilets and taps with restricted flow rates, will be provided within the buildings. Rainwater harvesting will also be used onsite to contribute to toilet flushing. The BREEAM Pre-Assessment which accompanies this Statement demonstrates that the scheme will achieve a 40% reduction in potable water use, achieving 6 out of 8 credits (75%) in the Water category.

Nature Conservation and Ecology

4.11 In order to improve site biodiversity conditions, an external living wall is to be provided on the Grafton Road elevation as part of the proposed redevelopment. An internal living wall is also to be provided within the reception space. It is proposed that the external living wall includes a variety of nectar rich

species that are either native or known to provide value to local wildlife species. This will aid in enhancing the biodiversity of the site itself, as well as providing a 'stepping-stone' habitat within the existing green corridor, therefore contributing to habitat creation for fauna that is located to the north and south of the railway line. Given that the site currently supports no vegetative habitats, the addition of living walls will ensure that the proposed redevelopment of the site will result in a net gain in biodiversity.

Materials and waste

4.12 The development makes use of an existing building and as such will require comparatively few materials to accommodate the proposed uses when compared to a new build project. This minimises the embodied carbon resulting from the proposed redevelopment.

4.13 Selection of materials is determined by a variety of factors, such as the architectural context, design rationale, embodied carbon, and maintenance requirements. For the proposed development, consideration will be given to the lifecycle environmental performance, with materials selected in consideration of the BRE's Green Guide to Specification, aiming for A or B rated materials wherever possible.

4.14 During detailed design of the building fabric, consideration will be given to minimising the environmental impact of the materials, by selecting non-toxic and robust materials to ensure longevity and a minimal impact on the health of occupants.

4.15 In order to minimise the amount of waste sent to landfill during the enabling works and construction phase, the scheme will aim to divert non-hazardous construction waste away from landfill.

4.16 Timber will be selected and purchased in consideration of sustainability certification. It is intended that all structural timber elements, along with any timber used for temporary uses, such as scaffolding, will be sustainably sourced (e.g. from FSC and/or PEFC sources).

4.17 During the construction phase, the principal contractor will be required to produce a Site Waste Management Plan (SWMP) which will detail who will be responsible for resource management, what types of waste will be generated, how the waste will be manged (e.g. reduced, reused or recycled), which contractors will be used, and how the quantity of waste generated by the project will be measured.

4.18 By reusing the existing building fabric, the scheme will achieve 7 out of 9 credits (78%) for Materials and 5 out of 6 credits (83%) for Waste according to the BREEAM Pre-Assessment.

5. ENERGY STRATEGY

5.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, an energy and carbon dioxide (CO_2) emissions strategy has been defined for the proposed development. The proposed energy performance of the scheme has been analysed and evaluated to target a high level of CO_2 emissions performance when assessed against Part L:2013 of the Building Regulations and associated policies, accounting for economic, technical and functional feasibility.

5.2 In order to meet and exceed the national standards set out in the Building Regulations on carbon and energy performance, as required by the London Borough of Camden, the measures outlined below describe the proposed means of achieving a reduction in carbon dioxide emissions over the Part L2A:2013 baseline for new non-domestic buildings, despite this being a refurbishment project. This approach is considered to be best practice, and demonstrates that the proposed refurbishment will achieve an exemplary level of carbon dioxide emissions reduction, equivalent to a new build project, demonstrating the extent to which the proposed scheme will respond to the climate emergency.

5.3 The following section includes a breakdown of potential measures proposed at each level of the Energy Hierarchy (below), including a renewable energy generation options study.

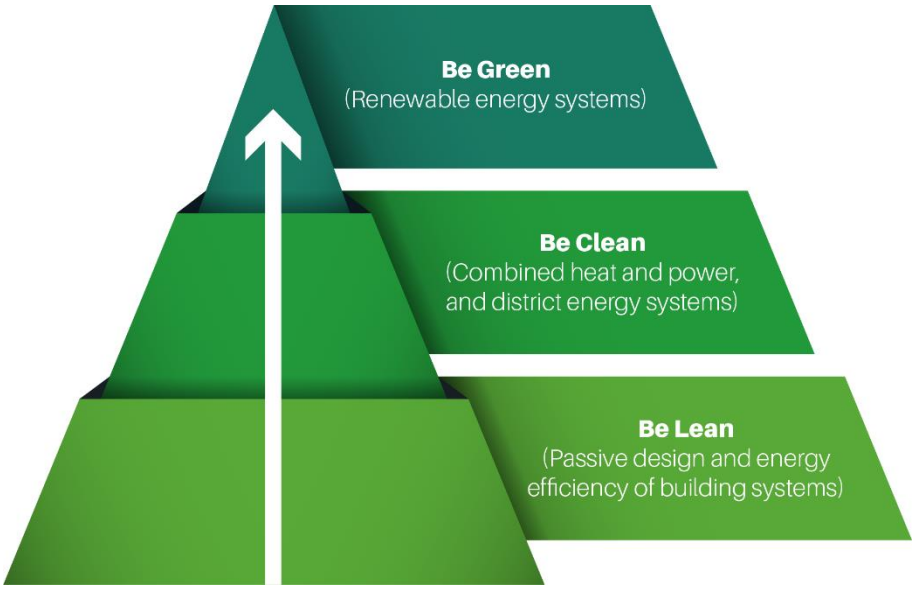
The Energy Hierarchy

5.4 The proposed strategy is based upon the principles of the Energy Hierarchy on the basis that it is preferable to reduce carbon dioxide emissions through reduced energy consumption above decarbonisation through alternative energy sources.

5.5 The tiers of the Energy Hierarchy are:

- Be Lean Use less energy
- Be Clean Supply energy efficiently
- Be Green Use renewable energy

Figure 5.1 The Energy Hierarchy



'Be Lean' (Use Less Energy)

5.6 The proposed spaces consist of general industrial and associated office uses. The building fabric specification has therefore been driven by the energy demand profile associated with such uses. Industrial areas do not require space conditioning to the same extent as fully occupied offices and as such will have a lower level of heat loss through the building fabric. The implication of this is that extensive levels of insulation will not be required to ensure the development's operational energy demand for space heating and cooling is minimised.

5.7 Passive design utilises daylight, solar energy, shading and stack or wind driven ventilation to illuminate, heat, shade and, where necessary, ventilate/cool the building, thus requiring less (mechanical) energy to achieve the performance standards for health and wellbeing of the occupants.

5.8 Site characteristics relating to local climate, surrounding, scale and size of the development therefore influence the potential energy requirements and savings that can be achieved through the consideration of this. The parameters that most influence the potential to utilise sunlight and solar gains are the orientation and layout of the buildings, however, these are typically influenced by factors other than energy efficiency or bioclimatic design considerations, with the form of industrial buildings driven principally by function. Due to the reuse and refurbishment of an existing building, there are few opportunities to incorporate passive design principles in the scheme. However, the development will make use of rooflights for natural daylighting to reduce artificial lighting loads.

5.9 U-values are a measure of the rate of heat transfer through a building element over a given area, under standardised conditions. They measure the rate at which heat is lost or gained through a fabric.

5.10 The following U-values are provided as an indicative guide for the building elements and will be further evaluated during detailed design, to best minimise heat loss/gain. The table demonstrates the compliant performance of the building fabric with the Building Regulations requirements for non-domestic uses. Although the carbon dioxide emissions have been assessed against Part L2A:2013 to determine best practice performance for an equivalent new building, U-values have been determined against the criteria set out in Part L2B:2013, as the works represent modifications to an existing building and as such this represents a limitation on the potential alterations to the building fabric. Under Part L2B:2013, it is required that retained thermal elements with U-values worse than those displayed in column (a) of Table 5.1 below should be upgraded to achieve the values outlined in column (b) of Table 5.1, where technically and functionally feasible.

Table 5.1 Target U-values for retained thermal elements

Building Fabric Element	(a) Part L2B:2013 threshold U-values (W/m²K)	(b) Part L2B:2013 improved U-values (W/m²K)	Proposed U-value (W/m²K)
External wall	0.70	0.30	0.17
Ground floor	0.70	0.25	0.3 (existing floor U-value does not exceed threshold)
Roof	0.35	0.18	0.18
Personnel and vehicle doors	1.5	1.5	1.5

5.11 It is proposed that glazing will be double glazed with a low emissivity coating. Although this has yet to be formally specified, it is expected that window U-values will be 1.3 W/m²K or better (including frame).

5.12 The achievable air tightness will be limited by the existing building fabric. Nonetheless, it is expected that works on the building fabric will improve the structural air tightness, and a level equal to or below 5 $m^3/h/m^2$ shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating/cooling demand further reduced.

5.13 High efficiency plant, equipment and controls are proposed to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values have been specified in line with the requirements of the Building Regulations in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.

- Low energy LED lighting will be installed throughout the scheme. Daylight dimming and presence detection controls will also be employed to make use of natural daylight and turn lights off when occupants are not present. It is proposed that lights with a lighting power density 1.5 W/m^2 per 100 lux with presence detection are employed throughout the proposed office spaces. Lighting with an efficacy of 150 lumens per circuit watt with presence detection and daylight dimming is proposed for the industrial spaces.

- In order to meet the requirements of the GLA's Energy Planning Guidance document under the 'Be Lean' scenario, space and water heating has been specified as gas-fired boilers with an efficiency of 91%.

- It is proposed that all occupied spaces will be naturally ventilated, eliminating the need for mechanical ventilation. Toilets will be provided with extract ventilation only, using fans with a specific fan power not greater than 0.3 W/l/s.

- Energy usage will be separately sub-metered to ensure that energy usage can be appropriately measured and managed, based on the end use category.

- Variable speed pumps will be employed to modulate flow rates as required by demand.

- It is intended that the electricity power factor will be greater than 0.95 and light metering with warnings about out of range values will be utilised as part of the building management systems.

5.14 Energy modelling of the proposed scheme has been undertaken using the EDSL TAS accredited software. The building geometry modelled is shown below in Figure 5.2.

Figure 5.2 3D model of building geometry (Spring Place elevation)

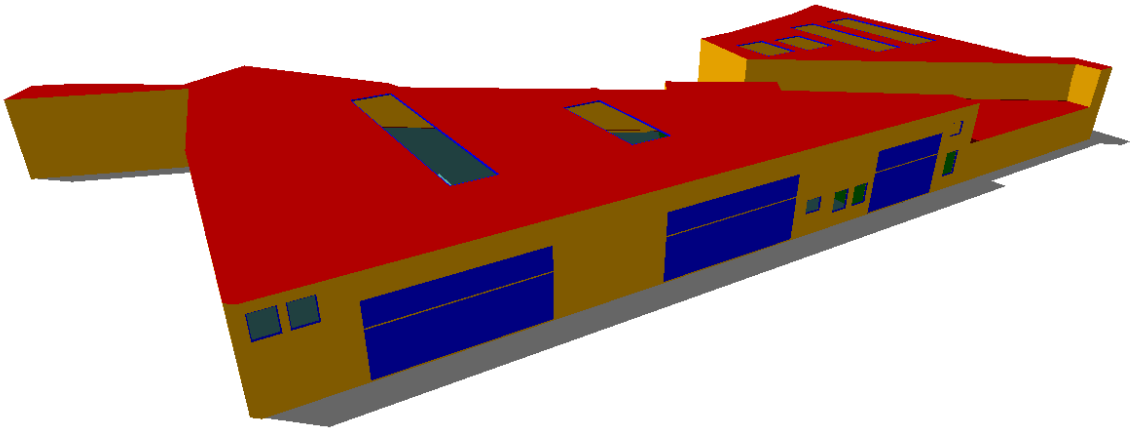
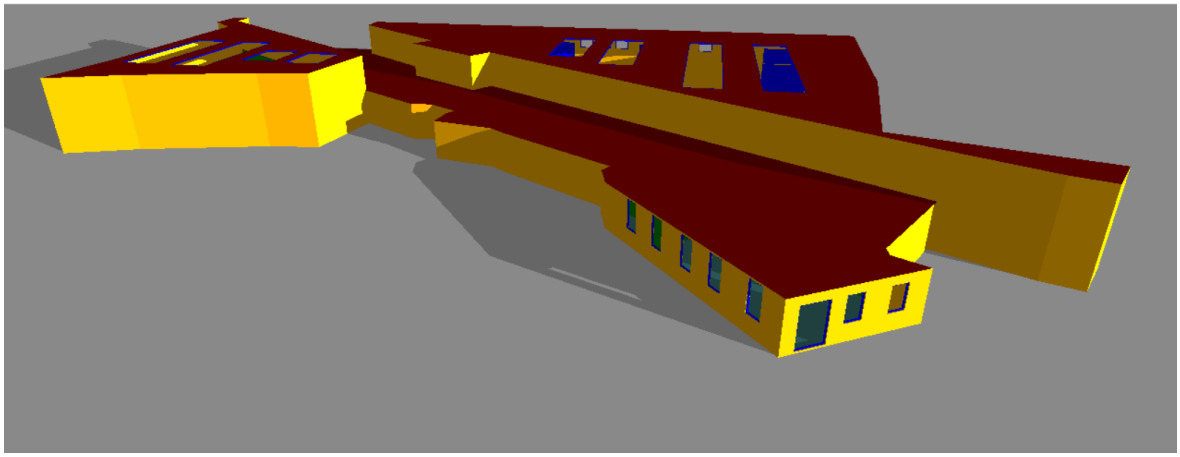


Figure 5.3 3D model of building geometry (Grafton Road elevation)



5.15 The carbon dioxide emissions for the non-domestic spaces under the ‘Be Lean’ tier of the Energy Hierarchy are shown below. A BRUKL worksheet showing the ‘Be Lean’ performance of the modelled spaces is provided in Appendix A2.

Figure 5.4 Non-domestic carbon dioxide emissions (Be Lean)

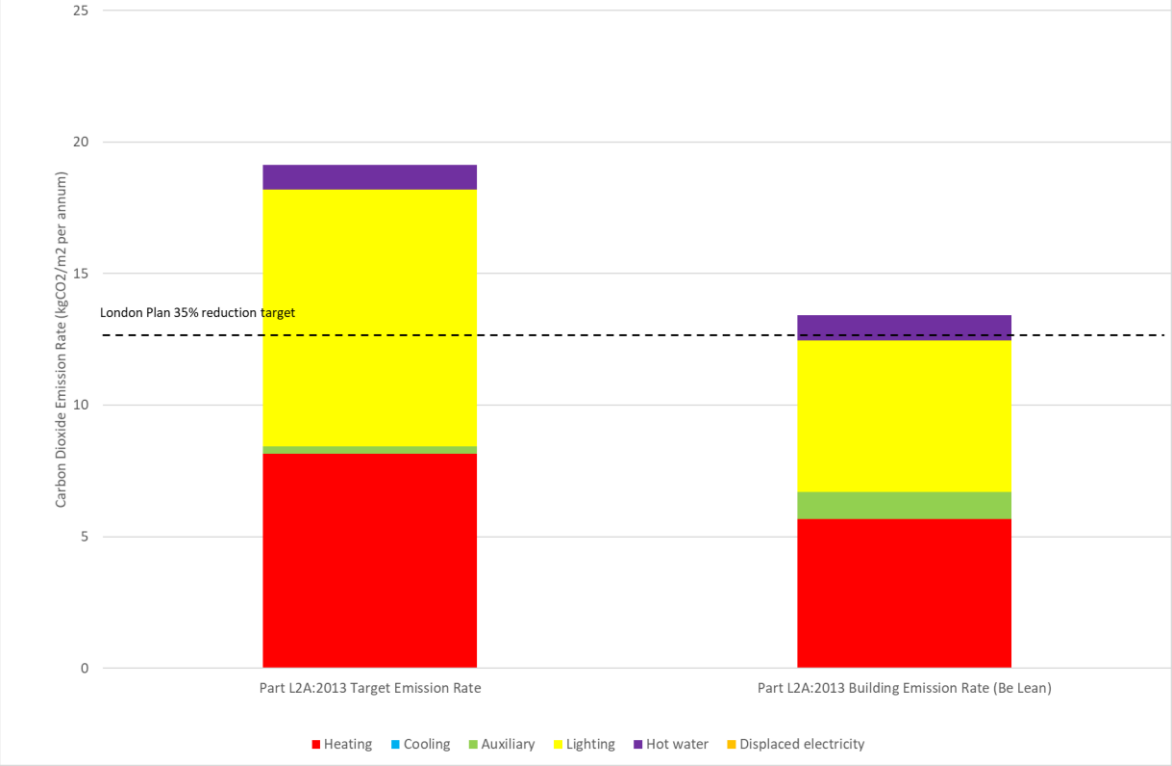


Table 5.2 Non-domestic carbon dioxide emissions (Be Lean)

TER: Baseline: Part L2A:2013 Emissions ($kgCO_2/m^2$ per annum)	BER: Proposed 'Be Lean' Emissions ($kgCO_2/m^2$ per annum)	Emissions Savings ($kgCO_2/m^2$ per annum)	Emissions Savings (%)
19.1	13.4	5.7	30%

5.16 The above analysis shows that the non-domestic spaces achieve a carbon dioxide emissions saving of 31% through energy efficiency measures alone, under the 'Be Lean' scenario.

'Be Clean' (Supply Energy Efficiently)

5.17 The potential for the proposed development to incorporate a low carbon heating/cooling system has been reviewed for the scheme, in line with the hierarchy presented in London Plan policy 5.6, copied below:

1. Connection to existing heating or cooling networks;
2. Site wide CHP network; and
3. Communal heating and cooling.

5.18 The London Heat Map is a tool provided by the Mayor of London to identify opportunities for decentralised energy projects in London. It builds on the 2005 London Community Heating Development Study.

5.19 The image below is an extract from the London Heat Map, showing the area in the vicinity of the site. It illustrates;

- Hear demand (areas of heat demand are shown in red, with areas with a high density of heat demand appearing more opaque and areas of zero heat demand appearing transparent);
- Existing heat networks (shown as red lines);
- Proposed heat networks (shown as orange lines);
- Heatmap study areas (shown as transparent white circles); and
- Potential heat supply sites (shown as red dots).

Figure 5.5 Extract from the London heat map

5.20 The extract above indicates that the proposed development site is located within an area of low heat density. There are no existing district heat networks located within the surrounding area, nor are there any future networks proposed. It is indicated that the proposed development site is located opposite a potential heat supply at the Holmes Road Depot. Heat would likely be supplied at this site via a gas-fired boiler, and is unlikely to be suitable for connection to the site due the infrastructure costs associated with establishing a connection.

5.21 The use of CHP is considered to be unviable for the proposed development site. CHP technology is appropriate for building uses with large hot water demands due to the requirements for CHP to be kept running to meet a base load. As heating is not required during summer months, base loads are

driven by hot water demand. As shown above in Figure 5.5, the hot water demand for the building is low and as such CHP does not represent a feasible technology for the proposed development.

'Be Green' (Utilise Renewable Technologies)

5.22 The proposed development has given consideration to renewable energy technologies that may be applicable to deliver additional carbon dioxide savings.

5.23 In determining the appropriate renewable technology for the site, a number of factors including carbon dioxide savings, site constraints, and potential impacts on neighbouring uses have been considered. Further details of each technology and its associated assessment in relation to the development are provided below.

- **Biomass –** This technology is not considered a practical solution to reducing CO_2 emissions, in the view of limited storage space for the combustible material, accessibility of the site for regular deliveries of the material, associated carbon emissions of this technology which are not normally accounted for within energy modelling, and local air quality issues arising from the combustion of biomass material.

- **Air Source Heat Pumps (ASHP) –** This technology is deemed appropriate to provide space heating to the internal spaces. It is proposed that the ASHP system will deliver a heating seasonal coefficient of performance of 4.0. as the design progresses, acoustic measures to limit the noise generate by the external unit of the system during operations will be considered. It is intended that water heating demand will be served by direct electric point of use water heaters, with a heating efficiency of 100%.

- **Ground Source Heat Pumps (GSHP) –** Due to the nature of the proposed development, the site is not suitable for a horizontal ground collection loop, nor for the employment of vertical boreholes, due to the intention to retain the existing building, making drilling of vertical boreholes impractical. The use of ground source heat pumps for the proposed development is therefore not considered viable.

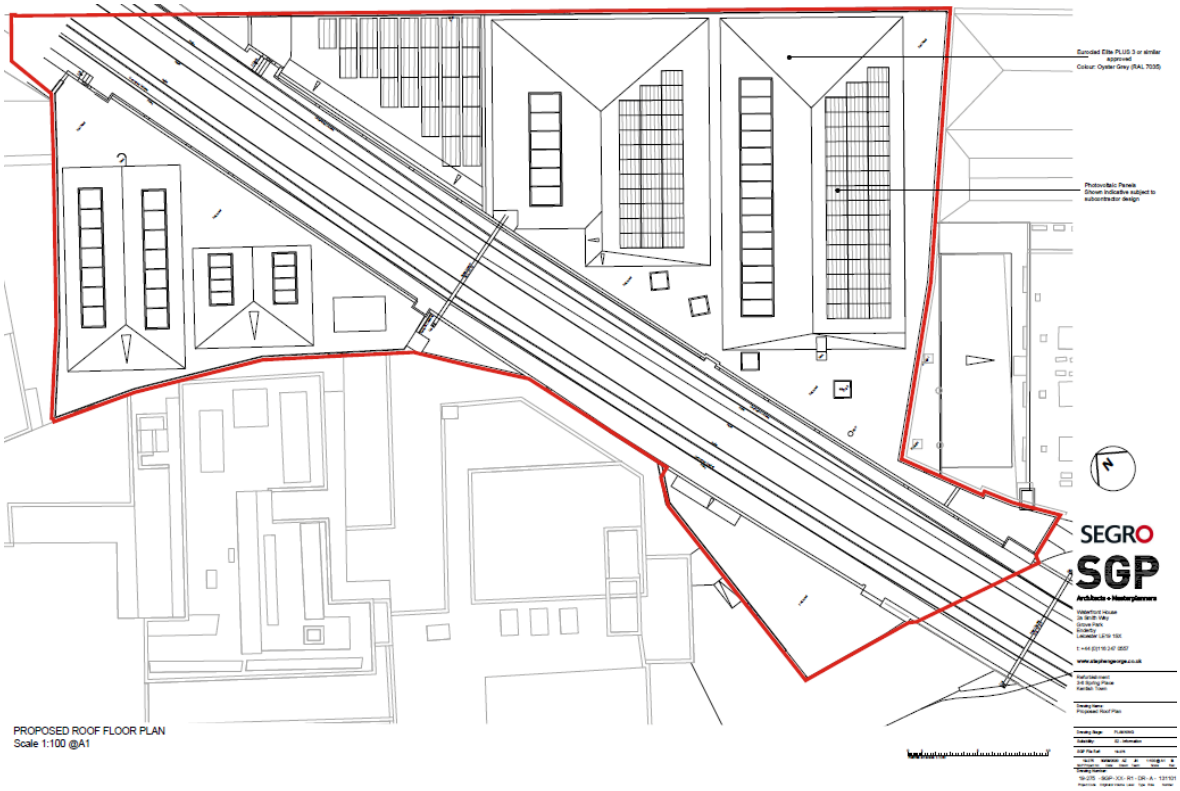
- **Photovoltaics (PV) –** The use of PV panels is considered appropriate for this scheme, and its use has been maximised in accordance with the roof space available. Full details of the proposed PV arrays, areas, locations, outputs and associated carbon dioxide savings are provided below.

- **Solar Thermal Hot Water (STHW) –** As stated above, hot water demands of the building are relatively low and, although technically feasible, this technology is rejected on the basis that the solar thermal hot water panels would compete for roof space with the proposed PV system, which is considered to be a more appropriate use of roof space. This technology is therefore rejected.

- **Wind Turbines –** This technology is rejected on the basis of its potential impact on visual amenity and relatively low efficiency from unpredictable, turbulent wind conditions associated with urban locations.

5.24 The location of the proposed photovoltaic (PV) panel array is highlighted on the roof plan below, based on the drawings produced by SGP Architects. This area has been selected to be free from overshading from neighbouring buildings.

Figure 5.6 Proposed rooftop PV locations



5.25 The highlighted area is proposed to house 222.7 sqm of PV panels. The PV coverage extends to all reasonably available roof space that is unshaded. Standard PV panels have been assumed, with an efficiency of 21.2%. Panels will be oriented on the existing roof slope at approximately 30° to the horizontal and face south-east to maximise output per panel, given the orientation of the existing building.

5.26 It is estimated that the 222.7 sqm of PV panels will produce an average of 35,600 kWh of renewable electricity per year, equating to a carbon dioxide saving of 9.6 $kgCO_2/m^2$ per year, or 18.5 tonnes of CO_2 per year.

5.27 The carbon dioxide emissions for the proposed development, under the 'Be Green' tier of the Energy Hierarchy, are shown below. A BRUKL worksheet showing the 'Be Green' performance of the spaces modelled is provided in Appendix A2.

Figure 5.7 Non-domestic carbon dioxide emissions (Be Green)

Table 5.3 Non-domestic carbon dioxide emissions (Be Green)

TER: Baseline: Part L2A:2013 Emissions ($kgCO_2/m^2$ per annum)	BER: Proposed 'Be Green' Emissions ($kgCO_2/m^2$ per annum)	Emissions Savings ($kgCO_2/m^2$ per annum)	Emissions Savings (%)
19.1	2.2	16.9	88%

5.28 The above analysis shows that the proposed development achieves a carbon dioxide saving of 88% through energy efficiency measures and renewable technologies, under the 'Be Green' scenario.

5.29 This analysis demonstrates that the GLA's London Plan new-build target of achieving an onsite level of emissions reduction of 35% and the London Borough of Camden's target of a 20% reduction in emissions from renewable technologies have both been met.

6. SUMMARY

6.1 This Energy and Sustainability Statement provides an overview as to how the proposed refurbishment of 3 – 6 Spring Place, Kentish Town contributes to sustainable development in the context of the strategic, design and construction considerations.

6.2 Consideration has been given to the Camden Local Plan in the formulation of this strategy, aiming to minimise the environmental impact of the proposed development during refurbishment and operation, and to ensure the development is constructed to rigorous sustainability standards.

6.3 Sections 4 and 5 of this statement demonstrate that the siting and design of the proposals support relevant policy relating to sustainable development. This shows that the proposed development:

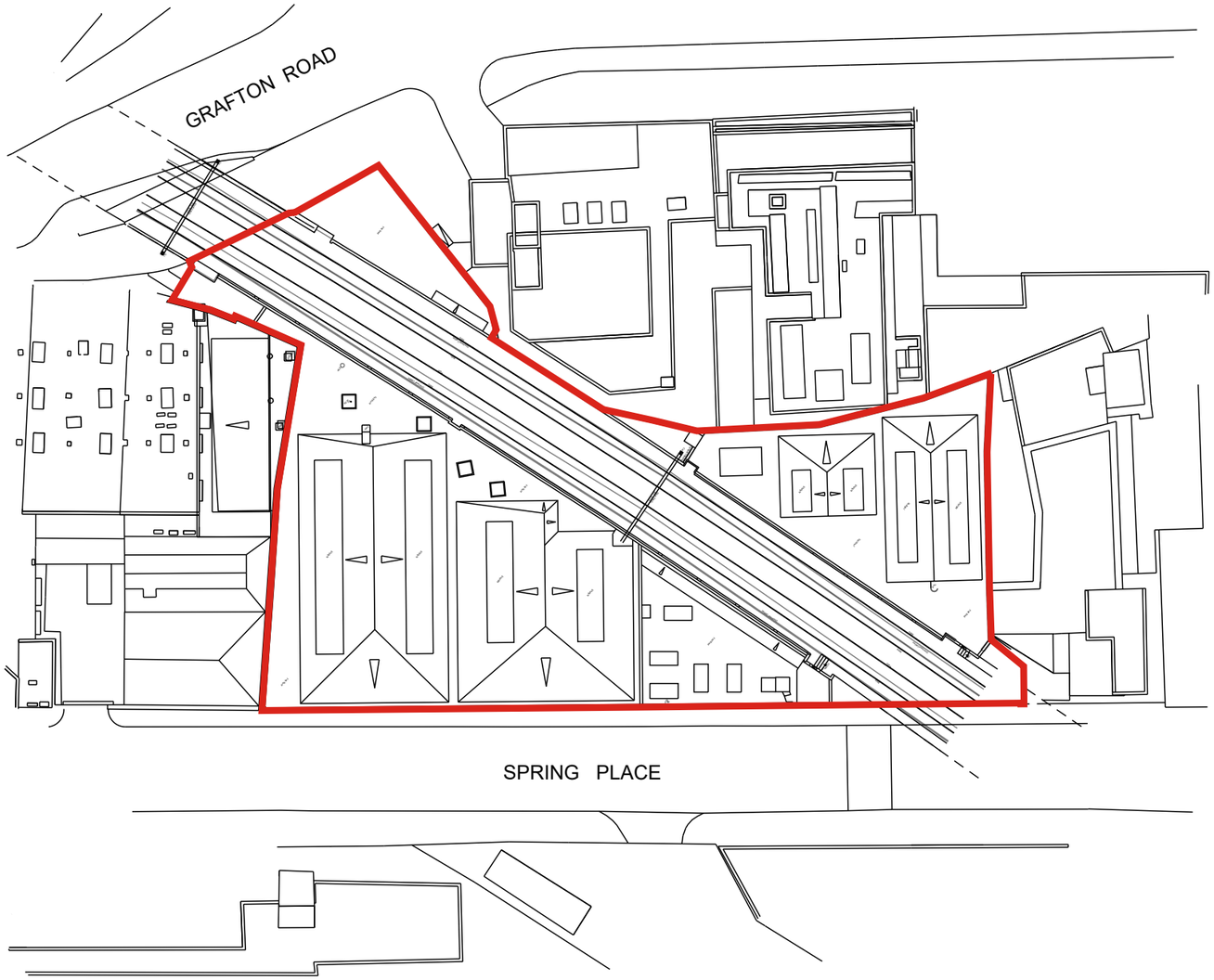
- will aim to achieve BREEAM certification, targeting a rating of 'Excellent';
- makes efficient use of land by reusing an existing building;
- will incorporate measures to improve site biodiversity, including the provision of an external and internal living wall;
- will include measures to reduce potable water consumption, including rainwater harvesting;
- will minimise waste production during construction and maximise the proportion of waste to be diverted from landfill;
- will minimise energy demand through the specification of low U-values to reduce heat loss;
- will employ air source heat pump technology to serve the space heating demand of the internal spaces;
- will utilise rooftop photovoltaic panels to generate renewable electricity on site; and
- will follow the Energy Hierarchy methodology to achieve an 88% reduction in carbon dioxide emissions when compared with the PartL2A:2013 baseline.

6.4 This demonstrates that the proposed refurbishment works will provide a building with a level of carbon dioxide emissions significantly reduced over that required for a new building, demonstrating the applicant's commitment to sustainable design principles and proactively responding to the climate emergency.

6.5 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the NPPF and Camden Council, and will provide a development that seeks to promote these principles in operation.

A1. SITE PLAN

Rev	Date	By	Description
A	09/10/2020	AZ	Street names added;



N

Planning Application Boundary

0 5 10 20 30 40 50
Metres at scale 1:500

Red Line Boundary based on O/S Data and **NOT** confirmed as the Legal Boundary

SEGRO

SGP

Architects + Masterplanners

Waterfront House
2a Smith Way
Grove Park
Enderby
Leicester LE19 1SX

t: +44 (0)116 247 0557

www.stephengeorge.co.uk

Refurbishment
3-6 Spring Place
Kentish Town

Drawing Name:
Location Plan

Drawing Stage:	PLANNING
Suitability:	S2 - Information
SGP File Ref:	19-275

SGP Project No:	Date:	Drawn:	Team:	Scale:	Rev:
19-275	30/09/2020	AZ	JN	1:500 @ A3	**A**

Drawing Number:

Project Code	Originator	Volume	Level	Type	Role	Number
19-275	- SGP -	XX -	XX -	DR -	A -	130000

A2. BRUKL WORKSHEETS

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

3-6 Spring Place - Be Lean

As designed

Date: Thu Mar 10 14:27:56 2022

Administrative information

Building Details

Address: London, NW5 3BA

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.1"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.1

BRUKL compliance check version: v5.6.b.0

Certifier details

Name:

Telephone number:

Address: , ,

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	19.1
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	19.1
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	13.4
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.17	0.17	External Wall
Floor	0.25	0.3	0.3	Ground Floor
Roof	0.25	0.18	0.18	Roof
Windows***, roof windows, and rooflights	2.2	1.36	1.54	W_1
Personnel doors	2.2	1.49	1.49	VD_Gnd
Vehicle access & similar large doors	1.5	-	-	No vehicle doors in project
High usage entrance doors	3.5	-	-	No high usage entrance doors in project

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

* There might be more than one surface where the maximum U-value occurs.
** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
*** Display windows and similar glazing are excluded from the U-value check.
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
$m^3/(h.m^2)$ at 50 Pa	10	5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Nat vent

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

2- Warehouse

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

3- Extract only (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

4- Offices

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

1- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.91	0
Standard value	0.9*	N/A
* Standard shown is for gas boilers >30 kW output. For boilers <=30 kW output, limiting efficiency is 0.73.		

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
Indust_Toilet 1	0.3	-	-	-	-	-	-	-	-	-	N/A
Indust_Toilet 2	0.3	-	-	-	-	-	-	-	-	-	N/A
Indust_Toilet 3	0.3	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Indust_WareStore 1	150	-	-	2248
Indust_WareStore 2	150	-	-	919
Indust_WareStore 3	150	-	-	196
Indust_WareStore 4	150	-	-	456
Indust_WareStore 5	150	-	-	950
Indust_Store 1	-	-	-	47
Indust_Toilet 1	-	-	-	129
Indust_FoodPrep 1	-	-	-	184
Indust_Circulation 1	-	-	-	365
Indust_Office 2	-	-	-	544
Indust_Toilet 2	-	-	-	17
Indust_Toilet 3	-	-	-	80
Indust_Reception 1	-	-	22	400

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Indust_WareStore 1	NO (-9%)	NO
Indust_WareStore 2	NO (-85%)	NO
Indust_WareStore 3	NO (-65%)	NO
Indust_WareStore 4	NO (-59%)	NO
Indust_WareStore 5	YES (+132%)	NO
Indust_Office 2	N/A	N/A
Indust_Reception 1	NO (-50%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m^2]	1923	1923
External area [m^2]	5195	5195
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	7
Average conductance [W/K]	1541	1916
Average U-value [W/m^2K]	0.3	0.37
Alpha value* [%]	4.45	4.45

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
100	**B2 to B7 General Industrial and Special Industrial Groups**
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	26.3	37.75
Cooling	0	0
Auxiliary	2.02	0.55
Lighting	11.41	19.31
Hot water	4.34	4.25
Equipment*	30.41	30.41
TOTAL**	**44.07**	**61.87**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m^2]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	86.15	121.97
Primary energy* [kWh/m^2]	77.59	110.7
Total emissions [kg/m^2]	13.4	19.1

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	163.2	0	52.5	0	2	0.86	0	0.91	0
	Notional	148.4	0	50.3	0	2	0.82	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	77.1	0	24.8	0	2	0.86	0	0.91	0
	Notional	122.2	0	39.5	0	0	0.86	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	206.3	0	66.3	0	11.5	0.86	0	0.91	0
	Notional	215.3	0	73	0	14.6	0.82	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	86.4	0	27.7	0	1.1	0.86	0	0.91	0
	Notional	79.6	0	27	0	1.3	0.82	0	----	----

Key to terms

Heat dem [MJ/m2] = Heating energy demand
Cool dem [MJ/m2] = Cooling energy demand
Heat con [kWh/m2] = Heating energy consumption
Cool con [kWh/m2] = Cooling energy consumption
Aux con [kWh/m2] = Auxiliary energy consumption
Heat SSEFF = Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER = Cooling system seasonal energy efficiency ratio
Heat gen SSEFF = Heating generator seasonal efficiency
Cool gen SSEER = Cooling generator seasonal energy efficiency ratio
ST = System type
HS = Heat source
HFT = Heating fuel type
CFT = Cooling fuel type

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.17	External Wall
Floor	0.2	0.3	Ground Floor
Roof	0.15	0.18	Roof
Windows, roof windows, and rooflights	1.5	1.33	Rooflight
Personnel doors	1.5	1.49	VD_Gnd
Vehicle access & similar large doors	1.5	-	No vehicle doors in project
High usage entrance doors	1.5	-	No high usage entrance doors in project

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = Minimum individual element U-values [W/(m²K)]

* There might be more than one surface where the minimum U-value occurs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

3-6 Spring Place - Be Green

As designed

Date: Tue Mar 01 11:59:16 2022

Administrative information

Building Details

Address: London, NW5 3BA

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.1"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.1

BRUKL compliance check version: v5.6.b.0

Certifier details

Name:

Telephone number:

Address: , ,

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	18.1
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	18.1
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	2.2
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.17	0.17	External Wall
Floor	0.25	0.3	0.3	Ground Floor
Roof	0.25	0.18	0.18	Roof
Windows***, roof windows, and rooflights	2.2	1.36	1.54	W_1
Personnel doors	2.2	1.49	1.49	VD_Gnd
Vehicle access & similar large doors	1.5	-	-	No vehicle doors in project
High usage entrance doors	3.5	-	-	No high usage entrance doors in project

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

* There might be more than one surface where the maximum U-value occurs.
** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
*** Display windows and similar glazing are excluded from the U-value check.
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
$m^3/(h.m^2)$ at 50 Pa	10	5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Nat vent

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

2- Warehouse

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

3- Offices

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

4- Extract only (3 Zones)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

1- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	4	0.11
Standard value	1	N/A

2- New HWS Circuit

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0
Standard value	0.9*	N/A
* Standard shown is for gas boilers >30 kW output. For boilers <=30 kW output, limiting efficiency is 0.73.		

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
Indust_WareStore 1	150	-	-	2248
Indust_WareStore 2	150	-	-	919
Indust_WareStore 3	150	-	-	196
Indust_WareStore 4	150	-	-	456
Indust_WareStore 5	150	-	-	950
Indust_Store 1	-	-	-	47
Indust_Toilet 1	-	-	-	129
Indust_FoodPrep 1	-	-	-	184
Indust_Circulation 1	-	-	-	365
Indust_Office 2	-	-	-	544
Indust_Toilet 2	-	-	-	17
Indust_Toilet 3	-	-	-	80
Indust_Reception 1	-	-	22	400

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Indust_WareStore 1	NO (-9%)	NO
Indust_WareStore 2	NO (-85%)	NO
Indust_WareStore 3	NO (-65%)	NO
Indust_WareStore 4	NO (-59%)	NO
Indust_WareStore 5	YES (+132%)	NO
Indust_Office 2	N/A	N/A
Indust_Reception 1	NO (-50%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m^2]	1923	1923
External area [m^2]	5195	5195
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	7
Average conductance [W/K]	1541	1916
Average U-value [W/m^2K]	0.3	0.37
Alpha value* [%]	4.45	4.45

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
	B1 Offices and Workshop businesses
100	**B2 to B7 General Industrial and Special Industrial Groups**
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	6.31	13.24
Cooling	0	0
Auxiliary	2.02	0.55
Lighting	11.41	19.31
Hot water	3.67	4.25
Equipment*	30.41	30.41
TOTAL**	**23.42**	**37.36**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m^2]

	Actual	Notional
Photovoltaic systems	18.51	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	86.15	121.97
Primary energy* [kWh/m^2]	70.11	103.78
Total emissions [kg/m^2]	2.2	18.1

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	163.2	0	12.6	0	2	3.6	0	4	0
	Notional	148.4	0	17	0	2	2.43	0	----	----
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	77.1	0	6	0	2	3.6	0	4	0
	Notional	122.2	0	14	0	0	2.43	0	----	----
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	86.4	0	6.7	0	1.1	3.6	0	4	0
	Notional	79.6	0	9.1	0	1.3	2.43	0	----	----
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	206.3	0	15.9	0	11.5	3.6	0	4	0
	Notional	215.3	0	24.6	0	14.6	2.43	0	----	----

Key to terms

Heat dem [MJ/m2] = Heating energy demand
Cool dem [MJ/m2] = Cooling energy demand
Heat con [kWh/m2] = Heating energy consumption
Cool con [kWh/m2] = Cooling energy consumption
Aux con [kWh/m2] = Auxiliary energy consumption
Heat SSEFF = Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER = Cooling system seasonal energy efficiency ratio
Heat gen SSEFF = Heating generator seasonal efficiency
Cool gen SSEER = Cooling generator seasonal energy efficiency ratio
ST = System type
HS = Heat source
HFT = Heating fuel type
CFT = Cooling fuel type

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.17	External Wall
Floor	0.2	0.3	Ground Floor
Roof	0.15	0.18	Roof
Windows, roof windows, and rooflights	1.5	1.33	Rooflight
Personnel doors	1.5	1.49	VD_Gnd
Vehicle access & similar large doors	1.5	-	No vehicle doors in project
High usage entrance doors	1.5	-	No high usage entrance doors in project

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = Minimum individual element U-values [W/(m²K)]

* There might be more than one surface where the minimum U-value occurs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5

A3. GENERAL NOTES

A3.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.

A3.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

A3.3 No site visits have been carried out, unless otherwise specified.

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