Energy & Sustainability Statement

7a Eccleston Street, London SW1W 9LX

REV A

January 2024

No 1 Cornhill
London EC3V 3ND
Tel: 0207 743 6602
www.taylorprojectservices.com

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Introduction & Summary of Findings

Introduction

Taylor Project Services LLP were appointed by Grosvenor Estates to undertake an energy and sustainability study on the proposed refurbishment works at 7a Eccleston Street, London. The study aims to discuss and compare improvements which can be made to the unit that will improve the energy performance of the building.

These improvements will include the upgrade of some building fabric, M&E services and the installation of renewables (where possible).

Results Summary

To compare the refurbished building to the existing, the results show that the improvements to the existing building will result in a carbon reduction of 2.8 Tonnes CO2 per year, which equates to a 69% reduction in carbon emissions when taking into account both fabric upgrades, services and renewables such as ASHP's. All LETI best practice retrofit targets have been met. However, due to site restrictions renewable energy supplied by PV will not be possible.

- Upgraded Windows - Heritage Secondary Glazing

Measures proposed to be Implemented

Following this report on options the following measures are proposed to be implemented at the property:

- Fabric Thermal Improvements
- Internal Roof Insulation
- High-efficiency LED Lighting throughout
- Refrigerant Systems Specified as Daikin Altherma reduced System Global Warming Potential (GWP) for hot water generation and heating.
- Whole house ventilation MVHR)

A combination of these measures applied sensitively and respecting the building age and status will future-proof the building for years to come.

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Existing Building/ Assessment procedure

The existing property is an office building split across three floors from 1st to 3rd floors including a retail unit situated on the ground floor and basement. The existing building was constructed pre-1900 with much of the building fabric proposed to be upgraded. The proposal sees the change of use of the office areas to create a new 3-storey residential unit.

Existing Fabric Parameters

Construction Type	U-Value (W/m2-K)
External Wall	1.6
Internal Partitions	0.48
Roof	1.6
Internal Floor	1.4
Single Secondary Double Glazing (front façade)	4.8 (G-Value: 0.85)
Air Pressure NCM Infiltration Rate	25.00 (m3/h-m2)

Baseline Services

Heating	Mains gas boiler
Cooling	No Cooling
Hot Water	Mains gas combi boiler
Lighting	LED, 80lm/W
Ventilation	Natural Vent
Renewables	None

Existing Front façade from Eccleston Street

To satisfy the design principles, energy demands and CO2 emissions of the residential unit have been assessed in compliance with the current Building Regulations, Part L1 in particular, using the latest Standard Assessment Procedure 10 and Elmhurst FSAP approved software.

The SAP Calculations establish a carbon emissions rate based on the construction of the building, its heating system, ventilation, internal lighting and any renewable technologies installed.

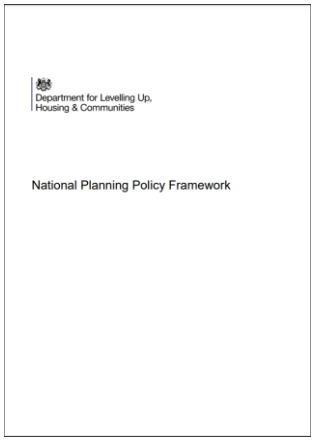
SAP Calculations do three things:

1. Determine the Domestic Emissions Rate
2. Demonstrate compliance with Part L of the building regs
3. Used to produce an Energy Performance Certificate (EPC)

Planning Policy

The National Planning Policy Framework (NPPF):

The NPPF was updated on 5th September 2023 and sets out the government's planning policies for England and how they are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced with the idea of sustainable development at the core.



Key polices:

152. The planning system should support the transition to a low carbon future in a changing climate. 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 infrastructure.

153. Plans should take 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. Policies should support appropriate measures to ensure the future resilience of communities an infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

134. Significant weight should be given to outstanding or innovative designs which promote high levels of sustainability, or help raise the standards of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.

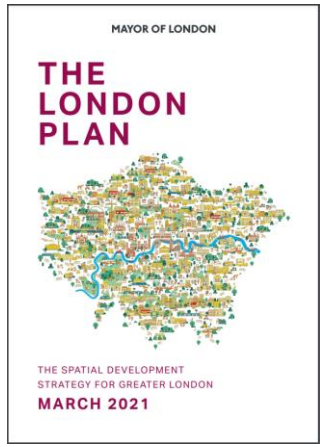
157. In determining planning applications, local planning authorities should expect new development to:

a) Comply with any development plan polices on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible; and

b) Take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

The London Plan:

The London Plan provides the overall strategic plan for London setting out an integrated economic, environmental, transport and social framework for the development of London over the next 2-25 years and the Mayor's vision for Good Growth.



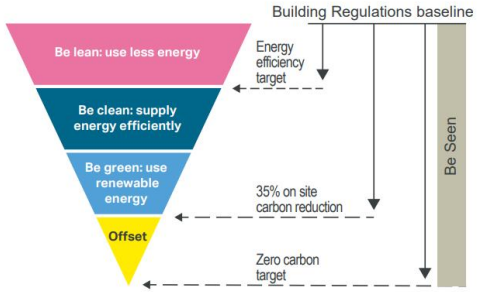
Planning Policy

Key polices:

SI 2 Minimising greenhouse gas emissions.

A. Major developments should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

1. Be lean: use less energy and manage demand during operation
2. Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
3. Be green: maximise opportunities for renewable energy on-site
4. Be seen: monitor, verify and report on energy performance



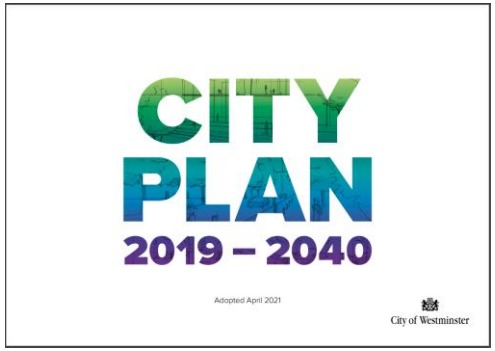
Source: Greater London Authority

D3 Optimising site capacity through the design-led approach:

13) Aim for high sustainability standards

Westminster City Plan:

The Westminster City Plan 2019-2040 is the key document used in determining planning applications in Westminster.



Key polices:

34. Development will, wherever possible, contribute to the greening of Westminster by incorporating trees, green walls, green roofs, rain gardens and other green features and space.

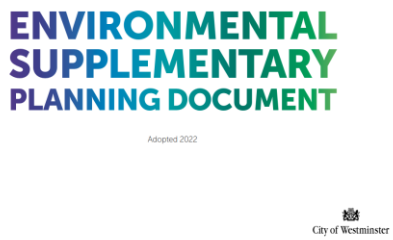
35. New development must incorporate Sustainable Drainage Systems (SuDS) to alleviate and manage surface water food risk.

36. All development is expected to reduce on-site energy demand and maximise the use of low carbon energy sources to minimise effects of climate change. The principles of the energy hierarchy should also be followed.

38. Development will enable the extended lifetime of buildings and spaces and respond to likely risks and consequences of climate change by incorporating principles of sustainable design including providing flexible, high quality floorspace.

Planning Policy

Environmental Supplementary Planning Document (Adopted 2022):



Energy Assessments

Major development proposals, including shell and core schemes, should include a detailed energy assessment to demonstrate how energy use and carbon emissions have been reduced for the development in accordance with policy requirements, and that energy use has been a central consideration in the development's design and evolution.

An energy assessment may be submitted as part of the Sustainability Statement or as a standalone assessment. The energy assessment should adhere to the format and guidance set out in the GLA's Energy Assessment Guidance 2020. As a minimum, energy assessments should:

- Calculate baseline energy demand and CO2 emissions, showing the contribution of emissions from both regulated and unregulated uses;
- Demonstrate how onsite energy demand and emissions have been addressed in accordance with the energy hierarchy approach;
- Indicate the design considerations and rationale behind the preferred approach; and
- Calculate the final energy and carbon performance of the development, and any carbon offset contributions to address residual shortfall, as necessary.

Carbon Emission Factors

The current UK regulatory framework within Approved Document L of the Building Regulations uses carbon emissions as the basis to determine compliance under the Standard Assessment Procedure (SAP) – see here. The carbon produced by new buildings is estimated using Carbon Emission Factors, which are periodically updated to reflect the changing carbon intensities of fuel supply. It should be noted that the Standard Assessment Procedure for carbon emissions is not always the most appropriate assessment in the case of historic buildings (see the alternative metrics section below and in the Retrofitting and Sustainable Design Chapter of this SPD). Energy assessments for developments that are not going to be connected to a planned or existing heat network should use SAP10 emissions factors.

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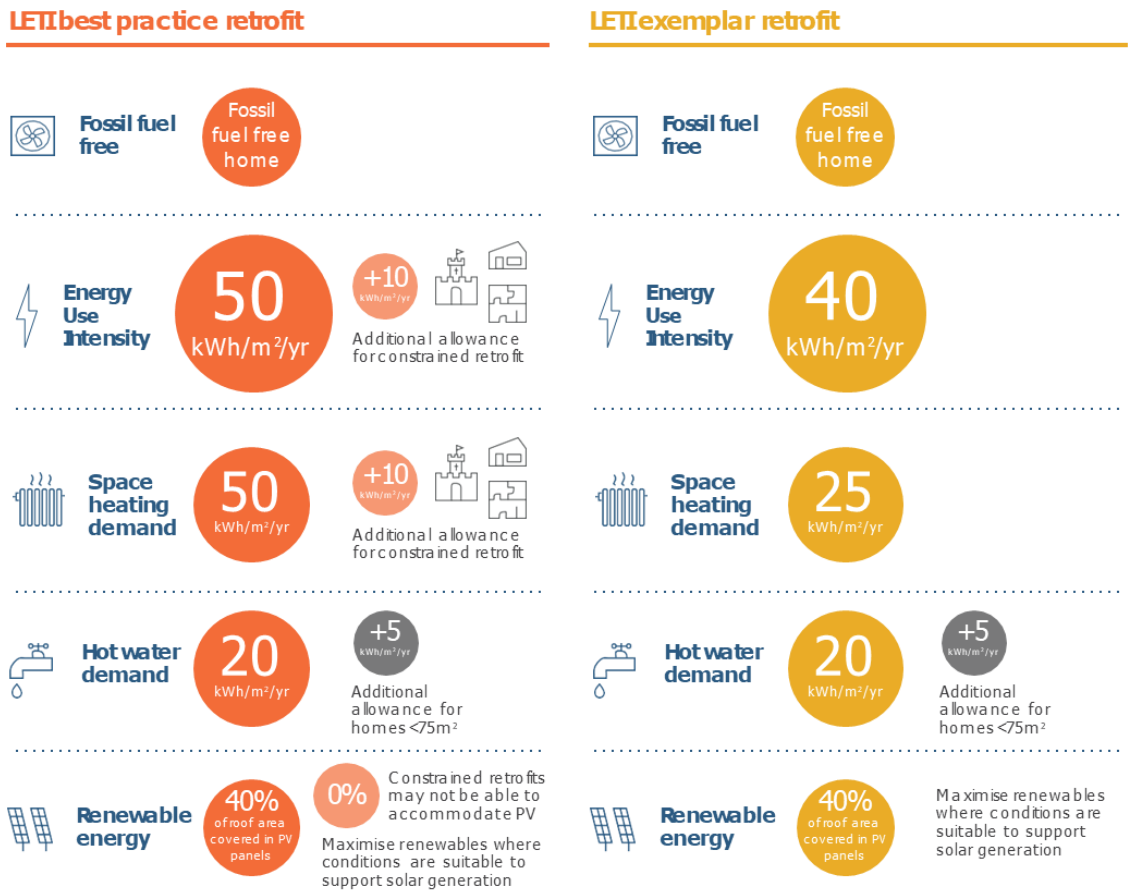
Summary of LETI

LETI (The London Energy Transformation Initiative)

Established in 2017, LETI was created in order to support the transition of London's built environment to achieving net zero carbon by providing guidance which can then be applied to all areas throughout the United Kingdom.

This is done by:

- Engaging with Stakeholders – develop a rapid and robust energy reduction approach, produce effective solutions to the energy trilemma of sustainability, security and affordability
- Work with local authorities – create practicable policy alterations to ensure regulatory systems are fit for purpose, with verified performance at the core
- Encouraging and enabling collaboration – within large, diverse groups of environmental professionals
- Providing technical advice to support exemplar developments – provides a leader to delivering zero carbon buildings.



LETI Home Retrofit Targets

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Be Lean - Proposed Fabric

As a Residential building the primary energy use is for Heating the property and measures should be implemented to limit the heat losses from the building. The existing building was built pre-1900 which these elements do not perform well compared to modern standards. We have proposed that where feasible building fabric is upgraded.

For the building a balance will need to be reached between the need to retain heat, the heat generated within a development and the need to remove excess heat. As the building fabric will form a major part in the overall energy assessment and performance of the building, an upgraded thermal strategy has been developed, with the improvement of the Part L1 limiting fabric parameters where feasibly

The table below gives the target fabric U-values for the new build elements:

Construction Type	Existing U-Value (W/m2-K)	Part L Minimum U-Value (W/m2-K)	LETI Constrained Retrofit Taget U-Value (W/m2-K)	Proposed U-Value (W/m2-K)
External Wall	1.6	0.3	0.32	**0.3**
Flat Roof	1.6	0.16	0.12	**0.12**
Pitched Roof	1.6	0.16	0.12	**0.12**
Internal Partitions	0.48	0.48	0.48	**0.48**
Internal Floor	1.4	1.4	1.4	**1.4**
Windows Improvement	4.8 (g-value:0.85)	-	-	**1.8 (G-Value: 0.4)**
Air Pressure	25 (m3/h-m2)	8.0 (m3/h-m2)	3.0 (ACH)	**8.0 (m3/h-m2)**

Energy Efficient Design Measures

- Improved building fabric insulation to walls, secondary glazing, roof and floor insulation
- Improved air leakage to a rate of 5-10m³/m²hr (subject to testing)
- Careful design to reduce the effect of non-repeating thermal bridges including the use of high-performance thermal breaks where feasible in new build elements
- All lighting, will use lamps with a luminous efficacy of at least 90 lamp-lumens/watt (equivalent to an “A” rating)
- All bathrooms and utility areas will incorporate automatic controls with occupancy sensors
- All white goods that are supplied (fridges, freezers, washer dryers and dishwashers) will be models that are “best practice” for energy consumption

Recommended minimum design standards

The London Energy Transformation Initiative **(LETI)** Climate Emergency Design Guide8 sets out recommendations for how new buildings can be designed to meet the UK’s climate change targets. The guide provides recommended specifications for different building archetypes including housing and commercial offices.

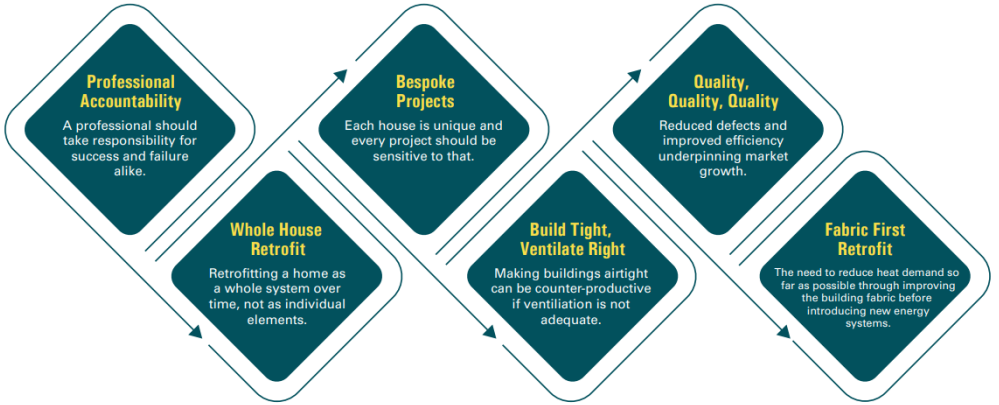
PAS 2035

BSI Publicly Available Specifications (PAS) 2035 is a document that was published by the British Standards Institute (BSI) in 2019 to provide a framework for deep retrofit projects that are high quality, safe and fit for the future.

Within the document there is detail as to how to carry out quality energy retrofits of existing domestic builds, alongside best practice guidance for implementing energy efficiency measures.

The document outlines the approach for the retrofit process with a whole house/building approach considering the home, environment, occupancy and householders improvement objects to obtain a comprehensive overview and determine the most suitable energy efficient measures to install.

The framework outlined within this document ensures that retrofit work is not considered in isolation and that a quality retrofit is achieved.



Although this guidance is mainly aimed at domestic buildings, it is important to consider this framework when considering the retrofitting of existing non-domestic buildings and therefore the guidance has been considered within this report.

Considering this guidance could result in more suitable energy efficient measures being implemented into buildings and provide the greatest overall outcome and benefit.

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Be Clean - Low Carbon Heating Options

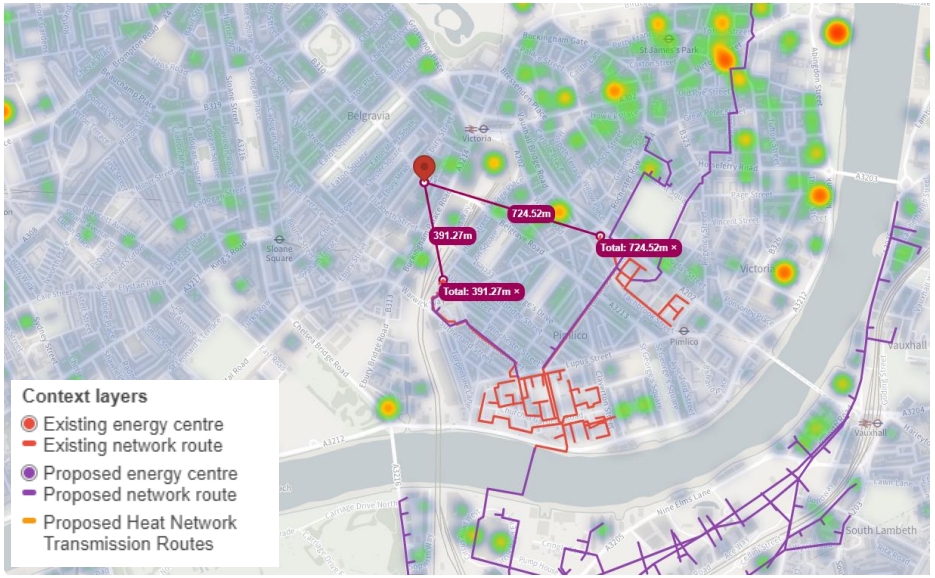
Summary of Alternative Heating Options Considered – Be Clean

As part of the Be Clean approach, the use of energy-efficient equipment, heat networks and community heating have been considered.

The London heat map demonstrates that there are no heat networks within a feasible distance for the building to be connected to.

The Be Clean section looks into using energy efficiently, by adopting energy saving methods when supplying the services to the building (heating, hot water, ventilation). For the development, the following strategy is proposed:

Heating & Hot Water	Ventilation
Highly efficient heat pump technology, which will provide heating and cooling to the new units. This technology will ensure future proofing and mitigation of fossil fuel generation and residual emission risks in the area.	To minimise unnecessary heat loss through ventilation, it is proposed that a Mechanical Ventilation Heat Recovery (MVHR) system is utilised, achieving high thermal efficiency of minimum 80% while maintaining a low energy consumption with Specific Fan Power (SFP) not exceeding 1.9W/l/s Part L 2021. All ductwork shall be insulated where necessary to prevent unwanted heat gain / loss.
Hot Water Supplied by Air Source Heat Pump (Altherma System)	
Time and Temperature Zone Control; Delayed Start Thermostat.	



London Heat Map for 7a Eccleston Street and surrounding area

Carbon & Energy Savings from Existing to Proposed

LETI best practice retrofit

	kWh/m2/yr	
Energy Use intensity	60	**51.86**
Space heating demand	60	**39.9**
Hot Water Demand	25	**24.98**
Renewable energy (PV)	40%	0%

All LETI best practice retrofit targets have been met. However, due to site restrictions renewable energy supplied by PV will not be possible.

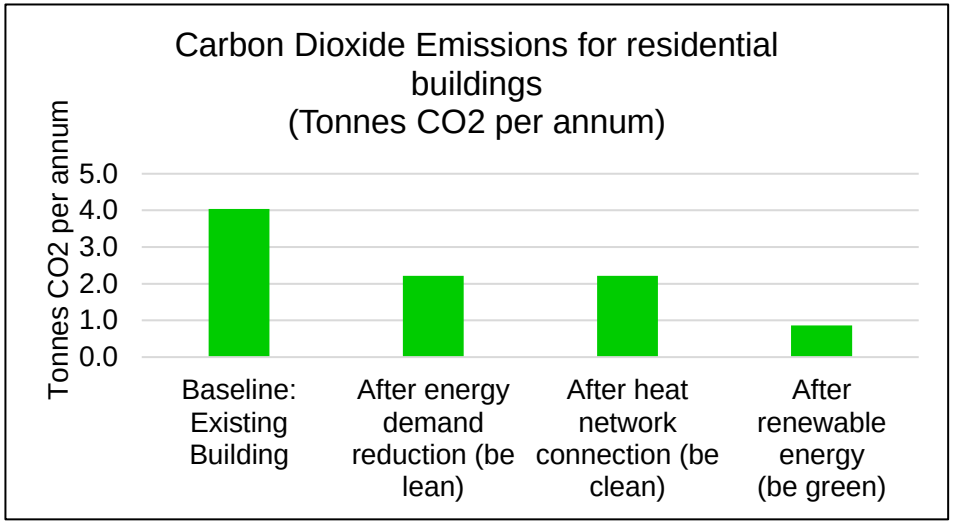
Comparison to Existing Model

To compare the proposed building to the existing, the results show that the improvements to the proposed building would result in a carbon reduction of 2.8 Tonnes CO2 per year which equates to a 69% reduction in carbon emissions when taking into account both fabric upgrades, services and renewables such as ASHP's.

	Carbon Dioxide Emissions for residential buildings (Tonnes CO2 per annum)
Baseline: Existing Building	4.0
After energy demand reduction (be lean)	2.2
After heat network connection (be clean)	2.2
After renewable energy (be green)	1.2

Comparison to Existing Model

	Regulated residential carbon dioxide savings	
	(Tonnes CO2 per annum)	(%)
Be lean: savings from energy demand reduction	1.8	45%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	1.3	33%
Cumulative on site savings	2.8	69%



Conclusion

To conclude this report. Several energy-saving (carbon saving) measures have been proposed to reduce energy use and the carbon footprint of 7a Eccleston street and comply with LETI targets. These include upgrades which reduce the demand of the building and also the installation of energy-efficient heating, lighting, hot water generation and ventilation:

- Fabric Thermal Improvements
- Upgraded Windows - Heritage Secondary Glazing
- Internal Roof Insulation
- High-efficiency LED Lighting throughout.
- Refrigerant Systems Specified as Daikin Altherma reduced System Global Warming Potential (GWP) providing heating and Hot water generation.
- Whole house ventilation MVHR)

This proposal would result in a 69% reduction In carbon dioxide emissions equating to 2.8 Tonnes CO2 per year.

We have also shown where possible we meet the LETI targets for best practice fit-out. Complying with the following targets energy intensity, Space heating and hot water generation.

TPS 20 YEARS

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No 1 Cornhill
London EC3V 3ND
Tel: 0207 743 6602
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