Sustainability Statement

80 Guilford Street

December 2013

XCO2 energy

w: www.xco2energy.com :: e: mail@xco2energy.com
t: +44 (0) 20 7700 1000 :: f: +44 (0) 20 7183 6620
Unit 1.01 :: 50-52 Wharf Road :: London :: N1 7EU

Contents

About us:
XCO2 Energy are a low-carbon consultancy working in the built environment. We are a multi-disciplinary company consisting of engineers, environmental experts and architects, with specialists including CIBSE low carbon consultants, Code for Sustainable Homes, EcoHomes and BREEAM assessors and LEED accredited professionals.

	Issue 01	Issue 02	Issue 03	Issue 04
Remarks	Draft			
Prepared by	DR	DR		
Checked by	CM	CM		
Authorised by	RM	RM		
Date	30/08/2013	02/12/2013		
Project reference	8354	8354		

Executive Summary

This report outlines the sustainability strategy for the proposed refurbishment of 80 Guilford Street in line with the recommendations set out by the London Plan and the Camden Council.

This sustainability statement is divided into two parts:

- Policy and Sustainability Standards
- BREEAM Domestic Refurbishment

The first part provides an overview of the site, planning policies and recommendations applicable to this development found in both Camden Council's Core Strategy and the London Plan. The report then demonstrates how these recommendations have been met.

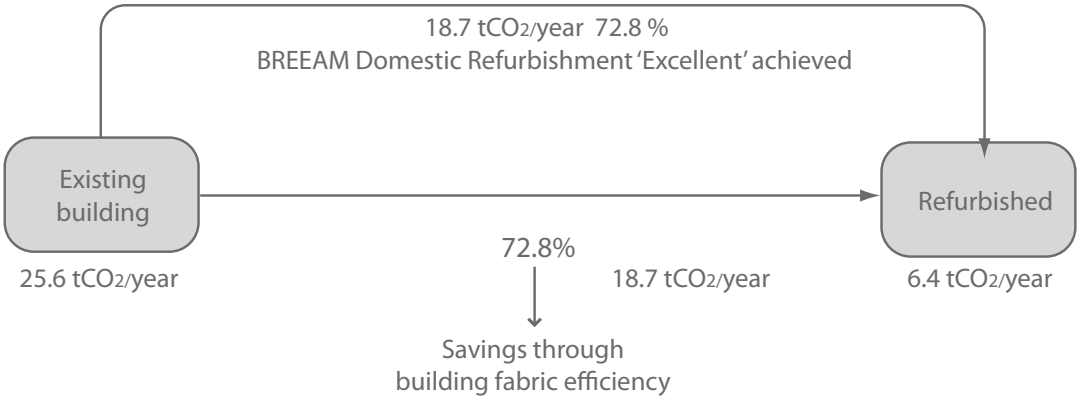
The body of this report outlines the sustainability measures that have been adopted to achieve BREEAM Domestic Refurbishment 'with an Excellent' rating. A summary of the pre-assessment credits for BREEAM Domestic Refurbishment is provided at the end of the report.

The development achieves 72.45 credits, which exceeds the required 70 credits for BREEAM Domestic Refurbishment 'Excellent'.

The diagram below provides a summary of the CO_2 savings achieved by the proposed change of use over the development with existing building fabric and systems. The 72.8% reduction in CO_2 emissions reflects regulated energy use only, in accordance with Part L Building Regulations. Unregulated energy use is not taken into account in the calculation of BREEAM credits (e.g. plug-in load and appliances).

The number of credits obtained in the BREEAM pre-assessment reflects the client and design team's aspirations in incorporating as many sustainability measures as possible.

Total savings over the development with existing fabric and systems at 80 Guilford Street
(savings is based on regulated energy only in accordance with Building Regulations Part L)



Site

80 Guilford Street is located along Guilford Street, in a close proximity to Russell Square underground station, within the London Borough of Camden. The proposed development includes the refurbishment of an existing Grade II Listed Building.

The approximate site location and boundary is shown in the figure below.

80 Guilford Street

Planning Policies

The development is in line with the requirements set out by the London Borough of Camden.

Camden Core Strategy 2010

The Camden Core Strategy sets out the Council's key planning policies and is a central part of their Local Development Framework (LDF). The recommendations for the sustainability policy is inserted below:

CS13 – Tackling climate change through promoting higher environmental standards

Reducing the effects of and adapting to climate change

The Council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation by:

a) Ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;

b) Promoting the efficient use of land and buildings;

c) Minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:

1. *Ensuring developments use less energy,*
2. *Making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;*
3. *Generating renewable energy on-site; and*

d) Ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions.

Camden Core Strategy
2010-2025
Local Development Framework

Camden

Camden Development Policies 2010

In addition to the Core Strategy Document the Camden Development Policies also forms part of the LDF. The policy relating to sustainability is listed below:

DP22 – Promoting sustainable design and construction

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5 below, have been incorporated into the design and proposed implementation; and

b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

c) expecting new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.;

d) expecting developments (except new build) of 500 sq m of residential floorspace or above or 5 or more dwellings to achieve "very good" in EcoHomes assessments prior to 2013 and encouraging "excellent" from 2013;

e) expecting non-domestic developments of 500sqm of floorspace or above to achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:

f) summer shading and planting;
g) limiting run-off;
h) reducing water consumption;
i) reducing air pollution; and
j) not locating vulnerable uses in basements in floodprone areas.

Camden Planning Guidance - Sustainability CPG3 - 2011

The Camden Planning Guidance support the policies set out in the Local Development Framework (LDF). While the Camden LDF contains policies relating to sustainability in their Core Strategy and Development Policies documents, the Council also has a separate planning guidance specific to sustainability.

According to the Camden Council,

- *All buildings, whether being updated or refurbished, are expected to reduce their carbon emissions by making improvements to the existing building. Work involving a change of use or an extension to an existing property is included. As a guide, at least 10% of the project cost should be spent on the improvements.*
- *Where retro-fitting measures are not identified at application stage we will most likely secure the implementation of environmental improvements by way of condition. Appendix 1 sets out a checklist of retro fit improvements for applicants.*
- *Development involving a change of use or a conversion of 5 or more dwellings or 500sq m of any floorspace, will be expected to achieve 60% of the un-weighted credits in the Energy category in their EcoHomes or BREEAM assessment, whichever is applicable. (See the section on Sustainability assessment tools for more details).*
- *Special consideration will be given to buildings that are protected e.g. listed buildings to ensure that their historic and architectural features are preserved.*

The sections that will be covered by a combination of the Sustainability Statement listed below:

- The energy hierarchy
- Energy efficiency: new buildings
- Decentralised energy networks and combined
- heat and power
- Renewable Energy
- Water Efficiency
- Sustainable use of materials
- Sustainability assessment tools
- Brown roofs, green roofs and green walls
- Flooding
- Adapting to climate change
- Biodiversity

The London Plan 2011

The London Plan 2011 requires compliance with the following policies relating to climate change:

- Policy 5.2 Minimising Carbon Dioxide Emissions (refer to the supplementary Energy Report)
- Policy 5.3 Sustainable Design and Construction
- Policy 5.5 Decentralised Energy Networks (refer to the supplementary Energy Report)
- Policy 5.6 Decentralised Energy in Development Proposals (refer to the supplementary Energy Report)
- Policy 5.7 Renewable Energy (refer to the supplementary Energy Report for more details)
- Policy 5.9 Overheating and Cooling
- Policy 5.10 Urban Greening
- Policy 5.11 Green Roofs
- Policy 5.12 Flood Risk Management
- Policy 5.13 Sustainable Drainage
- Policy 5.15 Water use and Supplies
- Policy 5.16 Waste Self-Sufficiency
- Policy 5.18 Construction. Excavation and Demolition Waste
- Policy 5.19 Hazardous Waste
- Policy 5.20 Aggregates

Where possible, the London Plan policies have been met through the implementation of the BREEAM Domestic Refurbishment.

BREEAM Domestic Refurbishment Pre-Assessment

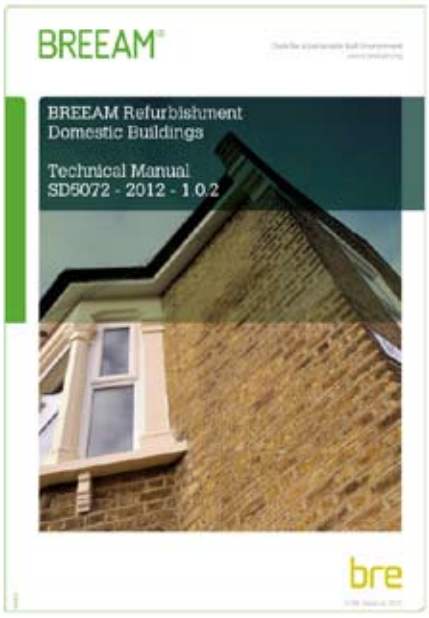
BREEAM Domestic Refurbishment

BREEAM Domestic Refurbishment is a performance based assessment method and certification scheme for domestic buildings undergoing refurbishment, providing an authoritative rating for refurbished homes, covering houses, flats and apartments. It also recognises limitations of existing buildings including their inherent built form and location. Since June 2012, BREEAM Domestic Refurbishment has superceded the EcoHomes assessment method.

BREEAM Domestic Refurbishment measures the sustainability of a development against design categories, rating the entire development as a complete package. Each standard requires developments to gain credits by meeting sustainable design principles over seven key areas:

1. Management
2. Health and Wellbeing
3. Energy
4. Water
5. Materials
6. Waste
7. Pollution

Camden Council sets Ecohomes 'Excellent' rating for refurbishments and conversions as a requirement from 2013. However, since Ecohomes was superceded by BREEAM Domestic Refurbishment in 2012, the development at 80 Guilford Street aims to reach BREEAM Domestic Refurbishment 'Excellent', reflecting the design team's aspirations in incorporating appropriate sustainability measures. The following section outlines the measures adopted at 80 Guilford Street to achieve BREEAM Domestic Refurbishment 'Excellent'.



Management

MAN 1 Home User Guide

A 'Home User Guide' will be made available to the dwelling providing occupants with an understanding of the energy associated with the operation of their home. This non-technical guide will include operational instructions, recommendations on improving energy use and information on the surrounding area (local amenities) to obtain full credits in this section.

MAN 2 Responsible Construction Practices

The tender specification will require contractors to be compliant with the Considerate Constructors Scheme (CCS). It is expected that formal certification will be achieved and that contractors will operate beyond compliance level (CCS Code of Considerate Practice score between 35 and 40 with score 7 in each section).

MAN 3 Construction Site Impacts

To minimise the construction impacts of the site, contractors will be required to monitor, report and set targets for the production of CO_2 arising from site activities in respect to energy use and water consumption.

MAN 4 Security

All external doors and accessible windows will meet minimum BREEAM standards and be appropriately fitted.

An Architectural Liaison Officer will be consulted and their advice will be incorporated into the design of the development in accordance with 'Secured By Design' standards.

MAN 5 Protection and Enhancement of Ecological Features

The development is currently located on a site with low ecological value as there are no existing features of ecological value at the site. Therefore, this credit can be awarded by default.

MAN 6 Project Management

A project implementation plan will be compiled by the project manager; individual and shared responsibilities will be assigned amongst the project team during an initiation meeting.

Health and Wellbeing

HEA 1 Daylighting

The layout of internal spaces within the development has been designed with daylight in mind.

HEA 2 Sound Insulation

Building elements will be designed to meet Building Regulations Part E.

HEA 5 Ventilation

A minimum level of background ventilation will be provided (e.g. trickle ventilators) for all habitable rooms, kitchens, utility rooms and bathrooms compliant with section 7, Part F, 2010. Extract ventilation will be provided in all wet rooms (e.g. kitchen, utility and bathrooms), and will be compliant with section 5, Building Regulations Approved Document Part F 2010. In addition, purge ventilation will be provided in all habitable rooms and wet rooms in compliance with section 7, Building Regulations Approved Document Part F, 2010.

The refurbishment will be designed to meet the requirements of Building Regulations Part F section 3.11–3.16.

HEA 6 Safety

Smoke and carbon monoxide detection systems will be installed as part of the refurbishment. A compliant fire detection and alarm system will also be provided.

Energy

ENE 1 Improvement in Energy Efficiency Rating (EER)

The Energy Efficiency Rating (EER) is a measure of the overall efficiency of a dwelling. It accounts for regulated energy use in terms of heating, hot water, equipment, lighting and auxiliary energy use.

The methodology set out by the Department of Energy and Climate Change (DECC) for assessing the energy use of dwellings is the Standard Assessment Procedure (SAP). The current version is SAP 2009.

A preliminary SAP calculation was carried out to assess the potential CO_2 savings achieved through

- energy efficiency measures
- the efficient supply of energy
- renewable systems

The preliminary SAP calculations for the proposed development at 80 Guilford Street showed a significant reduction in energy demand in comparison to the existing building. The SAP calculation results indicate that area weighted average EER will increase from 43.3 before the refurbishment to 80.3 post refurbishment.

ENE 2 Energy Efficiency Rating (EER) Post Refurbishment

The reduction in energy demand of the proposed development will be achieved through the addition of internal insulation to all external building elements, implementation of high insulation levels to all new external elements, use of efficient lighting, installation of high performance glazing and implementation of high efficiency gas combi boilers to provide space heating and hot water.

The SAP calculation shows that an EER of 80.3 will be achieved for the proposed development.

ENE 3 Primary Energy Demand
A primary energy demand of 108.5 kWh/m^2/year will be achieved by the building post refurbishment.

ENE 5 Energy Labelled White Goods
All residential units in 80 Guilford Street will be supplied with an EU Energy Efficiency Labelling Scheme Leaflet, which provides guidance on the purchase of energy efficient white goods.

The dwellings will also be supplied with energy efficient white goods which meet the following standard:

- Fridges and freezers or fridge freezers, washing machines and dishwashers - Energy Saving Trust recommended appliances
- Tumble dryers or washer dryers - B rating under EU Energy Efficiency Labelling scheme

ENE 6 Drying Space
The proposed development will include provisions for internal clothes drying, thereby reducing the amount of electricity consumed through the use of tumble dryers. Each 1-2 bedroom dwelling will include at least 4m of retractable drying lines, while a minimum of 6m will be provided in dwellings of 3 bedrooms, all within well-ventilated bathrooms.

ENE7 Lighting
Internal - When daylight is inadequate, lighting will be designed to give occupants flexibility in achieving desired illuminance levels without excessive energy use. The design will aim to achieve a maximum average wattage of 9 watts/m^2 across the total floor area of the dwelling.

External - Energy efficient light fittings will be installed in the external spaces. In addition, external lights will be fitted with controls to reduce the energy consumption of the building during periods of infrequent use:

- external space lighting will include energy efficient fittings
- security lighting will include daylight cut-off devices, with a maximum wattage of 150W and PIR

ENE 8 Energy Display Devices
Energy display devices will be installed in all flats to enable the occupants to gain an understanding of their energy consumption and to enable them to reduce their energy use in the future. The display devices will provide information on current electricity and primary heating consumption data.

ENE 8 Cycle Storage
Cycle spaces will be provided within the development to reduce the frequency of short car journeys. The cycle storage will be adequately sized, secure and accessible to all occupants, thereby achieving a credit in this category.

The provision of bicycle storage will be at a rate of 1 space for every two 1 bed units and 1 space for every 2-3 bed units.

Water

WAT 1 Internal Water Use

The water category aims to reduce the consumption of potable water in the home from all sources. These are mandatory credits within BREEAM Domestic Refurbishment, with BREEAM 'Excellent' setting an upper limit of 117 litres per person per day.

The development at 80 Guilford Street aims to reduce water consumption through the use of water efficient fittings, including dual flush toilet, water efficient shower heads and taps. The average capacity and maximum flow rates of the water fittings are listed below.

It is estimated that the proposed development will achieve a water consumption rate of 104.6 litres/person/day, exceeding the mandatory target for BREEAM 'Excellent'.

WAT 2 External Water Use

Flat with a private garden will be equipped with a compliant rainwater collection system for external/internal irrigation use. The volume of a rainwater butt for a 1-2 bedroom home with a private garden should be 150 litres.

Flats without garden space, as well as flats that only have balconies provided, achieve this credit by default.

WAT 3 Water meter

Water meters providing visual display of mains potable water consumption installed at a secure and visible location within all flats. The water meters will be capable of recording and displaying historical water consumption, and allowing occupants to monitor their water consumption over time. The meter will also be able to display current consumption either instantaneously or at half hourly intervals.

Estimated Water Consumption

	Residential Units	
Fitting	**Average capacity/Flow rate**	**Consumption (l/person/day)**
WC (full flush)	6 litres per flush	17.64
WC (half flush)	3 litres per flush	
Kitchen and utility sink taps	6 litres per min	13
Wash basin tap	4 litres per min	7.9
Bath	180L capacity to overflow	19.8
Shower	8 litres per min	34.96
Washing machine	8.17L per kg (dry load)	17.16
Dishwasher	1.25L per place setting	4.5
Net internal water consumption		114.96
Normalisation factor		0.91
Total Water Use		**104.6**

Materials

MAT 1 Environmental Impact of Materials

Embodied energy is the energy that is used in the manufacture, processing and the transportation of the materials to site.

The construction build-ups for each of the main building elements are rated from A+ to E. Each element to be used in the building has been rated according to the BRE Green Guide to Specification whereby:

- A+ rated elements are least likely to affect the environment
- E rated elements are most likely to affect the environment

It is assumed that most of the main building elements within this development will achieve between an A+ to C rating.

MAT 2 & MAT 3 Responsible Sourcing of Materials and Insulation

At least 80% of the materials specified will be obtained from legally and responsible sources. This includes all basic building elements, comprising the building frame, floors, roof, external walls, foundations and internal walls and all finishing elements.

In addition, 100% of all timber used on site will be legally sourced, thereby satisfying the mandatory requirements set out in this category. Any timber used in the structural and finishing elements will be specified from certified sustainable sources such as FSC or PEFC.

Where possible, on-site materials will be reused and recycled to lower transport CO_2 emissions associated with off-site recycling. Where practicable, materials with a high recycled or waste content will be specified.

The insulation index for all new insulation used in external walls, ground floor, roof and building services will be less than 2 when calculated using the BREEAM Mat3 Insulation Calculator..

Waste

WAS 1 Household Waste

- Non-recyclable: External space will be allocated for non-recyclable household waste, this will be collected by the Local Authority
- Recyclable: A Local Authority Collection Scheme is in operation for the collection of recyclable household waste. Each dwelling will be provided with a bin, with a total capacity of 30 litres and to be located in a dedicated position in the kitchen.

WAS 2 Construction Site Waste Management

The development will minimise the impact of construction waste on the environment through a Site Waste Management Plan (SWMP). This plan will include:

- benchmarks for resource efficiency
- procedures and commitments to reduce hazardous and non-hazardous waste
- monitoring hazardous and non-hazardous waste

All waste generated through the refurbishment process will be managed in accordance with BREEAM recommendations.

A pre-refurbishment audit of the existing building, which covers demolition materials, will be completed. Non-hazardous demolition waste generated by the dwellings refurbishment will meet or exceed the refurbishment and demolition waste diversion benchmarks.

Internal waste storage and separation

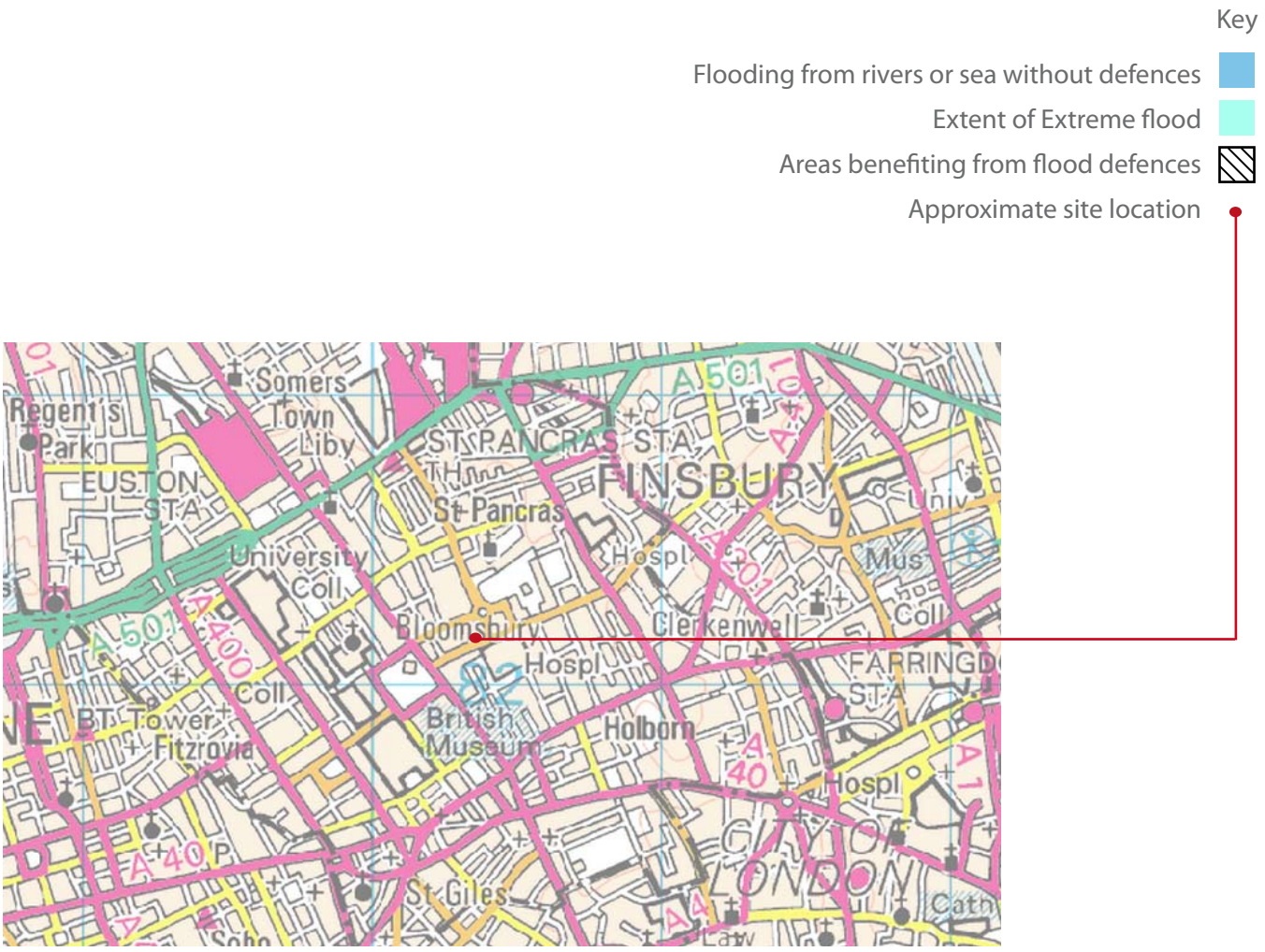
Pollution

POL 1 NOx Emissions

This section aims to reduce the release of nitrogen oxide (NOx) into the atmosphere. Space heating and hot water requirements will be met by high efficiency gas combi boilers with low inherent NOx emissions. Gas boilers with NOx emissions of less than 40 mg/kWh will be specified.

POL3 Flooding

The Environment Agency flood map (as below) shows the site to be at low risk of flooding. A flood risk assessment will be carried out to confirm this.



Environment Agency flood map shows that the site is located in an area with a low risk from flooding. (Source: EA flood map - http://maps.environment-agency.gov.uk)

BREEAM Domestic Refurbishment Pre-Assessment Results

A BREEAM Domestic Refurbishment pre-assessment was carried out for the 80 Guilford Street refurbishment, using the targets set by the client and project team. This reflects the client's and project team's commitment in adopting a range of sustainability measures over the life-cycle of the development.

The table below summarises the number of credits achieved in each of the BREEAM categories, using the BRE Pre-Assessment Estimator.

The proposed development achieves a total of 72.45 credits, which exceeds the requirement for BREEAM 'Excellent'.

				Score Assessment		
		Credit Score	Credits Available	Sub Total	Weighting Factor	Points Score
Management	MAN 1 Home User Guide	3	3	10	12%	10.91%
	MAN 2 Responsible Construction Practices	2	2			
	MAN 3 Construction Site Impacts	1	1			
	MAN 4 Security	2	2			
	MAN 5 Protection & Enhancement of Ecological Features	1	1			
	MAN 6 Project Management	1	2			
Health & Wellbeing	HEA 1 Daylighting	0	2	4	17%	5.67%
	HEA 2 Sound Insulation	2	4			
	HEA 3 Volatile Organic Compounds	0	1			
	HEA 4 Inclusive Design	0	2			
	HEA 5 Ventilation	1	2			
	HEA 6 Safety	1	1			
Energy	ENE 1 Improvement in Energy Efficiency Rating	4	6	22.5	43%	33.36%
	ENE 2 Energy Efficiency Rating Post Refurbishment	3.5	4			
	ENE 3 Primary Energy Demand	7	7			
	ENE 4 Renewable Technologies	0	2			
	ENE 5 Energy Labelled White Goods	2	2			
	ENE 6 Drying Space	1	1			
	ENE 7 Lighting	2	2			
	ENE 8 Display Energy Devices	2	2			
	ENE 9 Cycle Storage	1	2			
	ENE 10 Home Office	0	1			
Water	WAT 1 Internal Water Use	2.5	3	4.5	11%	9.90%
	WAT 2 External Water Use	1	1			
	WAT 3 Water Meter	1	1			
Materials	MAT 1 Environmental Impact of Materials	18	25	33	8%	5.87%
	MAT 2 Responsible Sourcing	7	12			
	MAT 3 Insulation	8	8			
Waste	WAS 1 Household Waste	2	2	5	3%	3.00%
	WAS 2 Refurbishment Site Waste Management	3	3			
Pollution	POL 1 NOx Emissions	3	3	5	6%	3.75%
	POL 2 Surface Water Runoff	0	3			
	POL 3 Flooding	2	2			
	Level Achieved:	**Excellent**		**Total Point Scored:**		**72.45%**