

# Preliminary Assessment BREEAM Domestic Refurbishment 19 Fitzroy Square

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## Contents:

Executive Summary.....	2
Score Breakdown.....	3
Management.....	4
Health and Wellbeing.....	6
Energy.....	8
Water.....	11
Materials.....	12
Waste.....	13
Pollution.....	14
Scoresheet.....	15

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# Executive Summary

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Introduction:

Eight Associates have been appointed, as registered BREEAM Domestic Refurbishment assessors, to undertake an outline stage review of the likely BREEAM rating for the proposed development at 19 Fitzroy Square in the London Borough of Camden. The results of this report are based on the meeting held on the 23<sup>rd</sup> February 2016 and subsequent correspondence.

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#### Building Summary:

The proposed development is located in Fitzroy Square, a Georgian Square in Fitzrovia, in the London Borough of Camden. Constructed circa 1827, 19 Fitzroy Square is the end property in a terrace of 7 houses on the northern side of the square.

19 Fitzroy Square is a Grade II\* listed property and also falls within the Fitzrovia Conservation Area; the BREEAM requirements for historic buildings (for sound insulation, ventilation, energy and security) are therefore applicable.

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#### Score Summary:

Camden Council requires all residential refurbishments, conversions and change of use (for 5 or more dwellings, or 500sqm or more) to achieve a BREEAM Domestic Refurbishment Excellent rating with at least:

- 60% of the credits within the Energy section (18 of a possible 29)
- 60% of the credits within the Water section (3 of a possible 5)
- 40% of the credits within the Materials section (20 of a possible 48)

The Council does, however, give special consideration to buildings that are protected (e.g. listed buildings) to ensure that their historic and architectural features are preserved.

Consequently, the project will aspire to an Excellent rating; however, it should be noted that to do constraints resulting from the building's status as a Grade II\* listed building this may not be achievable.

The development currently aims to achieve an **Excellent** rating, with a preliminary score of **72.21%** (the minimum score required to achieve this rating is 70%). Eight Associates recommend a safety margin of at least 3% is maintained to secure the rating through to practical completion.

The development will aim to achieve the council's targets for energy, water and materials.

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# Score Breakdown

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

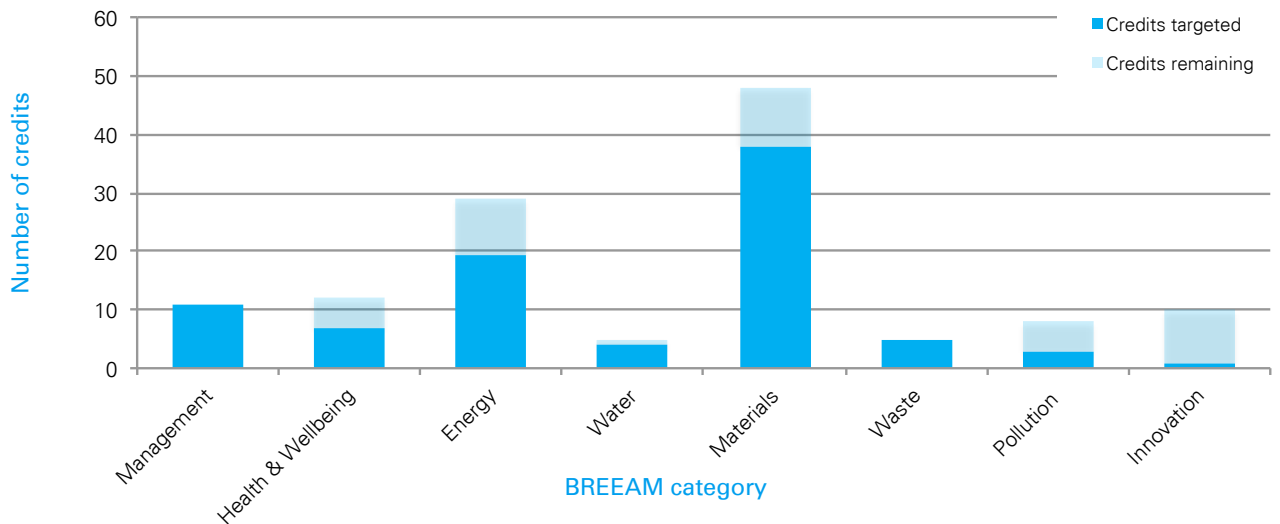
**Summarised Score:**

The table below shows the target score for each section of BREEAM Domestic Refurbishment.

	Score	Credits available	% Achieved	Weighting Factor	Credits Score
Management	11.0	11	100.00	0.12	12.00
Health & Wellbeing	7.0	12	58.33	0.17	9.92
Energy	19.5	29	67.24	0.43	28.91
Water	4.0	5	80.00	0.11	8.80
Materials	38.0	48	79.17	0.08	6.33
Waste	5.0	5	100.00	0.03	3.00
Pollution	3.0	8	37.50	0.06	2.25
Innovation	1.0	10	10.00	0.1	1.00
<b>Total</b>					<b>72.21</b>
				<b>Rating</b>	<b>EXCELLENT</b>

**Graphic Breakdown:**

The graph below shows the credits targeted (dark blue) and the potential credits that are achievable (light blue) under each section of BREEAM. Please see the remaining portions of the report for further details of BREEAM requirements.



# Management

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Man 01 – Home Users Guide:

The design team has confirmed that a Home Users Guide will be provided, informing the occupants on the correct operation of the building's various systems. The guide will contain all information listed in the 'Home Users Guide Contents List', as detailed by BREEAM, and will be non-technical in nature. **3 of 3**

*Three of three credits are targeted.*

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#### Man 02 – Responsible Construction:

The design team has confirmed that the site will be registered with the Considerate Constructors Scheme and will achieve a score of  $\geq 35$ , with at least 7 points in each section. **2 of 2**

*Two of two credits are targeted.*

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#### Man 03 – Construction Site Impacts:

The design team has confirmed that the chosen contractor will operate an environmental materials policy and at least 80% of site timber will be reclaimed, re-used or responsibly sourced. In addition, the design team has confirmed that site energy and water use will be logged during the construction phase and targets will be set for usage. **1 of 1**

*One of one credit is targeted.*

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#### Man 04 – Security:

The design team has confirmed that all doors and windows are to be replaced, and that all new units will meet the security ratings set out by BREEAM. **2 of 2**

In addition, the design team has confirmed that an Architectural Liaison Officer will be appointed to provide recommendations as to how Section 2 of Secured by Design ('Physical Security') will be met – all mandatory recommendations will be adopted in the refurbishment specification.

*Two of two credits are targeted.*

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# Management

## BREEAM Domestic

## Refurbishment

### 19 Fitzroy Square

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#### Man 05 – Ecological Features:

The design team has confirmed that a report will be provided by a member of the design team, confirming the presence / absence of the following ecological features:

1 of 1

- Trees of significant ecological value (i.e. trunk diameter  $\geq 100\text{mm}$ ,  $\geq 10$  years old or species of significance);
- Mature hedgerows over 1m tall and 0.5m wide;
- Natural areas (e.g. flower-rich meadow / grassland / heathland);
- Watercourses (rivers / streams / canals);
- Wetlands;
- Protected species;
- Local priority UK BAP species;
- Roosting / nesting opportunities for birds / bats.

Where protected species are identified as present on site, the relevant Statutory Nature Conservation Organisation (SNCO) will be notified and the species will be adequately protected in line with BREEAM criteria.

*One of one credit is targeted.*

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#### Man 06 – Project Management:

The design team has confirmed that all members of the project team will be involved in project decision-making, and individual/shared roles and responsibilities will be assigned across the following key design and refurbishment stages for one credit:

2 of 2

- Planning and Building Control notification;
- Design;
- Refurbishment;
- Commissioning and handover;
- Occupation.

In addition, the design team has confirmed that a handover meeting will take place, and that at least two of the following items will be undertaken to evaluate project success:

- A site inspection within three months of occupation;
- Post-occupancy interviews with building occupants (by phone or by post) within three months of occupation;
- A commitment to providing longer-term aftercare e.g. a helpline, nominated individual or other appropriate system to support building users for at least the first twelve months of occupation.

*Two of two credits are targeted.*

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# Health and Wellbeing

## BREEAM Domestic

### Refurbishment

# 19 Fitzroy Square

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#### Hea 01 – Daylighting:

Detailed daylighting calculations have been carried out for 19 Fitzroy Square confirming that the kitchen, living room, dining room and study meet the BREEAM minimum daylighting levels. Two credits can therefore be targeted.

2 of 2

The property is not being extended, therefore there will be no impact on daylighting levels in the kitchen, living room, dining room or study of neighbouring properties.

*Two of two credits are targeted.*

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#### Hea 02 – Sound Insulation:

As 19 Fitzroy Square is a listed building the BREEAM requirements for historic buildings can be applied for this issue.

2 of 4

The design team has confirmed that sound testing is not feasible due to lack of access to neighbouring properties. In lieu of this an acoustic consultant (who is a member of the Institute of Acoustics) will be appointed to calculate pre-refurbishment airborne and impact sound insulation values for separating/party walls based on the existing build-up.

The acoustician will provide recommendations for a suitable build-up to improve these values. At present a 3dB improvement is being targeted (airborne sound insulation 3dB higher and impact sound insulation 3dB lower than before the development).

*Two of four credits are targeted.*

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#### Hea 03 – Volatile Organic Compounds:

The design team has confirmed that internal finishes and fittings that emit high levels of volatile organic compounds (VOCs) will be avoided in the specification, in line with the criteria set out by BREEAM.

1 of 1

*One of one credit is targeted.*

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# Health and Wellbeing

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Hea 04 – Inclusive Design:

The design team has confirmed that it will not be possible to meet the inclusive design criteria as set out by BREEAM, most notably due to the lack of level access across the main entrance threshold. **0 of 2**

*Zero of two credits are targeted.*

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#### Hea 05 – Ventilation:

#### MINIMUM OF ONE CREDIT REQUIRED FOR ALL BREEAM RATINGS **1 of 2**

As 19 Fitzroy Square is a listed building the BREEAM requirements for historic buildings can be applied for this issue.

The design team has confirmed that a pre-refurbishment air tightness test and structural moisture survey will be carried out to establish the appropriate levels of background, purge and extract ventilation for the building. Ventilation rates in all habitable and inhabitable spaces will be sufficient to structural moisture to be dealt with effectively.

*One of two credits is targeted.*

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#### Hea 06 – Safety:

#### MINIMUM OF ONE CREDIT REQUIRED FOR BREEAM 'VERY GOOD' **1 of 1**

The design team has confirmed that compliant fire and (where mains gas or any other form of fossil fuel is used within the building) carbon monoxide detection systems will be installed. These will be hard-wired into the building's mains electricity supply and will feature battery back up. In addition, the systems will meet Part B of the Building Regulations for new build, in line with the following requirements:

- Fire detection and alarm systems will be in accordance with BS5839-6:2004 and to at least a Grade D, Category LD3 standard. The system will be positioned in accordance with the Building Regulations Part B, Fire Safety Volume 1 – Dwellinghouses 2006, Section 1, Paragraphs 1.11 – 1.18.
- Carbon Monoxide detection systems will meet BS EN 50291-1:2001 and be positioned in accordance with BS EN 50292:2002. Systems should carry a British or European approval mark. Where smoke and carbon monoxide detectors are combined, they should also meet the LPS 1282 standard.

*One of one credit is targeted.*

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# Energy

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Ene 01 – Improvement in Energy Efficiency Rating (EER):

The design team has confirmed that efforts will be made to improve the energy efficiency of the dwelling, thus reducing the associated CO<sub>2</sub> emissions. Efficient new services will be installed and, where possible, building fabric will be upgraded. **3 of 6**

Draft SAP 2012 calculations carried out by Eight Associates demonstrate an improvement in the building's energy efficiency rating of  $\geq 26$ .

*Three of six credits are targeted.*

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#### Ene 02 – EER Post Refurbishment:

Please note: as 19 Fitzroy Square is a listed building the mandatory requirements for this issue do not apply. **0.5 of 4**

19 Fitzroy Square is a Grade II\* listed building, therefore there are significant constraints on the degree to which the building's fabric can be upgraded. All new thermal elements will be constructed to perform better than the minimum standards set out in Building Regulations Part L. Where possible, existing walls will be upgraded with thermal insulation and existing windows improved with secondary glazing; however, it will not be possible to upgrade all walls and windows.

Initial energy modelling, carried out by Eight Associates, indicates that the building will achieve an energy efficiency rating of  $\geq 50$ .

*Half of four credits are targeted.*

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#### Ene 03 – Primary Energy Demand:

The design team has confirmed that efforts will be made to reduce the absolute total regulated energy demand of the dwelling. **4 of 7**

Based on SAP 2012 calculations Eight Associates estimate the post-refurbishment Primary Energy Demand as being  $\leq 240$  kWh/m<sup>2</sup>/year.

*Four of seven credits are targeted.*

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#### Ene 04 – Renewable Technologies:

The design team has confirmed that the majority of the dwelling's energy will be provided by renewable technologies (air source heat pumps). In addition, the Primary energy Demand will be less than 250 kWh/m<sup>2</sup>/year. **2 of 2**

*Two of two credits are targeted.*

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# Energy

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Ene 05 – Energy Labelled White Goods:

The design team has confirmed that all white goods will have the following ratings under the EU Energy Efficiency Labelling Scheme:

2 of 2

- Fridges/freezers = A+
- Washing machines = A++
- Dishwashers = A+
- Washer driers and tumble dryers = A
- Where no white goods are provided to the dwelling(s) but the EU Energy Efficiency Labelling Scheme Information Leaflet is provided to each dwelling

*Two of two credits are targeted.*

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#### Ene 06 – Drying Space:

The design team has confirmed that 6m+ of drying line will be installed, permanently fixed within a bathroom or utility room. The room will be heated and will feature adequate, controlled ventilation compliant with the Building Regulations Approved Document Part F.

1 of 1

*One of one credit is targeted.*

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#### Ene 07 – Lighting:

The design team has confirmed that the energy required for internal lighting will be minimised through the provision of a maximum average wattage across the total floor area of the dwelling of 9 Watts/m<sup>2</sup>. 2 of 2

In addition, energy efficient (greater than 45 lumens per circuit watt) external lighting will be specified. External lighting will be suitably controlled to avoid operation during daylight hours.

*Two of two credits are targeted.*

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# Energy

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Ene 08 – Energy Display Devices:

The design team has confirmed that a compliant energy display device will be specified. This device will be capable of displaying and recording current electricity and primary heating fuel consumption data and will comprise a self-charging sensor(s) fixed to the incoming mains supply or supplies, to measure and transmit energy consumption data to a visual display unit. The visual display unit must will be capable of displaying the following information:

2 of 2  
+ 1  
inn.

- Local time
- Current (real time) energy consumption (kilowatts and kilowatt hours)
- Current (real time) estimated emissions (g/kg CO<sub>2</sub>)
- Current (real time) tariff
- Current (real time) cost (per hour)
- Visual presentation of data (i.e. non-numeric) to allow consumers to easily identify high and low level of usage

Furthermore, the device will be capable of recording historic consumption data, in line with the BREEAM exemplary performance requirements. This data will be stored for a minimum of two years.

*Two of two credits and one innovation credit are targeted.*

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#### Ene 09 – Cycle Storage:

19 Fitzroy Square contains over four bedrooms; therefore, the design team has confirmed that storage will be provided for four cycles. Cycle storage will comply with the BREEAM requirements (covered overhead, fixed to a permanent structure, sufficiently secure).

2 of 2

*Two of two credits are targeted.*

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#### Ene 10 – Home Office:

The design team has confirmed that the space and services necessary for residents to be able to work from home will be provided, in line with BREEAM criteria for a home office. The room will incorporate the following services:

1 of 1

- Two double power sockets;
- One telephone point;
- One data point;
- A window with an openable casement of no less than 0.5m<sup>2</sup> and whose width or height is not less than 450mm.

*One of one credit is targeted.*

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# Water

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Wat 01 – Internal Potable Water Use:

#### MINIMUM OF TWO CREDITS REQUIRED FOR A BREEAM 'EXCELLENT'

2 of 3

The design team has confirmed that internal water use attenuation measures will be implemented. Although a number of options are available to achieve two credits for this issue, Eight Associates recommend the following specification:

- Bathroom taps with a flow rate of 3 litres per minute or less
- Showers with a flow rate of 10 litres per minute or less
- Baths with a capacity of no more than 200 litres to overflow
- 6/4 litre, dual flush WCs
- Dishwashers with a consumption of no more than 1 litre per place setting
- Washing machines with a consumption of no more than 7 litres per kg of dry load
- No waste disposal units to be installed
- No water softening devices to be installed

Adoption of the above specification will ensure that the required internal water consumption level of <118 litres/person/day will be achievable.

*Two of three available credits are targeted.*

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#### Wat 02 – External Water Use:

The design team has confirmed that the design includes limited external space (a terrace area at lower ground level). A rainwater butt of at least 200 litres capacity will be provided for storage of water for irrigation of plants. **1 of 1**

*One of one credit is targeted.*

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#### Wat 03 – Water Meter:

The design team has confirmed that an appropriate water meter for measuring usage of mains potable water will be specified. The meter will be a permanent feature, secured within the home in a location visible to occupants (i.e. not hidden within a cupboard) and capable of recording and displaying historic water consumption to allow water consumption to be monitored over time. The meter will be capable of displaying current consumption either instantaneously or at half hourly intervals. **1 of 1**

*One of one credit is targeted.*

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# Materials

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Mat 01 – Environmental Impact of Materials:

The design team has confirmed that many of the building's existing elements will be retained and their performance enhanced. Where new materials are required, those with the optimal balance of low environmental impact and high thermal performance will be specified. 20 of 25

Where used, concrete will be specified to comprise the highest possible proportions of ground granulated blast furnace slag (GGBS), pulverised fuel ash (PFA) and recycled aggregate (RCA).

*Twenty of the twenty-five available credits are targeted, based on the Green Guide rating of works to the external, internal and separating walls and roofs.*

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#### Mat 02 – Responsible Sourcing of Materials:

#### MINIMUM STANDARDS APPLY TO TIMBER PROCUREMENT 10 of 15

The design team has confirmed that all timber used on site will be 'legally harvested and traded' (see design guide for further details). **This is a pre-requisite; no credits can be awarded unless compliance with this criterion is confirmed.**

The principle contractor will source materials for the projects in accordance with a documented sustainable procurement plan.

The design team has confirmed that efforts will be made to reuse materials where feasible, and that where required, new materials will be responsibly sourced. All concrete will be BES 6001 certified and any other material will be ISO 14001 certified for both key processes and supply chain extraction processes. All timber will be FSC certified.

*Ten of fifteen credits are targeted.*

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#### Mat 03 – Insulation:

The design team has confirmed that where thermal insulation is required, responsibly sourced materials with a low embodied environmental impact relative to its thermal properties will be specified, in line with BRE requirements. 8 of 8

All insulation will be A+ rated under the Green Guide (including insulation for building services) and sourced from a manufacturer with ISO14001 (for manufacture and sourcing) or BES6001 (to at least a 'Very Good' standard) certification. In addition at least 80% of all new thermal insulation used in the building elements will be responsibly sourced.

*Eight of eight credits are targeted.*

# Waste

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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#### Was 01 – Household Waste:

The design team has confirmed that household recycling facilities will be provided alongside those for non-recyclable waste, thus diverting household waste from landfill or incineration.

2 of 2

The London Borough of Camden operates a recycling service where waste is collected and sorted post-collection, therefore two containers (one for recycling and one for general waste) with a capacity of no less than 30 litres each (i.e. 60 litres in total), installed in a fixed location in the dwelling will be sufficient to gain one credit for this issue.

The London Borough of Camden operates a composting collection service, where kitchen and garden waste is collected on a weekly basis. Therefore, an additional container with a capacity of at least 7 litres will be provided in a dedicated position internally for kitchen waste.

*Two of two credits are targeted.*

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#### Was 02 – Refurbishment Site Waste:

The design team has confirmed that a pre-refurbishment waste audit will be carried out to establish materials that can be recovered, re-used and recycled. In addition, the contractor will be required to operate a site waste management plan in line with BREEAM criteria, and meet the following waste generation and diversion benchmarks:

3 of 3

- No more than 8.78 tonnes of non-hazardous construction waste generated per £100,000 of project value (excluding excavation waste)
- 85% (by tonnage) of non-hazardous construction waste diverted from landfill
- 95% (by tonnage) non-hazardous demolition waste diverted from landfill

*Three of the available three credits are targeted.*

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# Pollution

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

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**Pol 01 – NO<sub>x</sub> Emissions:**

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Credits for this issue are targeted at this stage due to the presence of air source **0 of 3** heat pumps used for space heating and comfort cooling.

*Zero of three credits are targeted.*

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**Pol 02 – Surface Water Runoff:**

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The design team has confirmed there will be no change in the size of the building's footprint, or man-made impermeable area, as a result of the refurbishment. Furthermore, any new areas of hardstanding will be permeable. **1 of 3**

*One of three credits is targeted.*

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**Pol 03 - Flooding**

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The design team has confirmed that a site-specific flood risk assessment will be **2 of 2** carried out in line with the guidance set out in the National Planning Policy Framework in order to confirm that the site is at low risk from flooding.

*Two of two credits are targeted.*

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# Scoresheet

## BREEAM Domestic Refurbishment

### 19 Fitzroy Square

BREEAM Domestic Refurbishment 26.07.2016 1237 - 19 Fitzroy Square Preliminary Assessment			Score	Credits available	Score Assessment				
					Sub-total	Credits available	% achieved	Weighting factor	Credits Score (%)
Management	Man 01	Home User Guide	3	3	11	11	100	0.12	12.00
	Man 02	Responsible Construction Practices	2	2					
	Man 03	Construction Site Impacts	1	1					
	Man 04	Security	2	2					
	Man 05	Ecological Features	1	1					
	Man 06	Project Management	2	2					
Health and Wellbeing	Hea 01	Daylighting	2	2	7	12	58	0.17	9.92
	Hea 02	Sound Insulation	2	4					
	Hea 03	Volatile Organic Compounds	1	1					
	Hea 04	Inclusive Design	0	2					
	Hea 05	Ventilation*	1	2					
	Hea 06	Safety*	1	1					
Energy	Ene 01	Improvement in EER	3	6	20	29	67	0.43	28.91
	Ene 02	EER Post Refurbishment*	0.5	4					
	Ene 03	Primary Energy Demand	4	7					
	Ene 04	Renewable Technologies	2	2					
	Ene 05	Energy Labelled White Goods	2	2					
	Ene 06	Drying Space	1	1					
	Ene 07	Lighting	2	2					
	Ene 08	Energy Display Devices	2	2					
	Ene 09	Cycle Storage	2	2					
	Ene 10	Home Office	1	1					
Water	Wat 01	Internal Water Use*	2	3	4	5	80	0.11	8.80
	Wat 02	External Water Use	1	1					
	Wat 03	Water Meter	1	1					
Materials	Mat 01	Environmental Impact of Materials	20	25	38	48	79	0.08	6.33
		Roof	4.0	5					
		External Walls	4.0	5					
		Internal / Separating Walls	4.0	5					
		Upper and Ground Floor	4.0	5					
	Windows	4.0	5						
Mat 02	Responsible Sourcing of Materials*	10	15						
Mat 03	Insulation	8	8						
Waste	Was 01	Household Waste	2	2	5	5	100	0.03	3.00
	Was 02	Refurbishment Site Waste	3	3					
Pollution	Pol 01	NO <sub>x</sub> Emissions	0	3	3	8	38	0.06	2.25
	Pol 02	Surface Water Runoff	1	3					
	Pol 03	Flooding	2	2					
Innovation	Inn 01	Exemplary Performance	1	10	1	10	10	0.1	1.00
* Minimum standards apply					Score: 72.21% Rating: EXCELLENT				