46–47 Bedford Row –
BREEAM Refurbishment Pre-assessment Report

March 2014

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Report prepared for MPG Holborn LP by Ian Preston, Principal Consultant at Abitar, 24th March 2014; revised 27th March 2014.
Status: 2nd version.
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Introduction

This pre-assessment report was prepared by Ian Preston, Principal Consultant at Abitar, following a meeting with the architect, Henry Busiakiewicz of BB Partnership, and subsequent discussions with the design team. At the meeting the requirements of each credit and its achievability were discussed with reference to the proposed development at 46–47 Bedford Row, London WC1.

The development will convert two adjoining mid-terrace buildings previously in non-domestic use into a house and four flats. Camden Council requires submission of a BREEAM pre-assessment as part of the planning application.

This report is based on BREEAM Refurbishment: Domestic Buildings, which requires an assessment of whole dwellings.

Although the pre-assessment was carried out with reference to the full BREEAM Technical Manual, this report includes only brief summaries of the assessment criteria for each credit issue. It should therefore be read in conjunction with the BREEAM Refurbishment – Domestic Buildings Technical Manual, SD5072 – Issue 2.0, dated 29th April 2013, which has been issued to the project team. References to the relevant pages in the Manual for each credit issue are included in the report.

Target score and rating

The enclosed Pre-Assessment Estimator indicates the proposed target credits, outlines how the design team intends to achieve each credit and discusses some of the issues that must be addressed as the design progresses to ensure credits will be achieved in a formal assessment. The Appendix to the report provides further information about certain credits. The report represents one possible combination of credits.

The entire proposed development was initially evaluated against all BREEAM issues with the exception of the SAP-based Energy issues, Ene 01, 02 and 03. This indicated that a score of 48.47% was achievable.

A pre- and post-refurbishment SAP calculation was then carried out for a sample dwelling. The calculations indicated that Unit 3 at 46 Bedford Row can potentially achieve a further 12 credits in issues Ene 01, 02 and 03, an overall target score in that unit of 66.26% and all the minimum standards for a ‘Very Good’ rating.

Please note that the credits achievable across the development in these three Energy issues will depend on the varying scope for upgrading the thermal envelope and on the existing building services in each dwelling. In consideration of this fact, it should not be assumed that all dwellings will achieve the same scores in these issues. Further explanation is provided in the Energy section of the Appendix to this report.

However, the project team will work closely with the local conservation officer to achieve the highest level of energy performance and the highest BREEAM rating that is practically possible within the restrictions applicable to Grade II listed buildings.

BREEAM Refurbishment Pre-Assessment Estimator

BREEAM Domestic Refurbishment 2012 Pre-Assessment Estimator v0.7

BREEAM

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such.
The score presented is indicative of a dwelling's potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

Building name	46-47 Bedford Row, London WC1R 4LR
Indicative building score (%)	66.26%
Indicative BREEAM rating	BREEAM Very Good

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✓	✗
Wat 01	✓	✓	✓	✗	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓

Management | Health & Wellbeing | Energy | Water | Materials | Waste | Pollution

INNOVATION

Section Weighting: 10%

Indicative Section Score: 1.00%

Comments

MANAGEMENT

Section Weighting: 12%

Indicative Section Score: 10.91%

Man 01 Home Users Guide

No. of BREEAM credits available	3	Available contribution to overall score	3.27%
No. of BREEAM innovation credits	0	Minimum Standards applicable:	No

Assessment Criteria

Where a Home Users Guide be provided to all dwellings, covering all issues set out in the 'Users Guide Contents list', three credits may be awarded

Indicative Credits: 3

Comments

A full Home Users Guide will be produced. It will be co-ordinated by the main contractor, who will collate information from other project team members as required.
See pp. 32-36 of the BREEAM Refurbishment: Domestic Buildings Technical Manual for full assessment criteria, including the Users Guide Contents list.

Man 02 Responsible Construction Practices

No. of BREEAM credits available	2	Available contribution to overall score:	2.18%
No. of BREEAM innovation credits	1	Minimum Standards applicable:	No

Assessment Criteria

Where a compliant considerate construction scheme will be used, credits are awarded depending the score achieved as outlined below:

Indicative Credits: 2

Large Scale - project with more than 5 units

	One Credit	Two Credits
Considerate Constructors Scheme	Score of 25-34 with a score of 5 in each section	Score of 35-39 with a score of 7 in each section
Alternative Compliant Scheme	Compliance	Beyond Compliance

Small Scale - project with 5 units or fewer

	One Credit	Two Credits
Considerate Constructors Scheme	Score of 25-34 with a score of 5 in each section	Score of 35-39 with a score of 7 in each section
Alternative Compliant Scheme	Compliance	Beyond Compliance
Checklist A-3	50% of the optional items	80% of the optional items

Exemplary Credit

Considerate Constructors Scheme	Score of 40 or more with a score of 7 in each section
Alternative Compliant Scheme	Exemplary Level Compliance
Checklist A-3*	All Items (Optional & Mandatory)

* Small Scale Project Only

Indicative Innovation Credits Achieved
0

Comments

The main contractor will be a Considerate Constructors Scheme (CCS) member and a CCS score of at least 35 points will be targeted.
See pp. 37-42 of the BREEAM Technical Manual for full assessment criteria.

Man 03 Construction Site Impacts

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**1.09%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where evidence demonstrate that site impacts will be monitored, as detailed below:

Indicative Credits
1

	One Credit
Large Scale	Where there is evidence to demonstrate that **2 or more** of the sections in **Checklist A-4** are completed
Small Scale	Where there is evidence to demonstrate that **2 or more** of the sections in **Checklist A-5** are completed

Sections of Checklist	
Large Scale - Checklist A-4	**Small Scale - Checklist A-5**
Monitor, report and set targets for CO2 production of energy use arising from site activities	Set objectives for reducing CO2 production from energy use arising from site activities
Monitor, report and set targets for water consumption arising from site activities	Set objectives for reducing water use arising from site activities
A main contractor with an environmental materials policy	Main contractor environmental materials statement
A main contractor that operates an Environmental Management System	80% of site timber is reclaimed, re-used or responsibly sourced
80% of site timber is reclaimed, re-used or responsibly sourced	

Same definition of small and large scale as in Man 02

Comments

Two of the checklist sections listed above will be completed. The project would be classed as a large-scale development.
See pp. 43-46 of the BREEAM Technical Manual for full assessment criteria.

Man 04 Security

No. of BREEAM credits available	**2**	**Available contribution to overall score:**	**2.18%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable:**	**No**

Assessment Criteria

Where the following requirements will be met:

		Indicative Credits
One Credit Secure windows and doors	External doors and accessible windows meet minimum standards and appropriately certified	1
Two Credits Secured by design	Principles and guidance of Secured by Design Section 2 are complied with	
	A suitably qualified security consultant is consulted at the design stage and their recommendations are incorporated into the refurbishment	

Comments

All new and retained external doors and windows will comply with either the lock certification standards listed in note CN1 or the minimum security requirements in note CN6 (see Manual, pp. 48-49), as appropriate.
See pp. 47-52 of the BREEAM Technical Manual for full assessment criteria.

Man 05 Protection and Enhancement of Ecological Features

No. of BREEAM credits available	**1**	**Available contribution to overall score:**	**1.09%**
No. of BREEAM innovation credits	**1**	**Minimum Standards applicable:**	**No**

Assessment Criteria

Where the following requirements will be met:

		Indicative Credits
One Credit Protecting Ecological Features	Site survey carried out to determine presence of ecological features	1
	Statutory Nature Conservation Organisation notified of protected species	
	Features of ecological value protected during refurbishment works	

		Indicative Innovation Credits Achieved
Exemplary Credit **Ecological enhancement**	A suitably qualified ecologist recommends features to enhance ecology of the site	0
	adopts all general ecological recommendations	
	adopts 30% of additional recommendations	

Comments
There are no ecological features on the site, which is entirely covered by the footprint of the building and hard landscaping. There is limited scope for ecological enhancement and the design team do not currently propose to appoint an ecologist. See pp. 53-61 of the BREEAM Technical Manual for full assessment criteria.

Man 06 Project Management

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.18%**
No. of BREEAM innovation credits	**2**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where the following requirements will be met:

Indicative Credits → 2

One Credit Project Roles and Responsibilities	Where all of the project team are involved in the project decision making
	Small Scale - the project manager assigns individual and shared responsibilities amongst the project team including all trades on site
	Large Scale - the project manager assigns individual and shared responsibilities across the following key design and refurbishment stages: i. Planning and Building control notification ii. Design iii. Refurbishment iv. Commissioning and handover v. Occupation

Small Scale projects: five units or fewer and less than £100k

Large Scale projects: more than five units and more than £100k

One Credit Handover and Aftercare	Handover meeting arranged
	2 or more of the following committed to: - A site inspection within 3 months of occupation - Conduct post occupancy interviews with building occupants or a survey via phone or posted information within 3 months of occupation - Longer term after care e.g. a helpline, nominated individual or other appropriate system to support building users for at least the first 12 months of occupation

Indicative Innovation Credits Achieved → 0

Exemplary Credits

One Exemplary Credit Early Design Input	Where A BREEAM Accredited Professional has been appointed to oversee key stages within the project. OR Where a BREEAM Domestic Refurbishment Assessor has been appointed at an early stage of the project, prior to the production of a refurbishment specification

One Exemplary Credit Thermographic Surveying and Airtightness Testing	Where Thermographic surveying and Airtightness testing have been carried out at both pre and post refurbishment stages Where an improved air tightness target has been set at design stage and testing demonstrates that this has been achieved post refurbishment

Comments

The two standard credits are targeted. The first exemplary credit would require regular meeting attendance and reporting by the BREEAM AP or assessor, in addition to their normal duties. The proposal is classed as a large-scale development.

See pp. 62-70 of the BREEAM Technical Manual for full assessment criteria.

HEALTH & WELLBEING

Section Weighting: 17%

Indicative Section Score 5.67%

Hea 01 Daylighting

No. of BREEAM credits available	2	Available contribution to overall score	2.83%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: 1

Where the refurbishment results in a neutral impact on daylighting or where minimum daylighting standards are met, up to two credits may be awarded as follows:

For Existing Dwellings and Change of Use Projects

First Credit Maintaining Good Daylighting	The refurbishment results in a neutral impact on the dwellings daylighting levels in the kitchen, living room, dining room and study

Where the property is being extended

	New spaces achieve minimum daylighting levels
First Credit Maintaining Good Daylighting	The extension does not significantly reduce daylighting levels in the kitchen, living room, dining room or study of neighbouring properties

For All Properties

Second Credit Minimum Daylighting	The dwelling achieves minimum daylighting levels in the kitchen, living room, dining room and study

Comments

Please see the Appendix to this report for further details relevant to this issue.

See pp. 73-77 of BREEAM Technical Manual for full assessment criteria, including note CN1 on p. 74, and Checklist A-7 Parts 3 & 4 (pp. 260-261).

Hea 02 Sound Insulation

No. of BREEAM credits available	4	Available contribution to overall score	5.67%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: 1

To ensure the provision of acceptable sound insulation standards and so minimise the likelihood of noise complaints.

Properties where sound testing has been carried out:

Up to Four Credits	Four credits awarded according to the improvement over building regulations. See table in additional information in Technical Manual

Properties where sound testing is not feasible and not required by the appointed Building Control body

Two Credits	Where existing separating walls and floors are designed to meet the requirements of Building Regulations with compliant construction details

Up to Four Credits	Where a Suitably Qualified Acoustician (SQA) provides recommendations for the specification of all existing separating walls and floors
	SQA confirms in their professional opinion that they have the potential to meet or exceed the sound insulation credit requirements
	Where these recommendations are implemented
	See table in additional information in Technical Manual

Historic Buildings

Up to Four Credits	Where the dwelling is a Historic Building and sound testing results demonstrate existing separating walls and floor meet the Historic Building credit requirements
	See table in additional information in Technical Manual
	Where sound testing is not feasible and not required by the appointed Building Control body meeting criteria 2 and 3 using Table 12
	Properties where sound testing has been carried out, credits awarded according to the improvement over building regulations. See table in additional information in Technical Manual
	Where the dwelling is a detached property
	Where the dwelling is a propertywith separating walls or floors only between non habitable rooms OR Testing not required by building control body

Detached Properties

Four Credits	By Default

Properties with separating walls or floors only between non habitable rooms OR Testing not required by building control body

Four Credits	By Default

Comments

Separating floors can be acoustically insulated and secondary glazing will reduce external noise, but insulation of separating walls is not possible in a listed building, therefore only one credit is targeted for insulation values no worse than pre-refurbishment.

See pp. 78-87 of the BREEAM Technical Manual for full assessment criteria.

Hea 03 Volatile Organic Compounds

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**1.42%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where the refurbishment avoids the use of VOCs with new products meeting the following requirements:

Indicative Credits: 0

One Credit Avoiding the use of VOCs	Where all decorative paints and varnishes used in the refurbishment have met the requirement listed in table 5.4 in the Technical Manual
	Where at least five of the eight remaining product categories listed in table 5.4 have met the testing requirements and emission levels for Volatile Organic Compound (VOC) emissions against the relevant standards identified within table 5.4 in the Technical Manual
	Where five or less products are specified within the refurbishment, all must meet the requirements in order to achieve this credit.

Comments

See pp. 88-92 of the BREEAM Technical Manual for full assessment criteria, in particular the Additional Information section on pp. 90-91, which lists the applicable product types, test standards and required emission levels.

Hea 04 Inclusive Design

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.83%**
No. of BREEAM innovation credits	**1**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where an access statement has been carried out using Checklist A-8 of the Technical Manual to optimise the accessibility of the home as follows:

Indicative Credits: 0

	Checklist A-8 of the Technical Manual	
	Section 1	**Section 2**
One Credit Minimum Accessibility	Completed with Evidence	
Two Credits Advanced Accessibility	Completed with Evidence	Completed with Evidence

Exemplary Performance

One Credit	Where an access expert suitably qualified member of the design team has completed sections 1, 2 and 3 of Checklist A-8, access statement template with evidence provided of the measures implemented in the refurbishment

Indicative Innovation Credits Achieved: 0

Comments

The performance levels in this issue include measures found in the Lifetimes Homes standard. A credit may be achievable, but has not been targeted pending confirmation from an appropriately qualified access expert . See pp. 93-98 of the BREEAM Technical Manual for full assessment criteria.

Hea 05 Ventilation

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.83%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Where the dwelling meets the following ventilation requirements:

		Indicative Credits
One Credit Minimum Ventilation Requirements	A minimum level of background ventilation is provided (with trickle ventilators or other means of ventilation) for all habitable rooms, kitchens, utility rooms and bathrooms compliant with section 7, Building Regulations Approved Document Part F, 2010	1
	A minimum level of extract ventilation is provided in all wet rooms (e.g. kitchen, utility and bath-rooms), compliant with section 5, Building Regulations Approved Document Part F 2010.	
	A minimum level of purge ventilation is provided in all habitable rooms and wet rooms, compliant with section 7, Building Regulations Approved Document Part F, 2010.	
	It is an historic building and meets historic building requirements in CN4 of the technical manual	
Two Credits Advanced Requirements	Ventilation is provided for the dwelling that meets the requirements of Section 5 of Building Regulations Part F in full	
	Where the building is a historic building and meets the requirements for Historic Buildings in compliance note 4 of the technical manual	

Comments

The first credit is a minimum standard for all BREEAM rating levels. The ventilation system will be specified to meet the requirements of the first credit for historic buildings.
See pp. 99-102 of the BREEAM Technical Manual for full assessment criteria.

Hea 06 Safety

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**1.42%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Where a fire and carbon monoxide (CO) detection and alarm system is specified as follows:

		Indicative Credits
One Credit Fire and Carbon Monoxide (CO) Detection and Alarm Systems	Where a compliant fire detection and fire alarm system is provided	1
	Carbon Monoxide detector installed if dwelling is supplied with mains gas or other fossil fuel	
	Mains supplied fire detection and alarm system if project involves re-wiring*	
	Battery operated fire detection and alarm system if no re-wiring* is to take place	

*** see CN9 in Hea 06 for the definition of re-wiring**

Comments

This credit is a minimum standard for all BREEAM rating levels.
Compliant, mains-supplied fire and carbon monoxide detection and alarm systems will be provided.
See pp. 103-106 of the BREEAM Technical Manual for full assessment criteria, in particular Compliance Notes CN2 to 8.

ENERGY

Section Weighting: 43%

Indicative Section Score 29.66%

Ene 01 Improvement in Energy Efficiency Rating

No. of BREEAM credits available	**6**	**Available contribution to overall score**	**8.90%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where the following targets are met for the improvement in Energy Efficiency Rating achieved as a result of refurbishment:

Improvement in EER	Credits
≥ 5	0.5
≥ 9	1
≥ 13	1.5
≥ 17	2
≥ 21	2.5
≥ 26	3
≥ 31	3.5
≥ 36	4
≥ 42	4.5
≥ 48	5
≥ 54	5.5
≥ 60	6

Indicative Credits: 2.5

Comments

Targeted credits are based on preliminary SAP assessments of Unit 3, 46 Bedford Row. Please see the Appendix to this report for further details relevant to this issue.
See pp. 109-113 of the BREEAM Technical Manual for full assessment criteria.

Ene 02 Energy Efficiency Rating Post Refurbishment

No. of BREEAM credits available	**4**	**Available contribution to overall score**	**5.93%**
No. of BREEAM innovation credits	**2**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Where the following Energy Efficiency Rating benchmarks will be met as a result of refurbishment:

EER post refurbishment	Credits	Minimum requirements
≥50	0.5	'Pass' level EER of 50
≥55	1	'Good' level EER of 58
≥60	1.5	
≥65	2	'Very Good level' EER of 65
≥70	2.5	'Excellent' level EER of 70
≥75	3	
≥80	3.5	'Outstanding' level EER of 81
≥85	4	

Indicative Credits: 3

Exemplary	Credits
≥90	1
≥100	2

Indicative Innovation Credits Achieved: 0

Comments

A score of at least 2.5 credits is normally a minimum standard for a BREEAM 'Excellent' rating, corresponding to an Energy Efficiency Rating of at least 70 (low band C).
Targeted credits are based on a preliminary SAP assessment of Unit 3, 46 Bedford Row. Please see the Appendix to this report for further details relevant to this issue.
See pp. 114-116 of the BREEAM Technical Manual for full assessment criteria.

Ene 03 Primary energy demand

No. of BREEAM credits available	**7**	**Available contribution to overall score**	**10.38%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where the following Primary Energy Demand benchmarks will be met as a result of refurbishment:

Primary Energy Demand Post Refurbishment (kWh/m^2/year)	Credits
≤ 400	0.5
≤ 370	1
≤ 340	1.5
≤ 320	2
≤ 300	2.5
≤ 280	3
≤ 260	3.5
≤ 240	4
≤ 220	4.5
≤ 200	5
≤ 180	5.5
≤ 160	6
≤ 140	6.5
≤ 120	7

Indicative Credits: 6.5

Comments

Targeted credits are based on a preliminary SAP assessment of Unit 3, 46 Bedford Row. Please see the Appendix to this report for further details relevant to this issue.
See pp. 117-119 of the BREEAM Technical Manual for full assessment criteria.

Ene 04 Renewable Technologies

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.97%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where the dwelling will meet the following % contribution from renewables and primary energy demand targets as a result of refurbishment

Dwelling Type	Primary Energy Demand	Percentage from Renewables	
		1 Credit	2 Credits
Detached	≤ 250 kWh/m^2/year	≥10%	≥20%
Semi-Detached		≥10%	≥20%
Bungalow		≥10%	≥20%
End of Terrace		≥10%	≥20%
Mid Terrace	≤ 220 kWh/m^2/year	≥10%	≥20%
Low Rise Flat		≥10%	≥20%
Mid Rise Flat		≥10%	≥15%
High Rise Flat		≥10%	≥15%

Indicative Credits: 0

Comments

Renewable technologies are not proposed.
See pp. 120-123 of the BREEAM Technical Manual for full assessment criteria.

Ene 05 Energy Labelled White Goods

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.97%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits

Where Energy Efficiency White goods are to be provided as follows: → 2

First Credit

Appliance	Appliance provided	Appliance not to be provided
Fridges, Freezers and Fridge-Freezers	Energy Saving Trust Recommended appliances specified	EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Second Credit

Appliance	Appliance provided	Appliance not to be provided
Washing Machines and Dishwashers	Energy Saving Trust Recommended appliances specified	Second credit not achieved
Washer-Dryers and Tumble Dryers	Appliances specified with B Rating under EU Energy Efficiency Labelling Scheme	EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Comments

Compliant white goods will be provided in all dwellings.
See pp. 124-128 of the BREEAM Technical Manual for full assessment criteria.

Ene 06 Drying Space

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**1.48%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits

Where adequate, secure internal or external space with posts and footings or fixings is provided with the following: → 1

1 Credit

Number of bedrooms	Drying line required
1-2	4m+
3+	6m+

Comments

Extendable drying lines and adequate, controlled ventilation will be installed in the bathroom of each dwelling.
See pp. 129-130 of the BREEAM Technical Manual for full assessment criteria.

Ene 07 Lighting

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.97%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits: 2

Where energy efficient internal and external lighting is provided as follows:

External Lighting - 1 Credit

Energy Efficient Space Lighting of more than 45 lumens per circuit watt and Energy Efficient Security Lighting OR
Where Energy Efficient Space Lighting is provided ONLY

Internal Lighting - 1 Credit

Maximum average wattage across the total floor area of the dwelling of 9 watts/m2

Comments

Any burglar security lighting will have a maximum wattage of 150W and will be controlled by PIR control AND daylight cut-off sensors to prevent operation during daylight hours. All other external lighting will have dedicated energy-efficient fittings (> 45 lumens/circuit Watt) and all security lighting (i.e. lighting not controlled by a manual switch) will have daylight cut-off sensors or timers. Internal lighting will achieve a maximum internal wattage of 9 W/m2. See pp. 131-135 of the BREEAM Technical Manual for full assessment criteria.

Ene 08 Display Energy Devices

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.97%**
No. of BREEAM innovation credits	**1**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits: 2

Where consumption data is displayed to occupants by a compliant energy display device

Electricity usage data displayed	Primary Heating Fuel	
	Electricity	Other
Electricity usage data displayed	2 credits awarded	1 credit awarded
Primary Heating Fuel usage data displayed	N/A	1 credit awarded
Electricity & Primary Heating Fuel usage displayed	N/A	2 credits awarded

Exemplary Credits

One credit Recording consumption data	Where the first two credits are achieved
	Where any compliant Energy Display Device is capable of recording consumption data

Indicative Innovation Credits Achieved: 1

Comments

An Energy Display Device will be installed in each dwelling and will comply with the requirements for two credits plus an exemplary credit. A product from the Ewgeco H300 range may comply. See pp. 136-138 of the BREEAM Technical Manual for full assessment criteria.

Ene 09 Cycle Storage

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**2.97%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits: 0

Where individual or communal compliant cycle storage is provided as follows:

Dwelling Size	One Credit	Two Credits
Studios/ 1 bedroom	1 per two dwellings	1 per dwelling
2-3 bedrooms	1 per dwelling	2 per dwelling
4 bedrooms	2 per dwelling	4 per dwelling

Comments

Cycle storage will be provided in the rear courtyards of number 47 and Unit 1 at number 46, but these locations are non-compliant. Alternative compliant locations are not available, therefore credits cannot be achieved.

See pp. 139-142 of the BREEAM Technical Manual for full assessment criteria.

Ene 10 Home Office

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**1.48%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria	**Indicative Credits**
Where sufficient space and services will be provided to allow occupants to set up a home office in a suitable room with adequate ventilation	1

Comments

A compliant home office space will be provided in each dwelling. Office space cannot be provided in the living room, therefore the previously proposed locations have been revised.

See pp. 143-145 of the BREEAM Technical Manual for full assessment criteria.

WATER

Section Weighting: 11%

Indicative Section Score 6.60%

Wat 01 Internal Water Use

No. of BREEAM credits available	**3**	**Available contribution to overall score**	**6.60%**
No. of BREEAM innovation credits	**1**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Where the dwellings water consumption meets the following consumption benchmarks, or where terminal fittings meet the following water consumption standards:

Indicative Credits
1

Calculated Water Consumption (litres/person/day)	Equivalent terminal fitting standards	Minimum Standard	Credits
>150	Typical baseline performance	N/A	0
from 140 to ≤ 150	All showers specified to 'Good' **OR** All taps and WC's to 'Good' **OR** Kitchen fittings specified to 'Excellent'	N/A	0.5
from 129 to < 140	All showers specified to 'Excellent' **OR** All showers and bathroom taps to 'Good'	BREEAM Very Good	1
from 118 to < 129	All bathroom and WC room fittings specified to 'Good' **OR** All bathroom fittings specified to 'Excellent'	N/A	1.5
from 107 to < 118	All Bathroom and WC room fittings specified to 'Excellent' **OR** All Bathroom fittings Specified to 'Excellent' and WC room fitting specified to 'Good' **OR** All Bathroom fittings, kitchen and utility sittings specified to 'Good'	BREEAM Excellent	2
from 96 to < 107	All kitchen, bathroom, utility room and WC room fittings specified to 'Good' **OR** All bathrooms, kitchens and utility rooms specified to 'Excellent'	N/A	2.5
< 96	All bathroom fittings specified to 'Excellent' and WC room, kitchen and utility room fittings specified to 'Good'	BREEAM Outstanding	3

NOTE: 'Good' fittings are equivalent to good practice fittings with "Excellent" fittings equivalent to best practice fittings (see the technical manual for full details.

Exemplary Credit	If the water consumption is less than 80l/person/day

Indicative Innovation Credits Achieved
0

Comments

A score of at least two credits is a minimum standard for a BREEAM 'Excellent' rating. See report Appendix for further details relevant to this issue.

See pp. 148-155 of the BREEAM Technical Manual for full assessment criteria.

Wat 02 External Water Use

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**2.20%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits

Where the following requirements will be met: → 1

Requirements:

One Credit	Where a compliant rainwater collection system for external/internal irrigation use has been provided to dwellings. **OR** Where dwellings have no individual or communal garden space.

Comments

This credit will be achieved by means of compliant water butts in the rear courtyards. At least 100 L of rainwater storage is required for a home with a terrace or patio. Where there is no planting provided and the whole of the external space is covered by a hard surface, the volume requirement can be halved.

See pp. 156-159 of the BREEAM Technical Manual for full assessment criteria.

Wat 03 Water Meter

No. of BREEAM credits available	**1**	**Available contribution to overall score**	**2.20%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits

Where an appropriate water meter for measuring usage of mains potable water meter has been provided to dwelling(s), one credit may be awarded → 1

Comments

A compliant water meter will be installed. Although the BREEAM Manual states that meters must not be hidden, e.g. in a cupboard, the assessor has confirmed that it is acceptable for meters to be hidden if they transmit the required information to a separate display in a visible location. Certain devices compliant with issue Ene 08 are also capable of displaying information transmitted from a water meter. See pp. 160-162 of the BREEAM Technical Manual for full assessment criteria, particularly note CN1 on p. 160.

MATERIALS

Section Weighting: 8%

Indicative Section Score 5.69%

Mat 01 Environmental Impact of Materials

No. of BREEAM credits available	25	Available contribution to overall score	4.44%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Up to 25 credits can be awarded, with credits calculated using the Mat 01 calculator tool. The table below shows the maximum number of credits available for each element:

Indicative Credits
18

Elements	Green Guide Rating credits available	Thermal performance credits available*
Roof	5	3
External walls	5	3.8
Internal walls (including separating walls)	5	-
Upper and Ground Floor	5	1.2
Windows	5	2

The full 25 credits represents all of the elements containing refurbished or existing materials that meet the Green Guide Rating of A+(6)

GG Rating	Points for existing / refurbished elements	Points for new elements
A+ (6)	5	
A+ (5)	4.6	
A+ (4)	4.2	
A+ (3)	3.8	
A+ (2)	3.4	
A+	3	3
A	2	2
B	1	1
C	0.5	0.5
D	0.25	0.25
E	0	0

Where the full 25 credits cannot be achieved the score can be 'topped up' with thermal performance credits. The full number of thermal performance credits for each element can be achieved when achieving the minimum U-values shown below.

Elements	Minimum U-Value (W/m2K)
Roof	0.11
External walls	0.15
Internal walls (including separating walls)	-
Upper and Ground Floor	0.15
Windows	1.4

Comments

See the Appendix to this report for details of proposed materials.

See pp. 165-171 of the BREEAM Technical Manual for full assessment criteria.

Mat 02 Responsible Sourcing of Materials

No. of BREEAM credits available	**12**	**Available contribution to overall score**	**2.13%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Indicative Credits
6

Where new materials are responsibly sourced, up to 12 credits may be awarded where 80% of new materials for an element are responsibly sourced. The credits achieved are dependent on % of point achieved which is based upon the responsible sourcing tier level of each material sourced as detailed below:

Table 1

Tier level	Points
1	4
2	3.5
3	3
4	2.5
5	2
6	1.5
7	1
8	0

Will all new timber used in the project be sourced in accordance with the UK Government's Timber Procurement
Yes

Table 2

BREEAM credits	% of available points achieved
12	≥54%
10	≥45%
8	≥36%
6	≥ 27%
4	≥ 18%
2	≥ 9%

Comments

It is a minimum standard for all BREEAM ratings that all new timber is sourced in accordance with the Government's Timber Procurement Policy. Responsibly sourced timber and concrete are increasingly easy to locate, but other compliant materials may be more difficult to source.

See pp. 172-184 of the BREEAM Technical Manual for full criteria and the report Appendix for guidance.

Mat 03 Insulation

No. of BREEAM credits available	**8**	**Available contribution to overall score**	**1.42%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Indicative Credits
8

Where any new insulation specified for use within external walls, ground floor, roof and buildings services meet the following requirements:

Requirements

4 Credits	Where the Insulation Index for new insulation used in the buildings is ≥2
	Where Green Guide ratings are determined using the Green Guide to specification tool

Requirements

4 Credits	Where ≥ 80% of the new thermal insulation used in the building elements is responsibly sourced.

Comments

Please see the Appendix to this report for further details relevant to this issue.

See pp. 185-189 of the BREEAM Technical Manual for full assessment criteria.

WASTE

Section Weighting: 3%

Indicative Section Score 3.00%

Was 01 Household Waste

No. of BREEAM credits available	2	Available contribution to overall score	1.20%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Where compliant recycling and composting facilities are provided, up to two credits may be awarded as follows

Indicative Credits
2

First Credit - Recycling Facilities	
Scenario	**Internal recycling storage requirements**
Compliant collection scheme in place	3 internal recycling containers provided where recycling is not sorted post collection
	1 internal recycling container provided where recycling is sorted post collection
	Minimum 30 litre total capacity, no single container less than 7 litre capacity
	Dedicated position in accordance with compliance note 1
No compliant collection scheme in place No adequate external storage	3 internal recycling containers provided
	Minimum 60 litre total capacity
	Dedicated position in accordance with compliance note 1
No compliant collection scheme in place Adequate external storage provided	3 internal recycling containers provided
	Minimum 30 litre total capacity, no single container smaller than 7 litre capacity
	Dedicated position in accordance with compliance note 1

Second credit - Composting facilities	
With external space	**Without external space**
Where a composting service or facility is provided for green/garden waste	Where a composting service or facility is provided for kitchen waste
Where a composting service or facility is provided for kitchen waste	Where an interior container is provided for kitchen composting waste of at least 7 litres
Where an interior container is provided for kitchen composting waste of at least 7 litres	

Comments

Camden Council operates a compliant post-sorted collection scheme for mixed recyclable materials and also collects food and garden waste. A dedicated 30 L internal recycling bin will be provided next to the general waste bin, ideally within a kitchen cupboard, and a 7 L food waste caddy will also be provided.

See pp. 191-196 of the BREEAM Technical Manual for full assessment criteria.

Was 02 Refurbishment Site Waste Management

No. of BREEAM credits available	3	Available contribution to overall score	1.80%
No. of BREEAM innovation credits	1	Minimum Standards applicable	No

Assessment Criteria

Up to three credits are available depending on the site waste management plan to be implemented as follows

Indicative Credits
3

Projects up to £100k

Three Credits	Where waste generated through the refurbishment process is managed in accordance with Checklist A-9	**Indicative Innovation Credits Achieved**
Exemplary Credit	Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place	0

Projects up to £300k

Three Credits	Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place
Exemplary Credit	Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place
	Non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the resource efficiency benchmark
	The percentage of non-hazardous construction waste and demolition waste generated by the project has been diverted from landfill and meets or exceeds the refurbishment & demolition waste diversion benchmarks

Projects over £300k

First Credit Management Plan	Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place
Second Credit Good Practice Waste Benchmarks	First credit achieved
	Non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the resource efficiency benchmark
	Amount of waste generated against £100,000 of project value is recorded in the SWMP
	Pre-refurbishment audit of the existing building is completed
	If demolition is included as part of the refurbishment programme, then the audit should also cover demolition materials
Third Credit Best Practice Waste Benchmarks	Where the first two credits have been achieved achieved
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the refurbishment & demolition waste diversion benchmarks
Exemplary Credit	Where non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the *exemplary level resource efficiency benchmark*
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the exemplary level diversion benchmarks

Comments

Three standard credits are targeted. Please see the Appendix to this report for further details.
See pp. 197-206 of the BREEAM Technical Manual for full assessment criteria.

POLLUTION

Section Weighting: 6% | **Indicative Section Score 3.75%**

Pol 01 NOx Emissions

No. of BREEAM credits available	**3**	**Available contribution to overall score**	**2.25%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**No**

Assessment Criteria

Credits are awarded on the basis of NOx emissions arising from the operation of space heating and hot water systems for each refurbished dwelling as follows:

Indicative Credits
2

	Dry NOx Emissions
One Credit	≤100 mg/kWh (NOx class 4 boiler)
Two Credits	≤70 mg/kWh (NOx class 5 boiler)
Three Credits	≤40 mg/kWh

Comments

Space heating and hot water will be provided by new gas boilers, which will be specified to achieve three credits. Electric space and water heating will be avoided because of the very high NOx emissions associated with grid electricity.

See pp. 208-212 of the BREEAM Technical Manual for full assessment criteria.

Pol 02 Surface Water Runoff

No. of BREEAM credits available	**3**	**Available contribution to overall score**	**2.25%**
No. of BREEAM innovation credits	**1**	**Minimum Standards applicable**	**No**

Assessment Criteria

Where impacts of the refurbishment on surface water runoff are neutralised or where runoff is reduced as a result of refurbishment, up to three credits can be awarded as follows:

Indicative Credits
1

Requirements	
One Credit Neutral Impact on Surface Water	New hard standing areas must be permeable
	If building on to previously permeable area additional run-off must be managed on site
	Calculations should be carried out by an appropriately qualified professional

Requirements	
OR Second Credits Reducing Run-Off From Site: Basic	Where the criteria needed for One Credit has been achieved
	Where all run-off from the roof for rainfall depths up to 5 mm, have been managed on site using source control methods
	Include runoff from all existing and new parts of the roof.
	An appropriately qualified professional should be used to design an appropriate drainage strategy for the site

Requirements	
OR Three Credits Reducing Run-Off From Site: Advanced	Where run-off as a result of the refurbishment is managed on site using source control
	An appropriately qualified professional should be used to design an appropriate drainage strategy for the site.
	The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event has been reduced by 75% from the existing site.
	The total volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration has been reduced by 75%.
	An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).

Requirements		Indicative Innovation Credits Achieved
Exemplary Credit	Where all run-off from the developed site is managed on site using source control	0
	The peak rate of run-off as a result of the refurbishment for the 1 in 1 year event is reduced to zero.	
	The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event is reduced to zero.	
	There is no volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration.	
	An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).	

Comments

The entire site will be entirely covered by building footprint and impermeable hard surfaces both before and after development; therefore there will be a neutral impact on surface water.
See pp. 213-220 of the BREEAM Technical Manual for full criteria.

Pol 03 Flooding

No. of BREEAM credits available	**2**	**Available contribution to overall score**	**1.50%**
No. of BREEAM innovation credits	**0**	**Minimum Standards applicable**	**Yes**

Assessment Criteria

Where the dwelling is located in a low flood risk zone, or where in a medium to high flood risk zone and a flood resilience/resistance strategy has been implemented, up to two credits can be awarded as follows:

Indicative Credits: 2

Minimum Standards	A minimum of two credits must be achieved for this issue at the Excellent and Outstanding levels

Option 1 - Low Flood Risk

Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a low annual probability of flooding.

Option 2 - Medium / High Flood Risk

Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a medium or high annual probability of flooding.
	Two credits are awarded where as a result of the dwellings floor level or measures to keep water away the dwelling is defined as achieving avoidance from flooding by following Checklist A-10; Decision Strategy Flow Chart.
	Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the dwellings in accordance with recommendations made by a Suitably Qualified Building Professional

Comments

The architect has stated that the dwelling is believed to have a low probability of flooding. Please see the Appendix to this report for further details relevant to this issue.
See pp. 221-229 of the BREEAM Technical Manual for full assessment criteria.

BREEAM Domestic Refurbishment 2012 Pre-Assessment Estimator v0.6: Results Summary

BREEAM®

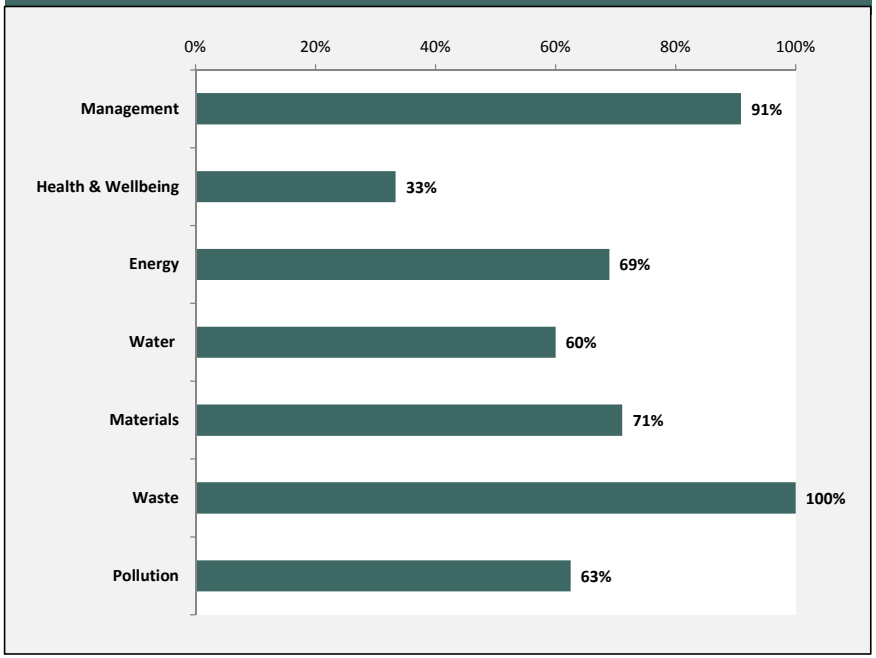
Building name	46-47 Bedford Row, London WC1R 4LR
Indicative Building Score	66.26%
Indicative Building Rating	BREEAM Very Good

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such. The score presented is indicative of a dwelling's potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

	Issue	Credits Available	Indicative Credits Achieved	Weighting	Section Score
Management	Man 01	3	3	12%	10.91%
	Man 02	2	2		
	Man 03	1	1		
	Man 04	2	1		
	Man 05	1	1		
	Man 06	2	2		
Health and Wellbeing	Hea 01	2	1	17%	5.67%
	Hea 02	4	1		
	Hea 03	1	0		
	Hea 04	2	0		
	Hea 05	2	1		
	Hea 06	1	1		
Energy	Ene 01	6	2.5	43%	29.66%
	Ene 02	4	3		
	Ene 03	7	6.5		
	Ene 04	2	0		
	Ene 05	2	2		
	Ene 06	1	1		
	Ene 07	2	2		
	Ene 08	2	2		
	Ene 09	2	0		
	Ene 10	1	1		
Water	Wat 01	3	1	11%	6.60%
	Wat 02	1	1		
	Wat 03	1	1		
Materials	Mat 01	25	18	8%	5.69%
	Mat 02	12	6		
	Mat 03	8	8		
Waste	Was 01	2	2	3%	3.00%
	Was 02	3	3		
Pollution	Pol 01	3	2	6%	3.75%
	Pol 02	3	1		
	Pol 02	2	2		
Innovation		10	1	N/A	1.00%

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✓	✗
Wat 01	✓	✓	✓	✗	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓

Percentage of Category Score Attained



Appendix

As there is limited space for assessor comments in the Pre-Assessment Estimator spreadsheet, further information on selected credit issues is provided below.

Hea 01 Daylighting

The daylight and sunlight analysis of 46-47 Bedford Row indicates that the refurbishment will result in a neutral impact on daylighting levels in kitchens, living rooms, dining rooms and studies (see Appendix A: Hea 01, Parts 3 and 4). The exception is room PG_09, the formal dining room at number 47, where the addition of secondary glazing and a glazed canopy will reduce the transmittance factor below the minimum level and the reduction in the size of the lightwell will increase the impact of external obstructions. A site-wide exemption applies to issue Hea 01, whereby 90% of assessed rooms must meet the criteria; therefore the first credit is achievable.

The analysis indicates that, although certain rooms will meet the minimum average daylight factor requirement and/or receive direct light from the sky, less than 90% of assessed rooms will comply with both requirements; therefore the second credit is not achievable.

Ene 01 – 03 Energy Efficiency Rating and Primary Energy Demand

A preliminary pre- and post-refurbishment SAP calculation for a sample dwelling – Unit 3 at 46 Bedford Row, the second-floor flat – was carried out by an accredited energy assessor.

The post-refurbishment calculation included draught-stripping of doors and windows, the addition of secondary glazing and the replacement of existing electric space and water heating with a highly efficient regular condensing gas boiler and cylinder. However, a number of measures including insulation of external solid brick walls, replacement double or triple glazing and installation of renewable energy technologies could not be considered owing to the building's Grade II listed status.

The calculations indicate that the following credits are potentially achievable in Unit 3:

Ene 01 – 2.5 credits for an improvement in the Energy Efficiency Rating (EER) of at least 21.

Ene 02 – 3 credits for a post-refurbishment EER of at least 75.

Ene 03 – 6.5 credits for a primary energy demand of less than 140 kWh/m^2/year.

Please note that the credits achievable across the development in these three Energy issues will depend on the varying scope in each dwelling for upgrading the thermal envelope and on the existing building services. For example, certain areas of the building already have secondary glazing or gas central heating, which will limit the improvement in EER that can be achieved. Similarly the total heat-loss area of each dwelling will vary greatly, which will determine the maximum EER and minimum primary energy demand achievable; but dwellings that have roofs that can be insulated may be able to achieve a greater improvement in EER compared to the pre-refurbishment situation.

In consideration of the above, it should not be assumed that all dwellings will achieve the same scores in these three Energy issues. However, the project team will work closely with the local conservation officer to achieve the highest level of energy performance that is practically possible within the restrictions applicable to Grade II listed buildings.

Wat 01 Internal Water Use

The minimum standard for a BREEAM 'Excellent' rating in this issue typically requires shower flow rates of no more than 6 litres/minute and WC effective flushing volumes of 3–4 litres. There is little scope in this listed building for rainwater harvesting or greywater recycling to compensate for fittings with higher water use.

The design team feels that the BREEAM 'Excellent' minimum standard would make the proposed dwellings commercially unviable, but that the BREEAM 'Very Good' minimum standard is achievable. This can be achieved in a number of different ways:

- By specifying all showers to 'Excellent' standard*;
- By specifying all showers and bathroom taps to 'Good' standard;
- With a calculated water consumption of 129-139 litres/person/day, taking into account all bathroom, WC room, kitchen and utility room fittings.

* Please see Table 23 on pp. 153-154 for the definitions of 'Good' and 'Excellent' standards in the context of this issue, which should not be confused with the BREEAM ratings of the same name.

Mat 01 Environmental Impact of Materials

The existing main slate and timber pitched roofs of 46 and 47 Bedford Row and above room PG_04 (estimated A4+ Green Guide rating) and the felt and timber pitched roof above room PG_04 (estimated A1+ rating) will be retained but thermally upgraded.

The ground floor corridor in Unit 1 will have a new pitched glazed roof, which will be treated as a window under this issue.

Room PG_10 will have a new flat roof, the construction of which is likely to be a warm deck with single-ply membrane (A+ rating).

The majority of the external walls will comprise retained solid brick walls (est. A5+), which will not be thermally insulated. Small areas of new brick and block external wall (A+ rating) will be constructed to fill existing openings.

All existing brick party walls (est. A3+) and the majority of existing brick (est. A1+) and timber stud (est. A2+) internal walls will be retained. New internal walls will have a timber stud and plasterboard construction (A+).

All existing solid ground floors (est. A5+) will be retained.

The majority of existing timber floors will be retained and made good where required (est. A5+). Small new areas of timber floor (A+ rating) will be constructed e.g. where a non-original staircase has been removed, or to equalize floor levels. The new raised timber floor in room PG_10 can potentially be insulated.

The majority of existing timber-framed single glazing will be retained but thermally upgraded with secondary glazing (rating to be determined). The majority of new vertical glazing will comprise timber sash windows (A or A+ rating) to match the existing windows, but new frameless glazing (A+ rating) will be specified around the lightwell in room PG_10.

New rooflights at the rear of the ground floor will have slimline aluminium frames (A rated if the frame profile is less than 0.88 kg/m).

A free online version of the Green Guide to Specification is available at www.bre.co.uk/greenguide/.

Insufficient detail is available to carry out a full score calculation at the pre-assessment stage, but the target is based on an estimated score.

Mat 02 Responsible Sourcing of Materials

The building elements assessed under BREEAM Refurbishment are listed in note CN1 on p. 174 of the Technical Manual.

Applicable materials (the majority of materials) are listed in note CN2 on pp. 175-176.

The various responsible sourcing schemes and their tier levels (i.e. how well each scheme scores) are listed in Table 29 on pp. 179-180.

The key processes and supply chain processes relevant to each material type covered by an environmental management system (EMS) are listed in Table 30 on pp. 180-181.

Mat 03 Insulation

The first four credits can be achieved when all new thermal fabric and services insulation is at least A rated (or the majority is A+ rated) in the Green Guide to Specification.

The second group of four credits can be achieved where > 80% of new insulation is responsibly sourced according to tier levels 1 to 6 (see issue Mat 02, Table 27, pp. 175-176).

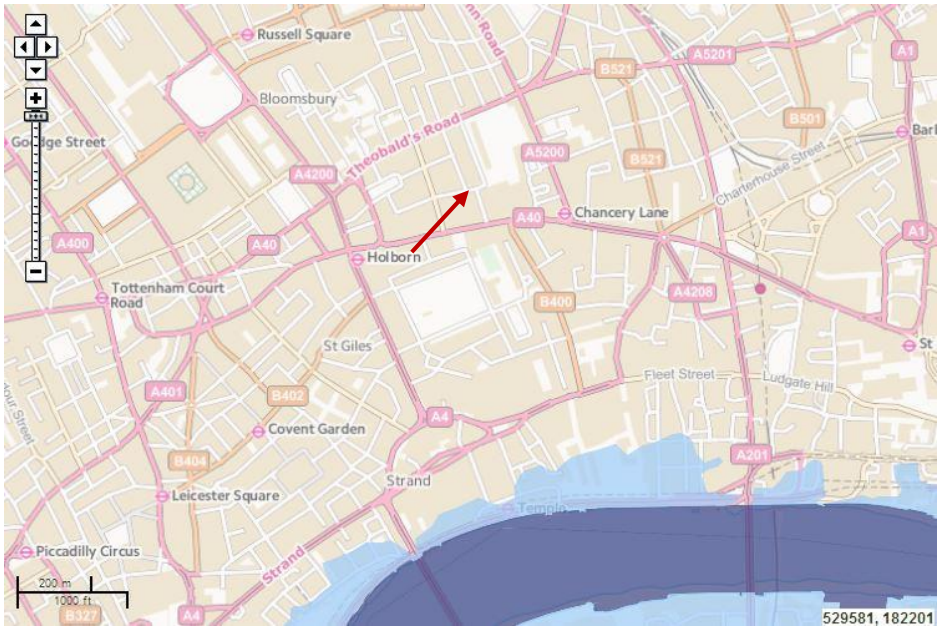
Was 02 Refurbishment Site Waste Management

Requirements associated with a score of three standard credits and an innovation credit include: a compliant Level 2 Site Waste Management Plan; no more than 26.52m^3 or 16.90 tonnes of non-hazardous construction waste generated per £100,000 of project value; a pre-demolition and pre-refurbishment waste audit; and at least 70% of non-hazardous construction waste and 80% of non-hazardous demolition waste by volume diverted from landfill.

Pol 03 Flooding

According to the Environment Agency flood map (see next page), the site is in an area that has a very low chance of flooding from rivers or the sea.

Please note that in a formal assessment a Flood Risk Assessment (FRA) is required that covers all sources of flooding (see note CN2 on p. 202). Note CN4 on p. 203 describes the reduced FRA requirements for developments < 2000m^2.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Bloomsbury
Theobald's Road
Holborn
Chancery Lane
Tottenham Court Road
St Giles
Covent Garden
Leicester Square
Piccadilly Circus
Strand
Fleet Street
Ludgate Hill
Charterhouse Street
B521
A5201
B501
A5200
A4200
A40
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B400
A4208
A401
B402
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B404
A201
B327
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