

# BREEAM Domestic Refurbishment Pre-Assessment

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2 Maresfield Gardens

**September 2014**

**REPORT REF: BDR/MG/20142509– RT**

# 1 Introduction

## 1.1 Scope of report

A BREEAM Domestic Refurbishment rating of “Very Good” has been targeted and the client is committed to achieving this rating.

The purpose of this strategy is to analyse the method of achieving a “Very Good”\* rated BREEAM Domestic Refurbishment Assessment (BDR). Determining which credits will be achieved and any implications of achieving the proposed credits will be highlighted if known at this time. If any site issues are found and they affect other units this will be advised upon.

The report provides conclusions as to the best methods of meeting the requirements of BREEAM Domestic Refurbishment.

**The project is being assessed under the BREEAM Domestic Refurbishment Technical Manual (2.0). Should it be registered under a subsequent version, the pre-assessment will have to be reviewed.**

## 2 BREEAM Domestic Refurbishment Strategy

BREEAM Domestic Refurbishment is the national environmental standard to be used in the refurbishments, extensions, conversions and changes of use of homes in England. Sustainable design principles cover performance in seven key areas:

- □ Management
- □ Health & Wellbeing
- □ Energy
- □ Water
- □ Materials
- □ Waste
- □ Pollution

BREEAM Domestic Refurbishment uses a rating system of “Pass”\* to “Outstanding”\*, “Outstanding”\* being the highest level. Dwellings are assessed and rated individually in two stages:

1. A Design Stage Assessment - an interim 'design stage' certificate is issued by the BRE once they have checked the report and evidence submitted and confirmed the design stage information complies with all relevant criteria in the BDR Technical Manual;
2. A Post Construction Stage Assessment - the dwellings are reviewed to ensure that the information provided at design stage has been incorporated. The report and post construction stage evidence must be submitted to the BRE, and checked for compliance prior to issue of the final certificate.

Minimum **mandatory standards** must be met for **energy efficiency, internal water use, ventilation, safety, flooding** and **responsible sourcing of materials** before even a Pass can be achieved.

Minimum Standards by rating level are:

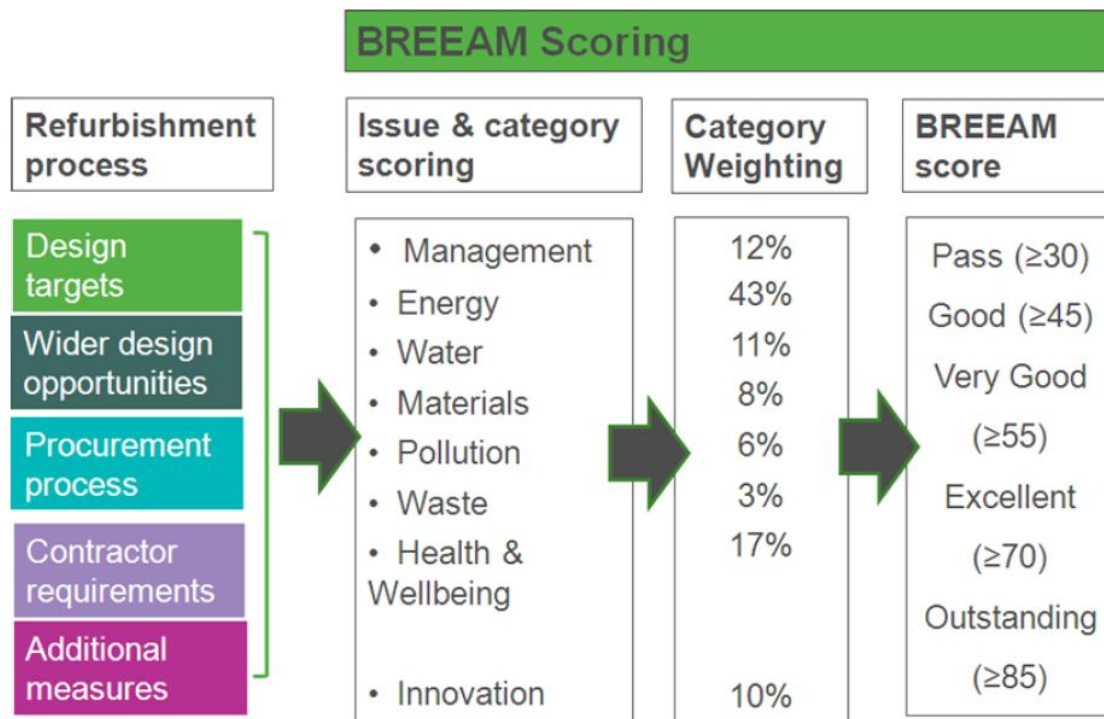
Table - 6: Minimum BREEAM Domestic Refurbishment standards by rating level

BREEAM issue	Minimum standards by rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02: Energy Efficiency Rating Post Refurbishment	0.5 Credits	1.0 Credits	2 Credits	2.5 Credits	3.5 Credits
Wat 01: Internal Water use	-	-	1 Credit	2 Credits	3 Credits
Hea 05: Ventilation	1 Credit	1 Credit	1 Credit	1 Credit	1 Credit
Hea 06: Safety	1 Credit	1 Credit	1 Credit	1 Credit	1 Credit
Pol 03: Flooding	-	-	-	2 Credits	2 Credits
Mat 02: Responsible sourcing of materials	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only

In addition to the seven areas above, Innovation Credits are available. These are worth 10% (1% each for the 10 credits) and are achieved on top of the 100% of the assessment weighting. These are:

- Ene 2 - Energy Efficiency Rating (2 credits available)
- Ene 8 - Display Energy Devices (1 credit available)
- Wat 1 - Internal Water Use (1 credit available)
- Was 2 - Refurbishment Site Waste Management (1 credit available)
- Pol 2 - Surface Water Run-off (1 credit available)
- Man 2 - Responsible Construction Practices (1 credit available)
- Man 5 - Protection and Enhancement of Ecological Value (1 credit available)
- Man 6 - Project Management (2 credits available)
- Hea 4 - Inclusive Design (1 credit available)

For the normal assessment weighting, each of the seven categories is weighted differently with the main focus on Energy. Full weightings are as follows:



Once credits in the above sections are achieved, the total rating is then calculated. The BREEAM rating benchmarks for a Domestic Refurbishment Assessment are set out as follows:


Table - 5: BREEAM Rating benchmarks

BREEAM Rating	% score
OUTSTANDING	≥85
EXCELLENT	≥70
VERY GOOD	≥55
GOOD	≥45
PASS	≥30

**Following the Pre-Assessment, the Site scores 56.23% i.e. a “Very Good” Rating**

**The Full Pre-Assessment can be found on the following pages.**

### 3. Document Control Sheet

Rev.	Issue Purpose	Checked	Signature	Author	Signature	Date
-	Initial Issue	Alex Timperley		Ryan Thrower		30/09/2014

#### Disclaimer

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Section		Credits Awarded	<i>Out of</i>	Evidence to be provided
<b>MAN 1</b>	HOME USER GUIDE	<b>3</b>	3	<p>To all dwellings a simple guide that covers information relevant to the ‘non-technical’ occupant on the operation and environmental performance of the dwelling as well as information on the Site and Surrounding Area will be supplied.</p> <p>Full content requirement of the Home User Guide can be found <a href="#">here</a>.</p>
<b>MAN 2</b>	RESPONSIBLE CONSTRUCTION PRACTICES	<b>0</b>	2	The Considerate Constructors Scheme (2013) will not be followed on this development.
<b>MAN 3</b>	CONSTRUCTION SITE IMPACTS	<b>1</b>	1	<p>The project is a large scale project so 4 items from Checklist A-4 need to be followed. The 4 items most suited to this job are:</p> <ul style="list-style-type: none"> <li>a. The Site Water usage is to be recorded.</li> <li>b. An Environmental Materials Policy is required from Developer (Air &amp; Water)</li> <li>c. COC Certificates for all Site Timber need to be provided.</li> <li>d. Contractor to be ISO14001 Compliant.</li> </ul>

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<b>MAN 4</b>	SECURITY	<b>0</b>	2	<p>Due to the complicated layout and schedule of changes to the project, it is unsure whether all doors and windows are being replaced. Therefore, at this stage, the first credit for all doors to be PAS-24 compliant and all windows to be BS:7950 compliant is withheld.</p> <p>While the principles and ethos of Secure by Design are being followed, the formal scheme will not be followed.</p>
<b>MAN 5</b>	PROTECTION OF ECOLOGICAL FEATURES	<b>0</b>	1	<p>No Topographical Survey/Ecology Report is to be commissioned on this development; therefore no credits can be awarded in this section.</p>
<b>MAN 6</b>	PROJECT MANAGEMENT	<b>2</b>	2	<p>The Developer is to write a project implementation plan. This needs to contain:</p> <p>An initiation meeting to assign individual and shared responsibilities amongst the project team including all trades on site.</p> <p>It is the joint responsibility of the whole project team, to ensure the production and/or completion of the outlined tasks:</p> <ul style="list-style-type: none"> <li>a) End user requirements and building usage</li> <li>b) Design aims.</li> <li>c) Particular installation and construction requirements.</li> <li>d) Usability and manageability of design solutions for the installer and end user of the building.</li> <li>e) Project team communication methods.</li> <li>f) Supply chains.</li> <li>g) Documents as required in schedule of evidence sections</li> </ul> <p>An <b>Innovation Credit</b> has also been awarded for employing a BREEAM Domestic Assessor at an early stage, prior to the production of a refurbishment specification.</p>

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HEA 1	DAYLIGHTING	1	2	<p>A preliminary inspection shows that the development should result in a neutral impact on the existing dwellings daylight levels in the Kitchen, Living Room, Dining Room and Study, meaning that 1 Credit can be taken in this section.</p> <p>The second Credit has been withheld for now until full Daylight Calculations are completed at Design Stage but it looks unlikely that this credit will be achieved.</p>
HEA 2	SOUND INSULATION	0	4	<p>While there will need to be some testing for Part E compliance, it is unsure to ascertain exactly what the extent of this requirement will be due to the mixed creation of units of the scheme in terms of Part L1b (refurbishment/extension/new)</p> <p>This credit will be revisited following the appointment of a Building Control Officer at Design Stage.</p>
HEA 3	VOLATILE ORGANIC COMPOUNDS	0	1	<p>Credit not currently sought due to the complicated nature of achieving this credit. Can be sought at a later date if extra credits become necessary.</p> <p>If the Client wishes to achieve this credit, then the standards contained in <a href="#">Table 15</a> must be met.</p>
HEA 4	INCLUSIVE DESIGN	0	2	<p>Retention of existing staircase means that Flats cannot achieve this credit.</p>



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<b>HEA 5</b>	VENTILATION	<b>1</b>	<b>2</b>	<p style="text-align: center;">For 1 Credit, the ventilation must comply with the following standards:</p> <ul style="list-style-type: none"> <li>- <b>Background</b> – all habitable rooms – Section 7, Building Regulations Approved Document Part F (2010)</li> <li>- <b>Extract</b> – all wet rooms – Section 5, Building Regulations Approved Document Part F (2010)</li> <li>- <b>Purge</b> – all habitable rooms &amp; wet rooms - Section 7, Building Regulations Approved Document Part F (2010)</li> </ul> <p style="text-align: center;"><b>The above credit is a mandatory credit under BREEAM Domestic Refurbishment.</b></p> <p style="text-align: center;">The second credit cannot be sort as the properties do not meet the requirements of Section 5 of the Building Regulations Approved Document Part F (2010).</p> <p style="text-align: center;">The second credit could be achieved if MVHR was to be installed.</p>
<b>HEA 6</b>	SAFETY	<b>1</b>	<b>1</b>	<p style="text-align: center;">A fire detection and alarm systems will be installed be in accordance with BS 5839–6:2004 and to at least a Grade D Category LD3 standard.</p> <p style="text-align: center;">Furthermore, a Carbon Monoxide detector and alarm system will be installed in accordance with and positioned in accordance to BS EN 50291–1:2001 and BS EN 50292:2002 and should carry a British or European approval mark.</p> <p style="text-align: center;"><b>The above credit is a mandatory credit under BREEAM Domestic Refurbishment.</b></p>

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<b>ENE 1</b>	IMPROVEMENT IN ENERGY EFFICIENCY RATING	<b>2</b>	<b>6</b>	<p>An improvement to the dwelling's EER of at least 26 is to be achieved in order to gain 3 credits.</p> <p style="text-align: center;"><b>Full SAP Calculations to confirm this score at Design Stage</b></p>
<b>ENE 2</b>	ENERGY EFFICIENCY RATING POST-REFURBISHMENT	<b>2</b>	<b>4</b>	<p>The minimum average Energy Efficiency Rating of the dwellings Post-Refurbishment is to be 65.</p> <p>This meets the minimum standards for a 'Very Good' rating, scoring 2 Credits.</p> <p style="text-align: center;"><b>Full SAP Calculations to confirm this score at Design Stage</b></p>
<b>ENE 3</b>	PRIMARY ENERGY DEMAND	<b>4</b>	<b>7</b>	<p>The primary energy demand post-refurbishment will be an average of &lt;math&gt;&lt;240 \text{ kWh/m}^2/\text{year}&lt;/math&gt; across the dwellings for a score of 4 Credits.</p> <p style="text-align: center;"><b>Full SAP Calculations to confirm this score at Design Stage</b></p>
<b>ENE 4</b>	RENEWABLE TECHNOLOGIES	<b>0</b>	<b>2</b>	<p>It is currently unknown whether renewable energy is to be installed on Site; therefore this Credit has been withheld for now.</p> <p style="text-align: center;">This section can be revisited at Design Stage if necessary.</p>

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<b>ENE 5</b>	ENERGY LABELLED WHITE GOODS	1	2	<p>At this stage, and due to the changing guidance for this credit coming in October 2014 (due to the lack of availability of White Goods on the current Energy Saving Trust list) it cannot be confirmed that a Fridge/Freezer, Washing Machine and Dishwasher will be compliantly procured.</p> <p>However, an <a href="#">EU Energy Efficiency Labelling Scheme Information Leaflet</a> is to be provided.</p>
<b>ENE 6</b>	DRYING SPACE	1	1	<p>A Tidy Drier of at least 6m in length is to be installed in the Bathroom of each dwelling.</p> <p>This will be an internal heated space with adequate, controlled ventilation, complying with Building Regulations Approved Document F Ventilation 2006.</p>
<b>ENE 7</b>	LIGHTING	2	2	<p>The following Lighting is to be provided:</p> <p style="text-align: center;"><b><u>External Lighting</u></b></p> <p><b>Space Lighting</b> – All to be equipped with fluorescent fittings. Lobby, entrance and steps or pathway lighting to be controlled by a time clock or daylight sensor. Hallway, landing, stairwell, internal corridor and garage lighting to be controlled with push button timers/PIR sensors. Communal room lighting to be controlled by manual switches or occupant sensors.</p> <p><b>Security Lighting</b> – To have a maximum wattage of 150 W and movement control devices (PIR) and daylight-cut off sensors.</p> <p style="text-align: center;"><b><u>Internal Lighting</u></b></p> <p><b>Internal Lighting</b> is also to be supplied to a maximum average wattage across the total floor area of <b>9 <u>watts/m2</u></b> is to be installed in order to achieve the second Credit.</p>

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ENE 8	ENERGY DISPLAY DEVICE	2	2	<p>An Energy Display Device is to be installed in order to achieve 2 Credits. The device must be fixed to the mains supply and be capable of displaying the following:</p> <ul style="list-style-type: none"> <li>• Current mains energy consumption (kilowatts and kilowatt hours) <ul style="list-style-type: none"> <li>• Current emissions (g/kg CO2) <ul style="list-style-type: none"> <li>• Current tariff</li> </ul> </li> <li>• Current cost (in pounds and pence)</li> </ul> </li> <li>• Projected cost (£ per month and £ per year)</li> </ul> <p>In addition, an <b>Innovation Credit</b> is available if the device is also capable of <b>recording</b> consumption data in addition to all criteria above.</p> <p>The <a href="#">Ewgeco H300</a> achieves all Credits, as well as a Credit for <b>WAT 3</b> should this exact unit be specified.</p> <p>As an alternative, certain energy companies such as E.ON and British Gas also supply compliant devices as part of service arrangements.</p>
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<b>ENE 9</b>	CYCLE STORAGE	<b>0</b>	2	Compliant Cycle Storage is not being supplied to this scheme.														
<b>ENE 10</b>	HOME OFFICE	<b>1</b>	1	<p>A Home Office is to be provided in the Living Room/Second Bedroom (for 3 bed dwellings) of each dwelling. This is to consist of:</p> <ul style="list-style-type: none"> <li>- Two double power sockets,</li> <li>- A telephone point,</li> <li>- 1.8m of wall space is to be provided in order to fit in a desk, a chair, and a filing cabinet or bookcase.</li> </ul>														
<b>WAT 1</b>	INTERNAL WATER USE	<b>2.5</b>	3	<p>Internal Water Usage will be kept to a maximum of 107 litres/person/day to meet mandatory standards.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;"><u>&lt;107ltrs/person/day (2.5 credits)</u></th> <th style="text-align: left;">Option 1</th> </tr> </thead> <tbody> <tr> <td>W/C</td> <td>6/4</td> </tr> <tr> <td>Basin Taps (Litres Per Min)</td> <td>6</td> </tr> <tr> <td>Kitchen Taps (Litres Per Min)</td> <td>8</td> </tr> <tr> <td>Shower (Litres Per Min)</td> <td>7</td> </tr> <tr> <td>Bath (Litres to Overflow)</td> <td>156</td> </tr> <tr> <td><b>TOTAL</b></td> <td><b>104.9</b></td> </tr> </tbody> </table>	<u>&lt;107ltrs/person/day (2.5 credits)</u>	Option 1	W/C	6/4	Basin Taps (Litres Per Min)	6	Kitchen Taps (Litres Per Min)	8	Shower (Litres Per Min)	7	Bath (Litres to Overflow)	156	<b>TOTAL</b>	<b>104.9</b>
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<b>WAT 2</b>	EXTERNAL WATER USE	<b>0</b>	<b>1</b>	All dwellings have private space but it is logistically infeasible to provide Water Butts to the Basement Courtyard's and Roof Terrace so this credit has been withheld.
<b>WAT 3</b>	WATER METER	<b>1</b>	<b>1</b>	<p>If the Energy Display Device specified in ENE 08 (the <a href="#">Ewgeco H300</a>) is installed to measure and record water consumption then this credit can be achieved.</p> <p>If the Ewgeco model is not installed, the Water Meter must be capable of the following:</p> <ul style="list-style-type: none"> <li>- Recording and displaying historic water consumption <ul style="list-style-type: none"> <li>- Monitor water consumption over time</li> </ul> </li> <li>- Displaying current consumption levels either instantaneously or at half hourly intervals</li> </ul>
<b>MAT 1</b>	ENVIRONMENTAL IMPACT OF MATERIALS	<b>12</b>	<b>25</b>	<p>Based on a standard masonry and timber construction, 12 Credits have been preliminarily awarded.</p> <p>Full Construction Notes should be provided at Design Stage to confirm this.</p>

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<b>MAT 2</b>	RESPONSIBLE SOURCING OF MATERIALS	<b>8</b>	12	<p>Materials will be responsibly sourced (i.e. FSC, PEFC, EMS, BES:6001 certification) so as to achieve 8 Credits.</p> <p style="text-align: center;">All new Timber products are to be legally sourced.</p>
<b>MAT 3</b>	INSULATION	<b>8</b>	8	<p>4 Credits can be awarded where &gt;80% of the insulation in the following areas is responsibly sourced:</p> <ul style="list-style-type: none"> <li>- External Walls</li> <li>- Ground Floor</li> <li>- Roof</li> <li>- Building Services</li> </ul> <p style="text-align: center;">The second 4 Credits are to be achieved by:</p> <ul style="list-style-type: none"> <li>• Ensuring the Insulation Index for new insulation is &gt;2</li> </ul> <p style="text-align: center;">Where the Green Guide Ratings are determined using the <a href="#">Green Guide</a> tool</p> <p style="text-align: center;">Based on the Construction Notes currently provided/assumed, all 8 credits can be awarded.</p>

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<b>WAS 1</b>	HOUSEHOLD WASTE	<b>2</b>	2	<p>The Local Authority provides a pre-collection sorting recycling service. Internal Recycling Facilities comprising of 3 bins of at least 7ltrs each and at least 30ltrs in total are to be supplied in the Kitchen of each dwelling. The bins are to be placed in a fixed location and be in addition to the normal refuse bin.</p> <p>The second credit can also be achieved as the Local Authority provides a Food Waste Collection Service. A 7ltr caddy is to be supplied in the kitchen of each dwelling.</p>
<b>WAS 2</b>	REFURBISHMENT SITE WASTE MANAGEMENT	<b>0</b>	3	<p>Following the change in legislation to remove the Site Waste Management Plan (2008), it is no longer mandatory for a SWMP to be undertaken.</p> <p>To reflect this and also the lack of site space for recycling, this credit is not being taken.</p>
<b>POL 1</b>	NOX EMISSIONS	<b>3</b>	3	<p>Gas Boilers with NOx emissions of &lt;40 mg/kWh are to be installed in the dwellings in order to achieve 3 credits.</p> <p>The Make and Model of the Boiler will be confirmed at As-Built Stage.</p>
<b>POL 2</b>	SURFACE WTER MANAGEMENT	<b>1</b>	3	<p>As the site has a Neutral Impact on Surface Water Run-Off by:</p> <ul style="list-style-type: none"> <li>a) The non-creation of any new hard standing areas</li> <li>b) No extension of buildings onto permeable surfaces.</li> </ul> <p>Therefore, 1 credit can be awarded.</p>



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<b>POL 3</b>	FLOODING	<b>0</b>	2	A formal Flood Risk Assessment to the requirements of PPS:25 has not been undertaken for this scheme.
<b>INN</b>	INNOVATION	<b>2</b>	10	<p style="text-align: center;">Innovation Credits have been achieved in</p> <ul style="list-style-type: none"> <li>• ENE 08 – Energy Display Device</li> <li>• MAN 06 – Project Management</li> </ul>

FINAL SCORE: **56.23%**

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BREEAM Domestic Refurbishment									
Summary Score Sheet			Site: <b>Maresfield Gardens</b>						
			Score assessment						
			Score	Credits available	Sub-total	Credits available	% achiev'd	Weighting factor	Credits Score
<b>Management</b>	<b>Man 1</b>	Home User Guide	3	3	6	11	54.54545	0.12	6.545454545
	<b>Man 2</b>	Responsible Construction Practices	0	2					
	<b>Man 3</b>	Construction Site Impacts	1	1					
	<b>Man 4</b>	Security	0	2					
	<b>Man 5</b>	Protection of Ecological Features	0	1					
	<b>Man 6</b>	Project Management	2	2					
<b>Health &amp; Wellbeing</b>	<b>Hea 1</b>	Daylighting	1	2	5	12	41.7	0.17	7.08
	<b>Hea 2</b>	Sound Insulation	2	4					
	<b>Hea 3</b>	Volatile Organic Compounds	0	1					
	<b>Hea 4</b>	Inclusive Design	0	2					
	<b>Hea 5</b>	Ventilation	1	2					
	<b>Hea 6</b>	Safety	1	1					
<b>Energy</b>	<b>Ene 1</b>	Improvement in Energy Efficiency Rating	3	6	16	29	55.2	0.43	23.72
	<b>Ene 2</b>	Energy Efficiency Rating Post Refurbishment	2	4					
	<b>Ene 3</b>	Primary Energy Demand	4	7					
	<b>Ene 4</b>	Renewable Technologies	0	2					
	<b>Ene 5</b>	Energy Labelled White Goods	1	2					
	<b>Ene 6</b>	Drying Space	1	1					
	<b>Ene 7</b>	Lighting	2	2					
	<b>Ene 8</b>	Energy Display Device	2	2					
	<b>Ene 9</b>	Cycle Storage	0	2					
	<b>Ene 10</b>	Home Office	1	1					
<b>Water</b>	<b>Wat 1</b>	Internal Water Usage	2.5	3	3.5	5	70.0	0.11	7.70
	<b>Wat 2</b>	External Water Usage	0	1					
	<b>Wat 3</b>	Water Meter	1	1					
<b>Materials</b>	<b>Mat 1</b>	Environmental Impact of Materials	12	25	28	45	62.2	0.08	4.98
	<b>Mat 2</b>	Responsible Sourcing of Materials	8	12					
	<b>Mat 3</b>	Insulation	8	8					
<b>Waste</b>	<b>Was 1</b>	Household Waste	2	2	2	5	40.0	0.03	1.20
	<b>Was 2</b>	Refurbishment Site Waste Management	0	3					
<b>Pollution</b>	<b>Pol 1</b>	Nitrogen Oxide Emissions	3	3	4	8	50.0	0.06	3.00
	<b>Pol 2</b>	Surface Water Run Off	1	3					
	<b>Pol 3</b>	Flooding	0	2					
<b>Innovation</b>	<b>Inn 1</b>	Innovation	2	10	2	10	20.0	0.1	2.00
					Total	125			Score: <b>56.23</b>
									Rating: <b>Very Good</b>
								<b>Rating</b>	<b>Score</b>
								Good	45
								Very Good	55
								Excellent	70

