Residential Evidence Base Report
For Planning Policy CE1
For Royal Borough of Kensington & Chelsea

28.10.2009
EcoHomes Analysis of RBKC LDF

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EcoHomes Analysis of RBKC LDF

1. Executive Summary

EcoHomes Analysis of RBKC LDF

Pitman Tozer Architects and Eight Associates have been appointed to provide an evidence base for the Royal Borough of Kensington & Chelsea (RBKC) policy related to meeting environmental standards and carbon emission reductions for existing dwellings in the Borough.

Workshops were held at RBKC offices on Monday 5th October and 14th October with Policy Managers, Design and Conservation Officers, Building Control, Pitman Tozer Architects and Eight Associates.

Brief and Findings

1. To consider the viability and feasibility to which conversions and refurbishments defined as major developments can be retrofitted to meet the Council’s required environmental standards, without impacting unacceptably on townscape.

   This is detailed in sections four and five and concludes that an EcoHomes Rating of ‘Very Good’ is achievable, along with a requirement to achieve at least 40% of the credits in each of the water, energy and materials sections.

2. The Methodology employed is a desktop study of 4 case studies to demonstrate the measures required to achieve a ‘Very Good’ and reduce the carbon emissions from the development sufficiently to meet the requirement of achieving 40% of the credits in the energy section of the EcoHomes assessment.

   It is concluded that this is feasible and also that improvements to the building fabric result in the most extensive carbon emissions reductions for the case studies.

3. Provide recommendations on whether the policy is suitable for the Borough.

   It is concluded that the policy is suitable.

A full copy of the brief is included within Appendix 1 of this report.

Summary of the Key Recommendations

- EcoHomes VERY GOOD is a suitable target to promote best practice.
- Best practice will further be ensured through requiring developments to achieve at least 40% of the credits in each of the following EcoHomes sections: energy, water and materials credits.
- An EcoHomes preliminary assessment should be required at Planning Stage. In addition, schemes should provide a Design Stage certificate prior to work starting on site and a Post Construction Stage Assessment prior to occupancy.
- Carbon savings requirements in this report are achievable on the sites with current building materials, practices and technologies.
- The design and conservation implications of the current policy are predominantly low for the case studies in Conservation Areas and lower for those outside Conservation Areas. For Grade II listed buildings each scheme should be treated on a case by case basis.

Disclaimer

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2. Introduction

2.1 Aim of the Report

EcoHomes Analysis of RBKC LDF

Introduction

The Royal Borough of Kensington and Chelsea (RBKC) have provided indicative environmental targets for retrofitting existing buildings as part of the draft publication of the Core Strategy for the Local Development Framework (LDF) - section 3E Policy CE 1a. The RBKC Core Strategy document includes a target for an EcoHomes VERY GOOD to be achieved for all "extensions and conversions defined as major development". (Please see Appendix 2 for the relevant part of RBKC’s Core Strategy).

RBKC has provided a brief dated 23rd September 2009 to determine the viability and feasibility of which existing buildings can be retrofitted to meet the Council’s policy. As recognised in the brief, it is important to consider the urban design implications of the proposed environmental targets given that the "The Royal Borough has an exceptional historic townscape, with over 4,000 listed buildings and over 70% of the Borough is afforded conservation area status."

Fitman Tozer Architects and Eight Associates have collaborated to provide the energy modelling and EcoHomes advice alongside an analysis of the urban design implications of environmental measures. This document includes models of four case studies to analyse the feasibility of achieving an EcoHomes "Very Good" rating.

Please note that EcoHomes has been used instead of Code for Sustainable Homes because the latter is for new build only. It should also be noted that modelling has been done of single unit terraced houses, whereas RBKC policy may relate to developments of multiple dwellings. It may therefore be advisable to carry out analysis on the transferability of this modelling. Furthermore, the findings in this report specifically covers the policy relating to retrofoming domestic properties and does not apply to new builds, extensions, suburbanisation development or commercial properties.

This document aims to carry out the following:

1. Identification of environmental measures for retrofoming existing buildings in RBKC, including for buildings within Conservation Areas or with Grade II Listed Buildings Status. The elements relating to carbon emission savings will also be quantified in terms of their cost effectiveness and impact on the townscape to inform decision-makers on the environmental and urban design implications of the policy objective.

2. Case study appraisal of achieving EcoHomes "Very Good" for four case studies, including a cost/carbon study of achieving relevant energy targets.

3. Recommendations on targets set out in Core Strategy.

Policy Development

This section summarises the background for the RBKC Core Strategy, in particular section CE1b. Firstly, this looks at the iteration process behind development of the Policy Target. It then provides a detailed summary of the resulting target recommendations.

Policy Target Reasons for change

Code for Sustainable Homes (CfSH) Level 4 for all refurbishments and conversions defined as major development. A preliminary assessment was made for the feasibility of achieving the relevant target and the policy was found to be too ambitious. Site constraints and retrofitting requirements meant that the target was unachievable on a case study.

CfSH Level 2/3 for all refurbishments and conversions defined as major development. A further assessment found that the reduced target was still ambitious. In particular, it was noted that the CfSH is a methodology designed for new build and many of the credits were not applicable to retrofit. EcoHomes was therefore identified as a suitable alternative.

EcoHomes VERY GOOD with 50% of credits under the Energy, Water and Materials sections. The target rating of VERY GOOD was found to be suitable for case studies. However, the mandatory requirement of 50% of the Energy credits was found to be ambitious in terms of the requirements for carbon emission reductions given site constraints.

EcoHomes VERY GOOD with 40% of credits under the Energy, Water and Materials sections. The mandatory requirement for carbon emission requirements was reduced and was still found to promote best practice whilst allowing for site constraints.

Target

The RBKC Core Strategy (Draft policy CE 1) sets out the impact on Climate Change. Section 3E of the policy is the focus of this report. Further sections of CE1 are not covered under this report. The following is taken from the relevant section:

"The Council will require an assessment to demonstrate that conversions and refurbishments defined as major development achieve the following relevant BREEAM standards: i. Residential Development: EcoHomes Very Good at Design and Post Construction) with 40% of credits achieved under the Energy, Water and Materials sections, or comparable when BREEAM for Refurbishments is published."

The policy covers planning applications classed as major developments, which constitutes sites with either 10 units or more or an area of half a hectare or more. The policy sets a target of an EcoHomes 'Very Good' rating plus a mandatory requirement to achieve 40% of credits in each of the following sections of the EcoHomes assessment: Energy, Water and Materials.
2. Introduction

2.3 Future Changes in Legislation and Policy Tools

EcoHomes Analysis of RBKC LDF

Introduction

It is important to note that both Building Regulations legislation and the EcoHomes assessment method are updated regularly. The implications of this are that the next update of Building Regulations Part L, relating to energy use in buildings, will be released in 2010, which will affect the RBKC policy targets. Similarly, the EcoHomes assessment method is updated every couple of years; the next update of this is anticipated for release next year and is likely to make a “Very Good” rating harder to achieve.

Legislation

Approved Document L1s of the Building Regulations will be revised in 2010 as part of the regular updating of Part L. At present the legislation has not been finalised in view of implementation in 2010. The period of consultation closed in September 2009 and this suggests that certain changes will be made that will have an impact on the Council’s policy. These include:

- Evidence and explanations will have to be provided by the “Design and Conservation Officer” for reasons to not comply with relevant guidance for Listed Buildings and Conservation Area from requirements of Part L1B. Exemptions can still apply, however evidence will have to be provided.
- Revisions to the carbon factors relating to the provision of power to dwellings.
- Incorporation of cooling into calculations for carbon emissions.

EcoHomes

The current version of EcoHomes is expected to be revised by the BRE within the timeframe of RBKC’s Core Strategy Policy. The revised scheme will be entitled BREEM: Refurbishment. Exact details of revisions and timetables are yet to be provided, however it is recommended that the up to date version of the EcoHomes information and standards are included within the RBKC Policy, as this will represent the current best practices and relate adequately to the up to date Building Regulations.
4. EcoHomes Analysis
4.1 Assessment Details

EcoHomes was developed and launched in April 2000 by the Centre for Sustainable Construction at the Building Research Establishment (BRE) with support from the National House Builders Council (NHBC). Its development was steered by a committee of industry representatives and environmental experts.

EcoHomes is an independent, transparent, environmental labelling scheme for housing. The scheme covers houses and apartments, either at the design stage or as part of major refurbishment.

EcoHomes assesses the environmental quality of a development by considering the broad concerns of climate change, use of resources, pollution, and impacts on biodiversity. These concerns are balanced against the need for a high quality internal environment.

The following section outlines the detailed policy requirement into 4 separate requirements.

Policy Requirement 1: EcoHomes VERY GOOD

The site will achieve a minimum score of 58% under EcoHomes thereby achieving a VERY GOOD rating.

Policy requirement 2: Achieve at least 40% of the Energy credits under EcoHomes

The site will achieve a minimum 40% of credits in the category relating to Energy as a mandatory requirement.

The issue titles and the number of credits related to each issue within the EcoHomes assessments are as follows:

<table>
<thead>
<tr>
<th>EcoHomes Issues</th>
<th>No. Credits Available</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Emissions</td>
<td>15</td>
<td>Credit relates to the absolute carbon emissions of the site as calculated under SAP software.</td>
</tr>
<tr>
<td>Heat Loss Parameter</td>
<td>2</td>
<td>Credit can be achieved through achieving a Heat Loss Parameter (HLP) as calculated under SAP software through improvements to the building fabric.</td>
</tr>
<tr>
<td>Drying Space</td>
<td>1</td>
<td>Credit relates to providing ventilated drying spaces in dwellings.</td>
</tr>
<tr>
<td>EcoLabelled White Goods</td>
<td>2</td>
<td>Credit relates to providing white energy efficient white goods.</td>
</tr>
<tr>
<td>Internal Lighting</td>
<td>2</td>
<td>Credit relates to providing energy efficient lighting to habitable rooms.</td>
</tr>
<tr>
<td>External Lighting</td>
<td>2</td>
<td>Credit relates to providing energy efficient lighting to areas external to the dwellings.</td>
</tr>
</tbody>
</table>

Policy requirement 3: Achieve at least 40% of the Water credits under EcoHomes

The site will be required to achieve a minimum 40% of credits in the category relating to Water as a mandatory requirement. The titles and the number of credits related to each issue are:

<table>
<thead>
<tr>
<th>EcoHomes Issues</th>
<th>No. Credits Available</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Water Usage</td>
<td>5</td>
<td>Credit relates to the flow-rate/capacity of showers, taps, baths, white goods and WC.</td>
</tr>
<tr>
<td>External Water Usage</td>
<td>1</td>
<td>Credit relates to rainwater harvesting for landscaping.</td>
</tr>
</tbody>
</table>

Issues

The issues assessed by EcoHomes are grouped into the eight category areas listed below:

- Energy: Operational energy and CO2
- Transport: Location issues related to transport
- Pollution: Air and water pollution (excluding CO2
- Materials: Environmental implications of materials selection, recyclable materials
- Water: Consumption issues
- Ecology and Land Use: Ecological value of the site, planting and landscaping
- Health and Well-Being: Internal and external issues relating to health and comfort
- Management: Issues relating to Management of the Construction Process

The Ecobuild Scale runs from “PASS” to “EXCELLENT”. To reach a rating, a minimum percentage score is required for each rating band as described in the table below. The final rating is determined by the EcoHomes assessor and quality assured and certified by BRE.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Min. Score</th>
<th>Environmental performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass</td>
<td>35%</td>
<td>Most developments should be able to achieve this with minor design specification changes at a minimal additional cost.</td>
</tr>
<tr>
<td>Good</td>
<td>48%</td>
<td>The developer has been able to demonstrate good practice in most areas.</td>
</tr>
<tr>
<td>Very Good</td>
<td>58%</td>
<td>Developments pushing forward the boundaries of environmental performance will achieve this.</td>
</tr>
<tr>
<td>Excellent</td>
<td>70%</td>
<td>Developments demonstrating exemplary environmental performance across the full range of issues will achieve this.</td>
</tr>
</tbody>
</table>

Rating and Scoring System

Credits are awarded under each credit issue, as stated above. Each of the seven issues has an assigned environmental weighting, therefore certain credits (such as water) are worth more than the total score than others (such as management).
4. EcoHomes Analysis

4.2 Policy Requirements

EcoHomes Analysis of RBKC LDF

Policy requirement 4:
Achieve at least 40% of the Material credits under EcoHomes

The site will be required to achieve at least 40% of credits in the category relating to Materials as a mandatory requirement under the EcoHomes assessment. The titles and the number of credits related to each issue are as follows:

<table>
<thead>
<tr>
<th>EcoHomes Issues</th>
<th>No. Credits Available</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Impact of Build-Ups</td>
<td>16</td>
<td>Use of Green Guide for materials to assess various build-ups</td>
</tr>
<tr>
<td>Sustainable Sourcing of Building Elements</td>
<td>6</td>
<td>Sustainable sourcing of main building elements.</td>
</tr>
<tr>
<td>Sustainable Sourcing of Finishing Elements</td>
<td>3</td>
<td>Sustainable sourcing of various finishing elements.</td>
</tr>
<tr>
<td>Household Waste Recycling</td>
<td>6</td>
<td>Provision of facilities for household waste recycling.</td>
</tr>
</tbody>
</table>

4.3 Case Study Results

EcoHomes Analysis of RBKC LDF

The table and graph below illustrates the full EcoHomes score for the ‘typical’ refurbishment project within RBKC, as detailed on the following pages. Following this score, the site would achieve a score of 58.45%, which would result in a VERY GOOD rating being achieved.

The policy recommendations – to achieve at least 40% of the energy, water and material credits are met within the case study development, as shown by the graph and table below.

<table>
<thead>
<tr>
<th>Summarised Score</th>
<th>Credits available</th>
<th>No. Achieved</th>
<th>% Achieved</th>
<th>Weighting Factor</th>
<th>Credits Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy requirement 2 achieved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>24</td>
<td>10</td>
<td>41.7%</td>
<td>0.22</td>
<td>9.17</td>
</tr>
<tr>
<td>Transport</td>
<td>8</td>
<td>6</td>
<td>75.0%</td>
<td>0.08</td>
<td>6.00</td>
</tr>
<tr>
<td>Pollution</td>
<td>11</td>
<td>6</td>
<td>54.5%</td>
<td>0.10</td>
<td>5.45</td>
</tr>
<tr>
<td>Materials</td>
<td>31</td>
<td>31</td>
<td>100.0%</td>
<td>0.14</td>
<td>4.46</td>
</tr>
<tr>
<td>Waste</td>
<td>6</td>
<td>3</td>
<td>50.0%</td>
<td>0.10</td>
<td>5.00</td>
</tr>
<tr>
<td>Land Use and Ecology</td>
<td>9</td>
<td>4</td>
<td>44.4%</td>
<td>0.12</td>
<td>5.33</td>
</tr>
<tr>
<td>Health and Wellbeing</td>
<td>8</td>
<td>2</td>
<td>25.0%</td>
<td>0.14</td>
<td>3.50</td>
</tr>
<tr>
<td>Management</td>
<td>16</td>
<td>10</td>
<td>100.0%</td>
<td>0.10</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>58.45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rating</td>
<td></td>
<td></td>
<td>VERY GOOD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graphic Breakdown
4. EcoHomes Analysis
4.4 Case Study Details
EcoHomes Analysis of RBKC LDF

The following table gives the broken down EcoHomes score for a ‘typical’ refurbishment project within RBKC. Following this score, the site would achieve over 58%, resulting in a VERY GOOD EcoHomes rating.

Please note that some credits are deemed to be dependant on the site location and features. These have been identified within the table – highlighted by the ★ symbol.

<table>
<thead>
<tr>
<th>EcoHomes Issues</th>
<th>Anticipated Compliance</th>
<th>No. Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ene 1 – Dwelling Emissions Rate</td>
<td>The average carbon emission rate (Dwelling Emissions Rate) to be reduced to less than 36 kgCO(_2)eq/kWh as calculated under accredited SAP software. The carbon emissions to be improved significantly through measures modelled in the report (please see Section 5) including upgrading the building fabric, improving the services and, in certain cases, providing a small proportion of renewables.</td>
<td>2 of 15</td>
</tr>
<tr>
<td>Ene 2 – Heat Loss Parameter</td>
<td>The development’s Heat Loss Parameter to be reduced to below 2.2 Wh/m(^2\K) by implementing the levels of insulation and high performance glazing detailed in the case studies of this report.</td>
<td>1 of 2</td>
</tr>
<tr>
<td>Ene 3 – Drying Space</td>
<td>Drying spaces to be provided in the bathroom or the utility room and the ventilation to be controlled by a humidistat.</td>
<td>1 of 1</td>
</tr>
<tr>
<td>Ene 4 – Eco-Labelled White Goods</td>
<td>White goods to be provided in line with the following requirements: the fridge-freezer to be A+ rated, the dishwasher to be A+ rated and the washer dryer to be B rated.</td>
<td>2 of 2</td>
</tr>
<tr>
<td>Ene 5 – Internal Lighting</td>
<td>75% of the internal lighting within the habitable rooms of the dwellings to be energy efficient.</td>
<td>2 of 2</td>
</tr>
<tr>
<td>Ene 6 – External Lighting</td>
<td>External lighting to the garden or entrance to accommodate fluorescent or LEDs.</td>
<td>2 of 2</td>
</tr>
<tr>
<td>Policy Requirement 2</td>
<td>Please note that the above specification would result in 10 out of 24 credits being achieved, which equates to 41.6% of the energy credits being achieved. Policy recommendations include a requirement to achieve at least 40% of the credits under the Energy section. This has been met.</td>
<td></td>
</tr>
</tbody>
</table>

Transport

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Achieved Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tra 1 – Public Transport</td>
<td>The development is in close proximity to several bus stops with a good frequency of services. If this is not the case, credits may be lost. This is deemed unlikely within the Borough of RBKC.</td>
<td>2 of 2</td>
</tr>
<tr>
<td>Tra 2 – Cycle Storage</td>
<td>It is not possible to provide secure storage for 2 cycles for each apartment on site. If the site allows space to be allocated for cycle storage, further credits can be achieved under this issue.</td>
<td>0 of 2</td>
</tr>
<tr>
<td>Tra 3 – Local Amenities</td>
<td>The development is within required distances of local amenities. If the site is not within close proximity to local amenities, credits may be lost. However, this is deemed unlikely for developments within the London Borough of RBKC.</td>
<td>3 of 3</td>
</tr>
<tr>
<td>Tra 4 – Home Office</td>
<td>A provision for a home office to include two double sockets, a data point and a telephone point along a 1.8m wall space in the secondary bedroom.</td>
<td>1 of 1</td>
</tr>
</tbody>
</table>

Pollution

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Achieved Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pol 1 – Insulant GWP</td>
<td>Foam based insulation in the to have a global warming potential (GWP) of less than 5.</td>
<td>1 of 1</td>
</tr>
<tr>
<td>Pol 2 – NO(_x) Emissions</td>
<td>Efficient condensing boilers to provide heating for the dwelling with a NO(_x) emission of less than 40mg/kWh.</td>
<td>3 of 3</td>
</tr>
<tr>
<td>Pol 3 – Surface water Runoff</td>
<td>Water attenuation measures, including SUDs, cannot be incorporated in this refurbishment due to site restraints.</td>
<td>0 of 2</td>
</tr>
<tr>
<td>Pol 4 – Renewable Energy Source</td>
<td>Renewable energy systems could be incorporated into the current scheme. However, due to site restraints, credits may be lost if attenuation measures are not installed.</td>
<td>0 of 3</td>
</tr>
<tr>
<td>Pol 5 – Flood Risk</td>
<td>The development is in a low flood risk area. If the development is in a medium or high flood risk zone, credits may be lost if attenuation measures are not installed.</td>
<td>2 of 2</td>
</tr>
</tbody>
</table>
### 4. EcoHomes Analysis

#### 4.4 Case Study Details

#### EcoHomes Analysis of RBKC LDF

<table>
<thead>
<tr>
<th>Materials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mat 1 – Environmental Impact of Materials</strong></td>
<td>Materials are assessed using the BRE’s Green Guide where A rated is the preferred choice. All elements that are retained and therefore re-used in situ earn an A-Rating: The following elements are A-rated: Roof, Windows, Boundary Protection, External Walls, Internal Walls, External surfacing and Upper Floors. 16 of 16</td>
</tr>
<tr>
<td><strong>Mat 2 – Responsible Sourcing of Materials: Basic Building Elements</strong></td>
<td>The main building elements such as walls, roof, upper floors, staircases are all elements that are retained and earn the highest rating under this credit. 6 of 6</td>
</tr>
<tr>
<td><strong>Mat 3 – Responsible Sourcing of Materials: Finishing Elements</strong></td>
<td>The finishing elements to be sourced from suppliers with an FSC or PEFC certification. 3 of 3</td>
</tr>
<tr>
<td><strong>Mat 4 – Recycling Facilities</strong></td>
<td>Recycling bin to be provided to the kitchen with a 30 litre capacity, in addition to the waste bin of minimum 30 litres. 6 of 6</td>
</tr>
</tbody>
</table>

#### Land Use and Ecology

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eco 1: Ecological Value of Site</strong></td>
<td>Site deemed of high ecological value due to the mature trees and hedgerows present on site. 0 of 1</td>
</tr>
<tr>
<td><strong>Eco 2: Ecological Enhancement</strong></td>
<td>Appoint an ecologist to advise on potential improvements to the landscaping and best practice ecological practices. 1 of 1</td>
</tr>
<tr>
<td><strong>Eco 3: Protection of Ecological Features</strong></td>
<td>Site constraints may mean that this credit is not achievable or cost effective due to the small external areas for potential improvements. 1 of 1</td>
</tr>
<tr>
<td><strong>Eco 4: Change of Ecological Value of Site</strong></td>
<td>There will be no increase or decrease in ecological value on site as a result of the development. 2 of 4</td>
</tr>
<tr>
<td><strong>Eco 5: Building Footprint</strong></td>
<td>The calculation of gross internal floor area to footprint ratio does not meet 2:6:1. Dwellings that have 4 storeys will in general achieve this credit. However, three storey dwellings will not achieve this credit. 0 of 2</td>
</tr>
</tbody>
</table>

#### Health and Wellbeing

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hea 1: Daylighting</strong></td>
<td>Daylighting calculations to be carried out to demonstrate that the kitchens and living areas benefit from good daylight. 1 of 3</td>
</tr>
<tr>
<td><strong>Hea 2: Sound Insulation</strong></td>
<td>No credits awarded, as assumed that acoustic testing will not be carried out in line with EcoHomes requirements. 0 of 4</td>
</tr>
<tr>
<td><strong>Hea 3: Private Space</strong></td>
<td>The development benefits from private amenity space at the rear of the property. 1 of 1</td>
</tr>
</tbody>
</table>

#### Water

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wat 1 – Internal Portable Water Use</strong></td>
<td>Sanitaryware specification to incorporate low flow appliances and fittings. An example specification is as follows: 6 of 9 2 of 5 1 of 1</td>
</tr>
<tr>
<td><strong>Wat 2 – External Water Use</strong></td>
<td>Provides a 250 litre water butt to harvest rainwater for use on the gardens.</td>
</tr>
</tbody>
</table>

#### Policy Requirement 4

Please note that the above specification would result in 31 out of 31 credits being achieved, which equates to 100% of the materials credits being achieved. Policy recommendations include a requirement to achieve at least 40% of the credits under the materials section. This has been met.

#### Policy Requirement 3

Please note that the above specification would result in 3 out of 6 credits being achieved, which equates to 50% of the water credits being achieved. Policy recommendations include a requirement to achieve at least 40% of the credits under the water section. This has been met.
### 4. EcoHomes Analysis

#### 4.4 Case Study Details

EcoHomes Analysis of RBKC LDF

<table>
<thead>
<tr>
<th>Management</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Man 1 – Home User Guide</td>
<td>A full home user guide to be provided to include BRE recommended contents.</td>
<td>3 of 3</td>
</tr>
<tr>
<td>Man 2 – Considerate Constructors</td>
<td>The site is to be registered under Considerate Constructors Scheme and will show compliance with best practice site management principles. The site is to achieve a score of at least 32/40.</td>
<td>2 of 2</td>
</tr>
</tbody>
</table>
| Man 3 – Construction Site Impacts | The contractor to undertake the following:  
  - Sort and monitor waste and recycle at least 5 types of construction waste material  
  - Adopt best practice policies in respect of water (ground and surface) pollution occurring on site  
  - Adopt best practice policies in respect of air (dust) pollution arising from site activities  
  - Monitor and set consumption targets for on-site energy usage  
  - Monitor and set consumption targets for on-site water usage                                           | 3 of 3 |
| Man 4 – Security    | The design team will work with an Architectural Liaison Officer and will incorporate all relevant “Secured by Design” principles within the scheme – including meeting security standards for external doors and windows. | 2 of 2 |
5. Carbon Savings Analysis

EcoHomes Analysis of RBKC LDF

Introduction

Three properties within the Borough have been chosen to be modelled as part of the carbon savings analysis. These properties were chosen to best identify typical design and conservation issues within the Borough when implementing carbon savings measures. The properties chosen are as follows:

- 48 Addison Avenue due to its status as a Grade II Listed Building.
- 44 Markham Square due to its location within a Conservation Area.
- 102 Princeastle Road considered as not located in a Conservation Area (option 1).
- 102, Princeastle Road considered as not located in a Conservation Area (option 2).

The following section contains the following information:

1. Drawings and photographs of the existing site are provided for each property showing the site location and the layouts.
2. An EcoHomes score based on the analysis in section 4 and carbon saving measures to meet the required 40% of energy credits. Modelling data is also provided showing fuel savings, carbon savings and capital expenditure.
3. Drawings and photographs of the proposed site showing the likely Design and Conservation implications of the carbon saving measures.

The dwellings have been modelled using SAP 2005 software to determine if the carbon emissions rate of 36 kgCO₂eq/yr is attainable in line with policy requirements. The carbon emissions figure has been taken from the Dwelling Emission Rate (DER).

Furthermore, a cost effectiveness analysis has been undertaken in order to provide a hierarchy of carbon savings measures. For each measure the impact in terms of predicted fuel savings, carbon savings and capital expenditure has been modeled.

The measures have been modelled in a cumulative process where each carbon savings measures is analysed in addition to the previous measures.

Cost effectiveness

The effectiveness of each measure has been calculated in terms of lifecycle value associated with saving 1 tonne of carbon or the pound per kilogram of carbon saved (£/kgCO₂) saved. This measure takes into account the fuel savings over 60 years, the capital and replacement costs over 60 years and the carbon saved over 60 years.

Hierarchy of Measures

Based on the modeling within this report, the carbon saving measures that improved the thermal performance of the building fabric will generate larger fuel savings than their capital requirement. The renewable energy systems are less effective in terms of fuel savings and carbon savings, taking into account capital expenditure over the lifecycle of the system.
Example 1
Site map - 48 Addison Avenue

Example 2
Site map - 102 Princedale Road
OPTION 1: External rear render and double glazed windows
OPTION 2: External front and rear render and casement windows

Example 3
Site map - 44 Markham Square

General Notes:
1. This drawing remains copyright of Pitman Tozer Architects Limited and may not be reproduced or copied without consent in writing.
2. Do not scale or measure out fitted dimensions.
3. Any errors or omissions noted on this drawing should be reported to the architect immediately.
4. Read in conjunction with all relevant structural and mechanical & electrical engineers drawings.
5. Dimensions critical to proposed building works must be checked on site before building works commence, as certain assumptions have been made due to lack of accessibility and anomalies in the existing building.

Revisions:
Rev A - notes amended - 28.10.09

Other notes:
Existing drawings supplied by Eight Associates

Project Address:
RBKCEH Feasibility

Drawing:
Site maps

Drawing status:
For Discussion Purposes Only

Date:
01.10.09

Scale:
1:1250 @ A3

Drawing number:
0915 SIT01

Revision:
A
Street view from Addison Avenue

Photo from rear garden
A Street view from Addison Avenue

B Existing front LGF window single glazed sash

C Existing detail of single glazed sash window