# Breeam Eco-Homes Report

**55 Holmes Road**
Kentish Town
London
NW5 3AN

MRJ RUNDELL + ASSOCIATES LTD
Architecture & Design Services

# Contents



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**Fig. 1** View of 55 Holmes Road from Holmes Road showing the existing plant room on the roof.


**Fig. 2** View of 55 Holmes Road from Cathcart Street showing the existing plant room on the roof.

# Introduction

## 1.1 Scope of the Report

This report concerns a proposed new development on top of an existing building at 55 Holmes Road in Kentish Town, London. The development proposes building 3 new Penthouse apartments.

The Breeam Eco-homes scheme has been used as a framework to assess the ecological impact of the design. A full Eco-homes assessment is not considered necessary at this early stage in the project but as the design develops it is intended that an official assessment will be carried out with the aim of achieving at the least a “Very Good” rating.

Chapter 2 of this report goes through the “credit scheme” used to produce the eco-homes rating, comments on how the design meets the aims of each credit and gives an estimate of the points scores achieved for each.

In the conclusion the points are added up and an overall analysis of the ecological impact of the building is discussed.



breeam:ecohomes

**Ecohomes 2006 –**
**The environmental rating for homes**

**Pre Assessment Estimator – 2006 / 1.2**

**April 2006**

This pre-assessment estimator allows an evaluation of the likely rating to be achieved under a formal Ecohomes assessment.

***NOTE:*** *The rating obtained by using this Pre Assessment Estimator is for guidance only. Predicted ratings may differ from those obtained through a formal assessment, which must be carried out by a licensed Ecohomes assessor. Individual credit scores are rounded to the nearest two decimal points. Full guidance on the credit requirements can be found at www.Ecohomes.org. Advice should be sought from a licensed assessor at an early stage in a project to ensure that the estimated rating will be obtained. A list of licensed assessors can be found at the Ecohomes website or by contacting the BREEAM office.*



BREEAM Office
BRE
Garston
Watford WD25 9XX
Tel: 01923 664462
E-mail: Ecohomes@bre.co.uk
*Web site: www.Ecohomes.org*

**Fig. 3** Front page of Pre Assessment Estimator - 2006/1.2

# Introduction

## 1.2 The Site

The site is situated on the roof of an existing mixed use development at 55 Holmes Road. It lies just off Kentish Town High Street and is in close proximity to all the amenities associated with a town centre.

The area is currently going through a period of regeneration. A large student housing building to the north at 54 to 74 Holmes Road has recently been completed and a block of affordable housing units is currently under construction at 74a Holmes Road.

## 1.3 The Building

The existing building at 55 Holmes Road has Office spaces on the ground floor and residential units above. We propose to demolish the existing plantroom and construct three new penthouse flats using high quality sustainable materials and new energy saving technology.



**Fig. 4** Aerial photograph showing the site location and surrounding area.

# 2 Breeam Credit Analysis

## 2.1 Energy

**Ene 1 Dwelling emission rate**
**Ene 2 Building fabric**
**Ene 3 Drying space**
**Ene 4 Eco labelled goods**
**Ene 5 Internal Lighting**
**Ene 6 External Lighting**

### Ene 1 Dwelling Emission Rate

**Aim:**
To minimise emissions of carbon dioxide ($CO_2$) to the atmosphere arising from the operation of a home and its services.

**Implementation:**
Each of the flats has been designed with energy conservation as a priority. Many energy saving measures have been employed in the design and the SAP 2005 calculation has been used to empirically assess the approximate energy consumption. Flat 2 has the highest Dwelling Emissions Rate and Flat 3 the lowest.

The whole proposal acheives an average SAP rating of 79 and an average Dwelling Emissions Rate (DER) of 20.56.

**Credits Awarded: 9/15**
Houses with dwelling emission rates of between 20 and 22 receive 8 credits.

**12a. Dwelling $CO_2$ Emission Rate (DER) for individual heating systems (including micro–CHP) and community heating without CHP**

| | Energy kWh/year | | Emission factor kg CO2 /kWh | | Emissions kg CO2 /year | |
|---|---|---|---|---|---|---|
| **Individual heating system:** | | | | | | |
| Space heating main from box (85) | 9043.21956 | x | 0.194 | = | 1754.384595 | (101) |
| Space heating secondary from box (85a) | 0 | x | | = | 0 | (102) |
| Energy for water heating from box (86a) | 4715.42837 | x | 0.194 | = | 914.7931042 | (103) |
| **Community scheme: (not included add if necessary)** | | | | | | |
| Space and water heating | | | (101) + (102) + (103) | = | 2669.177699 | (107) |
| Electricity for pumps and fans from box (87) | 600.52 | x | 0.422 | = | 253.41944 | (108) |
| Energy for lighting from Appendix L | 746.49 | x | 0.422 | = | 315.01878 | (109) |
| Energy produced or saved in dwelling | 0 | x | 0.422 | = | 0 | (110) |
| Energy consumed by the above technology | 0 | x | | = | 0 | (111) |
| **Total $CO_2$, kg/year** | | | (107) + (108) + (109) – (110) + (111) | = | 3237.615919 | (112) |
| **Dwelling $CO_2$ Emission Rate** | | | (112) ÷ (5) | = | 19.38692167 | (113) |

**Fig. 5** Calculation page of SAP Rating for Flat 3

# 2 Breeam Credit Analysis

**Ene 2 Building Fabric**

**Aim:**
To future proof the efficiency of dwellings over their whole life, and to encourage refurbished dwellings to improve their insulation standards through good fabric performance.

**Implementation:**
The new building achieves an average heat loss parameter of 1.4 W/m2K

**Credits Awarded: 0/2**
This figure of 1.4 W/m2K is above the value required to score a point so no points will be awarded for this credit.

**Ene 3 Drying Space**

**Aim:**
To minimise the amount of energy used to dry clothes.

**Implementation:**
A wall fixed rotary line is provided on the terraces on the south façade.  We propose using a Brabantia Wallfix or similar with a line length of 25m.

**Credits Awarded: 1/1**
This goes significantly beyond the 6 metres of line required and full credits are likely to be awarded



**Thermal Performance**

With an impressive thermal conductivity value (k) of only 0.036 W/mK in walls and 0.035 W/mK in lofts, Warmcel's 'in use' performance is further enhanced by its ability to create a high level of air-tightness to help seal a building against air infiltration and prevent thermal convection currents.

The proven methods of application ensure the insulation provides a complete seal to prevent heat loss, eliminating gaps, cracks or other cold bridges.

Air-tightness tests undertaken on a scheme of local authority houses in Cardiff by the Centre for Research in the Built Environment (CRiBE), part of the Welsh School of Architecture (WSA) at Cardiff University, demonstrated the air-tightness of these Warmcel-insulated homes outperformed good practice requirements.

**Fig. 6** Exceprt from Warmcel literature (See appendix 2)

# 2 Breeam Credit Analysis

**Ene 4 EcoLabelled Goods**

**Aim:**

To encourage the provision or purchase of energy efficient white goods, thus reducing the CO2 emissions from the dwelling.

**Implementation:**

Eco friendly appliances are to be installed in each of the units. The aim is to save on both energy and water consumption. Below is a list of likely appliances to be used.

| Appliance | Make and model | Energy rating |
|---|---|---|
| Fridge Freezer | Miele KD 85825 ded | A+ |
| Dish washer | Miele G 2530 SCi | A |
| Washing machine | Miele W3922 WPS | A+ |

**Credits Awarded: 2/2**

Full credits are likely to be awarded.

**Ene 5 Internal Lighting**

**Aim:**

To encourage the provision of energy efficient internal lighting, thus reducing the CO2 emissions from the dwelling.

**Implementation:**

It is intended that all fixed lighting in the flats will be dedicated energy efficient fittings.

**Credits Awarded: 2/2**

Full credits are awarded for 75% of fittings being dedicated energy efficient

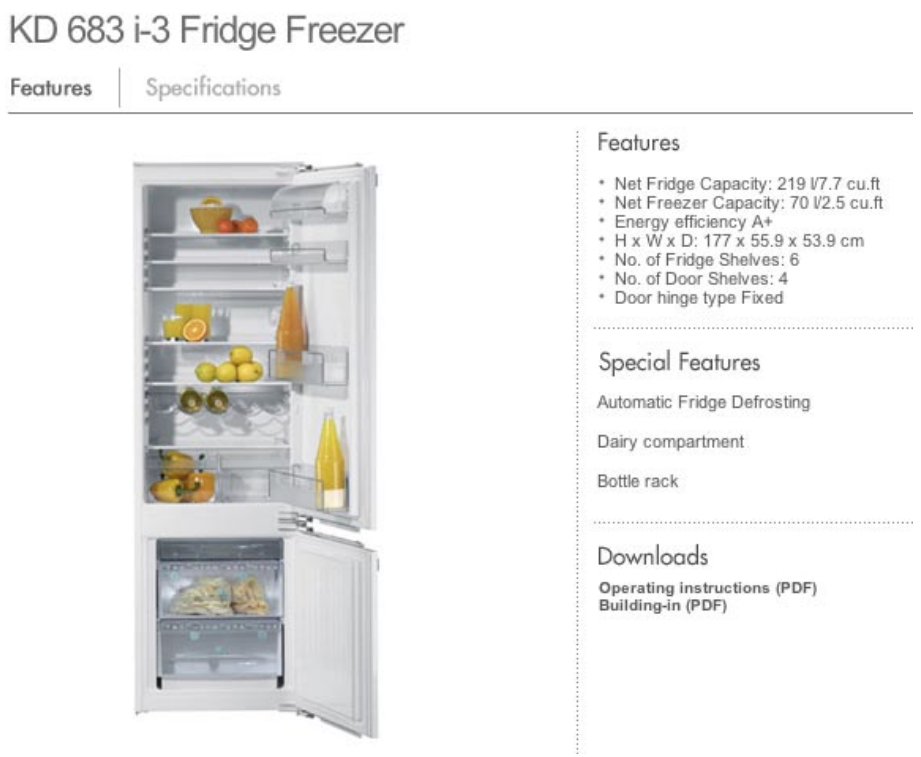


**Fig. 7** KD 683 1-3 Fridge Freezer taken from Miele website

# 2 Breeam Credit Analysis

**Ene 6 External Lighting**

**Aim:**
The purpose of this credit is to encourage the provision of energy efficient external lighting.

**Implementation:**
All exterior lighting requirements will be met with the use of compact fluorescent lamps. There will be no security lighting.

**Credits Awarded: 2/2**
Full credits should be awarded.

# 2 Breeam Credit Analysis

## 2.2 Transport

### Tra 1 Public Transport
### Tra 2 Cycle Storage
### Tra 3 Local Amenities
### Tra 4 Home Office

**Tra 1 Public Transport**

**Aim:**
To encourage developers to provide a choice of transport modes for residents with the aim of reducing the level of car use.

**Implementation:**
Kentish Town Tube station lies within 360m of the site.

There are 4 buses that stop on Kentish Town Road running in both directions. The stops on both sides of the road are within 300m of the site. No.s 134 and 214 are a 24 hour service; C2 is a daytime service and the N20 a night bus. All services run to Central London.

**Credits Awarded: 2/2**
Full credits will certainly be awarded for being within 500m of a Transport Node

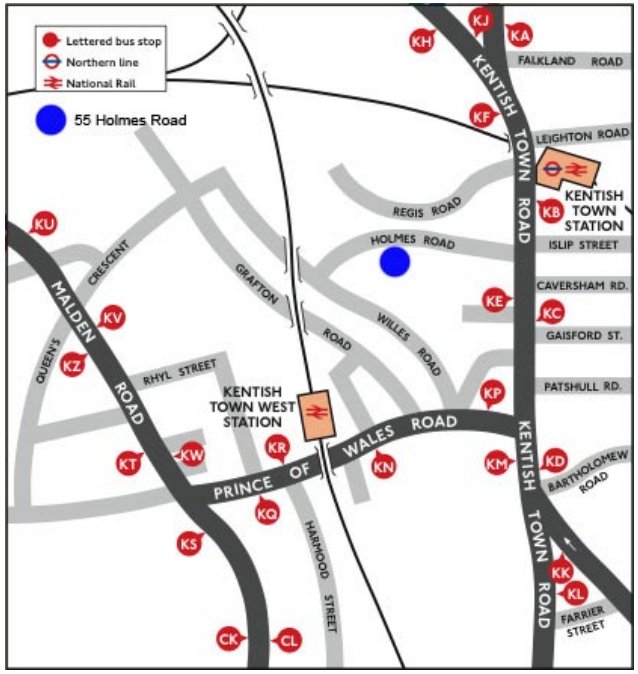


**Fig.8** Map showing transport links (adapted from Transport for London Website)

# 2 Breeam Credit Analysis

**Tra 2 Cycle Storage**

**Aim:**
To encourage the wider use of bicycles as transport, and thus reduce the need short car journeys, by providing adequate and secure cycle storage facilities.

**Implementation:**
The development involves the creation of one 3 bedroom apartment and two 2 bedroom apartments. The Eco-Homes requirements are that the three bedroom property is provided with storage for 2 bicycles and the two bedroom properties are provided with storage for 1 bicycle each.

The building that the development sits on currently has a large basement garage. The garage has a secure automatic gate on the entrance. The proposal is to create cycle storage within this area for all the flats in the building. This will require a total of 18 storage spaces. The racks would be of a standard “toast rack” style allowing the individual bikes to be locked to the frame as well as the wheel

**Credits awarded: 2/2**
Full credits will certainly be awarded. In providing storage for the rest of the entire block we go significantly beyond the requirements.

**Fig.9** An example of bike racks from bikecare.co.uk

# 2 Breeam Credit Analysis

**Tra 3 Local amenities**

**Aim:**
To encourage developers to plan new housing developments that are close to, or include, local shops and amenities. This will help to reduce the reliance of local residents on their cars.

**Implementation:**
Being just 200m from the centre of Kentish Town Road, the development is very well serviced for local amenities.

Below is a list Amenities recognised by the eco-homes criteria and the corresponding distance from the site.

| Amenity | Distance |
|---|---|
| Post office | 300m |
| School – St. Patrick's Catholic Primary school | 45m |
| School – Kentish town Primary school | 410m |
| ABC Pharmacy | 310m |
| The Bull and Gate Pub | 330m |
| The Oxford | 310m |
| O'Reilley's Bar | 230m |
| Lloyds Bank | 250m |
| Somerfield | 450m |
| Talacre Community Sports Centre | 450m |
| Kentish Town Congregational Church | 670m |
| Kentish Town Community Centre | 950m |

**Credits Awarded: 3/3**
The development easily satisfies the highest requirement of being within 1000m safe walking distance of 5 of the given amenity types. Full credits will be awarded.

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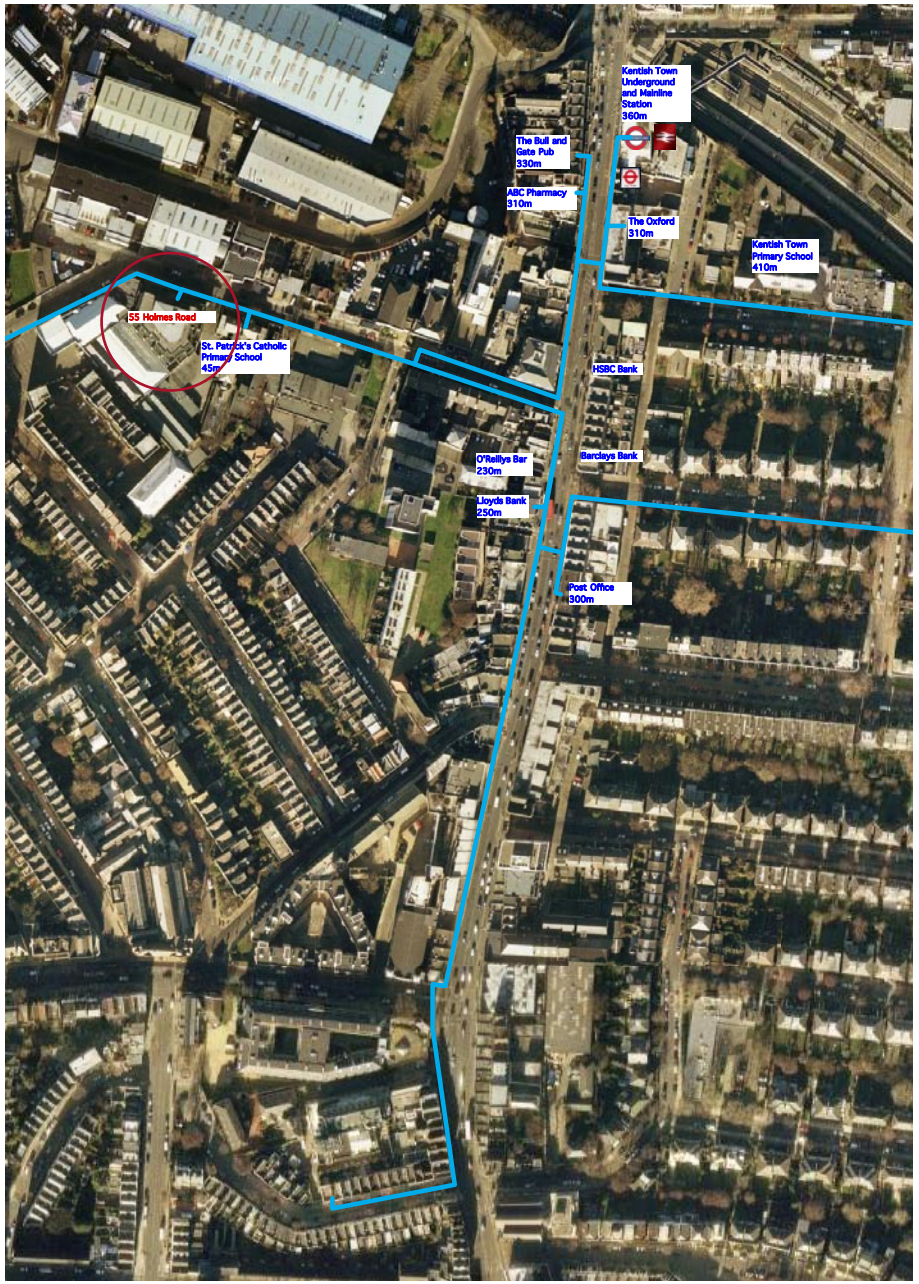



**Fig.10** An aerial photo showing Holmes Road in relation to Kentish Town Road

# 2 Breeam Credit Analysis

**Tra 4 Home office**

**Aim:**
To reduce the need to commute to work by providing residents with the necessary space and services to be able to work from home.

**Implementation:**
Each flat will have a designated study suitable as a home office. They each have a wall length of over 1.8m against which a desk, filing cabinet and shelves will be installed. 2 double sockets and two phone lines will also be installed in these rooms. The studies will have outstanding views and good natural ventilation.

**Credits Awarded: 1/1**
Full points should be awarded for this credit.

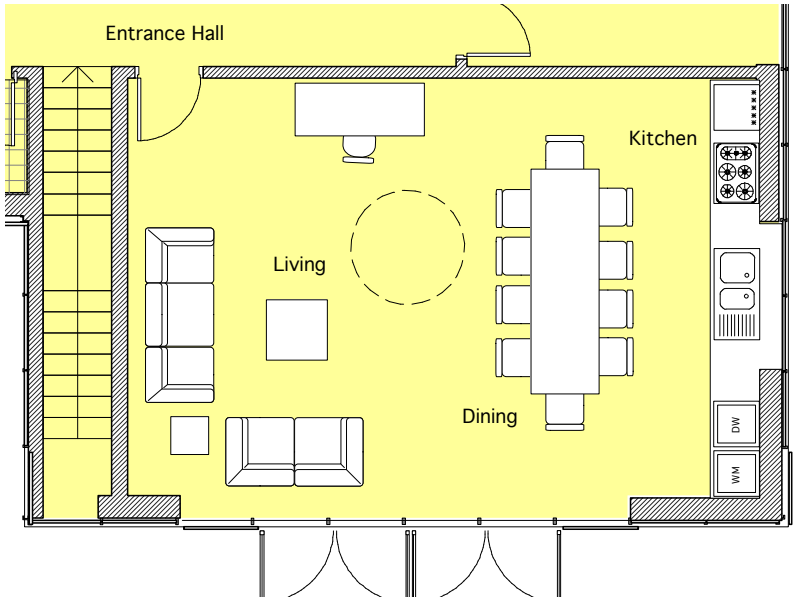



**Fig.11** Plan of the 3 Bedroom Flat showing Home Office

# 2 Breeam Credit Analysis

## 2.3 Pollution

**Pol 1 Insulant GWP**
**Pol 2 NOx Emissions**
**Pol 3 Reduction of surface run-off**
**Pol 4 Renewable and low emissions energy source**
**Pol 5 Flood Risk**

**Pol 1 Insulant GWP**
**Aim:**
To reduce the potential global warming from substances used in the manufacture or composition of insulating materials.

**Implementation:**
It is intended to use a newspaper based insulation (warmcell) product to provide insulation. One of this type of insulants main benefits is its ecological performance.

**Credits Awarded: 1/1**
Full credits are likely to be awarded

**Pol 2 NOx Emissions**
**Aim:**
To reduce the nitrous oxides (NOx) emitted into the atmosphere.

**Implementation:**
The current proposals intend to use Worcester-Bosch Greenstar High Flow 440 Combi boilers.  This has an NOx class rating of 5.

**Credits Awarded: 2/3**
2 out of the possible 3 credits would likely be achieved.

# 2 Breeam Credit Analysis

**Pol 3 Reduction of Surface Runoff**

**Aim:**
To reduce and delay water run-off from the hard surfaces of a housing development to public sewers and watercourses, thus reducing the risk of localised flooding, pollution and other environmental damage.

**Implementation:**

The runoff rainwater from the roof and deck areas will be collected as part of a rainwater harvesting system. According to the Environment Agency the site has a low probability of flooding and as a result to achieve maximum points for this section the rain water harvesting system will attenuate at least 50% of the peak flow during a design storm event.

**Credits Awarded: 2/2**

**Pol 4 Renewable and Low Emission Energy Source**

**Aim:**
To reduce atmospheric pollution by encouraging locally generated renewable and low emission energy to supply a significant proportion of the development's energy demand.

**Implementation:**

At this stage no renewable or low emission energy sources are being considered.

**Credits Awarded: 0/3**

# 2 Breeam Credit Analysis

**Pol 5 Flood Risk**

**Aim:**
To encourage developments in areas with low risk of flooding or if developments are to be situated in areas with a medium risk of flooding, that appropriate measures are taken to reduce the impact in an eventual case of flooding.

**Implementation:**
The development sits on the top of another building and therefore there is zero risk of flooding.

**Credits awarded: 2/2**
Full credits will be awarded

# 2 Breeam Credit Analysis

## 2.4 Materials

**Mat 1 Environmental Impact of materials**
**Mat 2 Responsible sourcing of materials: Basic Building Elements**
**Mat 3 Responsible sourcing of materials: Finishing Elements**
**Mat 4 Recycling facilities**

**Mat 1 Environmental Impact of materials**

**Aim:**
To encourage the use of materials that have less impact on the environment, taking account of the full life-cycle.

**Implementation:**
The new penthouse building is designed to be built entirely out of pre-fabricated TRADIS EVT (Enhanced Vapour Transfer) wall panels, floor cassettes and roof plates. This construction system offers several major advantages over traditional building methods:

The panels are factory produced and made to order. This tightly controlled manufacturing process minimises waste and means that much smaller dimensional tollerances can be acheived. The offsite manufacture also dramatically reduces on site construction time as the building essentially arrives on site in kit form and it is then simply craned onto the roof and assembled. A short on site construction time is imperative in order to minimize any disturbance to existing residents.

The wall panels are filled with WARMCEL 500 insulation which is manufactured from 100% recycled newspaper. WARMCEL 500 has an extremely low embodied energy, requiring far less energy to produce than any other mainstream insulation material. It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances.

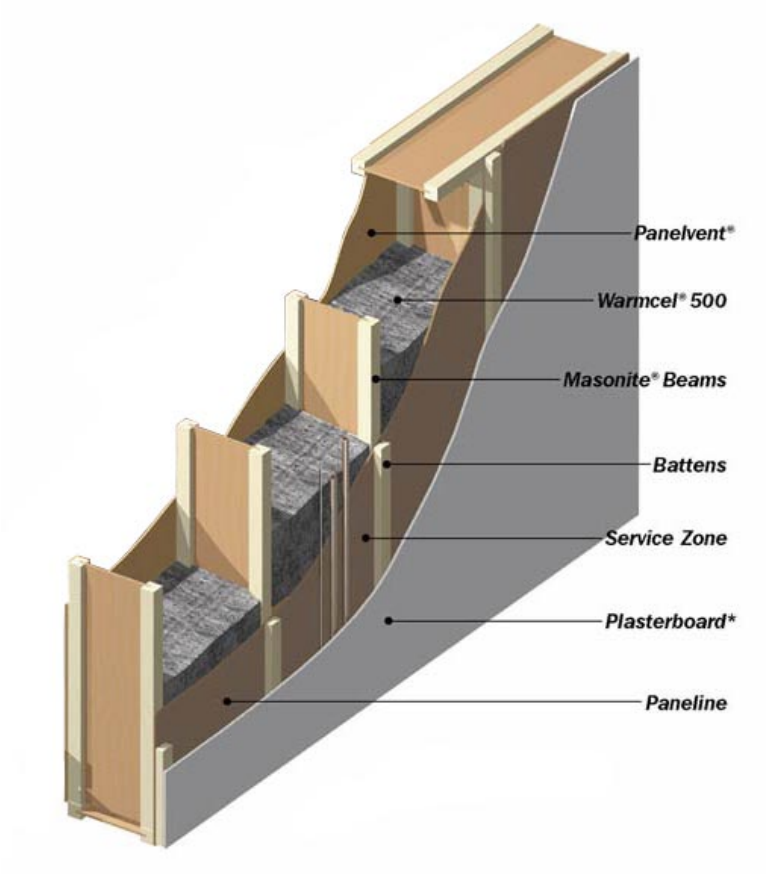



**Fig. 12** Sectional drawing of Tradis panel taken from Tradis literature

# 2 Breeam Credit Analysis

**Mat 1 Environmental Impact of materials continued.**

The WARMCEL insulation in conjunction with the TRADIS panel system delivers superior thermal performance and the improved tolerances afforded by the offsite manufacture mean that a complete seal can be acheived between panels, eliminating heat loss through gaps, cracks and other cold bridges. This massive reduction in heat loss reduces the heating demand within the building. By reducing heating demand, Warmcel also plays a major part in reducing household $CO_2$ emissions.

The panels combine this high thermal performance with the ability to ensure that any moisture that gets into the structure always migrates safely to the external atmosphere where it is harmlessly expelled. This works to prevent interstitial condensation and safeguards the integrity of the structure. Tradis Panels are a very ecologically sound product and would score an A rating in The Green Guide to Specification.

The windows will be argon filled K glass doubled glazed units.

**Credits awarded: 14/16**
It is difficult to provide a full specification at this early stage in the project. However, it is likely that points would be scored for most elements.


**Fig. 13** Excerpt from Masonite literature

# 2 Breeam Credit Analysis

**Mat 2 Responsible sourcing of materials: Basic Building Elements**

**Aim:**
To recognise and encourage the specification of responsibly sourced materials for key building elements.

**Implementation:**
This is a difficult credit to calculate at this early stage. Much of the buildings construction volume will be prefabricated timber frame. The Tradis panels that are likely to be used are fabricated through a company called Excel Fibres who make a newspaper based insulation. They have a high ecological agenda and can tailor the panels to your own specification. It is intended that all the timber used would be FSC Certified. It is intended that where practical all other elements would aim to be responsibly sourced.

**Credits awarded: 4/6**
It is difficult at this early stage to calculate for this credit. It has been estimated that 4 out of the 6 credits would likely be awarded.

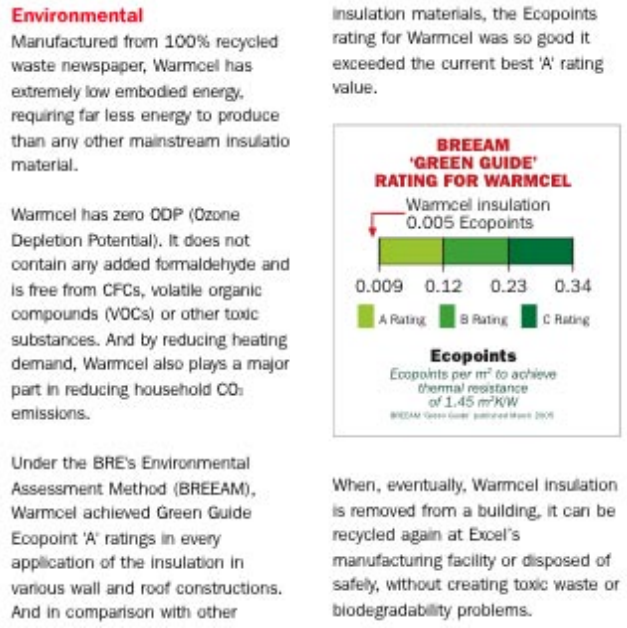
**Mat 3 Responsible sourcing of materials: Finishing Elements**

**Aim:**
To recognise and encourage the specification of responsibly sourced materials for secondary building and finishing elements.

**Implementation:**
This credit is difficult to calculate at this early stage as it involves the specification of doors, skirting boards, sofa's and kitchens. Every effort would be made in the responsible sourcing of these elements.

**Credits awarded: 1/3**
As no specification is currently available for these elements a very conservative score of 1 out of a possible 3 points has been estimated.





**Environmental**

Manufactured from 100% recycled waste newspaper, Warmcel has extremely low embodied energy, requiring far less energy to produce than any other mainstream insulatio material.

Warmcel has zero ODP (Ozone Depletion Potential). It does not contain any added formaldehyde and is free from CFCs, volatile organic compounds (VOCs) or other toxic substances. And by reducing heating demand, Warmcel also plays a major part in reducing household $CO_2$ emissions.

Under the BRE's Environmental Assessment Method (BREEAM), Warmcel achieved Green Guide Ecopoint 'A' ratings in every application of the insulation in various wall and roof constructions. And in comparison with other insulation materials, the Ecopoints rating for Warmcel was so good it exceeded the current best 'A' rating value.



When, eventually, Warmcel insulation is removed from a building, it can be recycled again at Excel's manufacturing facility or disposed of safely, without creating toxic waste or biodegradability problems.

**Fig. 14** Excerpt from Warmcel literature

# 2 Breeam Credit Analysis

**Mat 4 Recycling facilities**

**Aim:**
To encourage developers to provide homeowners with the opportunity and facilities to recycle household waste.

**Implementation:**
3 bins (additional to the normal waste) will be provided in each unit. There will be one 20 litre bin and two 10 litre bins.

Currently bin bags are dealt with through a rubbish chute located on each floor of the building. Obviously this makes recycling difficult since all rubbish ends up in the same bin at the bottom of the chute in the basement. It is apparent that some of the residents of the existing building have begun to organize their own recycling bins in the basement of the flat, which they walk their rubbish down to.

Ideally any recycling system put in place for the penthouse would also cater for the rest of the flats. The informal system set up by some of the residents could be formalised with the provision of adequately sized recycling bins for the whole building in the basement. The reality of this is that many people would continue to use the chute due to the effort involved in having to walk their rubbish down to the basement.

Another proposal would be to put a system in place where the chute was used for different types of rubbish on different days of the week. The building has a caretaker who works daily between 12 and 5 O'clock. Signs at the top of the chute would explain what rubbish could be disposed of on what days and the caretaker would swap the bins around accordingly.

**Credits awarded: 0/6**
At this stage no credits are likely to be awarded due to the current lack of permanent infrastructure.

# 2 Breeam Credit Analysis

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**Wat 1 Internal Potable Water Use**
**Wat 2 External Potable Water Use**

**Aim:**
To reduce consumption of potable water in the home.

**Implementation:**
All toilets are to have 6 litre cisterns. Large baths will be placed in the master bedrooms as will high flow showers.  However, medium baths and low flow rate showers will be placed in all other bathrooms.

There is a rainwater harvesting system, collecting rain from the roof, that will be used for toilet flushing and clothes washing. Washing machines and dishwashers have been chosen for their low water consumption.

**Credits awarded: 3/5**
3 of the possible 5 credits are likely to be awarded.

**Wat 2 External Potable Water Use**
**Aim:**
To encourage the recycling of rainwater, and reduce the amount of water taken from the mains, for use in landscape/garden watering.

**Implementation:**
An extensive rainwater harvesting system is proposed for the site. There will be 100 litre water butts for each dwelling. The collected water will be used for watering roof top planters

**Credits awarded: 1/1**
Full credits are likely to be awarded.

# 2 Breeam Credit Analysis

## 2.6 Land Use and Ecology

**Eco 1 Ecological Value of Site**
**Eco 2 Ecological Enhancement**
**Eco 3 Protection of Ecological Features**
**Eco 4 Change of Ecological Value of Site**
**Eco 5 Building Footprint**

**Eco 1 Ecological value of site**

**Aim**
To encourage development on land that already has a limited value to wildlife and discourage the development of ecologically valuable sites.

**Implementation:**
The building sits on top of an existing building and will not alter the existing site.

**Credits awarded: 1/1**
Full credits are likely to be awarded

**Eco 2 Ecological enhancement**

**Aim:**
To enhance the ecological value of a site.

**Implementation:**
The provision of extensive planting boxes on terraces and balconies will actively enhance the ecological value of the site

**Credits awarded: 1/1**
Full credits are likely to be awarded

# 2 Breeam Credit Analysis

**Eco 3 Protection of ecological features**
**Aim:**
To protect existing ecological features from substantial damage during the clearing of the site and the completion of construction works.

**Implementation:**
There are few ecological features on the site.  Neighbouring trees and shrubs will be adequately protected during construction.

**Credits awarded:1/1**
Full credits are likely to be awarded

**Eco 4 Change of ecological value of Site**
**Aim:**
The aim of this credit is to reward steps taken to minimise reductions in ecological value and to encourage an improvement.

**Implementation:**
The calculation of this credit is difficult at this early stage. The main change in ecological value of the site will be the roof planters.

**Credits awarded: 1/4**
A conservative estimate of 1 of the possible 4 credits has been assumed

**Eco 5 Building footprint**
**Aim:**
To promote the most efficient use of a building's footprint by ensuring that land and material use is optimised across the development.

**Implementation:**
The total combined floor are to footprint ratio is greater than 3.5:1

**Credits awarded: 2/2**
Full credits are likely to be awarded

# 2 Breeam Credit Analysis

## 2.7 Health and Wellbeing

**Hea 1 Daylighting**
**Hea 2 Sound Insulation**
**Hea 3 Private Space**

**Hea 1 Daylighting**
**Aim:**
To improve the quality of life in homes through good daylighting, and to reduce the need for energy to light a home.

**Implementation:**
The kitchens, living rooms and dining rooms all have average daylight factors well above the requirements. The requirements lie between 2% and 1.5% depending on the room. Our calculations give an average daylight factor of 3.9%

**Credits awarded: 3/3**
Full credits are likely to be awarded

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| | | | | |
|---|---|---|---|---|
| Total glazed area of windows or rooflight | = | W | = | 24 |
| Total area of all the room surfaces(ceiling, floor, walls and windows | = | A | = | 209 |
| Area weighted average reflectance of the room surfaces | = | R | = | 0.5 (Typical dwelling with light coloured walls) |
| a correction factor for dirt | = | M | = | 0.8 (Vertical glazing that can be cleaned easily) |
| glass transmission factor | = | T | = | 0.6 (Double glazing with low-emissivity coating) |
| angle of visible sky | = | ø | = | 60 |

$$\text{Average daylight factor DF} = \frac{MW\text{ø}T}{A(1-R^2)}\ \%$$

$$= 4.4053537$$

**Fig. 15** Daylight calculation for flat 1.

| | | | | |
|---|---|---|---|---|
| Total glazed area of windows or rooflight | = | W | = | 13.5 |
| Total area of all the room surfaces(ceiling, floor, walls and windows | = | A | = | 216 |
| Area weighted average reflectance of the room surfaces | = | R | = | 0.5 (Typical dwelling with light coloured walls) |
| a correction factor for dirt | = | M | = | 0.8 (Vertical glazing that can be cleaned easily) |
| glass transmission factor | = | T | = | 0.6 (Double glazing with low-emissivity coating) |
| angle of visible sky | = | ø | = | 60 |

$$\text{Average daylight factor DF} = \frac{MW\text{ø}T}{A(1-R^2)}\ \%$$

$$= 2.4$$

**Fig. 16** Daylight calculation for flat 2.

| | | | | |
|---|---|---|---|---|
| Total glazed area of windows or rooflight | = | W | = | 18.2 |
| Total area of all the room surfaces(ceiling, floor, walls and windows | = | A | = | 141 |
| Area weighted average reflectance of the room surfaces | = | R | = | 0.5 (Typical dwelling with light coloured walls) |
| a correction factor for dirt | = | M | = | 0.8 (Vertical glazing that can be cleaned easily) |
| glass transmission factor | = | T | = | 0.6 (Double glazing with low-emissivity coating) |
| angle of visible sky | = | ø | = | 60 |

$$\text{Average daylight factor DF} = \frac{MW\text{ø}T}{A(1-R^2)}\ \%$$

$$= 4.9397795$$

**Fig. 17** Daylight calculation for flat 3.

# 2 Breeam Credit Analysis

**Hea 2 Sound insulation**

**Aim:**
To ensure the provision of sound insulation and reduce the likelihood of noise complaints.

**Implementation:**
The building is planned to be built using a proprietary pre-fabricated timber panel construction system that includes provision for insulation against impact sounds in the floor panels.
The TRADIS Soundcel Floor System is a purpose-designed, acoustically-insulated floor construction offering high levels of sound reduction for both airborne and impact sound transmission. We aim to exceed building regulations part E requirements by at least 5dB.

**Credits awarded: 3/4**
A conservative estimate of 3 out of a possible 4 credits is likely to be achieved

**Hea 3 Private Space**

**Aim:**
To improve the occupiers' quality of life by providing an outdoor space for their use, which is at least partially private.

**Implementation:**
Partially private space is provided for all dwellings. The three flats each have extensive roof terraces.

**Credits awarded:1/1**
Full credits are likely to be awarded



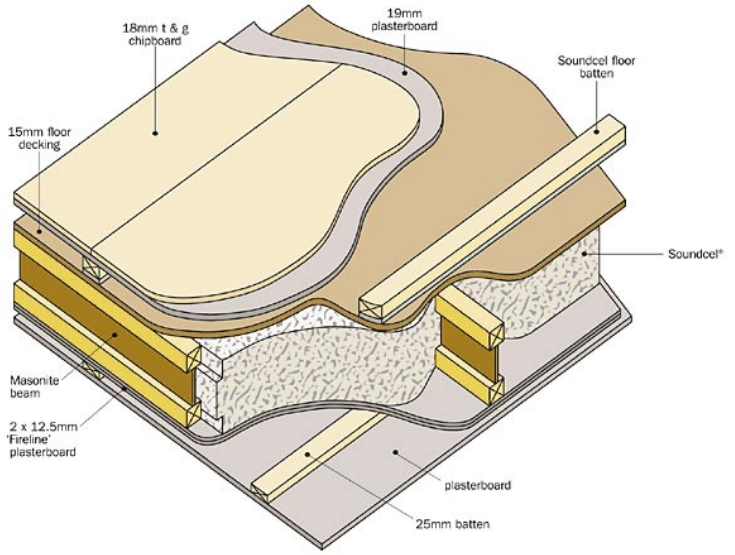


**Fig. 18** Sectional drawing through Soundcel floor taken from Tradis website

**Independent Test Results for Soundcel® Insulated Floor**

| | *Airborne Transmission (Weighted Sound Reduction Index (Rw))* **higher** *value represents better performance* | *Impact Transmission (Weighted Normalised Sound Pressure Level (LnT,w))* **lower** *value represents better performance* |
|---|---|---|
| **Masonite Floors** Soundcel Floor System, featuring Masonite Beam 'joists' at 600mm centres, with 250mm cavity completely filled with Soundcel acoustic insulation. *(see graphs below).* | **58 dB** (52 dB) | **63 dB** (65 dB) |
| Uninsulated floor, featuring Masonite Beam 'joists' at 600mm centres, with a 250mm cavity *(see graphs below).* | **41 dB** (52 dB) | **77 dB** (65 dB) |
| **Timber Floors** Soundcel Floor System, featuring timber joists at 400mm centres, with 200mm cavity completely filled with Soundcel acoustic insulation. | **57 dB** (52 dB) | **65 dB** (65 dB) |
| Uninsulated floor, featuring timber joists at 400mm centres, with a 200mm cavity. | **41 dB** (52 dB) | **77 dB** (65 dB) |

(Building Regulations values shown in brackets)

**Fig. 19** Exerpt from Soundcel literature

# 2 Breeam Credit Analysis

## 2.8 Management

**Man 1 Home User Guide**
**Man 2 Considerate Construction**
**Man 3 Construction Site Impacts**
**Man 4 Security**

**Man 1 Home User Guide**
**Aim:**
To recognise and encourage the provision of guidance to enable home owners / occupiers to understand and operate their home efficiently, in line with current good practice and in the manner envisaged by the developer, and to make best use of local facilities.

**Implementation:**
An operations manual will be produced for each unit.  Part of this manual will include the environmental performance of the flat. The manual will also include a chapter on the wider site and it's surroundings to enable full use to be made of the local amenities.

**Credits awarded: 3/3**
Full credits are likely to be awarded

# 2 Breeam Credit Analysis

**Man 2 Considerate construction**

**Aim:**

To recognise and encourage construction sites managed in an environmentally and socially considerate and accountable manner.

**Implementation:**

As the development is located on the top of an existing building considerate construction will be of prime importance. A large part of the design concept of the building is that there is a high degree of prefabrication. The aim of this is to reduce construction time as well as to keep noisy and disturbing work to a minimum.

**Credits awarded: 2/2**

Full credits are likely to be awarded

**Man 3 Construction Site Impacts**

**Aim:**

To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption, waste management and pollution.

**Implementation:**

It is difficult to state exactly how this will be dealt with until a contractor is chosen. However, the Environmental management of the construction work will certainly form part of the brief at tender stage. The large amount of factory based prefabrication will help to minimise waste during construction.

**Credits awarded: 2/3**

2 out of a possible 3 credits are likely to be awarded.

# 2 Breeam Credit Analysis

**Man 4 Security**

**Aim:**
To encourage the design of developments where people feel safe and secure; where crime and disorder, or the fear of crime, does not undermine quality of life or community cohesion.

**Implementation:**
The building currently has good security systems in place. The well lit access routes and common areas produce a safe and secure environment. The location of the new penthouse at high level will also contribute considerably to the overall feeling of security.

**Credits awarded: 1/2**
A conservative estimate of 1 out of a possible 2 credits is likely to be achieved.

# 3 Results

## Eco Homes Pre-Assessment Estimator

| Ref: | Concern | Possible Points | Predicted score | % of total | % of total max | Certainty of scoring | To achieve |
|---|---|---|---|---|---|---|---|
| Ene1 | Dwelling Emission rate | 15 | 8 | 7.36 | 13.75 | Uncertain | energy rating |
| Ene2 | Building Fabric | 2 | 0 | 0 | 1 | Uncertain | Insulation standard |
| Ene3 | Drying space | 1 | 1 | 0.92 | 0.92 | Certain | providing internal |
| Ene4 | EcoLabelled goods | 2 | 2 | 1.83 | 1.83 | Certain | fridges, freezers etc.. |
| Ene5 | Internal lighting | 2 | 2 | 1.83 | 1.83 | Certain | Eco friendly |
| Ene6 | External lighting | 2 | 2 | 1.83 | 1.83 | Certain | eco friendly |
| Tra1 | Public transport | 2 | 2 | 2 | 2 | Certain | close to transport |
| Tra2 | cycle Storage | 2 | 2 | 2 | 2 | Certain | providing cycle storage |
| Tra3 | Local amenities | 3 | 3 | 3 | 3 | Certain | close to shops |
| Tra4 | Home Office | 1 | 1 | 1 | 1 | Certain | Providing a room as office |
| Pol 1 | Insulant GWP | 1 | 1 | 0.91 | 0.91 | Probable | Eco friendly insulation |
| Pol 2 | $No_x$ Emissions | 3 | 2 | 1.82 | 2.73 | Probable | Good boiler |
| Pol 3 | Reduction of surface run off | 2 | 2 | 1.82 | 1.82 | Probable | collection from roof |
| Pol 4 | Renewable and low emission energy source | 3 | 0 | 0 | 2.73 | Probable | 15% of energy created by renewable |
| Pol 5 | Flood risk | 2 | 2 | 1.82 | 1.82 | Probable | Low risk of flooding |
| Mat 1 | Environmental impact of materials | 16 | 14 | 6.32 | 7.23 | Possible | |
| Mat 2 | Responsible sourcing of materials | 6 | 4 | 1.8 | 2.71 | Possible | responsible spec |
| Mat 3 | Responsible sourcing of finishings | 3 | 1 | 0.45 | 1.35 | Probable | |
| Mat 4 | Recycling facilities | 6 | 0 | 0 | 2.71 | probable | Providing bins |
| Wat 1 | Internal potable water use | 5 | 3 | 5 | 8.33 | Probable | |
| Wat 2 | external Potable water use | 1 | 1 | 1.67 | 1.67 | Probable | |
| Eco 1 | Ecological value of site | 1 | 1 | 1.33 | 1.33 | Certain | developing on low grade land |
| Eco 2 | Ecological Enhancement | 1 | 1 | 1.33 | 1.33 | Certain | advice from suitably qualified ecologist |
| Eco 3 | Protection of ecological features | 1 | 1 | 1.33 | 1.33 | Probable | |
| Eco 4 | Change of ecological value of the site | 4 | 1 | 1.33 | 5.33 | Probable | more than 9 natural species |
| Eco 5 | Building footprint | 2 | 2 | 2.67 | 2.67 | Certain | 3.5:1 floor area to footprint |
| Hea 1 | Daylighting | 3 | 3 | 5.25 | 5.25 | Probable | Light to all rooms |
| Hea 2 | Sound Insulation | 4 | 3 | 5.25 | 7 | Probable | Good sound insulation |
| Hea 3 | Private space | 1 | 1 | 1.75 | 1.75 | Certain | providing partial private space |
| Man 1 | Home user guide | 3 | 3 | 3 | 3 | Probable | |
| Man 2 | Considerate construction | 2 | 2 | 2 | 2 | Probable | beyond best practice |
| Man 3 | Construction site impacts | 3 | 2 | 2 | 3 | Possible | resource and energy use |
| Man 4 | Security | 2 | 1 | 1 | 2 | Probable | |
| | **Totals** | **107** | **74** | **71.62** | **99.16** | | |

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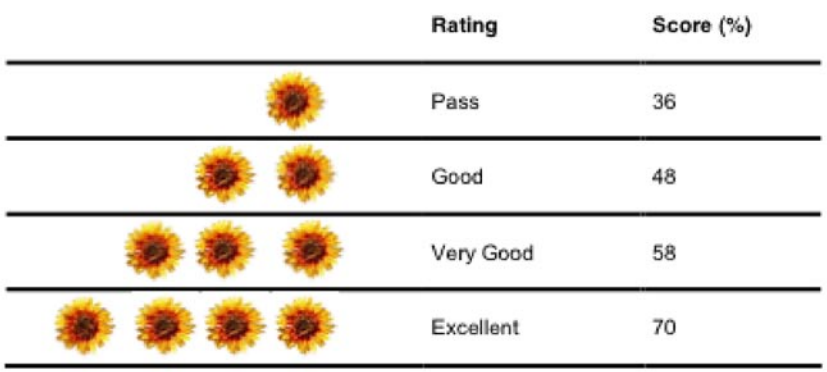
# 4 Conclusion

The BRE Eco-homes 2006 Pre Assessment Estimator has been used as a framework to assess the ecological impact of the design. The results table shows that the predicted score for the new development is 74 out of a possible 107. This works out at 71% of the possible points. According to this assessment the development achieves an “Excellent” rating. As the design develops it is intended that a further assessment will be carried out with the aim of achieving this high standard for the final design.

By using the criteria in the BRE Eco Homes assessment to guide design choices for the development at 55 Holmes Road we believe that we are proposing a building that balances the need for a high quality of life with a safe and healthy internal environment.



| | Rating | Score (%) |
|---|---|---|
| | Pass | 36 |
| | Good | 48 |
| | Very Good | 58 |
| | Excellent | 70 |

**Fig. 20** Rating Guide taken from BRE Eo Homes 2006 Pre Assessment Estimator