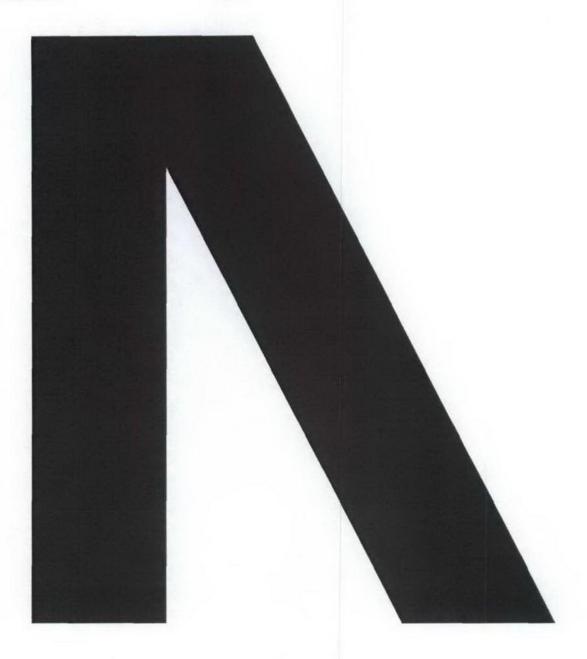
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## 19 EAST HEATH ROAD

Code for Sustainable Homes Report

August 2009



# **REVISIONS**

Date	Revision	Status	Comment	Q/A
14/04/08		Final	For issue	307-071/19.1
19/08/09	A	Final	For issue	307-071/19.1 PO

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### 1 INTRODUCTION

#### 1.1 Proposed Development

The proposal development is a private home in Hampstead. The design comprises a two storey dwelling with expansive basement accommodation including a swimming pool and gym. The current score is 62.86 %, which meets the requirements for Code Level 3.

### 1.2 Code for Sustainable Homes

The Code for Sustainable Homes was launched in December 2006 with the publication of 'Code for Sustainable Homes: A step change in sustainable home building practice" (DCLG 2006). This introduced a single national standard to be used in the design and construction of new homes in England, based or the BRE's EcoHomes® scheme. Adoption of the Code, is intended to encourage continuous improvement in sustainable home building.

The Code for Sustainable Homes is a set of sustainable design principles covering performance in nine key areas listed below:

- Energy and CO2
- Water
- Materials
- Surface water run-off
- Waste
- Pollution
- Heath and well being
- Management
- Ecology

In each of these categories, performance targets are proposed which are in excess of the minimum needed to satisfy Building Regulations, but are considered to be sound best practice, technically feasible, and within the capability of the building industry to supply.

The Code uses a rating system of one to six stars, and it differs from EcoHomes in several key regards outlined below:

- It is assessed at the level of an individual 'Dwelling'
- Il contains minimum mandatory standards for energy, water, materials, waste and surface water run-off, which must be met before even the lowest level of the Code can be achieved.
- It demands higher minimum standards for energy and water to be met before the higher levels of the Code can be achieved.
- It is performed in two stages with 'Final' Code certification taking place after a Post Construction Fleview has been carried out.

In addition to the mandatory requirements, each design category stores a number of percentage points. The total

number of percentage points establishes the 'star rating' for the dwelling.

Formal assessment of dwellings using the Code for Sustainable Homes may only be carried out using licensed and registered individuals, who are qualified 'competent persons' for the purpose of carrying out Code assessments. Training, registration and licensing of these individuals is carried out by the Building Research Establishment according to a UKAS registered 'competent persons scheme' and under ISO 14001 and 9001. BRE also carry out quality assurance of the assessments and issue certificates on behalf of the department of Communities and Local Government. This report does not confer an official Code rating to the scheme.

#### 1.3 Scoring System

Credits are available for each issue meeting the specified levels of performance. The number of credits available in each category does not necessarily reflect the relative importance of the issues being assessed. Before the final score is calculated each of the scores in the nine category areas has a weighting factor applied before the final score is calculated.

The Code uses a rating system of one to six stars, with six stars being the best. The final rating is determined by the Code assessor and quality assured and certified by BRE.

Before a dwelling can start to be awarded points under the Code it must achieve minimum standards in the following categories:

- Embodied impacts of construction materials
- Surface water runoff
- Construction site waste management
- Household waste storage space and facilities

There are also targets for carbon dioxide emissions and potable water consumption for each Code Level.

### Table 1 Code Scale

Rating	Requirements (equal to or greater than)
Level 1	36 Points
Level 2	48 Points
Level 3	57 Points
Level 4	68 Points
Level 5	84 Points
Level 6	90 Points

## 2 PRE-ASSESSMENT SUMMARY

Issue		Credits	Dwelling
Energy			
Ene1	% DER improvement over TER		
	Credits are awarded based on the percentage improvement of the Dwelling Emission Rate (DER) over the Target Emission Rate (TER) as calculated using SAP 2005. Minimum standards for each Code level apply.		
	10% improvement	1	
	14% improvement	2	
	18% improvement	3	
	22% improvement	4	
	25% improvement	5	7
	31% improvement	6	1,000
	37% improvement	7	
	44% improvement	8	
	52% improvement	9	
	60% improvement	10	
	69% improvement	11	
	79% improvement	12	
	89% improvement	13	
	100% improvement	14	(max 15
	True Zero Carbon	15	
Ene2	Building Fabric		
	Credits are awarded based on the Heat Loss Parameter (HLP) obtained from the SAP 2005 calculations. This is based on the level of insulation provided in the dwellings.		
	Less than or equal to 1.30	1	0
	Less than or equal to 1.10	2	(max 2)
ine3	Internal Lighting		
	Credits are awarded based on the percentage of dedicated energy efficient lighting provided in habitable spaces within the dwelling.		2
	Greater than or equal to 40%	1	(may 2)
	Greater than or equal to 75%	2	(max 2)

Ene4	Drying space		
	One credit is awarded for the provision of either internal or external drying space	1	1
	with posts and footings, or fixings capable of holding 4m+ of drying line for 1-2 bed dwellings and 6m+ for dwellings with 3 bedrooms or greater.		
			(max 1)
Ene5	Energy Labelled White Goods		
	Credits are awarded where each dwelling is provided with either information about the EU Energy Labelling Scheme or White Goods with the ratings stated below:		
	EU Energy Labelling information	1	2
	OR		
	A+ rated fridges and freezers and/or A rated washing machines & dishwashers	1	
	AND		(max 2)
	B rated washer dryers and tumble dryers	1	
Ene6	External Lighting		
	Credits are awarded based on the provision of space lighting with dedicated energy efficient fittings and security lighting with appropriate control gear.		2
	Space Lighting – Code compliant	1	
	Security Lighting – Code compliant	1	(max 2)
Ene7	Low or Zero Carbon Technologies		
	Credits are awarded where either 10% or 15% of the dwelling's heating energy requirements (SAP 2005) are met by low or zero carbon technologies. Note that where funding has not been granted through the Low Carbon Buildings Programme, a feasibility study is required that meets the Code requirements.		2
	10% of demand or greater	1	
	15% of demand or greater	1	(max 2)
Ene8	Cycle Storage	7	
	Credits are awarded where safe, secure and weather proof cycle storage is provided according to the Code requirements.		2
	Limited cycle storage	1	
	Full cycle storage	1	(max 2
Ene9	Home Office		
	One credit is awarded for the provision of space for a home office. The location, space and services provided must meet the Code requirements.	1	1
			(max 1
Total No	mber of Energy Credits Achieved		19
- Otal 140	made of kindigy of data notifiered	(max	- 210

Water			
Wat1	Internal Potable Water Use		
	Credits are awarded based on the predicted average household water consumption, calculated using the Code Water Calculator Tool. Minimum standards for each code level apply.		3
	Less than 120 litres/person/day	1	
	Less than 110 litres/person/day	2	
	Less than 105 litres/person/day	3	
	Less than 90 litres/person/day	4	
	Less than 80 litres/person/day	5	(max 5)
Wat2	External Potable Water Use		
	One credit is awarded where a compliant system is specified for collecting rainwater for external irrigation purposes. Where no outdoor space is provided the credit can be achieved by default.	1	(max 1)
Total Nu	umber of Water Credits Achieved	(m	ax 6)
Material	s .	(ma	ax 6)
Material	S Environmental Impact of Materials	(m	ax 6)
Material	s .	(m.	ax 6)
Material	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must		2
Material Mat1	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to		2
Material	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to predict a potential score.		(max 15)
Material Mat1  Mat2	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Basic Building Elements  Credits are awarded where materials used in the key building elements are responsibly sourced. The Code Materials Calculator can be used to predict a	1-15	(max 15)
Material Mat1  Mat2	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Basic Building Elements  Credits are awarded where materials used in the key building elements are responsibly sourced. The Code Materials Calculator can be used to predict a potential score.	1-15	(max 15)
Material Mat1  Mat2  Mat3	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Basic Building Elements  Credits are awarded where materials used in the key building elements are responsibly sourced. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Finishing Elements  Credits are awarded where materials used in the finishing elements are responsibly sourced. The Code Materials Calculator can be used to predict a potential score.	1-15	2 (max 15) 4 (max 6)
Material Mat1  Mat2  Mat3	Environmental Impact of Materials  Mandatory Requirement: At least three of the five key building elements must achieve a Green Guide 2007 Rating of A+ to D.  Tradable Credits: Points are awarded on a scale based on the Green Guide Rating of the specifications. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Basic Building Elements  Credits are awarded where materials used in the key building elements are responsibly sourced. The Code Materials Calculator can be used to predict a potential score.  Responsible Sourcing of Materials – Finishing Elements  Credits are awarded where materials used in the finishing elements are responsibly sourced. The Code Materials Calculator can be used to predict a	1-15	(max)

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Surface	Water Run-off		
Sur1	Reduction of Surface Water Run-off from Site	CONTRACTOR OF THE PARTY OF THE	
	Mandatory Requirement: Peak run-off rates and annual run-off volumes post development must not exceed the previous conditions for the site.	1-2	1
	<u>Tradable Credits:</u> Where rainwater holding facilities/SUDs are used to provide attenuation of water run-off for the volumes required and in accordance with the Code criteria.		(max 2)
Sur2	Flood Risk		
	Credits are awarded where developments are located in areas of low flood risk, or where in areas of medium or high flood risk appropriate measures are taken to prevent damage to the property and its contents in accordance with the Code criteria.	1-2	(max 2)
Total Nu	mber of Surface Water Run-off Credits Achieved	(ma	3 ax 4)
Waste			
Was1	Household Waste Storage		
	Mandatory Requirement: The space provided for waste storage should be sized to hold the larger of either all external containers provided by the Local Authority or the minimum capacity calculated from BS 5906.	4	4
	Tradable Credits are awarded for adequate internal and/or external recycling facilities.		(max 4)
Was2	Site Waste Management Plan (SWMP)/Construction Waste		
	Mandatory Requirements: A SWMP plan including the monitoring of waste generated on site and the setting of targets to promote resource efficiency must be produced and implemented.	1-2	2
	<u>Tradable Credits:</u> The SWMP should also include procedures and commitments for minimising waste and/or commitments to sort, reused and recycle construction waste.		(max 2)
Was3	Composting		
	One credit is awarded where individual home composting facilities are provided, or where a community/communal composting service, either run by the Local Authority or overseen by a management plan is in operation.	1	(max 1)
Total Nu	ber of Waste Credits Achieved		6
		(ma	ax 7)

Pollution			
Pol1	Global Warming Potential (GWP) of Insulants  One credit is awarded where all insulating materials have a Global Warming Potential (GWP) of less than 5.	1	(max 1)
Pol2	NO <sub>x</sub> Emissions		(max i)
	Credits are awarded on the basis of NO <sub>x</sub> emissions arising from the operation of the space heating system within the dwelling.  Less than 100 mg/kWh  Less than 70 mg/kWh  Less than 40 mg/kWh	1 2 3	(max 3)
Total Nu	umber of Pollution Credits Achieved	[ (m	1 nax 4)
Health 8	Wellbeing	W 100	A CONTRACT
Hea1	Daylighting  Credits are awarded for ensuring key rooms in the dwelling have high daylight factors (DF) and a view of the sky.  • Where the kitchen has an average DF greater than 2 %	1	(may 2)
	Where the living room, dining room and study have an average DF greater than 1.5 % Where all above rooms have a view of the sky	3	(max 3)
Hea2	Sound Insulation  Credits are awarded where performance standards exceed those required in Building Regulations Part E. This can be demonstrated by carrying out precompletion testing or through the use of Robust Details.		1 (may 4)
	Where airborne noise reduction is 3dB higher and impact noise is 3dB lower than Part E      Where airborne noise reduction is 5dB higher and impact noise is 5dB	3	(max 4)
	lower than Part E     Where airborne noise reduction is 8dB higher and impact noise is 8dB lower than Part E	4	
Hea3	Private Space		-
	One credit is awarded for the provision of an outdoor space that is at least partially private. The space must allow easy access to all occupants.	1	(max 1)
Hea4	Lifetime Homes  Credits are awarded where the developer has implemented all of the principles of the Lifetime Homes scheme.	4	4

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		(ma	ix 12)
Manag	nent		100
Man1	Home User Guide  Credits are awarded where a simple guide is provided to each dwelling covering information relevant to the 'non-technical' home occupier, in accordance with the Code requirements. The guide must be available in alternative formats on request, and should cover the following topics:		3 (max 3
	Operational issues     Site and surroundings	2	
Man2	Considerate Constructors Scheme  Credits are awarded where there is a commitment to comply with best practice		
	site management principles using either the Considerate Constructors Scheme or an alternative locally/nationally recognised scheme.		1
	Best Practice:- score between 24 and 31.5	1	(max 2
	Best Practice+:- score between 32 and 40	2	
Man3	Construction Site Impacts		
	Credits are awarded where procedures meeting the Code requirements are in place for the following:		
	<ul> <li>Monitor, report and set targets for CO<sub>2</sub>/energy use from site activities</li> </ul>		
	<ul> <li>Monitor, report and set targets for CO<sub>2</sub>/energy use from site related transport</li> </ul>		2
	Monitor, report and set targets for water consumption from site activities		
	<ul> <li>Adopt best practice policies in respect of air (dust) pollution from site activities</li> </ul>		(max 2
	<ul> <li>Adopt best practice policies in respect of water (ground and surface) pollution</li> </ul>		
	At least 80 % of site timber is responsibly sourced		
	One credit is achieved for meeting two of the six procedures above.	1	1
	Two credits are achieved for meeting four of the six procedures above.	2	
Man4	Security		
	Credits are awarded for complying with Section 2 – Physical Security from Secured by Design – New Homes. An Architectural Liaison Officer (ALO), or alternative, needs to be appointed early in the design process and their recommendations incorporated.	2	(max 2
Total Nu	mber of Management Credits Achieved	[	7 ax 9)

Ecology			
Eco1	Ecological Value of Site		
	One credit is awarded for developing land of inherently low value.	1	(max 1)
Eco2	Ecological Enhancement		(max 1)
	One credit is awarded where there is a commitment to enhance the ecological value of the development site.	1	1 (may 1)
Eco3	Protection of Ecological Features		(max 1)
	One credit is awarded where there is a commitment to maintain and adequately protect features of ecological value.	1	(max 1)
Eco4	Change of Ecological Value of Site		(
	Credits are awarded where the change in ecological value has been calculated in accordance with the Code requirements and is calculated to be:		3
	Minor negative change: between -9 and -3 species	1	(max 4)
	Neutral: between -3 and +3 species	2	(max 4)
	Minor enhancement: between +3 and +9 species	3	
	Major enhancement: greater than 9	4	
Eco5	Building Footprint		1
	Credits are awarded where the ratio of combined floor area of all dwellings on the site to their footprint is:		0
	Houses 2.5:1 OR Flats 3:1	1	(max 2)
	Houses 3:1 OR Flats 4:1	2	(max 2)
Total Nu	mber of Ecology Credits Achieved		6
		(m	ax 9)
Total in a	all Sections		60
		(ma	x 104)

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## 3 PRE-ASSESSMENT RESULTS

Code for Sustainable Homes Summary Score sheet

Site: 19 East Heath Road

						S	core assessn	nent	
			Score	Credits available	Sub-total	Credits available	% achieved	Weighting factor	Credit
Energy	Ene 1	% DER Improvement over TER	7	15	19	29	65.5	0.364	23.85
	Ene 2	Building Fabric	0	2	178				
	Ene 3	Internal Lighting	2	2					
	Ene 4	Drying Space	1	1					
	Ene 5	Energy Labelled White Goods	2	2					
	Ene 6	External Lighting	2	2					
	Ene 7	Low or Zero Carbon Technologies	2	2					
	Ene 8	Cycle Storage	2	2	1				
	Ene 9	Home Office	_ 1	1			1000		
Water	Wat 1	Internal Potable Water Use	3	5	4	6	66.7	0.09	6.00
200	Wat 2	External Potable Water Use	1	_ 1					
Materials	Mat 1	Environmental Impact of Materials	2	15	8	24	33.3	0.072	2.40
	Mat 2	Responsible Sourcing of Materials - Basic Building Elements	4	6					
	Mat 3	Responsible Sourcing of Materials - Finishing Elements	2	3					
Surface Wate:	Sur 1	Reduction of Surface Water Run-off from Site	1	2	3	4	75.0	0.022	1.65
Run-On	Sur 2	Flood Risk	2	2		- *****	0.00000	SOURCE AND A STATE OF THE STATE	1
Waste	Was 1	Household Waste Storage	4	4	6	7	85.7	0.064	5.49
	Was 2	Site Waste Management Plan/Construction Waste	2	2					
	Was 3	Composting	0	_ 1			_		
Pollution	Pol 1	GWP of Insulants	1	1	1	4	25.0	0.028	0.70
	Pol 2	NOx Emissions	0	3					
Health and	Hea 1	Daylighting	0	3	6	12	50.0	0.14	7.00
Wellbeing	Hea 2	Sound Insulation	1	4					
	Hea 3	Private Space	1	1					
	Hea 4	Lifetime Homes	4	4					
Management	Man 1	Home User Guide	3	3	7	9	77.8	0.1	7.78
	Man 2	Considerate Constructors Scheme	1	2					
	Man 3	Construction Site Impacts	2	2					
	Man 4	Security	1	2					
Land Use and	Eco 1	Ecological Value of Site	1	1	6	9	66.7	0.12	8.00
Ecology	Eco 2	Ecological Enhancement	1	1					
DOMOGRAPHAN	Eco 3	Protection of Ecolgoical Features	1	1					
	Eco 4	Change of Ecological Value of Site	3	4					
	Eco 5	Building Footprint	0	2					
						104	<b>*</b>	Score: Code Level:	

### **4 MANDATORY REQUIREMENTS**

Before a dwelling can start to be awarded points under the Code it must achieve minimum standards in the following categories. Specific requirements are detailed under the main headings below for the targeted Code Level.

### 4.1 Carbon Dioxide Emissions

Carbon dioxide (CO2) emissions resulting from operational energy consumption are calculated using SAP 2005). There are six levels of mandatory minimum standards – one for each Code Level.

Code Levels	Minimum Percentage reduction in Dwelling Emission Rate Over Target Emission rate
Level 1 (*)	10 %
Level 2 (**)	18 %
Level 3 (***)	25 %
Level 4 (****)	44 %
Level 5 (*****)	100 %
Level 6 (*****)	'Zero carbon home'

### 4.2 Potable Water Consumption

This is from WCs, showers and baths, taps and appliances, and is calculated using the Code Water Calculator. There are three levels of mandatory standards:

Code Levels	Minimum Potable water Consumption in litres per person per day
Level 1 (*)	120
Level 2 (**)	120
Level 3 (***)	105
Level 4 (****)	105
Level 5 (****)	80
Level 6 (*****)	80

### 4.3 Embodied Impacts of Construction Materials

At least three of the following five key elements must achieve a relevant Green Guide rating from the 2007 version of The Green Guide of A+ to D:

- Roof
- External Walls
- Internal Walls (including separating walls)
- Upper and Ground Floors (including separating floors)
- Windows

Before a dwelling can start to be awarded points under the Code it must achieve the minimum standards above.

### 4.4 Surface Water Run Off

The developer must ensure that peak run-off rates and annual volumes of run-off post development will be no greater than the previous conditions for the site.

Before a dwelling can start to be awarded points under the Code it must achieve the minimum standards above.

### 4.5 Construction Site Waste Management

A Site Waste Management Plan must be produced and implemented. This will require the monitoring of waste generated on site and the setting of targets to promote resource efficiency in accordance with the relevant guidance. This must also include details of how the waste will be measured and monitored, the name and position of the person who is responsible for implementing the plan, and how the plan will be implemented.

Before a dwelling can start to be awarded points under the Code it must achieve the minimum standards above.

### 4.6 Household Waste Storage Space and Facilities

The space allowed for waste storage should be sized to hold the larger of the two (by volume) of the following:

### EITHER

 All external containers provided under the relevant Local Authority refuse collection/recycling schemes.
 Containers should not be stacked to ensure ease of access and use.

### OR

 The minimum capacity of waste storage as calculated from BS 5906 (Code of Practice for Storage and On-Site Treatment of Solid waste from Buildings (2005)

Before a dwelling can start to be awarded points under the Code it must achieve the minimum standards above.

All containers must be accessible to disabled people, particularly wheelchair users and sited on a hard, level surface.