Code for Sustainable Homes

November 2010

Pre-assessment—Code Level 3

3 Belsize Place
London
NW3 5AL

22nd May 2012

eb7 - environmental consultants

STUDIO F7, BATTERSEA STUDIOS,
80 SILVERTHORNE ROAD, LONDON, SW8 3HE

3 Belsize Place, London, NW3 5AL

PLANNING APPLICATION – CODE FOR SUSTAINABLE HOMES SUPPORTING INFORMATION

APPLICATION NUMBER __CA/2011/ENQ/01824_____

WHAT IS THE CODE FOR SUSTAINABLE HOMES?

The Code is a sustainability assessment which can be applied to each unit within a development to demonstrate exemplary design and construction. The National Standard has been prepared by the Government working closely alongside the Building Research Establishment and Construction Industry Research and Information Association. Compliance to Code 3 is increasingly required by local planning authorities and Code 4 for affordable housing units.

OBJECTIVE OF THE CODE FOR SUSTAINABLE HOMES

The objective is to measure environmental performance of a building by creating mandatory targets which must be achieved through:

- Carbon dioxide (CO_2) emissions - must demonstrate an improvement over the ADL1A 2006 target emission rate (TER) of 25% or more (to achieve the required Code Level 3), the equivalent of meeting the TER under ADL1A 2010
- Potable water consumption - from WC's, showers, baths and hand basins should not exceed 105 litres per person per day (to achieve the Code Level 3/4)
- Materials - 3 out of 5 key elements of construction should have at least a 'D' rating in accordance with the BRE Green Guide 2006.
- Surface Water Run-Off - Ensure that peak flow rates will not exceed previous site conditions.
- Construction Site Waste Management - Ensure a site waste plan is in operation and that it monitors resource use of the site.
- Household Waste Storage and Recycling Facilities - External containers should be provided which can be through a Local Authority Collection Scheme. They should be accessible by wheelchair users as well as able bodied persons.

The minimum standards must be met for each of the above items in order to accumulate points to contribute towards achieving a Code Level rating.

ADVANTAGES OF THE STANDARD

1. Reduced maintenance costs.
2. Reduced green house gases.
3. Reduced impact on environment.
4. Provide affordable warmth.
5. Healthy and comfortable internal environment.
6. Improved sustainability credentials.
7. Increased level of occupant satisfaction.
8. Outperforms open market housing in terms of energy demand - increased sale-ability.
9. Demonstrates forward thinking and environmental awareness on the part of the Developers and Housing providers.

CODE ISSUES

The Code for Sustainable Homes Assessment covers the following areas:

- Energy / CO2
- Water
- Pollution
- Surface Water Run Off
- Waste Management
- Ecology
- Health and well being
- Materials

STANDARDS

Code Levels Total Points

1	**36**
2	**48**
3	**57**
4	**68**
5	**84**
6	**90**

The proposed development is required to achieve **Code Level 3**

3 Belsize Place, London, NW3 5AL

SUGGESTED UPGRADED SPECIFICATION

Energy / CO2

1. Utilisation of good thermal envelope design to achieve the minimum requirement of meeting the TER under Part L 2010 emission levels and reducing carbon emissions further utilising renewable technologies as per the local planning authority requirements
2. Display energy devices to be installed to all units, allowing occupants to monitor and manage energy consumption within the home
3. External drying line to be installed in patio/terraced areas to reduce dependence and energy use of tumble dryers.
4. External lighting specified to be low energy type.

Water

5. Mandatory element that must be achieved and potable water use of <105l/person/day should be targeted. This will require low flow fittings - dual flush toilets, aerators to taps reducing the flow of water and low flow rate to showers.
6. Rainwater harvesting techniques could be employed to further reduce wholesome water use

Materials

7. Elements specified are generally to be 'A' rated in accordance with BRE 'The Green Guide to Housing Specification' 2006 which means that the full life cycle costs and the impact on the environment are assessed. In addition, where possible, developer to use responsibly resourced materials for basic build elements, as well as internal finishes.

Surface water Run-Off

8. Development within flood zone 1. Hydrologists report will be required to confirm flood zone and confirmation of control of run-off rates to that no greater than pre-development

Waste

9. A construction cost >£300,000 has been assumed, as such a Site Waste Management Plan will be required. The SWMP should seek to minimise waste and divert waste from landfill. The developers should target the diversion of 50% of non-hazardous waste from landfill.

Pollution

10. Insulation used on site will contain no ozone depleting substances i.e. CFC and HCFC free and have a global warming potential of less than 5.
11. The developers should seek to specify gas fired boiler plant with NOx emissions <40mg/Kwh

Health and Well Being

12. Day-lighting calculations will be provided to demonstrate high levels of natural daylight within the dwelling.

Management

13. A guide will be provided by the developer for the occupants of the dwellings highlighting building performance and providing information on surrounding facilities.
13. The Secured by Design section 2 shall be sought through discussions with Local Police Architectural Liaison Officer or Crime Prevention Design Advisor. The aim is to ensure the completed dwellings are safe and secure through boundary treatment, toughened doors and windows and external lighting as examples.
14. The contractor should commit to meeting best practice under the Considerate Constructors Scheme as well as using best practice to reduce pollution from dust and ground water pollution

Ecology

15. The development site is currently 100% building or hard standing and as such has low ecological value and the developer may take the opportunity to improve biodiversity via the use of a green walls in the installation of bat and bird boxes

Overall Score

The proposed apartments should achieve **61.02** credits which equates to a '**Code Level 3**' Rating.

Pre-assessment Estimator

A detailed breakdown of the Code categories, the recommendations to the developers and how the development will achieve the necessary credits for a Code Level 3 is attached in Appendix A. This also includes the evidence that will be needed to be provided at the Design Stage Assessment.

CONCLUSION

The Developer and Principle Contractor will be committed to achieving the required score with the above recommendations incorporated into the specification. Occupiers of the homes will enjoy reduced operating and life cycle costs due to the enhancement over and above current Building Regulations and built in features designed to reduce environmental impact and green house gases. Overall the carbon footprint of the scheme will be minimised along with its Ecological impact. All stakeholders involved stand to benefit as a result of the assessment and recommendations.

Report Prepared by **:-**

EB7
eb7 - environmental consultants
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80 Silverthorne Road
London SW8 3HE

Assessor **Date: 22nd May 2012**

Checked **Date: 22nd May 2012**

Appendix A

Pre-assessment Estimator

Code for Sustainable Homes

Technical Guide November 2010 - Full Technical Guide

Pre-Assessment Report

STROMA CERTIFIED CODE ASSESSOR

Report Reference:	**12101**
Site Registration:	**002943-111004-01-1069**
Site Name:	**3 Belsize Place**
Assessor Number:	**STRO002943**
Company:	**EB7**
Assessor:	**Neil Ingham**

THE CODE FOR SUSTAINABLE HOMES

CERTIFICATION MARK

Site Details	
Site Name:	3 Belsize Place
Site Registration:	002943-111004-01-1069
Site Address:	3 Belsize Place
City/Town:	London
County:	Greater London
Postcode:	NW3 5AL
No. of Dwellings:	1
No. of Dwelling Types:	0
Planning Authority:	Camden Council
Funding Body:	

Assessor Details	
Company:	EB7
Assessor Name:	Neil Ingham
Cert Number:	STRO002943
Address:	Studio F7 Battersea Studios 80 Silverthorne Road
City/Town:	London
County:	
Postcode:	SW8 3HE
Tel:	07736 771584
Email:	neili@eb7.co.uk

Client Details	
Company:	Mindex LP
Contact Name:	
Job Title:	
Email:	
Tel:	
Address:	3 Belsize Place
City/Town:	London
County:	
Postcode:	NW3 5AL

Architect Details	
Company:	PKS Architects
Contact Name:	Selwyn Lowe
Job Title:	
Email:	
Tel:	
Address:	10 Dean House Studios
City/Town:	London
County:	
Postcode:	NW5 1LB

Developer Details	
Company:	Mindex LP
Contact Name:	
Job Title:	
Email:	
Tel:	
Address:	3 Belsize Place
City/Town:	London
County:	
Postcode:	NW3 5AL

Dwelling ID	Plot No.	Address	Social Unit
1	1	3 Belsize Place London	No

Development Summary & Ratings

Dwelling ID	Dwelling Type	Description	Level	Score
		3Belsize Place	3	61.02

Deviations from Standard

No deviations from standard

Score Sheet for 3 Belsize Place

	ENE									WAT		MAT			SUR		WAS			POL		HEA				MAN				ECO					Summary	
Dwelling ID	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**1**	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**3**	**1**	**2**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**5**	**Score**	**Level**
1	0	3	2	1	2	2	1	2	1	3	0	11	3	2	0	2	4	2	0	1	2	3	3	1	4	3	1	1	2	1	0	1	2	1	61.02	3

Summary Score Sheet

Dwelling Type: 3 Belsize Place

Dwelling ID: 1

	Credit Score	Credits Available	Score Assessment Sub Total	Credits Available	%	Weighting Factor	Points Score
Energy & CO2 Emissions							
ENE 1 Dwelling Emission Rate	0	10	14	31	45.16	36.4	16.44
ENE 2 Fabric Energy Efficiency	3	9					
ENE 3 Energy Display Device	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 Energy Technologies	1	2					
ENE 8 Cycle Storage	2	2					
ENE 9 Home Office	1	1					
Water							
WAT 1 Internal Water Use	3	5	3	6	50	9	4.5
WAT 2 External Water Use	0	1					
Materials							
MAT 1 Environmental Impact of Materials	11	15	16	24	66.67	7.2	4.8
MAT 2 Responsible Sourcing (Basic Building Elements)	3	6					
MAT 3 Responsible Sourcing (Finishing Elements)	2	3					
Surface Water Run-off							
SUR 1 Management of Surface Water Run-Off from Site	0	2	2	4	50	2.2	1.1
SUR 2 Flood Risk	2	2					
Waste							
WAS 1 Household Waste Storage and Recycling Facilities	4	4	6	8	75	6.4	4.8
WAS 2 Construction Site Waste Management	2	3					
WAS 3 Composting	0	1					
Pollution							
POL 1 Global Warming Potential of Insulants	1	1	3	4	75	2.8	2.1
POL 2 NOx Emissions	2	3					
Health & Wellbeing							
HEA 1 Daylighting	3	3	11	12	91.67	14	12.83
HEA 2 Sound Insulation	3	4					
HEA 3 Private Space	1	1					
HEA 4 Lifetime Homes	4	4					
Management							
MAN 1 Home User Guide	3	3	7	9	77.78	10	7.78
MAN 2 Considerate Constructors Scheme	1	2					
MAN 3 Construction Site Impacts	1	2					
MAN 4 Security	2	2					
Ecology							
ECO 1 Ecological Value of Site	1	1	5	9	55.56	12	6.67
ECO 2 Ecological Enhancement	0	1					
ECO 3 Protection of Ecological Features	1	1					
ECO 4 Change of Ecological Value of Site	2	4					
ECO 5 Building Footprint	1	2					
	Level Achieved: 3		Total Points Scored: 61.02				

Evidence for ENE 1 (Dwelling Emission Rate)
Only Part L 2010 Building Regulations compliance achieved. 7.9 credits allocated
The developer has commited to the achievement of a Code 3 rating for the development, as such, the developer will be required to achieve the target emmission rate as set down by AD L1A 2010. The local planning authority may have a requirement to meet a percentage of the developments energy needs via the use of low and zero carbon technologies - it is assumed that SAP caculations will be used to ensure that any such requirement can be met
Assumptions for ENE 1

Evidence for ENE 2 (Fabric Energy Efficiency)
Semi Detached 3 credits allocated
The developer has commited to a high level of thermal performace for the building envelope in line with the Camden Council development policy It is expected that an FEE of <60 will be achieved and 3 credits can be awarded
Assumptions for ENE 2

Evidence for ENE 3 (Energy Display Device)
Correctly specified display device showing current primary heating fuel consumption data. Correctly specified display device showing current consumption data.
In order to assist the managment of energy consumption within the dwelling, the developer will install display energy devices to monitor both gas and electrical consumption within the new development. Information on the display energy device will be supplied and the consumption data that it will display for both primary fuel and electricity.
Assumptions for ENE 3

Evidence for ENE 4 (Drying Space)
Compliant external drying space
In order to reduce the reliance on tumble drying of clothes, the developer is to supply 6m of external drying line in the terrace garden area The developer will supply full details of the line to be supplied, the locations (marked on plan) and fixing points
Assumptions for ENE 4

Evidence for ENE 5 (Energy Labelled White Goods)
A+ rated fridge & freezers or fridge/freezer A rated washing machine and dishwasher AND B rated washer-dryers & tumbles dryers, or EU energy efficiency labelling scheme leaflet where washing machines and/or dishwashers not provided
The developer has commited to supplying energy efficient white goods to the development Developer to provide details of all white goods provided and the energy ratings to include A+ rated fridges and fridge freezers, A rated washing machines and dishwashers and B rated tumble dryers. A copy of the EU energy labelling scheme will be included as part of the Home User Guide
Assumptions for ENE 5

Evidence for ENE 6 (External Lighting)
Compliant space lighting Compliant security lighting
The development is to have a low energy lighting strategy including all space and security lighting. Developer to supply details of all lighting including make, type and efficacy in lumens/circuit watt. Burglar security lights will be fitted with a max wattage of 150w, with PIR and dawn/dusk controls
Assumptions for ENE 6
All security and space lighting to be of the low energy type. All buglar security lights to be max 150w and fitted with PIR and dusk/dawn controls.

Evidence for ENE 7 (Low or Zero Carbon Energy Technologies)
Contribution of low or zero carbon technologies greater than or equal to 10%
In ordert to comply with the requirements of Camden Council, the developer has confirmed a energy strategy for the development that will utilise renewable technologies in order to reduce the carbon emissions from the new build dwelling At the design stage, the developer will provide SAP outputs to confirm the overall carbon emmissions, and the reductions achieved via the use of renewable technologies
Assumptions for ENE 7

Evidence for ENE 8 (Cycle Storage)
4 bedrooms or more - Storage for 4 cycles per dwelling
The Camden Council LDF, policy DP26 requires secure cycle storage and the pre-application commentary also confirms that secure cycle storage should be provided. It is assumed that appropriate secure storage will be provided for 4 cycles - compliant with Code for Sustainable Homes requirements in terms of space provision and security
Assumptions for ENE 8

Evidence for ENE 9 (Home Office)
Compliant home office
The developer has confirmed that a compliant home office facility will be provided in the ground floor studio area; 1.8m of wall desk space will be required, with appropriate sockets, telephone point and access to broadband. The sketch plans clearly show a well lit room, with adequate ventilation that will comply.
Assumptions for ENE 9

Evidence for WAT 1 (Internal Water Use)
Internal water use less than or equal to 105 litres per person per day
The development requires to meet the stringent water consumption rates to achieve the Code 3 level status, this will require low flow/flush fittings, for example:- Dual flush toilets at 5l/2.5/ flush rates Low capacity baths cica 180l Low flow taps in kitchens ad bathrooms, cicra 5l/min Low flow showers at circa 8l/min Developer to supply full details of all sanitaryware including make/model, flush/flow rates, locations and a completed water efficiency calculation for each dwelling. The developer has also expressed an interest in a rainwater harvesting techniques to further reduce wholesome water use
Assumptions for WAT 1
It is assummed that the development will meet the minimum standard of 105l/p/day as required for Code level 3&4

Evidence for WAT 2 (External Water Use)
Credit not sought or no external rainwater collection system provision
Due to the presence of a swimming pool at basement level, and no commitment to meet the water needs via harvested rain water, no credits can be achieved under this section
Assumptions for WAT 2

Evidence for MAT 1 (Environmental Impact of Materials)
Mandatory requirements met: At least 3 elements rated A+ to D, 11 credits scored
The developer will provide detailed specification for all the main build elements, it is expected that elements with a high Green Guide rating will be utilised which will indicate that the build elements specified have a low environmental impact The Mat 1 calculator will be completed to demonstrate compliance
Assumptions for MAT 1

Evidence for MAT 2 (Responsible Sourcing (Basic Building Elements))
3 credits scored
The developer intends to use responsibly sourced materials for the main build elements. Full details of the materials used and their EMS certification to be provided which will identify the level of certification, be it key process or key process & supply chain Mat 2 calculator to be completed to demonstrate compliance
Assumptions for MAT 2

Evidence for MAT 3 (Responsible Sourcing (Finishing Elements))
2 credits scored
The developer will use responsibly sourced materials for finishing elements, and will provide the EMS certification as appropriate to confirm compliance under key process and supply chain The completed Mat 3 calculator tool will demonstrate compliance
Assumptions for MAT 3

Evidence for SUR 1 (Management of Surface Water Run-Off from Site)
Special Case: No change/decrease in impermeable area. Credits not available Credits not sought, water quality criteria not met/sought.
The developer will supply a site specific flood risk assessment to demonstrate that surface water run-off is no greater than pre-development. The development is on an area of existing buildings and hardstanding, as such there is no decrease in impermeable area and as such, the special case exemption will be demonstrated
Assumptions for SUR 1
The developer does not wish to pursue further credits under this section

Evidence for SUR 2 (Flood Risk)
Low flood risk - zone 1
The EA flood maps show site lies within Zone 1 - low risk of flooding. The site specific flood risk assessment will confirm that the development sits within an area with a low risk of flooding from all sources
Assumptions for SUR 2

Evidence for WAS 1 (Household Waste Storage and Recycling Facilities)
Mandatory requirements met: Adequate storage of household waste with accessibility in line with checklist WAS 1. Local authority collection: Before collection sorting with appropriate internal storage of recyclable materials
The developer will be required to install 3 x recycling bins with minimum capacity of 30 litres in a specific storage area in the basement Checklists Cat 5.1 and IDP will need to be completed as well as evidence of internal storage - number, type and locations. In addition, documented details of the Camden Council collection scheme for general waste and recyclables will be supplied, which includes card & paper, metals & plastics, garden waste and food waste
Assumptions for WAS 1

Evidence for WAS 2 (Construction Site Waste Management)
Compliant site waste management plant containing benchmarks, procedures and commitments for the minimizing and diverting 50% waste from landfill in line with the criteria and with Checklist WAS 2a, 2b & 2c
The developer will put in place a site waste management plan, along with checklists Was 2a, 2b & 2c to demonstrate commitments to minimise waste generated on site, to minimise hazardous waste with appropriate monitoring and recording proceedures. In addition, the developer will target the diversion of 50% of non-harzardous waste away from landfill, which will include a commitment to use at least 25% of demolition waste to be recycled or re-used in the new development
Assumptions for WAS 2
Given the scale of the development, it is assumed that a SWMP will be put in place

Evidence for WAS 3 (Composting)
Local authority green waste collection scheme
The developer will supply details of Camden Councils garden waste and food waste recylcing programme to demonstarte compliance. In addition, the developer will supply information to the occupants on the composting process and the local authorities collections within the Home User Guide
Assumptions for WAS 3

Evidence for POL 1 (Global Warming Potential of Insulants)
All insulants have a GWP of less than 5
The developer will supply a copy of Checklist Pol1, with supporting evidence, to demonstrate that all insulants used within the development will have a GWP < 5
Assumptions for POL 1

Evidence for POL 2 (NOx Emissions)
NOx emissions less than or equal to 70mg/kWh
The Consultant Engineers to the project have confirmed that a Class 'A' gas boiler will be the primary source of heating and hot water, potentially supplemented by a solar thermal system. Accordingly it is expected that at least 2 credits will be achieved under this section.
Assumptions for POL 2

Evidence for HEA 1 (Daylighting)
Kitchen: Average daylight factor of at least 2% Living room: Average daylight factor of at least 1.5% Dining room: Average daylight factor of at least 1.5% Home office: Average daylight factor of at least 1.5% All rooms (kitchen, living, dining and where applicable the home office) have 80% of the working plane with direct light from the sky
It is assumed that, given the design drawings, that good levels of daylight will be achieved throughout the development. The developer will supply formal daylighting calculations as set out in Littlefair 1998, to demonstrate compliance in the office/studio, kitchen lounge and dining area
Assumptions for HEA 1

Evidence for HEA 2 (Sound Insulation)
Separating walls and floors only exist between non habitable spaces
Site plans and sections have been provided by the developer. It is clear that the proposed development adjoins the neighbouring property at ground floor level only and the connecting wall has unoccupied spaces on either side. The default credits can be awadred on the basis of seperating walls only occouring between non-habitable spaces
Assumptions for HEA 2

Evidence for HEA 3 (Private Space)
Individual private space provided
The supplied drawings demonstrate that there is significant patio and terraced areas within the design. although formal calculations will need to be submitted, there is clearly adequate outdoor space and the credits can be awarded
Assumptions for HEA 3

Evidence for HEA 4 (Lifetime Homes)
All criteria of Lifetime Homes in line with all 16 principals of Lifetime Homes
There is a specific planning requirment to meet the Lifetimes Homes standard - re-iterated by the Planning Officers pre-application comments. The development has been designed to meet the Lifetime Homes standard as confirmed by the architects and the credits can be awarded
Assumptions for HEA 4

Evidence for MAN 1 (Home User Guide)
All criteria inline with checklist MAN 1 Part 1 - Operational Issues will be met All criteria inline with checklist MAN 1 Part 2 - Site and Surroundings will be met
The developer will supply a Home User Guide to the development. The guide will include details required under Checklists Man1, parts 1 & 2. The developer will confirm in writing that such Home User Guides will be supplied to the dwelling, as well as a copy of the Guide for the assessor when prepared.
Assumptions for MAN 1

Evidence for MAN 2 (Considerate Constructors Scheme)
Considerate constructors scheme: Best practise only, a score of between 24 and 31.5 and at least a score of 3 in every section
There is a specific planing requirement under LDF Policy DP26 for the contractor to join the Considerate Constructors Scheme The developer has commited to meeting this requirement as well as confirming that a score of 24, with a score of at least 3 in each section, will be met.
Assumptions for MAN 2

Evidence for MAN 3 (Construction Site Impacts)
Adopt best practise policies in respects to air (dust) pollution from site activities Adopt best practise policies in respects to water (ground and surface) pollution
The developer commits to adopting best practice in the reduction of dust and ground water pollution in line with LDF Policy DP26 The developer is to complete checklist Man 3 with details of how the above will be achieved
Assumptions for MAN 3

Evidence for MAN 4 (Security)
Secure by design section 2 compliant
The developer will consult with the local architectural Liaison Officer, undertake the recommendations and meet Section 2 - Physical Security from Secured by Design - New Homes. The developer will provide detailed documentary evidence of the above process
Assumptions for MAN 4

Evidence for ECO 1 (Ecological Value of Site)
Land of low ecological value, achieved through checklist ECO 1. Development site has been identified as low ecological value by a suitably qualified ecologist
The development site consists of land that is 100% building or hardstanding. As such the site can be signed off by the assessor as having low ecological value
Assumptions for ECO 1

Evidence for ECO 2 (Ecological Enhancement)
Credit not sought or no compliant enhancement
Given the lack of external space for ecological enhancement, the developer has not instructed an ecologist to undertake a report and the credits are not sought
Assumptions for ECO 2

Evidence for ECO 3 (Protection of Ecological Features)
Land of low ecological value as identified under ECO 1
Credit by default as land is of low ecological value under Ene 1
Assumptions for ECO 3

Evidence for ECO 4 (Change of Ecological Value of Site)
Neutral: Greater than -3 and less than or equal to +3
This section will be calculated by the assessor as the land was 100% building or hardstanding prior to development The developer will supply plans of the site both before and after the proposed development marking the areas of buildings, hard standing and planted areas by plot categories. A neutral outcome is expected

Assumptions for ECO 4

Evidence for ECO 5 (Building Footprint)
Housing ratio of 2.5:1
The plans demonstrate that the development is arranged over 5 storeys including basement. Formal calculations have been undertaken and the footprint to NIA ratio is 2.67:1 - 1 credit is awarded

Assumptions for ECO 5

Assessor Declaration

I Neil Ingham, can confirm that I have compiled this report to the best of my ability, I have based all findings on the information that is referenced within this report, and that this report is appropriate for the registered site.

To the best of my knowledge all the information contained within this report is correct and accurate. I have within my possession all the reference material that relates to this report, which is available for inspection by the client, the clients representative or Stroma Certification for Quality Assurance monitoring.

Signed:

Neil Ingham
EB7
31 May 2012

Information about Code for Sustainable Homes

The Code for Sustainable Homes (the Code) is an environmental assessment method for rating and certifying the performance of new homes. It is a national standard for use in the design and construction of new homes with a view to encouraging continuous improvement in sustainable home building. The Code is based on EcoHomes©.

It was launched in December 2006 with the publication of 'Code for Sustainable Homes: A stepchange in sustainable home building practice' (Communities and Local Government, 2006), and became operational in England from April 2007.

The Code for Sustainable Homes covers nine categories of sustainable design. Each category includes a number of environmental issues. Each issue is a source of impact on the environment which can be assessed against a performance target and awarded one or more credits. Performance targets are more demanding than the minimum standards needed to satisfy Building Regulations or other legislation. They represent good or best practice, are technically feasible, and can be delivered by the building industry. The issues and categories are as follows:

- Energy & CO2 Emissions
  - Dwelling Emission Rate
  - Building Fabric
  - Internal Lighting
  - Drying Space
  - Energy Labelled White Goods
  - External Lighting
  - Low or Zero Carbon Technologies
  - Cycle Storage
  - Home Office
- Water
  - Internal Water Use
  - External Water Use
- Materials
  - Environmental Impact of Materials
  - Responsible Sourcing of Materials - Basic Building Elements
  - Responsible Sourcing of Materials - Finishing Elements
- Surface Water Run-off
  - Management of Surface Water Run-off from the Development
  - Flood Risk
- Waste
  - Storage of Non-Recyclable Waste and Recyclable Household Waste
  - Construction Site Waste Management
  - Composting
- Pollution
  - Global Warming Potential of Insulants
  - NOx Emissions

- Health & Wellbeing
  - Daylighting
  - Sound Insulation
  - Private Space
  - Lifetime Homes
- Management
  - Home User Guide
  - Considerate Constructors Scheme
  - Construction Site Impacts
  - Security
- Ecology
  - Ecological Value of Site
  - Ecological Enhancement
  - Protection of Ecological Features
  - Change in Ecological Value of Site
  - Building Footprint

The Code assigns one or more performance requirements (assessment criteria) to all of the above environmental issues. When each performance requirement is achieved a credit is awarded (with the exception of the four mandatory requirements which have no associated credits). The total number of credits available to a category is the sum of credits available for all the issues within it.

Mandatory minimum performance standards are set for some issues. For four of these, a single mandatory requirement is set which must be met, whatever Code level rating is sought. Credits are not awarded for these issues. Confirmation that the performance requirements are met for all four is a minimum entry requirement for achieving a level 1 rating. The four un-credited issues are:

- Environmental Impacts of Materials
- Management of Surface Water Run-off from Developments
- Storage of Non-Recyclable Waste and Recyclable Household Waste
- Construction Site Waste Management

If the mandatory minimum performance standard is met for the four un-credited issues, four further mandatory issues need to be considered. These are agreed to be such important issues that separate Government policies are being pursued to mitigate their effects. For two of these, credits are awarded for every level of achievement recognised within the Code, and minimum mandatory standards increase with increasing rating levels.

The two issues with increasing mandatory minimum standards are:

- Dwelling Emission Rate
- Indoor Water Use

For one issue a mandatory requirement at Level 5 or 6:

- Fabric Energy Efficiency

The final issue with a mandatory requirement for Level 6 of the Code is:

- Lifetime Homes

Further credits are available on a free-choice or tradable basis from other issues so that the developer may choose how to add performance credits (converted through weighting to percentage points) achieve the rating which they are aiming for.

The environmental impact categories within the Code are not of equal importance. Their relative value is conveyed by applying a consensus-based environmental weighting factor (see details below) to the sum of all the raw credit scores in a category, resulting in a score expressed as percentage points. The points for each category add up to 100.

The weighting factors used in the Code have been derived from extensive studies involving a wide range of stakeholders who were asked to rank (in order of importance) a range of environmental impacts. Stakeholders included international experts and industry representatives.

It is also important to note that achieving a high performance in one category of environmental impact can sometimes result in a lower level of performance for another. For instance, if biomass is used to meet heating demands, credits will be available for performance in respect of energy supplied from a renewable source, but credits cannot be awarded for low NOX emission. It is therefore impossible to achieve a total percentage points score of 100.

The Code uses a rating system of one to six stars. A star is awarded for each level achieved. Where an assessment has taken place by where no rating is achieved, the certificate states that zero stars have been awarded:

Code Levels	Total Points Score (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**

Formal assessment of dwellings using the Code for Sustainable Homes may only be carried out using Certified assessors, who are qualified ‘competent persons’ for the purpose of carrying out Code assessments.

Energy & CO2 Emissions
ENE 1: Dwelling Emission Rate **Available Credits:**10 **Aim:**To limit CO2 emissions arising from the operation of a dwelling and its services in line with current policy on the future direction of regulations.
ENE 2: Fabric Energy Efficiency **Available Credits:**9 **Aim:**To improve fabric energy efficiency performance thus future-proofing reductions in CO2 for the life of the dwelling.
ENE 3: Energy Display Device **Available Credits:**2 **Aim:**To promote the specification of equipment to display energy consumption data, thus empowering dwelling occupants to reduce energy use.
ENE 4: Drying Space **Available Credits:**1 **Aim:**To promote a reduced energy means of drying clothes.
ENE 5: Energy Labelled White Goods **Available Credits:**2 **Aim:**To promote the provision or purchase of energy efficient white goods, thus reducing the CO2 emissions from appliance use in the dwelling.
ENE 6: External Lighting **Available Credits:**2 **Aim:**To promote the provision of energy efficient external lighting, thus reducing CO2 emissions associated with the dwelling.
ENE 7: Low or Zero Carbon Technologies **Available Credits:**2 **Aim:**To limit CO2 emissions and running costs arising from the operation of a dwelling and its services by encouraging the specification of low and zero carbon energy sources to supply a significant proportion of energy demand.
ENE 8: Cycle Storage **Available Credits:**2 **Aim:**To promote the wider use of bicycles as transport by providing adequate and secure cycle storage facilities, thus reducing the need for short car journeys and the associated CO2 emissions.
ENE 9: Home Office **Available Credits:**1 **Aim:**To promote working from home by providing occupants with the necessary space and services thus reducing the need to commute.

Water
WAT 1: Indoor Water Use **Available Credits:**5 **Aim:**To reduce the consumption of potable water in the home from all sources, including borehole well water, through the use of water efficient fittings, appliances and water recycling systems.
WAT 2: External Water Use **Available Credits:**1 **Aim:**To promote the recycling of rainwater and reduce the amount of mains potable water used for external water uses.

Materials
MAT 1: Environmental Impact of Materials **Available Credits:**15 **Aim:**To specify materials with lower environmental impacts over their life-cycle.
MAT 2: Responsible Sourcing of Materials - Basic Building Elements **Available Credits:**6 **Aim:**To promote the specification of responsibly sourced materials for the basic building elements.
MAT 3: Responsible Sourcing of Materials - Finishing Elements **Available Credits:**3 **Aim:**To promote the specification of responsibly sourced materials for the finishing elements.

Surface Water Run-off
SUR 1: Management of Surface Water Run-off from developments **Available Credits:**2 **Aim:**To design surface water drainage for housing developments which avoid, reduce and delay the discharge of rainfall run-off to watercourses and public sewers using SuDS techniques. This will protect receiving waters from pollution and minimise the risk of flooding and other environmental damage in watercourses.
SUR 2: Flood Risk **Available Credits:**2 **Aim:**To promote housing development in low flood risk areas, or to take measures to reduce the impact of flooding on houses built in areas with a medium or high risk of flooding.

Waste
WAS 1: Storage of non-recyclable waste and recyclable household waste **Available Credits:**4 **Aim:**To promote resource efficiency via the effective and appropriate management of construction site waste.
WAS 2: Construction Site Waste Management **Available Credits:**3 **Aim:**To promote resource efficiency via the effective and appropriate management of construction site waste.
WAS 3: Composting **Available Credits:**1 **Aim:**To promote the provision of compost facilities to reduce the amount of household waste send to landfill.

Pollution
POL 1: Global Warming Potential of Insulants **Available Credits:**1 **Aim:**To promote the reduction of emissions of gases with high GWP associated with the manufacture, installation, use and disposal of foamed thermal and acoustic insulating materials.
POL 2:NOx Emissions **Available Credits:**3 **Aim:**To promote the reduction of nitrogen oxide (NOX) emissions into the atmosphere.

Health & Wellbeing
HEA 1: Daylighting **Available Credits:**3 **Aim:**To promote good daylighting and thereby improve quality of life and reduce the need for energy to light the home.
HEA 2: Sound Insulation **Available Credits:**4 **Aim:**To promote the provision of improved sound insulation to reduce the likelihood of noise complaints from neighbours.
HEA 3: Private Space **Available Credits:**1 **Aim:**To improve quality of life by promoting the provision of an inclusive outdoor space which is at least partially private.
HEA 4: Lifetime Homes **Available Credits:**4 **Aim:**To encourage the construction of homes that are accessible and easily adaptable to meet the changing needs of current and future occupants.

Management
MAN 1: Home User Guide **Available Credits:**3 **Aim:**To promote the provision of guidance enabling occupants to understand and operate their home efficiently and make the best use of local facilities.
MAN 2: Considerate Constructors Scheme **Available Credits:**3 **Aim:**To promote the environmentally and socially considerate, and accountable management of construction sites.
MAN 3: Construction Site Impacts **Available Credits:**2 **Aim:**To promote construction sites managed in a manner that mitigates environmental impacts.
MAN 4: Security **Available Credits:**2 **Aim:**To promote 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.

Ecology
ECO 1: Ecological value of site **Available Credits:**1 **Aim:**To promote development on land that already has a limited value to wildlife, and discourage the development of ecologically valuable sites.
ECO 2: Ecological enhancement **Available Credits:**1 **Aim:**To enhance the ecological value of a site.
ECO 3: Protection of ecological features **Available Credits:**1 **Aim:**To promote the protection of existing ecological features from substantial damage during the clearing of the site and the completion of construction works.
ECO 4: Change in ecological value of site **Available Credits:**4 **Aim:**To minimise reductions and promote an improvement in ecological value.
ECO 5: Building footprint **Available Credits:**2 **Aim:**To promote the most efficient use of a building’s footprint by ensuring that land and material use is optimised across the development.

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