Sustainable Design and Construction Supplementary Planning Document

Colchester Borough Council

June 2011

Contents

Executive Summary

Colchester Borough Council is committed to mitigating and adapting to climate change and planning has a key role to play. The Council is seeking to improve the sustainability of new buildings through the Code for Sustainable Homes and BREEAM, which are national standards to guide the development industry in the design and construction of sustainable new buildings. This Supplementary Planning Document includes information about the Code for Sustainable Homes and BREEAM and sets out the Council's expectations for development.

The Council's expectations are set out in the table over the page. Expectations are phased and tie in with planned changes to building regulations. The Council recognise the increased construction cost of more energy efficient buildings and is thus not requiring new development to exceed building regulations requirements. Notwithstanding this however major development will be encouraged to take the lead and deliver more sustainable buildings in advance of changes to building regulations.

Colchester Borough Council recommends that sustainability issues are addressed as early as possible in the development process and that an accredited assessor is brought onto the project team at the design stage. Sustainability information should be provided with the planning application and it may be useful to carry out a design stage assessment[1], although this is not essential.

Provision of the Code for Sustainable Homes/ BREEAM post-completion certificate will be a condition of approval, as will achieving the standards themselves. Where it can be demonstrated that compliance with the Code or BREEAM would not be practicable due to unique site constraints applicants must include a section in the design and access statement explaining how sustainability considerations have been incorporated into the development.

[1] A design stage assessment shows the Code/ BREEAM level that the development is predicted to achieve.

Date	2010	2013	2016
Carbon improvement over Part L (conservation of fuel & power) Building Regulations 2006	25%	44%	100% (Zero carbon[2])
Equivalent Code for Sustainable Homes standard	Level 3	Level 4	Level 6
Colchester Borough Council Code expectations	Will expect all residential development to attain a minimum rating of level 3 from 2010	Will encourage major [3]residential development from 2010 & expect all residential development from 2013 to attain a minimum rating of level 4	Will encourage major residential development from 2015 & expect all residential development from 2016 to attain a minimum rating of level 6
Colchester Borough Council BREEAM expectations	Major[4] development expected to attain a minimum rating of 'very good'	All development expected to attain a minimum rating of 'very good'	All development expected to attain a minimum rating of 'excellent'

[2] In May 2011 the government announced a definition for zero carbon homes, which will be included in future changes to building regulations.
[3] Major residential development is development of 10 or more dwellings.
[4] Major development is defined as development with a floorspace of over 1,000 sqm.

1. Introduction

Colchester Borough Council is committed to mitigating and adapting to climate change. Whilst international and national action is required to tackle climate change local authorities can make a real difference. Local authorities have a duty to take action for the wellbeing of its citizens and have the opportunity to take the lead in terms of climate change. Colchester Borough Council signed the Nottingham Declaration in 2007 and wants to continue taking steps to ensure that carbon emissions across the Borough are reduced. One of the Council's corporate objectives is to be cleaner and greener and through this Supplementary Planning Document this objective can be contributed to by ensuring that new development in the Borough is cleaner and greener.

This Supplementary Planning Document (SPD) provides guidance and advice for those involved in development in Colchester to help them deliver sustainable design. It adds more detail to the Core Strategy and Development Policies Development Plan Documents (DPDs) policies relating to sustainable design. The SPD will help applicants by setting out what the Council expects from development and will help development management officers discuss the sustainability issues at an early stage and assess the sustainability of a proposal. More sustainable buildings will help to reduce fuel poverty[5], which nationally has risen since 2004. One of the three main causes of fuel poverty is poor energy efficiency in the home.

This SPD will be a material consideration in the determination of planning applications. Experience has shown that SPDs are being used as evidence by planning inspectors at appeal. Inspectors have dismissed appeals for proposals that did not meet requirements outlined in sustainability SPDs in Three Rivers, Hertfordshire and Chelmsford Borough's[6].

[5] Fuel poverty means being unable to afford to keep warm. A household is considered to be in fuel poverty if it spends more than 10% of its income on fuel for adequate heating.
[6] Planning Advisory Service, 2010, Using supplementary planning documents to address climate change locally.

Section 2 of the SPD sets the context; it refers to relevant national and local policy and Colchester Borough's climate and future climate projections. Section 3 outlines Colchester Borough Council's expectations for development. Section 4 briefly summarises the Code for Sustainable Homes; information is included on typical costs and policy support for each of the categories. Section 5 summarises BREEAM and is presented in the same format as section 4. Section 6 discusses the implementation of the SPD. The previous Sustainable Design SPD included a section on Sustainable Drainage Systems (SuDS). This has not been taken forward in this SPD as a separate advice note on SuDS will be prepared by Colchester Borough Council in the future.

2. Context

Planning has a key role to play in tackling climate change. 44% of UK CO_2 emissions are from the use of buildings and if emissions from the construction and maintenance of buildings are also taken into account the figure rises to 64%[7].

The key planning objectives of the Planning Policy Statement: Planning and Climate Change Supplement are to make a full contribution to national climate change and energy policies and programmes; secure energy efficiency and a reduction in emissions through development; deliver patterns of urban growth that secure the fullest possible use of sustainable transport and reduce the need to travel; shape places that minimise vulnerability and provide resilience to climate change; conserve and enhance biodiversity; engage communities; and respond to the concerns of business whilst also encouraging technological innovation in mitigating and adapting to climate change[8].

At the local level, climate change and the delivery of quality sustainable places is a central part of the vision of the Core Strategy, Site Allocations and Development Policies Development Plan Documents. There are many local

[7] Zero Carbon Britain Project, 2010, pp.80-1.
[8] PPS1 Supplement, 2007, p.10.

policies, which relate to sustainable design and construction and these are set out in the Code for Sustainable Homes and BREEAM sections of this SPD.

The two Core Strategy objectives of most relevance to this SPD are:

- Reduce the Borough's carbon footprint and respond to the effects of climate change; and
- Encourage renewable energy and the efficient use of scarce resources.

Colchester currently has one of the highest average temperatures and lowest levels of rainfall in the East of England as shown in figures 1 and 2, below. It is reasonable to assume therefore that Colchester is likely to be more affected than other areas of the region and country by a changing climate.

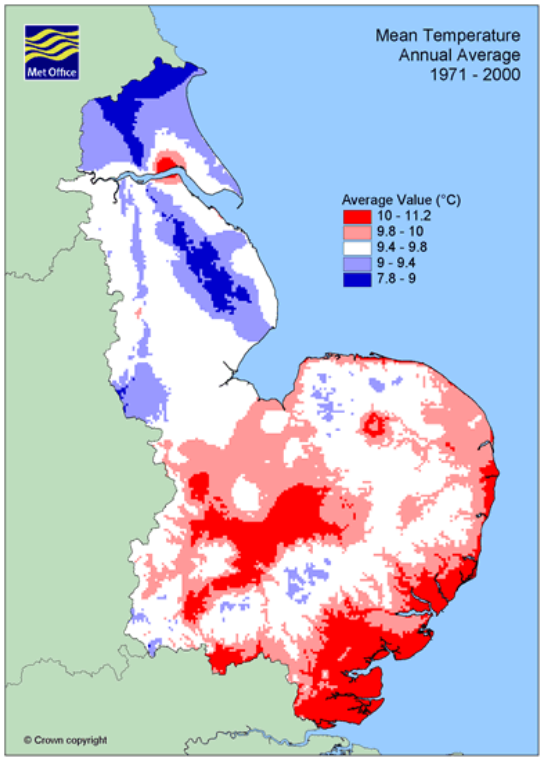

Figure 1. Data from the Met Office, which shows that the mean temperature annual average for Colchester 1971 – 2000 is 10 – 11.2°C.

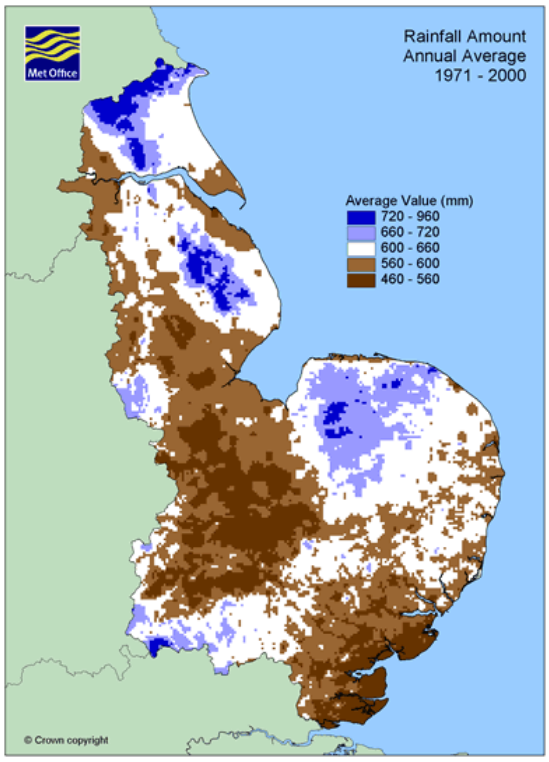

Figure 2. Data from the Met Office, which shows that the rainfall amount annual average for Colchester 1971 – 2000 is 460 – 600 mm.

Box 3, below, which is taken from Colchester Borough Council's Climate Risk Assessment, outlines the short term (2010-2039) climate change projections for Colchester.

The short term climate change projections for Colchester are:

- Milder, wetter winters (central estimate shows an increase in mean winter temperature of 1.3^{o}C and 6% increase in winter precipitation);
- Hotter, drier summers (central estimate shows an increase in mean summer temperature of 1.3^{o}C and 7% decrease in summer precipitation);
- More frequent extreme high temperatures (central estimate shows an increase in the mean temperature of the warmest day of 0.9^{o}C);
- More frequent downpours of rain (central estimate shows an increase of 5% precipitation on the wettest day);
- Significant decrease in soil moisture content in summer;

- Sea level rise and increases in storm surge height (central estimate for sea level rise in the East of England shows a 9.7cm increase under the medium emissions scenario and a 11.5cm increase under the high emissions scenario); and
- Possible higher wind speeds.

Box 3. Short term climate change projections for Colchester taken from Colchester Borough Council's Climate Risk Assessment. The data comes from UKCP09, which is the working name for the UK climate projections, which predict the future climate of the UK under three different emissions scenarios (high, medium and low). The three different scenarios are associated with different storylines about how the world may change and therefore how greenhouse gas emissions may change. It is good practice to consider all three scenarios, although differences between the scenarios do not start to become significant until around 2040. The UKCP09 key findings and published material report cumulative probabilities at the 10% (very unlikely to be less than), 50% (central estimate), and 90% (very unlikely to be greater than) probability levels.

Planning can facilitate high standards of development by raising awareness and standards. All development within the Borough should seek to respect and enhance the landscape, local character and the natural ecosystem. Development should be sympathetic to existing buildings, settlement patterns and land-form and should seek to retain, and enhance if possible, the existing ecosystem by returning surface water to the soil, protecting soil from erosion, respecting geo-diversity, retaining hedges and trees and other natural features, recycling wastes and avoiding pollutants. Design should allow for adaptation to climate change, for example including trees for shade and wind attenuation and green space to ameliorate temperatures.

Core Strategy policy ER1 is set out in box 4. This policy recognises the Council's commitment to carbon reduction and states that new dwellings will be encouraged to be built to a minimum of level 3 under the Code for Sustainable Homes and non-residential buildings will be encouraged to be built to a minimum BREEAM rating of 'very good'. Whilst a renewable energy target is also included in the policy the Council consider that it is more important that the Code for Sustainable Homes and BREEAM targets are met as these address a range of sustainability issues, including energy and CO_2 emissions. Nevertheless, the Council will continue to expect developers to consider the use of renewable or low carbon technologies, particularly as part of major development.

ER1 Energy, Resources, Waste, Water and Recycling

The Council's commitment to carbon reduction includes the promotion of efficient use of energy and resources, alongside waste minimisation and recycling.

The Council will encourage the delivery of renewable energy projects, including microgeneration, in the Borough to reduce Colchester's carbon footprint. New developments will be encouraged to provide over 15% of energy demand through local renewable and low carbon technology (LCT) sources.

Sustainable construction techniques will also need to be employed in tandem with high quality design and materials to reduce energy demand, waste and the use of natural resources, including the sustainable management of the Borough's water resources.

Residential dwellings will be encouraged to achieve a minimum 3 star rating in accordance with the Code for Sustainable Homes. Non-residential developments will be encouraged to achieve a minimum BREEAM rating of 'Very Good'.

The Council will support housing developments that reduce carbon emissions by 25% from 2010, 44% from 2013 and zero carbon homes from 2016 in accordance with national building regulations.

The Council is seeking to minimise waste and improve reuse and recycling rates through better recycling services and public awareness programs. To assist this aim, new developments will be expected to provide facilities and employ best practice technology to optimise the opportunities for recycling and minimising waste.

Box 4. Core Strategy Policy ER1.

3. Requirements

This SPD makes the case for development meeting a minimum of level 3 of the Code for Sustainable Homes and minimum of 'very good' under BREEAM. It shows that meeting these standards has many benefits and is not perhaps as expensive as people may think. The assessment of developments under the Code for Sustainable Homes and BREEAM is voluntary but the government and Colchester Borough Council encourages developers to have their development proposals assessed and to exceed the minimum performance standards required under Building Regulations. Colchester Borough Council, like many other local planning authorities, will use these assessments to understand the environmental performance of proposals in a manner that is quick, comprehensive and relevant to the determination of planning applications.

Table 5, below, outlines what the Council will expect in terms of compliance with the various levels under the Code for Sustainable Homes and BREEAM in accordance with policy ER1 of the Core Strategy.

Date	2010	2013	2016
Carbon improvement over Part L (conservation of fuel & power) Building Regulations 2006	25%	44%	100% (Zero carbon[9])
Equivalent Code for Sustainable Homes standard	Level 3	Level 4	Level 6
Colchester Borough Council Code expectations	Will expect all residential development to attain a minimum rating of level 3 from 2010	Will encourage major [10]residential development from 2010 & expect all residential development from	Will encourage major residential development from 2015 & expect all residential development from

[9] In May 2011 the government announced a definition for zero carbon homes, which will be included in future changes to building regulations.
[10] Major residential development is development of 10 or more dwellings.

		2013 to attain a minimum rating of level 4	2016 to attain a minimum rating of level 6
Colchester Borough Council BREEAM expectations	Major[11] development expected to attain a minimum rating of 'very good'	All development expected to attain a minimum rating of 'very good'	All development expected to attain a minimum rating of 'excellent'

Table 5. Phased implementation of the Code for Sustainable Homes and BREEAM

For outline planning applications, where it is very likely that development will come forward several years after outline planning consent is granted, the Code and BREEAM targets will reflect the requirement at the time the development is likely to come forward.

Whilst Core Strategy policy ER1 encourages development to provide over 15% of energy from renewable energy or low carbon technologies the Council considers it is more effective to take a holistic approach and consider the whole building. Notwithstanding this however, renewable energy will be necessary for some schemes to meet the energy category. Where renewable energy is included within a scheme this should be the most effective types of technology and future occupants should be provided with manuals/guidance

4. Code for Sustainable Homes

The Code for Sustainable Homes is a national standard, which is used to assess the sustainability of new dwellings. This section summarises the nine different categories of the Code for Sustainable Homes. Each of the Code's nine categories contains a number of environmental issues (see table 6). Credits are available for each of the environmental issues and the number of credits available per issue varies. The Code Technical Guide explains how many credits are available under each issue and how credits are achieved/ demonstrated. For example, 29 credits are available under the Energy and CO2 Emissions category, with 15 of these credits coming from one issue (Dwelling Emission Rate) and the remaining 14 coming from the eight other

[11] Major development is defined as development with a floorspace of over 1,000 sqm.

issues within the category. The nine categories within the Code have a different weighting and so the Code is not as simple as merely adding up the number of credits achieved. To establish the Code rating a score is given for each category, based on the number of credits achieved and weighting of the category, which gives an overall percentage. This percentage determines the Code rating. The Code certificate lists the percentage achieved and Code rating and also shows how the dwelling has performed under each category."

Table 6 lists all of the categories and environmental issues. Policy support is included for each category and some detail on cost are included. According to the DCLG document: Code for Sustainable Homes, A Cost Review (2010) the typical extra over costs from a baseline of building a 2006 building regulations compliant dwelling are as follows:

- <1% level 1
- 1-2% level 2
- 3-4% level 3
- 6-8% level 4
- 25-30% level 5
- 30-40% level 6.

There is significant variation at each Code level between dwelling types and across development scenarios. However, the figures use a 2006 building regulations compliant dwelling as the baseline and the October 2010 building regulations are more stringent. Therefore the extra over costs of building to a building regulations compliant dwelling should now be less.

Energy/ CO_2
Dwelling Emission Rate
Building Fabric
Energy Display Devices
Drying Space
Eco-labelled White Goods
External Lighting
Low or Zero Carbon Energy Technologies
Cycle

Home Office
Water
Internal Water Consumption
External Water Consumption
Materials
Environmental Impact
Sourcing – Basic Elements
Sourcing – Finishing Elements
Surface Water
Surface Water Run-Off Management
Flood Risk
Waste
Waste Storage
Construction Waste Management
Composting Facilities
Pollution
Insulant Global Warming Potential (GWP)
NO_x Emissions
Health and Well-Being
Daylight
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
Building Footprint

Table 6. Code for Sustainable Homes categories.

The reduction in CO_2 emissions is the most critical factor in determining the total cost of building to the Code. Up to level 3 of the Code for Sustainable Homes it is possible in theory to meet the mandatory CO_2 reduction through fabric improvement measures; although in the vast majority of cases some element of renewable energy technology is required. However, from level 4 low/zero carbon technologies are required to meet some or all of the dwellings

thermal and/or electrical demands. After the energy category water and health are the categories with the highest costs.

Costs of meeting code levels will reduce over time due to technology cost curves, innovation, learning effects and changing Building Regulations as most of the extra cost of achieving the code for sustainable homes (hereafter the Code) will become the cost of building a Building Regulations compliant dwelling.[12]

Many of the credits available under the Code for Sustainable Homes are measures that are already required or encouraged by Colchester Borough Council's planning policies. There is flexibility within the Code for Sustainable Homes, which allows developers to maximise credits from categories that are easily achieved based on the individual site.

Category 1: Energy and CO_2 Emissions

The Energy category is a major source of Code credits, with an overall weighting of 36.4%. There are nine issues under this category; with two mandatory issues: Ene 1 – Dwelling Emission Rate and Ene 2 – Fabric Energy Efficiency.

The October 2010 amendments to Building Regulations mean that the mandatory requirement under Ene 1 is equal to Code level 3 as the amendments improve the Target Emission Rate by 25% from the 2006 Target Emission Rate (maximum CO_2 emissions rate in kg per m^2 per annum arising from energy use for heating, hot water and lighting for the actual dwelling). Level 4 is a 25% improvement (44% improvement from 2006 regulations), level 5 is a 100% improvement (from 2006 regulations) and level 6 dwellings are required to be zero carbon.

Other issues in this category are:

[12] Department of Communities and Local Government (2010) Code for Sustainable Homes: A Cost Review, p. 67.

- Ene 3 – Energy Display Devices
- Ene 4 – Drying space
- Ene 5 – Eco-labelled white goods
- Ene 6 – External lighting
- Ene 7 – Low and zero carbon technologies
- Ene 8 – Cycle storage
- Ene 9 – Home office

Many of the credits can be gained at little extra cost, for example the provision of private gardens will ensure that external drying space is available.

There are a number of local policies which support the actions required to achieve credits under this category. In particular policy ER1 of the Core Strategy states that "sustainable construction techniques will also need to be employed in tandem with high quality design and materials to reduce energy demand… residential dwellings will be encouraged to achieve a minimum 3 star rating in accordance with the code for sustainable homes". Criterion (vii) of policy DP12 of the Development Policies DPD requires the provision of 'external drying areas' as part of residential development. Credits can be gained for this under Ene 4. Policy ER1 of the Core Strategy states that "new developments will be encouraged to provide over 15% of energy demand through local renewable and low carbon technology sources". One credit is awarded under Ene 7 for a reduction in CO_2 emissions of 10% and two credits are awarded for a reduction of 15%. This issue also linked to Ene 1, providing the opportunity to maximise credits. Policy DP17 of the Development Policies requires proposals for development to "incorporate satisfactory and appropriate provision for (ii) cyclists, including routes, secure cycle parking and changing facilities where appropriate". Further, the Parking Standards SPD requires the provision of at least one cycle parking space as part of new dwellings; with credits available for this under Ene 8.

<u>Category 2: Water</u>

This category has a weighting of 9% and includes a mandatory requirement in relation to indoor water consumption. As with the dwelling emission rate issue the reduction in water consumption increases with each Code level. The only other issue in this category is external water use (Wat 2).

At Code level 3/4 the costs under this category are fairly low with the average cost of meeting the internal water consumption target being £200 and with volume house builders reporting that based on volume orders level 3 can be achieved at no extra cost. In 2010 Part G of the Building Regulations was amended to include a requirement for water use to be limited to 125 litres per person, per day, which will further reduce the costs of meeting this category. A credit can be achieved under the external water use category at a cost of just £40-50 per dwelling by providing a water butt.

The achievement of credits under this category is supported by policy DP20 of the Development Policies DPD, which requires all development proposals to "incorporate measures for the conservation and sustainable use of water". The use of sustainable drainage systems and measures to conserve water within individual buildings are referred to in the policy.

Colchester Borough Council is entirely justified in seeking water efficiency levels which are tighter than Building Regulations. Climate change is leading to more frequent droughts, with consequent reduced water availability. Climate change projections for Colchester suggest that summer precipitation could decrease by 7% in the short term and 15% in the medium-long term[13]. In addition to a reduction in summer precipitation changing precipitation patterns, in particular more frequent downpours of heavy rain will affect the capture of rainwater and therefore the availability of water resources. The Environment Agency has identified that the catchment area of Anglian Water Services, which provides water to the Borough, is seriously water stressed. In their Water Resource Management Plan Anglian Water Services state that they can supply water to the Borough up to at least 2035. However, there are

[13] Climate change projections for Colchester Borough are set out in Colchester Borough Council's Climate Risk Assessment.

potential supply deficits against dry year averages or critical peak period forecasts. Various measures are identified as necessary to ensure water supply, including the implementation of demand management measures (leakage control, household metering and the promotion of water efficiency), education around reduced usage, increased supply networks from external sources and transfer schemes.[14] The implementation of the Code for Sustainable Homes will thus help to reduce the water usage in the Borough; helping to secure supply.

Category 3: Materials

There are numerous credits available under this category, including some mandatory requirements. The weighting factor is 7.2%. As achieving maximum credits under this category would involve a drastic change in specifications it is likely that under Code levels 3 and 4 the maximum credits will not be sought.

There is policy support for the use of materials with lower environmental impacts, Policy ER1 of the Core Strategy states '"sustainable construction techniques will also need to be employed in tandem with high quality design and materials" and policy DP1 of the Development Policies DPD states "all development must be designed to a high standard, avoid unacceptable impacts on … environmental sustainability".

Category 4: Surface Water Run-off

There are mandatory requirements under this category in relation to the peak rate of run-off and volume of run-off. Credits are also available if the site is located within flood zone 1 or if mitigation measures are incorporated into development on sites at medium or high risk of flooding.

[14] Royal Haskoning, Haven Gateway Water Cycle Study Phase 2, December 2009.

The Council already require development to avoid areas of flood risk and reduce the rate of discharge. This is supported by Policy DP20 of the Development Policies DPD, which states that: “development proposals shall incorporate measures for the conservation and sustainable use of water. These issues shall include … appropriate SuDS for managing surface water runoff …the use of SuDS will be particularly important as part of greenfield developments”. Policy DP1 of the Development Policies DPD states that development proposals must demonstrate that they will “incorporate… where appropriate, sustainable drainage systems”. Additionally, policy ENV1 of the Core Strategy states that “the Council will seek to direct development away from land at risk of fluvial or coastal flooding in accordance with PPS25, including areas where the risk of flooding is likely to increase as a result of climate change”.

Category 5: Waste

There is a mandatory requirement under this category in relation to the storage of non-recyclable waste and recyclable household waste (Was 1). Was 2 gives credits for a Site Waste Management Plan and these are mandatory for projects over £300,000. There is also a category on composting (Was 3). The costs of achieving credits under this category are fairly low, for example credits can be achieved if the local authority has a recycling collection scheme in place and in terms of construction waste it is in the developers' interest to reduce waste generated on site.

In terms of policy support, Policy ER1 of the Core Strategy states that "new developments will be expected to provide facilities and employ best practice technology to optimise the opportunities for recycling and minimising waste". Further, Policy DP12 of the Development Policies DPD states that the Council will have regard to the provision of "an accessible bin and recycling storage area" and Policy DP1 of the Development Policies DPD states that development proposals must demonstrate that they will "incorporate any necessary infrastructure and services including recycling and waste facilities".

Category 6: Pollution

There are two issues in this category which cover the global warming potential (GWP) of insulants and NO_x emissions from the heating system. Compliance with the GWP requirement for insulation materials can be achieved at no extra cost[15]. However if biomass boilers or heatpumps are used no credits under the NO_x issue can be achieved as biomass boilers emit NO_x.

Category 7: Health and Well-Being

There are four issues under this category: daylighting (Hea 1), sound insulation (Hea 2), private space (Hea 3) and lifetime homes (Hea 4). This

[15] Department of Communities and Local Government (2010) Code for Sustainable Homes: A Cost Review, p. 39.

category has a rating of 14%. With the exception of private space there are a number of credits available under each category. With the exception of the lifetime homes issue, which is mandatory under Code level 6, the cost of achieving the credits is fairly low and some credits can be achieved by default. For example, a detached dwelling achieves four credits under the sound insulation issue.

There are a number of policies, which support the issues in this category. Policy DP12 of the Development Policies DPD states that the Council will have regard to "acceptable levels of daylight to all habitable rooms and no single aspect north-facing homes" (Hea 1). Policy DP1 of the Development Policies DPD states that development proposals must "protect existing public and residential amenity, particularly with regard to … noise and disturbance" (Hea 2). Policy DP16 of the Development Policies DPD sets out requirements for the provision of private open space and public open space for dwellings (Hea 3). Policy DP12 of the Development Policies DPD states that "residential development will be guided by high standards for design, construction and layout" and the Council will have regard to "flexibility in the internal layout of dwellings to allow adaptability to difference lifestyles" (Hea 4). The supporting text to the policy states that "it is expected that new residential development will address the requirements of Lifetime Homes standards" (paragraph 5.6).

Category 8: Management

There are four issues under this category, which concern the reduction of the impact of the construction site and the provision of information to allow future residents to operate their home efficiently. These issues are: home user guide (Man 1), considerate constructors scheme (Man 2), construction site impacts (Man 3) and security (Man 4). The considerate constructors scheme is now widely used by the construction industry and credits are available for committing to meet best practice and by going beyond best practice.

In terms of policy support Policy DP1 of the Development Policies DPD requires development proposals to demonstrate that they will "create a safe and secure environment" (Man 4).

Category 9: Ecology

There are five issues under this category, which has a weighting of 12%: ecological value of site (Eco 1), ecological enhancement (Eco 2), protection of ecological features (Eco 3), change in ecological value (Eco 4) and building footprint (Eco 5). Many of the nine credits available under this category can be met by carrying out an ecological survey and by incorporating the recommendations for ecological enhancement into the design of the development.

The Core Strategy seeks to direct development to previously developed land and protect nature conservation assets. Policy SD1 states that "development proposals will be expected to make efficient use of land and take a sequential approach that gives priority to accessible locations and previously developed land". Policy ENV1 states that "unallocated greenfield land outside of settlement boundaries will be protected and where possible enhanced" and "the Borough Council will conserve and enhance Colchester's natural and historic environment, countryside and coastline". Policy DP21 of the Development Policies DPD states that "development will only be supported where it … will conserve or enhance the biodiversity value … maximises opportunities for the restoration, enhancement and connection of natural habitats in accordance with the Essex Biodiversity Action Plan … and incorporates beneficial biodiversity conservation features and habitat creation where appropriate". In relation to the building footprint issue (Eco 5) Policy H2 of the Core Strategy states that the Council "will seek housing densities that make efficient use of land".

6. BREEAM

BREEAM is the world's leading and most widely used environmental assessment method for buildings. BREEAM stands for Building Research Establishment Environmental Assessment Method. The aims of BREEAM are to:

- Mitigate the impacts of building on the environment.
- Enable buildings to be recognised according to their environmental benefits.
- Provide a credible, environmental label for buildings.
- Stimulate demand for sustainable buildings.

As with the Code for Sustainable Homes BREEAM is flexible, although there are some mandatory requirements. Schemes achieve a rating from pass to excellent. The table, below, lists the issues common to all BREEAM schemes. It is important to note that different uses have different credits available[16] and so this section of the SPD is less detailed than the Code section as not all credits are available to all uses.

Management Commissioning Considerate Constructors Scheme Construction site impacts Building Users Guide Security	**Land Use and Ecology** Reuse of land Contaminated land Ecological value of land & protection of ecological features Mitigating ecological impact Enhancing site ecology Long term impact on biodiversity
Waste Construction site waste management Recycled aggregates	**Transport** Provision of public transport Proximity to amenities Travel plan
Health and Wellbeing Glare control High frequency lighting	**Materials** Materials Specification – major building elements

[16] BREEAM is currently working on the production of one BREEAM scheme to replace the various schemes for different uses.

Internal & external lighting levels	Hard landscaping & boundary protection
Lighting zones & controls	Reuse of building façade
Potential for natural ventilation	Reuse of building structure
Thermal comfort	Responsible sourcing
Thermal zoning	Insulation
Indoor air quality	Designing for robustness
Volatile organic compounds	
Microbial contamination	
Pollution	**Water**
Refrigerant GWP – building services	Water consumption
Preventing refrigerant leaks	Water meter
NOx emissions of heating source	Major leak detection
Flood risk	Sanitary supply shut off
Minimising watercourse pollution	
Reduction of night time light pollution	
Noise attenuation	
Energy	**Innovation**
Reduction of CO_2 emissions	Exemplary performance levels
Sub-metering of substantial energy uses	Use of BREEAM Accredited Professionals
External lighting	New technologies and building processes
Low or zero carbon technologies	
Lifts	

Table 7. BREEAM Categories

The Department for Education and Skills commissioned a report looking into the costs of schools achieving BREEAM. The findings of this report are useful in terms of identifying what credits can be achieved at little extra cost.

The report found that achieving a rating of 'good' can be done at very little extra cost and 'very good' can be achieved at an extra cost of £18/m^2. A rating of 'excellent' is difficult to achieve without renewables and is onerous for small developments. The average cost of achieving an 'excellent' rating is £60/m^2.

As with the Code for Sustainable Homes the energy credits are the most expensive to achieve and the size of the development is important in determining cost.

The following credits are examples of issues that are given or accommodated at little or no additional cost:

- Seasonal commissioning after occupation;
- Considerate constructors scheme;
- Monitoring of construction site impacts including waste segregation;
- Consultation with local community and building occupiers, including Crime Reduction Advisor;
- Whole life costing;
- Design of materials for robustness;
- Review of furnishings and fittings for VOCs;
- Building thermal simulation at design stage to ensure thermal comfort;
- Provision of cyclist facilities;
- Water conservation credits;
- Dedicated storage of segregated recyclable materials; and
- Enhancing site ecology.

Management

The management category includes a number of issues, with the aim of ensuring that the construction and user impacts are managed in an environmentally sound way in terms of resource use, energy consumption and pollution. It includes minimum standards for commissioning, considerate constructor's scheme and building users guide. The category has a weighting of 12%.

Policy DP1 of the Development Policies DPD provides policy support for the implementation of issues in this category.

Health and Wellbeing

This category seeks to ensure that adverse health risks for users of the building are minimised and wellbeing is maximised. Issues covered include

ensuring that users of the building have adequate levels of daylight, can enjoy an outdoor view, are able to control lighting and temperature within the building, and there is the potential for natural ventilation. There are two minimum standards under this category; high frequency lighting, which will reduce health problems from the flicker of fluorescent lights and microbial contamination, which will reduce risk of legionellosis in operation. The category has a weighting of 15%.

Energy

This category aims to reduce CO_2 emissions from the building, including the building fabric, lighting and lifts, and provide a proportion of the energy use from low or zero carbon technologies. Minimum standards are required under the following issues: reduction of CO_2 emissions, sub-metering of high energy load and tenancy areas, and low or zero carbon technologies. This category has the highest weighting of all categories at 19%.

Policy ER1 of the Core Strategy provides policy support for the implementation of issues in this category.

Transport

This category seeks to reduce the need to travel and promote sustainable modes of travel by locating development in close proximity to public transport and amenities, providing safe facilities for cyclists and pedestrians and limiting the amount of car parking. The category has a weighting of 8%.

Policies TA1 and TA2 of the Core Strategy and DP1 and DP17 of the Development Policies DPD provide policy support for the implementation of issues in this category. Policy TA1 states that development will be "focused on highly accessible locations to reduce the need to travel" and policy TA2 states that development shall contribute towards excellent walking and cycling connections. Policy DP1 states that development must "provide a design and layout that takes into account the potential users of the site including giving

priority to pedestrian, cycling and public transport access" and policy DP17 states that "all developments should seek to enhance accessibility for sustainable modes of transport". The Council has adopted the Essex Vehicle Parking Standards document, which includes maximum car parking spaces for all non-residential uses.

Water

This category seeks to reduce water consumption through the installation of flush volumes and flow rates for installed sanitary fittings, a water meter and leak detection systems. There are two minimum standards under this category: water consumption and water meter. There are three credits available under the water consumption issue depending on the reduction in water consumption achieved. The category has the lowest weighting at 6%.

Policy DP20 of the Development Policies DPD provides policy support for the implementation of issues in this category.

Materials

This category recognises and encourages the specification of building, landscaping and boundary materials with a lower environmental impact over the full lifecycle of the building. Credits are awarded according to the Green Guide rating and an exemplary credit is awarded under the first issue. Credits can be gained if the façade and structure are re-used. Credits are also available for the responsible sourcing of materials and for designing for robustness. The category has a weighting of 12.5%.

Policies ER1 of the Core Strategy and DP1 of the Development Policies DPD provide policy support for the implementation of issues in this category.

Waste

This category promotes resource efficiency and seeks to minimise waste at source and ensure that waste is re-used or recycled. There is one mandatory issue: recyclable waste storage, which requires dedicated recyclable storage areas. The category has a weighting of 7.5%.

Policies ER1 of the Core Strategy and DP1 of the Development Policies DPD provide policy support for the implementation of issues in this category.

Land Use and Ecology

The purpose of this category is to minimise the impacts of development on biodiversity and enhance the ecological value of a site. Credits are awarded for the re-use of previously developed land, re-use of contaminated land, use of land with low ecological value, maintaining and enhancing ecological value, and securing long term maintenance and enhancement of biodiversity. There is one mandatory issue, which is mitigating ecological impact. Two credits are available under this issue, which covers minimising the impact of building on existing site ecology and change in ecological value. The category has a weighting of 10%.

Policies SD1 and ENV1 of the Core Strategy and DP21 of the Development Policies DPD provide policy support for the implementation of issues in this category.

Pollution

A variety of issues are covered in this category. Three issues cover refrigerant global warming potential and leaks. Credits are awarded for a reduction in NO_x emissions from heating sources, which will reduce pollution of the local environment. Credits are available if development is located in an area of low flood risk or if mitigation measures are included in areas of medium/ high flood risk and sustainable drainage systems ensure that the peak run-off from the site to the watercourses is no greater for the developed

site than it was for the pre-development site. Night time light pollution and noise pollution are also issues. Concentrating lighting in appropriate areas and minimising upward lighting will reduce light pollution, energy consumption and nuisance to neighbours. The category has a weighting of 10%.

Policies ENV1 of the Core Strategy and DP20 of the Development Policies DPD provide policy support for minimising flood risk and the provision of sustainable drainage systems.

Innovation

Under this category a maximum of 10 credits are available as additional recognition for a procurement strategy, design feature, management process or technological development that innovates in the field of sustainability above and beyond the level currently recognised and rewarded within BREEAM issues.

7. Implementation

The Code for Sustainable Homes and BREEAM must be carried out by an accredited assessor. The BREEAM website[17] includes a directory of accredited Code for Sustainable Homes and BREEAM assessors. Colchester Borough Council recommends that sustainability issues be addressed as early as possible in the development process and that an assessor is brought onto the project team at the design stage. Sustainability information provided with the planning application should be included in the design and access statement or as a separate report, and if no information is submitted, the applicant may be asked for further details. It may be useful to carry out a design stage assessment and include this as part of the planning application, although this is not essential.

Provision of the post-completion certificate will be a condition of planning approval, as will achieving the standards themselves. As with other policies,

[17] http://www.breeam.org/

non-compliance with the standards or failure to provide adequate information is grounds for refusing planning permission or enforcement.

Where it can be demonstrated that compliance with the Code or BREEAM would not be practicable applicants must include a section in the design and access statement explaining how sustainability considerations have been incorporated into the development. Reference should be made to:

- How the design contributes to reducing energy use.
- Any renewable or low carbon energy technologies incorporated into the development.
- The provision of open space and the opportunities this provides for biodiversity, flood storage and people.
- Sustainable drainage systems.
- Sustainable waste management such as provision of space for recycling and composting.
- How the development promotes sustainable modes of travel.