Energy & Sustainability Statement

Client: Emrys Architects
Cap House
9-12 Long Lane
London
EC1A 9HA

Project: 174 Camden Street NW1 9PT

Date: 26th August 2014

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About *MES Building Solutions*

MES Building Solutions **is an established consultancy practice specialising in providing building solutions throughout the UK.**

We offer a full range of services for both residential and commercial buildings from small individual properties through to highly complex mixed use developments.

We are an industry leader in delivering a professional, accredited and certified service to a wide range of clients including architects, developers, builders, housing associations, the public sector and private householders.

Employing highly qualified staff, our team comes from a variety of backgrounds within the construction industry with combined knowledge of building design, engineering, assessment, construction, development, research and surveying.

We are renowned for our creative thinking and provide a high quality, honest and diligent service.

MES Building Solutions maintains its position at the forefront of changes in planning, building regulations and neighbourly matters, as well as technological advances. Our clients, large or small are therefore assured of a cost effective, cohesive and fully integrated professional service.

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Section 1: Introduction

The purpose of this report is to provide an overview of how sustainability will be promoted both during and after construction and to establish the predicted energy requirements for the proposed development. It illustrates how energy efficiency measures, in conjunction with renewable generation, can be used to reduce the predicted energy consumption and associated carbon dioxide emissions.

The report is produced in support of the planning application to fulfil the requirements of London Borough of Camden in accordance with the following documents:

Camden Core Strategy Policy CS13
Camden Development Policy DP22
Guidance in CPG3
London Plan Policies 5.2, 5.3, 5.6, 5.7, 5.9, 5.10, 5.12, 5.13, 5.15 & 5.18

Included in the report are details of how the development will address the following:

In line with the requirements of the London Plan and London Borough of Camden we will calculate, the total energy requirement for the development and show how the energy hierarchy will be used to reduce energy consumption and emissions from the development.

We will demonstrate how the development will achieve a 40% reduction in CO_2 emissions when compared to 2010 Building Regulations requirements, to include a 20% contribution from LZC technology.

A detailed sustainability statement and CSH pre-assessment report for the development, detailing how the design team will address wider aspects of sustainability and the credits to be sought in order to achieve the CSH Level 4 rating required by planning.

Section 2: Description of development

Location

The development site is located on the corner of Jeffrey's Street and Prowse Place, London NW1, as outlined in red on the site plan below and shown in the photograph overleaf.

The existing building comprises a row of six masonry built garages. The building sits on a relatively small plot with 29 Prowse Place to the rear.

The existing building appears to have been built in the early/mid 20th century and may have been built following partial demolition of the existing terrace.

It is proposed that all but one of the existing garages on site are demolished and replaced with two duplex dwellings and a ground floor flat that will be partially within 29 Prowse Place.

Site Location Plan

Proposed plans (Emrys Architects)

Orientation

The proposed development is orientated so that its main frontage faces Jeffrey's Street to the North. This is the site of an existing building in an established residential area and the orientation of the proposed development is fixed due to surrounding buildings and site constraints. Having said this, large windows are proposed to the upper stories and as such the new dwellings should benefit from good levels of daylight given the site limitations.

Section 3: Energy

3.1 The Energy Hierarchy

The energy hierarchy is generally accepted as the most effective way of reducing building carbon emissions. This is highlighted and recognised in the 2011 edition of the London Plan in the Mayor's energy hierarchy;

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

Development proposals should:

Figure 3.1: The Energy Hierarchy

- ***Reducing energy demand***

The first step in the process of reducing the overall energy used and CO_2 produced by the building is to minimise the energy required to heat it. A well-insulated building envelope and passive design will reduce the energy requirement for heating and ventilating the building.

- ***Energy efficient systems and appliances***

The second step is to specify services and controls, lighting and appliances that are energy efficient and which result in further reduction in energy requirements.

- ***Making use of Low or zero-carbon (LZC) technologies***

When the energy demand has been reduced by implementing the processes of improving the fabric and energy efficiency, then LZC technologies can be employed to reduce the environmental impact of the remaining energy consumption.

3.2 Calculating Baseline Energy Demand

Energy used in a building is divided between that which is regulated (Heating, Cooling, Hot water, Ventilation & Lighting) and that which is said to be associated with the building in use (Equipment and Appliances).

The London Borough of Camden require the development to achieve a 40% reduction in CO_2 emissions when compared to 2010 Building Regulations requirements, to include a 20% contribution from LZC technology

The first step is to calculate a Building Regulations Part L1A 2013 compliant specification in order to establish baseline emissions for the development. In order to comply with Camden's planning requirements, the development must achieve targets based on a Part L 2010 baseline. However; the development will also be required to comply with 2013 Building Regulations and as such baseline figures are calculated using the most appropriate SAP model. The government approved SAP2012 methodology has been used to establish baseline energy requirements which comply with the 2013 edition of Part L1A. This represents an improvement of 6% over 2010 regulations. In order to calculate the baseline figures, the Part L 2013 compliant figures have been adjusted up to take account of the 6% improvement. A summary of the specification used in this calculation is shown in table 3.A, below.

Element	Specification
Walls	0.18W/m^{2}K
Roof	0.13W/m^{2}K
Heat loss Floors	0.13W/m^{2}K
Openings	1.00W/m^{2}K
Windows	1.33W/m^{2}K
Air Permeability	5m^3/m^2/hr
Ventilation	Intermittent extract fans
Thermal Bridging	Default (Y-Value = 0.150)
Lighting	75% low energy lamps
Space Heating	88% Efficient Gas Combi Boiler & radiators
DHW	Via main heating
Secondary Heating	None

Table 3.A: Sample model baseline specification

House Type	Total Area (m^2)	Carbon Emissions (tonns CO_2 per year)										Total Emissions (tonnes CO_2 per year)
		Space Heating (1) *SAP (261)*	Space Heating (2) *SAP (262)*	Secondary Heating *SAP (263)*	Water Heating *SAP (264)*	Space Cooling *SAP (266)*	Pumps & Fans *SAP (267)*	Lighting *SAP (268)*	Appliances *SAP (ZC2)*	Cooking *SAP (ZC3)*	Additional Allowable Generation	
Flat 01	28	0.30	0.00	0.00	0.24	0.00	0.04	0.08	0.87	0.29	0.00	1.83
Flat 02	63	0.80	0.00	0.00	0.46	0.00	0.04	0.16	1.41	0.47	0.00	3.34
Flat 03	48	0.61	0.00	0.00	0.35	0.00	0.04	0.13	1.11	0.37	0.00	2.61
Total:	**139**	**1.72**	**0.00**	**0.00**	**1.05**	**0.00**	**0.12**	**0.37**	**3.39**	**1.13**	**0.00**	**7.78**
											Total:	**7.78**

Table 3.B: Estimated baseline carbon dioxide (CO_2) emissions. (Tonnes CO_2 per year)

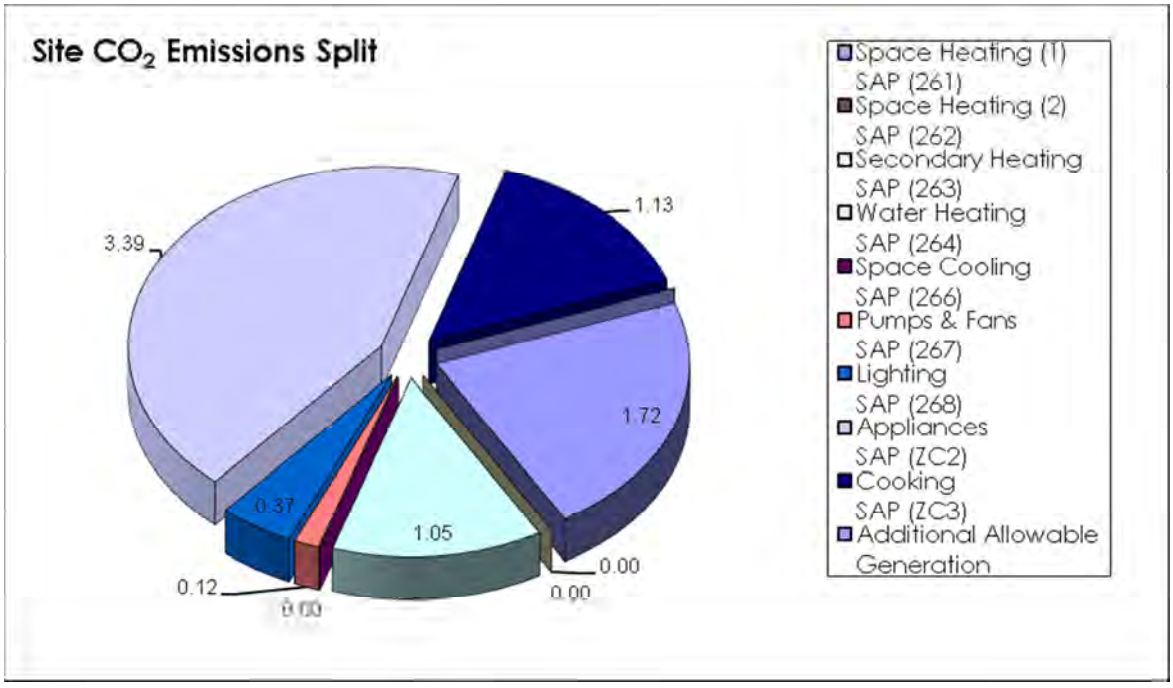

Figure 3.2: Estimated baseline carbon dioxide emissions (tonnes CO_2 per year) split.

Figure 3.2 shows how the CO_2 emissions are split between regulated and unregulated energy uses.

3.3 Energy Efficiency Measures (Be lean & be clean)

The first two steps of the Mayor's energy hierarchy require the reduction of energy consumption in the building through improvements to its fabric and by increasing the efficiency of the building services. This reduces the energy required to run the building and thus the emissions associated with that energy use. As the new 2013 Part L1A is already very stringent in terms of fabric performance targets, the reduction possible from further improvement to the building fabric and services is limited when compared those which may be expected from buildings constructed to earlier versions of Building Regulations.

Table 3.C, shows a revised specification for the dwellings (Part L 2013 compliant) with an improved fabric and mechanical services specification in order to further reduce heat loss and therefore, CO_2 emissions. It has also been assumed that a 10% improvement in emissions from appliances could be achieved through careful specification.

Element	Specification
Walls	0.18W/m²K
Roof	0.13W/m²K
Heat loss Floors	0.13W/m²K
Openings	1.00W/m²K
Windows	1.20W/m²K
Air Permeability	4m³/m²/hr
Ventilation	Decentralised mechanical extract fans
Thermal Bridging	Default (Y-Value = 0.150)
Lighting	75% low energy lamps
Space Heating	88% Efficient Gas Combi Boiler & radiators
DHW	Via main heating
Secondary Heating	None

Table 3.C: Sample model improved fabric specification

Table 3.D show the effect of the improvements outlined in table 3.C. The increased specification has reduced emissions by approximately 9%

House Type	Total Area (m^2)	Carbon Emissions (tonnes CO_2 per year)										Total Emissions (tonnes CO_2 per year)
		Space Heating (1) *SAP (261)*	Space Heating (2) *SAP (262)*	Secondary Heating *SAP (263)*	Water Heating *SAP (264)*	Space Cooling *SAP (266)*	Pumps & Fans *SAP (267)*	Lighting *SAP (268)*	Appliances *SAP (ZC2)*	Cooking *SAP (ZC3)*	Additional Allowable Generation	
Flat 01	28	0.28	0.00	0.00	0.19	0.00	0.06	0.08	0.78	0.29	0.00	1.68
Flat 02	63	0.76	0.00	0.00	0.37	0.00	0.06	0.12	1.27	0.47	0.00	3.04
Flat 03	48	0.58	0.00	0.00	0.28	0.00	0.06	0.09	1.00	0.37	0.00	2.37
Total:	**139**	**1.62**	**0.00**	**0.00**	**0.84**	**0.00**	**0.18**	**0.29**	**3.05**	**1.13**	**0.00**	**7.09**
											Total:	**7.09**

Table 3.D: Improved fabric carbon dioxide (CO_2) emissions. (tonnes CO_2 per yr)

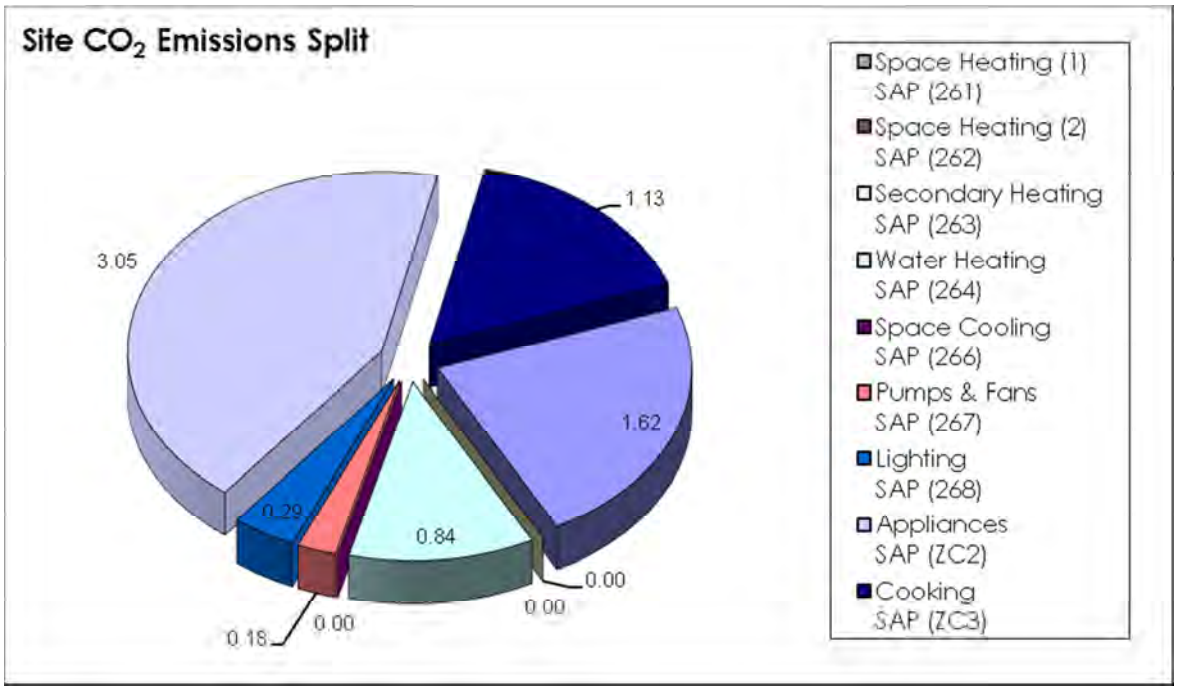

Figure 3.3: Estimated baseline carbon dioxide emissions (tonnes CO_2 per year) split.

Figure 3.3 demonstrates how the improvements detailed in table 3.C reduce the space heating and cooling CO_2 emissions by reducing improving the fabric of the building.

3.4 District Heating & CHP

It is a requirement to consider the application of both CHP technology and/or a district heating scheme on all new developments unless it is not possible on the site.

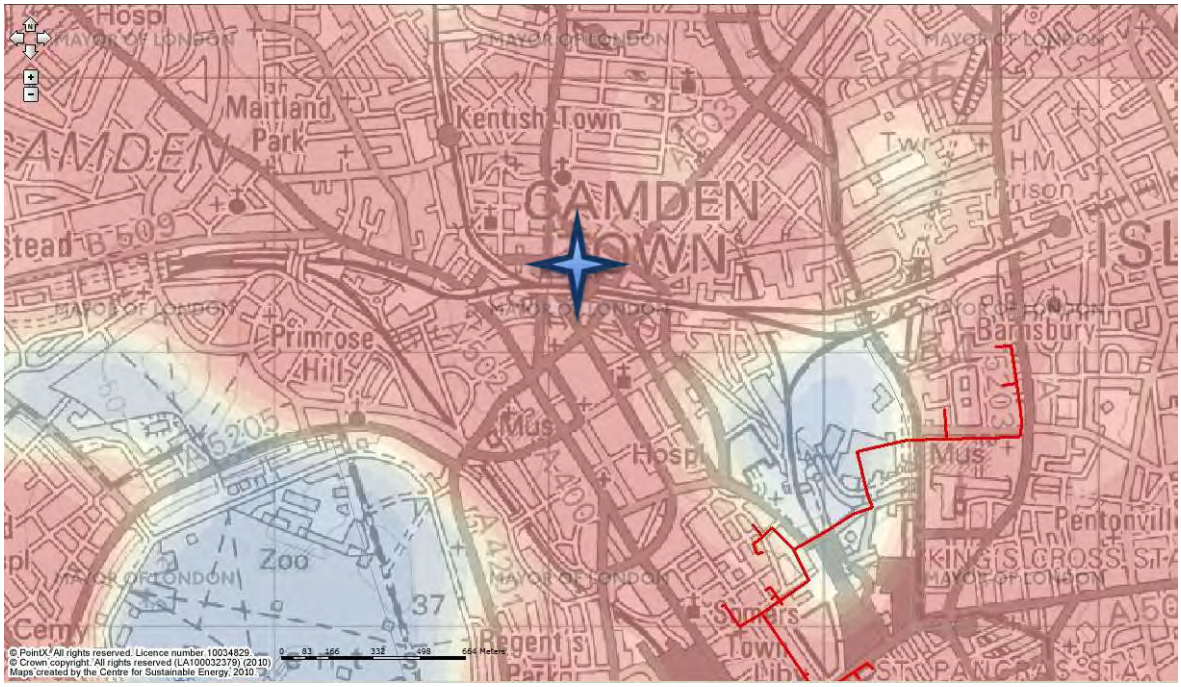

Figure 3.4: London Heat map showing potential district heating network (in red) on Euston Road approximately 1km to the South East of the site. Site location shown by blue cross.

In this case, CHP is not considered suitable as discussed in section 3.5.

The London Heat map identifies a potential future district heating Network on Euston Road to the South East of the site. This is approximately 1km away and as such connection into this network is not feasible. No other existing or potential future networks appear to exist within a practical distance of the site and as such this option is not possible. As the development is for three dwellings with conventional gas space and water heating; it is not proposed to allow for future connection to district heating.

3.5 CO_2 reduction through the use of renewable or low carbon technology (Be green)

Target contribution from renweables	
Baseline Emissions (Tonnes CO_2/yr)	7.78
Emissions following Stages 1 & 2 (Tonnes CO_2/yr)	7.09
% improvement over baseline site emissions following Stages 1 & 2	9 %
Target emission rate to achieve a 40% reduction over baseline (Tonnes CO_2/yr)	4.67
Reduction required from renewables (Tonnes CO_2/yr)	2.42
Reduction required from renewables (%)	31%

The proposal is to use the pitched area of South facing roof to install 6kWp of PV. An array of this size will generate 5,000 kWh of electricity per year. This offsets a total of 2.5 tonnes CO_2 per year. Table 3.F shows the improvements outlined in sections 3.3 and 3.4 as well as the CO_2 saving from the additional allowable generation.

House Type	Total Area (m^2)	Carbon Emissions (tonnes CO_2 per year)										Total Emissions (tonnes CO_2 per year)
		Space Heating (1) *SAP (261)*	Space Heating (2) *SAP (262)*	Secondary Heating *SAP (263)*	Water Heating *SAP (264)*	Space Cooling *SAP (266)*	Pumps & Fans *SAP (267)*	Lighting *SAP (268)*	Appliances *SAP (ZC2)*	Cooking *SAP (ZC3)*	Additional Allowable Generation	
Flat 01	28	0.28	0.00	0.00	0.19	0.00	0.06	0.08	0.78	0.29	-0.81	0.87
Flat 02	63	0.76	0.00	0.00	0.37	0.00	0.06	0.12	1.27	0.47	-0.81	2.23
Flat 03	48	0.58	0.00	0.00	0.28	0.00	0.06	0.09	1.00	0.37	-0.81	1.56
Total:	**139**	**1.62**	**0.00**	**0.00**	**0.84**	**0.00**	**0.18**	**0.29**	**3.05**	**1.13**	**-2.43**	**4.66**
											Total:	**4.66**

Table 3.F: Improved services carbon dioxide (CO_2) emissions. (tonnes CO_2 per yr)

Based on a 250 watt PV panel the site will require 24 PV panels (6 kWp) that will cover approximately 36m^2 of the roof. This is assuming a south orientation with the panels elevated to at least 11 degrees from the horizontal.

The Energy Savings Trust calculator has been use to estimate the installation cost and payback period tor a 6kWp array.
With current levels of feed in tariff, a system of this capacity would require an initial investment of around £9,000.00 and give a payback period of around 9 years (income and savings of approximately £1,000.00 per year).

Summary of section 3.5 *(Be lean + Be clean + Be green)*	
Baseline Site CO_2 (tonnes CO2 per year)	**7.78**
Site CO2 after first 2 stages of the energy hierarchy (tonnes CO2 per year) 7.09	**7.09**
Improvement over baseline emissions following stages 1 & 2 of the energy hierarchy (tonnes CO2 per year)	**0.69**
Reduction in CO_2 emissions attributable to stages 1 & 2 of the energy hierarchy	**9%**
Site CO_2 after stage 3 of the energy hierarchy (tonnes CO_2 per year)	**4.66 (F)**
Reduction in CO_2 emissions attributable to on-site renewable energy.	**31.2 %**
Total improvement over baseline emissions (tonnes CO_2 per year)	**3.12**
Total Cumulative Savings % improvement over total baseline site emissions	**40.1 %**

Energy resources accepted as renewable or low carbon technologies are defined by the Department of Energy & Climate Change Low Carbon Buildings Program as:

- Solar photovoltaics
- Wind turbines
- Small hydro
- Solar thermal hot water
- Ground source heat pumps
- Air source heat pumps
- Bio-energy
- Renewable CHP
- Micro CHP (Combined heat and power)

Solar Photovoltaics

Solar panel electricity systems, also known as solar photovoltaics (PV), capture the sun's energy using photovoltaic cells. These cells do not need direct sunlight to work – they can still generate some electricity on a cloudy day. The cells convert the sunlight into electricity, which can be used to run household appliances and lighting.

This is the chosen renewable technology on the site.

Wind Turbines

Wind turbines harness the power of the wind and use it to generate electricity. Forty percent of all the wind energy in Europe blows over the UK, making it an ideal country for domestic turbines. Urban sites such as the location of this development are generally unsuitable for wind turbine installations due to the interrupted turbulent wind flows caused by surrounding buildings and large obstacles. There are also possible issues with noise and `flicker' for the neighboring buildings.

The NOABL wind resource database for the site location records average wind speeds as shown in Table 3.G below. The British Wind Energy Association (BWEA) generally recommends an average wind speed of at least 7m/s for viable system performance.

Average wind speeds for grid ref: TQ2678	
45m above ground level	6.1m/s
25m above ground level	5.6m/s
10m above ground level	4.9m/s

Table 3.G: Average wind speeds available on site.

The urban nature of the site, lack of space and low average wind speeds mean that a wind turbine cannot be recommended as a viable option for this development. There are also general issues surrounding the use of building mounted turbines with the potential for excessive noise & vibration within the building.

As this building is located in an urban location with no spare land in which to locate a large turbine, building mounting would be the only option and is therefore not proposed as a practical solution for this building.

Small Hydro

Hydroelectricity generation uses running water to generate electricity, whether it's a small stream or a larger river. All streams and rivers flow downhill. Before the water flows down the hill, it has potential energy because of its height. Hydro power systems convert this potential energy into kinetic energy in a turbine, which drives a generator to produce electricity. Small, or `micro' hydro generation requires a reliable source of flowing water with a reasonably constant flow velocity. Systems of this nature are normally installed in locations with a natural moving water source such as a river, stream or spring where part of the flow can be diverted through a generator.

There is no such source of flowing water in this case and small hydro generation is not an option for this development.

Solar Water heating

Solar water heating systems use free heat from the sun to warm domestic hot water. Solar hot water heating can generate a large proportion of a dwelling's annual DHW requirement. The displaced fuel would be mains gas meaning that the CO_2 savings of this type of system would be relatively low due to the low carbon intensity of the displaced fuel.

Consequently, solar thermal is not considered to be a suitable system for this development and the roof space would be better used for PV as it offsets electricity meaning the CO_2 saving is considerably more than solar thermal.

Heat Pumps

Heat pumps use similar technology as refrigerators but reversed. A refrigerant liquid is used as a medium to extract heat from a source and convert it into useful heat energy. The heat source used can be generally one of three types; the ground, the air or a body of water. Both ground and water sourced heat pumps use a long circuitous pipe through which a refrigerant is pumped. In ground sourced heat pumps this can be either a coiled pipe or 'slinky' that is buried in a series of horizontal trenches or a loop inside a vertical bore hole to depths that can be up to 200m or deeper. Water sourced heat pumps generally use a similar system to the 'slinky' used for ground sourced systems but either floated on or submerged in a body of water (either a large pool or running water source). Air source heat pumps have a refrigerant coil mounted outside the building through which is passed air so that heat can be extracted. All three types of heat pump generally use the collected heat from the source to heat water. The heated water can then be used for space heating and DHW. Heat pumps require an input of energy to drive pumps, this is usually electricity and so they cannot be considered to be zero carbon unless the supplied electricity is from renewable sources; they do however have very good efficiencies; energy produced by heat pumps is typically in the region of 2.5 times that which is required to run them, giving efficiencies of 250%.

Because the 'fuel' for heat pumps is usually grid supplied electricity there is not necessarily any substantial reduction in carbon emissions when compared to an efficient gas condensing heating system where gas is available on site.

An air to air heat pump is being used for space heating and cooling on the top two floors of this house that helps meet Building Regulations however due to the main heating fuel is gas we are unable to demonstrate any CO_2 savings from this renewable technology.

Bio Energy

The Low Carbon Buildings Programme (LCBP) defines biomass as follows:

"Biomass is often called 'bioenergy' or 'biofuels'. These biofuels are produced from organic materials, either directly from plants or indirectly from industrial, commercial, domestic or agricultural products. Biofuels fall into two main categories:

- *Woody biomass includes forest products, untreated wood products, energy crops, short rotation coppice (SRC), e.g. willow.*
- *Non-woody biomass includes animal waste, industrial and biodegradable municipal products from food processing and high energy crops, e.g. rape, sugar cane, maize."*

For small-scale domestic (and small scale commercial) applications of biomass the fuel usually takes the form of wood pellets, wood chips and logs. The LCBP goes on to state:

"There are two main ways of using biomass to heat a domestic property:

- *Stand-alone stoves providing space heating for a single room. These can be fuelled by logs or pellets but only pellets are suitable for automatic feed. Generally they are 5-11 kW in output, and some models can be fitted with a back boiler to provide water heating.*
- *Boilers connected to central heating and hot water systems. These are suitable for pellets, logs or chips, and are generally larger than 15 kW"*

(http://www.lowcarbonbuildings.org.uk/micro/biomass)

Section 4: Sustainability & Code for Sustainable Homes

Camden Council requires all new dwelling to achieve Code for Sustainable Homes Level 4 certification. A pre-assessment has been completed which confirms an overall score of 70.2% (Level 4) is possible.

	Credit Score	Credits Available	Score Assessment Sub Total	Credits Available	%	Weighting Factor	Points Score
Energy & CO2 Emissions							
ENE 1 Dwelling Emission Rate	4.5	10	15.5	31	50	36.4	18.2
ENE 2 Fabric Energy Efficiency	0	9					
ENE 3 Energy Display Device	2	2					
ENE 4 Drying Space	1	1					
ENE 5 Energy Labelled White Goods	1	2					
ENE 6 External Lighting	2	2					
ENE 7 Low or Zero Carbon Energy Technologies	2	2					
ENE 8 Cycle Storage	2	2					
ENE 9 Home Office	1	1					
Water							
WAT 1 Internal Water Use	4	5	5	6	83.33	9	7.5
WAT 2 External Water Use	1	1					
Materials							
MAT 1 Environmental Impact of Materials	12	15	19	24	79.17	7.2	5.7
MAT 2 Responsible Sourcing (Basic Building Elements)	4	6					
MAT 3 Responsible Sourcing (Finishing Elements)	3	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	8	8	100	6.4	6.4
WAS 2 Construction Site Waste Management	3	3					
WAS 3 Composting	1	1					
Pollution							
POL 1 Global Warming Potential of Insulants	1	1	4	4	100	2.8	2.8
POL 2 NOx Emissions	3	3					
Health & Wellbeing							
HEA 1 Daylighting	2	3	9	12	75	14	10.5
HEA 2 Sound Insulation	3	4					
HEA 3 Private Space	0	1					
HEA 4 Lifetime Homes	4	4					
Management							
MAN 1 Home User Guide	3	3	9	9	100	10	10
MAN 2 Considerate Constructors Scheme	2	2					
MAN 3 Construction Site Impacts	2	2					
MAN 4 Security	2	2					
Ecology							
ECO 1 Ecological Value of Site	1	1	6	9	66.67	12	8
ECO 2 Ecological Enhancement	1	1					
ECO 3 Protection of Ecological Features	1	1					
ECO 4 Change of Ecological Value of Site	3	4					
ECO 5 Building Footprint	0	2					
	Level Achieved: 4		**Total Points Scored: 70.2**				

The Code for Sustainable Homes (CSH) provides an all-round measure of the sustainability of new homes. Nine categories are assessed and credits are scored in each category. Some categories are mandatory however most are optional.

Each category is weighted differently so that, for example, credits gained in Category 1 (Energy & CO_2) are worth more overall percentage points than the credits gained in Category 3 (Materials). Therefore the *Pre Assessment Estimator Tool* should be used to assist in predicting an overall score.

To achieve Code Level 4 a minimum of 68% must be achieved. We highly recommend aiming for more than the minimum points at the Design Stage Assessment to allow for changes during construction.

CSH is a two stage assessment process; *Design Stage Assessment* and *Post Construction Stage Assessment*. Both stages require the collation of evidence (depending on where credits are sought). However many of the Design Stage Assessment issues can be dealt with by a formal letter from the developer giving a specific undertaking.

The Post Construction Stage Assessment normally requires the collation of a significant amount of information to confirm the property complies with CSH requirement in its built form. It should also be remembered that changes in the specification of the development during construction can have an impact on the final Code points achieved.

Relationship between Total percentage points score and Code Level	
Total percentage points score (equal to or greater than)	**Code Levels**
36 Points	Level 1 (*)
48 Points	Level 2 (**)
57 Points	Level 3 (***)
68 Points	Level 4 (****)
84 Points	Level 5 (*****)
90 Points	Level 6 (******)

Total Credits available, Weighting Factors and Points			
Categories of Environmental Impact	**Total credits in each Category**	**Weighting factor (% points contribution)**	**Approximate weighted value of each credit**
Category 1 – Energy and CO_2 Emissions	31	36.4%	1.17
Category 2 – Water	6	9.0%	1.50
Category 3 – Materials	24	7.2%	0.30
Category 4 – Surface Water Run-off	4	2.2%	0.55
Category 5 – Waste	8	6.4%	0.80
Category 6 – Pollution	4	2.8%	0.70
Category 7 – Health and Wellbeing	12	14.0%	1.17
Category 8 – Management	9	10.0%	1.11
Category 9 – Ecology	9	12.0%	1.33
Total	**–**	**100.0%**	**–**

Appendices

Code for Sustainable Homes

TG November 2010 Addendum 2014 EN - Full Technical Guide

Pre-Assessment Report

mes buildingsolutions

Report Reference:	
Site Registration:	
Site Name:	**174 Camden Street**
Assessor Number:	**STRO002281**
Company:	**MES Building Solutions**
Assessor:	**Chris Jones**

THE CODE FOR SUSTAINABLE HOMES

CERTIFICATION MARK

Site Details	
Site Name:	174 Camden Street
Site Registration:	
Site Address:	174 Camden Street
City/Town:	Camden
County:	Greater London
Postcode:	NW1 9HA
No. of Dwellings:	1
No. of Dwelling Types:	0
Planning Authority:	Camden Council
Funding Body:	

Assessor Details	
Company:	MES Building Solutions
Assessor Name:	Chris Jones
Cert Number:	STRO002281
Address:	Newark Beacon Beacon Hill Office Park Cafferata Way
City/Town:	Newark
County:	Nottinghamshire
Postcode:	NG24 2TN
Tel:	01636 653055
Email:	chris.jones@mesenergyservices.co.uk

Client Details	
Company:	
Contact Name:	
Job Title:	
Email:	
Tel:	
Address:	
City/Town:	
County:	
Postcode:	

Architect Details	
Company:	Emrys Architects
Contact Name:	
Job Title:	
Email:	
Tel:	
Address:	9-12 Long Lane
City/Town:	London
County:	
Postcode:	EC1A 9HA

Developer Details	
Company:	
Contact Name:	
Job Title:	
Email:	
Tel:	
Address:	
City/Town:	
County:	
Postcode:	

Dwelling ID	Plot No.	Address	Social Unit
1	1	Pre-Assessment 174 Camden Street	No

Development Summary & Ratings

Dwelling ID	Dwelling Type	Description	Level	Score
		Pre-Assessment174 Camden Street	4	70.2

Deviations from Standard

No deviations from standard

Score Sheet for 174 Camden Street

	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	4.5	0	2	1	1	2	2	2	1	4	1	12	4	3	0	2	4	3	1	1	3	2	3	0	4	3	2	2	2	1	1	1	3	0	70.2	4

Summary Score Sheet

Dwelling Type: Pre-Assessment 174 Camden Street

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	4.5	10	15.5	31	50	36.4	18.2
ENE 2 Fabric Energy Efficiency	0	9					
ENE 3 Energy Display Device	2	2					
ENE 4 Drying Space	1	1					
ENE 5 Energy Labelled White Goods	1	2					
ENE 6 External Lighting	2	2					
ENE 7 Low or Zero Carbon Energy Technologies	2	2					
ENE 8 Cycle Storage	2	2					
ENE 9 Home Office	1	1					
Water							
WAT 1 Internal Water Use	4	5	5	6	83.33	9	7.5
WAT 2 External Water Use	1	1					
Materials							
MAT 1 Environmental Impact of Materials	12	15	19	24	79.17	7.2	5.7
MAT 2 Responsible Sourcing (Basic Building Elements)	4	6					
MAT 3 Responsible Sourcing (Finishing Elements)	3	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	8	8	100	6.4	6.4
WAS 2 Construction Site Waste Management	3	3					
WAS 3 Composting	1	1					
Pollution							
POL 1 Global Warming Potential of Insulants	1	1	4	4	100	2.8	2.8
POL 2 NOx Emissions	3	3					
Health & Wellbeing							
HEA 1 Daylighting	2	3	9	12	75	14	10.5
HEA 2 Sound Insulation	3	4					
HEA 3 Private Space	0	1					
HEA 4 Lifetime Homes	4	4					
Management							
MAN 1 Home User Guide	3	3	9	9	100	10	10
MAN 2 Considerate Constructors Scheme	2	2					
MAN 3 Construction Site Impacts	2	2					
MAN 4 Security	2	2					
Ecology							
ECO 1 Ecological Value of Site	1	1	6	9	66.67	12	8
ECO 2 Ecological Enhancement	1	1					
ECO 3 Protection of Ecological Features	1	1					
ECO 4 Change of Ecological Value of Site	3	4					
ECO 5 Building Footprint	0	2					
	Level Achieved: 4		Total Points Scored: 70.2				

Evidence for ENE 1 (Dwelling Emission Rate)
Improvement above Part L Building Regulations 2010. 4.5 credits allocated
Camden require that all dwellings demonstrate a 40% improvement over 2010 Building Regulations TER. An energy statemetn has been completed demonstrating this.
Assumptions for ENE 1

Evidence for ENE 2 (Fabric Energy Efficiency)
Apartment Detached 0 credits allocated
It is assumed that a FEE adequate to score at least 3 credits will be achieved.
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.
It is likely that Utilities suppliers will provide smart meters for gas and electricity
Assumptions for ENE 3

Evidence for ENE 4 (Drying Space)
Compliant internal drying space
These credits can be achieved by providing means of hanging clothes in the bathroom where there is adequate ventilation to prevent excessive condensation.
Assumptions for ENE 4

Evidence for ENE 5 (Energy Labelled White Goods)
EU energy efficiency labelling scheme leaflet provision/provided
It is assumed that a Home User uide will be provided to satisft MAN1 and that this will contain information on the EU labelling scheme
Assumptions for ENE 5

Evidence for ENE 6 (External Lighting)
Compliant space lighting Compliant security lighting
Low energy external lighting wil be provided. This should be fitted with time or light sensitive switching along with movement sensors on security lighting.
Assumptions for ENE 6

Evidence for ENE 7 (Low or Zero Carbon Energy Technologies)
Contribution of low or zero carbon technologies greater than or equal to 15%
Camden require a 20% contribution from renewable generation. An energy statement has been providied demonstrating how this is to be achieved.
Assumptions for ENE 7

Evidence for ENE 8 (Cycle Storage)
Studio or 1 bedroom dwelling - Storage for 1 cycle per dwelling 2 or 3 bedroom dwelling - Storage for 2 cycles per dwelling
No further notes. Drawings show cycle storage provision.
Assumptions for ENE 8

Evidence for ENE 9 (Home Office)
Compliant home office
It is assumed that home office provision will be located in an appropriate room that recieves adequate daylight and ventilation. two double sockets and a telephone point will be supplied.

Assumptions for ENE 9

Evidence for WAT 1 (Internal Water Use)
Internal water use less than or equal to 90 litres per person per day
it is assumed that low flow taps and showers will be specified along with lower capacity baths and duel flush toilets.
Assumptions for WAT 1

Evidence for WAT 2 (External Water Use)
No communal garden space
No external space is provided.
Assumptions for WAT 2

Evidence for MAT 1 (Environmental Impact of Materials)
Mandatory requirements met: At least 3 elements rated A+ to D, 12 credits scored
It is assumed that specifications wil be used that achieve an A+ to B rating in the BRE Green Guide
Assumptions for MAT 1

Evidence for MAT 2 (Responsible Sourcing (Basic Building Elements))
4 credits scored
Suppliers & manufacturers should be sued who can provide suitable environmental certification for thier products and materials.
Assumptions for MAT 2

Evidence for MAT 3 (Responsible Sourcing (Finishing Elements))
3 credits scored
Suppliers & manufacturers should be sued who can provide suitable environmental certification for thier products and materials.
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
No increase in impermiable area will occure following development, however there will be little or no opportunity to improve surface water drainage as there is no external space.
Assumptions for SUR 1

Evidence for SUR 2 (Flood Risk)
Low flood risk - zone 1
NW1 9PT is in Zone 1 for Flooding and is assumed to have a low risk. a FRA should be completed to confirm this.
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: After collection sorting with appropriate internal storage of recyclable materials
Camden Council opperate a post colection sorted recycling scheme.. Adequate accesible space will be provided for waste & recycling bins.
Assumptions for WAS 1
Camden operate a recycling collection service which is sorted after collection. Adequate accesible space will be provided for waste & recycling bins.

Evidence for WAS 2 (Construction Site Waste Management)
Compliant site waste management plan containing benchmarks, procedures and commitments for the minimizing and diverting 80% waste from landfill in line with the criteria and with Checklist WAS 2a, 2b & 2c
A site waste mangement plan will be implimented which diverts at least 85% of waste from landfill
Assumptions for WAS 2

Evidence for WAS 3 (Composting)
Local authority kitchen waste collection scheme - No Garden
No external space is provided. A local authority Kitchen waste collection service is available which will be used.
Assumptions for WAS 3

Evidence for POL 1 (Global Warming Potential of Insulants)
All insulants have a GWP of less than 5
All insulants which require the use of propellants in their manufacture or installation will have a GWP of less than 5
Assumptions for POL 1

Evidence for POL 2 (NOx Emissions)
NOx emissions less than or equal to 40mg/kWh
A gas boiler will be specified with NOx emissions lower than 40mg/kWh
Assumptions for POL 2

Evidence for HEA 1 (Daylighting)
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 all areas will have 80% of the working plane recieving direct light from the sun. Living rooms and allocated home office space will also achive an ADF of 1.5% or higher.
Assumptions for HEA 1

Evidence for HEA 2 (Sound Insulation)
Robust details have been incorporated Airborne 5dB higher, impact 5dB lower
It is assumed Robust Details will be employed to reduce sound transmission between dwellings.
Assumptions for HEA 2

Evidence for HEA 3 (Private Space)
Credit not sought or no compliant space provided
No private external space is provided for the one bed flat. Both duplex dwellings have external roof space so will score credits in this area.
Assumptions for HEA 3

Evidence for HEA 4 (Lifetime Homes)
All criteria of Lifetime Homes in line with all 16 principals of Lifetime Homes
It is assumed that all dwellings will meet the requirements of Lifetime Homes
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
It is assumed that Home User Guides will be provided to each dwelling containing information on the buildings design & function along with information on local services and details of sustainable living.
Assumptions for MAN 1

Evidence for MAN 2 (Considerate Constructors Scheme)
Considerate constructors scheme: Significantly beyond best practise, a score of between 35 - 50, and at least a score of 7 in each section*
It is assumed the site will be registered with the Considerate Contractors Scheme and achieve a score bwyond best practice.
Assumptions for MAN 2

Evidence for MAN 3 (Construction Site Impacts)
Monitor, report and set targets for CO2 production or energy use from site activities Monitor, report and set targets for water consumption from site activities 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
It is assumed that site energy and water use will be monitored and targets set. Best practice should be employed with regard to air & water pollution.
Assumptions for MAN 3

Evidence for MAN 4 (Security)
Secured by design section 2 compliant
It is assumed that the local police will be consulted and the site built to comply with Secure by Design
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
It is assumed that the site is of low ecological value with no ecological features present.
Assumptions for ECO 1

Evidence for ECO 2 (Ecological Enhancement)
Key recommendations and 30% additional recommendations by a suitably qualified ecologist
It is assumed that an ecologist will be employed and thier recomendations for enhancement implimented.
Assumptions for ECO 2

Evidence for ECO 3 (Protection of Ecological Features)
Land of low ecological value as identified under ECO 1
It is assumed that the site is of low ecological value with no ecological features present.
Assumptions for ECO 3

Evidence for ECO 4 (Change of Ecological Value of Site)
Minor enhancement: Greater than 3 and less than or equal to 9
It is assumed that an ecologist will be employed and thier recomendations for enhancement implimented.
Assumptions for ECO 4

Evidence for ECO 5 (Building Footprint)
Credit not sought

Assumptions for ECO 5

Assessor Declaration

I Chris Jones, 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:

Chris Jones
MES Building Solutions
03 September 2014

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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