Sustainable Design & Construction Statement

Phoenix Road (Cock Tavern)
Camden
NW1 1HB

SEPTEMBER 2014

REPORT REF: SDCS/PR/20140809 - AT

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DOCUMENT CONTROL SHEET

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1. INTRODUCTION

1.1 NRG Consulting has been appointed by Mark Fairhurst Architects to undertake an Energy Statement on a proposed development in Camden.

1.2 The Floor Areas in this report have been taken from the Floor Plans provided by the Architects for the scheme. The scheme comprises of 8 dwellings.

1.3 This document has been produced to satisfy:

- Policy 5.2 of the London Plan.
- Policy CS13 of the Camden Core Strategy
- Policy DP22: Promoting Sustainable Design and Construction of the Camden Local Development Framework

2. POLICY FRAMEWORK

2.1 With 8 residential refurbishment units proposed the development falls within the Government's "minor" category of planning applications.

REGIONAL POLICIES

2.2 The London Plan was updated in July 2011. In this update a change of priority was initiated in that a "fabric first" approach was adopted to ensure that a development was as energy efficient as possible before renewable energy was added. This is in contradiction to the previous London Plan, Policy 4A.7 that promoted renewable energy above all else.

2.3 Policy 5.2 of The London Plan (2011) was updated in April 2014. The updated version states:

A Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1 Be lean: use less energy

2 Be clean: supply energy efficiently

3 Be green: use renewable energy

B The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016:

Residential buildings:

Improvement on Part L 2013 Building Regulations: 2013 - 2016 - **35 percent** (as of 6th April 2014)

C Development proposals should include a detailed energy assessment to demonstrate how the targets for carbon dioxide emissions reduction outlined above are to be met within the framework of the energy hierarchy.

D As a minimum, energy assessments should include the following details:

a. Calculation of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations.

b Proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services

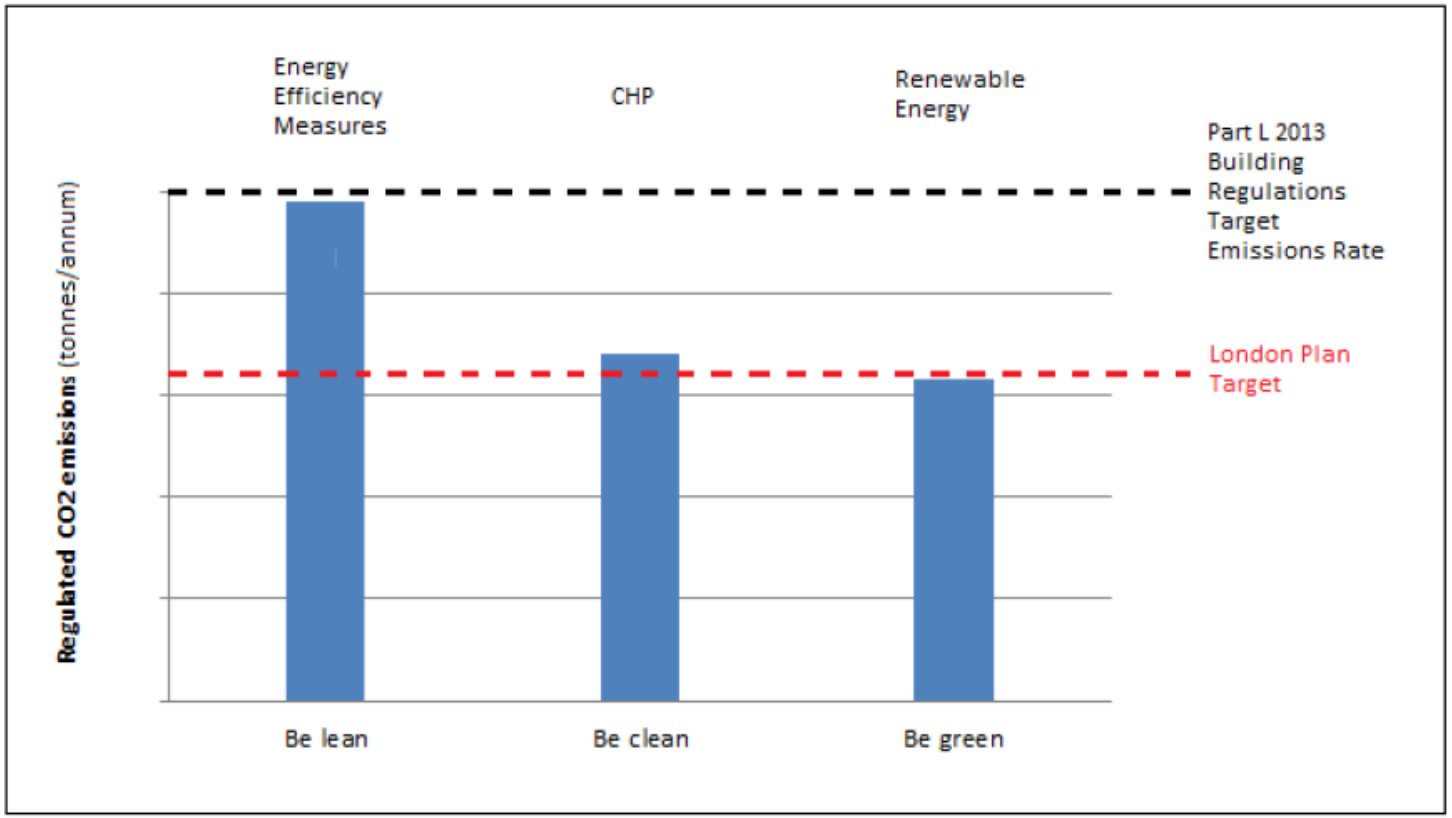
c Proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)

d Proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

2.4 As of 6th April 2014, The London Plan changed the targets required for major developments from 40% reduction in CO_2 emissions over the Part L 2010 baseline to 35% reduction in CO_2 emissions over the Part L 2013 baseline. Text from the GLA Website confirms this saying:

> The GLA provides guidance for developers and their advisers on preparing energy assessments to accompany strategic planning applications. Each assessment is required to demonstrate how the targets for regulated CO_2 emission reduction over and above 2013 Building Regulations will be met using the Mayor's energy hierarchy.
>
> As outlined in the Sustainable, Design and Construction SPG (to be published in April 2014), from 6 April 2014, the Mayor will apply a 35 per cent carbon reduction target beyond Part L 2013 of the Building Regulations - this is deemed to be broadly equivalent to the 40 per cent target beyond Part L 2010 of the Building Regulations, as set out in London Plan Policy 5.2 for 2013-2016. This target will apply to all Stage 1 applications received by the Mayor on or after 6 April 2014.

2.5 A visual representation of the GLA Target in relation to Building Regulations where feasible is:



LOCAL POLICIES

2.6 **London Borough of Camden Core Strategy Policy CS13** states that:

CS13 - Tackling climate change through promoting higher environmental standards

Reducing the effects of and adapting to climate change

The Council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all development to meet the highest feasible environmental standards that are financially viable during construction and occupation by:

a) ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;
b) promoting the efficient use of land and buildings;
c) minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:
   - ensuring developments use less energy,
   - making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;
   - generating renewable energy on-site; and
d) ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions

London Borough of Camden Local Development Framework Policy DP22 states that:

Policy DP22 - Promoting sustainable design and construction

The Council will require development to incorporate sustainable design and construction measures. Schemes must:

a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5 below, have been incorporated into the design and proposed implementation; and
b) incorporate green or brown roofs and green walls wherever suitable.

The Council will promote and measure sustainable design and construction by:

c) expecting new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.
d) expecting developments (except new build) of 500 sq m of residential floorspace or above or 5 or more dwellings to achieve "very good" in EcoHomes assessments prior to 2013 and encouraging "excellent" from 2013;
e) expecting non-domestic developments of 500sqm of floorspace or above to achieve "very good" in BREEAM assessments and "excellent" from 2016 and encouraging zero carbon from 2019.

The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as:

f) summer shading and planting;
g) limiting run-off;
h) reducing water consumption;
i) reducing air pollution; and
j) not locating vulnerable uses in basements in flood-prone areas.

The referenced paragraph 22.5 states that:

22.5 When a building is constructed, the accessibility of its location; its density and mix of uses; its detailed design taking into account the orientation of the site; and the mechanical services and materials chosen can all have a major impact on its energy efficiency. The Council will require all schemes to consider these general sustainable development principles, along with the detailed elements identified in the table below, from the start of the design process. Developments of 5 or more dwellings or 500sqm of any floorspace should address sustainable development principles in their Design

and Access statements or in a separate Energy Efficiency Statement, including how these principles have contributed to reductions in carbon dioxide emissions. When justifying the chosen design with regards to sustainability the following appropriate points must be considered:

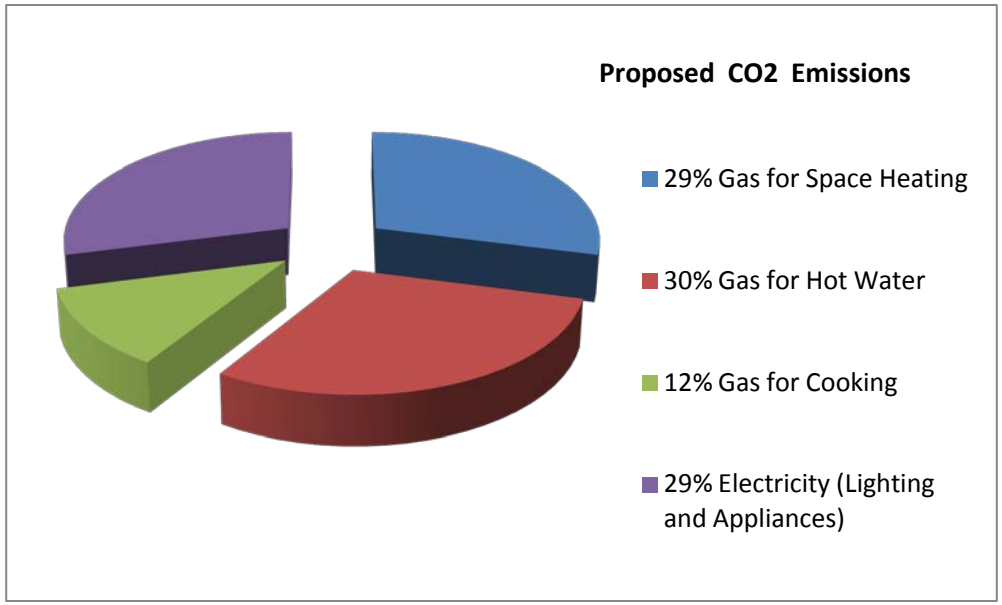
Design	**Fabric/ Services**
• the layout of uses • floorplates size/depth • floor to ceiling heights • location, size and depth of windows • limiting excessive solar gain • reducing the need for artificial lighting • shading methods, both on or around the building • optimising natural ventilation • design for and inclusion of renewable energy technology • impact on existing renewable and low carbon technologies in the area • sustainable urban drainage, including provision of a green or brown roof • adequate storage space for recyclable material, composting where possible • bicycle storage • measures to adapt to climate change (see below) • impact on microclimate	• level of insulation • choice of materials, including - responsible sourcing, re-use and recycled content • air tightness • efficient heating, cooling and lighting systems • effective building management system • the source of energy used • metering • counteracting the heat expelled from plant equipment • enhancement of / provision for biodiversity • efficient water use • re-use of water • educational elements, for example visible meters • on-going management and review

Therefore, this document will demonstrate how the development is designed and constructed in a sustainable way. A BREEAM Domestic Refurbishment Assessment has also been undertaken and is available under a separate cover.

3. PREDICTED ANNUAL CARBON DIOXIDE EMISSIONS

3.1 Full SAP calculations have been carried out on all refurbishment dwellings using the NHER Plan Assessor Version 6.0.1 (SAP v9.92) to gain the regulated emissions for the site. A licensed and OCDEA accredited SAP Assessor has carried out the calculations.

3.2 Typical CO_2 emissions for housing developments is broken down as follows



3.3 A table can be found in the Appendices which:

- Sets out the floor area of the dwellings,
- Shows the Target Emission Rate (TER) and Dwelling Emission Rate (DER) in terms of kg/m^2/year
- Highlights the percentage difference between the DER over the TER.
- Displays the CO_2 saved through the proposed use of energy efficient measures.

3.4 Based upon the figures as set out in the Appendices, with a total gross internal floor area of **547m^2,** the development has a baseline production of **9.5 tonnes CO_2/year.**

3.5

	CO_2 Emissions - (Tonnes per Annum)
	Regulated
Baseline: Part L 2013 of the Building Regulations Compliant Development (TER)	**9.5**
Proposed Development (DER)	
After Decentralised/CHP Feasibility	
After Renewable Energy	

4. ENERGY EFFICIENT DESIGN MEASURES

4.1 Construction Details have been selected to ensure that all fabric U-values exceed the requirements of Part L of the Building Regulations (2013). The proposed construction details for the refurbishment dwellings are as follows:

Elements	U Value	Further Information / Comment
Floor	n/a	Assumed heated space below
External Walls	0.28 w/m2/k	
Party Walls Between Dwellings	0 w/m2/k	
Roof	0.13 w/m2/k	
Roof (pitched)	0.16 w/m2/k	
Windows	1.4 w/m2/k	
Door	1 w/m2/k	
Rooflights	1.6 w/m2/k	
Air Permeability	Not required	Refurbishment
Ventilation	Natural	
Heating	Gas Boiler	Regular Combi Boilers – Mains Gas - 88% SEDBUK 2009 efficiency
Controls	Programmer, Room Thermostats & TRV's	Delayed Start Thermostat assumed.
Emitters	Radiators	Above 45 degree temperature assumed.
Thermal Bridging	Not applicable (existing building)	
Low Energy Lighting	100%	Low Energy **Bulbs** with a minimum luminous efficacy of greater than 45 lumens per circuit watt required.

4.3 The U-Values of all glazed elements will exceed Building Regulations standards, and incorporate low emissivity coating, resulting in an efficient balance between passive solar gain and the thermal losses from each room.

Daylight levels are high throughout and are supplemented with low energy light bulbs. The orientation of the building reduces peak solar gain while ensuring optimum levels of daylight both morning and evening.

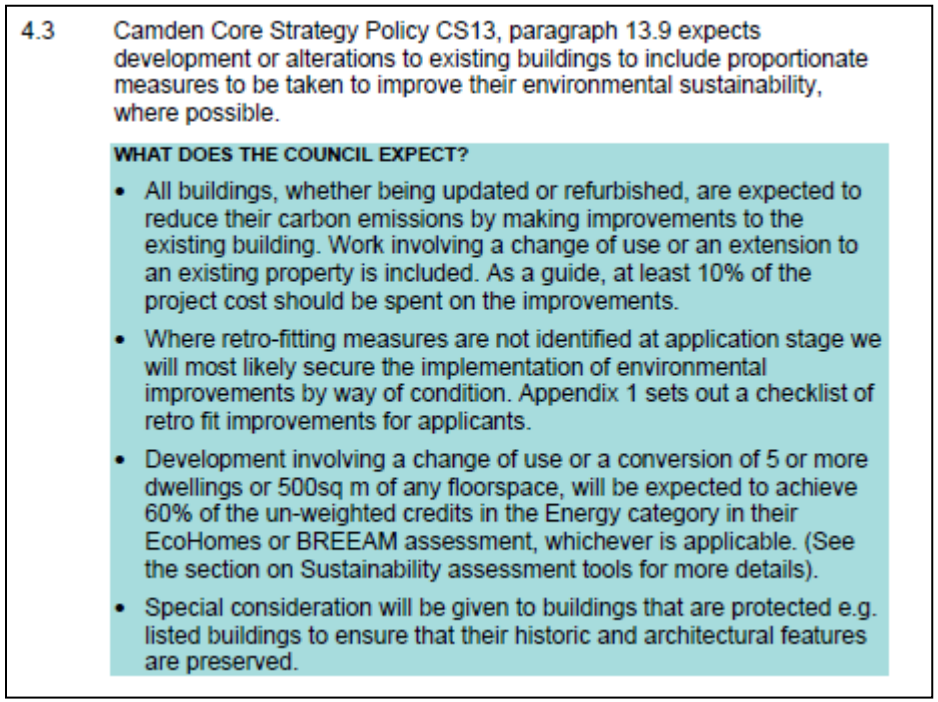
4.4 When taking into account proposed construction details and U Values, but excluding the imposition of renewable energy technologies gives the development emissions of **19.1 tonnes CO_2/year**; a **102.3%** increase in CO_2 emissions over the Part L 2013 baseline.

	CO_2 Emissions - (Tonnes per Annum)
	Regulated
Baseline: Part L 2013 of the Building Regulations Compliant Development (TER)	**9.5**
Proposed Development (DER)	**19.1**
After Decentralised/CHP Feasibility	
After Renewable Energy	

This increase comes despite every reasonable measure being taken to decrease emissions through proposed efficiency measures.

The April 2013 GLA Guidance states that a Part L 2013 pass must be achieved through energy efficiency measures only, and before the inclusion of renewable technology. Unfortunately this has not been possible on this development, mainly due to the fact that both Accredited Details and Air Pressure Testing cannot be included on a conversion, both of which affect the DER significantly.

In addition, the building is Grade 2 Listed, making many alterations impossible to implement. **Camden Core Strategy policy CS13 (paragraph 13.9)** includes the following guidance with regards to a Listen Building:



4.3 Camden Core Strategy Policy CS13, paragraph 13.9 expects development or alterations to existing buildings to include proportionate measures to be taken to improve their environmental sustainability, where possible.

WHAT DOES THE COUNCIL EXPECT?

- All buildings, whether being updated or refurbished, are expected to reduce their carbon emissions by making improvements to the existing building. Work involving a change of use or an extension to an existing property is included. As a guide, at least 10% of the project cost should be spent on the improvements.
- Where retro-fitting measures are not identified at application stage we will most likely secure the implementation of environmental improvements by way of condition. Appendix 1 sets out a checklist of retro fit improvements for applicants.
- Development involving a change of use or a conversion of 5 or more dwellings or 500sq m of any floorspace, will be expected to achieve 60% of the un-weighted credits in the Energy category in their EcoHomes or BREEAM assessment, whichever is applicable. (See the section on Sustainability assessment tools for more details).
- Special consideration will be given to buildings that are protected e.g. listed buildings to ensure that their historic and architectural features are preserved.

Due to the building's Listed status, the "proportionate measure" available on this development are very limited. The original specification for the unaltered building is as follows:

Elements	U Value	Further Information / Comment
Existing external walls	1.54 w/m2/k	350mm brick walls with no insulation
Party Walls Between Dwellings	0 w/m2/k	
Corridor walls (existing)	0.67 w/m2/k	Timber lath and plaster
Upper floors (corridor below)	0.25 w/m2/k	Assumed
Roof (insulation at joists)	2.3 w/m2/k	No insulation
Windows	4.8 w/m2/k	Single glazing
Doors (existing)	1.6 w/m2/k	Wood framed
Air Permeability	n/a	Refurbishment project
Ventilation	System 1	Natural ventilation with intermittent extract fans
Heating	Gas Boiler	Information not available
Controls	Programmer, room thermostat and TRVs	
Emitters	Radiators	
Thermal Bridging	n/a	Refurbishment project
Low Energy Lighting	0%	Low Energy **Bulbs** with a minimum luminous efficacy of greater than 45 lumens per circuit watt required.

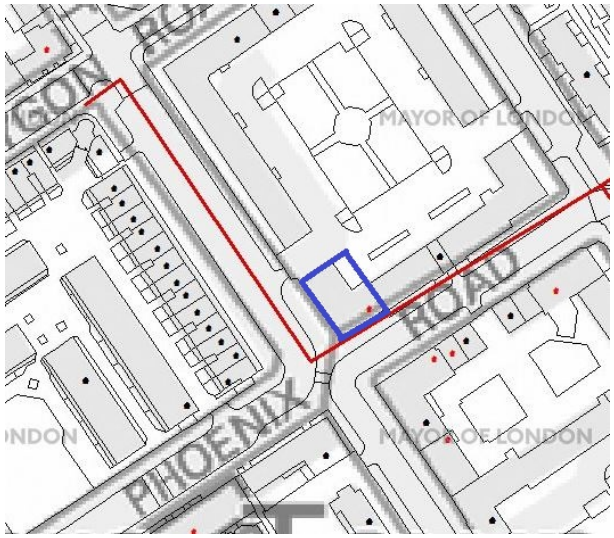
As can be seen, all "proportionate measures" have been taken based on the original specification of the building.

5. FEASIBILITY OF RENEWABLE ENERGY

Decentralised Energy

5.1.1 Pursuant to Policy 5.5 of the London Plan, to the knowledge of the authors, there are no existing large scale CCHP/CHP distribution networks to connect into for the development.

5.1.2 The London Heat Map has been checked and no viable local connections are available. The BLUE shape in the centre of the Picture is the Site. The Map picture is:



The red line is a planned District heating Network which does not exist yet. When completed it will still not be a viable option as this scheme comprises of a small number of individually heated units.

Communal Heat and Power

5.2 A CHP is not a feasible technology for the development due to the number of units as per the latest GLA Guidance (April 2014):

"By way of general guidance, it is not expected that small purely residential developments (for example, less than 300 dwellings) include on-site CHP. Due to the small landlord electricity supplies, CHP installed to meet the base heat load would require the export of electricity to the grid. It is recognised that the administrative burden of managing CH electricity sales at this small scale, where energy services companies (EXCOs) are generally not active, is too great for operators of residential developments to bear. If CHP is installed but does not operate because arrangements for CHP electricity sales are not concluded, the projected CO2 savings will not materialise."

5.3 Therefore it has been proposed that the scheme reverts to high efficiency Gas boilers. These systems will be complemented with modern controls to reduce the bills of the tenants to the lowest possible level.

5.4 The potential renewable energy applicable to this development is:

- Solar PV
- Solar Hot Water
- Ground Source Heat Pump
- Air Source Heat Pump
- Biomass Boilers

The feasibility of these items is investigated below:

5.3 Photovoltaic Panels

Advantages	Disadvantages	Overall Feasibility
Can have significant impact on carbon by offsetting electricity which has a high carbon footprint. Low maintenance No noise issues associated with PV No additional land use from the installation of PV panels	High capital investment required Needs unobstructed space on roof	The development incorporates a pitched roof which is perfectly suited to PV. However as the development is a Grade II Listed Building it is not feasible to install PV on the roof; therefore this option has been discarded

5.4 Solar Thermal Collectors

Advantages	Disadvantages	Feasibility
No noise issues associated with Solar thermal collectors No additional land use from the installation of solar thermal collectors Low maintenance and easy to manage Low capital cost	The hot water cylinder will need to be larger than a traditional cylinder. Consideration will need to be given to the space required especially as combination boilers are planned. Needs unobstructed space on roof.	Solar thermal collectors are feasible for the development, although it is not possible to meet a 25% carbon saving as the maximum demand that solar thermal collectors can be designed to meet can be no greater than 50% of the hot water demand. In addition the same concerns regarding the listed status of the building apply. Solar thermal collectors have therefore not been investigated further.

5.5 Biomass Heating

Advantages	Disadvantages	Feasibility
Potential to reduce large component of the total CO_2 A biomass boiler would replace a standard gas heating system so some of the cost may be offset through money saved on a traditional boiler.	Regular maintenance will be required Reliability of fuel may become a problem, therefore limited cost saving for residents A plant room and fuel store will be required which may take additional land from the proposed development or surroundings The fuel will need to be delivered, which can cause issues with access etc. Biomass is often not a favoured technology in new development due to the potential local impacts of NOx emissions and delivery vehicles.	This is a small tight site in an urban area. Biomass is not considered feasible for such a development due to the need for space to accommodate fuel storages, access for delivery vehicles and local NO_x emissions.

5.6 Ground Source Heat Pumps

Advantages	Disadvantages	Feasibility
Low maintenance and easy to manage Optimum efficiency with under- floor heating systems As heat pumps would replace standard heating systems, some of the cost may offset through money saved on a traditional boiler.	The heat pump has a noise level around 45-60dB so some attenuation may be required and it should be sensibly located Relatively high capital cost Requires electricity to run the pump, therefore limited carbon savings in most cases For communal systems plant room required which may take additional land from the proposed development/surroundings High payback.	Limited Space on site and large communal infrastructure needed would remove and reduce amenity space. For this reason, GSHP has not been investigated further.

5.7 Air Source Heat Pumps

Advantages	Disadvantages	Feasibility
ASHP systems are generally cheaper than ground source as there is no requirement for long lengths of buried piping. Low maintenance and easy to manage Optimum efficiency with under- floor heating systems As heat pumps would replace standard heating systems, some of the cost may offset through money saved on a traditional boiler.	The heat pump has a noise level around 50-60dB so some attenuation may be required and it should be sensibly located. The potential noise from the external unit may mean there is local opposition to their installation. Requires electricity to run the pump, therefore limited carbon savings in most cases For communal systems plant room required which may take additional land from the proposed development/surroundings Potential noise issues	With the cost of electricity increasing, the payback of ASHPs may be too great

6. RENEWABLE ENERGY MEASURES

6.1 Following the above feasibility, there is no feasible renewable technology for this development, and therefore none has been recommended for installation.

	CO_2 Emissions - (Tonnes per Annum)
	Regulated
Part L 2013 Baseline (TER)	**9.5**
Proposed Development (DER)	**19.1**
Reduction via Energy Efficiency	**0**
Amount Offset by Renewable Energy	**0**
Final CO_2 Emissions after Renewable Energy	**19.1**

7. WATER EFFICIENCY & RECYCLING

7.1 This development will meet and exceed a water efficiency target of 105 ltrs/person/day in line with Part G of the Building Regulations:

	House Type:	Type 1	
	Description:	Phoenix Road	
Installation Type	Unit of measure	Capacity/ flow rate	Litres/ person/ day
Is a dual or single flush WC specified?		Dual	
WC	Full flush volume	6	8.76
	Part flush volume	4	11.84
Taps (excluding kitchen and external taps)	Flow rate (litres / minute)	6	11.06
Are both a Bath & Shower Present?		Bath & Shower	
Bath	Capacity to overflow	156	17.16
Shower	Flow rate (litres / minute)	7	30.59
Kitchen sink taps	Flow rate (litres / minute)	8	13.88
Has a washing machine been specified?		No	
Washing Machine	Litres / kg	0	17.16
Has a dishwasher been specified?		No	
Dishwasher	Litres / place setting	0	4.50
Has a waste disposal unit been specified?		No	0.00
Water Softener	Litres / person / day	0	0.00
		Calculated Use	114.9
		Normalisation factor	0.91
Code for Sustainable Homes		Total Consumption	104.6
		Mandatory level	Level 3/4
Building Regulations 17.K		External use	5.0
		Total Consumption	109.6
		17.K Compliance?	Yes

For full Part G compliance document visit here: www.planningportal.gov.uk/uploads/br/**water_efficiency_calculator**.pdf

a. WCs

i. Flushing capacity for the WC suite including consumption at full and part flush for dual flush WCs.

b. Taps

i. Flow rate of each tap, at full flow rate in litres per minute measured at a dynamic pressure of 3±0.2 bar (0.3±0.02 MPa) for high pressure (Type 1) taps, or at a dynamic pressure of 0.1±0.02 bar (0.01±0.002 MPa) for low pressure (Type 2) taps (BS EN 200:2008)

ii. For 'click taps' and other taps with a 'water break', the manufacturer's stated full flow rate should be used to perform calculations (measured as described above). Do not use the flow rate at the break point. A factor for percentage of flow rate is already assumed within the use factor for taps.

iii. Taps on baths should not be included in the calculation as the water consumption from bath taps is taken account of in the use factor for baths.

c. Baths

i. Total capacity of the bath to overflow, in litres (excluding displacement, this is already included in the use factor for baths).

d. Showers

i. Flow rate of each shower at the outlet using cold water (T ≤ 30˚ C), in litres per minute measured at a dynamic pressure of 3±0.2 bar (0.3±0.02 MPa) or high pressure (Type 1) supply systems, or at a dynamic pressure of 0.1±0.05 bar (0.01±0.005 MPa) for low pressure (Type 2) supply systems (BS EN 1112:2008)

e Dishwashers

i. Litres per place setting derived from the figures quoted on the EU Energy Label.

ii. Where no dishwasher is to be provided and therefore consumption figures are unknown, a figure of 1.25 litres per place setting must be assumed.

f. Washing machines

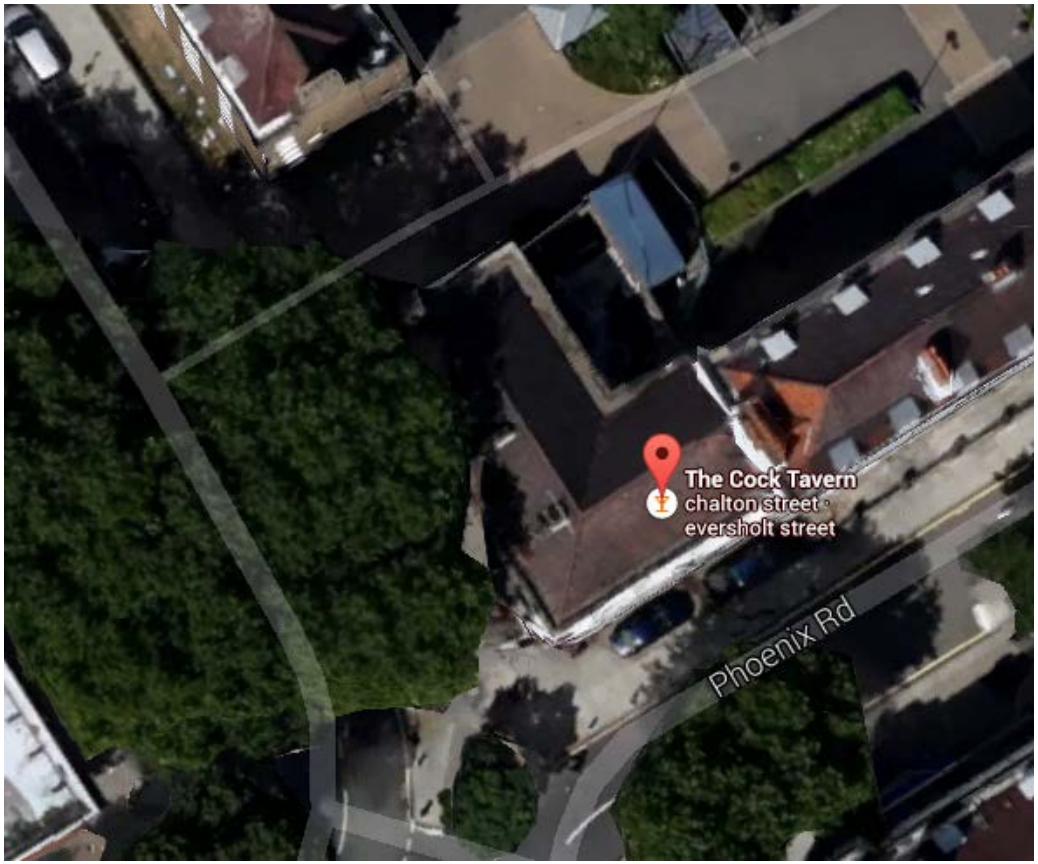
i. Litres per kilogram of dry load derived from the figure quoted on the EU Energy Label.

ii. Where no washing machine is to be provided and therefore consumption figures are unknown, a figure of 8.17 litres per kilogram must be assumed.

7.2 Rainwater Harvesting has been considered but is not a practical measure due to the tight, urban Site which does not offer sufficient space to install the required systems.

8. BIODIVERSITY & ADAPTION TO CLIMATE CHANGE

8.1 The development is a refurbishment of a pre-existing property (a Public House) which does not include any features of ecological value which would need protecting during construction:



8.2 Efforts can be made to improve the ecological value of the development through the installation of bird or bat boxes on the finished dwelling and the planting of bee friendly flowers where possible.

8.3 There is, unfortunately, little or no soft landscaping which can be utilised, but the development as a whole will have a neutral impact on the ecological value of the Site.

8.4 As a further consequence of the development being a refurbishment rather than a new build, the existing surface water run-off levels will not be increased as the footprint of the building is not changing. As with the Ecology considerations, the position of the Site, and the fact that the footprint of the existing building is not changing, means that the run-off levels cannot actually be reduced through soft landscaping, a green roof, or more permeable paving.

Appendix 1

Carbon Emissions - Phoenix Road (Cock Tavern)

1	2	3		4	5	6
PLOT	AREA	TER		Regulated Part L	DER (or BER)	Total
				Baseline		$kg/CO_2/yr$
						Regulated Only
		$kg/CO_2/m2/yr$		$kg/CO_2/yr$	$kg/CO_2/m2/yr$	
1	46.00	18.70		860	40.38	1,857
2	67.00	14.83		994	32.41	2,171
3	90.00	17.13		1,542	40.36	3,632
4	45.97	19.90		915	45.62	2,097
5	66.00	15.49		1,022	34.27	2,262
6	92.00	17.46		1,606	41.01	3,773
7	69.00	17.27		1,192	22.86	1,577
8	71.00	18.64		1,323	24.68	1,752
Total	**546.97**			**9,454**		**19,123**
Total Residential (m2)	547			**1m2 TER**		**1m2 DER**
				17.28		***34.96***
Total Site (m2)	**547**		**TOTAL TER CO2**	**9,454**	**TOTAL DER CO2**	**19,123**

	Multiple TER	9,454	$kg/CO_2/yr$
	Multiple DER	19,123	$kg/CO_2/yr$

Appendix 2

Data Input Report
Design - Draft

This design submission has been carried out using Approved SAP software. It has been prepared from plans and specifications and may not reflect the property as constructed.

Assessor name	Mr Neil Rothon	Assessor number	4282
Client		Last modified	15/08/2014
Address	4 Cock Tavern, 23 Phoenix Road, London, NW1		

Dwelling

Development:		House type:	
Property type:	Flat		
Flat type:	Mid floor	Year built:	1930
Tariff:	Standard	Assess summer overheating:	Yes
Thermal mass:	Medium	Thermal mass parameter:	250.00
Separated heated conservatory:	No	Degree day region:	Thames
Sheltered sides:	2	Terrain:	Dense Urban

Storeys:

Name	Area (m²)	Height (m)
Lowest occupied	45.97	2.50

Floors

Ref - Name	Type	Construction	Storey Location	Living Area (m²)	Area (m²)	U-value (W/m²K)
Floor 1 - corridor below	Upper	Solid	Lowest occupied	0.00	3.00	0.20

Living area that has no heat loss: 37.80

Walls

Ref - Name	Type	Construction	Gross Area (m²)	U-value (W/m²K)
Wall 1 - external wall	External	Brick	32.13	1.54
Wall 2 - party wall	Party	Solid	15.00	0.00
Wall 3 - sheltered wall	Sheltered	Brick	29.13	0.67

Roofs

Ref - Name	Construction	Gross Area (m²)	U-value (W/m²K)
Roof 1 - Roof	Flat	12.16	0.35

Openings

Opening Ref: 1 Door to corridor, N/A, ' N/A', master: No, linked to: 0

Location:	Wall 3	Source:	From Manufacturer	Orientation:	North East
Overshading:	N/A	Width (m):	0.90	Height (m):	2.10
Frame:	Wood	Transmittance factor:	N/A	U-value (W/m²K):	1.40

Opening Ref: 2 Window, Single glazed, ' N/A', master: Yes, linked to: 0

Location:	Wall 1	Source:	From Manufacturer	Orientation:	South West
Overshading:	Average / Unknown	Width (m):	0.85	Height (m):	1.70
Frame:	Wood	Transmittance factor:	0.85	U-value (W/m²K):	4.80

Opening Ref: 3 Window, Single glazed, ' N/A', master: No, linked to: 2

Location:	Wall 1	Source:	From Manufacturer	Orientation:	South West
Overshading:	Average / Unknown	Width (m):	0.90	Height (m):	1.70
Frame:	Wood	Transmittance factor:	0.85	U-value (W/m²K):	4.80

Opening Ref: 4 Window, Single glazed, ' N/A', master: No, linked to: 2

Location:	Wall 1	Source:	From Manufacturer	Orientation:	South West
Overshading:	Average / Unknown	Width (m):	1.15	Height (m):	1.70
Frame:	Wood	Transmittance factor:	0.85	U-value (W/m²K):	4.80

Thermal Bridging

Thermal bridge specification:	Default y value	y-value:	0.15

Ventilation

Air permeability entered:	No	Draught lobby:	N/A

Number of...	Open fireplaces	Open flues	Flueless gas fires	Extract fans	Passive vents
	0	0	0	2	0

Mechanical ventilation: Not present (natural)

Space heating

Main heating category:	Individual system/s	Number of systems:	1
Secondary heating:	No	Open flue or chimney:	No
Unconnected gas point:	N/A	Smoke control area:	Not Known
Type:	Boiler	Efficiency source:	2009 winter summer SEDBUK
Product index:	N/A		
Product details:	N/A N/A N/A		
Boiler type:	N/A	Fuel:	Mains gas
Condensing:	Yes	Flue type:	Balanced
Fan assisted flue:	No		
Combi type:	Instantaneous	Uses electricity:	N/A
Keep hot power rating:	N/A		
System:	Condensing combi with automatic ignition (1998 or later)		
Controls:	Programmer, room thermostat and TRVs		
Interlock:	No	Delayed start thermostat:	No
Compensation:	None	Burner control:	Modulating
Emitter:	Radiators	Pump in heated space:	Yes
Flow Temp:	Unknown		
Installed 2013 or later:	Yes		
Efficiency Type:	2009 SEDBUK	Efficiency (%):	88.00
Manufacturer efficiency description:	w		
FGHRS:	No		

Water heating

Type:	From main	Fuel:	Mains gas
Water separately timed:	N/A	Water use ≤125 litres/person/day:	Yes
Heat pump uses immersion:	N/A	Summer immersion:	N/A
Thermal store type:	N/A		

Store details:

Cylinder volume (litres):	N/A		
Thermostat:	N/A	In heated space:	N/A
Primary pipework insulated:	N/A		

WWHRS:

WWHRS: N/A

Renewables

No renewables present

Other

Internal lighting

Standard fittings:	1	Low energy fittings:	5	Total fittings:	6

Summer overheating

Thermal mass parameter (TMP): 250.00

User defined air change rate:	No	Air change rate (ach):	N/A
Cross ventilation on most floors:	No	Window ventilation:	Fully open
Source of user defined values:	N/A		
Curtains closed in daylight hours:	No	Fraction curtains closed:	N/A
Blind/curtain type:	N/A		

Special features (Appendix Q)

No Appendix Q special features present

Cooling details

No space cooling present

L1A 2013 - Regulations Compliance Report
Design - Draft

This design draft submission provides evidence towards compliance with Part L of the Building Regulations, in accordance with Appendix A of AD L1A. It has been carried out using Approved SAP software. It has been prepared from plans and specifications and may not reflect the 'as built' property. This report covers only items included within the SAP and is not a complete report of regulations compliance.

Assessor name	Mr Neil Rothon	Assessor number	4282
Client		Last modified	15/08/2014
Address	4 Cock Tavern, 23 Phoenix Road, London, NW1		

Check	Evidence	Produced by	OK?
Criterion 1: predicted carbon dioxide emission from proposed dwelling does not exceed the target			
TER (kg $CO_2/m^2.a$)	Fuel = N/A Fuel factor = 1.00 TER = 19.90	Authorised SAP Assessor	
DER for dwelling as designed (kg $CO_2/m^2.a$)	DER = 45.62	Authorised SAP Assessor	
Are emissions from dwelling as designed less than or equal to the target?	DER 45.62 > TER 19.90 Excess emissions = 25.72 kg/m² (129.25%)	Authorised SAP Assessor	Failed
Is the fabric energy efficiency of the dwellling as designed less than or equal to the target?	DFEE 133.90 > TFEE 43.79 Variance = 90.11 kWh/m² (205.78%)	Authorised SAP Assessor	Failed
Criterion 2: the performance of the building fabric and the heating, hot water and fixed lighting systems should be no worse than the design limits			
Fabric U-values			
Are all U-values better than the design limits in Table 2?	**Element** / **Weighted average** / **Highest** Wall / 1.10 (max 0.30) / 1.54 (max 0.70) Party wall / 0.00 (max 0.20) / N/A Floor / 0.20 (max 0.25) / 0.20 (max 0.70) Roof / 0.35 (max 0.20) / 0.35 (max 0.35) Openings / 3.86 (max 2.00) / 4.80 (max 3.30)	Authorised SAP Assessor	Failed
Thermal bridging			
How has the loss from thermal bridges been calculated?	Thermal bridging calculated using default y-value of 0.15	Authorised SAP Assessor	
Heating and hot water systems			
Does the efficiency of the heating systems meet the minimum value set out in the Domestic Heating Compliance Guide?	Main heating system: Mains gas, Combi boiler w Data from manufacturer Efficiency = 88.00% 2009 SEDBUK Minimum = 88.00% Secondary heating system: None	Authorised SAP Assessor	Passed
Does the insulation of the hot water cylinder meet the standards set out in the Domestic Heating Compliance Guide?	No hot water cylinder	Authorised SAP Assessor	
Do controls meet the minimum controls provision set out in the Domestic Heating Compliance Guide?	Space heating control: Programmer, room thermostat and TRVs Hot water control: No hot water cylinder No boiler interlock (main system 1)	Authorised SAP Assessor	Failed

Check	Evidence	Produced by	OK?
Fixed internal lighting			
Does fixed internal lighting comply with paragraphs 42 to 44?	Schedule of installed fixed internal lighting Standard lights = 1 Low energy lights = 5 Percentage of low energy lights = 83% Minimum = 75 %	Authorised SAP Assessor	Passed
Criterion 3: the dwelling has appropriate passive control measures to limit solar gains			
Does the dwelling have a strong tendency to high summertime temperatures?	Overheating risk (June) = Not significant Overheating risk (July) = Not significant Overheating risk (August) = Not significant Region = Thames Thermal mass parameter = 250.00 Ventilation rate in hot weather = 4.00 ach Blinds/curtains = None	Authorised SAP Assessor	Passed
Criterion 4: the performance of the dwelling, as designed, is consistent with the DER			
Design air permeability ($m^3/(h.m^2)$ at 50Pa)	No air permeability rate entered	Authorised SAP Assessor	
Mechanical ventilation system Specific fan power (SFP)	Not applicable	Authorised SAP Assessor	
Have the key features of the design been included (or bettered) in practice?	The following walls/wall have a U-value less than $0.15W/m^2K$: • party wall (0.00)	Authorised SAP Assessor	