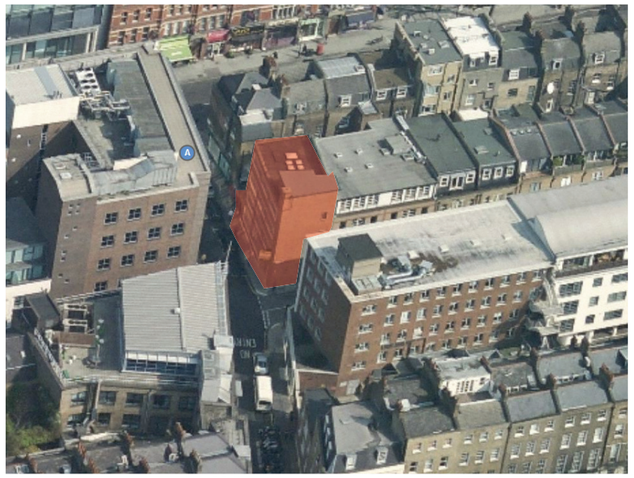
14 Roger Street
London
WC1N 2JU

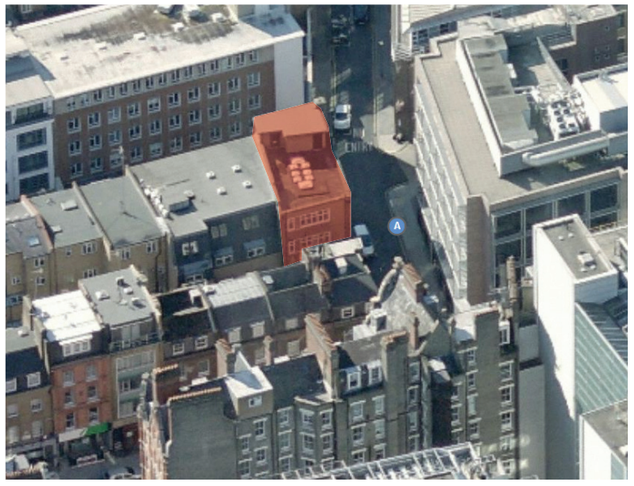
12076

Sustainability Statement

April 2013



14 Roger Street and Surroundings
Aerial View 01
(Site highlighted in red)



14 Roger Street and Surroundings
Aerial View 02
(Site highlighted in red)

1.1 EXECUTIVE SUMMARY

Marek Wojciechowski Architects have prepared this statement to set out the design process for sustainabiltiy proposals for the conversion and extension/alteration of for the property at 14 Roger Street, London, WC1N 2JU.

Low environmental impact is be an essential feature of the design of the proposed redevelopment.

This Statement outlines the development's approach to sustainability, energy efficiency and renewable energy strategies in order to meet the targets set out in the guidance documentation from Camden Council.

To guide and benchmark this process, the BREEAM Domestic Refurbishment Preliminary Assessment methodology has been used to assess the development.

The BREEAM Domestic Refurbishment Assessment 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 development is predicted to achieve an 'Excellent' rating. Refer to the accompanying document - '14 Roger Street BREEAM Domestic Refurbishment Preliminary Assessment'.

1.2 SUMMARY OF CONSIDERATIONS

The following is a summary of the design considerations taken into review when considering the refurbishment proposals

- Thermal insulation levels for all the existing building elements will be increased to new build standards, thereby substantially reducing the building's heat losses

- The dwellings will be naturally ventilated, removing the need for comfort cooling and mechanical ventilation systems

- Natural day lighting will improve occupancy comfort and reduce the requirement for artificial lighting

- The London heat map indicates that there is currently no opportunities to connected to an existing or proposed district heating network

- A extensive range of low and zero carbon technologies have been considered in terms of providing a proportion of the development's energy demand. The results indicated that due to design, planning and operational reasons, none of the investigated technologies are viable for meet a proportion of the building's energy demands.

- The combination of proposed energy efficient measures result in a reduction in CO2 emission of 25% as set out in the developments requirements for the BREEAM 'Excellent' rating .

- The existing building's structure and part of the front and rear façades will be retained and re-used.

- All timber used on site will be purchased from responsibly sources such as FSC approved vendors.

- New materials will be selected to take into account their overall environmental impacts.

- Recycling facilities will be provided for all occupants to reduce waste during operation.

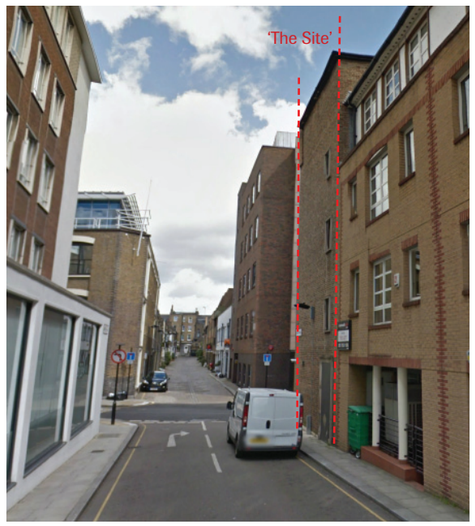
- Secure, convenient & weather-proof communal cycle storage spaces will be provided for the residence and its occupants.

- Water use will be minimised by the specification of water efficient taps, shower heads, dual flush toilets and low water use appliances.

- All construction on site will be managed in an environmentally sound manner in terms of resource use, storage, waste management, and potential sources of nuisance or pollution in accordance with the measures set out in a construction management plan prior to the commencement of works.

Front Elevation
As Viewed from
North Mews

14 Roger Street
As Viewed from
Roger Street



14 Roger Street
As Viewed from
North Mews

APPROXIMATE NET INTERNAL AREAS - FLATS

	Type (based on Camden Council Standards)	Level	Proposed Areas*
Flat 01	2 Bed, 4-person Duplex	Lower Ground Floor	40.6 sqm / 437 sqft
		Ground Floor	37.7 sqm / 405 sqft
		Total	**78.3sqm / 842sqft**
Flat 02	2 Bed, 4-person Duplex	Basement	44.9 sqm / 483 sqft
		Ground Floor	29.9 sqm / 321 sqft
		Total	**74.8sqm / 794sqft**
Flat 03	2 Bed, 4 person	First Floor	75.6 sqm / 813 sqft
Flat 04	2 Bed, 4 person	Second Floor	75.6 sqm / 813 sqft
Flat 05	1 Bed, 2 person	Third Floor	53 sqm / 570 sqft
Flat 06	3 Bed, 5 person Duplex	Third Floor	24.4 sqm / 262 sqft
		Fourth Floor	80.8 sqm / 869 sqft
		Total	**105.2sqm / 1,132sqft**

Proposed Area
Schedule for 14
Roger Street

2.1 Introduction to the Development

This Sustainability Statement has been prepared in support of the planning application for the proposed residential redevelopment at 14 Roger Street.

It aims to meet the energy and climate change requirements of Camden Council and the Greater London Authority.

The format of the statement is intended to reflect and respond to the issues raised in the GLA's 'Spatial Development Strategy for Greater London' - the 'London Plan'.

The principal objectives are to reduce the site's contribution to the causes of climate change by minimising the emissions of CO2, by reducing the site's needs for energy and providing some of the requirement by renewable/sustainable means.

Issues such as water, waste, biodiversity, etc. have also been addressed in the analysis.

To guide and benchmark this process, the BREEAM Domestic Refurbishment Preliminary Assessment methodology has been used to assess the development.

A preliminary assessment indicating that as a minimum an 'Excellent' rating will be achieved. BREEAM considers the broad environmental concerns of climate change, pollution, impact on residents and the wider community.

It balances these with the need for high-quality, safe and healthy internal living and working environment. These standards go beyond the requirements of the Building Regulations.

This Sustainability Statement forms a checklist of the sustainable initiatives considered for the proposed development. Each of the proposed initiatives is assessed on the relative sustainability potential.

2.2 Outline Description of Development

The proposals for the redevelopment of 14 Roger Street will constitute a Material Change of Use from an office building to six new residential flats. 1 no. 1 bedroom, 1 no. 3 bedroom and 4 no. 2 bedroom apartments.

The site is located in central London within close proximity to the local shops, tube and rail stations.

The attached accommodation schedule has been used as the basis for the energy assessment.

3. Planning Policy

The National Planning Policy Framework (NPPF) was published in March 2012, which states a clear presumption in favour of sustainable development. The NPPF supports the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourages the use of renewable resources.

The NPPF replaces PPS22 and in Section 10 outlines its energy and climate change policies. To support the move to a low carbon future, local planning authorities should:
Plan for new development in locations and ways which reduce greenhouse gas emissions;
Actively support energy efficiency improvements to existing buildings; and when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards.

In determining planning applications, local planning authorities should expect new developments to:

- comply with adopted Local Plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

- To help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources;

- have a positive strategy to promote energy from renewable and low carbon sources;

- design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts;

- consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure the development of such sources;

- support community-led initiatives for renewable and low carbon energy, including developments outside such areas being taken forward through neighbourhood planning; and

- identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

The key focus of the NPPF is to support local and regional planning authorities.

3.1 The London Plan

The GLA London Plan and GLA Energy Strategy are considered to be the benchmark for local planning regulation. Together they provide a useful tool against which to undertake energy and sustainability assessments. For the purpose of this assessment they have been used in an advisory way secondary to the requirements of the Camden Council, to help incorporate a number of energy efficiency measures into the proposed development. The key requirements of the London Plan (2011) for redevelopments are:

3.1.1 Policy 5.4 Retrofitting

A. The environmental impact of existing urban areas should be reduced through policies and programmes that bring existing buildings up to the Mayor's standards on sustainable design and construction. In particular, programmes should reduce carbon dioxide emissions, improve the efficiency of resource use (such as water) and minimise the generation of pollution and waste from existing building stock.

B. Within LDFs boroughs should develop policies and proposals regarding the sustainable retrofitting of existing buildings. In particular they should identify opportunities for reducing carbon dioxide emissions from the existing building stock by identifying potential synergies between new developments and existing buildings through the retrofitting of energy efficiency measures, decentralised energy and renewable energy opportunities

3.1.2 Policy 5.2 Minimising CO2 Emissions Planning Decisions

A. Development proposals should make the fullest contribution to minimising CO2 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

3.1.3 Policy 5.6 Decentralised Energy in Development Proposals

Planning Decisions

A. Development proposals should evaluate the feasibility of Combined Heat and Power (CHP) systems, and where a new CHP system is appropriate also examine opportunities to extend the system beyond the site boundary to adjacent sites.

B. Major development proposals should select energy systems in accordance with the following hierarchy:

1) Connection to an existing heating or cooling network
2) Site wide CHP network
3) Communal heating and cooling

C. Potential opportunities to meet the first priority in this hierarchy are outlined in the London Heat Map tool. Where future network opportunities are identified, proposals should be designed to connect to these networks.

3.1.4 Policy 5.7 Renewable Energy

A. The Mayor seeks to increase the proportion of the energy generated from renewable sources, and expects that the projections for installed renewable energy capacity outlined in the Climate Change Mitigation and Energy Strategy and in supplementary planning guidance will be achieved in London.

B. With the framework of the energy hierarchy, major developments should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.

C. Within LDFs boroughs should, and other agencies may wish to, develop more detailed policies and proposals to support the development of renewable energy in London – in particular, to identify broad areas where specific renewable energy technologies, including large scale systems and large scale deployment of small scale systems, are appropriate. The identification of areas should be consistent with any guidelines and criteria outlined by the Mayor.

D. All renewable energy systems should be located and designed to minimise any potential adverse impacts on biodiversity, the natural environment and historical assets, and to avoid any adverse impacts on air quality.

4.0 Energy Strategy

The designs of the proposed dwellings have been developed to reduce their annual energy consumption, whilst providing energy in the most environmentally friendly way to reduce their annual CO2 footprints.

4.1 Passive Design

Substantial reductions in energy usage for the scheme will be achieved by enhancing the existing passive building elements.

4.1.1 Building Envelope

As the existing office building is being converted into new dwellings, which typically have higher heat requirements then office buildings the existing facades will be thermally enhanced with new internal dry lining to the external walls, increased insulation levels in the roofs and floors and new energy efficient windows.

All retained and new thermal elements will therefore be specified to achieve the following area weighted U-values to reduce the heat losses though the building's fabric:

- Floors 0.22 W/m2K
- Roofs 0.18 W/m2K
- External Walls 0.28 W/m2K Glazing 1.80 W/m2K
- Doors 1.80 W/m2K
- Windows 1.80 W/m2K

4.1.2 Accredited Construction Details

All new architectural details will ideally be assessed with their thermal bridging values calculated. Were this is not possible, all architectural details should be in accordance with the enhanced construction details listed on the Energy Trusts website or as an absolute minimum as per the requirements of Accredited Construction Details document.

Accredited Construction Details (ACD's) have been developed to assist the construction industry to comply with the performance standards in Part L of the Building Regulations. They focus on issues concerning insulation continuity and airtightness and suggest a common approach to design, construction and testing methodology.

4.1.3 Ventilation

The new dwellings will be naturally ventilated via the new and enhanced existing window openings. Providing fresh air all year around, removing heat gains in summer, whilst saving energy that would otherwise be required by mechanical ventilation and the associated annual CO2 emissions.

4.2 Energy Efficient Systems & Appliances

After assessing the contribution of the passive elements to the overall energy balance, the aim is to further reduce CO2 emissions by selecting efficient mechanical and electrical systems and efficient controls to manage the energy used during operation.

4.2.1 Eco-Labelled Goods

As lights and appliances account for about a third of the CO2 emissions in dwellings, where domestic appliances are installed energy efficient units will be incorporated, including A and A+ rated appliances.

4.2.2 Low-Energy Lighting

To reduce the energy consumption associated with artificial lighting, 100% of all internal lighting fittings in each dwelling will be dedicated energy efficient light fittings.

4.2.3 Energy metering

Metering of the energy uses within the development separately, will help the building users identify areas of increased consumption and highlight potential energy-saving measures for the future, hence reducing the associated annual CO2 emissions from these systems.

All gas/heat and electrical supplies will be metered using smart meters to enable residents and tenants to be responsible for their own consumption and hence CO2 emissions. There will be a central display area for tenants and utility companies to view the meter readings located in the ground floor bike storage area.

Refer P_01 existing proposed ground floor plan for further details,

4.4 Decentralised Energy Networks

The feasibility of connecting to an existing or proposed district network has been investigated for the site in accordance with Policy 5.6 of the London Plan.

The London Heat Map (www.londonheatmap.org.uk) indicates that there are no existing or proposed district heating or cooling networks in or around the site, hence it is not possible to import or export energy to or from the site. There are also no known private wire networks in the vicinity of the site.

4.5 Combined Heat & Power (CHP)

In accordance with the Decentralised Energy Hierarchy in Policy 5.6 the feasibility of a site wide CHP network has been investigated.

The development's heat load is predominately associated with its domestic hot water requirement, with peaks in the morning and evening. Even if substantial hot water cylinders were incorporated into the design to' level out' the peaks in order to increase the operational hours of the system, the base heat load for the six dwellings is not sufficient to support the efficient operational of a CHP system.

Additionally the building's thermal and electrical load profile are un-aligned, meaning that when heat is required in the morning there is only a limited electrical requirement, and vice versa during the day.

Furthermore the building is in an air quality management zone and the running a CHP will have higher NOx and PM10 particles compared to a gas boiler.

Therefore CHP is not considered viable for the proposed development.

4.6 Low and Zero Carbon Energy Sources

Policy 5.7 of the London Plan requires that all major developments seek to reduce their CO2 emissions by at least 20% through the use of onsite renewable energy generation wherever feasible.

Based on the requirements to achieve an 'Excellent' BREEAM rating as set out in the BREEAM Domestic Refurbishment preliminary assessment, the proposed development aims to provide a reduction of 25% in CO2 emissions

Some energy sources have been considered acceptable for supplying a proportion of each dwelling's energy demand.

The feasibility of each of the energy sources listed has been assessed with regard to the potential contribution each could make to supply a proportion of the dwelling's delivered energy requirement, whilst considering the technical, planning and financial issues.

4.6.1 Wind Turbines

In urban environments it is difficult to achieve high wind speeds that would make the operation of turbines viable, unless they are located at a site where there is locally high wind speed or located on the roof of tall buildings, where obstructions and surrounding buildings would not interfere with the wind flow.

The urban location of the site coupled with the adjacent buildings will result in a turbulent flow regime across the site. As such it is not considered viable for the proposed development.

4.6.2 Photovoltaics

The advantage of photovoltaic cells is once they are installed they require minimal maintenance over their operational life and have no primary fuel requirements

However, the existing and proposed new roof structures has been design to be in keeping with the local styles within the conservation area, which may preclude the use of PV cells.

4.6.3 Solar Thermal

Solar thermal collectors utilises solar radiation to heat water for use in water heating of a building. The optimum orientation for a solar collector in the UK is a south facing surface, tilted at an angle of 30º from the horizontal.

Solar collectors are typically designed to meet a development's base heat load, associated with it's domestic hot water requirements.

For residential development these usually equates to 60-70% of the total DHW annual load, with the natural gas-fired boilers meeting the remainder of the load.

However, as previously stated the proposed roof structure has been design to be in keeping with the local styles within the conservation area and the building orientation makes the inclusion of solar thermal collectors unviable.

4.6.4 Biomass Heating

Although the development's thermal load profile suggests that a biomass boiler could operate as a lead boiler in a modular arrangement with a number of conventional gas-fired boilers and provide a significant reduction in it's CO2 emissions, biomass boilers are not recommended for the proposed development.

However, they require significant space for storage and delivery of fuel which generally does not suit an existing building. They have higher particulate emissions than gas boilers which typically raises concerns with the Environment Planning as central London suffers from poor air quality. Therefore biomass boilers have not be considered feasible for the proposed re-development.

4.6.5 Air Source Heat Pumps (ASHP)

Heat pumps supply more energy than they consume, by extracting heat from their surroundings. Heat pumps can supply as much as 3kW of heat output for just 1kW of electrical energy input. They can also be used to provide cooling, however the development has been design to be natural ventilated in summer negating the requirement for cooling on site.

They are most efficient when they work at lower temperatures, typically around 40oC. As the output temperature increases above this the efficiency of the system drops off. Therefore, as DHW is required at 60-65oC, two system would need to be installed if a heat pump system was considered; a conventional LTHW / CHP system for the DHW and either a underfloor heating system for space heating or a heating coil on the MVHR feed off the heat pumps.

There is insufficient space available to incorporate two heating systems . Furthermore the system only offers a 3.4% CO2 emission saving if it achieves a heating seasonal efficiency of 2.5. Recent studies have found that most installations in the UK are only achieving CSoP of 2-3. Hence a ASHP may actually result in an increase in CO2 emissions and have therefore not been considered any further.

4.6.6 Ground Source Heat Pumps (GSHP)

GSHP systems can either abstract energy through closed loops of pipework buried in the ground or from open loop system using natural aquifers in the ground. For closed loop systems the pipework or ground loop carrying the refrigerant/water can be laid horizontally or vertically. GSHP system only really work when there is a reasonably balanced heat an cooling requirement, so as not to heat up or cool down the ground around the piles. As the development has no cooling requirements and it not feasible to install boreholes under an existing building this technology is not considered viable.

5.0 Materials

Building and construction activities worldwide consume 3 billion tons of raw material each year, which account for approximately 50% of total global consumption.

Using green/sustainable building materials and products promotes conservation of dwindling nonrenewable resources. In addition, integrating sustainable building materials into building projects can help reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these source materials.

The aim for the proposed development will be for its overall environmental impact to be minimised through the specification of sustainable materials and the re-use of the existing structure and parts of the façades.

5.1 Environmental Impact of Materials

New materials with low overall environmental impact will be chosen and advice from the Green Guide to Specification will be taken into consideration for the selection.

The Green Guide rates the environmental impact of different materials and components, taking into account factors like toxicity, ozone depletion, ease of recycling, waste disposal etc. Where viable, at least 80% (by area) of the new main elements in the building, fabric & building services insulation should be specified to achieve the best performing “A” and “A+” ratings from the Green Guide.

5.2 Sustainable Timber

All timber used for basic or finishing building elements in the scheme will be sourced from responsibly managed and sustainable forests or plantations.

Such timber products are the only truly renewable construction material in common use and growing trees also absorb and fix CO2. Forests can also provide the habitat for a wide variety of plant and animal life, preserving important ecology and promoting biodiversity.

5.3 Locally Sustainable Materials

A building that is truly sustainable must be constructed using locally sourced, sustainable materials i.e. materials that can be supplied without any adverse effect on the environment.

Therefore, where practicable, materials should be sourced from local suppliers, reducing the environment impacts and CO2 emissions associated with transportation to the site.

5.4 Recycled Materials

The existing building’s structure and part of it’s façade will be retained and re-used.

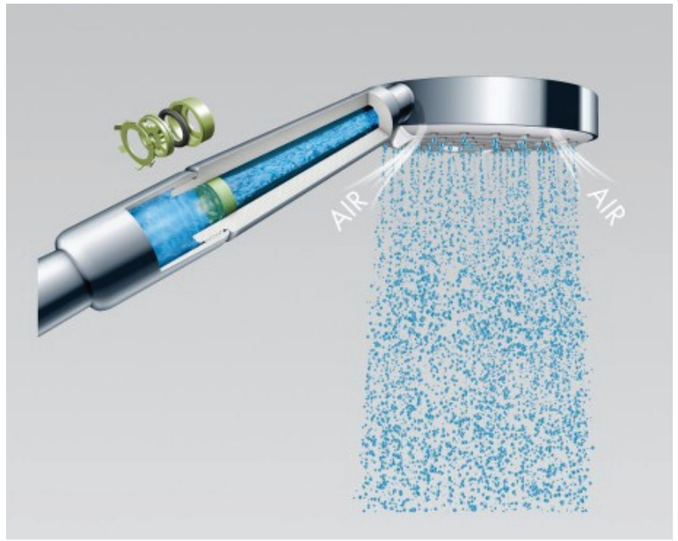
Scope for increased recycling will be incorporated by specifying recycled materials where possible and ensuring that even where new materials are used, as much as possible can be recycled at the end of the buildings’ life.

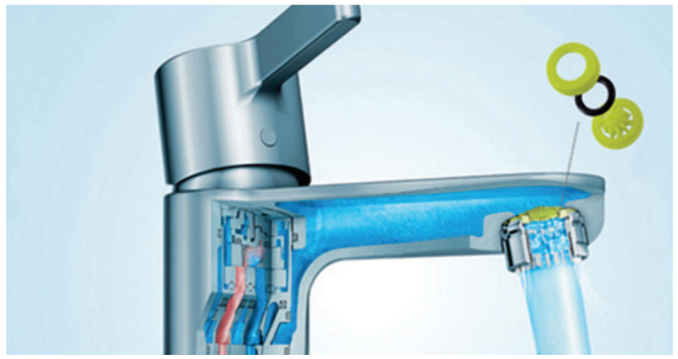
Specifying materials with a high-recycled content is also another method of saving processing or manufacturing energy. The recycled content of a material can be described as either post-consumer or post-industrial to indicate at what point in the life cycle a material is reclaimed.

5.5 Ozone Depletion and Global Warming

CFCs and HCFCs, compounds commonly used in insulation materials and refrigerants, can cause long-term damage to the Earth’s stratospheric ozone layer, exposing living organisms to harmful radiation from the sun. They also significantly increase global-warming if they leak into the atmosphere. Following the Montreal Protocol, production and use of CFCs is no longer permitted and EC regulations will require phasing out of HCFCs by 2015. However, products that replace these gases are often still potent global warming contributors.

All insulation materials specified for the proposed scheme will have zero Ozone Depleting Potential and low Global Warming Potential, (GWP<5) in either manufacture or composition in line with the BREEAM requirements. This will include insulation for building elements (roof, internal & external walls, floor – including foundations) as well as insulation for hot water vessels and pipe or duct work.





Proposed water conservation fittings

6.0 Water Conservation

Water consumption in the UK has risen by 70% over the last 30 years. Trying to meet the increasing demand by locating new sources of water supply is both expensive and damaging to the environment. Therefore, the design team have focused on reducing the demand for water and managing the existing resources.

6.1 Demand Reduction and Water Efficiency

The aim is to minimise internal and external potable water use within the development. Good water management can contribute to reducing the overall level of water consumption maintaining a vital resource and having environmental as well as cost benefits in the life-cycle of the building. The following water saving measures are being considered for a range of areas in line with CfSH requirements:

6.1.1 Dual Flush Cisterns on WC's

These units have the ability to provide a single flush of 4L and/or a full flush of 6L. It is proposed that these are used throughout the development in order to minimise water consumption.

6.1.2 Flow Restrictors to Taps

Flow restrictors reduce the volume of water discharging from the tap. Spray taps have a similar effect and are recommended to reduce both hot and cold-water consumption. Low flow taps in one of the above forms will be installed in all of areas so as to comply with the CfSH mandatory requirements .

6.1.3 Water Meters

In 1995 approximately 33,200 million litres of water a day were abstracted in England and Wales, this increased to 44,130 million litres/ day in 200, and much of this was for domestic water supply. To reduce this figure, accurate information on usage is required for management of a building's consumption. Water meters will be specified on the main supply and at the entry to all of the building in line with CfSH requirements.

6.1.4 Sustainable Urban Drainage

The site is currently completely impermeable with hard landscaping and building areas. The main aim for the redevelopment will be to improve the water retention of the site and minimise the risk of flooding from all water sources.

As a minimum, the design will ensure that the peak rate of runoff into watercourses is reduced to 50% of the existing sites run off rate. This will comply with the Interim Code of Practice for Sustainable Drainage systems (SUDS) (CIRIA, 2004) or for at least the 1 year and 100 year return period events.

80 Litre Capacity (2 x 32L & 2 x 8L)
Cabinet size - 600mm

Proposed waste / recycling waste storage unit

7.0 Waste Management

Buildings and building sites produce a significant amount of waste per year. Most of the waste produced in the UK is disposed of in landfill sites and only a small percentage of it is recycled or reused.

7.1 Waste Targets

Under EU legislation the UK will have to ensure that less than a third of its waste is sent for burial in landfill sites by 2020 and the figure at present is about 80%. To achieve this target a number of measures are implemented, including landfill tax, aiming to discourage disposal of waste to landfill. Good waste management is a key component of sustainable development. Reducing waste is an important means of:

- Reducing unnecessary expenditure

- Reducing the amount of natural resources used for production of new materials

- Reducing energy for waste disposal

- Reducing levels of contamination and pollution arising from waste disposal

The proposed development will minimise the impact of waste in the environment.

7.2 Demolition & Construction

During the construction phase a large amount of waste material will be generated through construction, demolition and land clearing procedures. In building construction, the primary waste products in descending percentages are: wood, asphalt/concrete/masonry, drywall, roofing, metals, and paper products.

Prior to commencement on a Site Waste Management Plan (SWMP) that complies with the requirements of current legislation will be prepared. This plan will identify the local waste haulers and recyclers, determine the local salvage material market, identify and clearly label site spaces for various waste material storage and require a reporting system that will quantify the results and set targets. As a minimum the SWMP will contain:

a. The target benchmark for resource efficiency e.g. m3 of waste per 100m2 or tonnes of waste per 100m2;

b. Procedures and commitments for minimising non-hazardous waste in line with the benchmark;

c. Procedures for minimising hazardous waste;

d. Procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste;

e. Procedures for sorting, reusing and recycling construction waste into defined waste groups either on site or through a licensed external contractor;

f. The name or job title of the individual responsible for implementing the above.

As the proposed development is on land that has previously been built upon, there is the potential for using waste materials from the existing buildings and hard paved areas. Bricks and concrete could possibly be reused as hard-core materials etc. Opportunities for introducing more reused or reusable materials/components will be explored during detailed design.

7.3 Waste Management & Reporting in Operation

The detailed design phases will identify the potential waste streams that the development will produce. At a minimum, plans will be formulated to handle the separation, collection, and storage of common recyclable materials such as paper, glass, plastics, and metals. The collection points will be easily accessible to all of the users.

The main aim will be to recycle as much waste as possible; this will be achieved by making sure that waste recycling facilities are strategically placed in convenient locations.

Dedicated storage space for recyclable materials generated by the site during occupation, will include the following:

Be clearly labelled for recycling

Be placed within accessible reach of the buildings

Be in a location with good vehicular access to facilitate collections.

7.4 Storage of household waste

The space allocated for waste storage should be able to accommodate containers with at least the minimum volume recommended by British Standard 5906 (British Standards, 2005) based on a maximum collection frequency of once per week. This is 100 litres volume for a single bedroom dwelling, with a further 70 litres volume for each additional bedroom.

The design team proposal the following large integrated recycling bin solution for the proposed dwellings:

Waste collection points

At key ground floor, locations there will be a number of colour coded waste recycling collection points, these will be empted on a regular basis

8.0 Environmental Management

Construction sites are responsible for significant impacts, especially at a local level. These arise from noise, potential sources of pollution and waste and other disturbances. Impacts such as increased energy and water use are also significant. Therefore attention is being given to site-related parameters with the aim to protect and enhance the existing site & its ecology.

The aim is to have a construction site managed in an environmentally sound manner in terms of resource use, storage, waste management, pollution and good neighbourliness. To achieve this, there will be a commitment to comply with the Considerate Constructors Scheme and get a formal certification under the scheme in line with the BREEAM/ CfSH requirements. As a minimum a score of greater than 32 of out 40 will be achieved with an aspiration to exceed 36, with no individual section achieving a score of less than 3.

Areas that can be taken into consideration in order to minimise the impact of the construction site on its surroundings and the global environment as outlined in the BREEAM methodology:

• Monitor, report and set targets for CO2 or energy usage arising from site activities

• Monitor, report and set targets for CO2 or energy usage arising from transport to and from site

• Monitor, report and set targets for water consumption arising from site activities

• Monitor construction waste on site, sorting and recycling construction waste where applicable

• Adopt best practice policies in respect of air and water pollution arising from site activities

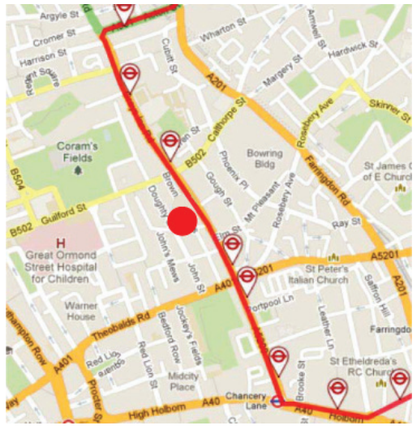
• Operates an Environmental Management System

• Additionally, all timber used on site should be responsibly sourced

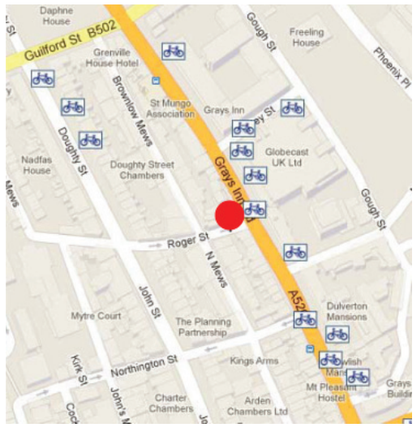
9.0 Environmental Management

The site currently comprises of a mix of existing buildings and hard landscaping, with no ecological value to the site.
New planted area will be included where possible, to increase the ecological value of the site and help protect local plant and animal species.

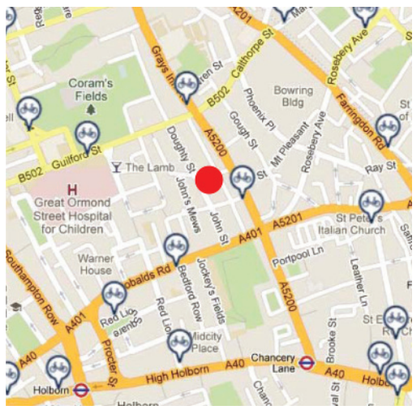
The proposed development will result in no negative change to the ecology of the site.



Bus Stops



Bicycle Stands



Barclays Docking Stations

10. Pollution

Global concern for environmental pollution has risen in recent years, as concentrations of harmful pollutants in the atmosphere are increasing. Buildings have the potential to create major pollution both from their construction and operation, largely through pollution to the air (dust emissions, NOx emissions, ozone depletion and global warming) but also through pollution to watercourses and ground water. The proposed development will aim to minimise the above impacts, both at the design stage and onsite.

11.0 Air Quality
11.1 Ozone Depletion

CFCs and HCFCs, compounds commonly used in insulation materials and refrigerants, can cause long-term damage to the Earth's stratospheric ozone layer, exposing living organisms to harmful radiation from the sun.

They also significantly increase global-warming if they leak into the atmosphere. Following the Montreal Protocol, production and use of CFCs is no longer permitted and EC regulations will require phasing out of HCFCs by 2015. However, products that replace these gases are often still potent global warming contributors. Where refrigerants are used for air-conditioning and comfort cooling they will be CFC and HCFC-free.

11.2 Internal pollutants

Volatile organic compounds (VOCs) are emitted as gases (commonly referred to as offgassing) from certain solids or liquids. VOCs include a variety of chemicals, some of which are known to have short-term and long-term adverse health effects.

Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands.

Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials, furnishings, adhesives, Urea-formaldehyde foam insulation (UFFI), pressed wood products (hardwood plywood wall panelling, particleboard, fibreboard) and furniture made with these pressed wood products.

'No' or 'low' VOC paints are available from most standard mainstream paint manufacturers. There 'eco-friendly' paints are made from organic plant sources and also powdered milk based products.

The design team will seek to select internal finishes and fittings with low or no emissions of VOCs and comply with European best practice levels as a minimum.

12.0 Green Transport

The transport of people between buildings is the second largest source of CO2 emissions in the UK after energy use in buildings and remains the main source of many local pollutants. Energy use and emissions from transport are growing at 4% per year, and at the same time, the effects of climate change are becoming more severe; there will be greater pressure to control CO2 emissions from transport and sites without good access to public transport will be at much greater risk from these controls.

12.1 Site location

The site for the proposed 14 Roger street development is located in central London, within close proximity to the shops and amenities of Gray's Inn Road and central London.

The site is within 500m of Chancery Lane tube station and is within 1000m of Russel Square tube station and Farringdon tube and main line train stations major and as such has excellent local and regional transport links within easy walking distance.

12.2 Cycling Facilities

Secure cycling spaces will be provided for the residences in order to encourage the occupants to use this carbon-free mode of transport. Secure, convenient and weather-proof communal cycle storage areas for use by the residential units will be located on the ground floor of the development.

- The current design shows allowance for 6 cycle spaces

12.3 Car Parking Spaces

No car parking spaces haven been provided for the proposed development so as to encourage the occupants to use the local public transport facilities and spatial constraints.

Each dwelling will also be provided with lifetime membership of a car club.

13.0 Checklist of Environmental Effects and Sustainability	
13.1 Energy Efficiency; vacant and under used land and buildings	
Has the development been assessed for energy-efficiency and predicted carbon emissions?	*Yes. Refer to the submitted BREEAM Domestic Refurbishment Preliminary Assessment.*
Will the development use vacant or under-used land or buildings?	*Yes. 14 Roger Street is currently vacant.*
13.2 Achieving sustainable buildings	
Has the potential long-term future use of the proposed building been considered?	*Yes. Refer to the Design and Access statement and Marketing Report.*
Has the option of reuse of an existing building or its materials been assessed?	*Yes. Refer to the Design and Access statement and the Sustainability Statement.*
Are the designs flexible enough to accommodate possible change of use in the future?	*Yes. Refer to the Design and Access statement and the Sustainability Statement.*
Has an energy statement been prepared to demonstrate how energy efficient measures will work and how carbon emissions will be minimised?	*Yes. Refer to the Design and Access statement and the Sustainability Statement.*
13.3 Materials	
Have material specifications incorporated lifecycle impacts and expected whole life costs, bearing in mind the building's likely refurbishment cycle? For example, timber certified as sustainable; natural insulation products; natural flooring materials; timber frame windows and natural paints.	*Yes. Refer to the Design and Access statement and the Sustainability Statement submitted with the application. Further analysis will be undertaken at detailed design stage*
13.4 Air Pollution	
Give outline information on any plant, machinery or equipment proposed for the development, that might emit air pollutants (type, size, fuel).	*Refer M & E design report submitted with the application*
If air conditioning is proposed, will it be a dry or wet system and for what reasons?	*N/A*
Will aspects of the development or its use cause odours? If so, indicate what measures will be taken to contain these and to prevent the spread of odours outside the development?	*N/A*
13.5 Achieving sustainable development	
Have potential risks to air quality (e.g. asbestos) associated with demolition or refurbishment been considered? What measures will be taken to contain the risk?	*A survey of the existing building will be carried out. A minimum of type 2 asbestos survey and preferably type 3 is required. If asbestos is found prior to any works being carried out, an asbestos report will be completed.*
If the development is for housing or schools along heavily trafficked roads, what design measures are being introduced to minimise occupiers' exposure to air pollution?	*Such measures might include designing buildings so that upper floors graduate away from the road; incorporating planting to screen buildings from the road.*
Have you prepared an air quality assessment, and what are your findings?	*The developer will comply with the Mayor and ALG's London Best Practice Guide on the control of dust and emissions from demolition and construction and comply with protected species legislation. The developer will also sign up to the relevant Considerate Constructors Scheme.*
What steps will be taken to contain dust during demolition and construction?	*Such steps will be outlined in a Construction Management Plan. Refer to section 13.15 of this checklist for further details.*
13.6 Noise Pollution	
What design features are proposed to minimise and contain noise?	*Minimal noise is expected from the proposed development. For details, Refer M & E design report submitted with the application.*
What design features are proposed to prevent noise or vibration being transmitted through the structure to adjoining properties?	*As above.*
What plant, machinery and equipment are proposed as part of the development?	*Refer M & E design report submitted with the application*
How has the design and location of services and plant been designed to minimise noise generation and transmission of noise and vibration?	*Refer M & E design report submitted with the application*
What hours of operation are proposed for plant and machinery?	*C3 residential use - 24 hours*
What hours of operation are proposed for the use of the development?	*C3 residential use - 24 hours*

13.7 Contaminated Land	
Indicate whether the site previously contained an industrial land use, or is known to be contaminated.	*Not previously contaminated and not known to be contaminated.*
If the land is known to be contaminated, or had a previous industrial land use, provide a summary of land use history, the nature and extent of any known contamination, and method of decontamination planned	*N/A*
Does the use planned involve the storage, processing or transfer of hazardous substances? What measures are being put in place to mitigate against potential hazards? Have you carried out an off-site accidental risk assessment on surrounding users? Please attach details.	*N/A*
13.8 Contaminated Land	
Is the development close to, or could it affect, watercourses or areas of open water? If so, give details of any proposals to protect or enhance watercourses and aquatic habitats.	*No*
Will materials be used in the development or its use that could cause pollution to surface run-off, groundwater, watercourses or areas of open water?	*Yes. Refer to the Design and Access statement and the Sustainability Statement.*
What means will be used to control surface water run-off?	*Refer to the Design and Access statement and the Sustainability Statement.*
What means are proposed to ensure water efficiency and conservation?	*Refer to the Design and Access statement and the Sustainability Statement.*
If your proposal is in the Flood Zone, have you prepared a flood risk assessment?	*Site is not located within a flood risk zone*
13.9 Achieving Sustainable Buildings	
What water saving devices have been incorporated?	*Refer to the Design and Access statement and the Sustainability Statement.*
Will sub-metering be installed to enable effective water management by occupiers?	*Refer to the Design and Access statement and the Sustainability Statement.*
Have opportunities for making use of rainwater or recycling water been assessed?	*Refer to the Design and Access statement and the Sustainability Statement.*
What measures have been incorporated to reduce the speed and volume of water runoff?	*Refer to the Design and Access statement and the Sustainability Statement.*
Has the potential for extracting water from boreholes been investigated?	*N/A*
13.10 Waste and Recycling	
What provision will be made within the development for storage of waste and materials for recycling?	*All residential units will be provided with an under counter recyclable waste storage. Waste will be collected twice a week at designated time, through kerb-side collection. Recycled waste will be collected once a week, at a designated time.*
Indicate on a plan of the development where the waste & recycling storage area/s will be provided	*The location of the waste & recycling storage are to be placed under counter. Details are contained within the floorplans for proposed units.*
Indicate the size/s of proposed storage areas	*Waste & recycled storage integrated bins are proposed to be stored within each individual flat and are approximately 80 Lit re Capacity (2x32L & 2x8L). Cabinet size - 600mm.*
Give outline information on any proposed compactors	*Not applicable*
Will discarded building materials and components from the site be salvaged and re-used, and will waste materials by re-cycled on or off site If on-site, how will effects such as noise and dust be controlled?	*Demolition and construction waste will be recycled on-site where possible. A Site Waste Management Plan will be prepared for the development as the scheme will cost over £300,000 and this plan will outline the re-use, recovery and recycling of C&D waste*
Has the transfer of demolition materials by water been considered?	*Not applicable*
13.11 Residential Developments	
What provision will be made for interim storage of separate materials for recycling in each dwelling and on each level in developments of more than one dwelling?	*Waste & recycled storage integrated bins are proposed to be stored within each individual flat and are approximately 80 Lit re Capacity (2x32L & 2x8L). Cabinet size - 600mm.*

13.12 All workplaces and other development with no-smoking policies	
Indicate what provision will be made for bins for smokers' waste outside main entrances	*Smokers bins to be provided where and if required.*
13.13 Large Developments	
Are there opportunities within the development for provision of public sites to collect materials for recycling	*The planned development is relatively small and there are no opportunities on site for a public site, nor is one considered necessary for this scale of development.*
13.14 Medical, dental or veterinary developments	
If clinical waste is likely to be generated (medical, dental or veterinary) indicate what storage provision will be provided entirely separate from storage of non- clinical waste	*N/A*
13.15 Achieving sustainable buildings (as well as the above):	
How far will steps be taken to reuse, recycle or transfer construction and demolition waste?	*The Site Waste Management Plan will cover many of these elements relation to the reuse, recovery and recycling of materials resulting from the construction and demolition phases of development. It is anticipated that there are elements of pre fabrication (glazing etc.) that may be possible, and waste will be segregated on site if possible, with any remaining waste being sent to a recycling centre for segregation. The SWMP will detail the construction and design process to finalise the sustainable methods that have been used for this scheme.*
13.16 Achieving sustainable buildings	
Design of buildings and their approaches to meet the needs of disabled people?	*Yes.*
Have you incorporated "inclusive design" techniques so that the public spaces, access routes to and around the building are, wherever possible, accessible to wheelchairs?	*Refer to the Design and Access statement submitted with the application.*
Have you provided an access statement?	*Yes.*
13.17 Residential developments	
What proposals are included for open space, play-space, or associated community facilities?	*The planned development is relatively small and there are no opportunities on site for a public site, nor is one considered necessary for this scale of development.*
What design features are being introduced in order to protect occupiers from air pollution?	*Refer to the Design and Access statement and the sustainability strategy submitted with the application.*
Can the designs for the building incorporate "green roofs" or has it scope for vertical habitats?	*Yes.*
13.18 Archaeology	
What measures are proposed:	
To preserve in situ all archaeological remains of national importance?	*Refer to the Archaeology Desk Based Assessment submitted with the application.*
To properly evaluate, and where practicable preserve in situ, remains of local archaeological value?	*Refer to the Archaeology Desk Based Assessment submitted with the application.*
For those archaeological remains for which in situ preservation is inappropriate, full investigation, recording and an appropriate level of publication by a reputable investigating body?	*Refer to the Archaeology Desk Based Assessment submitted with the application.*