77-79 CHARLOTTE STREET

SUSTAINABILITY STATEMENT

CHARLOTTE STREET PROPERTY LTD

9th February 2015

Revision 00

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EXECUTIVE SUMMARY

This report supports the application for the demolition of the existing building at 77-79 Charlotte Street and erection of a new part four, part five and part six storey building plus double basement to provide 4no.dwellings and replacement commercial space.

The objective is to deliver a building with a high sustainability performance taking account of the physical and technical constraints of the site. To do this a balance has been sought between the various environmental, social and economic issues prioritising those that provide the greatest potential for the building to limit its environmental impact.

A sustainability strategy has been developed by the project sustainability consultant for the proposed development in consultation with the applicant and the design team. The strategy has been informed by a preliminary Code for Sustainable Homes assessment for which a target rating of Level 4 is being sought for the residential element.

The following sustainability standards and targets have been identified for the proposed scheme in line with Camden's policy requirements:

- ❖ 'Level 4' rating under the Code for Sustainable Homes;
- ❖ Use of previously developed 'Brownfield' land to provide new, high quality and sustainable apartments and office space;
- ❖ Reduce CO_2 emissions over Building Regulations Part L 2013:
    - Increased levels of insulation and air tightness to provide good thermal performance;
    - Energy efficient lighting throughout and whole-house ventilation with heat recovery to each residential unit;
    - Low carbon heating provided by air to water heat pumps and solar thermal panels.
- ❖ Domestic water use rate of 105 litres/person/day:
    - Water efficient sanitaryware and appliances;
    - Greywater recycling to reduce demand for potable water.
- ❖ Promote wellbeing for occupants:
    - Safe access and security considerations through liaison with local Crime Prevention Design Advisor
    - Inclusive design through application of Lifetime Homes standard.
- ❖ Materials with low environmental impact informed by the Green Guide to Specification
- ❖ Materials sourced from responsible suppliers, particularly timber which will be procured in line with the Government's Timber Procurement Policy
- ❖ Better practice sustainable construction procedures:
    - Exceed compliance under the Considerate Constructor's Scheme;
    - Contractor to have an accredited Environmental Management System in place;
    - Better practice construction environmental management plan to include responsible sourcing of site timber;
    - Site waste management plan to include better practice targets for minimising and recycling waste.

- ❖ Support the Local Biodiversity Action Plan:
    - Provision of a green roof that will encourage an increase in ecological value, as advised by a suitably qualified ecologist;
    - Potential to incorporate features to provide new habitats including bird boxes and an 'insect hotel'.
- ❖ Promote sustainable transport:
    - Secure cycle parking;
    - Immediate connection to pedestrian and cycle routes;
    - Zero car scheme.
- ❖ Homes that are resilient to future climate change impacts:
    - Passive measures to limit solar gain and provide natural ventilation to control overheating risk;
    - Water efficient fittings and water reuse system to reduce mains water demand and limit risk to water quality, and to limit localised flooding;
    - A building that is structurally sound and resilient to the 'shrink/swell' effect;
    - Resilient façade materials to withstand extreme weather events such as storms and heatwaves.

1 APPROACH TO SUSTAINABILITY

1.1 DEVELOPMENT DESCRIPTION

The applicant is seeking consent for the proposed development at 77-79 Charlotte Street which includes the demolition of the existing building and erection of a new part four, part five and part six storey building plus double basement to provide 4no.dwellings and replacement commercial space.

1.2 77-79 CHARLOTTE STREET SUSTAINABILITY STRATEGY

The sustainability strategy for the Development has been prepared by the project sustainability consultant in consultation with the applicant and the design team. To deliver a good sustainability performance within the constraints of the site a balance has been sought between the various environmental, social and economic issues. This means prioritising those issues that provide the greatest potential for the development to limit its environmental and social impact at a local and national scale, without compromising the viability of the scheme.

The strategy has been informed by a preliminary environmental assessment for the residential element which has been carried out by a licensed assessor for the Development under the latest version of Code for Sustainable Homes.

The commercial replacement provides less than $500m_2$ of accommodation and falls below the threshold requirement for a BREEAM assessment (as defined by Development Plan Policy DP22 – refer to section 2.2).

1.2.1 SUSTAINABILITY DRIVERS

The Camden Planning Guidance Section 3 (CPG 3) sets out the expectations of the Council with regards to development proposals and their sustainability performance. Taking account of the technical and physical constraints imposed by the site as a city infill type development, the scheme proposals are unable to implement all the sustainability measures set out in CPG 3. However, based on appropriateness and viability the following sustainability standards and targets are proposed for the Development:

Topic	CPG 3 Section	Comments
Energy	2 - 6	The Development is targeting a major improvement over Part L 2013, in excess of 19%. Full details of the energy strategy, developed in line with the energy hierarchy, are provided in the Energy Statement which accompanies this application. A summary is provided in Section 4 of this document.
Water efficiency	7	The Development is targeting a maximum internal water use rate of 105 litres/person/day. Details are provided in Section 5 of this document.
Sustainable use of materials	8	Targets will be set in i=regarding the use of construction materials in order to reduce waste in line with the waste hierarchy. New materials will achieve the highest possible ratings under the Green Guide. Details are provided in Section 6 of this document.

Sustainability assessment tools	9	The development is targeting a Code for Sustainable Homes Level 4 rating. Details are provided in Section 3 of this document.
Brown roofs, green roofs and living walls	10	It is proposed to install a green roof.
Flooding	11	The Environment Agency Flood Map indicates the Development is in an area of low flood risk from fluvial flooding The development will achieve no net gain in peak rate runoff from that of the existing development.
Adapting to climate change	12	The Development has been designed as far as practicable for resilience to future climate impacts. Details are provided in Section 9 of this document.
Biodiversity	13	A net gain in biodiversity is expected through the provision of a green roof and other measures to encourage new habitats.
Local food growing	14	Due to existing site constraints, there will be limited opportunities for growing food.

1.2.2 SUSTAINABILITY STATEMENT

This document sets out the design proposals adopted by the applicant in order to deliver a high sustainability performance appropriate to this type of development, and to demonstrate compliance with national and local planning policy requirements (see Section 2). In particular, it addresses the sustainability topics set out in Camden Planning Guidance 3 as well as other topics appropriate to this project.

2 POLICY CONTEXT

2.1 OVERVIEW

The national and local planning policy requirements relating to sustainable development have been reviewed in order to establish the relevant standards and targets, which in turn have guided the development of the sustainability strategy. The key planning drivers and 'triggers' that have informed the sustainability design proposals put forward by this sustainability statement are set out in this chapter.

2.2 NATIONAL POLICY - THE NATIONAL PLANNING POLICY FRAMEWORK

The National Planning Policy Framework (NPPF) replaced the suite of Planning Policy Statements and Guidance in 2012. The NPPF identifies three dimensions to sustainable development - economic, social and environmental – which should be applied jointly and simultaneously:

Economic role – contributing to building a strong, responsive and competitive economy by identifying and coordinating development requirements;

Social role – supporting strong, vibrant and healthy communities by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being;

Environmental role – contributing to protecting and enhancing our natural, built and historic environment. This includes helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change.

The NPPF promotes the pursuit of sustainable development by seeking positive improvements to the built and natural environment, and to people's quality of life. This will include:

- Improving the conditions in which people live, work, travel and take leisure;
- Widening the choice of high quality homes;
- Net gains for biodiversity.

2.3 LOCAL POLICY – CAMDEN COUNCIL

Camden's Local Development Framework (LDF), which replaced the Unitary Development Plan in November 2010, is a collection of planning documents that (in conjunction with national planning policy and the Mayor's London Plan) sets out the Council's strategy for managing growth and development in the borough.

The Core Strategy sets out the key elements of Camden's vision for the borough and is a central part of the LDF. The Development Policies set out detailed planning criteria that the Council use to determine applications for planning permission in the borough.

The over-arching policies relating to sustainable development are summarised below:

❖ Core Strategy Policy 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:

1. ensuring developments use less energy,
2. making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;
3. generating renewable energy on-site; and

d) ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

❖ Development Plan 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 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.

❖ Development Plan Policy DP23 – Water

The Council will require developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by:

a) incorporating water efficient features and equipment and capturing, retaining and re-using surface water and grey water on-site;

b) limiting the amount and rate of run-off and waste water entering the combined storm water and sewer network through the methods outlined in part a) and other sustainable urban drainage methods to reduce the risk of flooding;

c) reducing the pressure placed on the combined storm water and sewer network from foul water and surface water run-off and ensuring developments in the areas identified by the North London Strategic

Flood Risk Assessment and shown on Map 2 as being at risk of surface water flooding are designed to cope with the potential flooding;

d) ensuring that developments are assessed for upstream and downstream groundwater flood risks in areas where historic underground streams are known to have been present; and

e) encouraging the provision of attractive and efficient water features.

❖ Camden Planning Guidance 3 - Sustainability

This guidance provides information on ways to achieve carbon reductions and more sustainable developments. It also highlights the Council's requirements and guidelines which support the relevant Local Development Framework (LDF) policies set out above.

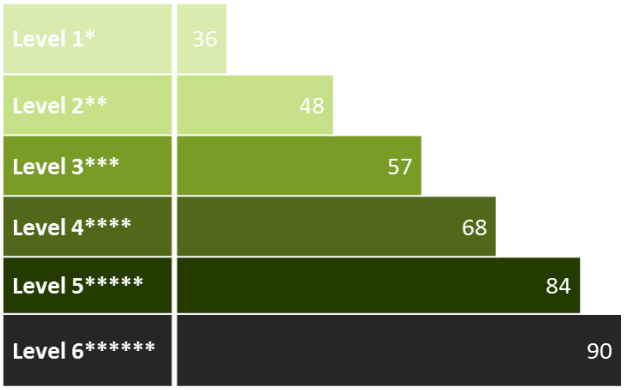
This Sustainability Statement has been prepared in alignment with the Guidance Section 3 to demonstrate compliance with Camden's aspiration for low carbon and sustainable development.

3 SUSTAINABILITY ASSESSMENT

3.1 THE CODE FOR SUSTAINABLE HOMES

The Code for Sustainable Homes (CSH) seeks to minimise the adverse effects of new dwellings on the environment at global and local scales, whilst promoting healthy indoor conditions for the occupants. The environmental implications of a new home are assessed at the design stage and compared with good practice by independent assessors. An overall rating of the dwelling's performance is given which is defined by six levels, with level 6 being the highest. This is determined from the total number of CSH credit criteria met and their respective environmental weighting.

The total of all these scores is the overall rating, which is awarded according to the following scale:



CSH addresses a range of sustainability issues under nine key categories as follows:

CSH Environmental Sections	
Energy and CO_2	Pollution
Water	Health & Wellbeing
Materials	Management
Surface water runoff	Ecology
Waste	

In line with Camden policy requirements, the Development is targeting a CSH Level 4 rating.

A preliminary assessment has been carried out by a licensed CSH Assessor informed through consultation with the project team. This has ensured the appropriateness and achievability of the credits targeted in order to attain the desired rating without impacting upon the viability of the scheme.

The anticipated target score for the apartment with a terrace garden is 71.40% and for the apartments without a terrace garden is 70.23%; both with the potential to target additional credits subject to technical feasibility. Both scores equate to a Level 4 rating. A summary of the credits targeted is provided in Figure 1 on the following page and the full pre-assessment is provided in Appendix A.

It is important to note that at this stage the pre-assessment is not fixed and some credits may be replaced by others whilst the detailed design progresses. However, the overall target of a Level 4 rating will be maintained.

77-79 Charlotte Street
CODE FOR SUSTAINABLE HOMES (2014 Addendum) PRELIMINARY ASSESSMENT REPORT
DATE: 4th Feb 2015
Version: 02
Target Rating: Level 4

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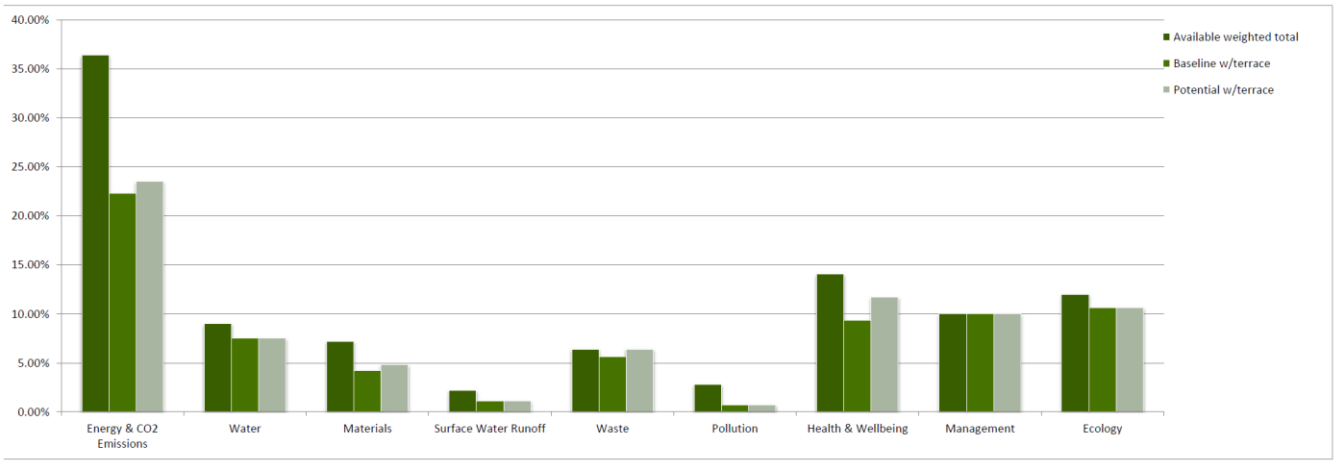
SUMMARY PERFORMANCE & RATING

Credit section	No. Credits available	Credits targeted				Credit weighting	Available weighted total	Targeted weighted total			
		Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace			Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace
Energy & CO2 Emissions	31	19	20	19	20	1.17%	36.39%	22.31%	23.48%	22.31%	23.48%
Water	6	5	5	5	5	1.50%	9.00%	7.50%	7.50%	7.50%	7.50%
Materials	24	14	16	14	16	0.30%	7.20%	4.20%	4.80%	4.20%	4.80%
Surface Water Runoff	4	2	2	2	2	0.55%	2.20%	1.10%	1.10%	1.10%	1.10%
Waste	8	7	8	7	8	0.80%	6.40%	5.60%	6.40%	5.60%	6.40%
Pollution	4	1	1	1	1	0.70%	2.80%	0.70%	0.70%	0.70%	0.70%
Health & Wellbeing	12	8	10	7	7	1.17%	14.04%	9.36%	11.70%	8.19%	8.19%
Management	9	9	9	9	9	1.11%	9.99%	9.99%	9.99%	9.99%	9.99%
Ecology	9	8	8	8	8	1.33%	11.97%	10.64%	10.64%	10.64%	10.64%
							TOTAL SCORE	71.40%	76.31%	70.23%	72.80%
							CSH RATING	LEVEL 4 ****	LEVEL 4 ****	LEVEL 4 ****	LEVEL 4 ****

CSH RATING	Score
LEVEL 6 ******	90%
LEVEL 5 *****	84%
LEVEL 4 ****	68%
LEVEL 3 ***	57%
LEVEL 2 **	48%
LEVEL 1 *	36%
UNCLASSIFIED	<36%



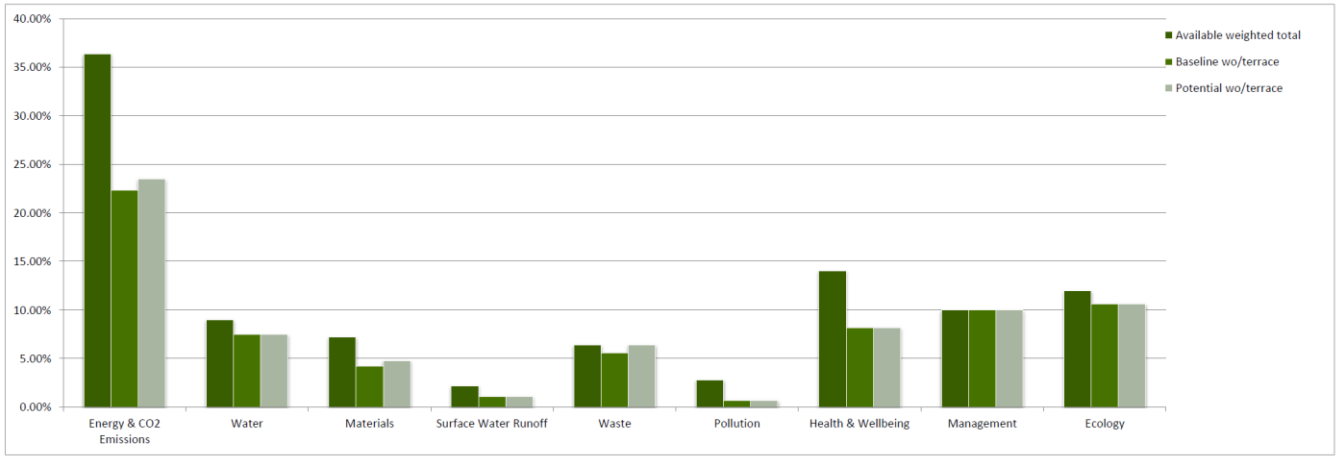


Figure 1 - Summary of Anticipated Performance under Code for Sustainable Homes 2014

4 ENERGY & CO_2

Camden Key Messages
All developments are to be designed to reduce carbon dioxide emissions.
Energy strategies are to be designed following steps set out by the energy hierarchy.
There are a variety of renewable energy technologies that can be installed to supplement a development's energy needs.
Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies.

The proposed energy strategy has been developed to maximise cost-effective opportunities for reducing the Development's energy demand and CO_2 emissions by adopting the principles of The London Plan's Energy Hierarchy: "*be lean; be clean; be green*".

The overall aim is to reduce the energy demand of the building as far as practicable through passive and active efficiency measures such as high levels of insulation and air tightness, and efficient building services. Once this is achieved, on-site energy generation is applied to further reduce the development's CO_2 emissions.

Due to a number of physical and technical constraints a number of renewable energy technologies have been discounted for the Development. However, a significant reduction in CO_2 has been achieved through energy efficiency measures and low and zero carbon technologies.

PROPOSED DESIGN MEASURES – PASSIVE

Building fabric performance	The thermal performance of the building envelope will be enhanced beyond current new build standards by using improved u-values. Windows will be specified with high specification glazing to achieve a performance that exceeds minimum standards of Part L 2013.
Ventilation	A secure means of natural purge ventilation will be provided through openable windows. The primary source of year-round ventilation to the residential units is through individual whole house mechanical ventilation units specified with heat recovery (MVHR).
Low energy lighting and controls	Low energy lighting will be specified throughout the building, including communal areas. This will help to reduce related energy use as far as practicable. Good control is key to further minimising lighting energy consumption and will be provided as standard.
Air to water source heat pumps	Following an analysis of various heating options, air to water source heat pumps have been selected as the most efficient and low carbon means of providing heating to the residential units. Energy efficient VRF units will be specified to the commercial space.
Solar thermal	Solar thermal panels will supplement the air to water heat pumps to provide a zero carbon supply of hot water; particularly beneficial during summer months when the heat pump is used in cooling mode.

A full energy statement setting out the proposals for reducing CO_2 emissions has been prepared and accompanies this planning application. Please refer to this document for detailed information and calculations.

5 WATER MANAGEMENT

5.1 WATER CONSERVATION

Camden Key Messages
All developments are to be water efficient.

The project team is seeking to achieve a reduction in water use for the building over standard performance. The water efficiency target will be informed by the Code for Sustainable Homes criteria for a Level 4 rating, which sets a mandatory requirement for each dwelling to achieve a water use rate of 105 litres/person/day.

To meet this target water efficient bathroom fittings and appliances will be installed as standard. A greywater recycling system is proposed that will collect from showers and baths and once treated, will supply domestic and potentially commercial WCs.

The use of greywater is also being explored to provide recycled water for irrigation to the terrace garden via a bib tap. If this is deemed unviable, a water butt will be installed as an alternative means of supply.

PROPOSED DESIGN MEASURES

Water efficient sanitaryware	This includes low, dual flush WCs, wash hand basin and kitchen taps with restricted flow rates, reduced flow showers and avoidance of over-sized baths. Typically a detailed design issue, however understanding the performance requirements of bathroom fittings at this stage will help to determine the likely achievable water savings.
Water efficient white goods	Again, typically a detailed design issue, however consideration for appliances with a high level of water efficiency is being made by the applicant.
Water reuse	A greywater recycling system will help to reduce the demand on mains-supplied potable water.
Non-potable water supply for irrigation	The terrace garden will be provided with a supply of recycled water for watering plants; either through the greywater recycling system or a water butt installed to collect rainwater from the downpipe.

5.2 FLOOD RISK AND SUSTAINABLE DRAINAGE

Camden Key Messages
All developments are required to prevent or mitigate against flooding.
All developments are expected to manage drainage and surface water.

The application is for the demolition of an existing, mid-terrace building to be replaced with a new structure. No increase to the building footprint is proposed and consequently there will be no increase to current runoff levels.

The viability of achieving a reduction in runoff rates is limited due to insufficient space to accommodate attenuation measures, such as attenuation tanks. These would typically be stored within the basement; however the proposals intend to maximise this space for office accommodation as far as practicable.

Although not fully quantifiable, it is envisaged that the green roof and planting to the terrace garden could help to attenuate and reduce the rate of surface water runoff from that of the current site.

6 MATERIALS & CONSTRUCTION

6.1 REDUCING ENVIRONMENTAL IMPACT OF MATERIALS

Camden Key Messages

Reduce waste by firstly re-using your building, where this is not possible you should implement the waste hierarchy

The waste hierarchy prioritises the reduction, re-use and recycling of materials

Source your materials responsibly and ensure they are safe to health.

It is not possible to retain the existing building and provide the new, high quality residential and office accommodation proposed. The intention therefore is to demolish the current building and construct a sustainable and resource efficient property that is fit for the intended purpose.

In line with the waste hierarchy shown in figure 3 below, the applicant intends to use construction methods, such as pre-fabrication where viable, and apply construction procedures that ensure the amount of waste generated is reduced as far as practicable. Where waste is generated this will be managed by a CSH-compliant site waste management plan with targets for recycling with an aim to reduce waste to landfill as far as practicable.

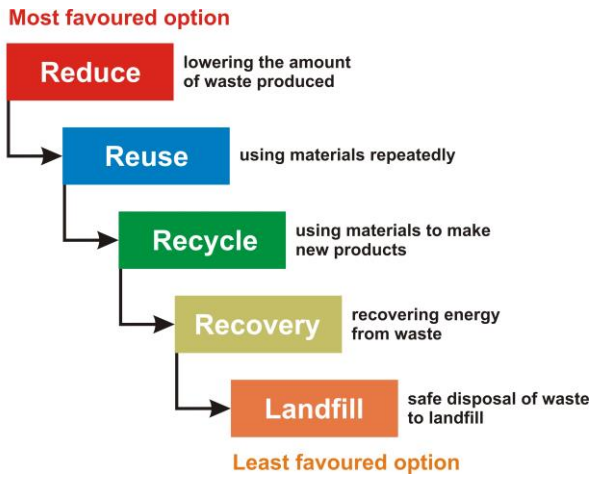


Figure 3 - The Waste Hierarchy

The specification of the new building elements will be important in terms of balancing the requirements of the design brief with the requirements for a building with low environmental impact.

The new elements and the materials specification will be assessed against The Green Guide to Specification. The Green Guide is a reference website and electronic tool providing guidance for designers and their clients on the relative environmental impacts for a range of different building elemental specifications. The ratings within the Guide are based on Life Cycle Assessment, using the BRE's Environmental Profile Methodology.

PROPOSED MEASURES

Waste reduction and recycling targets	The site waste management plan will set procedures and targets for minimising waste generation and the promotion of recycling of construction waste.
Low environmental impact	New materials and material components with lowest environmental impact, as rated by the Green Guide to Specification, will be selected where practical. This will apply to insulation materials also.
Volatile Organic Compounds (VOCs)	The proposals include the use of materials which contain no harmful substances and preservatives with minimum toxicity. Where practical this will include flooring and floor finishes, wall coverings, suspended ceiling tiles and paints & varnishes.
Thermal performance	Thermal insulation products will be specified to upgrade the efficiency of the envelope and to super-insulate the new mechanical services pipework.

6.2 RESPONSIBLE SOURCING

This issue will mainly be managed by the Contractor as part of their procurement strategy. However, in order to demonstrate the applicant's commitment to responsible sourcing of materials, requirements relating to this issue will be defined early in the tender stage and will be set out clearly in tender documentation.

PROPOSED DESIGN MEASURES

Responsibly sourced timber	There will be a requirement to source timber in accordance with the UK Government's Timber Procurement Policy. Additionally, if appropriate local supplies are available, the development will aspire to use timber which is reclaimed, including during construction. Both measures will ensure the sustainable use of wood within the development.
Supplier EMS	Where possible, the Contractor will be required to prioritise the use of suppliers with a current accredited environmental management system (EMS) in place over those suppliers that don't.
Chain of custody	Contractors will be encouraged to source materials from suppliers with a proven chain of custody for sustainably and responsibly sourced products.

6.3 MANAGING CONSTRUCTION

The applicant is committed to ensuring that the Development exceeds minimum legislative and regulative requirements relating to construction practices. The Contractor, once appointed, will be required to adopt the following better practice procedures to ensure sustainable and responsible construction.

PROPOSED CONSTRUCTION PRACTICES

Site waste management plan	In line with the waste hierarchy the Contractor will set challenging resource efficiency and waste reduction targets, to be included as part of a best practice Site Waste Management Plan. The targets will relate to minimising waste generation (excluding hazardous waste) and to diverting waste from landfill through reuse and recycling. It will be the responsibility of the Contractor to put in place procedures to sort and reuse/recycle construction waste in order to seek achievement of these targets wherever possible. Contractors will also be encouraged to follow guidance from DEFRA, BRE and/or WRAP (Waste & Resources Action Programme).
Construction environmental management plan	It is essential to the applicant that the environmental impacts of the construction works are mitigated as far as practicable. The project team will work with the contractor to assist development and implementation of measures to support this commitment. This will include a requirement for the contractor to have an accredited environmental management system (EMS) in operation, and to develop a construction environmental management plan (CEMP) that exceeds standard practice to include procedures for monitoring and recording resource use. The CEMP will be developed in full once a contractor has been appointed.
Considerate Constructors Scheme	The Considerate Constructors Scheme (CCS) is a UK certification scheme that encourages the considerate management of construction sites. The applicant has committed to requiring the Contractor, once appointed, to sign up to the CCS and will encourage an exemplary performance under the criteria of the scheme.

7 BIODIVERSITY

A desk study and an extended Phase 1 habitat survey of the site was carried out by Thomson Ecology on 12th January 2015 to undertake to confirm habitats and plant species present on the site. Conducting an ecological walkover survey following the extended Phase 1 survey methodology is a standard technique for assessing the ecological value of development sites.

No habitats or plants of ecological value were recorded on site and the site is deemed to be of low ecological value.

A desk study from Greenspace Information for Greater London (GiGL) was carried out for the site, comprising a search of protected sites and habitats. The desk study included a search for SAC, SPA and RAMSAR sites within 2km of the site, SSSI's within 500m of the site and other habitats (for example, broadleaved woodland, water courses, wetlands, flower rich meadows/ grassland and heathland) within 100m of the site.

It was confirmed that there are no protected sites or habitats within these distances to the site.

The Development is proposing to incorporate a green roof as part of the landscaping proposals. Based on the recommendations of the ecologist the green roof will maximise the inclusion of native species or species with a known benefit to wildlife. An example of the green roof under consideration is the Bauder Green Roof Wildflower Blanket which contains a total of 24 native species.

Other measures being considered to encourage biodiversity enhancement of the site are as follows:

- 'Insect Hotels' incorporated into the green roof design. They will be placed in areas with full or partial sunlight and can be constructed from items such as bamboo canes, logs and recycled building materials;
- At least two bird boxes installed on the new building.

8 ADAPTING TO CLIMATE CHANGE

8.1 CLIMATE IMPACTS AND RISKS

Camden Key Messages

All development should consider how it can be occupied in the future when the weather will be different. The early design stage is the most effective time to incorporate relevant design and technological measures.

Our climate is changing and this will have notable environmental, social and economic implications. In response, the built environment needs to be able to adapt to the impacts of climate change to minimise the associated risks.

Using climate projections from the UK Climate Impacts Programme (UKCP09) the impacts and associated risks from a changing climate in Central London mainly relate to rising temperatures and changing rainfall patterns, which are exacerbated by extreme weather events that are hard to predict. A basic assessment of the key impacts and associated risks are summarised below:

Climate impact			Climate risk
Rising temperatures and hot weather events	Overheating - internal and external (i.e. urban heat island)		Health implications for people Operational and cost issues for building managers/occupiers Increased CO_2 from increased cooling demand (known as 'maladaptation')
Hot weather events and prolonged or intense periods of precipitation	Structural stability		Subsidence or heave ('shrink-swell') Cracking of building fabric Safety implications for people Operational and cost issues for building managers/occupiers
Increased winter rainfall and prolonged or intense periods of precipitation	Water resource and flooding		Water shortages Localised flooding Operational and cost issues for building managers/occupiers

The applicant and the project design team consider it a duty of care to ensure as far as possible the development proposals for 77-79 Charlotte Street help support the building in remaining safe and operational throughout its lifespan, regardless of the climate.

8.2 MANAGING OVERHEATING

The use of active cooling in buildings in Central London is expected to increase due to rising temperatures, made worse by the Urban Heat Island (UHI) effect. The use of air conditioning can obviously offset internal overheating risk; however increased use of these systems will increase the amount of energy consumed and consequently CO_2 emissions. This will further contribute to climate change. Measures that cause this effect are often referred to as 'maladaptation'; a short term solution, which in reality exacerbates the issue.

Adopting passive and low carbon cooling measures where possible within the Development will help to limit the risk of overheating and provides dual benefits in terms of both climate change mitigation and adaptation.

PROPOSED DESIGN MEASURES

Solar control	The office space will be largely shaded against summer solar gain by the buildings opposite. Apartments will be specified with solar control glazing and based on occupants being able to use blinds to control the level of light entering the property it is anticipated that no further solar control will be required.
Natural ventilation	A secure means of natural ventilation will be provided to apartments through openable windows, supplemented by a mechanical ventilation system with heat recovery (MVHR). This will be particularly important at night when the occupant may wish to keep the windows closed due to external noise. These measures are deemed sufficient to maintain a comfortable level of coolth to the apartments for most parts of the year. However, low carbon background cooling may need to be considered to mitigate overheating risk; however, it is anticipated that this will only be required during extreme hot weather events.
Low energy lighting	Low energy lighting will be provided throughout the building, including communal areas. This will reduce internal heat gains associated with standard performance luminaires.

8.3 MANAGING STRUCTURAL STABILITY

The building has been designed by a competent structural engineer who has taken account of both the substructure and superstructure when considering structurally stability. A hard-wearing brick is proposed for the facade which will help to protect against future weathering. However, the close proximity of surrounding buildings is likely to provide a good level of protection to the façade against adverse weather conditions.

8.4 MANAGING WATER RESOURCE AND FLOODING

Drier summers and periods of prolonged drought will put pressure on the availability of mains water in Central London. This will be experienced by both domestic and commercial users as the demand for more water for irrigation increases, whilst simultaneously being subjected to increased demand to supply new development.

Conversely, increases in winter precipitation and the frequency of unpredictable, intense rainfall events will lead to a greater risk of flash flooding from surface water run-off, exacerbated by increased urbanisation. Surface water flooding is already a significant source of flood risk for Central London, more so than river flooding due to the defences provided by the Thames Barrier.

The Development will achieve a reduced mains water demand over standard performance through efficient fittings and appliances. Greywater recycling is also proposed to further reduce water demand. These measures will ensure any additional burden placed on the local utility network is limited and will help the building and its users to be more resilient to the climate risks associated with water shortages.

In regards to surface water runoff, the Development is not envisaged to increase the rate of peak runoff from that of the existing site, but has very limited scope to reduce the current rates.

APPENDIX A – CODE FOR SUSTAINABLE HOMES PRE-ASSESSMENT

DETAILED PRE-ASSESSMENT REPORT

Mandatory credits apply for Level 4

Credit at risk

SCOTCH Partners

1. ENERGY & CO_2 Emissions 1.17%	Credits Available	Credit Criteria	Targeted Credits Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	Comments
Ene 01 Dwelling emission rate	10	**% improvement DER/TER:** 1 credit ≥ 6% 2 credits ≥ 12% 3 credits ≥ 19% (Level 4) 4 credits ≥ 32% 5 credits ≥ 44% 6 credits ≥ 56% 7 credits ≥ 70% 8 credits ≥ 84% 9 credits ≥ 100% (Level 5) 10 credits Zero net emissions (Level 6)	4	4	4	4	**3 credits are mandatory for Level 4 rating** 19% improvement on Part L 2013 required as a minimum. Level of performance will depend on the energy strategy i.e. fabric energy efficiency and building services. Calculated using SAP. Note: energy averaging can be applied where units are within a single building envelope Using area averaging, % improvement over TER equals 32%
Ene 02 Fabric energy efficiency	9	**FEE kWh/m2/year (*apartments, mid-terrace*)** *3 credits* ≤ 48 *4 credits* ≤ 45 *5 credits* ≤ 43 *6 credits* ≤ 41 *7 credits* ≤ 39 (Levels 5 & 6) *8 credits* ≤ 35 *9 credits* ≤ 32 **FEE kWh/m2/year (Detached, Semi & End Terrace)** 3 credits ≤ 60 4 credits ≤ 55 5 credits ≤ 52 6 credits ≤ 49 7 credits ≤ 46 (Levels 5 & 6) 8 credits ≤ 42	3	4	3	4	Level of performance will depend on fabric efficiency (u-values, air tightness and thermal bridging). Note: energy averaging can be applied where units are within a single building envelope Recommended that Approved Details for cold bridging are used in order to avoid having to use the default value. This will have a major impact on the FEE. Requires coordination between the architect and the structural engineer to agree which product is suitable for the building. **SAP calculations to be updated based on revised glazing**
Ene 03 Energy display devices	2	*1 credit* - Electricity **OR** primary heating fuel *2 credits* - Electricity **AND** primary heating fuel *(2 credits - Electricity is primary heating fuel)*	2	2	2	2	Credit responsibility: Scotch
Ene 04 Drying space	1	1-2 beds = 4m+ drying line 3+ beds = 6m+ drying line	1	1	1	1	Cove Burgess confirmed line to be provided in utility rooms. Note: 30l/s required vent.(Scotch)
Ene 05 Energy labelled white goods	2	*1 credit* - A+ rated fridges/freezers *1 credit* - A rated washing machines & dishwashers plus B rated dryers or info to dwelling OR *1 credit* - Info to dwelling only	2	2	2	2	Credit responsbility: Cove Burgess and client See also comment against Wat 01
Ene 06 External lighting	2	*1 credit* - Energy efficient space lighting & controls Plus *1 credit* - Energy efficient security lighting & controls	2	2	2	2	Credit responsibility: Scotch
Ene 07 Low & Zero Carbon Technologies	2	*1 credit* - 10% CO2 emissions reduction Or *2 credits* -15% CO2 emissions reduction	2	2	2	2	Air source heat pumps and solar thermal should enable these credits to be achieved

Ene 08	Cycle storage	2	*1 credit:* 1 bed - 1no spaces for every 2no dwellings 2 & 3 bed - 1no space per dwelling 4 bed - 2no spaces per dwelling *2 credits:* 1 bed - 1no spaces per dwelling 2 & 3 bed - 2no spaces per dwelling 4 bed - 4no spaces per dwelling	2	2	2	2	Planning requirement for 2No spaces per dwelling Credit responsibility: Cove Burgess
Ene 09	Home office	1	1.8m in a suitable room, plus *adequate* ventilation and 1.5% daylighting	1	1	1	1	Cove Burgess to space plan home office (must be by a window to enable 1.5% daylighting). Ventilation to be provided by either openable windows or MVHR. Scotch to consider ventilation and access to sockets and internet.
Energy Section Credit Total		**31**		**19**	**20**	**19**	**20**	
Weighted Total		**36.39%**		**22.31%**	**23.48%**	**22.31%**	**23.48%**	

2. WATER				Targeted Credits				
1.50%		Credits Available	Credit Criteria	Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	Comments
Wat 01	Indoor water use	5	*1 credit* ≥ 120 l/p/d (Levels 1 & 2) *2 credits* ≥ 110 l/p/d ***3 credits* ≥ 105 l/p/d (Levels 3 & 4)** *4 credits* ≥ 90 l/p/d *5 credits* ≥ 80 l/p/d (Levels 5 & 6)	4	4	4	4	**3 credits are mandatory for Level 4 rating** Very efficient bathroom fittings required. Reduced flow rates to taps and showers. Recommended to use separate washing machine and dryer, rather than washer/dryer to achieve required credits. Potential to achieve 4 credits through efficient bathroom fittings and greywater recycling (GWR). This has been agreed. Individual or centralised - Scotch to advise
Wat 02	External water use	1	System to collect and reuse water for external use	1	1	1	1	Apartments without terrace gardens will achieve this credit by default. Apartment with terrace will target credit through either a bib tap fed from the GWR system, or a 100l water butt fed by rainwater downpipe (will need to pop out of façade to feed water butt and overflow to pop back in to downpipe.)
Water Section Credit Total		**6**		**5**	**5**	**5**	**5**	
Weighted Total		**9.00%**		**7.50%**	**7.50%**	**7.50%**	**7.50%**	

3. MATERIALS				Targeted Credits				
0.30%		Credits Available	Credit Criteria	Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	Comments
Mat 01	Environmental impact of materials	15	A+ to D rated materials in the Green Guide for at least 3No of the following: - roof, - external walls, - internal walls, - upper and ground floors, - windows.	8	10	8	10	Cove Burgess to review chosen materials for construction against Green Guide to Specification to determine likely number oif credits achievable.
Mat 02	Responsible sourcing - basic building elements	6	80% of assessed materials in building elements are responsibly sourced, plus 100% timber	4	4	4	4	Contractor (through employers Requirements)
Mat 03	Responsible sourcing - finishing elements	3	80% of assessed materials in finishing elements are responsibly sourced, plus 100% timber	2	2	2	2	Contractor (through employers Requirements)
Materials Section Credit Total		**24**		**14**	**16**	**14**	**16**	

Weighted Total		**7.20%**		**4.20%**	**4.80%**	**4.20%**	**4.80%**	
4. SURFACE WATER RUNOFF		Credits Available	Credit Criteria	Targeted Credits				Comments
0.55%				Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	
Sur 01	**Management of SWR from developments**	0	**Hydraulic controls criteria:** No increase in peak runoff rate and volume runoff rate, plus design for local drainage failure	~	~	~	~	To be discussed with MLM drainage engineer
		2	**Water quality criteria:** *1 credit* - No discharge for rainfall up to 5mm And *1 credit* - Treatment of runoff to minimise pollution	0	0	0	0	Not targeted - likely unviable but should be confirmed by MLM
Sur 02	**Flood risk**	2	*1 credit* - Zone 2 or 3 plus at least 600mm above design flood level Or *2 credits* - Zone 1	2	2	2	2	Simple flood risk assessment required to confirm flood zone. Typically carried out by drainage engineer. EA flood map suggests flood zone 1 due to defenses provided by Thames Barrier
SWR Section Credit Total		**4**		**2**	**2**	**2**	**2**	
Weighted Total		**2.20%**		**1.10%**	**1.10%**	**1.10%**	**1.10%**	
5. WASTE		Credits Available	Credit Criteria	Targeted Credits				Comments
0.80%				Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	
Was 01	**Storage of non-recyclable and recyclable household waste**	0	**Household *(apply IDP Checklist)* :** Adequate, inclusive external storage space (larger volume of either BS5906 requirements or LA-provided container).	~	~	~	~	
		4	**Recyclable *(apply IDP Checklist)*:** *2 credits* - Internal storage where no external storage, no LA collection and 60l capacity provided Or *4 credits* - Internal storage to support LA recycling collection scheme (30l - single or multiple bins)	4	4	4	4	Cove Burgess to check local authority collection scheme and provide appropriate internal storage capacity
Was 02	**Construction site waste management**	1	**Minimising construction waste:** Targets for resource efficiency; procedures for minimising construction waste; monitoring, measuring & reporting.	1	1	1	1	Contractor (through employers Requirements)
		2	**Diverting waste from landfill:** Achieve the above plus procedures to sort and divert waste to achieve either: *1+1 credits* - 50% by weight or volume (non-haz) *1+2 credits* - 85% by weight or volume (non haz)	1	2	1	2	Contractor (through employers Requirements) May be constrained by size of site
Was 03	**Composting**	1	Individual composter, or community scheme, or LA collection	1	1	1	1	Camden Council operate a domestic kitchen waste collection scheme. Credit can be achieved if space is made for the external storage vessel supplied by the council, and a 7l caddy is provided within the internal waste storage area for each apartment
Waste Section Credit Total		**8**		**7**	**8**	**7**	**8**	
Weighted Total		**6.40%**		**5.60%**	**6.40%**	**5.60%**	**6.40%**	
6. POLLUTION		Credits		Targeted Credits				

0.70%		Credits Available	Credit Criteria	Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	Comments
Pol 01	Global warming potential (GWP)	1	Roofs, walls, floors, external walls and building services to have insulation using substances with GWP <5 (manufacture and installation)	1	1	1	1	Contractor (through employers Requirements)
Pol 02	Nitrous Oxide (NOx) emissions	3	Dry Nox level (mg/kWh): *1 credit* - ≤ 100 *2 credits* - ≤ 70 *3 credits* - ≤ 40	0	0	0	0	Air source heat pumps use grid electricity with high Nox levels. Therefore 0 credits
Pollution Section Credit Total		**4**		1	1	1	1	
Weighted Total		**2.80%**		0.70%	0.70%	0.70%	0.70%	
7. HEALTH & WELLBEING		Credits Available	Credit Criteria	Targeted Credits				Comments
1.17%				Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	
Hea 01	Daylighting	3	Average daylight factor: *1 credit* - Kitchens 2% *1 credit* - Living & dining, studies, home office 1.5% *1 credit* - 80% working plane direct light from sky	0	2	0	0	Some dwellings may achieve credits, some may not. Recommended to engage daylighting consultant to test viability of credits; however credits may not be feasible if area of glazing is reduced to achieve credits under Ene 02.
Hea 02	Sound insulation	4	Airborne and impact sound insulation values improvement over Part E: *1 credit* - 3dB *3 credits* - 5dB *4 credits* - 8dB Or Use of construction assessed as Robust Details to the standards above. *(Default: 4 credits - detached dwellings)*	3	3	3	3	To be discussed and agreed with acoustic engineer (Scotch)
Hea 03	Private space	1	Inclusive private (1.5sqm/bed) or semi-private (1sqm/bed) outdoor space. Accessible only to intended occupants	1	1	0	0	Only apartment with terrace garden will achieve this credit.
Hea 04	Lifetime Homes	4	Compliance with all principles of Lifetime Homes. *Unless exemption of criteria 2 and/or 3 applies (awarded 3 credits)*	4	4	4	4	Confirmed by Cove Burgess
Health & Wellbeing Section Credit Total		**12**		8	10	7	7	
Weighted Total		**14.04%**		9.36%	11.70%	8.19%	8.19%	
8. MANAGEMENT		Credits Available	Credit Criteria	Targeted Credits				Comments
1.1%				Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	
Man 01	Home user guide	3	*2 credits* - Checklist Man 1, Part 1. Available in alternative formats. Plus *1 credit* - Additional info on the site & surroundings	3	3	3	3	Contractor (through employers Requirements)
Man 02	Considerate Constructors Scheme	2	*1 credit - Score ≥5 in every section, total score 24 - 34* *2 credits - Score ≥7 in every section, total score 35 - 50*	2	2	2	2	Contractor (through employers Requirements)
Man 03	Construction site impacts	2	*1 credit* - 2 or more items *2 credits* - 4 or more items	2	2	2	2	Contractor (through employers Requirements)

Man 04	Security	2	Consult ALO/CPDA at design stage and incorporate recommendations. Plus compliance with SBD Section 2 *Physical Security*	2	2	2	2	Confirmed that Cove Burgess will meet with ALO/CPDA
Management Section Credit Total		**9**		**9**	**9**	**9**	**9**	
Weighted Total		**10.00%**		**10.00%**	**10.00%**	**10.00%**	**10.00%**	
9. ECOLOGY		Credits Available	Credit Criteria	Targeted Credits				Comments
1.33%				Baseline w/terrace	Potential w/terrace	Baseline wo/terrace	Potential wo/terrace	
Eco 01	Ecological value of site	1	Site is confirmed as land of low ecological value	1	1	1	1	Assumed low value - to be confirmed by ecologist
Eco 02	Ecological enhancements	1	Suitably qualified ecologist + report. Adopt all key recommendations and 30% of additional recommendations.	1	1	1	1	Requires implementation of the key recommendations from the ecology report, and 30% of the additional recommendations
Eco 03	Protection of ecological features	1	Eco features and maintained and protected	1	1	1	1	Assumed achieved - to be confirmed by ecologist
Eco 04	Change in ecological value	4	**Species per hectare change:** *1 credit* -9 and ≤ -3 *2 credits* -3 and ≤ +3 *3 credits* 3 and ≤ 9 *4 credits* +9	3	3	3	3	To be confirmed by the ecologist
Eco 05	Building footprint	2	**Ratio of net internal floor area:net internal ground floor area** *1 credit:* Houses - ≥ 2.5:1 Apartments - ≥ 3:1 *2 credits:* Houses - ≥ 3:1 Apartments - ≥ 4:1	2	2	2	2	Credit responsibility: Cove Burgess
Ecology Section Credit Total		**9**		**8**	**8**	**8**	**8**	
Weighted Total		**11.97%**		**10.64%**	**10.64%**	**10.64%**	**10.64%**	
TOTAL PRE-ASSESSMENT WEIGHTED SCORE				**71.41%**	**76.32%**	**70.24%**	**72.81%**	
CODE FOR SUSTAINABLE HOMES RATING				**Level 4**	**Level 4**	**Level 4**	**Level 4**	

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