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Addendum to West End Lane Sustainability Statement: Measures for Sustainable Design

Design

The layout of uses

The proposed development puts a vacant garage and car park site to a more sustainable use as housing (Class C3) with associated landscaping. The proposed site layout creates a short row of three townhouses over two to three storeys arranged back to back with the terraced houses which line Mutrix Road. The layout has evolved to carefully consider the impact on the surrounding context and harnesses the full potential of the site in terms of positioning, massing and orientation. Each of the houses are dual or triple aspect with high quality internal layouts and private gardens.

Floorplates size/depth

The internal room layouts are well proportioned with large windows openings to provide good natural lighting and ventilation. The internal floor to ceiling depth within each individual house is 300mm. The U-value of exposed floors 0.13 W/m^{2}K. For further details on the proposed envelope specification please refer to Page 9 of Build Energy Sustainability Report which supports this application. Each habitable room features a window which can be opened at an appropriate size considering the depth and size of the room.

Floor Plate Sizes Schedule

	House 1 (GIA)	House 2 (GIA)	House 3 (GIA)
Ground Floor	47m^2	42 m^2	42 m^2
First Floor	47m^2	42 m^2	42 m^2
Second Floor	25 m^2	26 m^2	25 m^2
Total	119 m^2	110 m^2	109 m^2

Floor to ceiling heights

The proposed building will be designed to adapt to climate change and reduce overheating by having floor to ceiling heights (2.45m-2.5m) greater than the minimum requirement of 2.35m outlined in CPG1: Design. A large floor to ceiling height allows space for hot air to rise above the inhabitants and leave the space below cooler.

Location, size and depth of windows

There are openable windows on both sides of the houses (SW and NE) to allow cross ventilation to help reduce overheating. Much of the window area is south facing and there are roof lights in order to benefit from natural light and solar gains. Solar gains provide passive heating and therefore reduce CO_2 emissions by reducing the heating demand.

Limiting excessive solar gain

Whilst the building has been designed to benefit from solar gains, excess of this can result in overheating of dwellings. This has been considered regarding shading, and also when placing and sizing the windows and roof lights. An overheating analysis has been carried out as part of the SAP assessment and this has shown the three dwellings to have either a 'slight' (house 1) or 'not significant' (houses 2 and 3) overheating risk. Therefore, the solar gains are not excessive.

Reducing the need for artificial lighting

Glazing has been maximised (while limiting excess solar gain) in order to increase natural daylight and reduce the reliance on artificial lighting. The living rooms will have large, south-west facing windows and there are large roof lights above the bathrooms. These will provide a large amount of natural daylight to the areas of the houses that will likely have the most use and require the most lighting. The development will feature energy efficient lighting with timers and dimmer controls. The interior design will feature light coloured walls and ceilings that can reflect light and aid the effectiveness of the natural light.

Shading methods, both on or around the building

Windows will be fitted with louvres which will provide shading of windows when required, allowing daylight and solar gains to be controlled. Blinds and curtains will also be used and windows are set in deep reveals for further shading.

Optimising natural ventilation

As there are windows on both the front and rear of the houses and there is a clear path through the house (when internal doors are open), this will allow cross ventilation which reduces the overheating risk to slight/not significant. This passive ventilation removes the need for mechanical ventilation and therefore reduces the building's CO_2 emissions.

Design for and inclusion of renewable energy technology

In the Sustainability Statement it has been specified that 0.98kWp of solar PV panels will generate enough electricity to meet the 20% carbon emission reduction target. Previously these were specified to be horizontal to reduce their profile, however panels positioned at a 30-degree pitch would generate more electricity and are more effective at self-cleaning, and therefore it is now proposed to have panels mounted at this angle.

Impact on existing renewable and low carbon technologies in the area

New buildings could potentially impact other renewable and low carbon technologies nearby, for example by shading solar panels, blocking the wind for a wind turbine, or confining the space around a heat pump. The development will not impact on any renewable and low carbon technologies in the area, whilst generating its own renewable energy through solar PV panels.

Sustainable Urban Drainage, including provision of a green or brown roof

A Sustainable Urban Drainage assessment has been carried out and submitted, which details the measures of green roofs, planters and permeable surfacing. The majority of surface water will be retained on site and then evaporated or infiltrated.

Adequate storage space for recyclable material, composting where possible

Each of the houses features a private enclosed garden which can be used for the storage of recyclable materials and composting. There will also be internal space for refuse and recycling in the kitchen. There will be a discreet timber prestige refuse bin store external to the houses which can be seen on page 22 of the Design and Access Statement. The refuse store meets the capacity requirements within CPG1: Waste recycling and storage.

Bicycle storage

There will be storage space for 6 bicycles to the front of the building, which can be seen on the ground floor plan. This promotes the use of cycling to reduce reliance on cars and other transport. The cycle storage will be a discreet timber cycle enclosure and can be seen further on page 22 of the Design and Access Statement. The development is completely car free and located in an area of excellent transport connectivity.

Measures to adapt to climate change

The following measures have been put in place in order to adapt to climate change

- Openable windows and cross ventilation to reduce the cooling load and risk of overheating
- Louvres for summer shading to reduce the risk of overheating
- Planting trees and vegetation around the development, including in the private gardens and around the cycle enclosure. This, along with the green roofs, helps with cooling in the immediate area.
- The provision of external space in the form of private gardens
- Pervious surfaces to enable water to infiltrate the ground

Impact on microclimate

As there is no air conditioning or excess plant equipment, there will not be a significant amount of heat expelled by the building. As mentioned above, the green roofs and vegetation will help reduce any overheating in the area. The building is not deemed to be large enough to significantly affect local wind flow. Dark coloured buildings can absorb and then release heat which can make the local air warmer. The proposed building is light coloured to reflect heat which will allow the building to stay cooler inside and outside.

Fabric/Services

Level of insulation

The U-values of the proposed floors, walls, roofs, windows and doors are as specified in Appendix R of SAP 2012, which ensures an efficient thermal envelope, which in turn reduces the heating demand of the building, reducing running costs and associated CO_2 emissions. The insulation used will have low conductivity values, which means the thickness of insulation, and therefore thickness of the construction elements, can be kept relatively small whilst achieving the required U-value, maximising the space inside the building.

Choice of materials, including - responsible sourcing, re-use and recycled content

Materials will be chosen to lower the environmental impact of the development. The skin of the building is proposed as brick which is a durable material and will be responsibly sourced. The doors and window panels at lower level will be constructed from responsibly sourced timber. Every effort will be made on site to minimise waste during the construction process with materials re-used where appropriate.

Air tightness

The fabric has been designed to be highly air tight, with a specified Design Air Permeability rate of 5 m^3/hm^2 and an even lower value will be achieved if possible. This will be met by using Accredited Construction Details, sealing of edges and junctions, and overall consideration of air tightness throughout the design and construction.

Efficient heating, cooling and lighting systems

Highly efficient combi boilers have been specified to provide efficient heating. Weather compensators and time and temperature zone controls have also been incorporated to ensure the time and areas of heating result in minimal wasted heating. The lighting will feature low energy fittings, timers and use sensors. As detailed below, the above technologies will be linked to an effective building management system.

Effective building management system

Each of the town houses will feature a digital building management system which will manage and monitor the building's mechanical and electrical equipment such as ventilation, lighting, power systems, fire systems, and security systems and optimise the efficiency of the building.

The source of energy used

The development will feature PV panels which have been identified as a suitable technology for incorporation at West End Lane allowing the required 20% reduction in carbon emissions through renewable energy to be met. A minimum of 0.98kWp per plot is required to meet this target.

Metering

Each of the houses will feature a water, gas and electricity meter to educate the future residents on the amount of water and energy they are using. This will be an essential tool in the management of water and energy. The water meters will also assist Thames Water in identifying potential pipe leaks and will reduce the demand for water.

Counteracting the heat expelled from plant equipment

The small scale residential nature of the scheme will contain minimal plant equipment and therefore the heat expelled will not be significant. As the heating is from combi boilers, there will be little heat lost to the house through piping and storage (compared to if there was a hot water cylinder).

Enhancement of/provision for biodiversity

The existing site consists of vacant garages and a tarmac car park and provides little contribution to biodiversity. The proposal will enhance biodiversity through new landscaped private gardens which feature planting and new vegetation. In addition, the proposal includes the provision of bird and bat boxes to support local habitats which are detailed on Page 25 of the Design and Access Statement which supports this application.

Efficient water use

As demonstrated within the Sustainability Statement, water use calculation software has been used to determine a fitting specification that achieves a water consumption total of 110 litres per person per day, as per Camden Council's requirements. This is 105 litres for internal use and 5 litres for external use. The specification of fittings is shown in Appendix C of the Sustainability Statement.

Re-use of water

Due to space limitations there is currently no rainwater harvesting system.

Educational elements, for example visible meters

As outlined in the 'metering' section of this addendum, the development will feature individual water and electricity meters. These meters will be positioned in visible location to educate future residents. The building will be one of the only buildings in the immediate neighbourhood to feature green roofs.

On-going management and review

Future residents will be given an OM manual which will outline the management, review and maintenance procedure for the proposed dwellings. The OM manual will feature advice on the maintenance and management of sustainable technologies including the green roof, PV panels, doors and windows and the bird and bat boxes.