

Sustainable Urban Drainage System review and Proposal

Planning permission to redevelop the site was granted by London Borough of Camden on 14th September 2012. Appended to that permission were a number of conditions.

Condition 13 has been considered here.

“Prior to commencement of development, details of a sustainable urban drainage system shall be submitted to and approved by the local planning authority and such system shall be implemented as part of the development and thereafter retained and maintained.

Reason; To reduce the rate of surface water run-off from the buildings and limit the impact on the storm-water drainage system in accordance with policies CS13 and CS16 of the London Borough of Camden Local Development Framework Core Strategy and policies DP22, DP23 and DP32 of the London Borough of Camden Local Development Framework Development Policies”

The London Borough of Camden policy sections highlighted in the approval are;

Core Strategy CS13 Accessibility.

Core Strategy CS16 Promoting our Town Centres and Shops.

Development Policy DP22 Promoting Sustainable Design and Construction.

Development Policy DP23 Water.

Development Policy DP32 Air Quality and Camden’s Clear Zone.

Of the above sections, DP22 and DP23 contain the bulk of relevant commentary related to the development of a sustainable urban drainage system.

Sustainable Drainage Systems.

Within the recommendations made in the Ciria SUDS Manual C697, the following specific points have been identified and considered in respect of the proposed redevelopment at **43 Belsize Lane London NW3 5AU.**

Reduced runoff rates.

Consideration shall be given to introducing systems which reduce runoff rates compared with the pre redevelopment runoff rates. Reduction of the amount of rainwater entering a combined sewer relieves pressure on the sewage treatment works. Such systems include;

Rainwater harvesting (for use as garden irrigation, car washing, certain use within the dwelling such as flushing WCs, etc.)

Infiltration. This can be in the form of permeable pavement, lawns and soft landscaping etc. Such measures are recharging natural ground water whilst reducing discharge to the sewer.

Attenuation. Rainwater falling on non-permeable surfaces can be held back from entering the sewer in chambers on site and released into the sewer via a hydro brake in a controlled manner. Rainwater can also be attenuated beneath permeable pavement in a porous sub base to subsequently infiltrate into the ground consistent with the permeability of the soil encouraging natural ground water recharging.

Green and Brown Roofs. The introduction of green or brown roofs provides a natural reservoir for storage of rainwater which, depending on the time of year has the capacity to attenuate rainwater and release it slowly into the surface water disposal system and for the transfer of water back to the atmosphere by evaporation and transpiration.

Pre demolition arrangement

Roof area.....	43.7m ²
Non permeable courtyard.....	60.6m ²
Soft landscape.....	58.7m ²

Redeveloped arrangement

Roof area.....	75.5m ²
Non permeable courtyard.....	54.6m ²
Permeable landscape.....	32.9m ²

Paragraph 23.9 of the Development Policy states..."All other development that increases the amount of impervious surface will be expected to minimize the amount and rate of run off from the site to at least the existing rate."

From the above figures it can be seen that the development has the potential to increase the amount of run off by 26m².

This is not a large increase and could be largely offset by the introduction of either a green roof or rainwater recycling.

The nature of the approved redevelopment imposes constraints of extensive use of a number of the SUDS options.

Permeable pavement is constrained by the extent of the basement which extends under the whole courtyard. We would recommend permeable pavement with a porous sub-base to areas of external patio/terracing.

Soakaways are required to be a minimum of 5m from the dwelling which, on this site is not achievable. It would also be necessary to take account of the very low permeability of the clay on this site.

The introduction of an attenuation tank. The anticipated level of the sewer within the carriageway is such that it is expected that it will be necessary to install an under floor twin pump packaged pump station serving the domestic foul drainage. Provision of a rainwater attenuation tank with a regulated discharge rate could be expected to require a tank bigger than the under floor space available. Such a tank would be required to accommodate a 1 in 100 year storm over a 24hour period to cater for an electrical failure.

Proposal

Given the above review it is proposed to adopt the following measures:

1. An intensive green roof be provided on the flat roof areas of the new building which extends to some 75.5 m2.
2. The patio area to the rear of the building to be paved with a permeable material to allow surface water to permeate into the ground.

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