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London School of Hygiene and Tropical Medicine Tavistock Place

Sustainable Urban Drainage

Project No. 4159
September 2017

A scheme for the original Bloomsbury Research Institute (BRI) was proposed on the site. It was designed in accordance with the requirements of Thames Water with due consideration of the constraints of the site. It has been assumed that drainage within the footprint of the new building will be discharged at preliminary connection points indicated on the M&E drawings. This includes surface water over the footprint of the building. It also includes foul drainage within the basement area which it is assumed will be pumped up to at least the perimeter invert levels.

Although above ground level the building has the same footprint, below ground it has been changed significantly. The basement was originally 2 stories deep over the entire footprint of the building. It is now only one storey over about half the building footprint. This has an impact on the underground drainage design.

The previous submission for the BRI was designed As follows.

Surface Water

In accordance with Building Regulations a separate surface water system is indicated prior to discharge into the existing combined sewer.

Surface water outside the building footprint is collected in gullies in the courtyard and a drainage channel around the building perimeter. The drainage channel will need to be incorporated into the perimeter finishes and structural details.

The scheme has been developed in accordance with London Plan 5.12 which requires a 50% reduction in the current peak surface water flows from the new development area. Attenuation of surface water on site has been the subject of much consideration.

The current proposal is to provide an attenuation tank with a pump set to control the rate of discharge although the use of a 'blue' roof was considered. The proposal is for the majority of the surface water from the development to discharge into the combined sewer in Tavistock Place.

There is a green roof over a large part of the main building roof which provides a small amount of attenuation but a significant amount of further attenuation is required.

The size of attenuation tank is based on the 50% reduction of the existing flows and includes a 30% increase in rainfall for climate change. Due to its size it has been shown as a deep reinforced concrete tank. It is thought that a large proprietary tank will not fit in the space and even if it did fit it in the ground, it will need to get into the site.

The attenuation tank will control the discharge from the upper roof levels of the main building. A free discharge of the surface water from the ground level path around the building and the Atrium area has been taken into account when setting the discharge rate from the attenuation tank.

Foul Water

Thames Water have approved the free discharge of the foul drainage into the local sewer network based on a future foul drainage discharge of 12.33 l/s which has been assessed by BDP.

The proposal is for the foul water from the new development to discharge into the combined sewer in Tavistock Place. Further investigative works are required to confirm the size and location of this sewer.

In accordance with Building Regulations a separate foul system is indicated prior to discharge into the existing combined drain.

All 3 existing connections into the mains sewers have been used in the design as requested by Thames Water. There is however, concern with respect to the connection into Marchmont Street. The connections from the basement area are in a very congested area and also the outflow is through an area outside the ownership of the UCL site. As details are progressed in the next design stage the design of this area will be developed and it may be necessary to transfer this outflow into the nearby outflow into Tavistock Place.

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The principles of the above proposals remain and in the case of the foul water no changes are proposed.

No that the basement does not go under the entire footprint of the building additional underground surface water drainage will be required.

Over the basement the proposals remain unchanged but the rest of the site will need an additional surface water run to collect all of the RWP's. This will also collect water from the drainage channel around the building. It is proposed to provide attenuation for the surface water at roof level in the form of a 'blue' roof located under the green roof at the lower roof level. The attenuation capacity will be designed to the same criteria as the attenuation tank already provided. With water now being directed to the other part of the site the attenuation tank can be reduced is site and a more 'off the shelf' solution possible.