40 Compton Street
London
EC1V 0BD

t: 020 7324 2240
e: london@curtins.com
w: www.curtins.com

Our Ref: 077090/LT/1

2nd February 2021

Dear Julia Puton,

RE: 6/2020/3420/MAJ – Biopark, Broadwater Road, Welwyn Garden City, AL7 3AX

Thank you for your comments on the above scheme. Please find the responses to your queries raised below.

LLFA Comment: Post development calculations have been provided. We noticed that the designed half drain down times significantly exceed the design standards and our guidance. In principle half drain down times for all SuDS storage features should not exceed 24 hours. We understand this cannot be delivered, based on complexity of the designed site levels. However, as a minimum we expect to see that the proposed drainage scheme has sufficient storage volumes to cope with the 1 in 100 year event followed by the 1 in 30 year rainfall in the next 24 hours. Our understanding is that the current strategy does not currently provide this level of storage, we would therefore advise that the strategy should be updated to fit with this requirement.

Response:

It is not possible to demonstrate that the system could or could not accommodate a 1 in 30 year event 24 hours after the 1 in 100 has passed due to MicroDrainage not having the functionality to analysis this.

For simpler sites, the method would be to run the 1 in 30 year storm, calculate the storage volume required then add that to the requirement of the 1 in 100 year storm. However, due to the cascading nature of this proposed system, this method is not suitable

Furthermore, the granular storage over the basement would not be able to be increased in depth as it is restricted by the required headroom in the existing basement and the required FFL's above.

It is therefore proposed to ensure the network manages a single return period, with a storage requirement equal to the sum of the storage requirements for the 30 and 100 year event. To identify this return period, MicroDrainage's Quick Storage estimate has been used to determine the anticipated storage requirement for the site, using the proposed discharge rate (1.6l/s) and impermeable area, for the 30 and 100 year event. These volumes have then been added together and through trial and error the return period that requires a volume equal to the sum of the 30 and 100 year event it to be used. This return period has been calculated as the 1 in 1000 year event. The system has been tested for this and only flooding occurs on the access road, which flows away from buildings towards the highway. This method is seen as conservative as it does not account for the reduction in storage as the system drains for 24 hours.

The report and results have been updated to include this commentary and the 1 in 1000 year results.

LLFA Comment: On the submitted drainage layout it has been indicated that within the proposed access road there is another geocellular tank with area of 50m2. No mention of this tank has been included in the report. Therefore, the applicant should clarify this, provide full information about the tank and submit an updated drawing.

Response: The note is a typo left over from a previous revision; this has been corrected in the updated issue.

LLFA Comment: We understand that blues roofs with available surface water storage within cellular cells will be provided within four communal terraces. No connections from these areas have been indicated on the plan. If an overflow is assumed, this should be clarified by the applicant, as proposed levels of blue roofs have not been included on the plan. Moreover, it should be clarified how flows from these structures will be limited.

Response: At this outline design stage the outfall locations of the blue roofs have not been confirmed. The system will be designed by a blue roof specialist at a later design stage and as a result the drop locations will be confirmed then too. The connection location to the below ground network will be a result of this design and therefore cannot be anticipated at this early design stage. As with all blue roof system, an overflow would be expected to be incorporated to allow for safe discharge in the event of blockage. The network has been designed to include these areas attributed to the blue roof so that storage volumes are calculated accurately.

LLFA Comment: There is an underground tank proposed at the bottom of the parking ramp with a pumped discharge into the higher network. However, it should be indicated how runoff will be collected from the surface, as the submitted plan does not include any collection structure.

Response: It is expected that the tank at the base of the ramp will serve as an attenuation location for rainfall during high intensity events. It is to only manage run-off that discharges onto the ramp. This run-off will likely be collected via a traditional system (linear channels or gullies). The exact collection system will be confirmed following the structural design of the ramp, as this will dictate the penetration size permitted in it.

LLFA Comment: We have also noticed that multiple solar panels have been proposed at rooftops of each building. As green roofs have also been considered at each roof space, we would be grateful if the applicant could clarify if this has been accounted for in the proposed green roofs design and if an appropriate consideration was given in the submitted biodiversity net gain estimates.

Response: The outline design of the green roofs has been undertaken in line with guidance given by the LLFA. This included removing storage volumes and evapotranspiration from them and only including them as an input time area diagram. The green roofs have at this stage only been designed as input time area diagrams to account for the delayed entry of rainwater to the below ground system. This is still applicable with PV panels. I have spoken with the Ecologist for the project and have been told the green roof design has been accounted for in the biodiversity new gain calculations.

LLFA Comment: If a discharge is proposed to a surface water sewer, we require confirmation from the sewer network operator that they are satisfied to receive the proposed discharge at the proposed rates and volumes.

Response: This has now been confirmed. The response is appended to the updated report.

Yours faithfully

Curtins Consulting Limited
40 Compton Street, London, EC1V 0BD
t: 020 7324 2240 e: london@curtins.com w: www.curtins.com

[redacted]

Michael Smith
Principal Civil Engineer
For and on behalf of
Curtins Consulting Ltd