

**Lead Local Flood Authority – London Borough of Camden**

Statutory Consultee for all Major Developments (SuDS)

Statutory Consultee for all Major developments &gt;1ha

|  |                                 |
|--|---------------------------------|
| Scheme Address                               | 55 Fitzroy Park London N6 6JA   |
| Planning Reference                           | 2018/3672/P                     |
| Size of site (as stated on application form) | 5075m <sup>2</sup>              |
| Application type                             | Post- Objection                 |
| Date   | 27/11/2020                      |
| Recommendation:                              | Additional information required |

Description of Development:

**Demolition of all existing buildings on the site and their replacement with five detached dwelling houses (Class C3) (three x part 2 part 3 storey houses at front facing Fitzroy Park and two x part 1 part 2 storey houses at rear adjoining Millfield Lane) plus associated driveways, access paths, carparking, landscaping and pond enhancements.**

Documents Reviewed

- Drainage Report for Fitzroy Park Development (Coyle Kennedy, 14<sup>th</sup> August 2020, Document Ref: 16-254-190227-01RP Rev C);
- LLFA Drainage Comment /Query Tracker (LBH, 14<sup>th</sup> August 2020, Ver 1.1);
- SuDS Proforma, 55 Fitzroy Park (LBHGEO, 14<sup>th</sup> August 2020); and,
- 55 Fitzroy Park - SuDS Run-off calcs (LBHGEO 14<sup>th</sup> August 2020, Document ref: LBH 4599).

Review of LLFA Comments (10/03/2020 and 03/06/2020)

 1) *LLFA Requirement (03 June 2020)*

State the assumed infiltration rate used to size the infiltration features and provide at least one representative infiltration rate test, given the fundamental impact on the entire drainage and hydrology strategy.

**Partially Provided.**

Comments:

The LLFA Drainage Comment Tracker indicates no soakage test in accordance with BRE Digest 365 has been undertaken and mentions “soakage testing would not be technically appropriate for a largely submerged infiltration trench”. The LLFA Drainage Comment Tracker also mentions “the infiltration trench is expected to be full of water and to spill a constant trickle of water across the Millfield Lane carriageway as at present”. The Site Drainage Layout (Drawing No. P300 Rec D) indicates surface water will discharge at 5 l/s to the infiltration trench and when the capacity of the trench is exceeded overflows will be directed to an offline attenuation tank.

The LLFA Drainage Comment Tracker provides an approximate infiltration rate of  $2 \times 10^{-5}$  m/s based on assumptions of the permeability beneath Millfield Lane and indicates “the final sizing of the wet swale/infiltration trench and the design any overspill system will be undertaken following

trials of an initial trench during the initial construction works on site". Therefore, the design standard of the infiltration trench is not confirmed based on actual site conditions.

**Action for applicant:**

**Provide results of site investigations to determine the infiltration rate and update the drainage strategy accordingly.**

2) LLFA Requirement (3<sup>rd</sup> June 2020)

Provide an updated drainage layout plan clearly demonstrating how the drainage will operate, including pipe sizes and gradients and volumes which correspond with supporting calculations, along with the changes discussed (removal of pipe under Millfield Lane; renaming the 'swale'; increase distance between infiltration trench and lane).

**Partially Provided.**

Comments:

The Site Drainage Layout (*Drawing No. P300 Rec D*) in Appendix A of the Drainage Report sets out layout of the proposed drainage arrangement. The Drainage Report mentions that runoff off from the paved areas and the car parks will be discharged to the combined sewer via a Petrol Interceptor, and runoff from the blue/green roofs, paved areas and footpaths will be discharged via "attenuation/infiltration trench via percolation".

Drainage system for the blue/green roofs, paved areas and footpaths

The cover levels and manhole depths are indicated on the Site Drainage Layout, and the invert levels of the surface water manholes are shown on the Drainage Network Sections plan (Drawing No. 302 Rev A). The asset information for the blue/green roofs, paved areas and footpaths drainage system indicates surface water runoff is conveyed directly to the infiltration trench, and also overflows from the pond are also conveyed to the infiltration trench. The pond is an existing drainage feature at the site, and the capacity of the infiltration trench is not labelled on the Site Drainage Layout. Surface water runoff is then discharged to the infiltration trench at 5l/s via a flow control device; and when the capacity of the trench is exceeded, overflows from the infiltration trench are conveyed to the attenuation tank. The cover level (i.e. 77.9m), the invert level (i.e. 77.5m) and the capacity of the tank (i.e. 35m<sup>3</sup>) are shown on the Site Drainage Layout; however, the asset information for the flow control device and the inspection chamber upstream of the flow control device is not provided.

The total attenuation provided by the green roofs is not labelled on the Site Drainage Layout, however the total attenuation provided at each plot is summarised in Appendix B of the Drainage Report. A total of 125.7m<sup>3</sup> of blue and green roof attenuation is proposed at the site.

Additionally, no asset information has been provided for the blue/green roofs.

The drainage strategy proposes to locate the infiltration trench immediately adjacent to Millfield Lane. Building Regulations (Part h) states that "*infiltration devices should not be built within 5m of a building or road or in areas of unstable land*". The infiltration trench does not meet this requirement.

Drainage system for paved areas and the car parks

The cover levels and depths of the manholes for the drainage system for the paved areas and the car parks is shown on the Site Drainage Layout, and the invert level of the surface water

manholes are provided on the Drainage Network Sections drawing. The proposed discharge rate for the surface water drainage is 5 l/s, and offline an attenuation tank of capacity 3m<sup>3</sup> is provided upstream of the flow control device. The Drainage Network Sections drawing indicate the surface water drainage will connect to the combined manhole at invert – 81.145m and the foul network will connect to the combined manhole at invert – 82.101m.

A review of the invert levels on the Drainage Network Sections for manholes S12 (i.e. 79.219m) and S13 (78.419m) indicates the foul sewer rising main which rises downstream of manhole F6 (i.e. 76.784m) is shown to clash with the blue/green roofs, paved areas and footpaths drainage system which discharges via infiltration. There is no information in the Drainage Report to demonstrate how cross contamination will be prevented.

**Action for applicant:**

***Provide an updated drainage layout plan with details of the capacity of the green/blue roofs.***

***Provide robust justification as to why the infiltration trench is not in compliance with Building Regulations.***

***Demonstrate how cross contamination between the surface water drainage and the foul network will be prevented.***

3) *LBC Correspondence (3<sup>rd</sup> June 2020)*

*Outline the existing and proposed runoff volumes (to demonstrate that there will be no extra volume of water entering the Heath compared to existing).*

**Provided.**

Comment:

Calculations to demonstrate the existing and proposed runoff rates and volumes are provided in SuDS Run-off calcs (ref: 4599) and they demonstrate the 'Proposed Exceedance of Greenfield Run-off Volumes' (ref: Sheet 5 of 8) to be less than the 'Existing Exceedance of Greenfield Run-off Volumes' (ref: Sheet 4 of 8).

The calculations also demonstrate the total attenuation required on Sheet 6 of 8, and Sheet 7 of 8, which indicate that approximately 160.7m<sup>3</sup> of attenuation is required to achieve Greenfield runoff rate for the 1 in 100 year plus 40% climate change event; and Appendix B of the Drainage Report indicates this has been provided by the green/blue roofs and surface water attenuation.

4) *LLFA Requirement (03 June 2020)*

*Demonstrate that the proposed below ground attenuation features are sufficiently above the groundwater levels or have been designed so storage will not be taken up by groundwater rather than surface runoff.*

**Partially Provided.**

Comments:

LLFA Comments dated 15<sup>th</sup> January 2020 identified that "the ground level shown in the Figure indicates the ground level to be 81.2 mAOD. The report presents groundwater monitoring results

from September 2017 and November 2018 investigations. The highest groundwater level, with respect to ground level, were record 80.14 mAOD on September 2017 and 80.05 mAOD in November 2018. These values are equivalent to 0.66m below ground level (bgl) and 0.75m bgl respectively. The Site Drainage Layout (Drawing No. P300 Rec D) in Appendix A of the Drainage Report indicates the invert level of the attenuation tank to be 77.5m. Hence, there is the potential for groundwater ingress to the attenuation storage if suitable mitigation is not implemented.

**Action for applicant:**

**Provide details of how the surface water attenuation will be designed to prevent storage being taken up by groundwater during periods of high groundwater levels on the site.**

5) LLFA Requirement (10 March 2020)

Has pre-application advice been sought from Thames Water on the proposed flows discharging to the combined sewer.

**Not Provided.**

Comment:

The proposed surface water drainage discharges to the combined sewer along with the foul network, and consultation with Thames Water is required to determine if the existing sewer has sufficient capacity to accept combined flows from the new development or whether infrastructure upgrades would be required. Furthermore, Thames Water should be in agreement with the proposed discharge rates and the proposed connection point to the combined sewer.

**Action for applicant:**

**Provide written confirmation from Thames Water that there is sufficient capacity existing in the network, and the proposed point of discharge and discharge rate are acceptable.**

6) LLFA Requirement (03 June 2020)

Can access for maintenance be guaranteed? Who will maintain it, as there is a risk that Thames Water won't adopt it and therefore sewerage from beyond the boundary of 55 Fitzroy Park will be the responsibility of a private owner?

**Not Provided.**

Comment:

The LLFA Drainage Comment Tracker states "access will be maintained" but does not provide a maintenance plan for the new pump chamber or indicate who will be responsible for ensuring the pump chamber is maintained.

**Action for applicant:**

**Provide details of the management and maintenance for the new pump chamber with details of how it will be secured for the lifetime of the development and who will be responsible for ensuring it is maintained.**

7) LLFA Requirement (03 June 2020)

Provide most recent correspondence with Thames Water regarding acceptance of the proposed new pump chamber.

**Not Provided.**

Comment:

The LLFA Drainage Comment /Query Tracker indicates “*Thames Water will be approached following planning approval. The proposed drainage system is not dependent upon adoption by Thames Water*”.

**Action for applicant:**

**Provide correspondence from Thames Water regarding acceptance of the proposed new pump chamber.**

8) LLFA Requirement (03 June 2020)

Submit further proposed details for management of flood risk during construction, including measures to avoid offsite runoff and contamination (to be reflected in updated CMP).

**Not Provided.**

Comment:

The LLFA Drainage Comment Tracker indicates “*the contractors will provide their detailed proposals for management of the risks initially to the design team for scrutiny and approval and then subsequently to Camden via the CMP*”. It is assumed this document will be provided at detailed design or prior to the commencement of construction. The LLFA Drainage Comment Tracker also states the “need minimise the presence of liquid hydrocarbon fuels and other potentially harmful substances on site and to maximise pre-fabrication of completed elements”. It is also assumed this will be addressed in the CMP.

**Action for applicant:**

**Provide details for management of flood risk during construction, including measures to avoid offsite runoff and contamination (to be reflected in an updated CMP).**

Recommendation – Further information required

The revised drainage strategy has been reviewed in line with the LLFA comments dated 10/03/2020 and 03/06/2020. The applicant has not provided all the requested information and it is considered that **additional information is required to satisfy planning requirements**. The applicant should provide details of the information required as set out below:

- Provide results of site investigations to determine the infiltration rate and update the drainage strategy accordingly.

Once these issues have been adequately addressed, we feel that an appropriately worded condition can be placed on the permission for the consideration of the surface water drainage strategy during detailed design. This condition will include provision of further details on the

following, prior to construction, based on our assessment of the current drainage proposals. These are subject to amendment following submission of further information as outlined above;

- Provide an updated drainage layout plan with details of the capacity of the green/blue roofs. Engineering plans should be updated accordingly along with supporting surface water calculations provided for each of the SuDS and critical drainage elements, including the flow control features.
- Provide calculations to demonstrate the hydraulic performance of the entire SuDS network, including the proposed pipe network, for the 1 in 1 year, 1 in 30 year, 1 in 100 year and 1 in 100 year plus 40% climate change.
- Provide robust justification as to why the infiltration trench is not in compliance with Building Regulations.
- Demonstrate how cross contamination between the surface water drainage and the foul network will be prevented.
- Provide details of how the surface water attenuation will be designed to prevent storage being taken up by groundwater during periods of high groundwater levels on the site.
- Provide written confirmation from Thames Water that there is sufficient capacity existing in the network, and the proposed point of discharge and discharge rate are acceptable.
- Provide evidence to demonstrate that the City of London Corporation have no objections to the detailed design of the drainage system.
- Provide details of the management and maintenance for the new pump chamber with details of how it will be secured for the lifetime of the development and who will be responsible for ensuring it is maintained.
- Provide correspondence from Thames Water regarding acceptance of the proposed new pump chamber.
- Provide details for management of flood risk during construction, including measures to avoid offsite runoff and contamination (to be reflected in an updated CMP).