

Project No. & Name:	9670 – Our Lady’s RC High School, Manchester	Prepared by:	Rev:	Date:
Document Ref:	9670-WML-ZZ-XX-RP-C-1001	Daniel Baker	P03	May 2021

DRAINAGE STRATEGY

Background

1. The below Drainage Strategy Report has been created by WML to support and inform an initial drainage scope for Our Lady’s RC High School, Manchester
2. It is understood that the development will comprise the construction of a two storey standalone teaching block which includes classrooms and a library on an area of soft landscaping adjacent the existing school building.

Surface Water Drainage Strategy

3. The proposed drainage strategy for this site will incorporate the principles of, and where appropriate demonstrate compliance with the NPPF and the SUDS manual.
4. The proposed drainage system should be designed in accordance with BS EN 752 and Building Regulations Part H (2010). Approved Document H indicates the following hierarchy for the disposal of surface water drainage from the new development sites, firstly discharge via infiltration, secondly discharge via watercourse and lastly discharge to sewer.
5. These options are discussed in further detail below.
6. **Surface water discharge via infiltration:** From a review of the WML Geo-Environmental Investigation and Assessment 9670-WML-XX-ZZ-RP-G-0002 it is understood that the site is generally underlain by cohesive soils that are not suitable for the use of soakaways and other infiltration techniques.
7. **Surface water discharge via watercourse:** It is understood that there are no watercourses within the vicinity of the proposed development and therefore disposal of surface water via this technique is not a viable solution for this site.
8. **Surface water discharge via public sewer connection:** As neither of the above options are viable solutions for the disposal of surface water from this development, a connection to the public sewer will be required.
9. It is understood from a review of the as-built drainage information and Sonde Survey for the existing site that there are multiple private foul and surface water drains in the vicinity of the of the new building which may be suitable for a connection from the new building.
10. However as there appears to be discrepancies between both sets of information it is recommended that a CCTV survey should be undertaken to confirm location, depth and condition/suitability of all existing drainage prior to reuse by the new development.
11. From the information available it appears that a portion of the existing drainage will require diverting to avoid clashes with proposed building foundations. The full extent of diversion works is to be confirmed upon receipt of the CCTV survey report.

Surface Water Proposal

12. Reference should be made to WML Proposed Drainage GA 9670-WML-ZZ-XX-DR-C-1001.
13. It is understood that LLFA policy is that any new development should aim to discharge surface water runoff at the pre-developed Greenfield runoff rate.
14. In consideration of the above, a greenfield runoff assessment was undertaken using Microdrainage software which concluded the following flow rates;

Return Period	Flow (l/s)
1 in 1 year	0.8
1 in 30 year	1.5
1 in 100 year	1.8

15. A copy of the Greenfield runoff calculation can be found appended to this report.
16. The proposals for the new build development intend to discharge all surface water at the above Greenfield runoff rates including a 40% climate change allowance.
17. It is proposed to collect roof water via traditional rainwater pipes and discharge via a new below ground drainage system at a restricted flow rate into a local point along the existing private surface water drainage network which then goes on to discharge into the public sewer located beneath Boothroyden Road.
18. It is proposed to connect the new below ground drainage network into the existing private drainage infrastructure downstream of the existing flow control chamber therefore not impacting upon the performance of the existing private drainage system.
19. A below ground attenuation system has been incorporated within the new below ground drainage system to store surface water for all storms up to and including the critical 100 year event plus 40% climate change allowance prior to being discharged at a restricted flow rate.
20. It is proposed to collect surface water runoff from areas of external hardstanding via a permeable paving system. A perforated pipe will be situated within the low point of the sub base layer which will collect/transport surface water captured by the paving and connect back into the new primary below ground drainage network.

Waste Water proposal

21. As noted in section 9, a review of the as-built drainage drawings have confirmed the presence of foul water sewers drains in the vicinity of the proposed building footprint.
22. It is therefore proposed to collect waste water from the new development via traditional soil stacks/SVPs and discharge via a new connection to the nearest private foul water drain.

SUDs Review

23. SUDs should be considered as part of the detailed drainage design for the new build development area and are discussed in further detail below.
24. Storing water for later use could be a viable option for this site. The expected limited roof space available on the new school building is considered not practical for the incorporation green roofs/water gardens, however water butts located on the rain water pipes could be used for gardening/grounds keeping or domestic purposes. This option should be discussed with the client during detailed design.
25. Above ground storage basins/swales have been considered for the storage of surface water prior to disposal into the existing drainage network, however it is considered that the additional health & safety risks associated with such systems are unwanted by the school.
26. Permeable paving has been specified for all external construction across the development. Given the anticipated ground conditions noted in section 6, it is expected that the actual volume of surface water runoff disposed via infiltration will be very low and therefore it is also proposed to connect the permeable paving into the new primary below ground drainage system.

Maintenance Plan

27. It is understood that the new drainage network will be privately owned and maintained by the client or an appointed maintenance company on their behalf and will not be offered up for adoption by United Utilities.
28. The proposed drainage system has been designed in accordance with the current standards and guidelines to achieve a minimum self-cleansing velocity, however excessive debris in the system could still result in loss of performance.
29. The proposed drainage design will consist of traditional manholes, pipes and channels.
30. It is proposed to check the underground drainage system and lift manhole/inspection chamber covers to ensure that the pipework associated with each chamber is operating correctly twice yearly and ensure drainage channels are free from debris.
31. Any problems encountered should be investigated by CCTV survey if required and any remedial works necessary carried out in a timely manner.
32. It is recommended that the biannual inspections take place in spring and autumn where there is additional risk of blockage from debris associated with fallen leaves etc.
33. Attenuation has been provided in the form of a below ground storage crate system. A recommended maintenance schedule, checklist and a preferred cleaning procedure should be included from the supplier in the O&M Manual however it is anticipated that this should include twice yearly checking that the upstream manholes are free from debris and ensure that no sediment is being passed into the storage crates.
34. The proposed drainage system includes a permeable paving drainage solution. It is proposed to check and clean the permeable surface regularly to ensure that surface water runoff is not prevented from draining into the sub base, especially during the autumn period where a build-up of leaves could occur.
35. The drainage proposals include a hydrobrake flow control unit or similar. It is recommended that the hydrobrake is inspected twice a year during the full site drainage as noted above. The manufacturer also provides a cleaning, maintenance and repair service for the hydrobrake that covers the following;
 - Scheduled cleaning
 - Emergency breakdown assistance
 - On-site repairs
 - Equipment strip-down
 - Planned maintenance
 - Planned spares replacements
36. The above should be considered by the Client upon first occupation of the development as part of the general site maintenance plan.

Appendix 01
Greenfield Runoff Calculation

WML Consulting Ltd		Page 1
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL		
Date 25/02/2021 15:04 File	Designed by DBaker Checked by	
Innovyze		Source Control 2014.1.1
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 100 Soil 0.450 Area (ha) 0.157 Urban 0.000 SAAR (mm) 864 Region Number Region 10 Results 1/s QBAR Rural 0.9 QBAR Urban 0.9 Q100 years 1.8 Q1 year 0.8 Q30 years 1.5 Q100 years 1.8		
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