

Project No. & Name:	9132 – Spire Yale, Chesney Court	Prepared by:	Rev:	Date:
Document Ref:	9132-WML-ZZ-XX-RP-C-1001	Daniel Baker	P01	August 2021

DRAINAGE STRATEGY

Background

1. The below Drainage Strategy Report has been created by WML to support and inform planning conditions for a site known as Spire Yale, Chesney Court.
2. It is understood that the development will comprise the refurbishment of existing buildings and the construction of a new central extension.

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 9132G-WML-XX-ZZ-RP-G-0001 (April 2020) and Addendum (April 2021) it is understood that the site is generally underlain by a mixture of granular material interspersed with Glacial Till.
7. Infiltration testing was undertaken and has confirmed the following rates of permeation.
 - 4×10^{-4} m/s
 - 3×10^{-5} m/s
8. Given the above, the disposal of surface water via infiltration would appear to be a suitable solution for the development site.
9. **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.
10. **Surface water discharge via public sewer connection:** In the event that infiltration is deemed not suitable, a connection to the public sewerage network would be required.
11. A CCTV survey was undertaken by GUN, March 2020 and confirmed the presence of both foul and surface water drains serving the existing site, which would be suitable for reuse.

Surface Water Drainage Proposal

12. It is understood that the existing site drainage infrastructure will remain in-situ and will continue to serve the existing buildings and hardstanding as present unless the proposed development works necessitate a change or hinder the performance of the existing drainage network.
13. The drainage scheme put forward below and shown on WML drawing 9132-WML-ZZ-XX-DR-C-1001 is based on the disposal of all surface water from the new development works via infiltration using the above flow rate of 3×10^{-5} m/s for design purposes.
14. It is proposed to drain all new areas of external footpaths, car parking and access roads via permeable paving (UltiSuDs by Tarmac or similar).

15. Surface water runoff captured by the permeable paving system will be stored within the sub-base material prior to infiltrating into the sub strata.
16. It is proposed to collect roof water from the new extension via traditional downpipes and dispose of via a new crated soakaway system located to the rear of the new extension.
17. The Geo-Environmental Investigation Report identified the presence of perched water at circa 1.5m below ground level (mbgl).
18. In order to ensure the performance of the crated soakaway system is not hindered by the presence of perched water, it is proposed to utilise a single later of shallow crates with a maximum depth of 1mbgl.
19. Both the depth of permeable sub base and the volume of the crated soakaway system will be designed to accommodate surface water runoff for all critical storm events up to and including the 100 year storm plus a 40% climate change allowance in order to mitigate any flood risk to the development site.

Waste Water proposal

20. As noted in section 11, The CCTV survey undertaken by GUN of the existing site drainage has confirmed the presence of foul water drains currently serving the existing buildings.
21. It is therefore proposed to collect waste water from refurbishment areas via traditional soil stacks/SVPs and discharge via a new connection to the nearest private foul water drain currently serving the existing building.
22. Waste water from the new extension will be drained via a new below ground foul drainage network which then connects to the existing drainage network located within the car park.

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 extension 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 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 however due to the limited space available on the site to accommodate such systems, they have been deemed an unsuitable solution for this development.
26. Permeable paving has been specified for all new external construction across the development site. Surface water runoff will be stored within the sub-base material prior to infiltrating into the sub strata.
27. A crated soakaway system located to the rear of the new extension has also been specified to dispose of all roof water via infiltration.

Given the above it can be considered that all surface water runoff from the new development works will be discharged on site thus not increasing the volume of water leaving the site and not increasing the risk of flooding to neighbouring developments.

Maintenance Plan

28. 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 Welsh Water.
29. 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.
30. The proposed drainage design will consists of traditional manholes, pipes and channels.
31. 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.
32. Any problems encountered should be investigated by CCTV survey if required and any remedial works necessary carried out in a timely manner.
33. 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.
34. Attenuation has been provided in the form of a below ground storage/soakaway 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.
35. 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 leaves could occur.