

DO NOT SCALE



LEGEND

- Site Boundary
- Existing Foul Water Sewer / Abandoned Foul Water Sewer
- Existing Soakaway Location
- Proposed Surface Water and Manholes
- Proposed Foul Water and Manholes
- Rodding Eye
- RWP
- Silt Trap
- Permeable Paving (Infiltration)
- Diffuser Box
- Highway Soakaway
- Proposed Finished Floor Level
- Proposed Levels

Maintenance / Responsibilities

Adoption and maintenance of all surface water components serving 2 or more properties subject to SAB approval.

This is a social housing development. To be maintained by Wales and West Housing as a Registered Social Landlord (RSL)

Wrexham SABs will require details of the maintenance (requirements will be considered further at detailed design stage) and a SuDS Management Plan will be produced to address the frequency and type of maintenance activities. Details / costs to be determined for Full SABs Application.

Water Quality

Roof

Run-off from roof can be considered clean run-off and will generally not require any treatment

Car parking

Consideration of components to assist with removal of suspended solids and hydrocarbons so that the water draining into the public sewer network is of a high quality.

The use of permeable paving will provide a level of treatment for flows prior to discharge to ground

SUDS Strategy

The prime function of SuDS, as with conventional drainage, is to provide effective surface water drainage, ensuring the greatest degree of flood risk protection over the long term both within and downstream of the development and prevent pollution. However, SuDS approaches can bring wider benefits too. Appropriately designed, constructed and maintained, SuDS are more sustainable than conventional drainage systems and can help to:

- Reduce run-off surface water flow-rates and/or volumes and hence reduce the risk of flooding
- Encourage natural groundwater re-charge
- Reduce pollutant concentrations in storm water
- Provide habitat for wildlife.

There are many site-specific factors which will influence the choice of any single or combination of SuDS devices used within a development. The primary factors are:

- Whether the development is domestic, commercial or industrial
- Whether the underlying ground is contaminated. If so, infiltration systems will most probably not be permitted.
- Whether the underlying ground is permeable enough for infiltration systems to be considered.
- Whether the ground water levels are deep enough for infiltration systems to be considered
- Whether the site is steeply sloping and its general topography
- The availability of space inside the development for each potential SuDS facility.
- Health & Safety aspects should the development be likely to be inhabited or used by children.

To ensure no increased flood risk to offsite land and development, disposal of surface water to the ground is encouraged and runoff volumes will be reduced through the SuDS management train where ground conditions permit. Where ground conditions are unsuitable, a discharge to an open water body / sewer will be necessary with rates restricted to the existing site conditions.

Drainage Strategy

Existing Drainage

CCTV Drainage surveys have identified drainage routes and outfalls. Surface water flows from the existing site discharge into 4 No. soakaways between 2.0 - 2.6m deep, these are all 900 Dia perforated concrete rings which will have an unknown pit size of granular surround.

The survey has also identified existing foul connections from the existing premises which exit the site on the southern boundary. The off-site route is unknown but as it currently takes live foul flows from the existing development it is assumed to be in suitable condition.

Proposed Foul

We propose to utilise the existing 150 Dia foul sewer within the site on the southern boundary. The current masterplan indicates this will be in an enclosed rear garden with access via a path 1.2m wide. Welsh Water may have issues with this POC as future access to undertake any necessary maintenance would be difficult. We suggest early discussions with Welsh Water to determine if the proposals are acceptable..

Proposed Surface Water

1. Collection for re-use

Wales and West Housing are not proposing the use of rainwater harvesting for re-use within the dwellings. Rainwater harvesting alone would not be adequate to deal with the surface water flows from the site and provision will be required for an overflow to a Level 2 or lower priority runoff destination. Therefore RWH systems are not considered a cost effective solution for managing surface water and a lower priority runoff destination is required.

The use of water butts to be installed on some RWP's will be considered if there is potential for demand.

2. Infiltration

Currently there is no site investigation report available and no infiltration testing has been undertaken. However as the site currently drains to soakaways we can assume the site will be suitable for infiltration techniques to dispose of surface water flows from the proposed development.

This preliminary strategy has assumed a low infiltration rate of 1×10^{-2} m/s (0.036m/hr)

3. Watercourse

There are no watercourses within the vicinity of the site.

As a connection into a higher priority destination is possible a connection into the combined sewer would not be acceptable.

4. Surface water sewer

The Welsh Water sewer records indicate there are no surface water public sewers within the vicinity of the site.

As a connection into a higher priority destination is possible a connection into the combined sewer would not be acceptable.

5. Combined sewer

The Welsh Water sewer records indicate there are no surface water public sewers within the vicinity of the site.

As a connection into a higher priority destination is possible a connection into the combined sewer would not be acceptable.

SUDS Methods

Method	Comment	Suitability for Development
Green Roofs	Can be used on suitable low-rise buildings to provide retention, attenuation and treatment of rainwater, and promotes evaporation and local biodiversity.	Not suitable: Architectural proposals for the development involve a pitched roof arrangement which are not suitable for green roofs.
Rainwater Harvesting	Rainwater harvesting reduces the total runoff volume from the developed site, and reduces treated water consumption.	Not suitable: Additional costs of installation would have severe effect on viability of the development. Running and maintenance costs would not be acceptable to our client. The ability to restrict peak flow rates and short-term peak volumes is non-existent where a critical storm event occurs. Water butts for garden re-use will be incorporated where appropriate.
Infiltration	Reduces total run off volume from the development	Suitable: Providing infiltration tests prove favourable a range of infiltration techniques can be considered to dispose of surface water flows
Permeable Surfacing (Infiltration)	Reduces total run off volume from the development. Can be used to enhance quality of run-off water.	Suitable: Providing infiltration tests prove favourable a range of infiltration techniques can be considered to dispose of surface water flows, but the below constraints will need to be considered further
Permeable Surfacing (Tanked)	Can be used to enhance quality of run-off water. Sub-base provides 'source' storage and reduces the volume of storage downstream. The storage can be created with selection of the stone fill or use of plastic box systems. Impermeable membrane at base of construction to prevent impact on pavement stability	Not Suitable: But can be considered if infiltration is not achievable. However a discharge to a lower priority (watercourse or sewer) would be required
Swales, basins and ponds	Provide areas for above ground surface run off storage. Swales also allow filtering of particulate matter, improving water quality.	Not suitable: Space constraints on site do not permit large above ground areas for flood storage. No scope to reduce plot numbers due to site viability
Bio-Retention Areas	Collect and retain run-off to help improve water quality, prior to discharge in piped system or infiltration	Suitable: Shallow SuDS features may be possible and will be considered during detailed design subject to landscaping proposals.
Geocellular storage	Suitable for sites with insufficient space for basins etc. Suitable for sites where topography prevents the use of open basins etc. Can be very effective infiltration devices subject to ground conditions.	Not Suitable: But can be considered if infiltration is not achievable. However a discharge to a lower priority (watercourse or sewer) would be required
Large Pipes, conduits and tanks	Suitable for sites with insufficient space for basins etc. Provide a volume of below ground storage with a high void ratio and good man entry provision to allow for future maintenance and cleaning. Generally, be suitable for adoption by the statutory water company.	Not Suitable: But can be considered if infiltration is not achievable. However a discharge to a lower priority (watercourse or sewer) would be required

Notes

- This is a preliminary design demonstrating a drainage solution is achievable to discharge flows from the proposed development. Further detailed design is required however; it should be noted the site does currently drain at unrestricted flow rates with no known flooding issues.
- The specification in all respects shall be in accordance with the current Wrexham CBC Specification and Construction publication in force in the county at the time of construction.

STRATEGY

B	16.08.22	Updated to suit revised Planning Layout	PW	AJ
A	15.11.21	Updated to suit revised Planning Layout	PJN	AJ
Rev.	Date	Revision	By	Appd.

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CASTLEMEAD GROUP

Project

**CWRT PENTWMPATH,
LLAY, WREXHAM.**

Title

Drainage Strategy

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