

This is one of a series of guidance notes providing information to help you understand our procedures and improve design standards.



MANAGEMENT OF SURFACE WATER GENERATED FROM NEW DEVELOPMENT

Welsh Government Planning Policy Wales states that flood risk is a material planning consideration.

Technical Advice Note 15: Development and Flood Risk (TAN 15, 2004), also states that surface water is a material consideration and explains that development should not create additional run-off compared with the undeveloped situation and re-development schemes should aim to reduce run-off where possible

It is essential to consider sustainable drainage early in the development process because there may be implications for land purchase or the design and layout of the roads, buildings and public open spaces. It is strongly advised that applicants consult the Council's Flood & Water Management Team (as the Lead local Flood Authority – LLFA) as early as possible in the planning process. It is advisable for developers to provide an initial assessment of drainage options at this time to enable constructive discussions with the Council. The earlier it can be determined that the drainage proposals are viable, the less chance of delay, wasted effort and costs for all parties involved.

This approach ensures that conditions are not attached to a planning permission which could

later prove to be impossible to implement for legal or technical reasons.

This document and pro-forma are supported locally by both Dŵr Cymru / Welsh Water and Cyfoeth Naturiol Cymru / Natural Resources Wales and assumes that any submitted design or calculations have been carried out by a suitably qualified person carrying an appropriate professional indemnity.

Please note this document will continue to be updated in line with amendments to legislation and national guidance. Applicants should confirm they are using the most current version of this guidance. Any queries can be directed to flooding@wrexham.gov.uk advice.

Who to consult:

The Council's Development Control team consider observations from a number of organisations in relation to surface water management of new developments. Drainage designs may need to take into account specific requirements of these bodies depending on the individual details of each proposal. It is therefore recommended that applicants consult with the organisation below as early as possible when considering their development proposals.

● **The Council's Flood and Water management Team** (the Lead Local Flood Authority) should be consulted early on development proposals, particularly those intending to discharge via infiltration or to watercourses that are not designated a 'main river'.

● **Dŵr Cymru / Welsh Water** should be consulted early on all proposals to discharge to the public sewer system. They should also be consulted on any proposals where it is the intention for the on-site drainage systems serving the development to be adopted.

● **Cyfoeth Naturiol Cymru / Natural Resources Wales (NRW)** should be consulted early on proposals intending to discharge to a 'main river'. The Council's Flood & Water Management Team may refer surface water proposals to NRW (as part of their oversight role) to advise where the suitability of the point of discharge is uncertain and/or the impact to third parties is unclear.

● **The Council's Highways Development Control Team** should be consulted early on proposals to ensure drainage of a proposed highway meets their requirements.

Surface Water Design Criteria

The Flood & Water Management Team will need to be satisfied that the criteria below are being met. This will normally apply to all major¹ development, or where local site conditions dictate.

Wrexham County Borough Council advocates that surface water run-off should be controlled

as near to its source as possible. Preferably sustainable drainage systems (SuDS) should be utilised. The variety of SuDS techniques available means that virtually any development should be able to include a scheme based around these principles. Surface water should be disposed of to the receptors listed in order of priority below:

- a) Infiltrated to ground;
- b) To a watercourse
- c) To a surface water sewer
- d) Other

Undeveloped (Greenfield) Sites:

Discharge rates and volumes are normally required to be limited to the equivalent greenfield runoff rate (with on-site attenuation for all events up to the 1% (1 in 100 year) rainfall event with an appropriate allowance for climate change).

Previously Developed (Brownfield) Sites:

The developer is asked to calculate the existing brownfield runoff rates and to improve the existing situation. This should aim to be as close as reasonably practicable to the greenfield runoff rates. If it cannot be demonstrated that previously developed land has functioning positive drainage or the details of components cannot be ascertained (even if there are known outfalls), an assumption should be made that the system is no longer operational and the site should be treated as an "undeveloped site".

Storage of Water on Site:

The drainage system should be designed so that flooding does not occur on any part of the development for the 3.33% (1 in 30 year) rainfall event other than in those areas/systems designated to store or convey water. It may be acceptable to allow some on-site flooding of roads etc. for rainfall events beyond this. However flooding within the development site should not occur in any part of a building or utility plant susceptible to water during a 1% (1 in 100 year) + climate change rainfall event.

¹ For the purpose of this document major development is defined as:

- The number of houses or units to be provided is 10 or more
- The development site is in excess of 0.5 hectares
- The floor space to be created by the development is 1,000 square metres or more

Practicable Minimum Limit of Discharge:

A practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactorily low flow rate while keeping the risk of blockage to an acceptable level. It is suggested that this is 5 litres per second, using an appropriate vortex flow control device or other technically acceptable flow control device. The minimum size of pipe discharging from a flow attenuation device should be 150mm laid at a gradient not flatter than 1 in 150, which meets the requirements of Sewers for Adoption 7th Edition.

Information for Submission:

Pro-formas to be completed by the applicant and submitted as part of the relevant planning application are provided in Appendix A. The information needed will depend on the significance, complexity and stage of the development proposal.

- **Indicative Drainage Proposal:** This should provide the minimum amount of information to demonstrate that the proposed approach is feasible and/or that the detailed design could be covered by way of a planning condition.
- **Detailed Drainage Design:** A detailed drainage design should provide sufficient information to

demonstrate that the system will function as intended to achieve the above drainage criteria. It should be comprehensive enough to allow any condition related to surface water management placed on the development to be discharged.

Planning Officers consult with the Flood & Water Management Team and other consultees to review and provide advice on drainage proposals related to planning applications. Failure to submit any of the information requested will prevent these consultees from providing constructive reviews and observations to the Planning Team. [This may result in a recommendation to the Planning Team for refusal of the planning application on grounds of insufficient information being received.](#)

It is suggested that applicants refer to the SUSDRAIN website, CIRIA Guidance and other publications as a source of detailed information on sustainable drainage (see Appendix B). 'Rainfall Runoff Management for Developments - Report SC030219' provides advice and technical guidance on the management of surface water drainage, including run-off rates and storage sizing. Alternatively applicants may want to use the free online calculation tools (based on the above report) to assist with this, available at www.UKsuds.com.

[If you wish to discuss proposals prior to submission, please contact the Flood & Water Management Team on \[flooding@wrexham.gov.uk\]\(mailto:flooding@wrexham.gov.uk\).](#)



APPENDIX A.

PRO-FORMA A - INDICATIVE DRAINAGE PROPOSAL

The information required below is considered the minimum amount of information that will allow our Drainage Engineers to be satisfied that the proposed approach is feasible and/or that the detailed design could be covered by way of a planning condition.

1	Site location details with site address and national grid reference.	
2	A plan of the existing site, noting its topography and how it presently drains.	
3	A plan of the proposed site, its topography and proposed future drainage arrangements. (A fully detailed system is not required at this stage - Just sufficient information that the proposed system requirements have been thought out and are achievable within the site).	
4	Areas of permeable and impermeable land for existing site.	
5	Area of permeable and impermeable land for proposed development site.	
6	Explanation of how the drainage hierarchy (Infiltration-watercourse-sewer) has been followed	
7	Evidence that the site has an agreed point of discharge*	
8	The existing surface water run-off rates from the site	
9	An indication of the post development discharge rates from the site. This should include an explanation of how this has been calculated.	
10	An indication of the volume of attenuation storage that would be required on site. This should be based on the 100 year critical storm duration with an appropriate allowance for climate change for the site and the allowable discharge rate.	
11	The likely method of attenuation to be used on site and explanation as to its choice.	
12	A plan indicating a suitable location for the attenuation within the proposed development.	
13	An explanation how it is proposed to manage and fund the maintenance of the proposed system over the lifetime of the development. This should consider the requirement to ensure that access is physical possible for such maintenance works.	
14	For large phased sites an explanation of how the site will adequately consider surface water drainage at all stages of the development may be required	

*When considering the different types of discharge, the following information should be provided

Infiltration:

If surface water is to be infiltrated on site, the applicant must provide percolation tests in accordance with BRE Digest 365 or CIRIA R156. Where percolation tests are not possible at the early stages of a development proposal, an indicative assessment based on available information (e.g. BGS Infiltration SuDS Map) will suffice for outline applications.

Watercourse:

If discharging to a watercourse, ditch, stream etc. the applicant must demonstrate that the system is an appropriate point of discharge for the site i.e. would take existing pre-development flows. If not then further information/assessment will be required to determine the suitability of the system to convey the proposed flows and volumes of water. Evidence will be required that the development will not increase risk to others. If the proposed discharge point is outside the development site then the applicant will need to demonstrate that the necessary permissions and/or agreements to achieve the connection are possible.

Public Sewer :

If discharging to a public sewer then evidence of agreement in principle from the owner/undertaker (e.g. Dwr Cymru / Welsh Water) will be required.

PRO-FORMA B - DETAILED DRAINAGE DESIGN

In addition to the details outline in Pro-forma A, the details below are necessary to provide sufficient information so that the Council can be satisfied that the system will function as intended to achieve the above drainage criteria. This information is considered comprehensive enough to allow any condition related to surface water management placed on the development to be discharged.

In addition to 1 to 14 in Pro-forma A, please include:		
15	Detailed drawings/plans of the proposed drainage system including dimensions, levels, pipe sizes, manhole details etc.	
16	Details of the proposed discharge control.	
17	Details of the attenuation storage required based on the above discharge control and how this attenuation will be achieved on site.	
18	Calculations or modelling of the proposed systems. This will need to show how the system operates to achieve the following drainage criteria: • No on-site flooding for events up to the 3.33% event. • How flooding (if any) between the 3.33% (1 in 30 year) and 1% (1 in 100 year) + climate change events are suitably contained on site. • Residual Risk and Designing for Exceedance: As well as consideration of modelled events, there should be an examination of what would happen in respect of storms in excess of the design event or system failures e.g. blockage. It is expected that the development will be designed to minimise the consequences of such scenarios.	

APPENDIX B

FURTHER RECOMMENDED READING & GUIDANCE.

- CIRIA C697 The SuDS Manual
- CIRIA Report 156 – Infiltration Drainage – manual of good practice
- CIRIA C713 Retrofitting for surface water management
- CIRIA C698 Site handbook for the construction of SUDS
- CIRIA C738a Managing urban flooding from heavy rainfall - encouraging the uptake of designing for exceedance - Recommendations and summary
- CIRIA C635 Designing for exceedance in urban drainage: Good practice
- CIRIA X108 Drainage of development sites - a guide
- UK Sustainable Drainage – Guidance and Tools. Available at: http://www.uksuds.com/greenfieldrunoff_js.htm
- British Standard - BS 8582:2013 Code of practice for surface water management for development sites
- Rainfall runoff management for developments R&D Technical Report SC030219
- Soakaway Design – BRE Digest 365

contact

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