

Policy PUBDM5: Surface water run-off

All development proposals will need to incorporate measures to attenuate surface water run-off in a manner appropriate to the Broads. This will need to reflect the characteristics of the site in accordance with a drainage hierarchy for rainwater so that, in order of priority, they:

- a) continue natural discharge processes;
- b) store water for later use;
- c) adopt shallow infiltration techniques in areas of suitable porosity;
- d) store water in open water features for gradual release to a watercourse;
- e) store water in sealed water features for gradual release to a watercourse;
- f) discharge direct to a watercourse;
- g) discharge direct to a surface water drain; or
- h) discharge direct to a combined sewer/deep infiltration or borehole soakaways.

The surface water run-off rates that will occur as a consequence of the development are required to be no more than those prior to the development taking place. However applicants are encouraged to seek betterment in surface water run off as part of their proposals.

Sustainable Drainage Systems (SuDS) shall be used unless, following adequate assessment, soil conditions and/or engineering feasibility dictate otherwise.

Proposals to address surface water must be considered at an early stage of the scheme design process. The following criteria need to be addressed when designing measures to address surface water:

- i) Use a risk assessment on treatment stages to reflect the type of proposed development and how surface water run-off and drainage will affect the receptor;
- ii) Take the current drainage arrangements of the area into account;
- iii) Take natural site drainage and topography into account;
- iv) Effectively manage water including maintenance of and, where possible improvement to water quality; and
- v) Provide amenity for local residents whilst ensuring a safe environment.

Where SuDS via ground infiltration is feasible, in order to ensure that SuDS discharge water from the development at the same or lesser rate as prior to construction, developers must undertake groundwater monitoring within the winter period and winter percolation testing in accordance with the current procedure¹.

Minor developments which increase the footprint of an impermeable surface are required (where appropriate) to incorporate mitigation measures to reduce surface water runoff, manage surface water flood risk to the development itself and to others, maximise the use of permeable materials to increase infiltration capacity, incorporate on-site water storage and make use of green roofs and walls wherever reasonably practicable and appropriate in accordance with design policies..

Within the critical drainage catchments as identified by the Lead Local Flood Authority and in other areas where the best available evidence indicates that a serious and exceptional risk of surface water flooding exists, all development proposals involving new buildings, extensions and additional areas of hard surfacing shall ensure that adequate and appropriate consideration has been given to mitigating surface water flood risk.

¹ Currently BRE Digest 365

Schemes that involve SuDS will be required to provide details of the management regime to ensure effective operation of the type of SuDS delivered.

Reasoned Justification

The policy seeks to ensure that surface water run-off is discharged as high up the following **hierarchy** (as set out in the NPPG) as possible:

- into the ground (infiltration);
- to a surface water body;
- to a surface water sewer, highway drain, or another drainage system;
- to a combined sewer.

Sustainable drainage systems (SuDS) slow the rate of surface water run-off and improve infiltration, by mimicking natural drainage in both rural and urban areas. This reduces the risk of “flash-flooding”, which occurs when rainwater rapidly flows into the public sewerage and drainage systems. SuDS can also be used to enhance the environment of a site by contributing to green infrastructure and providing habitats for wildlife.

The Government has issued a written statement in relation to SuDS² saying that ‘*we expect local planning policies and decisions on planning applications relating to major development (developments of 10 dwellings or more; or equivalent non-residential or mixed development) to ensure that sustainable drainage systems for the management of run-off are put in place, unless demonstrated to be inappropriate.*’. The policy seeks to address this direction.

Types of SuDS

The Broads is ideally suited for this sort of approach as dykes and other forms of holding basins are characteristic of the landscape. There is a range of possible SUDs techniques that can be utilised. However, not all techniques will be appropriate for individual development sites. Examples of SuDS include retention ponds (a depression which holds water even during dry weather conditions), water butts and swales (long vegetative depression which is normally dry except during and after heavy rainfall).

Designing SuDS

An appropriate amount of land take should be allowed to account for SuDS within any development. To be most effective SuDS proposals need to be integrated into scheme designs at an early stage and not retro-fitted once layout has already been established.

Special consideration will need to be given to the design of the drainage system when there is known flooding issues within the immediate catchment of the development. Generally known flooding issues do correlate with areas shown as high risk flooding on the Government Risk of Surface Water Flooding (RoSWF) maps however the LLFA will highlight any relevant information at the time of consultation.

It is acknowledged that the scope of any drainage strategy should be proportionate to the scale of the development and the amount and type of flood risk the development site is subject to. As part of any drainage strategy it will be important to identify existing drainage arrangements in order to determine the available options for draining the site as well as to ascertain the impact of the proposal post development.

² <http://www.parliament.uk/documents/commons-vote-office/December%202014/18%20December/6.%20DCLG-sustainable-drainage-systems.pdf>

In certain instances it may not be appropriate to attenuate significant amounts of water due to ecological considerations however water quality issues should always be considered. A risk assessment should be undertaken and appropriate treatment stages should be introduced if the receiving environment is assessed as being sensitive to development.

Normal infiltration SuDS should be no deeper than 2m, below ground level with a minimum of 1.2m clearance between the base of infiltration SuDS and the peak seasonal groundwater levels. Monitoring/testing of groundwater must be undertaken in winter as this tends to be the time of year that sees most precipitation and higher groundwater levels.

Advice from Norfolk County Council (Lead Local Flood Authority) is that deep infiltration or borehole soakaways should be the final option for consideration on a par with discharge to a combined sewer. Whilst these methods can provide groundwater recharge via infiltration at depth, it does not mimic the natural drainage system as would shallow infiltration. Furthermore, the Environment Agency have also stated that they would not support the use of deep bore soakaway systems as these can present an unacceptable risk to groundwater environment. Applications are expected to clearly demonstrate with supporting information as to why other SuDS discharge options are not appropriate prior to proposing deep infiltration/borehole soakaway. If deep bore soakaways are proposed the developer may require an environmental permit from the Environment Agency for a direct discharge to groundwater.

Good examples of how development can be planned to manage water and deliver multiple benefits effectively are outlined in the RSPB/WWT report 'Sustainable drainage systems: maximising the potential for people and wildlife – A guide for local authorities and developers' (available at https://www.rspb.org.uk/Images/SuDS_report_final_tcm9-338064.pdf).

Areas with concentrated surface water risk will be identified by the Lead Local Flood Authorities as Critical Drainage Catchments³ (CDCs). The CDCs form the main focus for partner engagement, detailed analysis and potential implementation of flood protection schemes as well as the production of Surface Water Management Plans⁴ which look in detail at places that have suffered surface water flooding or have a high surface water flood risk. Currently there are no CDCs in the Broads Authority area.

Management, maintenance and adoption of SuDS

The management of SuDS during the construction phase, to ensure they operate in an effective manner is of importance. Once constructed a management plan needs to be in place, along with appropriate resources, to ensure they continue to operate in perpetuity. With regards to adopting SuDS, Anglian Water's current standards for SuDS adoption are available to view at the following address: <http://www.anglianwater.co.uk/developers/suds.aspx>

Additional information

There are various sources of technical information that can be used when addressing surface water and designing SuDS:

- NPPG⁵

³ A Critical Drainage Area is a discrete geographic area (usually a hydrological catchment) where multiple or interlinked sources of flood risk cause flooding during a severe rainfall event thereby affecting people, property or local infrastructure

⁴ <https://www.norfolk.gov.uk/what-we-do-and-how-we-work/policy-performance-and-partnerships/policies-and-strategies/flood-and-water-management-policies/surface-water-management-plans> and

<https://www.suffolk.gov.uk/roads-and-transport/flooding-and-drainage/flood-management-in-suffolk/>

⁵ <http://planningguidance.communities.gov.uk/blog/guidance/flood-risk-and-coastal-change/reducing-the-causes-and-impacts-of-flooding/why-are-sustainable-drainage-systems-important/>

- Non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems⁶
- SuDS manual produced by CIRIA⁷.

Evidence used to inform this section

- The NPPG and advice from Norfolk County Council as the Lead Local Flood Authority.

Monitoring Indicators

- SuDS delivered in line with the hierarchy.

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

⁷ In delivering SuDS there is a requirement to meet the framework set out by the Government's 'non statutory technical standards' and the revised SuDS Manual complements these but goes further to support the cost-effective delivery of multiple benefits. http://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx