Surface water flood risk and Sustainable drainage systems

The Flood and Water Management Act 2010 states, in Schedule 3, that a SuDs Approval Body (SAB) will be created and required to assess and approve any sustainable drainage systems and, if approved, adopt and maintain those systems for their lifetime. In December 2014, the Government announced a change of National Planning Policy in relation to sustainable drainage systems, this policy will take effect from 6 April 2015, and applies to major developments of 10 or more dwellings and major commercial schemes. From that date the lead flood authority (LLFA), will be a statutory consultee on these major planning applications for surface water flood risk management advice and sustainable drainage systems.

Dudley Council strongly promote and encouraged the uptake of sustainable drainage systems (SuDS) predominantly through the planning system as a means to reduce flood risk, improve inland waters as well as enhance the environment for wildlife.

The National Planning Policy Framework (NPPF) states that “the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of …water pollution”. Support for the use of a SuDS approach also ensures that development does not increase flood risk elsewhere.

If a SuDS based drainage solution is adopted or full compliance with the SuDS Standards would lead to the development becoming unviable, then the developer is required to submit a proposal to the LLFA regarding:

- the specific Standards that impact on viability;
- the extent to which compliance can be achieved and viability is retained;
- the likely environmental impact associated with non-compliance, and proposed mitigation measures.

The applicant must provide evidence that all options for a viable design that fully complies with these Standards have been explored.

When making planning applications, developers will get the best results if they consider the use of SuDS options early in the site evaluation and planning process, not just at the detailed design stage.

It is therefore important to engage in early discussions with the SuDS team, who work alongside their colleagues in the highway and planning authorities. This will ensure that surface water management is integrated into the development, leading to an effective drainage design with costs adequately considered at the start of the development.

There will be a SuDS solution to suit the site, due to the wide range of components available. To determine the right technique it is necessary to first establish the soil conditions and hydrology of the site and use the results of the investigations to support the drainage proposals. The choice can also be significantly influenced by the sites land use history, quality of the land (whether it is
affected by contamination), the need to protect vulnerable groundwater sources and the permeability of the soil. For example infiltration systems including soak aways may not be appropriate in land that is undermined by coal extraction, contaminated or clay in based soils.

SuDS solutions are most cost effective when designed to work with the natural drainage pattern of the site, for example designed to use existing ditches or natural depressions for swales and ponds or designed to form part of hard and soft landscaped areas. Ponds and green spaces will provide habitats for wildlife to flourish, reduce pollution and provide areas for people to enjoy, adding value to the site.

In the early stages of the site design, consideration should be given as to how the drainage system will be adopted and maintained in the future. It is likely these decisions will influence the design just as much as the technical considerations.

The local planning authority will determine the application in accordance with national and local policies whilst taking into account advice on technical matters from the LLFA.

The LPA will need to be satisfied that:

- any proposals meet national and local policies
- any proposals clearly identify who will be responsible for maintaining the sustainable drainage systems and funding for maintenance should be fair for householders and premises occupiers; and,
- set out a minimum standard to which the sustainable drainage systems must be maintained.

What is expected from the developer?

- Ensure that any submission has been designed in accordance with the National Non statutory technical standards for SuDS, local Strategies, policies and other relevant guidance.
- Use “Planning for SuDS – making it happen” CIRIA C687 to guide the planning of the site
- Check EA web site to see if the development site is in an area at risk of river flooding
- Check to see if the development site is in an area of surface water flood risk by consulting the LLFA.
- Consider guidance provided by Susdrain at www.susdrain.org
- Consider how to manage the rate of surface water run-off so that it is similar to the conditions before the development, that is, Greenfield run off equivalent. Also consider the effect this run-off will have on any receiving ground or watercourse
- Use the “Code of Practice For Surface Water Management For Development Sites” BS8582:2013, in developing a drainage strategy for the site
- Use Environment Agency’s Groundwater Protection (GP3) Principles and Protection when considering infiltration systems
- Speak to the SuDS team about local ground conditions and the suitability of various Sustainable drainage systems. The SuDS team will also provide advice on local historical incidents, current flood and future surface water flood risk.
- Speak to the SuDS team about the surface water drainage proposals for the site. They can advise on what consents will be required, which types of SuDS are unsuitable and whether to take special precautions to prevent pollution or reduce infiltration
- When carrying out the detailed SuDS design, use “The SuDS Manual” CIRIA C697 to inform the choice of SuDS components, maintenance, etc; for the development
• Demonstrate in the Flood Risk Assessment (FRA) that surface water will not cause flooding on site or offsite as a result of the proposed development

• Whilst constructing the site, protect adjoining areas from flooding

• Consider the timetable for construction. Where permeable surfaces are installed, ensure they are not blocked with silt from site activities. Ensure that any planting is carried out in the right conditions

• Ensure there is an adequate management and maintenance system in place to ensure operation of the drainage system until final adoption

Pre-application discussions

The SuDS team will either engage in direct pre-application discussion with developers, or as part of a multi-disciplinary team during LPA discussions. The importance of early discussions cannot be over-emphasized. They should establish the following:

a) hydrological, planning and environmental objectives for the site (leading to a drainage strategy)

b) requirements of the local drainage approval and designation processes, including consents, inspections, commuted sums for future maintenance, etc;

c) environmental or technical constraints to drainage design for the site

d) the need for a Flood Risk Assessment (FRA)

e) planning layout and constraints – in joint discussions with the Local Planning Authority

f) highway layout and constraints – in joint discussions with the Local Highway Authority

gh) establishing blue and green corridors within the development

h) design criteria for the surface water management system

i) designing the surface water management system for future maintenance

j) opportunities for the surface water management system to deliver multiple benefits

k) land ownership for drainage routes and points of discharge (including proposed sewer connections)

l) existing drainage systems - both on and off site

m) stakeholder responsibilities and requirements, including timescales for any likely approvals/consents

n) temporary drainage during the construction phase(s).

For larger sites or multi plot developments, where the land is sub divided into separate plots owned by different landowners, or where there is an intention to develop the land in phases, the content for a drainage Masterplan should be agreed at this stage.

The Masterplan should be designed to ensure effective communication between all developers and identified stakeholders in establishing the selection, implementation and phasing of source control, site and regional and/or linking drainage components, together with responsibilities for temporary drainage and maintenance during construction.

The above should be supported by providing a completed copy of the attached pro forma
Outline planning application

The following information should be presented in the form of a drainage strategy to enable determination of the application:

a) the technical design criteria used for the development site(s) based upon the national SuDS guidance supported by Ciria, UK SuDS and Susdrain guidance

b) any constraints which affect the proposed development

c) topographical survey of the site, including levels and sections of any adjacent water courses for an appropriate distance upstream and downstream of discharge point

d) how the indicative drainage design meets the FRA requirements (if an FRA is required)

e) proposed approach in the drainage design to deal with flood risk, water quality, conveyance, storage, exceedance routes and multi functional use of drainage ‘space’ to meet community and environmental requirements

f) details of any offsite works required

g) details of any consents required

h) identification of discharge points or receptors i.e. to ground, watercourse or sewer

i) identification of sensitive receptors, including groundwater protection zones, habitat designations or archaeological features

j) an assessment of the need and opportunity for rainwater harvesting and use

k) evidence of infiltration capacity at the site and suitability of infiltration drainage

l) proposed design calculations for peak flow, volume control and greenfield runoff, and/or brownfield runoff where appropriate. Based upon the national SuDS guidance showing pre-development (greenfield or brownfield as relevant) and post-development runoff rates, critical storm duration and associated storage estimates with indicative impermeable areas. The HR Wallingford web site UKSuDS provides tools for site drainage design and evaluation including Greenfield runoff and storm water storage calculations

m) inclusion of climate change, future development allowances and quantification of any surface water flows on-site from off-site locations

n) temporary drainage during construction

o) proposed split of the surface water management systems between private (i.e. within curtilage) and public (i.e. in public open space and/or highway)

p) the relationship with and links to the LFRMS, Water Framework Directive, Planning, Sustainability and Environmental Policies (National, Regional and Local)

The Masterplan (in addition to the drainage strategy information) should include:

i. details of phasing;

ii. individual plot discharge and storage constraints;

iii. who would be responsible for construction, maintenance and adoption of the regional and/or linking components of the drainage system;
iv. who would be responsible for controlling the overall surface water management of the site;

Due to the nature of outline planning applications and whether or not certain aspects of the proposed development are reserved, the amount of information which would be contained within the drainage strategy (set out above) should be considered to be a minimum.

If the drainage of the site is not reserved (and the layout and landscape design are also not reserved) then the drainage strategy should be more detailed as set out below.

It is likely that an outline planning permission will have a condition(s) attached requiring the submission of more detailed drainage information which must be approved before the development can commence.

**Full planning application**

(or reserved matters application if applicable)

**Detailed design**

If a reserved matters application is being made, the submission on the detailed design and layout of the sustainable drainage system should update and enhance the drainage strategy, taking into account the advice from the SuDS team and stakeholder inputs, and be submitted as a detailed drainage strategy.

If a full planning application is being made then the submission should be a combination of the information required for an outline application drainage strategy and the following information, to produce a detailed drainage strategy:

a. Final design calculations to demonstrate conformity with the design criteria for the site for peak flow, volume control and greenfield runoff, and/or brownfield runoff where appropriate. Based upon the national SuDS guidance showing pre-development (greenfield or brownfield as relevant) and post-development runoff rates, critical storm duration and associated storage estimates to determine the scale (and associated land take) of conveyance and storage structures;

b. Existing and proposed site sections and site levels;

c. Long sections and cross sections for the proposed drainage system;

d. Plan of proposed SuDS with sub-catchment areas including impermeable areas and phasing;

e. Details of connections to watercourses and sewers;

f. Operational characteristics of any mechanical features including maintenance and energy requirements;

i. Plan demonstrating flooded areas for the 1 in 100 year storm when system is at capacity and demonstrating flow paths for design for exceedance;

j. Allowance for urban creep varying between 2 and 10% depending on development size

k. Access tracks/roads and hard standings arrangements for all proposed SuDS;

l. Management plan for all non Water Company adopted drainage. This must include a formal agreement, in a format agreed with the LLFA, identifying roles and responsibilities for each organization or company for SuDS inspections, maintenance and repairs for the life of the SuDS facilities.

m. Landscape planting scheme if proposing vegetated SuDS;

n. Plan for management of construction impacts including any diversions, erosion control,
phasing and maintenance period (pre-adoption);

The local planning authority will determine the application in accordance with national and local policies whilst taking into account advice on technical matters from the LLFA.

Due to the nature of full or reserved matters planning applications certain aspects of the proposed development may not be fully developed at the time of submission. The amount of information which would be contained within the detailed drainage strategy (set out above) should be considered to be a minimum.

If the applicant has not fully detailed the drainage design, it is likely that the planning permission will have a condition(s) attached requiring the submission of more detailed drainage information which must be approved before the development can commence.

GUIDANCE

National

Ciria C687 Planning for SuDS (www.ciria.org)

BS 8582 2013 Practice for surface water management

National guidance for SuDS

UK Sustainable Drainage guidance and tools (www.uksuds.com)

Susdrain SuDS guidance (www.susdrain.org)

Water Framework Directive

Groundwater protection Principles and Practice (GP3) 2013 Environment Agency

Local

Black Country Core Strategy (ENV5) 2011 1 (www.Dudley.gov.uk)

Black Country SFRA

Dudley Council Preliminary Flood Risk assessment (PFRA) www.dudley.gov.uk

Dudley Council Local Strategic Flood Risk Strategy (LFRMS)

English River Severn and Humber Flood Risk management Plans (FRMP)

Dudley Local Action/Development/Area Plans (www.dudley.gov.uk)