1. Introduction

National planning policy was recently amended, through a ministerial statement, to require all new major development, received from 6th April 2015, to use sustainable drainage systems (SuDS) in their proposals for the management of surface water runoff.

SuDS are designed to control surface water runoff close to where it falls and mimic natural drainage as closely as possible, ideally by utilising existing landscape features and by keeping water above ground. SuDS aim to:

- reduce the risk and impacts of flooding;
- remove pollutants from urban runoff at source;
- provide amenity benefits;
- contribute to improving and enhancing biodiversity.

SuDS, if installed correctly, can provide additional benefits such as; enhancing the natural and built form of development, providing educational and recreational enhancement and by protecting water resources.

The Local Planning Authority requires, through a planning application submission, a developer to include SuDS and to demonstrate that that these meet minimum standards of operation. Proposals will be assessed in consultation with the Lead Local Flood Authority (LLFA) function within the Council. Arrangements will need to be proposed for their long term future maintenance, including who will be the adopting body responsible for them. This should form the basis of a management plan. Planning conditions or a section 106 legal agreement will be used through the planning process to secure these.

SuDS comprise many components and each will need to be tailored to the specific location, constraints and opportunities for each site. There is no ‘one size fits all approach’ to SuDS.

2. Purpose of this guidance

This guidance provides introductory advice on how best to approach the development of SuDS proposals within schemes. It is not designed to be exhaustive; given the wide range of industry guidance already available.

This guidance also provides information on the criteria needed to support planning application submissions.

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1 10 dwellings or more, or greater than 0.5 hectares of commercial development
Given existing requirements set out within the National Planning Policy Framework (NPPF), the Council is also seeking to apply these principles to all ‘other’ planning applications, where drainage is a particular consideration.

3. Who is responsible for approving SuDS?

SuDS are a material planning consideration and will be assessed as part of the planning process. The Lead Local Flood Authority (LLFA) will be a statutory consultee in this process for all major development from 6th April 2015. It is the responsibility of the LLFA to advise the Local Planning Authority on the acceptability of SuDS proposals.

The Environment Agency are no longer a statutory consultee for surface water management but retain their statutory role with regards to flooding from rivers and the sea.

4. What standards do SuDS have to meet?

The NPPF places great emphasis on the need to reduce the risk and impact of flooding.

Sites deemed to be at risk from flooding, will still be required under the NPPF, to provide a site specific Flood Risk Assessment (FRA).

a) Non-Statutory Technical Standards

The government have produced ‘non-statutory technical standards for sustainable drainage systems’ to assist. The Council will be using these as a basis for assessing proposals. The standards cover the following topic areas:

- Flood risk outside the development
- Peak flow control
- Volume control
- Flood risk within the development
- Structural integrity
- Designing for maintenance considerations
- Construction

Industry guidance to support these standards has been produced by the Local Authority SuDS Officer Organisation (LASOO) and can be found on their website.

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2 This includes minor development where there are drainage implications.

3 “flood risk” is defined by the Planning Practice Guidance as a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.
b) Runoff Destinations
Surface water should be discharged as high up the following drainage hierarchy as reasonably practicable:
1. Infiltration into the ground.
2. To a watercourse.
3. To a surface water sewer.
4. To a combined sewer.

Discharge into a combined sewer should be a last resort, once all options have been fully explored and tested. Evidence to demonstrate this would be needed. Discharge should never be made to a foul sewer.

This process is consistent with Part H of the Building Regulations.

c) Water Quality
The non-statutory technical standards do not cover water quality. However, the SuDS system will still need to be designed with the appropriate water quality treatment processes, based on the nature of the development.

Water quality and design criteria can be found in Chapter 4 of the new ‘SuDS Manual’ (C753), particularly in Sections 4.2 and 4.3. A Simple Index Approach (SIA) has been developed by the Scottish Environmental Protection Agency to support the use of the standards that are in the manual – these can also be used in England. The tool and additional guidance can be found on the Susdrain website.

It is recommended that developers familiarise themselves with these standards before pursuing to develop SuDS proposals as it will help assist in both the planning and evidence gathering.
5. How should SuDS be incorporated into a development?

Each site will warrant a different approach to the composition of SuDS. This will be dependent on many factors such as, topography, shape, size and permeability.

SuDS are more likely to be successful where they are planned for at the **earliest stages of a project**. Particularly so, as some SuDS components will require a specific amount of land to be allocated to them so that they are effective.

The Local Planning Authority offers pre-application advice on development proposals. This service is recommended as it will assist in the preparation of your application, provide detailed advice from specialist officers and ultimately lead to a smoother process once a submission is made. This can also assist in the preparation of legal agreements and help to alleviate the need for planning conditions.

Chapter 7 of the ‘SuDS Manual’ (C753) outlines a four stage process for the SuDS design process. This includes a series of flow charts and additional guidance to fully explain the stages which are outlined below:

1. **Set strategic surface water management objectives**
   
   This stage requires consultation with the relevant stakeholders to establish the strategic objectives for managing surface water on the development. For example, this should take account of flood risk, water quality, biodiversity and amenity needs and maintenance requirements.

   The Council’s pre-application advice service will help to support this stage.

2. **Conceptual design (initial design and layout)**
   
   The conceptual design requires information about the features of the site and also what is required from the development (the vision) as these will have an impact on the SuDS design.

   Site investigations will need to be undertaken to consider topography (and identify natural flow routes), infiltration capacity, discharge points and any existing flood risks. SuDS should aim to mimic the natural drainage of the site prior to its development. The natural drainage should be fully investigated first, so that the
SuDS design can utilise the landscape, taking advantage of natural storage areas, flow routes and any sub-catchments. This will also assist in managing exceedance flows. Permeability, topography and existing below ground conditions are all important considerations which need to be understood upfront as these will influence the layout of the site.

For brownfield sites\(^4\), existing arrangements will still need to be investigated to establish if there are any remaining connections into public sewers and what existing discharge rates are.

A contextual analysis should be carried out so that SuDS proposals take account of the constraints and opportunities of the site. Understanding a sites’ context is important in developing a successful strategy.

The site context will influence the conceptual SuDS layout. It provides opportunity to integrate with open space, connect with blue and green infrastructure and provide a natural transition with the built form. This may also assist in locating treatment stages to improve water quality.

There must be no surface water runoff from a development onto a neighbouring site or onto the public highway. Flood Maps for Surface Water are available on the Environment Agency website and may be of assistance as the SuDS may need to be able to accommodate overland flows which run onto the development site.

Flood Maps for Surface Water are available here:


The vision for the development itself will cover the nature of the development required on the site, other infrastructure required and who will be responsible for the adoption and maintenance of the SuDS system. Think about the following questions:

- How will SuDS be integrated into the development?
- Can it be interlinked with public open space to provide multi-functional benefits?
- How can SuDS be used to enhance the visual appearance and marketability of the development?

\(^4\) Land which has been previously developed and occupied by a permanent structure (excluding agricultural and forestry buildings)
What are the objectives for how surface water should be managed on the site?

This will help to establish the design criteria for the site which can be used to assess the design against. This will help to refine the design throughout the development process to ensure that it is achieving what is needed.

**Throughout this stage, the 4 main aims of SuDS should be reflected upon.**

The conceptual plan should demonstrate how the SuDS management train\(^5\) has been considered. ‘End of pipe’\(^6\) solutions should be avoided. More detail on this is available in the Ciria ‘SuDS Manual’ (C753).

See Table 2.1 of ‘Planning for SuDS – making it happen’ (C687) for an overview of how the different SuDS components contribute to flood risk management, water quality, amenity and biodiversity.

The SuDS Management Train

Use of the SuDS management train (sometimes known as a ‘treatment train’) will assist in developing solutions which best reflect the natural drainage patterns of a site, whilst contributing to runoff control, providing water storage and by treating pollution. The diagram on the next page shows how the management train can be applied, using a sequence of SuDS components.

End of pipe solutions should be avoided as they do not provide treatment of runoff that is collected. They also do not reduce the volume of water that needs to be attenuated and conveyed off site.

Using the management train approach will provide the required water quality treatment for the proposed landuses and should help reduce the volumes of water that get passed from one stage to the next.

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\(^5\) A concept used in the development of SuDS where the system is divided into four stages which manage the quantity and quality of the runoff.

\(^6\) Drainage systems where a traditional piped system is used to drain into a SuDS feature mainly for attenuation purposes.
3. **Outline Design (sizing and optimisation)**
At this stage of the process the SuDS design can begin to be developed alongside the layout and design of the proposed development. There will be a need for more information relating to the drainage characteristics of the site in order to begin to estimate the storage volumes required.

4. **Detailed design (testing and finalising scheme)**
The detailed design is the stage where the design is finalised for approval. This requires detailed calculations on the performance of the system against the design criteria and the approval standards from Section 4 of this document.
Finalise the Detailed Design
The final design should include specific locations and dimensions for SuDS components and calculations to show the performance of the system under different rainfall conditions.

The final system should meet the 4 aims of SuDS listed at the beginning of this document.

All future maintenance requirements should be taken account of and will need to be determined and secured, based on the nature and type of SuDS. An adopting body\(^7\), for the future maintenance will need to be proposed. These will form the basis of planning conditions and/or a section 106 legal agreement.

6. Case Studies
The Susdrain website contains examples of how SuDS have been used on a variety of developments, which may be of use.

See the Susdrain website for further information:
http://www.susdrain.org/case-studies/

7. What SuDS components are available?
The SuDS hierarchy outlined in the table below lists the main SuDS components that are available and the benefits that they bring.

This list included in this table is not exhaustive. There is further detailed information available in industry guidance, some of which is detailed in the box on the next page.

\(^7\) The organisation who will be responsible for the operation and maintenance of the SuDS.
North East Lincolnshire Council SuDS Guide (v4)

8. **What should I submit with my planning application?**

A SuDS Strategy is required. This will be required before a major application can be validated. In addition, a site specific Flood Risk Assessment will be needed, if the site is at risk from flooding.
The following checklist states the requirements for planning application submissions. Providing these, should ensure that proposals also meet the Technical Standards issued by Defra.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Outline</th>
<th>Full</th>
<th>Reserved Matters or Discharge of Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documents</strong></td>
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<td></td>
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<tr>
<td>SuDS Strategy Report which should include:</td>
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<tr>
<td>• Details of how the site drains prior to the proposed development</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>including the presence of sub-catchments and any flows originating</td>
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<td>from neighbouring sites which will need to be accommodated.</td>
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<tr>
<td>• Details of proposed permeable and impermeable areas of land.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• Permitted discharge rate (as agreed with receiving authority).</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Discharge to a watercourse should include an assessment on the ability</td>
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<tr>
<td>of the receiving water body to convey the flows from the site without</td>
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<td>increasing risk to third parties.</td>
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<tr>
<td>• If infiltration is proposed percolation tests should be provided and</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>impacts on groundwater quality should be assessed.</td>
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<tr>
<td>• Assessment of volume of storage required (including allowance for</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>climate change).</td>
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<tr>
<td>• Information about the proposed adopting organisation.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• Explanatory SuDS statement explaining how all three aims have been</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>met and referring to how the SuDS management train has been used.</td>
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<tr>
<td>• Calculations showing the performance of the system. This should</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>include the 3.33% and 1% annual probability rainfall events (including</td>
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<td>allowance for climate change) and identify the critical storm. Any</td>
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<tr>
<td>assumptions used in these calculations should be clearly stated.</td>
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<tr>
<td>• Evidence of how the site will deal with flows from an extreme</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>rainfall event (greater than 1% annual probability/0.1% annual</td>
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<tr>
<td>probability). Plans should be included showing overland flow routes</td>
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<tr>
<td>and how these avoid any buildings or emergency access routes.</td>
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<tr>
<td>• Details of any flow control devices to be used.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>• Simulation files (if Microdrainage has been used).</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>• Landscape planting scheme.</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>• Construction method statement.</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Large multi-phased developments will need to set out criteria for how</td>
<td>✓</td>
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<tr>
<td>different phases of the overall development will be accommodated by</td>
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<tr>
<td>the strategic SuDS network.</td>
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<tr>
<td>Maintenance Plan.</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>

8 Department for Environment, Food and Rural Affairs – the government department responsible for national SuDS policy
### Criteria

<table>
<thead>
<tr>
<th>Plans</th>
<th>Outline</th>
<th>Full</th>
<th>Reserved Matters or Discharge of Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topographical plans of the existing site including cross sections where needed.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Conceptual SuDS plan showing allocated landuses within the site and demonstrating the use of the SuDS management train approach (including treatment stages needed). This should also demonstrate how the SuDS have been integrated with the landscape and highlight exceedance flow routes for more extreme rainfall events (greater than 1% annual probability).</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Detailed technical plans, drawings and cross-sections showing the layout of the SuDS scheme and the development.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Construction phasing plan and how this impacts on the delivery of the SuDS i.e. timing of when certain components need to be installed to service the ongoing development.</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Failure to provide information may result in delays validating or determining a planning application. In severe cases, it may also lead to a refusal of planning permission.

**Outline**

Applications submitted for Outline permission need to be able to demonstrate that there is a viable option for managing surface water through the use of a sustainable drainage system.

**Full**

Applications for Full permission will need to provide the detail on a proposed SuDS scheme in order to demonstrate that it meets the requirements from Section 4 of this guidance. If more detail is submitted at this stage it will help with the approval process and may reduce the need for some conditions. It also gives more confidence about how flood risk will be managed on site.

**Reserved Matters or Discharge of Condition**

Reserved Matters applications provide detail on the matters that were reserved at the Outline stage. Information submitted should build upon what was submitted for the Outline application. Some resubmission of previous information may be required in order to provide the complete picture on the proposed sustainable drainage system.

Applications to discharge conditions will be treated similarly depending on the wording of the initial condition.
What should be included in a maintenance plan?
Long term maintenance of SuDS will be secured by planning condition. The responsible person or adopting body will be secured through a section 106 legal agreement.

Final designs of SuDS should consider future maintenance activities, including the necessary access required to undertake them. SuDS serving more than 1 property should be located in, over or under publicly accessible land.

The maintenance plan should include:
- A description of the routine maintenance activities (including cost and frequency) required for all components of the system. This should also include information on the expected lifespan of components and the costs to replace them at the end of their life.
- Plans showing who will be responsible for all components and how they will be accessed for maintenance work. This should include any features which serve a single property and are to be maintained by the property owner.
- Details of how the maintenance will be funded.
- Details of the annual monitoring that will be undertaken by the party responsible for management and how this will be reported to the Council.
- A proposed schedule of visits to be undertaken by the Council to monitor construction and to ensure compliance with approved plans.

The costs of installation, future maintenance and management should be costed within the initial phases of development to ensure it is appropriate and viable in the long term.

What climate change allowances need to be considered?
The National Planning Practice Guidance (NPPG) requires climate change to be considered in the future capacity of SuDS. The Environment Agency updated their climate change guidance on 19 February 2016. This new guidance now provides a set of allowances (percentiles) for some of the indicators and has broken some down by the region of the UK. It may be necessary to use more than one of the allowances from the range of percentiles given to assess the potential impacts in the long term. Please read this guidance through carefully and get in touch if you have any questions on which allowances to use.

‘Climate change allowances for planners’ can be found at:
Are there additional requirements for large multi-plot developments?
Larger, multi-phased developments can be complex. Proposals for these will still need to demonstrate how surface water from each phase can be accommodated in the context of the site-wide strategic SuDS scheme.

In this situation, the details submitted as part of the planning application will need to show what discharge allowances have been made for individual phases.

9. When should SuDS be used?
SuDS are a requirement for all major development received from 6th April 2015. However, all schemes which affect drainage will have to demonstrate sustainable drainage principles.

If SuDS are investigated and fully explored in the initial phases of developing a scheme, it will be more likely that a suitable solution will be found which will be viable and provide multi-functional benefits.

Officers are available to provide additional assistance in this matter and the Council would urge developers to take advantage of the Councils pre-application advice service.

10. Further Information
Further information on the use of SuDS and how to incorporate and design them, can be found here:

- Planning for SuDS – making it happen (C687) – Ciria 2010.
- The SuDS Manual (C753) – Ciria 2015
- Susdrain – the community for sustainable drainage. The website contains advice and case studies - www.susdrain.org
- UK SuDS tools website - www.uksuds.com