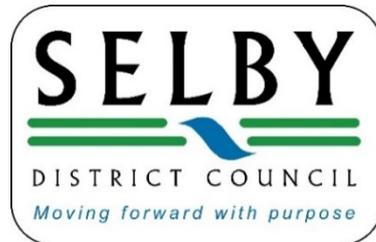
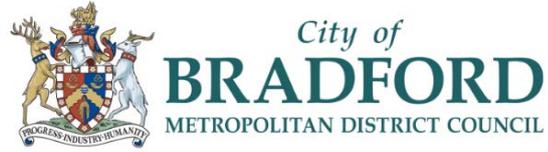


Leeds City Region Sustainable Drainage Systems Guidance

February 2020



Foreword

The 2015 Boxing Day floods had an unprecedented impact on the Leeds City Region in both the extent and severity of the flooding, and the damage and devastation that was caused. In a 24-hour period some parts of the City Region received more than a month's worth of rainfall. The surface water run-off into the river system was rapid and the subsequent rise in river levels allowed little time for communities to prepare.

Managing the flood risk and decreasing the rate of rainwater run-off is a key factor in reducing the likelihood and severity of future flood events. This can be achieved by the incorporation of Sustainable Drainage Systems (SuDS) when designing and building new developments.

The publication of this guidance delivers a commitment made in the Leeds City Region Flood Review to provide a stronger steer for the delivery of SuDS.

We all know the significant impact that flooding can have upon communities and the important role that flood prevention measures can have in reducing the numbers of homes and businesses affected when flood events occur.

We are committed to a proactive and innovative approach to ensuring the City Region, working in partnership with key partners, is resilient to flooding. This has recently been demonstrated with the successful delivery of complex flood prevention projects including the UK's first movable weir as part of the Leeds Flood Alleviation Scheme, the Wyke Beck Programme and the Skipton Flood Alleviation Scheme.

This guidance provides an important contribution to the City Region's work to address the Climate Emergency, supporting the commitment made by Leeds City Region and all its Partner Councils to become a net zero carbon City Region by 2038 at the latest with significant progress by 2030. In addition, the Guidance also contributes to achieving the objectives of the City Region's Green and Blue Infrastructure Strategy and support wider flood risk management activities undertaken across the City Region by our partners.

Councillor Susan Hinchcliffe
Chair, West Yorkshire Combined Authority
Leader of Bradford Council

and

Roger Marsh OBE
Chair, Leeds City Region Enterprise Partnership



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1.0 Introduction

- 1.1 As part of the government's continuing commitment to protect people and property from flood risk, the Ministry for Housing, Communities and Local Government (MHCLG) published a proposal¹ to strengthen existing planning policy to secure sustainable drainage systems (SuDS).
- 1.2 To this effect, they expect local planning policies and decisions on planning applications relating to major development - 10 dwellings or more, or equivalent non-residential or mixed development as set out in planning regulations² and paragraph 165 of the National Planning Policy Framework - to ensure that SuDS for the management of surface run-off are put in place, unless demonstrated to be inappropriate.
- 1.3 Under these arrangements, in considering planning applications, local planning authorities should consult the relevant lead local flood authority on the management of surface water; satisfy themselves that the proposed minimum standards of operation are appropriate and ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development, demonstrated through SuDS maintenance plans. Developers are encouraged to enter into early discussions with lead local flood authorities to ensure local SuDS requirements are fully understood at the time of submitting a planning application.³
- 1.4 To protect the public whilst avoiding excessive burdens on business, this policy will apply to all developments of 10 homes or more and to major commercial developments. The government will keep this under review and consider the need to make adjustments where necessary. However, the current requirement in national policy that all new developments should give priority to the use of SuDS will continue to apply.
- 1.5 The purpose of this document is to provide developers with a brief introduction to SuDS, provide guidance on the information that should be included with a planning application in order to promote the use of the SuDS in new developments and provide guidance on the hydraulic and other technical standards required to implement SuDS.
- 1.6 This guidance does not set new policy but strategically signposts developers to existing national and local policy and best practice. This demonstrates the coordinating role that the Combined Authority undertakes with regard to flood risk management in the Leeds City Region.

¹ MHCLG, A review of the application and effectiveness of planning policy for Sustainable Drainage Systems, (August 2018)

² Article 2(1) of the Town and Country Planning (Development Management Procedure (England) Order 2015)

³ For further information see section 8: *Information Requirements for your Application*

Leeds City Region Strategic Policy Context

- 1.7 In response to the 2015 Boxing Day floods the Leeds City Region Flood Review Report (Dec 2016) was prepared including the development of a number of recommendations. This included a commitment to update planning policies and approaches across the City Region to mitigate flooding and improve resilience, including updating City Region planning guidance to provide a stronger steer for the adoption of SuDS.
- 1.8 The Leeds City Region Strategic Economic Plan (SEP) (May 2016) sets out the vision, strategic priorities, headline initiatives and interconnected delivery plans for the City Region covering the period to 2036. Strategic Priority 4: *Infrastructure for Growth* includes *integrated flood risk reduction* as a key action area. Central to this is the development of an integrated whole catchment flood management and adaptation programme, including strategic green infrastructure. This is linked to Priority 3: *Clean Energy and Environmental Resilience*, which includes *green infrastructure* as a key action area. This includes planning and delivering whole catchment area investments that mitigate flood risk and improve the resilience of the City Region economy.
- 1.9 The Leeds City Region Green and Blue Infrastructure Strategy and Delivery Plan primarily focuses on the mitigation of, and adaptation to, future flood events and has recently been endorsed by the Combined Authority. The strategy includes as a priority the development of Natural Flood Management (NFM) programmes and drainage solutions encompassing the embedding of SuDS into new developments.
- 1.10 Through emerging policies and strategies, including housing and transport policy, the City Region will consider the potential impacts of flooding and how these can be mitigated through the implementation of SuDS schemes. This ensures that the Combined Authority is delivering integrated infrastructure across the City Region. The principles within this guidance will be utilised to direct such consideration.
- 1.11 Across the City Region, the Combined Authority is aligning its strategies and policies for the economy towards the overarching aim of delivering inclusive growth. The health and wellbeing benefits of SuDS support inclusive growth aspirations by delivering benefits in terms of enhanced quality of life for all, including vulnerable communities who may be less able to recover from the impact of flood events. This document provides the basis for enhancing delivery of these assets.
- 1.12 The Combined Authority takes into account inclusive growth through the assurance process when considering the merits of proposed flood risk management schemes and prioritises projects accordingly where appropriate. Inclusive growth is also a consideration when the Combined Authority is seeking funding from the Government. For instance, over one third of all schemes in the City Region submitted for funding requests as part of the Government's 2019 Spending Review are located in the top 20% most deprived areas in the country.

The Aim of the Guide

The Flood and Water Management Act 2010 states that “Sustainable drainage means managing rainwater (including snow and other precipitation) with the aim of (a) reducing damage from flooding, (b) improving water quality, (c) protecting and improving the environment, (d) protecting health and safety, and (e) ensuring the stability and durability of drainage systems”.

The vision for the West Yorkshire Combined Authority, working in partnership with the Leeds City Region Enterprise Partnership, is to develop **Sustainable Drainage Systems Guidance** to deliver the aspirations of partner organisations, across the City Region, to:

- Promote delivery of **high performance sustainable drainage proposals that remain effective for the lifetime of the development**, with such proposals considered from the outset by developers, consultees and approval bodies.
- **Encourage sustainable development** that is commensurate with the existing level of risk and that will be resilient to the predicted impacts of climate change.
- **Encourage the use of sustainable techniques** that have a benefit to the environment, including improvement to amenity and biodiversity, and the quality of surface runoff entering the drainage network and watercourses.
- Ensure that the **current and future level of flood risk is not increased**, and, where possible is decreased, to people, property and infrastructure through the implementation of the new development.
- Support an **efficient and effective planning application process** that enables developers to demonstrate that their proposals comply with flood risk policy, guidance and standards.

The developer will still need to consult with the Environment Agency, Yorkshire Water Services Ltd and other risk management authorities as per the development control processes set out by these organisations.

The guide promotes a process for developers where requirements for SuDS design parameters and approach will be consistent across regional Lead Local Flood Authorities (LLFAs) and Planning Authority boundaries. The guide is clear in explaining where local requirements may differ to reflect local priorities or conditions and developers are encouraged to engage with Planning Authorities directly to determine whether a SuDS scheme is appropriate for a specific proposed development.

2.0 Geographical Area

2.1 It has been jointly determined that this Sustainable Drainage Systems Guidance will cover the geographical area of the Leeds City Region, with the exception of Barnsley Metropolitan Borough Council. This would include the following partner councils:

- City of Bradford Metropolitan District Council
- The Borough Council of Calderdale
- Craven District Council
- Harrogate Borough Council
- The Council of the Borough of Kirklees
- Leeds City Council
- Selby District Council
- The Council of the City of Wakefield
- City of York Council
- North Yorkshire County Council

Figure 1: Leeds City Region Partner Councils

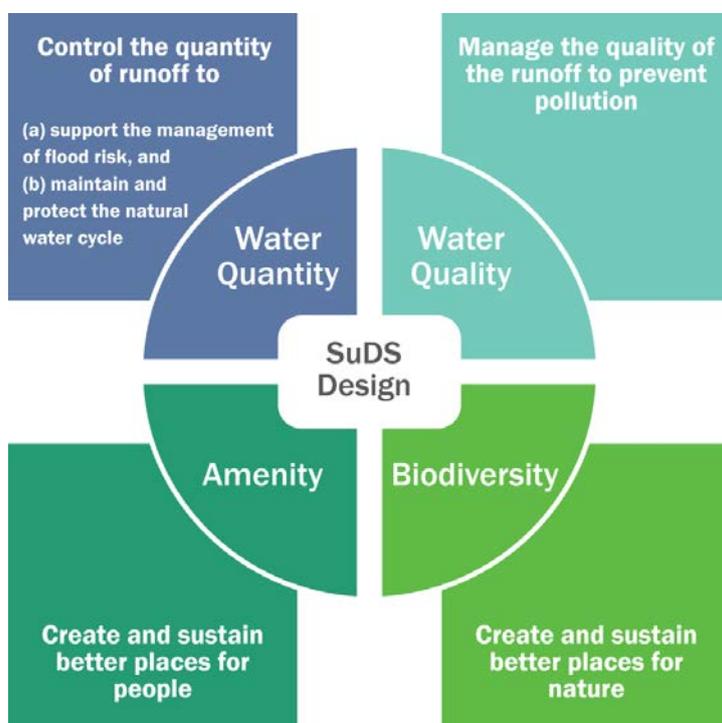


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3.0 Sustainable Drainage Systems

- 3.1 Surface water drainage systems developed to maintain a sustainable development are collectively known as sustainable drainage systems, often abbreviated to SuDS. These systems replicate as closely as possible the existing, natural drainage situation. They are designed both to reduce the environmental risks resulting from urban runoff and to contribute wherever possible to environmental enhancement.
- 3.2 SuDS objectives can be broadly put into four categories (see figure 2) where the ideal solution minimises the impacts from the development on the quantity and quality of the runoff, and maximises amenity and biodiversity opportunities. These are also referred to as the four pillars of SuDS design.

Figure 2: Sustainable drainage objectives (CIRIA C753)

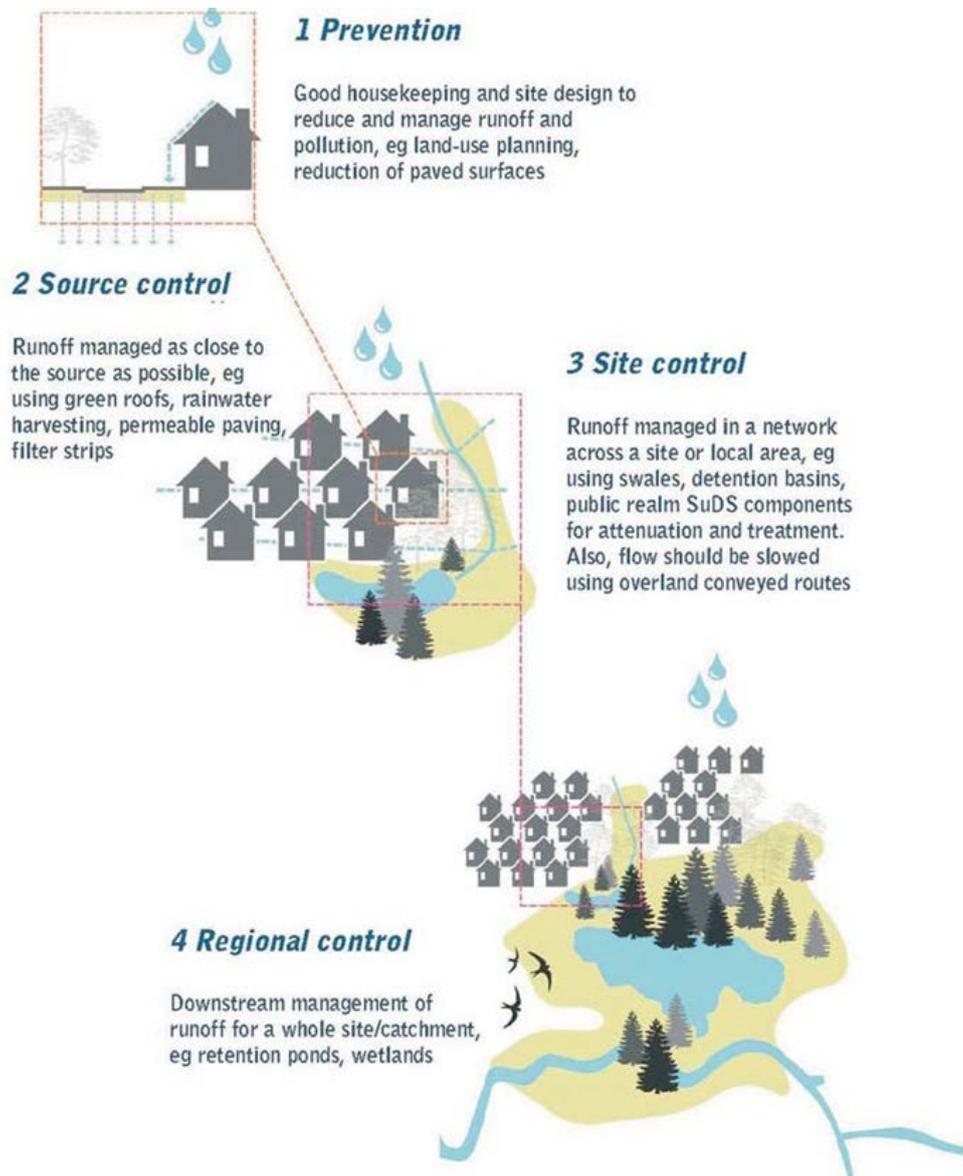


- 3.3 More information can be found in the Construction Industry Research and Information Association (CIRIA) SuDS Manual (C753) and the other references listed at the end of this document.

4.0 The SuDS Management Train

- 4.1 In order to mimic the natural situation of the site as successfully as possible, a “management train” is adopted. It uses a series of drainage techniques to reduce pollution, flow rates and volumes. The hierarchy of techniques within this management train should be considered as follows:

Figure 3: SuDS Management Train (CIRIA 2010)



5.0 Expected Levels of Treatment

- 5.1 In terms of water quality improvement, the number of techniques required in a SuDS management train is proportional to the level of risk to the environment of pollution reaching a receiving water body. Where there is less risk, fewer levels of treatment are required.

- 5.2 The level of environmental risk depends on the potential amount of pollution that could be conveyed by the surface runoff and the sensitivity of the receiving water bodies. In most circumstances the number of techniques required in a management train would be as follows:

Table 1: Levels of Treatment

Risk	Levels of Treatment	Typical Locations
Low	1	Small residential developments
Medium	2	Most new residential and small retail developments
High	3	Major retail and industrial developments; motorways and major roads

- 5.3 For particularly sensitive receiving waters, greater numbers of techniques could be required to provide the desired level of protection.
- 5.4 Part H of the Building Regulations requires the selection of receptor for the disposal of surface water drainage from a development site to be in accordance with the following hierarchy:
- 1) Disposal to ground via infiltration, and where this is not practicable;
 - 2) Disposal to a watercourse, and where this is not practicable;
 - 3) Disposal to a surface water sewer or highway drain, and where this is not practicable;
 - 4) Disposal to a combined sewer.

Note: No surface water will be allowed to connect to a foul sewer.

6.0 Sustainable Drainage Techniques

- 6.1 There are a number of SuDS techniques, all of which can be grouped under the following headings:

Source Control

Table 2: Source Control SuDS Techniques

SuDS Technique	Description and Key Design Points	CIRIA SuDS Manual Reference
<p>Green Roofs</p> 	<p>Green roofs comprise a multi-layered system that covers the roof of a building or podium structure with vegetation cover/landscaping/permeable car parking, over a drainage layer. They are designed to intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows.</p>	<p>Chapter 13</p>
<p>Soakaway / Attenuation Storage Tanks</p> 	<p>Square or circular excavations, filled with aggregate or lined with brickwork, or pre-cast storage structures surrounded by granular backfill, designed to store runoff until it infiltrates into the surrounding soil.</p>	<p>Chapter 22</p>
<p>Filter Strips</p> 	<p>Filter strips are vegetated strips of land designed to accept runoff as overland sheet flow from upstream development, provide a degree of filtration and retention by the vegetation and soil, and convey excess runoff onwards to more suitable storage/infiltration techniques</p>	<p>Chapter 16</p>
<p>Water Butts / Rainwater Harvesting</p> 	<p>Rainwater harvesting is the process of collecting and using rainwater that would otherwise have gone into the drainage system or been lost through evaporation.</p>	<p>Chapter 12</p>

<p style="text-align: center;">Permeable Paving</p> 	<p>Permeable or pervious pavements provide a pavement suitable for pedestrian and/or vehicular traffic, while allowing rainwater to infiltrate through the surface and into the underlying layers. The water is temporarily stored before infiltration to the ground, reuse, or discharge to a watercourse or other drainage system.</p>	<p style="text-align: center;">Chapter 21</p>
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Photographs: www.susdrain.org

Site Control

Table 3: Site Control SuDS Techniques

SuDS Technique	Description and Key Design Points	CIRIA SuDS Manual Reference
<p style="text-align: center;">Underground Storage</p> 	<p>Geocellular crates, pre-cast concrete storage tanks or over-sized pipes with appropriate discharge control provide attenuation storage below ground. No water quality treatment.</p>	<p style="text-align: center;">Chapter 11</p>
<p style="text-align: center;">Swales</p> 	<p>Swales are linear vegetated drainage features in which surface water can be stored or conveyed. They can be designed to allow infiltration, where appropriate. They should promote low flow velocities to allow much of the suspended particulate load in the stormwater runoff to settle out, providing effective pollutant removal.</p>	<p style="text-align: center;">Chapter 18</p>

<p>Detention Basins</p> 	<p>Detention basins are surface storage basins or facilities that provide flow control through attenuation of stormwater runoff. They also facilitate some settling of particulate pollutants. Detention basins are normally dry and in certain situations the land may also function as a recreational facility.</p>	<p>Chapter 23</p>
<p>Infiltration Basins</p> 	<p>Infiltration basins are vegetated depressions designed to store runoff and infiltrate it gradually into the ground.</p>	<p>Chapter 14</p>

Photographs: www.susdrain.org

Regional Control

Table 4: Regional Control SuDS Techniques

SuDS Technique	Description and Key Design Points	CIRIA SuDS Manual Reference
<p>Retention ponds</p> 	<p>Ponds can provide both stormwater attenuation and treatment. They are designed to support emergent and submerged aquatic vegetation along their shoreline. Runoff from each rain event is detained and treated in the pool.</p>	<p>Chapter 24</p>

<p style="text-align: center;">Wetlands</p> 	<p>Wetlands provide both stormwater attenuation and treatment. They comprise shallow ponds and marshy areas, covered almost entirely in aquatic vegetation. Wetlands detain flows for an extended period to allow sediments to settle, and to remove contaminants by facilitating adhesion to vegetation and aerobic decomposition. They also provide significant ecological benefits.</p>	<p style="text-align: center;">Chapter 24</p>
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Photographs: www.susdrain.org

7.0 Case Studies

- 7.1 The selection of following case studies illustrates the range of SuDS schemes successfully implemented throughout the Leeds City Region. The case studies demonstrate that SuDS can be delivered in a range of development conditions within challenging locations.

Local Authority	Kirklees Council
Location	A635 Leeds Road, Chidswell
SuDS Technique	Various
Development Type	Mixed residential and commercial development of 120ha. Indicative housing capacity of over 1,500 dwellings. Indicative employment capacity of over 120,000 sq.m.
Description of SuDS Scheme	Significant development site in the Local Plan. General drainage requirements to be identified early in the process and provided to developers.
Key Design Points	Mainly greenfield site with opportunities for a masterplanning approach to drainage.
Issues at Planning Stage	Investment from council to provide pre-planning drainage advice to help inform scheme layout and optimum SuDS solution.
Issues at Implementation Stage	Not yet implemented.
Lessons Learnt	Positive feedback from planning teams. Proactive approach to help deliver high quality strategic development site.
<p>Background</p> <p>The project presented is one of a number of studies carried out to provide information to prospective developers regarding flood risk in and around the larger development sites identified in the council's Local Plan. The report provides high level guidance on constraints, opportunities and preferences for surface water drainage solutions for the site.</p> <p>In summary, the objective of the report is to provide a guidance document for large Local Plan housing allocation sites that is useful to developers in understanding and satisfying the LLFA's requirements on flood risk and surface water drainage. The intention is to guide developers towards Sustainable Drainage Solutions for the site that meet national and local standards, influence site layout and, ultimately, to engage with the Lead Local Flood Authority at the earliest opportunity on the most appropriate drainage solution for the site.</p>	

Information provided to the developer

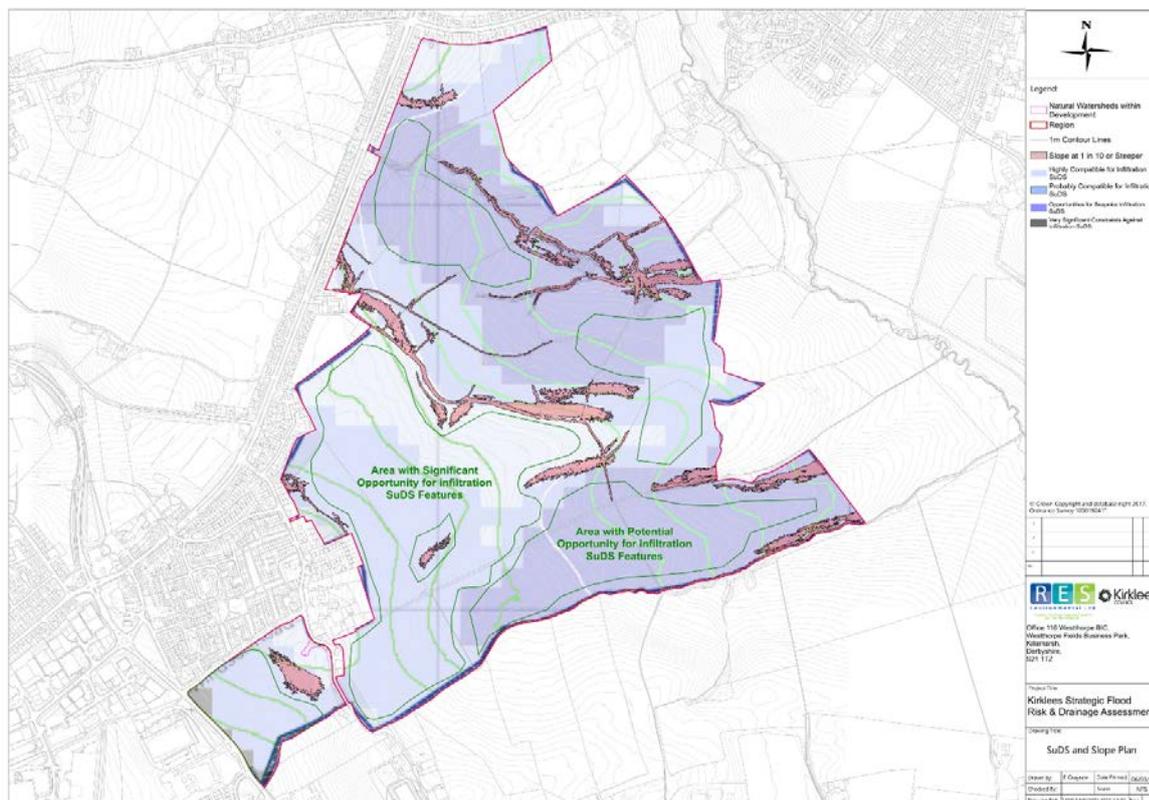
- General hydrology of the site – topography, existing South West drainage, existing site conditions and underlying geology
- Broad hydrological assessment – allowable discharge rates, high-level storage requirements and ground infiltration rates
- Site constraints – potential for infiltration and discharge locations
- A conceptual drainage strategy – location of storage and infiltration areas, SuDS management and maintenance, designing for exceedance through and out of the development, encouraging a planned approach to drainage implementation to accommodate development phasing and site layout

The conclusions and recommendations from the developer's work are summarised below:

- Suggests possible locations and scale of SuDS
- Emphasis of the need for a robust operations and maintenance plan for the site drainage
- Suggests the contents of the required drainage strategy
- Highlights the need to understand and accommodate exceedance flows safely through the development

The approach supports the Council's aim to work closely with site developers to deliver the right development at the right time. All available information is shared with the developer as early in the process as possible, setting design parameters and preferences that can steer the site drainage solution towards early agreement and approval.

SuDS concept plan with opportunities and constraints



Local Authority	City of Bradford Metropolitan District Council
Location	Allerton Lane, Allerton, Bradford
SuDS Technique	Detention basins
Development Type	Residential development consisting of 292 dwellings, including open space, landscaping and associated highways works.
Description of SuDS Scheme	<p>Two surface storage basins in series that provide flow control through attenuation of stormwater runoff. The basins are normally dry and in certain situations the land may also function as a recreational facility as part of the public open space allocation on the development.</p> <p>The basins are vegetated to provide treatment to the water quality which will help absorb runoff for small rainfall events. The management of the basins will be undertaken by Bradford Council and this has been funded through a commuted sum payment by the developer to the Council.</p>
Key Design Points	The detention basins are designed to offer stormwater storage up to and including the 1% annual event probability return period plus allowance for climate change. Due to the steeply sloping nature of the site two ponds in series were designed with flow control on each of the basin structures. The final outfall from the basins is into Pitty Beck and the peak discharge rate is restricted to the existing greenfield runoff from the site. The design was carefully engineered to ensure links from the areas of new housing to the locally popular walking routes.
Issues at Planning Stage	The design of the basins was necessary at an early stage to ensure the form and visual impact of the development could be fully appreciated. Through pre-application consultation, the developer was able to understand the requirements of the key council consultees enabling SuDS to be integrated sympathetically into the full planning application.
Issues at Implementation Stage	The temporary management of the basins in controlling pollution pathways generated from sediment generation was an issue at implementation stage. The timescales necessary to discharge planning conditions, and pressures within local authorities, presented issues with the developer and the councils to be able to discuss design details, leading to some of the design features being 'standardised'. More flexible deadlines would have allowed for open dialogue to encourage more innovative design solutions.
Lessons Learnt	Early discussions between the developer and the local authority are essential to ensure local requirements are understood and implemented correctly. Planning conditions are one of the only ways to control design standards, and should be carefully worded, with

advice from planning specialists, to enable a suitable time for a scheme to be designed. A SuDS working group including the developer and local authority is recommended to meet on a regular basis from the inception of the design through to construction stage.

Proposed design layout of the SuDS basins

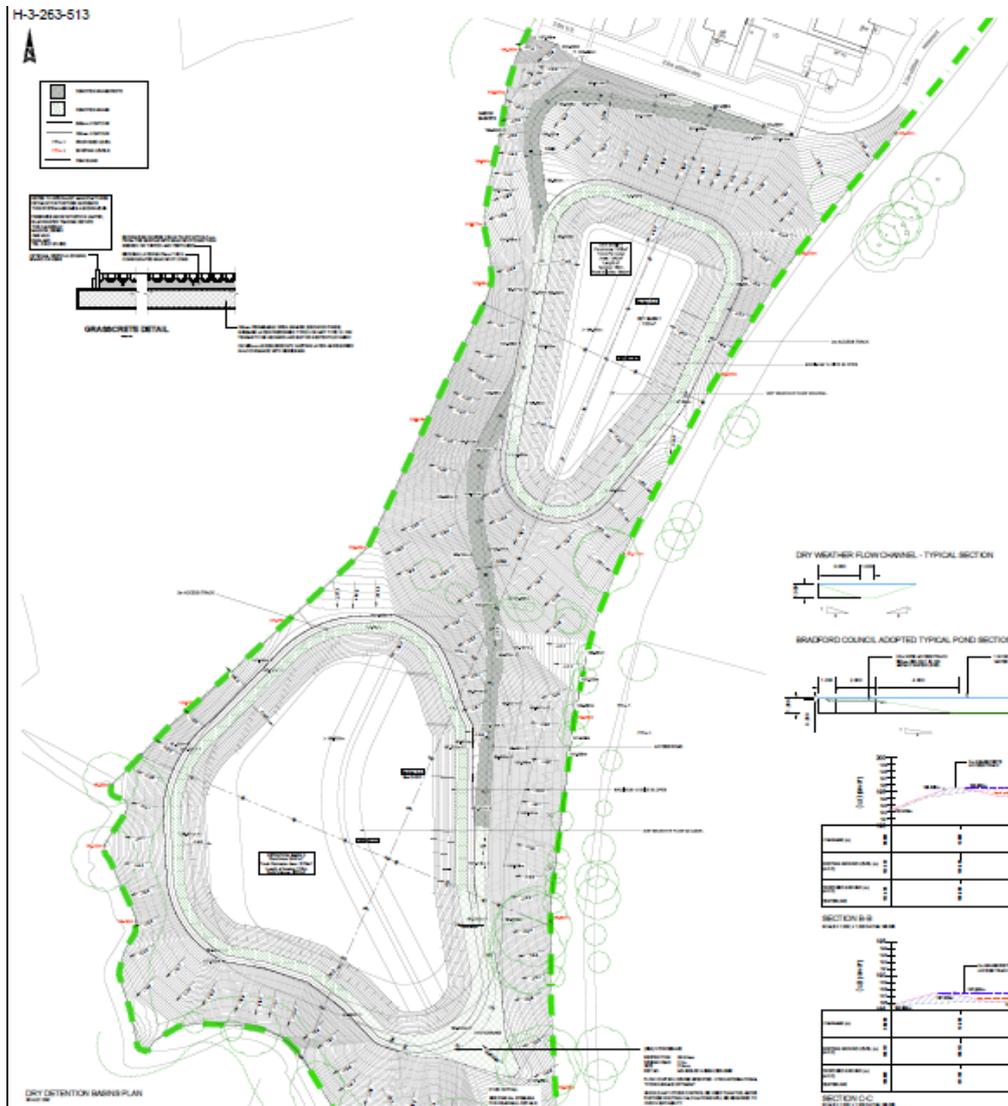


Image of the lower basin under construction in January 2019



Source: Bradford City Council

Image of the upper basin under construction in January 2019



Source: Bradford City Council

Local Authority	Leeds City Council
Location	Pontefract Lane, Leeds
SuDS Technique	Retention ponds
Development Type	40 ha manufacturing and distribution park, just off J45 of the M1.
Description of SuDS Scheme	Three linked retention ponds, balancing surface water from the 40ha site, prior to discharge to Wyke Beck at greenfield rates.
Key Design Points	Only one level of treatment is provided, therefore oil separators were also required on plot.
Issues at Planning Stage	Masterplan correctly allocated the bottom part of the site for the SuDS scheme.
Issues at Implementation Stage	Ponds installed prior to plot development, which enabled them to be used for flow balancing and sediment treatment during the construction phase.
Lessons Learnt	<p>The developer did not wish to pay a large commuted sum up front for Leeds City Council to maintain the ponds, so instead, agreed a more flexible approach to pay year-on-year in quarterly installments.</p> <p>A significant proportion of the funding is for the removal of cuttings to encourage the growth of native wildflowers. This was included in the landscape management plan, which was a planning condition.</p>

The implemented SuDS scheme



Source: Leeds City Council

8.0 Information Requirements for your Application

8.1 Whilst there are several types of planning applications, the three main categories are discussed below.

Pre planning application/ enquiry

8.2 Pre planning applications are submitted very early in the design process, and seek information with regard to local requirements. Early consultation with the lead local flood authority is an essential step towards achieving a sustainable design that is appropriate for the development.

Table 5: Pre planning application/ enquiry – planning matrix

Statutory consultee information requirements		Information to be provided by developers for pre-planning application or discussions to be held with LLFA (requirements draw on readily available information)
Site location and LLFA(s) involved	Site location	Plan or description
	LLFA(s) involved	Identified through initial discussions with planning officers
	Location of nearest watercourse (open and culverted)	Ordnance Survey (OS) map or similar/contact LLFA to check drainage register
	Location of nearest public sewer (surface water and/or combined)	Water authority asset records
	Location of nearest highway drain	Contact LLFA to check drainage register
Proposed site characteristics	Proposed site layout	Marked up OS map or preliminary master plan
	How any particular requirements addressing flood risk have been considered	Discussion with LLFA about potential requirements for floor levels, flood storage compensation, flood resilient construction etc.
	How any particular requirements addressing amenity and biodiversity have been considered	Discussion with LLFA about the potential for combining open space with SuDS to improve amenity and biodiversity on the site.
Information about how the site will be drained after development.	How the site will be drained	Concept drainage layout plan with indicative sizes of drainage infrastructure
	How the proposed drainage scheme will mimic natural drainage patterns	Discussion with LLFA about the selection of suitable SuDS methods to be included in the drainage scheme.
	Agreed discharge rate and receptor (including location)	Discussion with LLFA to confirm the requirements.

	Identify maintenance requirements and responsible organisation	Initial discussion with LLFA regarding adoptability of various components, maintenance requirements of the various options and who will be responsible for the various maintenance activities.
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Outline planning application

8.3 Outline planning applications seek to establish whether a development is acceptable in terms of scale and nature of development. Fewer details are required for the submission however once outline permission has been granted, you will need approval of the details (reserved matters or conditions) before work on site can start.

Table 6: Outline planning application – Planning Matrix

Statutory consultee information requirements		Information to be provided by developers for outline planning application or discussions to be held with LLFA (Requirements draw on readily available information)
Site location and LLFA(s) involved	Site location	Site location plan
	LLFA(s) involved	Identified through initial discussions with planning officers
Existing site characteristics	How the site currently drains	Marked up topographical survey plan showing existing impermeable areas and existing drainage infrastructure
	Location of nearest watercourse (open and culverted)	OS map or similar/contact LLFA to check drainage register
	Location of nearest public sewer (surface water and/or combined)	Water authority asset records
	Location of nearest highway drain	Contact LLFA to check drainage register
	Sources of flood risk already present on the site	Risk of flooding on site obtained from the EA's flood risk maps and LLFA's historical records. To be assessed in a Flood Risk Assessment.
	Sources of flood risk already present near the site	Risk of flooding near the site obtained from the EA's flood risk maps and LLFA's historical records. To be assessed in a Flood Risk Assessment.
	Existing topography	Topographical survey plan of existing site
Underlying geology and infiltration rate	Description of underlying geology from soils map. Measured as part of site investigation (where it has been undertaken)	

	Groundwater level and aquifer protection	Information from British Geological Survey maps and Environment Agency Groundwater Source Protection Zone maps. Measured as part of site investigation (where it has been undertaken).
	Existing use of site (with regard to potential contaminants)	Description of current and previous site uses. Relevant soil and groundwater contamination testing as part of site investigation (where it has been undertaken)
	Existing predevelopment runoff rate	Existing impermeable areas quantified on OS map or topographical survey. Estimate of existing runoff rate.
Proposed Site Characteristics	Type of development	Master plan layout
	Area of development	Proposed impermeable area at master planning stage
	Proposed site layout and levels	Master plan layout with indicative finished levels
	How any particular requirements addressing flood risk have been considered	Discussion with LLFA about potential requirements for floor levels, flood storage compensation, flood resilient construction etc.
	How any particular requirements addressing amenity and biodiversity have been considered	Potential areas for combining open space with SuDS to improve amenity and biodiversity on the site shown on the master plan layout.
Information about how the site will be drained after development.	Options discounted as unfeasible SuDS options and why	Assessment of options based on available information, identifying further information to be obtained.
	How the site will be drained	Concept drainage layout plan with indicative sizes of drainage infrastructure
	How the proposed drainage scheme will mimic natural drainage patterns	Discussion with LLFA about the selection of suitable SuDS methods to be included in the drainage scheme.
	Requirements requested by the LLFA, Environment Agency, Water Authority and other risk management authorities	Evidence of initial consultations. Concept layout plans/sketches addressing the requirements.
	Agreed discharge rate and receptor (including location)	Preliminary calculations showing that the proposed design will achieve the agreed requirements.
	Identify maintenance requirements and responsible organisation	Initial discussion with LLFA regarding adoptability of various components, maintenance requirements of the various options and who will be responsible for the various maintenance activities.
Climate adaptation and resilience considerations.	How climate change has been considered	Evidence of inclusion in preliminary calculations
	How will exceedance events be controlled	Plan showing exceedance flow paths or relevant discussion in the concept drainage design report
	If future interventions are needed	Discussion with LLFA to confirm the requirements

Note: An initial Flood Risk Assessment or Statement (proportionate to the scale of the development) should be produced to incorporate the above information/requirements. A Surface Water Drainage Strategy or Statement should be produced to incorporate the above information/requirements

Full planning Application/ Reserved Matters

- 8.4 Full planning is a detailed submission of all information required for a development to be accepted. Reserved matters is submitted within three years following a previous outline planning application and includes all the information that was excluded previously.

Table 7: Full planning application/ reserved matters – planning matrix

Statutory consultee information requirements		Information to be provided by developers for full planning and reserved matters applications (Requirements draw on information required to plan and design the development)
Site location and LLFA(s) involved	Site location	Site location plan
	LLFA(s) involved	Identified through initial discussions with planning officers
Existing Site Characteristics	How the site currently drains	Existing drainage layout plan, condition assessment of existing drainage assets to be retained
	Location of nearest watercourse (open and culverted)	Shown on proposed drainage layout plan if it will receive runoff from the site
	Location of nearest public sewer (surface water and/or combined)	Shown on proposed drainage layout plan if it will receive runoff from the site
	Location of nearest highway drain	Shown on proposed drainage layout plan if it will receive runoff from the site
	Sources of flood risk already present on the site	To be assessed in a Flood Risk Assessment
	Sources of flood risk already present near the site	To be assessed in a Flood Risk Assessment
	Existing topography	Topographical survey plan of existing site
	Underlying geology and infiltration rate	Results of a site geotechnical investigation. Infiltration rates to be tested in accordance with Building Research Establishment (BRE) 365 in areas of proposed soakaways or other infiltration SuDS methods.
	Groundwater level and aquifer protection	Information from Environment Agency Groundwater Source Protection Zone maps. At least three months of groundwater level monitoring as part of the site investigation.

	Existing use of site (with regard to potential contaminants)	Relevant soil and groundwater contamination testing as part of site investigation
	Existing predevelopment runoff rate	Existing runoff rate calculations
Proposed Site Characteristics	Type of development	Proposed site layout plans
	Area of development	Proposed impermeable area and allowance for potential future increases
	Proposed site layout and levels	Proposed layout and proposed finished surface levels
	How any particular requirements addressing flood risk have been considered	Proposed plans and details addressing relevant requirements
	How any particular requirements addressing amenity and biodiversity have been considered	Proposed plans and details of relevant SuDS features.
	Options discounted as unfeasible SuDS options and why	Final assessment of options
	How the site will be drained	Design drainage layout plan with sizing and details of critical infrastructure
	How the proposed drainage scheme will mimic natural drainage patterns	Discussion about the selection of suitable SuDS methods included in the drainage scheme.
	Requirements imposed by the Environment Agency	Proposed layout plans, details and calculations addressing the particular requirements
	Requirements imposed by the Water Authority	Proposed layout plans and details addressing the particular requirements
	Agreed discharge rate and receptor (including location)	Detailed calculations showing that the proposed design will achieve the agreed requirements
	Identify maintenance requirements and responsible organisation	Detailed maintenance management plan including responsible parties for the various activities.
Climate adaptation and resilience considerations.	How climate change has been considered	Evidence of inclusion in detailed calculations
	How will exceedance events be controlled	Plan showing exceedance flow paths
	If future interventions are needed	Timing and nature if interventions to be detailed in maintenance management plan including responsible parties for the various activities.

Note: An initial Flood Risk Assessment or Statement (proportionate to the scale of the development) should be produced to incorporate the above information/requirements. A Surface Water Drainage Strategy or Statement should be produced to incorporate the above information/requirements

8.5 If you are in any doubt of which planning application is required, you should contact your Local Planning Authority in the first instance

9.0 Design standards to be used to support your application

9.1 The following design standards/requirements are common to all Planning Authorities in the Leeds City Region:

A Surface Water Drainage Strategy or Statement

9.2 This is required for **all** sites (proportionate to the scale, nature and location of the development). The strategy or statement should demonstrate compliance with the Sustainable Drainage Technical Standards and the National Planning Policy Framework.

A Flood Risk Assessment or Statement

9.3 This is required for **all** sites (proportionate to the scale, nature and location of the development). See the Flood Risk Assessment (FRA) Checklist for advice.

Surface Water Drainage Design

9.4 This is required to be in accordance with the current edition of “Sewers for Adoption”.

Minimum Flow Control Diameter

9.5 Flow control diameters are not to be less than 75mm unless specifically designed not to block.

Brownfield Existing Peak Discharge

9.6 If the existing brownfield discharge cannot be calculated, it can be derived by using 140l/s/ha of connected impermeable area, provided the existing drainage is still functional.

Freeboard

9.7 The Freeboard above the Design Flood Level should be no lower than 600mm for residential, 400mm for offices and commercial, 300mm for industrial and warehousing and 300mm for underground car parks.

Disposal via Pumping

- 9.8 Surface water pumping stations should only be used where there is no practical alternative and a suitable exceedance flowpath exists in the event of failure or exceedance of the pumping system.

Flood Storage under Adoptable Highway

- 9.9 Refer to Local Authority Highways Structures Technical Approval processes. Note the potential need for accreditation for 900-1499mm structures and due to codes of practice requiring specific inspection regime undertakings from owners of structures 1500mm and greater, difficulties in the adoption process are envisaged and location under the highway is discouraged.

Soakaway Standards

- 9.10 Follow testing procedures and calculation methodology of Building Research Establishment (BRE) Digest 365. Additional seasonal testing or borehole analysis is required for major applications. BRE Digest 365 design parameters of 1 in 10 year return periods should be extended to reflect NPPF and Non-Statutory SUDS Standards and demonstrate no flooding in 1 in 30 year return periods and the 1 in 100+ climate change critical storm to be safely retained on site. Appropriate stand off from buildings of 5 metres. Refer to Highway design guides for local requirements.

Water Quality

- 9.11 Measures to improve water quality to achieve the objectives of the EU Water Framework Directive through pollutant management and improved chemical and ecological status of water bodies.

Council-specific Requirements or Local SuDS Standards Documents

- 9.12 The following table, which will be updated annually, outlines council-specific requirements or local SuDS standards documents. For detailed up-to-date local SuDS policy it is advised that applicants visit LLFA websites directly.

Table 8: Council-specific Requirements or Local SuDS Standards Documents – last updated 01/02/2020

Issue	Planning Authority									
	Leeds	Bradford	Kirklees	Wakefield	Calderdale	North Yorkshire	York	Harrogate	Selby	Craven
Stand-off distance from open watercourses	9m, but lesser distances will be considered.	No formal distance / set distance. Agreed on a site-by-site basis.	No formal distance / set distance. Agreed on a site-by-site basis.	No formal distance / set distance. Agreed on a site-by-site basis.	No formal distance / set distance. Agreed on a site-by-site basis.	5m	No formal distance / set distance. Agreed on a site-by-site basis.	8m	8m	5m
Stand-off distance from the side of culverted watercourses	As per Yorkshire Water requirements set out in Sewers for Adoption 6	No formal distance / set distance. Agreed on a site-by-site basis. Don't permit build overs	Sewers for Adoption standards as a minimum requirement	No formal distance / set distance. Agreed on a site-by-site basis.	No formal distance / set distance. Agreed on a site-by-site basis. Don't permit build overs	3m	No formal distance / set distance. Agreed on a site-by-site basis.	3m	3m	3m
Consider connections to Highway Drains	Yes, subject to commuted sum	Yes	Yes	No – Unless upsized and adopted by YW	Yes, subject to commuted sums	No	Yes	N/A	N/A	N/A
Minimum Brownfield Discharge Rate reduction	Majors = 50% Minors = 30%	30%	30%	30% - if building or infrastructure remain. If site has been cleared and is undrained greenfield runoff rate	30%	30%	30%	30%	30%	30%
Greenfield Discharge Rate to be used	See Minimum Development Control Standards for Flood Risk	See Minimum Development Control Standards for Flood Risk	5l/s/ha	2.5l/s/ha	2.5l/s/ha	As calculated using IH124 or FEH methods. Alternatively 1.4l/s/ha	To be modelled using IOH124 or FEH, 1.4l/s/ha	As calculated using IH124 or FEH methods. Alternatively 1.4l/s/ha	As calculated using IH124 or FEH methods.	As calculated using IH124 or FEH methods.

							where not available.		Alternative ly 1.4l/s/ha	Alternative ly 1.4l/s/ha
Climate Change Allowance	https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances	https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances	30%	40% unless an assessment has been undertaken to prove otherwise	https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances	30%	30%	30%	30%	30%
Urban Creep Allowance	0	0	0	Expect to see 10% but not enforced	0	10%	10%	10%	10%	10%
Highways adoption of Permeable Paving	In some circumstances. Early discussion required	No	No	Yes – subject to HETS approval and with a 20yr commuted sum. Check dams are usually required within the construction	In some circumstances. Early discussion required	No	No	N/A	N/A	N/A
Consider adoption of development SuDS	Yes	No	No	Historically ponds but no new ones since SuDS through Planning as 100yr commuted sum required	Yes	Can adopt SuDS that serve only the highway drainage; adoption must be agreed with the Highway Authority	No	NYCC can adopt SuDS that serve only the highway drainage; adoption must be agreed with the Highway Authority	NYCC can adopt SuDS that serve only the highway drainage; adoption must be agreed with the Highway Authority	NYCC can adopt SuDS that serve only the highway drainage; adoption must be agreed with the Highway Authority
Identified Special Areas of Drainage	No	No	Yes	No	Yes	No	No	No	No	No
Local Plan SuDS Policies	Natural Resources and waste DPD (7: water)	Yes	Yes	No – Policies and conditions currently being updated.	Yes	No	Yes	No/Yes- Draft Local Plan 2018	Yes	Yes- Draft Local Plan 2018

								Publication Draft		Submission Draft
Local SuDS Guidance	<p>Minimum Development Control Standards for Flood Risk (2017)</p> <p>https://www.lee.gov.uk/docs/Minimum%20development%20control%20standards%20for%20flood%20risk.pdf</p>	Minimum Development Control Standards for Flood Risk	No	New guidance will be drafted.	Emerging Flood Risk and Drainage Supplementary Planning Guidance	NYCC SuDS Design Guidance	Drainage/SuDS Guide	NYCC SuDS Design Guidance	NYCC SuDS Design Guidance	NYCC SuDS Design Guidance
	<p>LCC currently reviewing SuDS policy regarding potential adoption of SuDS</p>									

Useful References

Lead Local Flood Authority Websites:

www.Leeds.gov.uk/FloodRisk - Link to the Flood Risk Management section of the Leeds City Council website.

<https://www.bradford.gov.uk/emergencies/flooding/flooding-information-and-support/> - Link to the Flooding Information and Support section of the Bradford Council website.

<http://www.kirklees.gov.uk/business/regeneration/majordevelopments.aspx> - Link to relevant documents on the Kirklees Council website.

<http://www.wakefield.gov.uk/residents/roads-and-transport/land-drainage-and-flooding> - Link to the Land Drainage and Flooding section of the Wakefield Council website.

<https://www.calderdale.gov.uk/v2/residents/environment-planning-and-building/flooding/flood-risk-drainage> - Link to the Flood Risk and Drainage section of the Calderdale Council website.

<https://www.northyorks.gov.uk/flood-and-water-management> - Link to the Flood and Water Management section of the North Yorkshire County Council website.

http://www.york.gov.uk/info/200378/flood_risk_management/169/flood_risk_management - Link to the Flood Risk Management section of the City of York Council website.

https://www.york.gov.uk/downloads/file/17210/sustainable_drainage_systems_guidance_for_developers - Link to the City of York Council SuDS Guidance for Developers (August 2018)

Planning Policy and Sustainable Drainage:

<https://www.gov.uk/government/speeches/sustainable-drainage-systems> - This statement has similar weight to the National Planning Policy Framework and makes Sustainable Drainage Systems a material planning consideration and also places a presumption in favour of SuDS.

<https://www.gov.uk/government/publications/national-planning-policy-framework--2> - Link to the National Planning Policy Framework. See Section 10 (Meeting the challenge of climate change, flooding and coastal change) and Section 11 (Conserving and enhancing the natural environment), especially para 109, which encourages the use of 'green SuDS'.

<https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards> - Non statutory Technical Standards for SuDS.

<http://planningguidance.planningportal.gov.uk/> - See Flood Risk and Coastal Change.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296964/LIT_8496_5306da.pdf - Guidance to support the National Planning Policy Framework, September 2013, Environment Agency Standing Advice

SuDS Guidance and Design:

http://www.ciria.org/Resources/Free_publications/the_suds_manual.aspX - The CIRIA SuDS Manual (C753) provides a wealth of information about the benefits of SuDS, SuDS methodologies and general design guidance.

<http://www.susdrain.org/delivering-suds/using-suds/design-guidance/guidance-overview.html> - The SusDrain website provides a list of useful design references, as well a lot of other useful information about the design, implementation and maintenance of SuDS.

Useful references for obtaining information about your site:

<https://www.gov.uk/prepare-for-a-flood/find-out-if-youre-at-risk> - Environment Agency flood risk maps to identify whether a site is likely to be at risk from flooding from rivers and the sea, surface water or reservoirs.

<http://www.bgs.ac.uk/products/hydrogeology/groundwaterFlooding.html> - British Geological Survey mapping showing wider area within which groundwater levels are likely to be at or rise to levels close to the ground surface.

<http://apps.environment-agency.gov.uk/wiyby/37833.aspx> - Environment Agency mapping showing areas where groundwater sources are used for public water supply and are therefore risk of contamination from any activities that might cause pollution in the area.

<http://www.bgs.ac.uk/products/digitalmaps/digmapgb.html> - British Geological Survey mapping showing the underlying and superficial rock types.

<http://www.landis.org.uk/soilscapes/> - Mapping from Cranfield Soil and AgriFood Institute showing soil types



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