

Hull City Council

Guide to Drainage Impact Strategies and Drainage Impact Assessments

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Chapter 1: What are Drainage Impact Assessments and Drainage Impact Strategies, and why are they needed?

These are standalone reports which are provided by the developer or applicant and which identify any drainage issues which may arise from a development. They also identify suitable means of storing and discharging surface water from the proposal without increasing surface water or flood risk elsewhere. The drainage infrastructure of proposed developments should seek to reduce the overall level of flood risk both in the area of the application and beyond.

Drainage and flood risk are material considerations in the determination of planning applications. A satisfactory means of surface water disposal must be demonstrated in order to show that:

- a) the site can be appropriately developed;
- b) any land-take required for proposed drainage infrastructure has been allowed for; and,
- c) due consideration has been given to the impact of the proposed development on the drainage catchment area.

The city is particularly vulnerable to surface water flooding due to its low level and the unique nature of the sewer system. Main rivers and watercourses in the upper part of the catchment drain into the public sewer system on a large scale. Due to the relatively flat nature of the city the surface and foul sewers are combined in order to ensure they drain effectively. However, in times of heavy rain, surface water can overwhelm the sewers causing flooding.

The Flood and Water Management Act 2010 was introduced following the Pitt Report into the widespread flooding experienced in 2007 and contained many of the report's 92 recommendations. These included the creation of Lead Local Flood Authorities (LLFAs) which includes Hull City Council. LLFAs have a number of responsibilities, including preparing and maintaining a strategy for local flood risk management in their area. Hull's Strategic Flood Risk Assessment was carried out to comply with the Act and part of it requires all major developments to carry out an assessment of flood risk and to identify measures to address this risk. Given the nature of the topography and the drainage system in the Hull and Haltemprice catchment area, Hull City Council believe it is right to challenge and to achieve an appropriate level of protection for the City now and in the future.

Legislation, policy and guidance concerning flood risk, climate change and SuDS is complex and in planning terms is underpinned by the National Planning Policy Framework (NPPF) which is clear on the need to use "opportunities offered by new development to reduce the causes and impacts of flooding." (NPPF para 100, bullet 4)

The emerging Hull Local Plan includes policies on surface water storage and drainage, sustainable drainage systems and flood risk.

Chapter 2: Drainage Impact Assessments and the Planning Process

Drainage Impact Assessments (DIA) and/or Drainage Impact Strategies (DIS) are required to accompany planning applications for major developments – generally 10 or more dwellings, 1,000sqm of floor-space or where sites are more than 1ha or equivalent for non-residential or mixed development. Appendix A includes a comprehensive definition.

As part of the planning process, approval of the DIA is required by the City Council. To get approval, it should be in accordance with this guide and with SuDS design guidance. Historic guidance should be taken from the Surface Water Management Plan and the updated Strategic Flood Risk Assessment. These documents can be found on Hull City Council's Flood Risk web page

Where a DIA is required, it must be site specific. It should reference the site Specific Flood Risk Assessment and address surface water drainage having regard to the principles of SuDS. These have the benefit of taking into account water quantity, water quality and environmental and amenity issues.

Upon receipt of a DIA by the Planning Services the Lead Local Flood Authority (LLFA) will be consulted. The LLFA will consider the content of the report and advise accordingly.

The LLFA is given 21 days to consider the DIA and the DIS in relation to applications for major development from first receipt.

Any proposed amendments to approved schemes must be submitted for approval. Any planning conditions can only be discharge by the Planning Services.

Failure to provide a DIA or a DIS with a relevant application will result in the application not being validated.

Demonstrating a satisfactory means of surface water drainage should address concerns that may otherwise lead to a refusal of planning permission.

The DIA is an integral part of the development processes and should be aligned with the building and landscape brief or design at an early stage. The DIA should identify the principles behind the chosen approach and demonstrate that the method to achieve surface water source control gives the best environmental protection available and is adoptable.

Agreement of a DIA by the Lead Local Flood Authority does not constitute planning consent for your scheme but it does demonstrate that a LLFA is satisfied in principle with the proposed drainage scheme.

Please note the DIA will be considered by the LLFA for surface water only for all Major Planning applications. Foul water drainage discharge from the development will be approved by Yorkshire Water through their pre-development enquiry process and by your Building Regulation provider.

Please note the DIA or DIS does not remove the requirement for a Flood Risk Assessment if the proposed development is within flood zone 2 or 3. This assessment will be with considered by the Environment Agency.

Chapter 3: When are Drainage Impact Assessments and Drainage Impact Strategies needed, and what should they include?

The DIA should follow best practice guidance, in-line with the CIRIA SuDS Manual C697 (2007), and NPPF planning guidance published by DCLG, together with the non-statutory technical guidance published by Defra. There are other guidance sources which must be considered when designing surface water and SuDS scheme, a number of which are listed in Appendix B. This should not be considered to be an exhaustive list.

As detailed layout, dwelling numbers etc. may not be known at the outline planning stage, an acceptable DIS is all that is required at that time. However for full planning applications, or (when the initial application was an outline), reserved matters applications, a DIA must be agreed as part of the planning process. The table below shows the main differences between what is needed in a DIS and a DIA. Additional DIA requirements are set out in the chapter following the table.

3.1 Differences between a DIS and a DIA

Drainage Impact Strategy (DIS)	Drainage Impact Assessment (DIA)
Needed for Outline Planning Applications	Needed for Full Planning Applications and Reserved Matters Applications
DIS should demonstrate that:	DIA should include:
The point of discharge will not cause flood risk either within or outside of the development	A concept drawing of the development proposal including road layout. Detailed drawing and cross section of all SuDS features and landscape plan with all site levels and ground contours assessed along with the requirement of the Flood Risk Assessment
The peak flow rate and volume control meet the criteria set out in section 3.4 of this guide	A plan clearly identifying: Total area of site; (Ha) Area of public open greenspace; (Ha) Impermeable area;(Ha)
The structural integrity of components of the drainage system	A summary and reasoning of SuDS to be incorporated and of how the drainage design provides SuDS techniques in accordance with the SuDS C753 design manual
	A drainage plan identifying all the types (including foul) of drainage features of the site showing layout and access details, along with a schematic representation of the site drainage arrangements at an appropriate scales indicating cover levels, invert levels, flow of direction, etc.

Drainage Impact Strategy (Cont.)	Drainage Impact Assessment (Cont.)
	A description / risk assessment of the design of safety measures to render above ground SuDS acceptably safe (if required)
Maintenance and constructability has been given consideration	Confirmation of maintenance responsibility. Plans taking account of the construction, operation and maintenance requirements of both surface and subsurface components. Ensuring they are adequate for the 'life' of the development and allowing for any personnel, vehicle or machinery access required to undertake this work

3.2 Point Of Discharge

- a) Hydraulic control is essential for all SuDS. Provide details and evidence of the outlet structures to show they are adequate to restrict flows to achieve the correct discharge to receiving watercourses or combined sewer;
- b) The soil classification for the site (if full or partial infiltration or a soakaway are specified); although a point to note here is that few sites in Hull are suitable for infiltration due to soil type and the presence of the Source Protection Zones. Should infiltration techniques be chosen a Hydrogeological Risk Assessment may be required to assess the impacts on ground water.
- c) Evidence of subsoil porosity tests including where possible at the location of any intended infiltration device (if full or partial infiltration or a soakaway are specified); and
- d) Establish the location and name of the nearest open water course that may be required to convey surface water from the development within 500m radius.

3.3 Interception Storage

- a) Demonstration of on-site interception techniques proposed to prevent any discharge of surface water from a site for the majority of rainfall events up to 5mm depth (i.e. around 50% of all rainfall events).

3.4 Peak Flow Rate & Volume Control

3.4.1 Brownfield sites – “Brownfield” is a term used in urban planning to describe land previously developed.

Provide the following information if your development proposal is on a brownfield site:

- a) Calculations showing flow and drain down time of any SuDS feature;
- b) Attenuation designed for a 1 in 100 year 6 hour rainfall event plus 30% Climate Change flows are contained or stored on site;
- c) The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 75 year flows plus 30% Climate Change;
- d) The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development;
- e) The design of the system should allow 10% for urban creep;
- f) The existing hard standing area of the brownfield site, runoff rate must be constrained to a value as close as is reasonably practicable to:
 - 1) a run off rate equivalent to that of Greenfield – 1.4 Lt/per sec/Ha;
 - 2) a 50% runoff rate for the hard standing area for a 1in 2 year 6 hour rainfall event;
 - 3) to a 5.0 Lt/per sec/Ha runoff rate;
- g) Assessment of flood risk includes consideration of SuDS system blockage and flow exceedance route for 150 and up to 200 year return period rainfall events showing no loss to land or property as a result of overland flow.

Please Note – The LLFA will expect the applicant to demonstrate they have applied the above hierarchy when designing for discharge rate from the development:

3.4.2 Greenfield sites – “Greenfield” is undeveloped land in a city or rural area either used for agriculture, landscape design, or left to evolve naturally.

Provide the following information if your development proposal is on a greenfield site:

- a) Calculations showing flow and drain down time of any SuDS feature;
- b) Attenuation designed for a 1in 100 year 6 hour rainfall event plus 30% Climate Change flows are contained or stored on site;

- c) The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 75 year flows plus 30% Climate Change;
- d) The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development;
- e) The design of the drainage system should allow 10% for urban creep;
- f) Calculations to show flows from the development is restricted to the runoff rate for a 1 in 2 year 6 hr rainfall event or a rate of 1.4 Lt/per/sec/Ha runoff rate can be used in default;
- g) Assessment of flood risk includes consideration of SuDS system blockage and flow exceedance route for 150 and up to 200 year return period rainfall events showing no loss to land or property as a result of overland flow.

3.5 Construction Design Elements.

- a) Design of inlet and outlet structures and treatment systems must be sufficient to minimise erosion and cope with any debris or litter present in the system. All products proposed should include all manufacturers' details;
- b) A method statement detailing how contaminated water, erosion and sediment control arising during construction will be dealt with;
- c) Proposals for integrating the drainage system into the landscape or required public open space;
- d) SuDS land take including temporary or sacrificial SuDS for dealing with construction run-off;
- e) Confirmation of construction method statement; and
- f) Demonstration of techniques used to prevent surcharging of sewers effecting SuDS systems.

3.6 Water Quality Treatment

An examination of the current and historical drainage patterns and site topography and geology to determine if the area is environmentally sensitive (e.g. Groundwater Source Protection Zone)

3.7 Functionality of the Design

- a) Design features must be sufficiently durable to ensure structural integrity over the system design life; (residential 100 years and commercial 60 years);
- b) Confirmation of land ownership of all land required for drainage;
- c) A copy of a letter from the Environment Agency and/or Yorkshire Water giving the location of the nearest watercourse/ public sewers and evidence that capacity exists in the network, and confirmation of their availability for servicing the site and allowable discharged rates;
- d) Additional requirements that should be included where relevant at the applicant's discretion (and may be requested by the LLFA following application if necessary);
- e) Confirmation of maintenance responsibility;
- f) Plans taking account of the construction, operation and maintenance requirements of both surface and subsurface components and ensuring they are adequate for the 'life' of the development and allowing for any personnel, vehicle or machinery access required to undertake this work

3.8 'As built' Drawings

Upon completion of the SuDS scheme the applicant is advised to provide 'as built' drawings of the drainage apparatus to the LLFA this should normally be provided electronically.

Please Note- the LLFA will expect the applicant to demonstrate they have applied the following hierarchy when designing for discharge from the development:

1. Store rainwater for later use;
2. Use infiltration techniques in suitable areas;
3. Provide attenuation with discharge to a watercourse;
4. Provide attenuation with discharge to a surface water sewer (drain);
5. Provide attenuation with discharge to the combined sewer (drain).

Chapter 4: Advice and Pre-Application Meetings

Advice on the drainage impact assessments, SuDS etc. is available by phone, email or in person. There is currently no charge for this information. Applicants can make general enquiries to Hull City Council's Flood Risk Management Team on 01482 300 300, or by emailing flood.risk@hullcc.gov.uk.

In some cases, particularly for larger developments, a pre-application meeting will be helpful to all interested parties in establishing a common understanding of proposals and will assist the determination of subsequent planning applications. Such a meeting will be held at the discretion of Planning Services. The developer or applicant is advised to contact the Development Management section at an early stage to agree the requirement for a pre-application meeting. Pre-application Meetings arranged through Planning Services

The planning officer will arrange the meeting and it is expected that it will be attended by representatives of the Developer, Agent, Planning Services, Lead Local Flood Authority, Building Control, Highways, and Parks & Gardens as appropriate. To ensure maximum benefit from the meeting the developer should submit proposals for addressing the drainage issues. A draft DIA and a diagram of the proposed scheme showing the outline design of SuDS for the site.

This should show where areas drain to, the flow routes for water through the system, where water will be stored and the volume of storage provided for the design rainfall event, the location, capacity and details of flow controls and the discharge point. Exceedance routes should also be indicated or explained. This should be submitted at least 2 weeks prior the meeting.

Appendix A

Definition of Major Development

“major development” means development involving any one or more of the following—

(a) the winning and working of minerals or the use of land for mineral-working deposits;

(b) waste development;

(c) the provision of dwellinghouses where —

(i) the number of dwellinghouses to be provided is 10 or more; or

(ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);

(d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or

(e) development carried out on a site having an area of 1 hectare or more;

“mining operations” means the winning and working of minerals in, on or under land, whether by surface or underground working;

This is as defined by The Town and Country Planning (Development Management Procedure) (England) Order 2010

Appendix B

Sources of Design Guidance

- a) CIRIA: The SUDS Manual C697. Now updated to C753
- b) CIRIA: Source control using constructed pervious surfaces. C582.
- c) CIRIA: Rainwater and greywater reuse in buildings: best practice guidance. C539.
- d) CIRIA: Designing for exceedance in urban drainage – good practice. C635.
- e) CIRIA: Building greener. Guidance on the use of green roofs, green walls and complementary features on buildings. C644.
- f) CIRIA: Site handbook for constructing SUDS. C698.
- g) CIRIA: Structural design of modular geocellular drainage tanks. C680.
- h) Interpave: Guide to the Design, Construction and Maintenance of Concrete Block Permeable Pavements
- i) Interpave: Understanding Permeable Paving
- j) Environment Agency: Green roof tool kit.
- k) Sewers for Adoption – 6th edition
- l) Assessing & managing flood risk in development BS8533:2011
- m) Code of practice for surface water management for development sites BS 8582:2013

Appendix C

Contact Details

Lead Local Flood Risk Team email: flood.risk@hullcc.gov.uk
Lead Local Flood Risk Team telephone 01482 300 300

Development Management email: dev.control@hullcc.gov.uk

Building Control email: hull.building.control@hullcc.gov.uk