



Supplementary Planning Document (SPD): Living with Water- Approach to Surface Water Drainage

Hull Council and Yorkshire Water have collaborated in devising this Supplementary Planning Document (SPD) as part of the “Living with Water Partnership”. It is designed to assist developers in ensuring that new development is drained in the most sustainable way possible and does not increase flood risk to residents in the city. The SPD also seeks to demonstrate how sustainable flood risk management has other benefits such as improving biodiversity and general quality of life within the city. The document will be adopted by Hull Council as one of the suite of documents within the city’s statutory development plan and should be read alongside the Hull City Council Local Plan (adopted November 2017)

Introduction

1.1 This Supplementary Planning Document (SPD) aims to guide applicants on how to reduce surface water run-off to mitigate flood risk from new development. Inadequate drainage can cause large scale damage both to the economy and to the health and wellbeing of communities. In 2007 8000+ residential properties in Hull were affected by surface water flooding. The cost to the national economy from the summer 2007 flooding was £3.2billion (in 2007 value)ⁱ. In line with research carried out by the National Infrastructure Commission surface water flooding has now been added to the national risk register due to the increasing risk, frequency and damages this source of flooding leads to. The impact of climate change has influenced this but also development in the past has had a significant role in increasing this risk so it’s vital that future development does not continue to add to this burden.

1.2 Since 2010 there has been a requirement for the Lead Local Flood Authority to comment on surface water drainage for all major planning applications as a statutory consultee as stated in paragraph 11.4 of the Local Plan. Water and Sewerage Companies are not statutory consultees in the development management process but it has long been part of government guidance that they should be consulted by Local Planning Authorities. In practice, Hull Council consult YW on all major applications and may do so on smaller developments. YW in turn responds with comments regarding the public sewer network and in the majority of cases, request that appropriate conditions to control surface water drainage entering the public sewerage are imposed on any grant of planning permission.

1.3 This document is primarily aimed at developers and designers to give consistent planning advice from the consultees involved in drainage so there is an understanding of what is expected in Hull for Policy 39 Sustainable Drainage in the Local Plan.

Definition of drainage and local circumstances

1.4 For the purposes of this SPD the “drainage” relates to the discharge of surface water from a development site.

1.5 Due to the unique topography and historic amendments to natural drainage systems in Hull, most of the water from the city and surrounding area ends up in the combined drainage system from homes, roads and watercourses and it is all treated at the sewage treatment works and then it is pumped out into the estuary. Most sewerage systems in the UK use rivers and watercourses to relieve the pressure on the sewerage system in wet weather, allowing water to escape which prevents flooding. Unusually in Hull there are several significant watercourses that are piped into the sewers adding further complexity.

1.6 The topography of the city is similar to a bowl with higher land in East Riding draining towards the city and the land rising towards the Humber frontage. This adds challenges to draining a system by gravity. During dry periods surface water is needed in the sewer system to flush though the foul but in intense or heavy rain the drainage systems quickly reaches capacity and flooding occurs.

1.7 Paragraphs; 11.12, 11.13, 11.21, 11.22, 11.23 and 11.24 in the Local Plan give more detail on the specific local issues relating to surface water in Hull. It is for the reasons stated in the paragraphs

above that Hull City Council has adopted a different stance to dealing with surface water drainage consultations.

1.8 95% of the city is within Flood Zone 3a (high risk) as shown on the Environment Agency's flood map, as such all proposed developments require a Flood Risk Assessment to assist developers in understanding the flood risk and relevant mitigation. The requirements for this are set out in the Local Standing Advice.

http://www.hullcc.gov.uk/portal/page_pageid=221,578325&_dad=portal&_schema=PORTAL

It is requested that a **Flood Risk Assessment** (FRA) (in-line with the standing advice or bespoke, if required), is clearly titled as a separate document to a **Drainage Impact Assessment** (DIA) which addresses the surface water drainage of the new development.

Policy Background

1.8 A detailed Level 2 SFRA was produced for the entire city boundary. This included integrated modelling of all sources of flood risk including sewer, river, tidal and surface water. This modelling provided the justification for the surface water requirements included in Policy 38 and 39.

Policy Implementation – Drainage Impact Assessments

1.9 All major applications need to submit a DIA to show how they will comply with Policy 39, in particular how the development will achieve the required rates of surface water discharge. The surface water management hierarchy that should be followed for any new development is:

- a) Surface water runoff is collected for use;
- b) Discharge into the ground via infiltration;
- c) Discharge to a watercourse or other surface water body;
- d) Discharge to a surface water sewer, highway drain or other drainage system, discharging to a watercourse or other surface water body (note that most highway drains in Hull are connected to the combined sewer system)
- e) Discharge to a combined sewer (this can only be permitted in exceptional circumstances)

In exceptional circumstances, where clear evidence is provided that a), b) or c) from the above hierarchy is inappropriate for the site, a restricted connection to the local surface water system (and in some cases the combined system) may be granted.

Greenfield sites must prove no increase in surface water entering the network, the maximum acceptable volume for Greenfield Sites will be current green field rate (approximately 3.5l/s).

Brownfield sites must reduce existing run off rates by at least 50%. **This is an agreed rate with Hull City Council and Yorkshire Water.**

The calculations should include a simple demonstration of the amount of storage required and then how the design of the development will accommodate this for a 1 in 75 year (1.33% annual probability) flood. It is accepted that for a 1 in 100yr (1%AP) storage does not have to be within the formal storage but use of the roads, parking, gardens would be acceptable as long as it is within the site boundary. A 30% allowance for climate change should be added to ensure the design is appropriate for the lifetime of the development.

1.10 The preferred method of storage provision and systems to achieve this run-off rate is through above ground sustainable drainage such as swales, dry detention basins, raingardens or planters/tree pits which are more visible and provide additional benefits such as water quality, amenity and biodiversity, educational, recreational and community benefits alongside managing the flood risk to enable development. In sites of high density it may not be achievable to provide the volume of storage required through above ground so a combination of below and above should be considered.

1.11 If designed appropriately the above ground SuDS could enable a developer to meet several policy requirements. These would be policy 38 and 39 for water management, policies 42 and 43 on open space provision, noting the fact that NPPF includes areas of water as open space so SuDS features such as ponds, swales or reed beds can count as natural or semi natural green open spaces. There is also the opportunity to address requirements in policies 44, 45 and 46 on biodiversity, trees and local food growing through the installation of tree pits, planters and green/brown roofs.

Pre-planning Advice

1.12 It is strongly advised that developers contact the Developer Services team at Yorkshire Water as early as possible in the design phase of the development. Site specific advice can be provided on

appropriate and sustainable means of surface water drainage, along with other information such as the location of infrastructure that could impact on site layout. Contact details are provided below:

Developer Services Team: telephone 0345 120 84 82 (option 1) or email:
technical.sewerage@yorkshirewater.co.uk

Hull City Council Flood Risk Team
Flood.risk@hullcc.gov.uk

Core Design Principles

1.14 The following agreed principles should be followed when designing SUDs:

- SUDs should be considered as an integral part of site design at the earliest stages possible, not added on as a “retrofit”.
- The principle of SUDs and living with water should be seen as a positive to sell the development. Promotion of water management through signage and interpretation of the SUDs and information packs with new homes/commercial buildings should be provided.
- The SUDs features must provide the required level of storage as calculated in line with the DIA requirements. If it is not possible to do this through using all above ground SUDs then the use of permeable paving with storage beneath or underground storage tanks are acceptable.
- Existing watercourses should be retained as part of the development with culverting not accepted and the re-opening of existing culverts where possible.
- SUDs features, such as swales, located within private gardens are unlikely to be efficiently maintained into the future. There would be little regulation over these structures and therefore these should be avoided. The use of water butts or grey water recycling can be considered.
- The amount of impermeable area of a housing site can change over the lifetime of the development. Building extensions and paving of gardens will often occur outside of the planning process because it does not require planning permission. Therefore proposed housing schemes should make a 10% allowance for “urban creep”.

- All SuDS or surface water storage systems must be designed with future maintenance in mind. With above ground SUDs, planting and the type of vegetation used can make a big difference in the amount of maintenance required. Surrounding land uses and maintenance of green open spaces should be incorporated into the maintenance plans along with consideration of who may want to adopt.
- Sewers for Adoption 8 (SfA8) s and guidance in CIRIA report C753 the SuDS Manual should be used as the general design principles for SuDS.

Responsibilities for maintenance

1.15 The maintenance options available to a developer for sites in Hull are as follows:

- SuDS measures that form part of the highway network will be adopted by Hull City Council provided they meet the adoption principles and the highways team are satisfied that the design, specification and construction is adequate. <http://www.hull.gov.uk/roads-and-pavements/roads/road-and-new-developments>
- Above ground SuDS measures that form part of the public open space or public realm may be adopted by Hull City Council providing they meet the adoption principles and the relevant adopting department (Flood Risk, Parks, Streetscene) are satisfied that the design, specification and construction is adequate. Types of open space SuDS are: reed beds, dry detention basins, swales, ponds and tree pits. Payment for long term maintenance would be required to cover the lifetime of the development, payable prior to adoption.
- Detention basins which meet the relevant design criteria (linked below) may be adopted by Yorkshire Water. Yorkshire Water may take on maintenance of the detention basin. [Yorkshire Water Design Requirements for Surface Water Attenuation Assets](#)
- Alternatives are for the developer to take on the maintenance through a Management Company via a chargeable rate to the future development site occupiers/residents. This would be for the developer and/or Management Company to facilitate.
- Community groups or organisations such as Wildlife Trusts may be interested if SuDS are designed in accordance with their principles and offers benefits in line with their values.

Policy 39

Sustainable Drainage

1. All development should incorporate sustainable drainage systems (SuDS) unless it has been demonstrated this is not technically or economically feasible. Major development should be accompanied by a Drainage Impact Assessment.
2. The Drainage Impact Assessment should account for the following:
 - a. run-off rates for greenfield sites should not exceed 1.4 litres per second per hectare;
 - b. run-off rates for brownfield sites should not exceed 50% of the current run-off rate;
 - c. the on-site drainage system should be capable of storing water for the 1 in 75 year (1.33% annual probability) rainfall event;
 - d. the site should be capable of storing the water from a 1 in 100 year (1% annual probability) rainfall event;A 30% allowance should be added to the above requirements to account for climate change and to ensure that the development is safe for its lifetime.
3. The drainage system should be designed so that in the event of the system failing or the tolerances being exceeded, no surface water flooding is caused to habitable buildings on- or off-site.
4. Site layout should have regard to any relative flood risk within the site and any existing features which could support sustainable drainage on-site.
5. Sustainable drainage systems must be designed with regard to Source Protection Zones.
6. Applications should demonstrate how the long term maintenance of the sustainable drainage system will be assured.

Table to show maintenance requirements for the different SuDS componentsⁱⁱ

| Operation and maintenance activity | SuDS component | | | | | | | | | | | | |
|--------------------------------------|----------------|---------|-----------------|--------------------|----------|---------------------|--------------|-----------------|-------------------|------------------------------|--------------|-------------|----------------------------------|
| | Pond | Wetland | Detention basin | Infiltration basin | Soakaway | Infiltration trench | Filter drain | Modular storage | Pervious pavement | Swale/bioretention/ trees | Filter strip | Green roofs | Proprietary treatment systems |
| Regular maintenance | | | | | | | | | | | | | |
| Inspection | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Litter and debris removal | ■ | ■ | ■ | ■ | □ | ■ | ■ | □ | ■ | ■ | ■ | | □ |
| Grass cutting | ■ | ■ | ■ | ■ | □ | ■ | ■ | □ | □ | ■ | ■ | | |
| Weed and invasive plant control | □ | □ | □ | □ | | □ | □ | | □ | | □ | ■ | |
| Shrub management (including pruning) | □ | □ | □ | □ | | | | | □ | □ | □ | | |
| Shoreline vegetation management | ■ | ■ | □ | | | | | | | | | | |
| Aquatic vegetation management | ■ | ■ | □ | | | | | | | | | | |
| Occasional maintenance | | | | | | | | | | | | | |
| Sediment management ¹ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |
| Vegetation replacement | □ | □ | □ | □ | | | | | | □ | □ | ■ | |
| Vacuum sweeping and brushing | | | | | | | | | ■ | | | | |
| Remedial maintenance | | | | | | | | | | | | | |
| Structure rehabilitation /repair | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | |
| Infiltration surface reconditioning | | | | □ | □ | □ | □ | | □ | □ | □ | | |

Key

- will be required
- may be required

Notes

ⁱ Defra and Environment Agency report – Cost of Summer Floods 2007 in England [Project: SC070039/R1](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291190/scho1109brja-e-e.pdf)

ⁱⁱ CIRIA report C753 The SUDs Manual v6