

Sustainable Drainage Systems (SuDS) & Surface Water Drainage Requirements For New Development

Design and Maintenance

Combined Planning Note and Standing Advice

September 2016

East Riding of Yorkshire Council
as Lead Local Flood Authority &
Local Planning Authority



[This page is intentionally blank]

About this note

East Riding of Yorkshire Council (ERYC) is a unitary authority which means that it is the Local Planning Authority (LPA) and the Lead Local Flood Authority (LLFA). Although not exhaustive, this note is intended to provide assistance to developers when preparing applications for full planning permission and reserved matters for major development, in respect of SuDS and Surface Water Drainage Design.

This is a supplementary note to support Objective 9 of the ERYC Local Flood Risk Management Strategy¹ and Policy ENV6 of the ERYC Local Plan Strategy Document.²

To assist developers this document is split into two parts.

- a) Sections 1 to 9 provide standing advice on the design of surface water drainage and SuDS systems for major developments.
- b) Section 10 sets out the Council's preferred hierarchical approach for the ongoing maintenance of surface water drainage and SuDS apparatus over the lifetime of the development.

Background

From the 6 April 2015 surface water drainage is being dealt with via an amendment to the planning system. According to Government, Local Planning Authorities are now expected to:

- a) consult Lead Local Flood Authorities (LLFAs) regarding surface water management and flood risk on major developments;
- b) satisfy themselves that the national minimum standards of operation for SuDS are appropriate; and
- c) “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” and that “the sustainable drainage system should be designed to ensure that the maintenance and operation requirements are economically proportionate³”.

To implement this amendment, the statutory consultee arrangements for the planning application process⁴ were changed on 15 April 2015 making LLFAs statutory consultees for major development⁵. The Government has also amended the National Planning Practice Guidance to reflect these changes.

This note has been developed to provide assistance to developers and planning officers when considering surface water drainage and SuDS.

¹ www.eastriding.gov.uk/flooding

² www.eastriding.gov.uk/erlocalplan

³ DCLG Sustainable Drainage Systems: Written Statement – HCWA161, 18 December 2014

⁴ Town and Country Planning (Development Management Procedure) (England) Order 2010 (DMPO)

⁵ The definition of major development is set out on page 3 of this note

If you would like pre planning advice for surface water drainage and flood risk, please contact the Lead Local Flood Authority at LLFA@eastriding.gov.uk and they will provide you with a quotation.

[This page is intentionally blank]

The design of surface water drainage systems and SuDS

I. Introduction

East Riding of Yorkshire Council is a Lead Local Flood Authority (LLFA) and a statutory consultee on all major planning applications (see section 2). In this regard, the LLFA is required to assess this type of planning application to ensure an appropriate level of technical compliance with the minimum design requirements (see section 3). Some of this work was previously the responsibility of the Environment Agency.

At outline planning stage the applicant is not expected to submit detailed information. However, the LLFA must be satisfied that sufficient information has been submitted to confirm that the site can be drained without increasing flood risk to the site or elsewhere. The LLFA may request specific planning conditions in this respect.

Applicants can make general enquiries, including pre-planning advice for surface water and flood risk, to the LLFA on 01482 395656 or email LLFA@eastriding.gov.uk, however the Council reserves the right to make a charge for specific advice. A schedule of charges is available upon application.

2. General Information

As indicated above, in respect of any major development with surface water drainage there is a statutory requirement for the Local Planning Authority (LPA) to consult with the LLFA. A **major** development means development involving one of the following:

- a) 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.

In the case of (a) and (b) it is advised that specific requirements are discussed with a LLFA officer prior to submission of the application.

3. Minimum Design Requirements

The *Non-statutory Standards for Sustainable Drainage Systems (Defra 2015)* document provides the current benchmark for designing SuDS - these are re-presented below (S1 to S14). LLFA advice on how to apply these within the East Riding of Yorkshire is provided in **bold** text.

a) Flood risk outside the development

S1 Where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges without any impact on flood risk from that surface water body (e.g. the sea or a large estuary) the peak flow control standards (S2 and S3 below) and volume control technical standards (S4 and S6 below) need not apply.

Within the East Riding of Yorkshire, S1 applies where the development is capable of discharging to the Humber Estuary or the North Sea by gravity, without tide locking⁶, over the lifetime of the development.

b) Peak flow control

S2 For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.

S3 For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

Refer to 5 (c) [Accredited Specification], (d) [Hydraulic Calculations], (e) [Flow Control] and 7 [Climate Change] of this document for further information

For previously developed sites, an assessment of the site must be undertaken immediately prior to the application being submitted. This should determine the existing on-site impervious areas, together with where they actually discharge (Historic impervious areas are not to be used). A minimum of 30% reduction in the existing discharge rate will be required together with sufficient proof that flood risk will not be increased by the proposed discharge. If the LLFA consider that an unacceptable flood risk may result from the calculated brownfield run off rate then a reduced discharge rate will be imposed on, or agreed with, the developer.

c) Volume control

⁶ Tide-locking occurs when fluvial flows on tributaries are prevented from entering the estuary by high tides. The result is raised water levels in the tributaries which can cause localised flooding.

- S4 Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.
- S5 Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.
- S6 Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.

Refer to 5 (c) [Accredited Specification], (d) [Hydraulic Calculations], (e) [Flow Control] and 7 [Climate Change] of this document for further information

The applicant must prove to the LLFA that the proposed drainage systems for the development will not increase flood risk.

d) Flood risk within the development

- S7 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 30 year rainfall event.
- S8 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.
- S9 The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance [flood flow] routes that minimise the risks to people and property.

Refer to 5 (c) [Accredited Specification], (d) [Hydraulic Calculations], (e) [Flow Control] and 7 [Climate Change] of this document for further information

e) Structural integrity

- S10 Components must be designed to ensure structural integrity of the drainage system and any adjacent structures or infrastructure under anticipated loading conditions over the design life of the development taking into account the requirement for reasonable levels of maintenance.

S11 The materials, including products, components, fittings or naturally occurring materials, which are specified by the designer must be of a suitable nature and quality for their intended use.

Refer to 5 (c) [Accredited Specification] of this document for further information.

f) Designing for maintenance considerations

S12 Pumping should only be used to facilitate drainage for those parts of the site where it is not reasonably practicable to drain water by gravity.

Refer to 5 (c) [Accredited Specification] and 10 [Ongoing Maintenance] of this document for further information.

g) Construction

S13 The mode of construction of any communication with an existing sewer or drainage system must be such that the making of the communication would not be prejudicial to the structural integrity and functionality of the sewerage or drainage system.

The applicant is advised contact the statutory sewerage undertaker (this is generally Yorkshire Water for sites within the East Riding of Yorkshire) to make a pre-application enquiry about any connection with public sewer apparatus.

If the connection is to a privately owned watercourse, whether this is culverted or not, the applicant should contact the Internal Drainage Board / LLFA to establish if consent is required to comply with the Land Drainage Act 1991 or local bylaws. The applicant may also require the approval of the riparian owner to discharge to the culvert or watercourse.

If connection is to a main river the applicant should contact the Environment Agency to establish if consent is required to comply with the Water Resources Act 1991 or local bylaws.

S14 Damage to the drainage system resulting from associated construction activities must be minimised and must be rectified before the drainage system is considered to be completed.

4. Engineering Design Assessment

The applicant is advised to consider how drainage infrastructure can be accommodated in the proposed development, for example:

- is there sufficient room to accommodate pipes and water storage areas?
- can the site drain by gravity or does it need to accommodate a pumping station?
- where is the on-site drainage going to discharge to?
- are permissions or easements required to accommodate off site drainage?

On developments over 4ha, or neighbouring developments that are cumulatively greater than 4Ha, the LLFA will require a 'regional'/comprehensive SuDS scheme incorporated into the design of the site. This is regardless of the ownership or commercial considerations. Such schemes will often drain water to one central storage area where water can then be discharged at a controlled rate back into the environment.

The applicant is advised to assess the cost of infrastructure requirements such as drainage, highways and utilities in the first instance. Failure to properly plan for infrastructure costs at an early stage may lead to scheme failure, due to financial viability, later in the project.

Any derogation of the technical standards will require a substantial body of supporting evidence which clearly sets out why an alternative approach is required both on a deliverability and cost basis.

The developer is encouraged to incorporate a 'regional'/comprehensive SuDS system in developments less than 4ha, however for these sites derogation may be agreed based on a site viability assessment.

5. Minimum Information Requirements

In order for the LLFA to comment on the SuDS element of a planning application, the application **must submit a surface water drainage assessment** with the following information:

- a) A topographical survey in metres Above Ordnance Datum (mAOD) which should include:
 - i. *Existing general site levels;*
 - ii. *Existing intermediate ground levels for proposed off-site drainage works;*
 - iii. *Crown, intermediate and channel level of the nearest adjacent public highway;*
 - iv. *Bank/cover and invert level of the receiving watercourse/sewer/culvert;*
 - v. *A plan showing dimensions and levels mAOD of all existing and proposed drainage apparatus within and without the curtilage of properties. With the exception of assumed rain water gully positions domestic connections, may be omitted;*
 - vi. *Cross sections with dimensions and levels mAOD of all existing and proposed drainage apparatus within and without the curtilage of properties. With the exception of assumed rain water gully positions, domestic connections may be omitted.*
- b) the results of a Building Research Establishment Digest 365 Soakaway Design test with workings that relate to any proposed design set out in 3(a) and 3(b) except where:
 - vii. *the development is in a Ground Water Source Protection Zone 1 as defined on the Environment Agency Groundwater Source Protection Zone Map;*
 - viii. *seasonal groundwater is evident at less than 2m below average site level;*
 - ix. *a ground investigation report has been undertaken by a qualified person that demonstrates that the site is unsuitable for infiltration;*
- c) an accredited specification for materials and methods of construction, to comply with S7 to S13. (Note - the LLFA may develop its own specification however currently considers the following):
 - i. *a specification for Works associated with drainage of the public highway.*
 - **DfT Design Manual for Roads and Bridges: Volume 4 or any variation/alternative specification required by the Council's Highway Development Management Team.**
 - ii. *a specification for traditional engineered drainage systems including non-porous pipes, manhole chambers, pumping stations and other ancillary apparatus.*
 - **WRC Sewers for Adoption 7th Edition**
 - iii. *a specification of the Design of Sustainable Drainage Systems.*

- **The SuDS Manual (C753) CIRIA**

d) hydraulic calculations in order to comply with S1 – S6:

- i. *The applicant should submit calculations to demonstrate compliance with the minimum design requirements;*
- ii. *Present day rainfall volumes and catchment characteristics will normally be assessed against the Flood Estimation Handbook;⁷*
- iii. *For larger sites the LLFA officer would normally expect to see calculations based on the Wallingford Procedure, usually through the use of industry standard software;*
- iv. *Applicants using Micro Drainage for the design are recommended to contact the LLFA to obtain the required design criteria (MADD Factor, additional flow, etc);*
- v. *For smaller sites hand calculations may be accepted if the LLFA officer considers these to be sufficiently conservative.*

e) details of flow control device to comply with S1 – S6:

- i. *It will be expected that proprietary flow control apparatus shall be manufactured to an accredited standard such as BBA (or similar approved);*
- ii. *It is expected that the minimum head to discharge rate shall not be less than 5 litres per second. This is because the risk of flooding caused by blockage increases as the flow control orifice reduces in size.*

f) a plan showing the route of exceedance flows beyond the site boundary

g) details of inspection and maintenance arrangements (see section 10)

⁷ Flood Estimation Handbook : Centre for Ecology and Hydrology : ISBN 094854094X

6. Flood Risk Assessment

Applicants are reminded that a detailed flood risk assessment will also be required if:

- i. *any part of the development lies within flood zone 2 or 3a according to the Environment Agency flood risk map for planning⁸ and the Council's Strategic Flood Risk Assessment⁹;*
- ii. *the development is greater than 1 Ha and/or situated within a groundwater emergence zone, and/or a surface water hazard zone (meaning any part of the development that is subject to medium or high risk according the Environment Agency Map for Surface Water Flooding).*

If the development is located within flood zone 1 and is greater than 1 Ha then a flood risk assessment/drainage impact assessment will be required.

For further information about the requirements for flood risk assessment the applicant should refer to the Council's Flood Risk note for the Planning Application Process¹⁰ and the Strategic Flood Risk Assessment.¹¹

⁸ <http://watermaps.environment-agency.gov.uk>

⁹ <http://www2.eastriding.gov.uk/environment/planning-and-building-control/east-riding-local-plan/strategic-flood-risk-assessment/>

¹⁰ <http://www2.eastriding.gov.uk/environment/planning-and-building-control/east-riding-local-plan/supplementary-planning-documents/>

¹¹ www.eastriding.gov.uk/environment/planning-and-building-control/east-riding-local-plan/strategic-flood-risk-assessment/

7. Climate Change

a) Rainfall

The drainage design should accommodate expected increases in rainfall volume due to climate change over the lifetime of the development. This should be demonstrated by increasing peak rainfall volume in hydraulic calculations by 30% or by increasing on-site storage by an additional 30%.

b) Sea Level Rise

The drainage design must incorporate measures to accommodate the maximum anticipated level of the sea or tidal water over the lifetime of the development. For further information on sea level rise refer to the Environment Agency's climate change guidance for planners¹².

¹² www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

8. Open Space and surface water drainage systems and sustainable drainage systems

In certain circumstances the Council, as both the LLFA and LPA, may accept the dual use of space for playing pitches/outdoor sports provision/amenity and water detention areas as part of a SuDS or surface water drainage system. Such an arrangement may lead to a more efficient use of space on development sites, potentially reducing the impact of development on surrounding areas.

However, it is important that any reduction in the availability of playing pitches/outdoor sports facilities/amenity space, as a result of detained water, should be minimised as far as practicable. As such, the detention areas should be designed to only flood in those instances where the exceedance rate is greater than a 1 in 30 event.

The Council will not accept the dual use of children's play space and water detention areas.

9. Consideration of the application

The following sets out the process by which information on SuDS will be considered through the development management process on major applications:

- a) Validation: Planning application will not be validated unless a surface water drainage assessment has been provided. This assessment must include the following:
 - i) *Minimum information requirements as set out in section 5 above;*
 - ii) *A statement setting out clear arrangements for the ongoing maintenance of apparatus over the lifetime of the development, as set out in section 10 below.*
- b) The LLFA function of the Council will be consulted and will have 21 days to comment. If the information provided is inadequate the applicant will be asked to agree to an extension of time so that this information can be provided. If an extension of time is not agreed, the Council may have to refuse an application because of inadequate information. Note that whilst the LLFA has to assess whether a particular proposal is acceptable in planning terms, their agreement cannot be taken as a technical assessment of the SuDS proposal.
- c) Should the LPA be satisfied that the surface water drainage proposals meet the requirements of the LLFA and any other relevant consultees (and assuming all other planning issues are acceptable), permission will be granted subject to planning conditions.
- d) Developers should carefully consider the planning conditions and submit any further information to discharge the conditions as required.
- e) Failure to discharge the planning conditions could result in enforcement action.

Ongoing maintenance of surface water drainage systems and sustainable drainage systems

10. What are the options for SuDS adoption and maintenance?

It is up to the developer to propose an arrangement for the inspection and ongoing maintenance of SuDS over the lifetime of the development. It is not for the Council to specify a particular approach, however the following hierarchical approach is preferred. Where an option is proposed at the bottom of the hierarchy, this will likely result in a much higher degree of scrutiny and may result in prescriptive conditions:

Hierarchical Approach in order of Preference

a) Adoption by Water and Sewerage Company (WSC)

The developer may enter into a section 104 agreement (Water Industry Act 1991) with the local WSC. Technical specification of the nature and type of apparatus that may be considered for adoption should be discussed with the WSC. The Council would consider this approach appropriate so long as the WSC is acting in its capacity as a statutory sewerage undertaker. Any assets would need to be adopted as public sewerage assets that shall be recorded as such on the public sewer and maintained at the expense of the regulated business. Yorkshire Water is the WSC for most of the East Riding, they can be contacted on 0845 1 24 24 24.

b) Adoption by Highways Authority

A SuDS system might be considered for inclusion in a S38 agreement (Highways Act 1980), if the surface water or SuDS system exclusively serves the proposed adoptable public highway and where there are no private upstream connections.

c) Vesting in a Public (Flood) Risk Management Authority (RMA)

A SuDS system may be vested in a public RMA by a private agreement. The public RMAs in the East Riding are the Council, Internal Drainage Boards and the Environment Agency. The Council, for the time being has decided not to consider entering into such an agreement.

d) Private Maintenance Arrangement

As the least preferred option a private inspection and maintenance arrangement may be considered (this would include a private arrangement entered into with a WSC that is not acting in its capacity as a statutory sewerage undertaker).

Adoption and maintenance under any private arrangement will be the subject to careful consideration by the Council. This reflects the potential liability and costs involved if a private arrangement fails due to a company ceasing trading or a residents' association disbanding or failing in its duties.

In the case of a private arrangement a condition will require a satisfactory legal agreement to be drawn up to provide for inspection and maintenance of the proposed surface water drainage scheme. This legal agreement would be required BEFORE the first occupation of any dwelling or building on the site.

Over the lifetime of the development an agreement must include the following:

- a) A detailed operational maintenance plan;
- b) Physical access arrangements for maintenance, and establishment of legal rights of access in perpetuity, prior to the commencement of any phase of the development;
- c) A financial revenue plan clearly setting out how funding for maintenance is to be raised over the lifetime of the development;
- d) A whole life cost analysis for capital maintenance over the lifetime of the development. Any values should be based on the current HM Treasury Present Value (PV) Discount Rate. Assumptions about the expected useful life of materials should be included in any such analysis; and
- e) Details of financial surety to ensure long term maintenance and capital maintenance costs of apparatus. It is for the developer to demonstrate that a suitable financial underwriting arrangement is in place.

If the LPA is not satisfied that suitable private arrangements can be brought forward, in rare circumstances the LPA may consider a bond arrangement, this will only be considered if all other options are exhausted.

'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 to the specification set out in 5(a). This should normally be provided electronically in Autodesk© *.DWG / *.DXF format or ESRI© compatible shape-file format.

Contact

The LLFA's contact details for planning enquiries and formal consultations on planning applications are as set out below. There may be a charge for pre application advice.

Email: LLFA@eastriding.gov.uk or
Tel: 01482 395656

Flood Risk Management
East Riding of Yorkshire Council
Room BG19
County Hall
Beverley
HU17 9BA

Appendix A: Model Planning Condition

No development shall take place until a scheme for the inspection and maintenance of the surface water drainage system has been submitted to, and approved in writing by, the Local Planning Authority. The scheme shall include arrangements for the adoption by any public authority or statutory undertaker, or any other private arrangements to secure the operation of the scheme throughout its lifetime. If adoption by a public authority or a statutory undertaker is not proposed then the arrangements will need to be the subject of a legal agreement. This will be needed to ensure that inspections are undertaken by a suitably qualified person during construction, at the end of an initial 12 month maintenance, and at specified periods thereafter. The ongoing maintenance proposals shall specify the regular maintenance work to be undertaken, and who will be responsible for the funding and supervision of this work and of any necessary repairs during the lifetime of the development. Inspections and maintenance shall be carried out in accordance with the agreed scheme, unless otherwise agreed in writing with the Local Planning Authority.

This pre-condition is imposed as the Local Planning Authority is under a duty to ensure that inspection and future maintenance arrangements for surface water drainage schemes are agreed.