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EAST DUNBARTONSHIRE COUNCIL

DEVELOPMENT AND INFRASTRUCTURE

NEIGHBOURHOOD SERVICES

Flooding and Drainage

Guidelines
For Developers

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Rev B

CONTENTS

Quality Management

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1.0 Introduction

This guidance document sets out East Dunbartonshire Council's (EDC) technical requirements for flood risk, drainage design, construction, maintenance and operation. In addition to the general principles set out in Scottish Planning Policy (SPP) in relation to flooding and drainage.
SPP states:

> *"Flooding can impact on people and businesses. Climate change will increase the risk of flooding in some parts of the country. Planning can play an important part in reducing the vulnerability of existing and future development to flooding."*

This guidance identifies the current (at time of publication) key legislative and national policies that all developers must comply with for new developments.

2.0 Legislation and Policy

2.1 Scottish Planning Policy (SPP)

Although the primary responsibility for reducing the impact of flooding on property is the owner, EDC has a duty not only to ensure adequate maintenance of all their drainage assets but also to ensure that all new developments comply with the requirements set out in national policy.

The current version of the SPP was published on June 2014 and replaces the older version that was published on 2010. Refer to link below for further details.

http://www.scotland.gov.uk/Resource/0045/00453827.pdf

The SPP sets out national planning policies that reflect the Scottish Government's priorities for the operation and planning system and for the development and use of land which is set out in the National Planning Framework. Refer to link below for further details.

http://www.scotland.gov.uk/Resource/0045/00453683.pdf

2.2 Flood Risk Management (Scotland) Act 2009

The Flood Risk Management (Scotland) Act 2009 (FRM Act 2009) came into force on 16th June 2009. The Act replaces the previous Flood Prevention (Scotland) Act 1961. The main aim of the FRM Act 2009 is to provide a more streamlined, sustainable and modern approach to flood risk management and also provides for both present and future needs and also that of the impact of climate change.

The Act provides a framework for the co-ordination and co-operation between all organisations involved with flood risk management and identifies new responsibilities for the Scottish Environmental Protection Agency (SEPA), Scottish Water (SW) and local authorities in relation to flood risk management. Refer to link below for further details.

http://www.legislation.gov.uk/asp/2009/6/pdfs/asp_20090006_en.pdf

2.3 SuDS For Roads

SuDS for Roads is a guidance document that was commissioned by SCOTS and SUDS Working Party. The document was created by a partnership that consisted of a range of public and private sector organisations including the Scottish Government and Scottish Water.
The purpose of the document is to provide a guide through the design of roads and incorporating SUDS which are suitable as best practise and are provided utilising whole life costing tools in the selection process. Refer to link below for further details.

http://scots.sharepoint.apptix.net/roads/General%20Publications/SuDS%20for%20Roads/20100805%20SUDS%20for%20Roads%20-%20FINAL%20Version.pdf

2.4 Sewers For Scotland

Current version of Sewers for Scotland is the 3rd Edition. This is a design and construction guidance which is aimed at all developers and consultants who are planning to undertake a development of any size within Scotland. The document provides procedures and guidance for the design and construction of all new infrastructure associated with any new development. Refer to the link below for further details.

http://www.scottishwater.co.uk/business/connections/connecting-your-property/sewers-for-scotland-and-suds

2.5 The SuDS Manual (Ciria 697)

Ciria 697 is a guidance document which aims to identify the best practise guidance on the planning, design, construction, operation and maintenance of Sustainable Drainage Systems (SUDS) to help facilitate their effective implementation and within proposed developments.

3.0 Scottish Environment Protection Agency (SEPA)

With any proposed development sites, developers should assess the risk of flooding from all sources as set out in SPP. A good starting point to identify any potential flood risk would be to use the SEPA's Coastal and River Flood Maps (published January 2014) which are available on the SEPA's website. Refer to link below for further details. It is important to note that the maps are indicative only and do not take into account any structures such as culverts, bridges or flood defences. They also do not show a worst case scenario as they do not show river or coastal flooding occurring simultaneously.

http://map.sepa.org.uk/floodmap/map.htm

Where the proposed development is at risk from flooding, the developer should support the planning application with a Flood Risk Assessment (FRA). When undertaking the FRA, the developer should consult SEPA's "Technical Flood Risk Guidance for Stakeholders" (current version is version 8 published February 2014). Refer to link below for further details.

http://www.sepa.org.uk/system_pages/search.aspx?q=guidance%20to%20stakeholders

This document outlines the methodologies that are appropriate to undertake the hydrological and hydraulic modelling and identifies the information that SEPA require when submitting a FRA.
When a planning application is supported with a FRA, it is the planning authorities' responsibility to consult SEPA to provide advice on the potential flood risk. SEPA will then review the FRA and provide comments and advice to the planning authority on how appropriate the study is along with its conclusions and the acceptability of the proposal in line with SPP.
Depending on SEPA's findings will determine the response. If SEPA find that the FRA contains adequate information within the assessment, they will inform the planning authority that they support the development. SEPA may submit an objection to the application if there is not substantial information provided within the FRA or that the principle of the development is not in accordance with SPP. SEPA policy document number 41 sets out the role and responsibilities of SEPA and the Planning Authority.

3.1 Controlled Activities Regulations

The Water Environment (Controlled Activities) (Scotland) Amended Regulations 2013 provides controls for various activities in or near inland waters. Any works which include discharges, abstractions, impoundments or engineering works will require authorisation / license from SEPA who are responsible for implementing the Act.
To assist the developer, SEPA have produced a guide to the regulation "The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) A practical Guide" (current version is 7.1 published March 2014). Refer to link below for further details.

http://www.sepa.org.uk/water/water_regulation/car_application_forms.aspx

The regulations are in place to help regulated certain land activities which can have a significant impact on the water environment. To ensure that the regulations are proportionate to the work being undertaken; there are three levels of authorisation:

General Binding Rules (GBRs)

GBR's are for the regulation of activities that pose a low risk. In the case of GBR's you are not required to contact SEPA or incur any charges although work has to be undertaken in accordance with that set out in the general binding rules.

Registrations

Registrations cover small scale activities that individually pose little risk to the environment but cumulatively can result in harm to the environment. Operations must apply to SEPA to register the activities (a single application fee will apply). All works undertaken must comply with the terms of the application.

Licence

Any activity that requires specific conditions to provide environmental protection will require either a simple or for those activities that may require a more complicated environmental assessment a complex licence. The level of licence will depend on the identification of a "responsible person" who must ensure that all work is in compliance with the terms and conditions of the licence. Both simple and complex licences will incur an application charge and the activity may also incur an annual subsidence charge.

Guidance on the above can be found in the CAR Practical Guide using the link provided above. SEPA should be consulted to establish what the appropriate level of CAR approval is required for the proposed works.

4.0 East Dunbartonshire Council's Technical Guidance – Flooding

4.1 Background

Developers should assess all sources of flood risk associated with any proposed development sites and should be in line with that set out within SPP. There are many factors that can be attributed to flood risk, these are:

- Located on a flood plain;
- Located adjacent to a watercourse;
- Poor maintenance of watercourses;
- Poor maintenance of existing drainage systems;
- Inadequate designs for drainage systems and;
- Increase surface water run off due to increased impermeable areas
- Rainfall events
- Breaches in flood defences
- Ground Water

The risk of flooding can have implications for the siting and the design of the proposed development.

4.2 Flood Risk Assessments (FRA's)

East Dunbartonshire Council (EDC) will request for a Flood Risk Assessment to support a planning application when:

- The proposed development is located close to a watercourse;
- EDC have evidence of historical flooding issues relating to the proposed site;
- SEPA's flood map shows the proposed site to be at flood risk or close proximity to the inundation of a watercourse to the 1 in 200 flood event;
- To ensure that any flood risk is adequately managed on site;
- To ensure that no adverse flood risk is transferred upstream or downstream of the watercourse and;
- FRA should be provided to SEPA for comment and review. Confirmation should be provided from SEPA proving no objection to EDC for approval.

For further details in relation to FRA's please refer to section 3.0.

4.3 Allowable Discharge

If discharging to any watercourse or surface water culvert an allowable discharge rate must be agreed with EDC.
In sensitive areas where the watercourse has existing pressures in terms of flood risk both upstream and downstream, EDC would be looking for further betterment for the peak flow run-off rate.

4.4 Peak Flow Run-Off Rate

The peak flow run-off rate from the proposed development site for a 1 in 100 year (1%) storm event shall not exceed peak rate run-off from the undeveloped site for a 1 in 2 year (50%) storm event.
For developments that are located within a previously developed site (brownfield), the peak flow run-off rate from the development to any drain, sewer or watercourse for a 1 in 2 year event and the 1 in 100 year event must not exceed the greenfield run off rate for the site during those same events (as agreed by EDC). The proposed development's peak run-off rate at a minimum must either mimic or better the previous developments rate if the Greenfield run-off is greater.

4.5 Overland Flow Routes

If overland flows occur from the proposed drainage system during a 1 in 200 year (0.5%) storm event, the developer must demonstrate the following:

- flood volumes;
- overland flow routes, paths do not impact on any existing infrastructure and are contained within the proposed development;
- depths of water;
- rate of rise and;
- durations

Calculations and location of these flooding locations should be provided to EDC for review and comment. These are required to show that no flooding or damage to properties will occur during such an event and must be contained safely on site.

4.6 Finished Floor Levels

It is good practise to design the proposed finished floor levels so that they are at an appropriate height above the surrounding ground levels. The finished ground levels should be designed as such that falls are sloping away from any proposed building. General ground levels should be finished in a way not to promote ponding of any surface water within any site especially where it poses a threat of flooding to properties.

Unless it can be shown that overland flows do not pose a threat of flooding to properties, the finished floor levels shall be as follows:

- Minimum of 300mm above footway level or adjacent ground level, and air bricks (where they exist) should be set 150mm above footway level or adjacent ground level.

Proposed finished floor and ground level plan should be submitted for review to EDC for review and comment. This is to avoid any damage that may be caused by internal flooding by water passing through entrances/exits and through the airbricks.

4.8 Climate Change

EDC and SEPA's Technical Flood Risk Guidance for Stakeholders recommends an allowance of +20% on the estimated 1 in 200 year (0.5%) peak flow. SEPA considers that this allowance should be over and above any separate allowance for freeboard.

5.0 Technical Guidance – Drainage

EDC may request a drainage impact assessment, similar to a drainage strategy for the proposed development. This assessment should include all information contained in the Flooding and Drainage Guidelines required by EDC to support the planning application.

5.1 Surface Water Run-Off

Detailed information should be provided to EDC showing how the existing site is drained and where to. This may involve submitting a detail plan of the existing drainage regime or undertaking a CCTV & drainage investigation survey to determine this.

For the proposed development site details should be provided to EDC showing the detailed drainage design layout including all calculations in the support of the development and drainage design.

If the proposed development is to be discharged to a Scottish Water Asset, all relevant checks and confirmations shall be submitted to EDC for approval.

For further details in relation to the design of surface and foul water infrastructure please refer to the current version of Sewers for Scotland.

5.2 Level of Treatment

SUDS features must be incorporated into the development to provide adequate levels of treatment for any surface water run-off.

The proposed drainage system must be designed and constructed so that any surface water discharge from the development does not have an adverse effect on the receiving watercourse. Therefore the following levels of treatment required by EDC are as follows:

- 1 level of treatment – Roofs;
- 2 levels of treatment - Residential Roads, parking areas and commercial zones and;
- 3 levels of treatment - Refuse collection areas, industrial areas, loading bays / lorry parks**,** highways

Please note: Levels of treatment required may vary depending on other stakeholder and local authority requirements however it is EDC sole requirement that the above treatment levels are provided as minimum.

5.3 SUDS

Designs of any SUDS features are to be in accordance with the Sustainable Urban Drainage System Design Manual: Ciria 697. This is to ensure that the surface water quality is improved and that the quantity of the run-off is reduced.

For any SUDS discharge to the water environment; SEPA should also be consulted in order to provide the appropriate CAR approvals.

EDC will require the applicant to ensure that the "Whole Life Cost and Whole Life Carbon" toolkit is used when selecting the SUDS features in any adoptable development. This ensures that the most cost effective solution is implemented for different developments. The toolkit is able to calculate the whole life cost of a wide range of SUDS features.

EDC will require that no SUDS features should be proposed within a functioning flood plain to avoid the risk of:

- SUDS features becoming redundant during possible inundation from adjacent watercourses.
- Risk of contaminants from the development washing to the adjacent watercourses during such events.

Any new developments must not impact on the storage capacity or functionality of an existing flood plain.

Refer to the link below for the current version of the toolkit. For further details in relation to SUDS please refer to section 2.5.

http://www.scotsnet.org.uk/best-practice.php

5.4 Structural Integrity

Developer is to ensure that all proposed and existing drainage elements are in such a condition that the overall risk of flooding is reduced and that the integrity of the system is such that it will perform under the loading conditions anticipated over its design life. In this regard the surface water drainage shall be controlled in such a way that:

- No surcharging shall occur within the drainage system for a 1 in 30 year (3.33%) storm event;
- No overflow shall occur anywhere within the drainage system for storm events up to and including the 1 in 100 year (1%);

- Positive drainage measures shall be provided within the developments access at its junction with the public road;
- If a culvert is present on site, a CCTV of the existing culvert shall be carried out and no work shall commence on site until the survey has been assessed and any remedial work that is required is approved by EDC;
- A CCTV survey of the existing culvert shall be carried out and submitted to EDC on completion of the work on site. Any remedial work that is required by EDC shall be undertaken within the timescale deemed necessary by EDC and;
- A CCTV survey of the completed piped replacement of an existing culvert, together with its associated manholes, shall be carried out immediately on completion of these works. No construction work on property adjacent to the culvert shall commence until the survey has been assessed and approved by EDC.

Consideration must be given for the material selection for the various components of the drainage system to ensure that they are suitable for the intended end use.

5.5 Design Considerations

The proposed drainage system must be designed to take into account of the construction, operation and maintenance requirements of both surface and sub-surface elements. As such the proposed system must allow for: personnel, vehicles and machinery access. In this regard this is controlled in such a way that:

- No vegetation such as trees or large shrubs shall be planted **at any time**, over or within 3 metres of either side of a culvert or piped system;
- No Buildings may be constructed over or within 3 metres of either side of an existing culvert. EDC have to be consulted prior to any works commencing in close proximately to the culvert to protect its structural integrity;
- All access points must be clear, visible and freely accessible **at all times**;
- No planting shall take place, at any time on any proposed or existing flood defence embankments;
- No plant or machinery shall encroach within two metres of a flood defence wall;
- No construction material or excavation spoil will be stored within two metres of a flood defence wall;
- No excavation shall be carried out at any time within two metres of a flood defence wall and;
- Soakaways are not permitted without prior agreement with the Planning Authority.

5.6 Construction

The developer is to ensure that all construction details provided as part of the planning application are in accordance with the current EDC standards. Current versions of the construction details are available in AutoCAD format on request.

To ensure that the proposed drainage system performs the way it is intended to, the drainage system must be constructed in accordance with the approved designs that have been signed off by EDC. It is required that “As-Built” drawings will be provided to EDC prior to adoption of the development.

5.7 Construction Phase SUDS

Prior to any commencement of any construction works on site, details of the proposed construction phase SUDS shall be provided to EDC and SEPA for approval.
If possible these should be submitted at the planning application stage or at the earliest opportunity.

5.8 RCC / Adoption and Maintenance of Proposed Adopted SuDS system.

Prior to adoption of all new developments, the developer is to provide the following information:

- As-Built drawings indicating:
    - Channel and Centreline Levels
    - Top of kerb levels
    - Back of Footway levels
    - Drainage cover and invert levels
- CCTV surveys of all new infrastructure
- Plans to identify:
    - All council adopted drainage
    - Scottish Water maintained drainage
    - Factor maintained drainage
- Statement from the persons responsible for the maintenance of the unadopted drainage and a schedule of tasks and timescales for carrying out the said tasks shall be logged with the planning authority.

5.9 Checklist

The checklist in Appendix A will ensure that all relevant information is submitted to EDC to support the planning application. It is requested that a completed checklist is provided to EDC with the submission of all relevant information required in relation to Flooding & Drainage.

If insufficient information or this checklist is not returned with submission EDC will refuse review on the basis that not all information has been submitted to support of the application.

Please refer to **Appendix A** for checklist.

APPENDIX A

EDC FLOODING

AND

DRAINAGE CHECKLIST

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Flooding and Drainage Checklist

Flooding (Design)

No	Description	Yes	No	NA
1	Is the site at Flood Risk and has a Flood Risk Assessment been undertaken. SEPA checklist to be provided with FRA			
2	Have details of existing drainage regime within the site been provided including a CCTV of existing sewers / culverts			
3	Are calculations of Peak flow run-off rate in line with EDC requirements and provided for review and approval			
4	Are details of the 1 in 200 year overland flow route within the site been provided to ensure no flood risk to new or existing property adjacent to the site and is contained within the development			
5	Are FFL's set at minimum of 300mm above road levels and the site is designed to minimise runoff from driveways, roads and paths towards proposed properties			
6	Has an allowance for climate change been considered above the 1 in 200 year event and details provided			
	Drainage (Design)			
7	Has a Drainage strategy/assessment of development submitted			
8	Stakeholder consents been provided for connection for review			
9	Have detailed drainage calculations been provided for the drainage network as per EDC requirements			
10	Have SUDS been incorporated into the design and provided			
11	Have appropriate levels of treatment been provided for surface water run-off as per EDC requirements			
12	Have EDC's design considerations been met			
13	Are construction details submitted in line with EDC requirements			
14	Have details of construction phase SUDS provided.			
15	Details of positive drainage measures at boundaries with existing roads			
16	SUDS Whole Life Costing Toolkit is provided for review.			
17	Extent of drainage ownership shown on plans provided.			
18	Maintenance statement provided from those responsible for unadopted drainage / SUDS.			