The Highland Council
Comhairle na Gàidhealtachd

Roads and Transport Guidelines for New Developments
Stiùiridhean Rathaidean is Còmhdhalach airson Leasachaidhean Ùra

Section 2 – Standards and Guidelines
Earrann 2 – Inbhean agus Stiùiridhea

Chapter 8
Caibideil 8
Flooding
Tuiltean

Contents

Section 3 - Flooding and construction traffic / Earrann 3 – Tuiltean agus trafaig togail 2

Chapter 8 – Flooding / Caibideal 8 – Tuiltean 3

8.1 General / Coitcheann 3

8.2 Legislation / Reachdas 3

8.2.1 Flood Risk Management (Scotland) Act 3
8.2.2 Planning 4
8.2.3 Controlled Activities (Scotland) Regulations 2005 5
8.2.4 Coast Protection Act 1949 5

8.3 Management of flood risk for new developments and infrastructures / Rianachd cunnart thuiltean airson leasachaidhean agus bun-structaran ùra 6

8.3.1 Introduction 6
8.3.2 Initial flood risk assessment 6
8.3.3 Detailed flood risk assessment 7
8.3.4 Drainage 8
8.3.5 Water environment 8

8.4 General design requirements / Riatanasan dealbhaidh coitcheann 9

Section 3 - Flooding and construction traffic / Earrann 3 - Tuiltean agus trafaig togail

Section 3 of the roads and transport guidelines for new developments document provides information with regard to flooding issues, as they can have a significant impact on new development. The section also provides information and guidance with regard to the impact of construction traffic.

Section 3 includes the following:

Chapter 8 – Flooding

Chapter 9 –Construction traffic

Chapter 8 – Flooding / Caibideal 8 – Tuiltean

8.1 General / Coitcheann

8.1.1 With its extensive coastline, steep topography and high rainfall, land within the Scottish Highlands can be at high risk of flooding from many sources. All land can be subject to flooding to some degree or influence flooding elsewhere and the consequences of flooding can be devastating on people, infrastructures and the natural environment.

8.1.2 In placing new developments or upgrading existing infrastructures, it is important to assess the risk of flooding from all sources and its consequences now and in the future. The level of flood risk should be appropriate for the development, and it should not increase flood risk elsewhere. Recognising that climate change affects the environment and needs to be considered, flood risk should be assessed for current and future conditions.

8.1.3 The management of flood risk must be considered from the inception phase of a project in order to inform and best shape the development to any particular site constraints. Early consultation with the Council and Scottish Environment Protection Agency (SEPA) officers is therefore essential.

8.1.4 As a general rule, all new developments must not result in the increase in flood risk to any other property regardless of how trivial this increase may appear to be. All new structures must not be prone to flood damage from any source for events up to and including a 0.5% Annual Exceedance Probability (AEP) (also referred to as a 1 in 200 year event).

8.2 Legislation / Reachdas

8.2.1 Flood Risk Management (Scotland) Act

8.2.1.1 The Flood Prevention (Scotland) Act 1961 and Flood Prevention and Land Drainage (Scotland) Act 1997 Acts were superseded by the Flood Risk Management (Scotland) Act 2009, which received Royal Assent in June 2009. The new Act has updated legislation to streamline the development of flood protection schemes and introduce a more sustainable and modern approach to flood risk management. The Act has also transposed the European Floods Directive into Scottish law. Under the Act local authorities will be responsible

for preparing local flood management plans while SEPA will be responsible for preparing wider district plans.

8.2.1.2 Specific measures within the Flood Risk Management (Scotland) Act include:

- A framework for coordination and cooperation between all organisations involved in flood risk management;
- Assessment of flood risk and preparation of flood risk management plans;
- New responsibilities under SEPA, Scottish Water and Local Authority functions for flood risk management;
- A revised, streamlined process for flood risk management measures include deemed planning permission for all confirmed flood protection schemes. However, the schemes will still require to secure authorisation through The Environmental Authorisations (Scotland) Regulation 2018
- New methods to enable stakeholders and the public to contribute to managing flood risk; and
- A single enforcement agency, SEPA, for the safe operation of Scotland's reservoirs.

8.2.1.3 Under the Act, Local Authorities have general power to manage flood risk, including operations related to a flood protection scheme and any other flood protection work if considered necessary to reduce flood risk. They have also a duty to carry out clearance and repair works as part of the measures included in a local flood risk management plan.

8.2.1.4 Scottish Water has responsibility for the public drainage system, including both foul and storm water systems. It should be noted that Scottish Water is not obliged to adopt new road drainage in adopted roads or accept road drainage into its system. If Scottish Water does adopt such drainage, this will normally be subject to a Section 7 Agreement, in terms of the Sewerage (Scotland) Act 1968.

8.2.1.5 Flooding means flooding from all sources including coastal, rivers, groundwater and surface water.

8.2.1.6 Secondary legislation and technical guidance are expected to be published in the near future. Up to date information should therefore be sought from the Scottish Government website or SEPA website.

8.2.2 Planning

8.2.2.1 Scottish Planning Policy (Flooding and Drainage) - SPP includes the Scottish Government's current policy and guidance on flooding in relation to new development. The following points cover core aspects of the guidance for new developments in flood risk areas:

- Little or no risk area (less than 0.1% AEP (1:1000)) – no general constraints;
- Low to medium risk area (0.1% to 0.5% AEP (1:1000 – 1:200)) – suitable for most development but not essential civil infrastructure; and
- Medium to high risk area (0.5% AEP (1:200)) or greater – in built up areas with flood prevention measures, most brown-field development should be acceptable except for essential civil infrastructure; undeveloped and sparsely developed areas are generally not suited for most development.

8.2.2.2 Planning Advisory Note 61: Planning and Sustainable Drainage Systems and Planning Advisory Note 69: Planning and Building Standards Advice on Flooding provide guidance on the implementation of SUDS and planning system in relation to the management of flood risk.

8.2.3 Controlled Activities (Scotland) Regulations 2005

8.2.3.1 The Water Environment and Water Services (Scotland) Act 2003 was introduced in order for Scotland to meet the requirements of the European Water Framework Directive which requires all inland and coastal waters to reach "good status" by 2015. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) is the mechanism which has been implemented to prevent a degrading in water quality and the adoption of best practice for all works impacting on the water environment.

8.2.4 Coast Protection Act 1949

8.2.4.1 Under the Coast Protection Act 1949, the Council is the Coast Protection Authority for its own local government area. The Act stipulates that:

- Local Authorities may carry out coast protection works which may be new or maintenance works; and
- Local Authorities must consider proposals for coast protection works or for other works on the coast, to be carried out by others.

8.2.4.2 The Council has produced supplementary guidance, "Flood Risk and Drainage Impact Assessment" and developers should make reference to this document.

8.3 Management of flood risk for new developments and infrastructures / Rianachd cunnart thuiltean airson leasachaidhean agus bun-structaran ùra

8.3.1 Introduction

8.3.1.1 Before considering the development of a site and commencing a design, a developer needs to be aware of any potential flooding issue that could affect the site. This includes the site being prone to existing flooding or the development exacerbating flooding at a location remote from the site. In this assessment the developer will need to take account of the current policy on new development and flood risk, currently SPP. This policy may prohibit certain developments on particular sites.

8.3.1.2 It is the developer's responsibility to demonstrate that the site is either not subject to flooding and erosion or to incorporate such measures that deal with them. This requirement also applies to any prospectively adoptable public road. The developer is also responsible for ensuring that any measure does not cause detriment to any other party.

8.3.2 Initial flood risk assessment

8.3.2.1 Flooding can affect any type of development, including a single house. It is important, therefore, that a developer undertakes some form of flood assessment at the project inception stage. Such an assessment can be very brief if the risk is considered to be minimal. For all developments, particularly critical infrastructure, consideration shall be given to how the site can be safely accessed or exited during an extreme flood event.

8.3.2.2 An initial flood risk assessment will generally include a record of a site walkover survey, consultation with council staff and SEPA and the collation and review of any publicly available information regarding nearby historical flooding. The initial assessment should also include a description of the proposed development. It should be undertaken by an experienced person and seek to assess if there are any potential sources of flooding on or close

to the site. All sources of flooding (coastal, fluvial, pluvial and groundwater) should be considered as appropriate.

8.3.2.3 For sites close to the coast, there are no set rules for when coastal flooding could affect a development; however generally developments more than 5 metres above the mean high water spring level will be considered safe from coastal flooding.

8.3.2.4 The flood maps produced by SEPA may be beneficial during this initial assessment.

8.3.2.5 Evidence of erosion, either on the site or nearby, which could impact on development, should also be recorded.

8.3.2.6 The developer can also seek advice from the Council, as its staff may have local knowledge of flooding. In addition, SEPA provides information on areas that are deemed to be at risk of flooding, but which tends to be of a general nature rather than showing specific local problems.

8.3.3 Detailed flood risk assessment

8.3.3.1 If the initial flood risk assessment suggests that the site may be prone to flooding or if the Council considers that the development proposals may introduce or exacerbate flooding elsewhere, then the developer could be requested to provide a full flood risk study, which shall be prepared by a qualified hydrologist or similar competent person. It should be prepared in compliance with the latest SEPA guidance on the preparation of such documents and should consider flooding from all potential sources as appropriate. The final proposed development should be in compliance with all the relevant legislation and design guidance.

8.3.3.2 The current flood protection standards within SPP have been selected so as to provide some resilience to more severe flood events which can be expected as a result of climate change. Hence, there is no specific requirement to include a further allowance for climate change within proposed designs, although such an approach is recommended. In all cases, a sensitivity study should be undertaken to demonstrate that the impact of climate change on the development is tolerable.

8.3.3.3 It should also be noted that the flood protection standards within SPP make no allowance for freeboard, hence freeboard to account for both uncertainty and physical processes should be included for all developments based on

current best practice. A minimum freeboard of 500 millimetre is recommended in accordance with SEPA guidance, but each site should be considered according to its own conditions and a lower or higher freeboard may be justifiable.

8.3.3.4 If a site is envisaged to be susceptible to flooding, especially a severe flood event, then the developer must consider any likely flood routing and provide details of how any impact can be mitigated against. For example, how can flood water from a 1 in 200 year event get to proposed attenuation areas and would this be via the road network? Culs-de-sac that are accessed downhill should be avoided unless an escape flow route for flood water is incorporated.

8.3.4 Drainage

8.3.4.1 Drainage of a development should allow for a drainage system that accommodates a 3.3% AEP (1 in 30 year) rainfall event, as standard. The drainage system should also be assessed for the safe passage of design exceedance events, 0.5% AEP (1 in 200 year) flood for normal development or 0.1% AEP (1 in 1000 year) for critical infrastructure and must demonstrate no intolerable consequences in the event of the drainage system failure or exceedance.

8.3.4.2 The Council shall be consulted to determine appropriate SUDS design standards and features for the proposed development. It should be noted that Scottish Water is under no obligation to adopt road drainage or to accept water from road drainage systems. If Scottish Water does agree, a Section 7 Agreement may be required. Chapter 5 - Section 5.23 sets out road drainage requirements.

8.3.4.3 Where the development proposes a culvert, inlet and outlet screens should be provided where deemed necessary, in agreement with the Council. Future maintenance requirements must be established and approved by the Council, in order to reduce flooding events due to a build-up of debris.

8.3.5 Water environment

8.3.5.1 A CAR licence is required for all activities within the water environment. The licensing system which is managed by SEPA divides works into four areas:

- abstraction;
- pollution control (discharge);

- impoundment; and
- engineering, with a range of licensing levels depending on the level of risk. It is essential to consider the requirements for obtaining an appropriate licence for the proposed works and this should be discussed with SEPA at the earliest opportunity. The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) - a Practical Guide, available from the SEPA website, provides details of which activities are regulated and the conditions of each authorisation.

8.4 General design requirements / Riatanasan dealbhaidh coitcheann

8.4.5 The following technical documents are recommended sources of additional relevant information:

The culvert design and operation guide C689F (CIRIA, 2010)

Designing for exceedance in urban drainage – good practice C635 (CIRIA, 2006)

The rock manual C683 (CIRIA, 2007)

The SUDS manual C753 (CIRIA, 2015)

Accounting for residual uncertainty: an update to the fluvial freeboard guide (Environment Agency, 2017)

Design manual for roads and bridges CG 501 – design of highway drainage systems (National Highways, 2025)

Design manual for roads and bridges BD 97/12 – The assessment of scour and other hydraulic actions at highway structures (National Highways, 2012)

The flood estimation handbook (Institute of Hydrology, 1999)

Sewers for Scotland – 4th edition (Scottish Water, 2018)

SUDS for roads (SCOTS, 2009)