

SEPA learning session: understanding flooding

April 2025



Who are we?

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Agenda – Part 1

Developing your technical understanding of flooding

Claire Wheeler, Alayne Finlay and Nicholas Gair, SEPA

- Main sources of flooding
- Impact of climate change on flooding in Scotland
- Accounting for climate change in flood risk assessment
- Using SEPA's Future Flood Maps for land use planning
- Flood probabilities
- Factors contributing to the assessment of flood risk
- Dealing with uncertainty in flood risk assessment

Agenda – Part 2

SEPA's role in providing flooding advice to the planning process

Elaine Fotheringham and Katherine Lakeman, SEPA

- National strategy and policy context
- SEPA's role in the planning process
- SEPA planning guidance on flooding
- SEPA planning responses and notification process
- Considering flooding in development planning

Local authority spotlight

David Hay, Glasgow City Council and Andrew Miller, Moray Council

For the future of our environment

Developing your technical understanding of flooding



Fluvial Flooding



Coastal Flooding



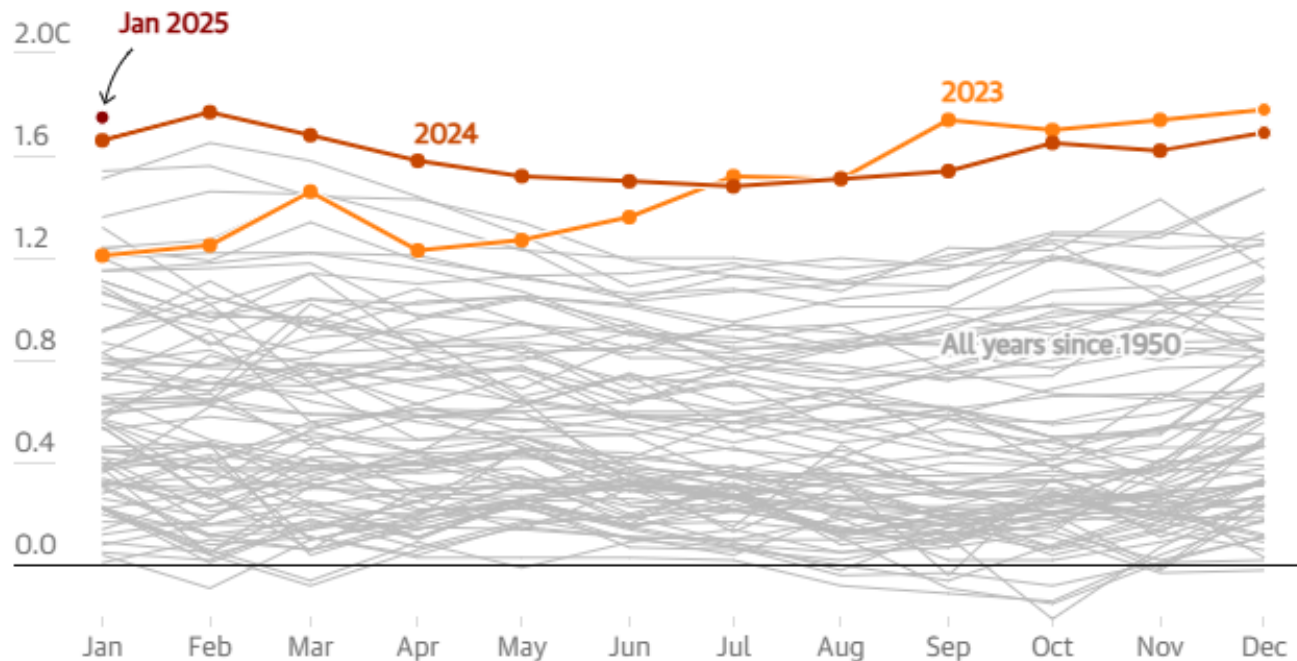
Surface Water Flooding



The world is warming - our climate is changing.

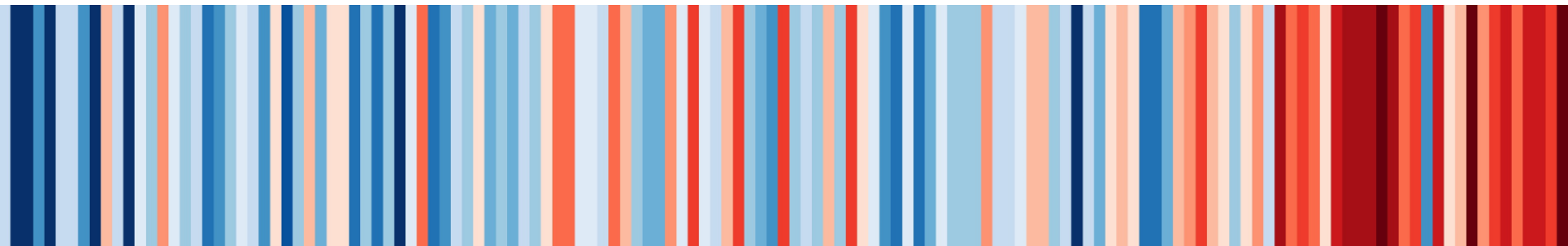
January 2025 was the hottest on record

Global monthly temperature anomalies, relative to a 1850 -1900 baseline



Guardian graphic. Source: Copernicus, C3S/ECMWF

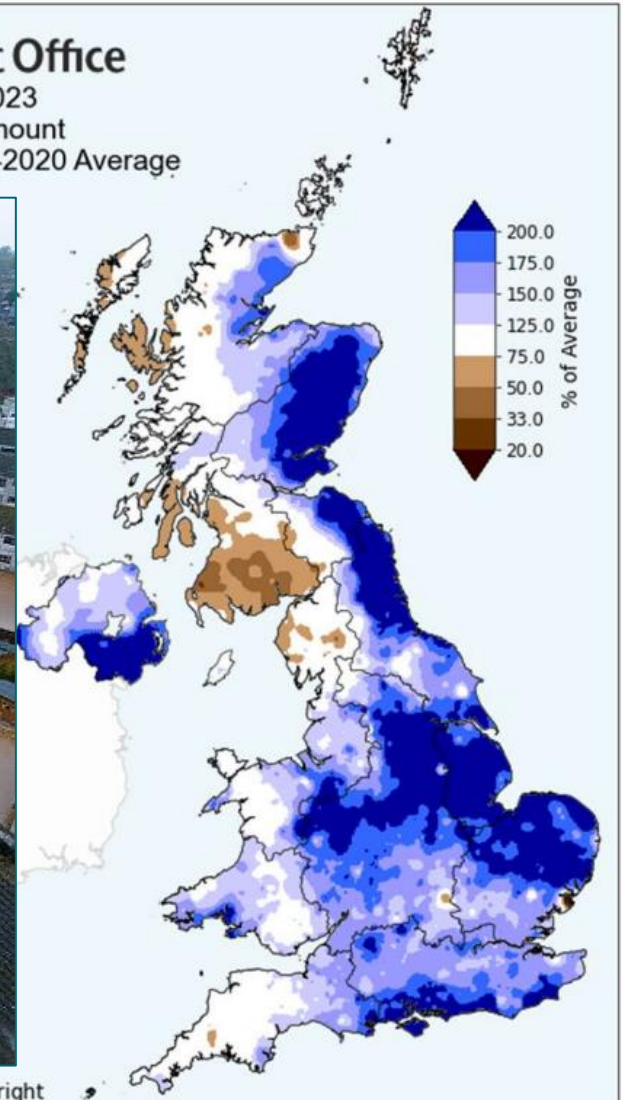
Temperature change in Scotland since 1884 [#ShowYourStripes](https://www.showyourstripes.info) www.showyourstripes.info



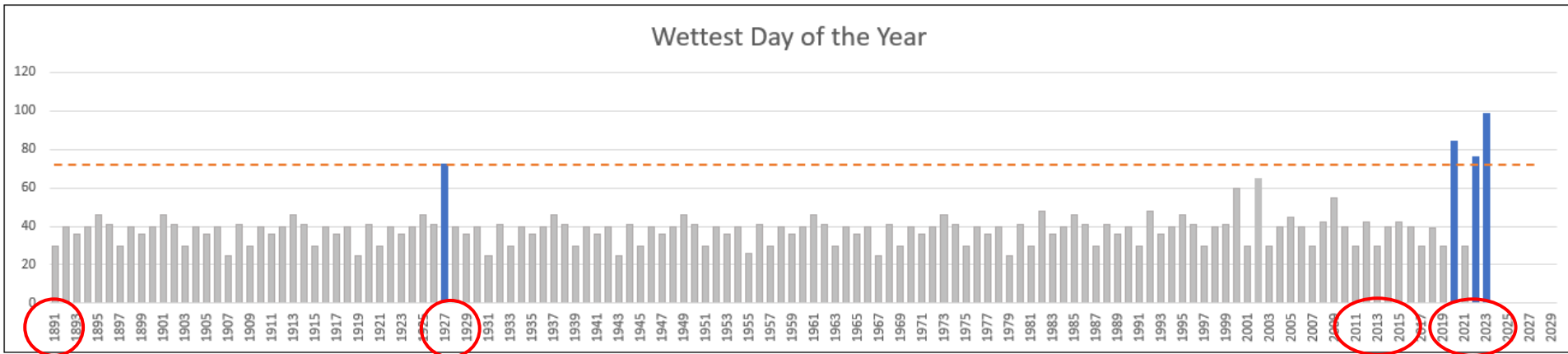
Scottish context



Met Office
October 2023
Rainfall Amount
% of 1991-2020 Average



When the records keep on falling



1891
Rainfall
record
begins

1927
Wettest day on
36-year record so
far.
The record stands
for another 93
years.

2010-2016
Breachin flood
protection scheme
is designed and
built.

2020, 2022
and 2023
The 1927 wettest
day record is
broken 3 times in
4 years.

The provisional total for the wettest day in October 2023 is 35% higher than the 1927 record which stood for 93 years.

Land Use Planning and Flood Risk

Feedback



Your feedback helps
us to improve.

Using the SEPA flood maps for land use planning

Introduction

This advice and the SEPA flood maps are provided to ensure that new development avoids areas at flood risk. Scottish Government's [National Planning Framework 4 \(PDF 6.1MB\)](#) states that for planning purposes, at risk of flooding or in a flood risk area means land or built form with an annual probability of being flooded of greater than 0.5%, which must include an appropriate allowance for future climate change. This risk of flooding is indicated on [SEPA's Future Flood Maps](#) or may need to be assessed in a flood risk assessment.

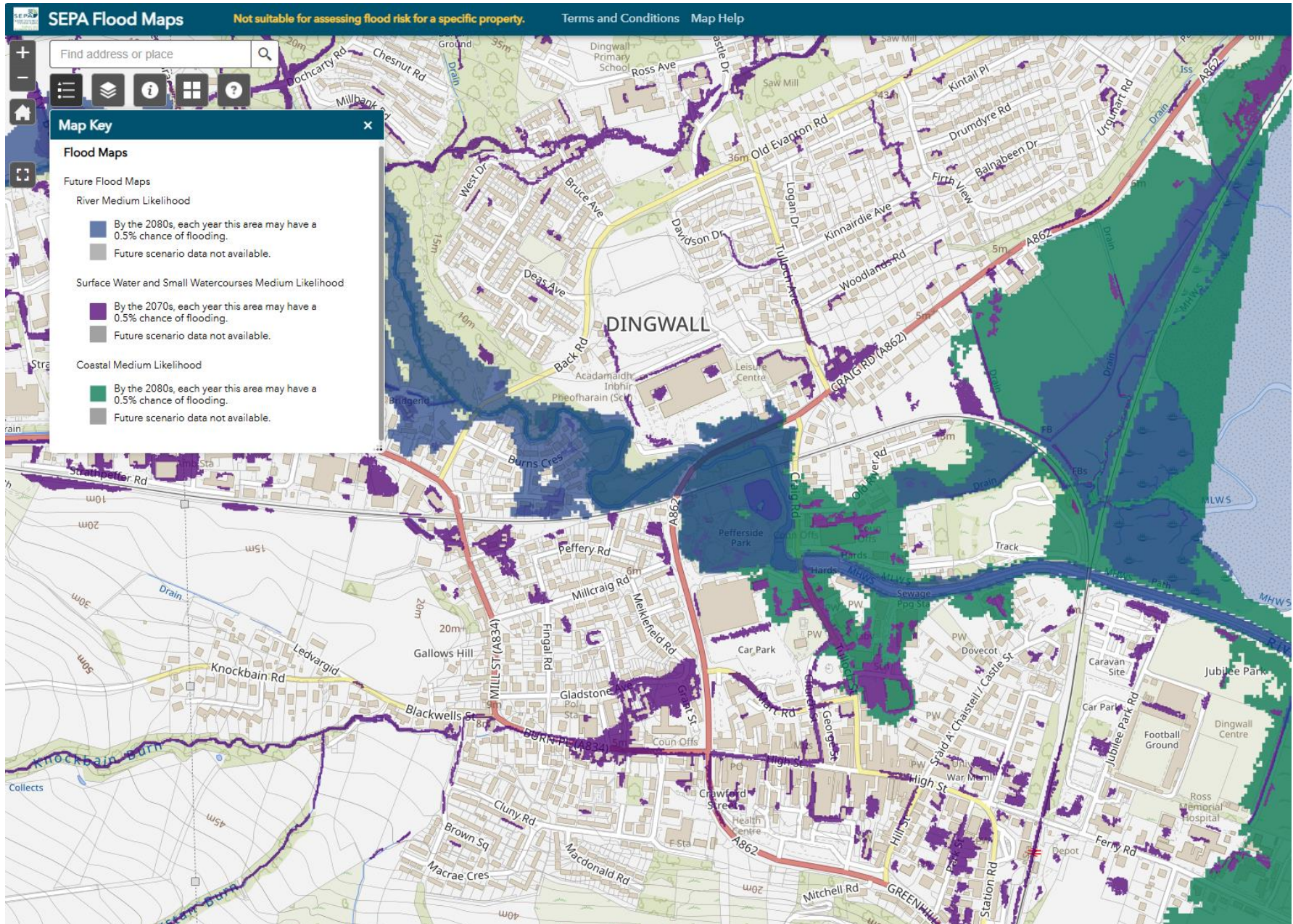
This guidance will help anyone interested in the development of a site that is in or close to places that could flood. New development should avoid areas at risk of flooding to make sure that it is safe from flooding, now and in the long term. Any land that can flood should be kept free of new development, because when floodplains store and carry flood water, they give protection from flooding to nearby communities.

What the maps show:

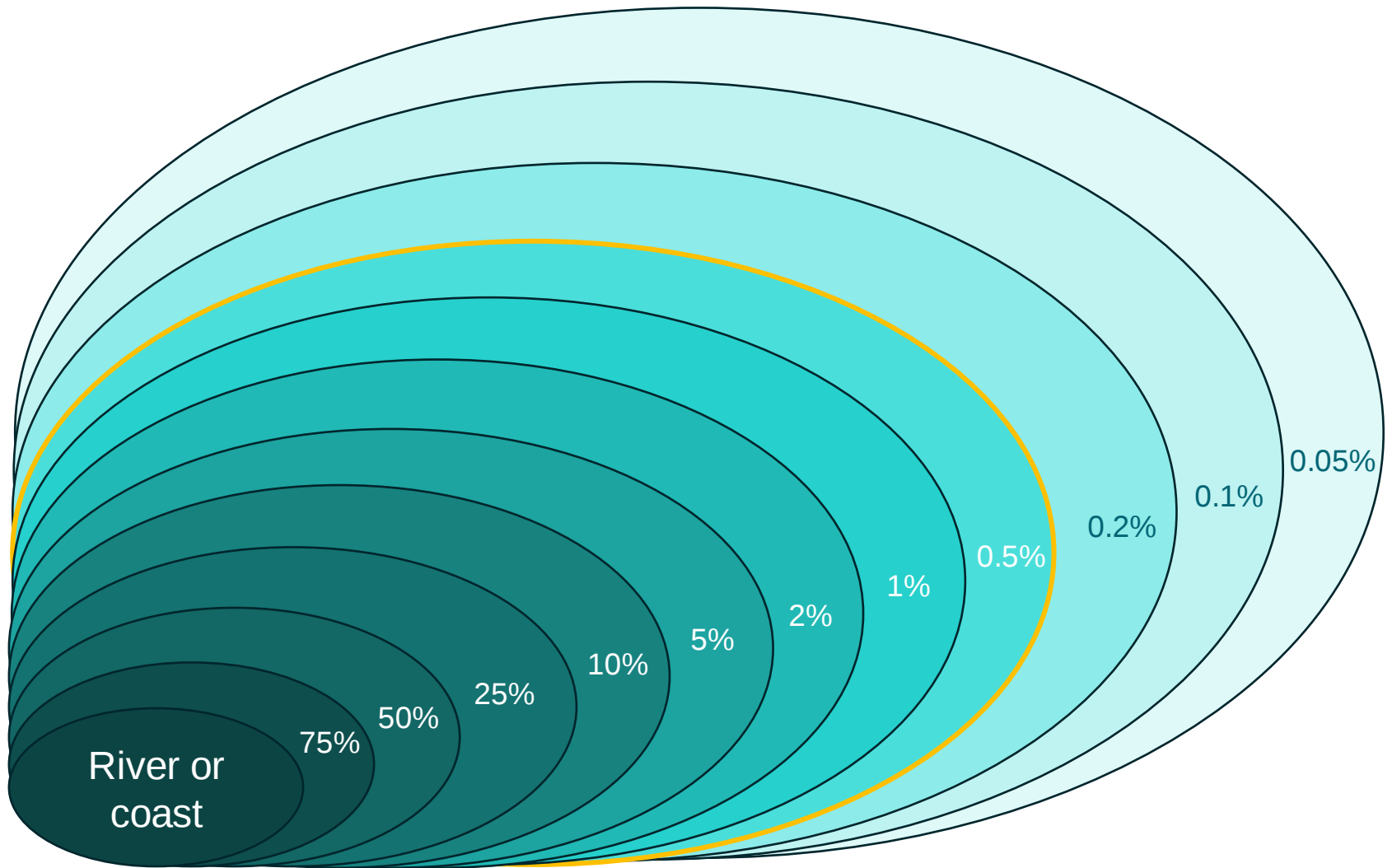
Our flood maps are developed from a combination of national, regional and local scale flood modelling and show areas at risk of flooding. They do not provide a precise or site-specific assessment of flood risk to any individual property. We have assessed flood risk to areas within Scotland, not flood risk to individual properties. The flood maps should be used to identify whether a site sits within an area that is at risk of flooding and therefore if further assessment is likely to be needed before progressing with the development of a site. In using the maps, some of the most important things for you to note are:

- You should check the [Future Flood Maps](#), which show what may happen to your site in the future due to climate change. When the map view opens no layers will be visible until you zoom in to your location of interest. Use the 'Map Help' feature at the top of the map page for more help on viewing the information you want to see.

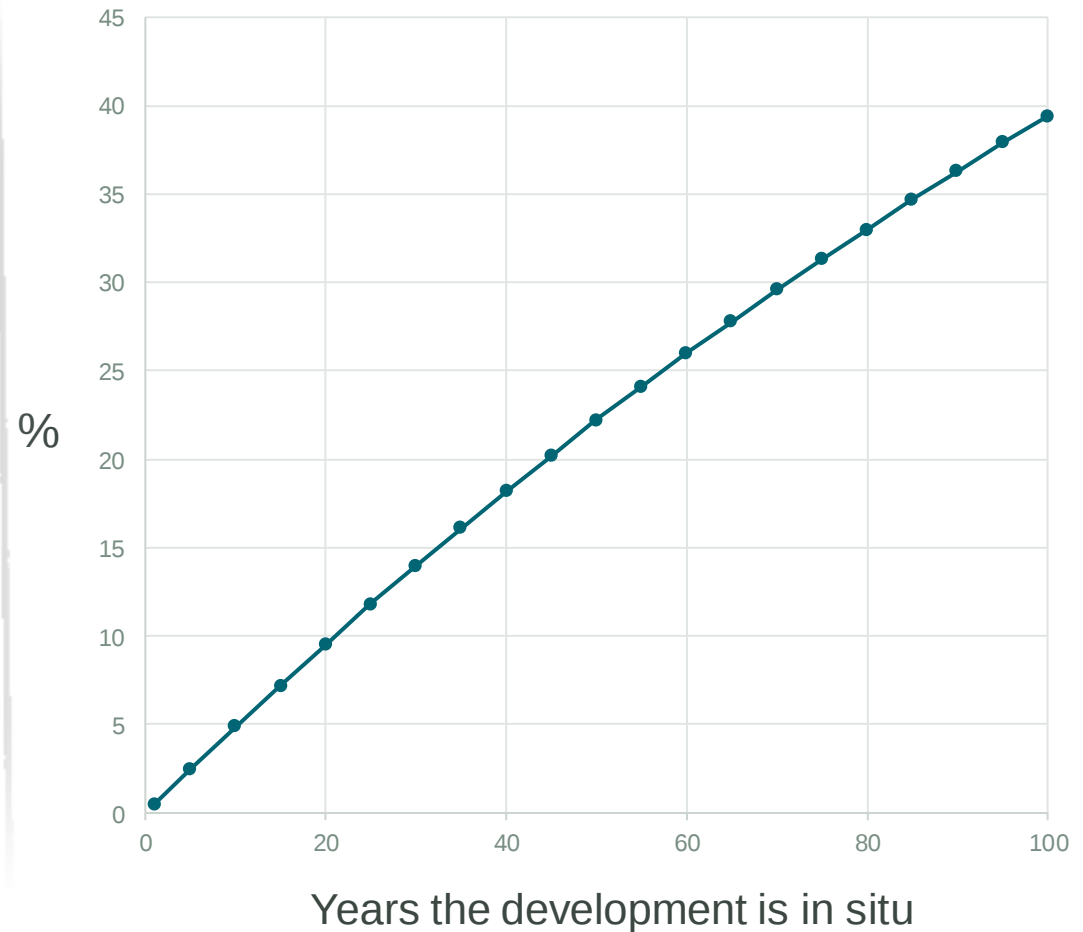
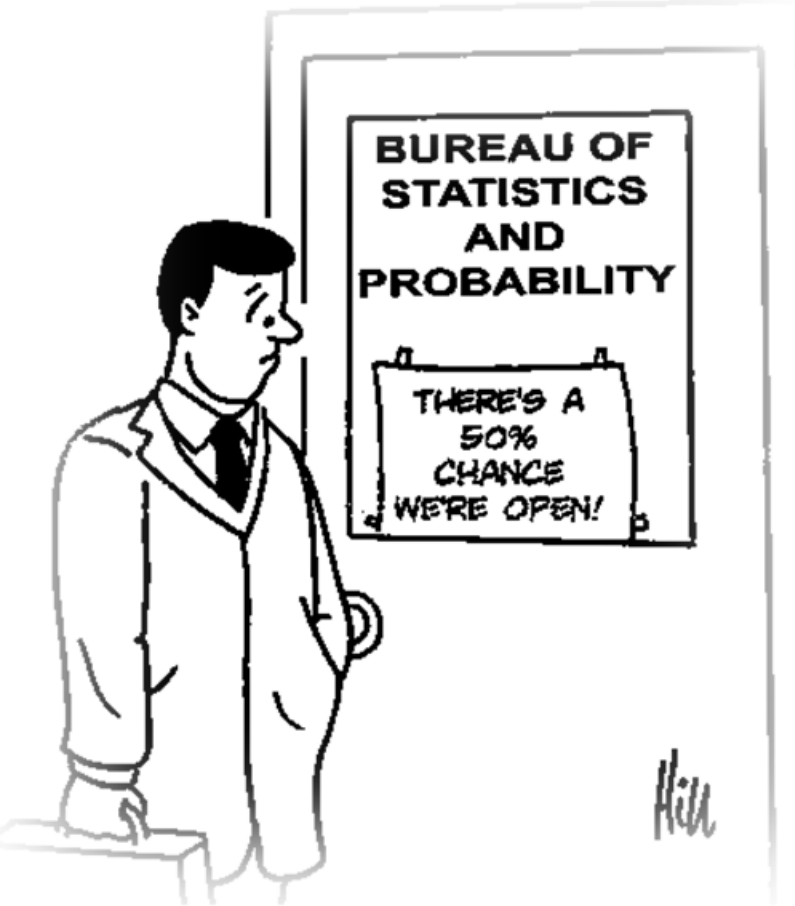
SEPA future flood maps



Flood probability



Probability of being flooded at least once over the development lifespan



The effect of climate change on flood probability



Other factors to be assessed for the flood risk area

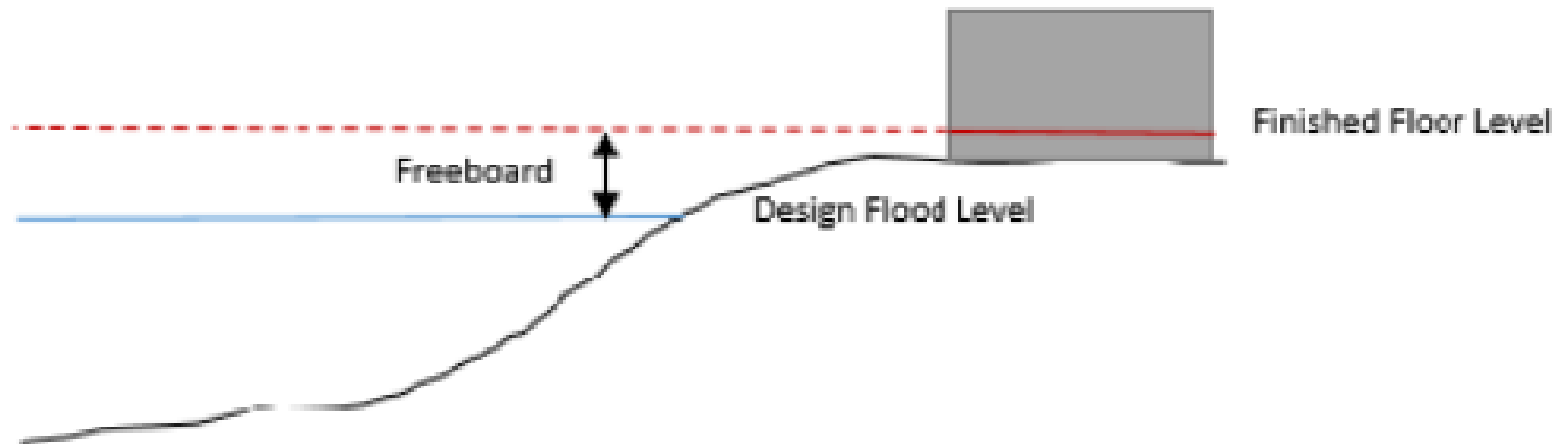
Where it is likely that they contribute to the risk at the site:

- Waves
- Blockage of structures
- Failure of a feature like an embankment



DAVID MAY

Freeboard - a practical way to deal with uncertainty



For the future of our environment

SEPA's role in providing flooding advice to the planning process



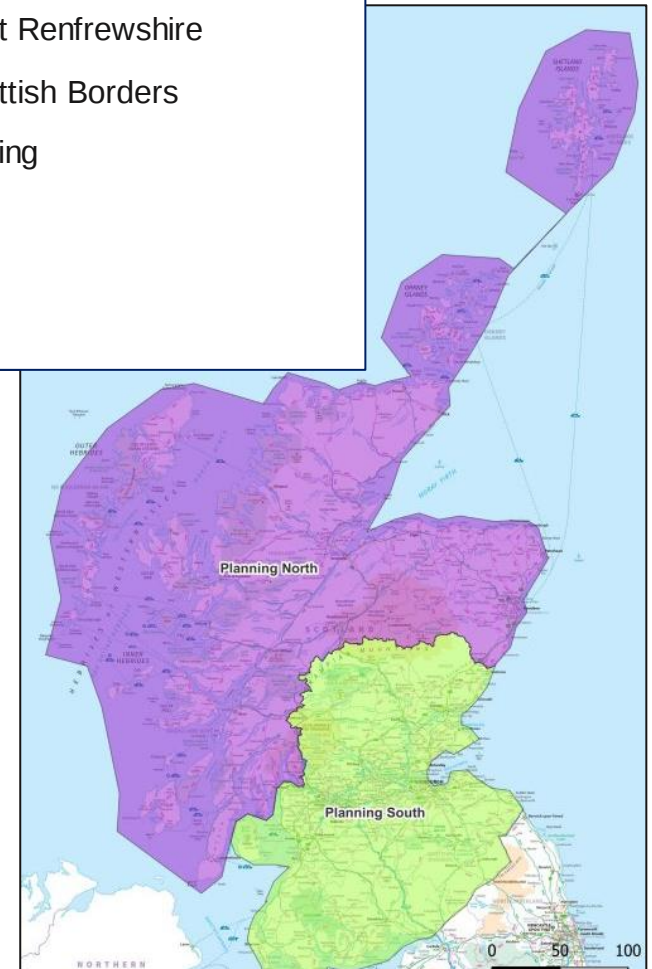
SEPA's regional planning teams

Planning.south@sepa.org.uk

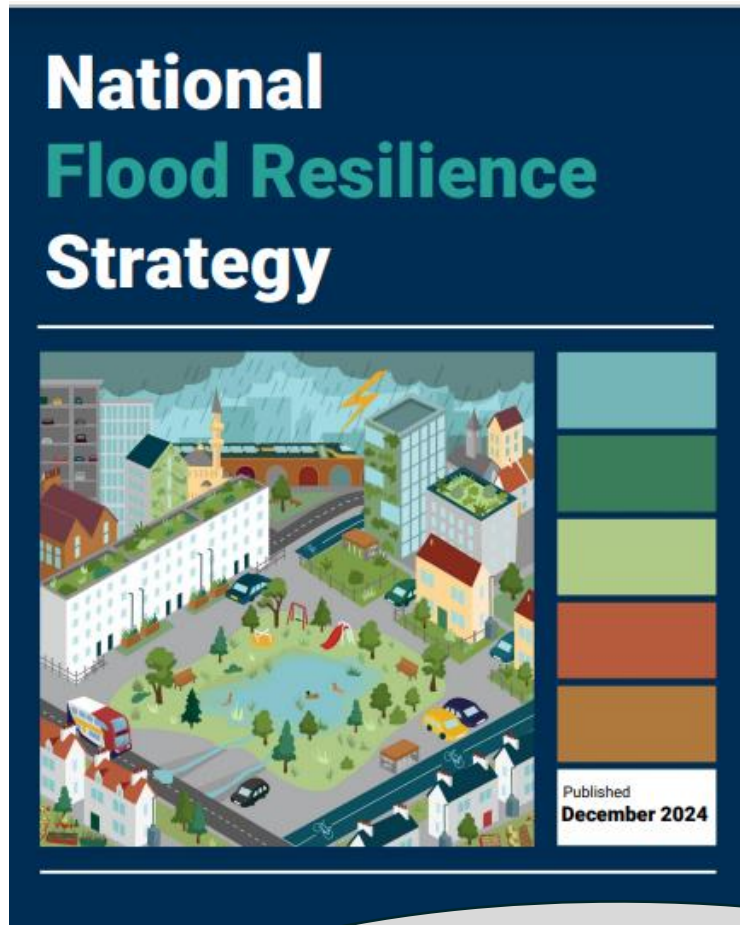
- | | | |
|-----------------------|---|---------------------|
| • Angus | • West Dunbartonshire | • North Lanarkshire |
| • East Ayrshire | • East Lothian | • South Lanarkshire |
| • North Ayrshire | • Falkirk | • Perth & Kinross |
| • South Ayrshire | • Fife | • Renfrewshire |
| • City of Edinburgh | • Glasgow City | • East Renfrewshire |
| • Clackmannanshire | • Inverclyde | • Scottish Borders |
| • Dumfries & Galloway | • Loch Lomond & Trossachs National Park Authority | • Stirling |
| • Dundee City | • West Lothian | |
| • East Dunbartonshire | • Midlothian | |

Planning.north@sepa.org.uk

- Aberdeen City
- Aberdeenshire
- Argyll & Bute
- Cairngorms National Park Authority
- Moray
- Orkney Islands
- Shetland Islands
- Highland
- Comhairle nan Eilean Siar (Western Isles)



SG's National Flood Resilience Strategy for Scotland



Flooding is Scotland's **biggest** domestic climate adaptation challenge.

By 2080 the number of **properties at risk** of flooding in Scotland **will rise from 284,000 to almost 400,000.**

The focus of action will change from 'fixing flooding problems' to **creating flood resilient places.**

Reducing the impacts of flooding is **as much about the design of our places** as it is about the design of specific flood actions.

"Overall progress on adapting to climate change in Scotland remains slow."

UK Climate Change Committee 2023

National Planning Framework 4



“For planning purposes, at risk of flooding or in a flood risk area means land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change.”

Policy 22

- a) Development proposals at risk of flooding or in a flood risk area will only be supported if they are for:
- i. essential infrastructure where the location is required for operational reasons;
 - ii. water compatible uses;
 - iii. redevelopment of an existing building or site for an equal or less vulnerable use; or
 - iv. redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long-term safety and resilience can be secured in accordance with relevant SEPA advice.

The protection offered by an existing formal flood protection scheme or one under construction can be taken into account when determining flood risk.

In such cases, it will be demonstrated by the applicant that:

- all risks of flooding are understood and addressed;
- there is no reduction in floodplain capacity, increased risk for others, or a need for future flood protection schemes;
- the development remains safe and operational during floods;
- flood resistant and resilient materials and construction methods are used; and
- future adaptations can be made to accommodate the effects of climate change.

Consultation with SEPA on flood risk

SCHEDULE 5

Regulation 25

Consultation by the planning authority

Subject to regulation 25, the planning authority must before determining an application for planning permission for development consult a person, authority or body mentioned in a paragraph below in the circumstances specified in that paragraph.

1. SEPA—

(1) where the development is likely to result in a material increase in the number of buildings at risk of being damaged by flooding;

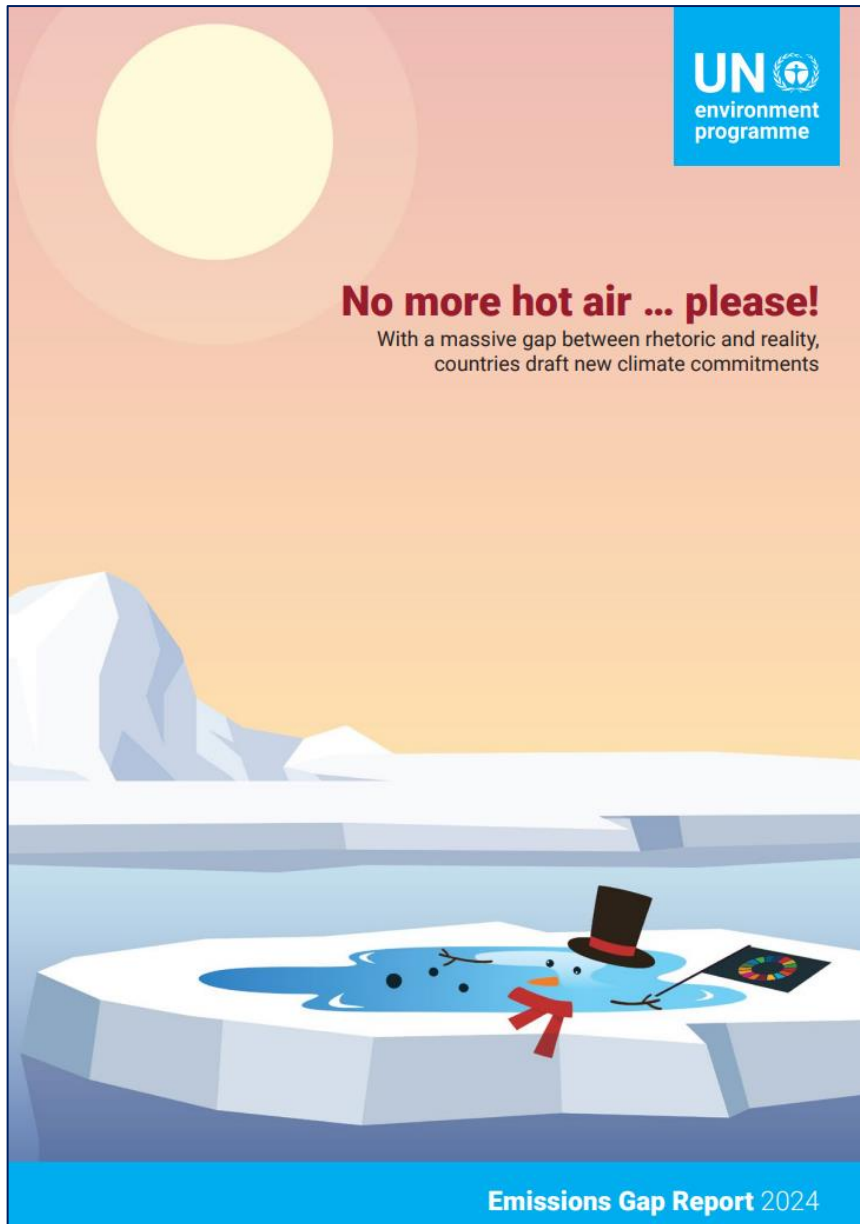


Table 1: Consultation framework for development management

Please note that Table 1 should be read as a whole; even if the proposal is exempt from one category, it may require consultation with SEPA under another category.

Reason for consultation	When to engage with SEPA
Development characteristic – applicable to any scale of development (unless otherwise specified)	
A. Developments at potential flood risk based on SEPA's flood maps and any other local information available to make this judgement The maps will help you identify whether a site is located within or near an area at flood risk. Please only consult SEPA on flood risk when a site appears to be at potential flood risk from either reference to these maps, or where other local information suggests flooding may be an issue. In both cases, please only consult us when the applicant has provided at least the information outlined in the "What should I do with this information" section of this webpage. For developments where the only potential source of flood risk is from a small watercourse (which may not be shown in SEPA's flood maps) we request that in the first instance local authority flood risk management staff assess the proposal against any information they hold to determine whether it may be at flood risk, and if so, only consult SEPA if they subsequently recommend that our advice is required.	All types of developments covered in this table that are potentially at risk of flooding <u>except</u> the following which are covered by our flood risk standing advice: • Only source of flood risk is surface water • Change of use within a vulnerability category or to a lower category of vulnerability where there is no change in footprint • Extensions of all sizes that do not form an entirely new dwelling • New, altered or extended garages, sheds, conservatories and greenhouses • Essential infrastructure or water compatible uses • Cemeteries • Small scale street furniture • Walls, fences and other enclosures • Like-for-like replacement of watercourse crossings • Hydro schemes • Footpaths, access tracks, private roads, car parts and other landscaping proposals • Open sided agricultural buildings and structures • Septic tanks and soakaways • Temporary construction accommodation

SEPA's Climate Change Guidance for FRA



- Based on latest science – UKCP18
- Will be updated as science evolves
- See Appendix 2 for technical queries

Climate change allowances for flood risk assessment in land use planning

Version 6

Issued date: 25 February 2025

Land Use Vulnerability

Table 1: Categories of Vulnerability

Most Vulnerable	Highly Vulnerable	Least Vulnerable	Essential Infrastructure ²	Water Compatible
• Police Stations • Ambulance Stations • Fire Stations • Command centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points • Hospitals • Schools • Care homes • Nurseries • Residential institutions e.g., prisons, children's homes • Basement dwellings • Isolated dwelling(s) in sparsely populated areas • Dwelling houses situated behind informal embankments. • Caravans, mobile homes, chalets and park homes intended for permanent residential use. • Holiday caravan, chalet and camping sites • Installations requiring hazardous substance consent (but where there is demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or with energy infrastructure, that require a coastal or water side location, or other high flood risk areas, then the facilities should be classified as Essential Infrastructure)	• Buildings used for dwelling houses. • Social services homes (ambulant/adult) • Hostels and hotels • Student halls of residence • Non-residential uses for health service • Landfill and sites used for waste management facilities for hazardous waste.	• Shops • Financial, professional, and other services • Restaurants and cafes • Hot-food takeaways • Drinking establishments • Nightclubs • Offices • General industry • Storage and distribution • Non-residential institutions not included in Most Vulnerable or Highly Vulnerable Uses • Assembly and leisure • Land and buildings used for agriculture and forestry that are subject to planning control. • Waste treatment (except landfill and hazardous waste facilities) • Minerals working and processing (except for sand and gravel)	<u>As per NPF4 Glossary</u>, includes: • Digital communications infrastructure • Telecommunications infrastructure • All forms of renewable, low-carbon and zero emission technologies³ for electricity generation and distribution and transmission electricity grid networks and primary sub stations • Water and wastewater infrastructure • Transport proposals and travel networks identified in the local development plan.	<u>As per NPF4 Glossary</u>, comprises: • Flood control infrastructure • Environmental monitoring stations • Water transmission infrastructure and pumping stations • Sewage transmission infrastructure and pumping stations • Sand and gravel workings • Docks, marinas and wharves • Ministry of Defence (MOD) defence installations • Ship building, repairing, and dismantling. • Dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation) • Lifeguard and coastguard stations • Amenity open space • Nature conservation and biodiversity • Outdoor sports and recreation and essential facilities such as changing rooms • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific operational warning and evacuation plan.

Position on Development Protected by a Flood Protection Scheme



Brechin Flood Protection Scheme before and during Storm Babet, 2023



SEPA use of objections on flood risk



SEPA's role vs that of decision-maker

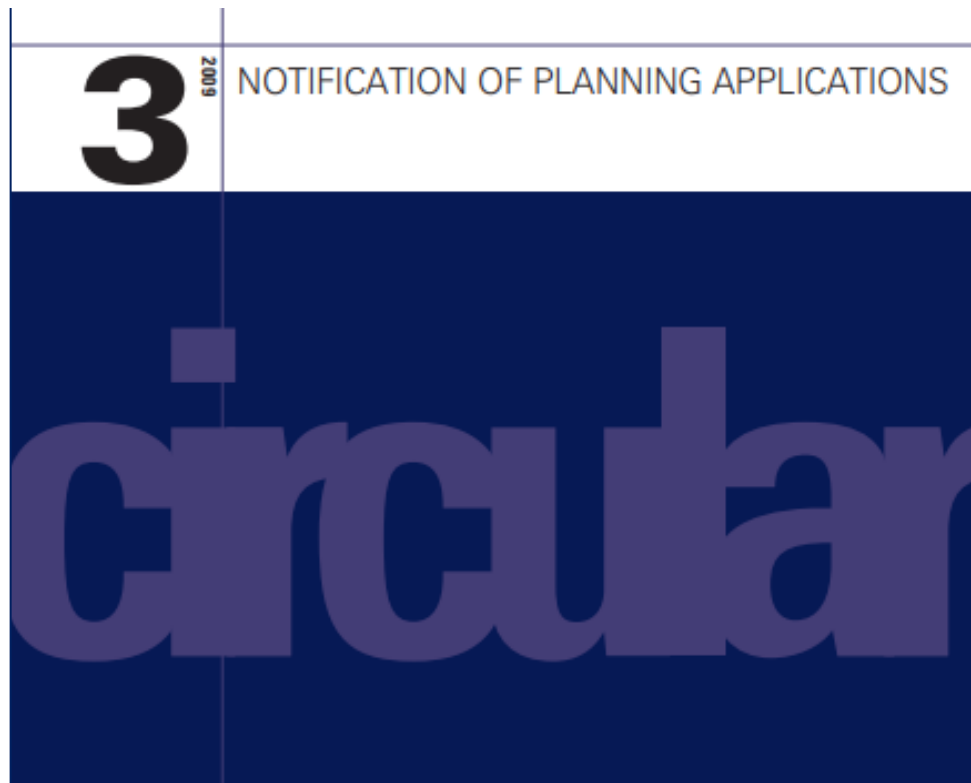


Scottish Government say ... *“The Scottish Ministers have continued to reinforce that **policies in NPF4 should be read and applied as a whole** and that **conflicts between policies are normal and to be expected**. The planning system requires **decision makers to weigh up all relevant policies**, for example, quality homes, brownfield development and town centre living, as well as relevant material considerations in applying balanced planning judgement (section 25 of the Town and Country Planning (Scotland) Act, 1997, as amended). **The introduction of NPF4 has not changed this**”.*

Notification on flooding grounds

(v) Flooding

Development which has been the subject of consultation with the Scottish Environment Protection Agency (SEPA) under article 15(1)(h)(i) of the Town and Country Planning (General Development Procedure) (Scotland) Order 1992 where SEPA has advised against the granting of planning permission or has recommended conditions which the planning authority does not propose to attach to the planning permission.



Flood warning is not mitigation ...

You are here: [Home](#) > [Flooding](#) > [Flood Updates](#) > Live flooding information

Live flooding information



Find the latest flooding information for your area:

Flood risk in development planning: SFRA



Guidance for planning authorities on Strategic Flood Risk Assessment



SEPA Planning Advice Note for Planning Authorities

**LDP Evidence Gathering: Achieving
sufficiency of evidence relating to flood
risk and the water environment**

December 2024



Local authority spotlight

- **David Hay, Group Manager,
Engineering, Glasgow City
Council**
- **Andrew Miller - Acting
Principal Planning Officer,
Moray Council**



Case Study - Tidal Clyde

David Hay
Glasgow City Council

24th April 2025

Our Journey with SEPA

- Circa 2018, SEPA is raising objections to all developments along the Tidal Clyde corridor within Glasgow on the grounds of insufficient information as assessments were being based on a 2005 1-D model.
- Formation of a joint working group including Senior Officers from both SEPA and GCC.
- Commissioning of the 2021 Tidal Clyde 2-D model with funding from SEPA, GCC, Scottish Enterprise & Peel Ports.
- Development of masterplan principles.



Masterplan Principles vs NPF4 Policy 22

- Both supportive of bringing vacant and derelict sites back into productive use
- Change to how 'floodplain' was being interpreted.



Policy 22

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- i. essential infrastructure where the location is required for operational reasons;
 - ii. water compatible uses;
 - iii. redevelopment of an existing building or site for an equal or less vulnerable use; or
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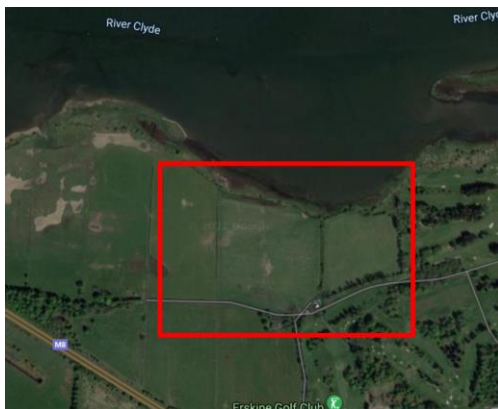
The protection offered by an existing formal flood protection scheme or one under construction can be taken into account when determining flood risk.

In such cases, it will be demonstrated by the applicant that:

- all risks of flooding are understood and addressed;
- there is no reduction in floodplain capacity, increased risk for others, or a need for future flood protection schemes;
- the development remains safe and operational during floods;
- flood resistant and resilient materials and construction methods are used; and
- future adaptations can be made to accommodate the effects of climate change.

Compensatory Storage - Is it beneficial?

- University of Glasgow GALLANT research.
- Regional compensatory storage, candidate site identified to provide 225,000m³ of storage.
- Evidence led.



Developer Uncertainty

- Glasgow vs Manchester
- Policy vs Hydraulic Model
- Project development costs
- Funder timescales
- Will GCC grant planning permission?
- Will SEPA object on flood risk grounds?
- Will the Scottish Government call the application in?



NPF4 Policy 22 - Case Study

Change of use of former bar to 3 self catering units, Kinloss, Moray



Background



- Former school building, most recently used as a bar/pub. A caravan park surrounds the former school and schoolhouse.
- Findhorn Bay lies to the west. Mouth of River Findhorn where it meets the Moray Firth.
- Planning application submitted to change use of former bar to 3 self catering units, no extensions proposed and slight reduction in footprint of building.



Flood Risk

- Site lies in an area identified as being at risk from a 1 in 200 year plus CC coastal flood event.
- Not at risk under the 1 in 200 or 1 in 1000 year coastal flood events.
- Both SEPA and Moray Flood Risk Management (Council Flood Team) raised an objection to the proposal on the basis the site was at risk from flooding and did not fall within any of the allowances under NPF4 Policy 22 and was contrary to MLDP Policy EP12.
- Application was acceptable in all other respects in policy terms, but was refused on flood risk under delegated powers.



SCHEDULE OF REASON(S) FOR REFUSAL

By this Notice, Moray Council has REFUSED this proposal. The Council's reason(s) for this decision are as follows: -

The proposal is contrary to policies 1, 2, 10 and 22 of the National Planning Framework 4 (NPF) and EP12 of the Moray Local Development Plan 2020 (MLDP) for the following reasons:-

- The proposal is located on a site that is at risk of coastal flooding as identified via the future SEPA flood maps and the redevelopment of this site from a bar to holiday accommodation where people are sleeping overnight is an increase in land use vulnerability as there is an increase to people from coastal flood risk therefore is contrary to NPF policies 10, 22 and MLDP policy EP12.
- The proposed development has no safe access and egress from the development in a flood event due to the public road used to access the site also being at flood risk therefore is it unacceptable under NPF policy 22.
- The proposal does not adapt to the future impacts of climate change (coastal flooding) therefore it is contrary to NPF policies 1 and 2.

Request for Review to LRB

- The request to the Moray Local Review Body to review the refusal was considered by Members. The LRB overturned the decision, and were minded to approve on the basis:
 - conversion of vacant property was welcomed
 - the Kinloss-Findhorn road acts as a flood barrier
 - proposal was an acceptable departure from flood risk/climate policies given weight of above matters
- The LRB decision required notification to Scottish Ministers due to SEPA objection (s46 of 1997 TCP Act).
- After notification, the application was called in.

Call In by Scottish Ministers

- Following consideration by a reporter from the DPEA, they recommended to Ministers that the application be refused:

28. I conclude that the proposal does not accord overall with the relevant provisions of the development plan. The productive reuse of a vacant building and the provision of holiday accommodation are material considerations which weigh in favour of the proposal. My assessment above on flood risk and evacuation lead me to conclude that overall, these benefits do not outweigh the flood risk and public safety issues.

29. I have considered all the submissions and documents drawn to my attention. There are no other material considerations that would cause me to change my conclusion.

30. Therefore I recommend that planning permission is refused.

31. If Ministers disagree with the above recommendation and are minded to grant planning permission, then I recommend that this is subject to the conditions listed in Appendix 1.

Scottish Ministers' Decision

- Ministers took a similar position to the LRB (excluding road acting as flood barrier) and approved consent for temporary period of 25 years.
- Conditions applied in respect of flood resilience measures as well as a flood emergency plan.

22. The Scottish Ministers conclude overall that the productive reuse of this vacant building and the provision of holiday accommodation and local employment are material considerations which in this case justify granting temporary planning permission, as a departure from the development plan, subject to conditions on additional mitigation measures.

Conditions

23. Given the risk of future flooding, the Scottish Ministers consider that planning permission should be granted for a limited period, and that the situation could be reviewed in the light of the circumstances pertaining at the time. In addition to the reporter's recommended conditions, Scottish Ministers impose a condition setting out the duration of consent for 25 years from the date of this decision. This time period will allow for monitoring of future flood risk predictions and climate change adaptation measures in this coastal area.

24. In the interests of safety and to minimise risk to life and property, Scottish Ministers impose an additional condition requiring a Flood Emergency Plan for the evacuation of the occupiers of the development.

25. To ensure that the buildings are as flood resilient as possible to reduce damage during any flooding events, Scottish Ministers also impose an additional condition that before work commences on site, that the Flood Resilience Statement is submitted to the planning authority and approved in writing and the Flood Resilience measures shall be fully implemented prior to occupation of the development.

Formal Decision

26. Accordingly, for the reasons given above, the Scottish Ministers hereby grant planning permission for a period limited to 25 years for the proposed development subject to the conditions listed in the appendix of this decision notice.

Reflections

- Early-ish test of Policy 22 for Moray Council.
- This possibly would have been an approval under auspices of SPP (can't speak for SEPA).
- Temporary consent from Ministers – questionable whether this will ever be implemented, would be difficult to secure any lending against such a restrictive condition. 25 years is also a significant period - may as well be permanent?
- What's the future of the building?
- Policy 22 is quite clear cut. It could be argued it prevents regeneration of vacant buildings in flood risk areas, of which there are many across Scotland.
- On the other hand flood events bring extreme misery to those affected and flood defence measures are extremely expensive (£180 million spent on Moray Flood Alleviation Project).
- Planners need to take a strict stance on this in recognition of the bigger picture, even for small scale proposals such as this case.

Questions

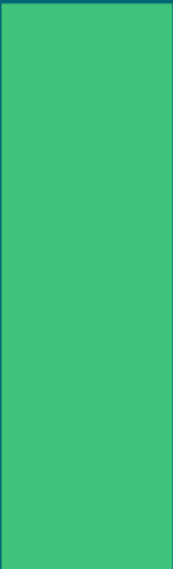


Further information

- [SEPA Flood Hazard Maps](#)
- [Sign up to SEPA's Floodline](#)
- [Report flooding to SEPA](#)
- [Live flood updates from SEPA](#)
- [Scottish Government National Planning Framework 4](#)
- [SEPA's flood risk advice and guidance for planning](#)
- [Guidance on when to consult SEPA](#)
- [Flood Risk Management Planning in Scotland](#)
- [Adaptation Scotland's user-friendly summary of climate change projections](#)
- [The Scottish Flood Forum](#)
- [Scottish Government National Flood Resilience Strategy](#)

For the future of our environment

Thank you





For the future of our environment