

Improving Understanding of Flood Hazard Across Scotland

The Story Continues

SEPA Strategic Flood Risk Team

1. Introduction

To meet the requirements of the Flood Risk Management Scotland Act 2009 (FRM Act) and EU Floods Directive SEPA has produced new flood hazard maps for Scotland which were launched on 15th Jan 2014. The maps are the most comprehensive source of national flood hazard information, providing strategic level information suitable for assessing community level flood risk. The maps are used in land use planning and public awareness raising, and are a key input to the FRM Strategies and Plans being developed by SEPA and local authorities to reduce overall flood risk.

The maps use improved data and methodologies for river and coastal flooding and for the first time provide a national map of surface water flooding. The outputs include polygons of flood extent, and grids of depth, velocity and hazard for a range of scenarios from 1:10 year to 1:1000 year including climate change and defended and undefended scenarios.

2. Map Updates

As of 3 March 2015, Version 1.1 of the Flood Maps supersedes the previous version (v1.0) published in January 2014. From this point, statutory flood risk and planning advice from SEPA will make use of and make reference to Version 1.1 of our flood hazard maps. Version 1.1 provides improved flood mapping for a number of locations across Scotland.

The map updates can be viewed on the SEPA website and are thus accessible to all. The updated data (GIS format) has been provided to local authorities as a new set of flood maps, covering both their council administrative region and Flood Risk Management Local Plan Districts.

The updates in Version 1.1 do not alter the strategic nature of the flood maps and do not (for those updated locations) allow the user to interpret the maps at a property specific scale. The fluvial and coastal maps are a screening tool for flood risk consultation with SEPA and local planning authorities should continue to use them for that purpose only. The surface water map should be used as a trigger for internal communication between council planners and council flood prevention staff as they will normally be the best source of advice and information on surface water flooding, including when issues may reside within the remit of Scottish Water.

Changes have been made in some areas (Figure 1) to the river, coastal and surface water flood hazard data. The changes will be reflected in the extent, depth and, where appropriate, velocity maps. Flood risk information has also been updated to account for changes in the flood hazard data resulting in updates to the flood impacts map.

3. Integrated Catchment Studies (ICS)

Under Q&S3 (2010-15) Scottish Water have money in Q&S 3 to carry out modelling (Integrated Catchment Modelling) to help address surface water flooding:

- 'Ponding' or flowing water on the surface generated from rainfall before it enters the underground drainage network or cannot enter the underground drainage network because it is full to capacity.
- From sewers where the flooding is caused by rainwater entering the system or cannot be discharged due to high river or sea levels.

As part of this work Scottish Water have modelled the sewer system to develop a better understanding of the flooding issues. Solutions to address surface water flooding, and potentially water quality, will then be identified for funding in Q&S4 (2015-20).

Scottish Water have set up partnerships with the local authorities and SEPA to take these projects forward. SEPA and the local authorities have contributed modelling for these studies.



Figure 2: ICS Locations

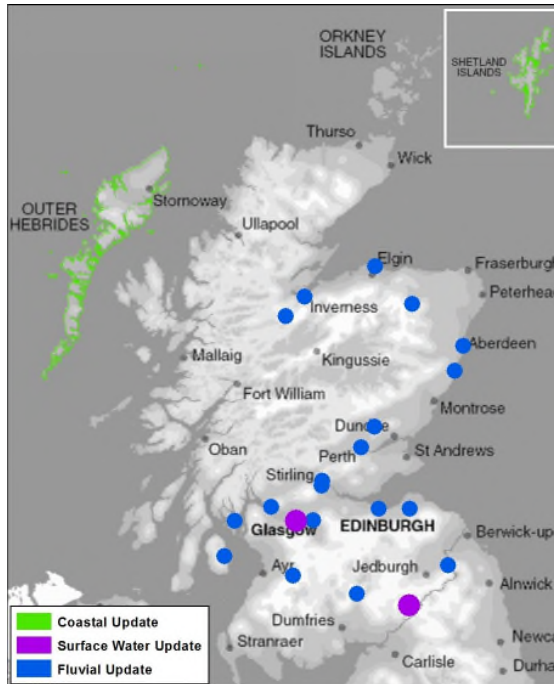


Figure 1: Flood Map Version 1.1 Update Locations

6. Future Work

The FRM Act requires SEPA to review and update the maps where appropriate by 22nd December 2019, and every subsequent 6 years. Additionally the maps are subject to a continuous programme of improvement and development. Future work includes:

Climate Change / Catchment Change Scenarios – Understanding how climate change is likely to affect flood risk across Scotland, developing climate change scenarios for the maps, and communicating this information. The FRM Act requires SEPA to account for the likely impact of climate change on the impact of future floods during the statutory updates.

Input Data – Improving input data and the way it is collected and stored, including collection of new LiDAR, information on flood defences and hydraulic structures, and reviewing and improving hydrology and coastal boundary conditions. This work extends to the consideration of new technologies and collaborations in high resolution topographic and structural datasets.

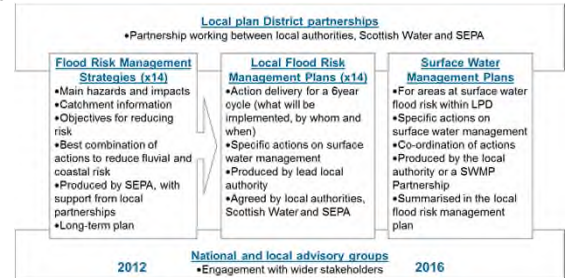
Historic flood event analysis – An improved system of observed flood event data collection and management in order to increase the amount of data available and improve the way in which this data is used to calibrate and validate hazard map outputs.

Methods and Processes – Reviewing and improving the scientific/technical approach used for modelling to improve confidence. Reviewing the modelling and mapping processes to make future updates to the maps more efficient.

5. Flood Risk Management Strategies / Local Flood Risk Management Plans

Flood Risk Management Strategies
SEPA will produce a Flood Risk Management Strategy for each Local Plan District by the end of 2015. These strategies will set out the most sustainable combination of actions to address flooding in the areas at greatest risk, where the benefits of intervention can have the greatest impact. Taken together, the 14 Flood Risk Management Strategies will provide a national plan for Scotland.

Local Flood Risk Management Plans
Local Flood Risk Management Plans will take each Flood Risk Management Strategy and turn it into a local delivery plan. These will provide a summary of local activity to manage flood risk and will be produced by the lead local authority in each Local Plan District. The plans, published in June 2016, will include delivery dates, consider funding and identify how actions will be co-ordinated at a local level for the next six years. This is the time that each FRM Planning cycle will take. FRM Strategies will cover three of these cycles.



7. Access to Data

The UK submission of the Flood Hazard and Risk Maps (publicly known as SEPA's flood maps) has received praise in a recent European Commission report. The online map viewer, presented on the SEPA website, received particular attention and was included in the good practices adopted section



Figure 3: The public map viewer available at <http://map.sepa.org.uk/floodmap/map.htm>

The UK has three authorities that are responsible for the production of Flood Hazard and Flood Risk Maps. These are the Environment Agency in England and Wales, the Scottish Environment Protection Agency in Scotland and the Rivers Agency in Northern Ireland. The majority of online map viewers produced by these authorities are informative and easy to use, particularly the one for Scotland which has multiple layers that can be turned on and off and a detailed search facility.

8 Collaboration

Working together

Partnership working and consultation are at the heart of tackling flooding in Scotland and there are a lot of organisations helping us to manage flooding better. The National Flood Management Advisory Group (NFMAG) has over 50 member organisations, reflecting the national importance and wide impact of flooding on our communities, economy and environment. At the local level we also receive advice and guidance from Local Advisory Groups to make sure that local knowledge and circumstances are taken into consideration. Through the Scottish Advisory and Implementation Forum for Flooding (SAIFF), SEPA, local authorities and Scottish Water share technical knowledge and resources, and get advice from the Scottish Government and other key interested organisations.

Floodline

It's not just SEPA, local authorities and Scottish Water that have a role in managing flood risk, you also have a part to play too. Being prepared for flooding is one of the main ways you can help to protect your family, your home or your business. SEPA's Floodline service provides free, advanced flood warning messages direct to your phone. The service also provides advice on what to do before and after flooding.