Flood Risk Management (Scotland) Act 2009 (FRM Act)

Local Authority flood study checklist

Version 3

10 September 2018

Introduction to this document

This is the **third version** of a flood study checklist to local authorities. It provides guidance to local authorities and their consultants undertaking flood studies by outlining key steps and methodologies to identify flood management actions that are most sustainable.

This third version has been updated with further information on prioritisation. General updates were also carried out to the text and references and new information added to ensure that this checklist is clear and fully up to date. New information includes how to consult SEPA and how to request data.

Flood studies are the responsibility of the commissioning authority. Local authorities have been undertaking flood studies for many years and this document is not intended to substitute for local expertise. It aims to support local authorities in their role to identify sustainable actions to manage flood risk and where required, in developing information to feed into FRM Strategy prioritisation. Where a local authority intends to undertake a study that updates SEPA online maps, SEPA's Flood Modelling Guidance should be followed. The Flood Modelling Guidance provides technical information on the modelling aspect of a flood study.

This is a living document that will be updated as new information becomes available and on feedback from local authorities. It has been developed by SEPA in collaboration with local authorities. The document has been reviewed by the SAIFF Local Authority Implementation Group who contributed to its development. Sign off for this document is provided by SAIFF Policy Management Group (PMG).

This document is not designed to substitute for a detailed tender; it aims to highlight areas which local authorities should consider when commissioning a flood study. This document is suitable for scoping and appraisal stages leading to recommendations of preferred options to manage flood risk, but not outline or detailed design; for river, coastal and natural flood management studies.

The Natural Flood Management Handbook can be referred to for support on natural flood management studies. Parts of this document are relevant to surface water management planning and these are highlighted throughout the document. However, local authorities should refer to the Surface Water Management Planning Guidance for detail on how to undertake studies relating to surface water flooding.

This document is presented in sections that can inform parts of a study tender (scope) document. Some local authorities may wish to phase the study depending on the complexities of flooding issues to be investigated. Not all parts of this check list will be relevant to all studies and local authorities may wish to add further information depending on local circumstances.

Information produced during the study's options appraisal stage will be used by SEPA to prioritise actions. Prioritisation allows SEPA to provide recommendations to Scottish

Government on where sustainable flood risk management actions should be taken using a nationally consistent approach. However, investment decisions lie with the Scottish Government and COSLA. It is therefore important that key steps set out in this check-list are followed to ensure the correct information is developed that can readily feed into prioritisation.

For FRM cycle 2 (December 2021- December 2027), structural and non-structural actions will be included in the prioritisation. Please see Annex 1 which contains further detail on which actions will be prioritised and further information on the criteria and metrics that will be used for prioritisation. This applies to actions to address all sources of flooding whether surface water, river or coastal actions.

When commissioning flood studies, local authorities should consider sharing resources with other local authorities and partner organisations (e.g. Transport Scotland). Joint studies reduce cost and create time efficiencies, resulting in significant savings. Effort should be made to undertake early consultation with potential partners.

SEPA is able to support flood studies (including surface water related studies) via the provision of data, technical advice and a review of outputs if requested to do so by the commissioning authority. Please note that this is subject to resource/staff availability.

Please note that SEPA are currently improving data provision process, therefore data processes and data available may change in future. SEPA will aim to keep the procedures set out in this document up to date.

Finally, please note that SEPA cannot be liable for any issues arising from the outputs that are generated using information in this document.

Contents

Key literature referenced in this document and relevant guidance

Legislation and general guidance

- The Flood Risk Management (Scotland) Act 2009: http://www.gov.scot/Topics/Environment/Water/Flooding/FRMAct
- Scottish Government guidance to SEPA and responsible authorities: *Delivering Sustainable Flood Risk Management* (June 2011): http://www.gov.scot/Publications/2011/06/15150211/0
- Scottish Government guidance: *Options appraisal for flood risk management: Guidance to support SEPA and the responsible authorities, First Edition* (June 2016): *http://www.gov.scot/Publications/2016/06/4633/0*
- Scottish Government guidance to Flood Risk Management (Scotland) Act 2009 - Local Authority Functions Under Part 4 Guidance: *http://www.gov.scot/Publications/2015/07/7909*
- SEPA Flood Modelling guidance (2016): *https://www.sepa.org.uk/media/219653/flood_model_guidance_v2.pdf*
- Surface Water Management Planning Guidance (2013)[1]: *http://www.gov.scot/Publications/2013/02/7909*
- *Asset performance tools – asset inspection guidance Report* – SC110008/R2, Environment Agency (2004): *http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/APT_2_report.sflb.ashx*

Strategies and Plans

- Flood Risk Management Strategies and Local Flood Risk Management Plans. Available through SEPA website: *http://apps.sepa.org.uk/FRMStrategies/*
- SEPA River Basin Management Plans: *https://www.sepa.org.uk/environment/water/river-basin-management-planning*

Economic appraisal

- HM Treasury Green (2011). *The Green Book: appraisal and evaluation in Central Government.* HM Treasury, London. *https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent*
- *Scottish Public Finance Manual – Appraisal and Evaluation,* Scottish Government, 2012*:* http://www.gov.scot/Topics/Government/Finance/spfm/Intro
- Penning-Rowsell E, Priest S, Parker D, Morris J, Tunstall S, Viavattene C, Chatterton J and Owen D. (2013). *Flood and Coastal Erosion Risk Management: A Manual for Economic Appraisal ('The Multi-Coloured Manual').*
- *Benefit Cost Analysis of Options to Manage Surface Water Flooding (Guidance to replace existing chapter 6 of Surface Water Management Planning Guidance),*

[1] New version of this guidance is available on Knowledge Hub. Please contact frmplanning@sepa.org.uk for access.

Scottish Government (December 2014). Please note that a new version of this guidance has been issued and is available from SEPA *(frmplanning@sepa.org.uk)*

- SEPA Costing of Flood Risk Management Measures (F4006) (2013); JBA Consulting. Available from SEPA (frmplanning@sepa.org.uk).

Environmental

- SEPA Natural Flood Management Handbook (2015) *https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf*
- SEPA Water Environment Hub (RBMP) *http://www.sepa.org.uk/data-visualisation/water-environment-hub/*
- Perfect C, Addy S. and Gilvear D. (2013). *The Scottish Rivers Handbook: A guide to the physical character of Scotland's rivers*, CREW project number C203002. Available online at: http://www.crew.ac.uk/publication/scottish-rivers-handbook
- *Guidelines for Ecological Impact Assessment in the UK and Ireland* (Terrestrial, Freshwater and Coastal), CIEEM (January 2016) *http://www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf*
- Scotland's Coastal Change Assessment: http://www.dynamiccoast.com/
- The Environment Agency: *Working with natural processes: evidence directory*: https://www.gov.uk/government/publications/working-with-natural-processes-to-reduce-flood-risk
- Addy S, Cooksley S, Dodd N, Waylen K, Stockan J, Byg A and Holstead K. (2016). *River Restoration and Biodiversity: nature-based solutions for restoring rivers in the UK and Republic of Ireland.* CREW project number CRW2014/10: *http://www.crew.ac.uk/publication/river-restoration*

Climate change

- ClimateXChange: *Flexible adaptation pathways*: *http://www.climatexchange.org.uk/adapting-to-climate-change/flexible-adaptation-pathways/*
- The Environment Agency: *Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/544982/LIT_5707.pdf*)
- The Environment Agency: *Accounting for adaptive capacity in FCERM options appraisal: User guide – SC110001/R1 (March 2018)*; *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/690257/Accounting_for_adaptive_capacity_in_FCERM_options_appraisal_-_user_guide.pdf*
- Scottish Government guidance: *Public bodies climate change duties: putting them into practice*: *http://www.gov.scot/resource/doc/340746/0113071.pdf*
- CEH report (2011): An assessment of the vulnerability of Scotland's river catchments and coasts to the impacts of climate change (available on SEPA website) *http://www.sepa.org.uk/environment/water/flooding/developing-our-knowledge/#FRM_climate_change*), including a *summary report of the project.*

Local Authority flood study checklist

Use this table to check your study against the key requirements included in this checklist.

Background Information	
1. Does the study include background information to the project and a summary of known flooding issues to be investigated?	
2. Does the study include a map with defined boundaries?	
3. Does the study include references to relevant plans, policies and guidance; existing studies and FRM activities relevant to the study area?	
Study Objectives	
4. Does the study set clear objectives?	
Data and Information gathering	
5. Does the study require existing information to be reviewed, analysed and gaps identified?	
6. Has the study identified data requirements for the purposes of undertaking hydrological assessment/ flood estimation and calibration of any hydraulic models?	
7. Does the study require relevant surveys and investigations to be undertaken?	
8. Does the study require the development of appropriate baseline assessments (NFM, RBMP) where the need for it is identified in the SEPA FRM Strategy/LFRMP?	
Hydrology and Modelling	
9. If the study requires flood modelling, does it follow appropriate modelling methodologies and provides clear outputs?	
10. If the study also aims to update SEPA flood map, does the modelling follow the requirements of SEPA's flood modelling guidance?	
11. Does the study include appropriate climate change allowance as part of hydrology and modelling?	
Options appraisal and Recommendations for sustainbale options	
12. Does the study follow key appraisal guidance?	
13. Where NFM is being considered as part of the options appraisal, does the study follow the recommendations of the NFM Handbook?	
14. Does the study include key steps in the appraisal process - long listing to short listing and the assessment of economic, social and environmental criteria of the short list?	
15. Does the long list provide justification of why some actions are not taken forward?	
16. Does the options appraisal stage require the assessment of options to be based on sustainability criteria identified through SEPA prioritisation method (economic, social and environmental criteria)?	
17. Does the options appraisal describe a managed adaptive approach to manage flood risk in the long term?	
18. Does the study require a clear set of recommendations (preferred option consisting of structural and non-structural measures) to manage flood risk?	
19. Does the study require the investigation of short to medium term as well as long term options to manage flood risk?	
Stakeholder engagement and consultation	
20. Have key stakeholders been consulted at key stages of the project?	
21. Have the public/local community been consulted at key stages of the project?	
Project Management	
22. Are project management requirements specified and according to LA own policies?	
Project Deliverables	
23. Does the study provide a list of outputs/deliverables?	
24. Are formats of outputs specified to LA requirements and systems?	
Data	
25. Does the study provide a list of all relevant data and how to obtain it?	
26. Does the study provide information on whether additional information needs collected?	

1. Background and the study area

This section sets out the high level context for the study. It should provide background information to the project, including policies on sustainable flood risk management and where relevant, links to FRM Strategies and Local FRM plans. It should also describe high level aims, and provide descriptions of the study area, general characteristics, any known flooding issues and potential constraints.

Further detail on what could be included is also provided in Chapter 3 of the SEPA Flood Modelling Guidance.

1.1. Provide high level aims of the study.

1.2. Describe the strategic framework for the management of flood risk in Scotland, including national policies and key guidance to support sustainable flood management:

- Explain the catchment / coastal cell based approach and delivery of multiple benefits. Relevant information is available in the Scottish Government Sustainable Flood Management Guidance (June 2011).
- Describe key statutory requirements on public bodies relating to climate change (Public Bodies Climate Change Duties and the objectives of the Scottish Climate Change Adaptation Programme).
- Describe key literature that the consultants will be required to follow. Include Scottish Government guidance on appraisals and the Multi-Coloured Manual.

1.3. Include details of the relevant objectives and actions from the FRM Strategy/Local FRM Plan and include action descriptions.

1.4. Provide a map of the study area with defined boundaries. For coastal studies, include reference to relevant coastal cells and sub-cells.

1.5. Provide a study area description (summarise the study area including watercourses or coastal reaches, areas of particular interest, overview of hydrological response to rainfall, other catchment/coastal characteristics, land use, urbanisation, existing management practices and existing defences, etc.).

Information that may be useful to include when summarising existing flood defences

- Who owns it?
- When was it built?
- Was it built under legislation or by a local authority locally?
- What is the original design SoP and design life?
- What is the current SoP (if known)?
- What type of scheme is it (conveyance, diversion, storage)?
- Are there any gates/structures that require manual intervention?
- Any failure events?

1.6. Provide information on flood risk and describe flooding issues using existing information and local knowledge (for example use information from SEPA Flood Maps, FRM Strategies, Local FRM Plans, Shoreline Management Plans etc.). Ensure as much local knowledge and information is gathered as possible at the start of the study as this will help at later stages. Include information on how the risk is currently being managed. If erosion or deposition may contribute to flood risk within the study area, this should also be described here.

1.7. Provide an overview of flood history for the area.

1.8. Describe any previous studies carried out in the catchment and note their conclusions (including previous investigations by the local authority or other organisation, Shoreline Management Plans, existing hydrological and hydraulic models, natural flood management projects, restoration projects and any other relevant studies/projects).

1.9. Describe any current and ongoing activities (e.g. community driven activities, active flood groups, etc.)

1.10. Identify any potential constraints including those related to Natura 2000 sites / Sites of Special Scientific Interest (SSSIs).

1.11. Where possible, identify key infrastructure in the area.

2. Study Objectives

This section should describe what the study aims to achieve. The objectives should be clear and linked to the overall outcomes. Examples of potential objectives are provided below. Each study will be different and should develop its own aims and objectives, if possible in consultation with key stakeholders.

2.1. Develop better understanding of current and future flooding issues and flooding mechanisms in the area

In areas where flood risk information is incomplete or poorly understood, improving the understanding of flood hazard and risk should be a key aim of a flood study. Where a study also aims to improve information on flood risk related to SEPA online maps, this aim should be clearly stated. SEPA *Flood Modelling Guidance* should be followed where this is the case.

2.2. Improve knowledge of existing flood defences, natural features and artificial structures

In many areas, some flood defences will be in place but the standard to which they protect land or properties will be unknown. In such cases, the study should aim to investigate and assess the status / condition / existing level of protection provided by such flood defences. The assessment should include natural features and artificial structures that could play a role in flood risk management (formal, informal and private).

2.3. Identify opportunities for natural flood management (NFM)

The study should identify opportunities for NFM within the catchment/coastal area. SEPA's NFM potential mapping may be helpful for identification of potentially suitable locations for NFM opportunities.

NFM studies should look at options for working with natural processes to i) reduce the rate or amount of run-off; and/or ii) improve the ability of rivers and their floodplains to manage flood water; or iii) increase/improve natural resilience of the shoreline to the impacts of climate change, floods and erosion.

For further details see SEPA's NFM Handbook.

2.4. Develop sustainable options to manage flood risk

Where a flood study is looking to develop options to manage flood risk this aim should be clearly stated. The options should include structural and non-structural actions and the assessment should follow existing guidance and best practice. Recommendations can include short term, medium term and long term options to manage flood risk.

2.5. Identify any required flood protection schemes or works, their costs, benefits and other associated information

Where a flood scheme is likely, the proposal should include enough detail to provide a high level estimate of the cost benefit of such a scheme and additional information so as to feed into SEPA prioritisation (draft prioritisation criteria are included as Annex 1).

2.6. Identify opportunities for broader impact, where possible linking these with partner and community initiatives

A flood study can also aim to develop information about broader benefits such as improving RBMP status of water bodies, other environmental improvements, regeneration, tourism, recreation and amenity. Where structural actions are proposed, information on carbon mitigation should also be developed.

2.7. Engage partners and stakeholders, community and land managers in the study as required

A study should aim to involve a wide range of stakeholders for example through steering groups and other forms of engagement with stakeholders and the community.

3. Data and Information gathering and review

Existing information and data relevant to the project should be gathered from the local authority and external organisations. Data requests should be made as soon as possible to ensure data is available for the start of the study.

3.1. Review existing information

Review of the existing data and information (e.g. previous studies, existing flood models, Flood Risk Assessments, local flood history, availability of hydrometric data, assessments of bodies of water and surveys, Scotland's National Coastal Change Assessment, etc.). See section 5.7 of SEPA *Flood Modelling Guidance* for further detail on use of existing models.

Identify data gaps and undertake additional surveys / data collection where required (e.g. a local authority might want to install rainfall or flow gauges or arrange for new Lidar to be collected).

3.2. Request data and information

A non-exhaustive list of available data to support flood studies is provided in Section 10 of this document.

All relevant data for the study area should be gathered, including data about utilities, Scottish Water assets, infrastructure, and environmental, historic and ecological interests.

Data requests to SEPA should follow the procedures set out in Section 10 of this document, including requests related to surface water management studies.

Local authorities should allow time for establishing third party data licences for data sharing.

3.3. Collect additional data and information

Additional information about the study area should be collected. A non-exhaustive list of additional information is provided below.

3.3.1. *Local flood history*

Where the initial assessment of local flood history shows that historic flood records are inadequate for calibration or the flooding mechanisms are poorly understood, new data may need to be collected. For detail on how to do this, see section 5.4 of SEPA's *Flood Modelling Guidance.*

3.3.2. *Survey / Site visit (topographical)*

Carry out any additional surveys and topographic information as may be required to inform the study. See section 5.5 of SEPA's *Flood Modelling Guidance* for further detail.

3.3.3. *Flood defence survey (artificial structures and natural features)*

Carry out an assessment of existing (formal and informal/private) defences, artificial structures and natural features in the study area, including (where relevant) coast protection structures. There is currently no Scottish asset assessment guidance but *"Asset performance tools – asset inspection guidance report – SC110008/R2"* produced by the Environment Agency (2014) may be useful.

It may be useful to consider how climate change may impact the future condition and standard of protection of flood defences as well as impacts on operation and maintenance.

Assessment of coastal defences should include still water and wave overtopping and any potential pressures due to coastal erosion.

For flood modelling purpose, the survey should include condition assessment as well as defence height. See section 5.5.4.4 Flood defence survey and section 5.5.6.2 Coastal defence survey of *Flood Modelling Guidance* for further detail.

3.3.4. *Residents / community surveys*

Undertake a flood risk survey to find out about residents' understanding of flood risk in the area. Any existing community flood action /resilience groups should be consulted.

3.3.5. *Landowner/Title searches*

Carry out a Landowner/ Title search for all areas affected by proposed works/ investigations. Verify the owner and tenant/ occupant of each area of land affected by investigations or works and gather relevant contact information. Identify any areas where the title search has not concluded and discuss how to best obtain the correct information.

3.3.6. *Public Utility searches*

Liaise with statutory undertakers to confirm the existence of public utilities in the vicinity of the study area.

3.3.7. *Survey (ecological/environmental)*

Survey information is required for baseline assessments for RBMP and NFM. Other assessments should consider biodiversity and land use. Local authorities are also required to carry out surveys (including Phase 1 Habitat survey) in order to produce a Preliminary Ecological Appraisal following CIEEM guidelines.

3.3.8. *Survey/ground-truth (receptors at risk)*

For the appraisal stage, it may be necessary to carry out a survey of the receptors identified at risk from flooding to ensure the economic appraisal reflects most up-to-date information.

3.4. Carry out Baseline Assessments

Consultants should carry out baseline catchment/ coastal assessments, taking into account information on catchment and coastal characteristics, RBMP and NFM potential. The SEPA *NFM Handbook* and the *CREW Scottish Rivers Handbook* are good sources of information for catchment/coastal assessments. The assessments should result in catchment/ coastal maps showing information on characterisation, RBMP opportunities and NFM potential (see sections below).

3.4.1. *Baseline RBMP assessment*

Carry out a RBMP assessment for all studies (fluvial and coastal) where RBMP objectives have been set and where information indicates downgrades in ecological quality caused by alterations to physical condition.

A first step in this process should include the checking of the waterbody status by accessing the Water Environment Hub (https://www.sepa.org.uk/data-visualisation/water-environment-hub/). Once this is confirmed, SEPA RBMP team should be contacted (rbmp@sepa.org.uk) for the latest data and to determine whether an RBMP objective should be set for the study. The RBMP team may also provide information on opportunities for additional funding through the Water Environment Fund (WEF).

The risks and opportunities for reducing the physical impacts identified in the River Basin Management Plans should be considered. This can be done as part of the process of establishing the baseline condition of current defences, the characterisation of rivers and coasts and the wider options appraisal (desk-based exercise). This should be done using the following methodology:

- For water bodies less than good for morphology, use SEPA morphology pressures dataset to identify significant pressures that need to be removed from within the river corridor of the reach or coastal/transitional waterbodies. Significant pressures are culverts, embankments, high impact realignment, significant lengths of bank reinforcement, and lack of riparian/coastal vegetation
- Review historic mapping for these waterbodies to determine where the river/coast was previously located and identify opportunities to reconnect (e.g. paleochannels, restore wetlands etc.)
- Review ground model data to see where opportunities exist to reconnect the river with floodplain
- Carry out constraints/ multiple benefits analysis of removing physical pressures
- Consider where addressing the physical pressures could provide benefits to flood or erosion risk and allow adaptation to climate change, i.e. increasing floodplain space (embankments / bank protection set-back or de-culverted), re-aligning the coast to restore coastal habitats which increase wave attenuation, or longer channel space through re-meandering.
- Consider whether there are locations at the site or upstream where riparian planting could help

In some instances, it may be necessary to carry out further assessments in order to identify potential measures to deliver FRM and RBMP benefits. These may include, for example, a Fluvial Audit Survey, STREAM analysis (sediment balance survey), and detailed discussions

with SEPA specialists on MIMAS scoring (currently under review), completing Reach Sheets, or carrying out Reach Prioritisation (to determine practicable restoration projects).

SEPA RBMP and hydromorphology teams hold data that may help to undertake location specific assessments. The RBMP team should be contacted for further information at rbmp@sepa.org.uk.

3.4.2. *Baseline NFM assessment*

NFM measures seek to manage the pathways of floodwaters and in doing so reduce the impact of flooding on people, homes and businesses. An important part of NFM is the delivery of environmental and social benefits. Quantifying the benefits of NFM can be challenging but when considered with these additional benefits, NFM can compare favourably, especially when used in combination with traditional engineering flood defences.

Baseline NFM assessment should be carried out for all studies where NFM has been identified in FRM Strategies as a possible option to manage flood risk. The baseline NFM assessment can also be carried out for other studies where SEPA NFM maps or local knowledge indicate that NFM could reduce flood risk.

The baseline NFM assessment is a scoping of where opportunities to restore or enhance natural processes may benefit flood risk and deliver multiple benefits. The output should include a map of NFM opportunities (a 'long list of NFM options') for use at a later stage of the study (options appraisal). It is primarily a desk-based assessment using GIS information, but can be complemented by walkover surveys and local knowledge. Section 6.4 of the *NFM Handbook* outlines elements which should be included in a baseline NFM assessment and this should be referred to. These elements can be summarised as follows:

- Characterise the catchment or coastal area to develop understanding of how the catchment currently operates under flood conditions and the areas of the catchment that contribute most to flooding. Catchment/coastal characterisation should include information on the environmental context, hydrology and flood risk, and site specific coastal processes. At the coast, this includes considering how potential sea-level rise could alter natural coastal features which currently provide a flood protection benefit.
- Identify opportunities for NFM. The primary objective of long listing of NFM actions should be to identify where there are opportunities for restoration or enhancement of natural features. Therefore understanding current land cover and/or where there have been modifications to rivers or coastlines is key. Information from existing projects and studies, SEPA RBMP data (e.g. morphological pressures database), survey data, land cover data, National Coastal Change Assessment, and any other useful datasets such as aerial photography, where available, should be used to inform the long list. Further detail on how to identify opportunities for different NFM measures is given in section 6.4.1 and 6.4.2. of the *NFM Handbook*.
- Where possible, GIS data should be complemented by walkover surveys of areas of NFM potential to confirm information such as current land use, infrastructure (e.g. presence of utilities), significant land pressures (e.g. erosion, morphological alterations, etc.), presence of biodiversity features and protected areas, and any hydraulic structures that may restrict flows.

- A long list of NFM actions should be identified using expert judgment and catchment/ coastal NFM characterisation. A list of potential NFM actions is provided in the *NFM handbook*. These long-listed NFM actions should be displayed on catchment maps together with other relevant information on characterisation and survey results.

4. Hydrological assessment and flood modelling

Hydrological assessment and flood modelling should be developed following methodologies outlined in SEPA's Flood Modelling Guidance, especially where the study aims to update SEPA online flood maps. For surface water see SWMP guidance.

Methodologies associated with hydrology and modelling are not described in detail here. For a comprehensive guidance see SEPA's *Flood Modelling Guidance.* It should be noted that the requirements for hydrology and modelling for a flood study may be different for a Flood Risk Assessment for land use planning. Where the flood modelling outputs aim to update SEPA online maps, early engagement with SEPA is required to ensure that the proposed method of hydrological estimation and modelling methods meet SEPA standards and can therefore be easily incorporated into SEPA flood maps.

For Natural Flood Management, modelling may be required at the short-listing stage and options appraisal. The SEPA *Flood Modelling Guidance* includes a section on modelling approaches to Natural Flood Management (see Chapter 12).

A *Flood Modelling study SoR (Statement of Requirements)* is also available to local authorities on request from SEPA (Advice@SEPA.org.uk).

4.1. Hydrology

See *Flood Modelling Guidance* for a comprehensive technical guide to hydrology.

4.2. Climate change

One of the elements supporting sutainable flood risk management is a consideration of the impacts of climate change on future flood risk.

The latest information on how to consider climate change impacts of river flows is summarised on the SEPA website. This summary report (together with the main CEH report, 2011) should be used to assess the potential climate change impacts on river flooding. The findings of this report support the development of the Flood Maps and are referenced in SEPA's *Flood Modelling Guidance*.

For coastal flooding, the UK Climate Change Impacts Programme (UKCP) provides projections of sea level rise. The UKCP09 projections are currently being updated. This is intended to give greater regional detail and provide more information on potential extreme levels and impacts of climate change. Revised projections will be issued as part of the UKCP18 project and are expected to be higher than the UKCP09 climate change projections

due to improved understanding in processes that will affect sea level. It should be noted that sea level rise may lead to higher inshore wave heights, increased rates of coastal erosion and lead to changes in the position of the foreshore. Increases in sea level may also need to be considered for surface water flooding and potential for combined fluvial/estuarine flooding at the coast.

Projections for rainfall can be taken from the UKWIR project "Rainfall Intensity for Sewer Design Phase 2". For small catchments and urban watercourses it may be more appropriate to consider a rainfall rather than a flow uplift.

There are uncertainties in the future level of climate change as future emissions of greenhouse gases are not known and there are uncertainties associated with climate modelling. This means that although it is known that sea levels are increasing, the exact year in which a particular level of sea level rise will be reached is not known. This uncertainty is accounted for in the UKCP18 climate change scenarios by providing projections for a number of different emissions scenarios and probability levels. To manage uncertainty the Scottish Government Appraisal Guidance promotes a managed adaptive approach to climate change – this may require the assessment of climate change for a number of different time horizons and probability levels. Please note that these probability levels may not align with those used in a flood risk assessment for land use planning.

4.3. Flood modelling and mapping

See *Flood Modelling Guidance (Chapter 13)* for a comprehensive technical guide to flood mapping.

5. Developing and appraising options to manage current and future flood risk

This section provides information on how to develop and appraise (value) options to manage flood risk that are most sustainable. It provides a summary of key steps described in the Scottish Government Guidance on Options Appraisal for Flood Risk Management (2016).

Appraisal is required for all studies that are looking to assess options to manage flood risk. In the assessment, local authorities and their consultants should develop solutions in consideration of catchment and coastal processes and characteristics, making all reasonable and practical efforts to enhance the natural ability of the landscape (rural and urban) to slow and store water. Where overall study objectives were set in the earlier stages of the study, these should be referenced here to provide the basis of the appraisal.

Sustainable flood risk management includes looking at the multiple benefits that different actions provide in terms of environmental and social impacts, including recreation, health and well-being. Information developed as part of the baseline NFM, the baseline RBMP assessment and additional surveys should be used.

5.1 Available guidance for appraisals

5.1.1. *Scottish Government Guidance on Options Appraisal for Flood Risk Management*

The Ministerial guidance on *Options Appraisal for Flood Risk Management* should be followed at all stages of the options appraisal. Further information on valuing costs and benefits and the economic, environmental and social impacts see Sections 5, 6, 7 and 8 of the *Guidance.* Information on estimating whole life costs of options is provided in Section 10.

It is worth noting that this guidance does not specify design standards. Instead it recommends that a range of standards are assessed including an option that protects to a 1% AEP plus allowances for climate change. Other levels of protection should be considered during option development. The approach should be risk-based, linking benefits to costs with the aim of maximising the reduction in overall risk.

5.1.2. *Multi-Coloured Manual*

Detailed guidance and standard data on estimating flood damages is available in Penning-Rowsell *et al*. (2013) ('The Multi-Coloured Manual'). A licence to use this data is required to be requested from the Flood Hazard Research Centre.

5.1.3. *SEPA Flood Modelling Guidance / NFM Handbook*

Guidance on modelling of NFM actions is provided in SEPA's *Flood Modelling Guidance* and further consideration of NFM in projects is provided in SEPA's *NFM Handbook*.

5.2. Key steps in the appraisal process

Options should be developed to include 'do nothing' / 'do minimum' scenarios, and go through a process that includes defining purpose and setting objectives, long-listing, short-listing and appraisals to recommending the most sustainable options.

a) Define the purpose of the appraisal and set objectives. Objectives should be set on the context of the overall flood study aims and objectives.

b) Develop a long list of actions

- Actions should include those that reduce the likelihood of flooding, reduce damages should a flood occur, avoid creating new flood risk, or promote community resilience.
- A list of potential structural and non-structural actions is provided in Annex 2.

c) Screen the long-list

- Screening is required to reduce the long-list to a more manageable shorter list of actions.
- The screening should be carried out based on technical, economic and legal feasibility.

- Sustainability should be a key consideration and unsustainable options should be rejected early in the process. Broad positive and negative impacts can be identified at this stage, although technical detail is not required and impacts do not need to be valued.
- High level scoring may be helpful. The reasons for rejecting actions should be clearly described.
- A summary of the assessment could include tables summarising any known feasibility issues, land manager benefits/dis-benefits, any other additional benefits/dis-benefits, potential for adaptation to climate change impacts and whether the action should be progressed to detailed appraisal stage.
- Each action should also be assessed in terms of its contribution to achieving RBMP benefits and/or any potential negative RBMP impacts. At this stage of the assessment, SEPA (and SNH and Forestry Commission as required) should be consulted on the results. The result of this screening process should be a short-list of actions that can be progressed to more detailed appraisals.

d) Short list of actions: developing options

The starting point is to develop 'do nothing' and / or 'do minimum' option

- 'Do nothing' describes a future situation with no further intervention. Where there are existing actions such as flood warning, the operation of the flood warning system would cease.
- 'Do minimum' refers to continuing with minimal statutory activities, such as clearance and repair works.
- Where possible, the consultant should develop both 'do nothing' and 'do minimum' options, especially in areas with existing formal or informal defences. Flood defences may fail at some point in the future and this failure should be considered in the appraisals.
- The 'do nothing' and 'do minimum' option should include an assessment of climate change, especially in coastal areas.
- 'Do something' option builds on 'do minimum' option. 'Do something' should be developed by looking at opportunities for structural and non-structural actions and build up from short-listed actions into viable options to meet flood management objectives.
- Do something' options can be identified using an iterative process to build up viable options starting from non-structural, natural flood management and finally considering more traditional engineering. These options can include 'no regret', cost-effective solutions that may be easier to implement in the short-term, especially in circumstances where other actions may take time to put in place. Medium-term options can include flood defences, and long-term options should be considered with the projected impacts of climate change in mind.
- Given the uncertainties associated with levels of climate change, managed adaptive approaches (which can be adjusted as conditions change or new information becomes available) should be considered.
- These options should be compared with the 'do nothing' and/or 'do minimum' options to provide a consistent baseline for comparison. An example of option development using this approach is provided in Table 1.

Where NFM actions have been identified as being appropriate, the following steps should be taken:

- Expert judgement will be important in assessing NFM actions in particular, but ideally some modelling should be undertaken to inform this expert judgement. NFM actions are most likely to provide benefits for local, frequent flood events but can also be used to complement hard engineering by lessening or delaying catchment response to flooding.
- The NFM actions should be assessed alongside other engineering solutions and in combination with other engineering solutions. Additional benefits or impacts on the wider economy, environment and society should be assessed to aid the selection of sustainable solutions. Feasibility should also be considered including the presence of high grade agricultural land or other issues where it may be difficult to gain landowner's consent to implement NFM. Section 6.4.3 of the *NFM Handbook* provides further information on shortlisting of NFM actions.

Table 1. Example of option development

Option	Description of actions
Do nothing	Baseline assessment (no maintenance activities)
Do minimum	Current situation for comparison (meeting statutory requirements)
Non-structural option 1	Land use planning; emergency response, improved understanding
Non-structural option 2	Land use planning; emergency response; flood warning and property level protection
Structural option 1 (NFM only)	River and floodplain restoration, increasing roughness/land drainage modification, woodland planting
Structural option 2 (NFM and engineering)	River and floodplain restoration, land drainage modification, flood defence wall
Structural option 3 (NFM and engineering)	River and flood plain restoration, off line flood storage, flood defence wall
Structural option 4 (Engineering)	Flood defence wall, on-line flood storage reservoir
Structural and non-structural option 5	Flood defence wall, floodplain restoration, property level protection, land use planning, emergency response

e) Value options

For each option, the following components should be assessed (economic, social, environmental). Detail of the components of the appraisal is available in the Scottish Government's *Options Appraisal for Flood Risk Management*. These include:

- Estimates of flood risk management benefits (damages avoided and non-economic benefits for the wellbeing of people and the environment)
- Wider positive and adverse impacts
- Adaptability to climate change and future flood risk drivers
- Whole-life costs
- Cost benefit ratio

- Uncertainty in costs and benefits.

f) Compare options

The options should be compared and decisions about the most sustainable options be made on the basis of the appraisal of economic, social and environmental impacts, whole life costs and consideration of risk and uncertainty, both present and future. The outputs should include a well-designed appraisal summary table.

5.3. Additional information on climate change adaptation to be considered during appraisals

The impacts of climate change on maintenance of the actions should also be considered. There may also be an increased burden on maintenance in areas that are showing higher sensitivity to climate change. Some information is available in SEPA's costing project – the project provided scores for adaptability to climate change and impacts on maintenance. The prioritisation of actions will include an assessment of adaptability to climate change and this will be based on similar principles as the assessment in the costing project.

Where possible, actions should be developed with a 'no regrets' approach to managing future flood risk (for example, as a result of climate change). This might include designing actions to take account of climate change now, or ensuring flexibility to enable adaptation in the future. The Environment Agency's user guide, *Accounting for adaptive capacity in FCERM options appraisal (SC110001/R1),* provides a useful overview and guidance for managed adaptive approaches and SEPA wishes to encourage this type of approach in FRM planning. Further information on developing adaptive approaches can also be found on the ClimateXChange website.

6. Recommendations for the management of flood risk in the area

This section should provide recommendations for the management of flood risk, taking into account all information developed in the previous study stages. Recommendations should be clear and set out management options for the short- to medium-term as well as looking into the long-term management with the consideration of climate change impacts.

6.1. A clear set of recommendations for the management of flood risk in the area should be provided. These may include a combination of structural and non-structural measures, such as taking forward a flood or coastal protection scheme/ works, a natural flood management scheme / works, in combination with community/landowner engagement and consideration of land use planning implications.

6.2. The recommendations should be assessed against Project Objectives established early on in the process.

6.3. The recommendations should include 'no regret', cost-effective solutions that may be easier to implement in the short-term (such as flood works and awareness raising), especially in circumstances where other actions may take time to put in place. Medium and long-term options should be also be provided and consider how flood risk may be managed in the context of climate change. This may include relocation of properties or infrastructure in the long-term.

6.4. The study should clearly state if a flood protection scheme is unlikely to be viable. Other actions should be recommended such as property-level protection, awareness raising, community flood action groups, self-help, maintenance, emergency plans/response, planning policies, etc.

6.5. Recommendations should also include any mitigation required to ensure no adverse impacts on the integrity of Natura sites (consultation with SNH is recommended and/or with Natural England if the study extends to cross-border areas).

7. Consultation with partners, stakeholders and the public

This section should describe the requirements for partner, stakeholder and public consultation throughout the study. Consultation with partners and stakeholders is a key process in flood protection schemes and in developing options to manage flood risk and will minimise the risk of objections.

7.1. Consultation with partners, stakeholders and communities is an integral part of any flood study. These can include (list not exhaustive):

- A start-up meeting with key partners.
- Scottish Water.
- FRM Local Advisory Groups (run by SEPA and the Lead Local Authorities).
- Organisations including SNH, Forestry Commission, infrastructure owners and managers, Scottish Water, NGOs, fisheries interests, community councils/ community flood action /resilience groups, landowners (where relevant), and equivalents of English organisations if the study extends across the English border.
- Community engagement is a very important element of any flood study that is looking at options to protect people and property from flooding. Public meetings should be held at key stages of the study (for example to consult on flood maps and preferred options). The public should also be informed about the outcomes of the study and next steps.
- Engagement with individual landowners may be difficult to achieve at the initial stages of a project. The degree to which landowners and land managers are engaged in the initial stages may depend on existing relationships and networks.

7.2. Scottish Water should be consulted at early stages to ensure that locations of infrastructure and any relevant data is gathered at the start of the project. This should be initiated via a Strategic Planner from the Scottish Water Flood Risk Management Team (FRM). Initial communication should be made via the following mailbox address: FRM@SCOTTISHWATER.CO.UK.

7.3. SEPA is able to support flood studies via the provision of data, advice and guidance. The provision of data is described in Section 10 of this document. SEPA may be able to review key outputs from flood studies where requested by the commissioning authority. Outputs that SEPA may be able to review (subject to resource availability) are provided in Table 2 below.

Table 2. SEPA involvement in flood studies

Flood study stage	What SEPA can review and provide comment on (where time and resources allow):
Statement of Requirements	• SoR study contents
Hydrological assessments, flood modelling and baseline assessments (RBMP, NFM)	• Local flood history • Hydrological assessment and flow estimation (including climate change assessment) • Hydraulic models where LA aims to update SEPA flood maps (model audit files) • Coastal methods and modelling • Mapping outputs • NFM assessment (catchment maps and long list) • RBMP assessment Where a project steering group is in place, we welcome a meeting at this stage involving the local authority and the consultant.
Developing and appraising options	• Long list of actions and the screening process • Short list of options • Appraisal methodology • Appraisal summary tables • Information relating to prioritisation of actions Where a project steering group is in place, we welcome a meeting at this stage involving the local authority and the consultant.
Recommendations for the management of flood risk	• Preferred options for the management of flood risk including in the short, medium and long-term • Information required for prioritisation of actions • Potential flood risk impacts of proposed actions • Potential implications for CAR We would expect to see studies taken to at least the 'preferred option stage' prior to submitting for prioritisation.
Final draft report	We can provide a final review of the study outputs. Where a project steering group is in place, we welcome a meeting at this stage involving the local authority and the consultant.

7.4. Table 2 provide a guide on parts of flood studies that SEPA may be able to review. SEPA will provide a coordinated response to flood studies which may involve a number of SEPA teams. Therefore SEPA requires a minimum of 4 weeks to review outputs from flood studies. SEPA may bring in additional expertise from within the organisation should specialist advice be required (e.g. geo-morphologists or restoration specialists).

7.5. Please note that it is not SEPA's role to 'approve' or 'sign off' a flood study commissioned by a third party as our comments are only advisory. However, early engagement with SEPA will ensure greater alignment between SEPA's advice and subsequent use within a statutory process, thus reducing the risk of objections at a later stage.

8. Project management services

This section describes what is expected of the Local Authorities to provide good project management.

8.1. A robust project management approach should be applied throughout the project. Whilst each local authority has its own tendering and procurement procedures, they should ensure that adequate consideration is given to the consultant's technical knowledge and experience (if employed) in taking forward flood studies.

8.2. Project management services required for good project management include, for example, developing a staged programme through to study completion, auditing (internal and external) and progress reporting, attendance at progress meetings and any other project management services according to local authority existing procurement requirements. Suggestions for project management in flood modelling studies are available in SEPA *Flood Modelling Guidance Template SoR* available to local authorities on request from Advice@SEPA.org.uk.

9. Project deliverables

This section communicates what is expected from the project and indicates what Local Authority should have in their possession at the end of the study.

For details of project deliverables for a flood modelling study see Chapter 15 of SEPA's *Flood Modelling Guidance*. Where possible Local Authorities should ensure they have the Intellectual Property Rights to all flood study outputs, including models and survey. File types should be specified to ensure data is provided in the correct format for future use. The following provides a non-exhaustive list of project deliverables:

- Technical (final) report covering each stage of the flood study and describing methodologies, key decisions and outputs
- Non-technical summary

- Data register and licensing requirements
- Assessment of existing defences and other structures from flood defence survey
- Survey reports and results (flood defence, topographical and environmental and residents/community survey). Topographic/flood defence survey should be requested in CAD (.dwg) and GIS formats where appropriate.
- Catchment/coastal information sheets (NFM, RBMP) including NFM maps
- Modelling reports and results / models / model files (see section 15 *Flood Modelling Guidance*)
- Options appraisal document/report (to include do nothing/do minimum scenario and flood risk; long list of actions, long list screening results, short list appraisal tables, residual risk assessment)
- Appraisal summary tables summarising economic, social and environmental information about the short-listed options
- A report outlining recommendations for the future management of flood risk
- Consultation log (outputs from consultation with partners and stakeholders)
- Project management outputs (e.g. programme, risk register, progress reports).

10. Data available

This section provides a description of data available for the purpose of flood studies. It should include all LA data as well as data available from other organisations. Data requests relating to surface water management plans should also follow the same process.

10.1. The commissioning authority must make available all relevant data to develop the study. Other organisations and Responsible Authorities under the FRM Act, including SEPA and Scottish Water, should be contacted to ensure all relevant data is identified and made available. Data and licensing requirements need to be established and agreed early on in the process.

10.2. For detail on data available for modelling purpose see Chapter 5 of SEPA *Flood Modelling Guidance.* SWMP guidance also provides information on relevant data. The process set out in this check-list should be followed when requesting data for surface water studies.

10.3. Early engagement with SEPA is recommended in order to identify licencing/ sub-licencing requirements and ensure that all data is available at the start of a study.

10.4. The request for SEPA data should be made to advice@sepa.org.uk using the data request form provided in Annex 4.

10.5. Where a sub-contractor is working on behalf of a local authority, a permission to sub-licence SEPA data will be required. In order to obtain a permission to sub-licence, the local authority is required to fill out table provided in Annex 3.

10.6. SEPA is currently improving its data sharing procedures. Whilst the information provided in Table 3 is correct at the time of the release of this document, it may change in future. SEPA will aim to update Table 3 regularly to ensure the procedures are fully up to date.

Table 3. List of data available from SEPA (all SEPA data requests need to be send to advice@sepa.org.uk).

Dataset Name	Description of Dataset / Data Supply Information
Observed Flood Event Database	The Observed Flood Event (OFE) Database (previously referred to as the Historical Flood Event Database) is a national representation of observed flood events across Scotland. The database is a continuously updated non-exhaustive list. Flood records may duplicate local authority records. SEPA will supply an extract from the OFE Database for the study area. Please supply a GIS compatible file or appropriate coordinates to define the study area when requesting. Data will be issued to the local authority under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
Flood Hazard Maps	Flood Hazard Mapping and model extents (depths, velocity and flood extents) for fluvial, coastal and surface water. A 'lightweight' version of this data is provided to Local Authorities as a standard dataset when an update is made available on the SEPA website. This data is banded vector data and is supplied for the following sources and return periods where '+CC' refers to datasets which include climate change: • River – 10yr, 200yr, 1000yr • Surface Water – 10yr, 200yr, 200yr+CC • Coastal - 10yr, 200yr, 1000yr Extents and depths are available for all sources. Velocity (magnitude) is available for river and surface water and velocity (direction) is available for river only. If you require additional return periods or 'heavyweight' gridded data this will need to be requested. Return periods available are: 10yr, 30yr (fluvial and pluvial only), 25yr (coastal only), 50yr, 100yr, 200yr, 1000yr (fluvial and coastal only), 30yr+cc (fluvial and pluvial only), 200yr+cc. Please note, 'heavyweight' sewer flooding (S16) data must be requested directly from Scottish Water. Standard issue and additional data are both supplied to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Both standard issue and additional date require written permission to sub-sicense from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
Flood Risk Maps	This data displays the potential impacts of flooding on people, properties, community services and specific environmental sites. This information is only available for potentially vulnerable areas. The risk maps will be updated in 2019 to reflect updated potentially vulnerable area boundaries and risk information. This data is issued as standard to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.

Natural Flood Management Layers	This data displays areas where implementing natural flood management techniques could be most effective. This information will help to make flood risk management decisions and should not be viewed in isolation. Please refer to the SEPA website for more information on natural flood management. NFM opportunities include runoff reduction, floodplain storage, sediment management, estuarine surge attenuation and wave energy dissipation. This data is issued as standard to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
Groundwater Susceptibility Layers	This layer shows catchments where groundwater may be a contributing factor to flooding. SEPA's groundwater susceptibility layers only show groundwater flooding where is there a hydraulic connection with rivers, due to permeable deposits at the surface. More detailed information on areas at risk from ground water flooding is available from the BGS here. This data is issued as standard to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. SEPA's Groundwater Susceptibility Layer can be requested using the form in Annex 4.
Flood Defence Layer	This dataset provides a non-exhaustive spatial representation of formal flood defences built under the Coastal Protection (Scotland) Act 1949, Flood Prevention (Scotland) Act 1961 or the Flood Risk Management (Scotland) Act 2009. It does not contain any documentation, drawings or photographs of defences, the ownership of these documents is retained by Local Authorities. Please note this dataset has not been updated in recent years and many defences are not included. Data was issued to local authorities with v1.2 Flood Map release under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
Models (Hydraulic / Flood Forecasting & Warning)	SEPA holds a number of fluvial and coastal models. These models are not always shareable due to licencing conditions surrounding the input datasets and model ownership. Model availability is assessed on a case by case basis. Where models can be supplied these will be issued to the local authority under Clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
Receptor data & Appraisal Baseline Outputs	This dataset contains input Receptor data and Appraisal Baseline Outputs. This dataset was originally issued to local authorities in March 2016 and will be superseded in December 2018 by outputs from the 2018 National Flood Risk Assessment. This data is issued as standard to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.

Annual Averaged Damage (AAD) Grids	This dataset provides average annual damage total at a 1km^2 grid resolution. The data is derived from the appraisal baseline output data (listed previously). Separate grids exist for fluvial, coastal and pluvial flood risk. Further guidance on this dataset is available if required. This dataset was originally issued to local authorities in March 2016 and will be superseded in December 2018 by outputs from the 2018 National Flood Risk Assessment. This data is issued as standard to local authorities under clause 13.2 of the Flood Map Data Licence Agreement. Requires written permission to sub-license from SEPA before dataset may be issued to consultants. This data can be requested using the form in Annex 4.
SEPA's FRM Strategy Information	Objectives and actions, PVA datasheets and supplementary catchment and coastal information. FRM Strategy information can be viewed on the SEPA website. National Objectives and Actions spreadsheet can be obtained by contacting frmplanning@sepa.org.uk (quote 'FRM Study' / 'FRM Scheme' and its name in the subject, and also local authority associated).
Hydrometric (Flow and Levels) data	Scottish River Flow data and Archived River Flow data. Scottish River Flow data is available under Open Government Licence at http://nrfa.ceh.ac.uk/data/search. River flow data held in the NRFA for Scottish sites may not be up-to-date. For archived River Flow and Level data and advice on data quality contact advice@sepa.org.uk. For gauge locations please look here.
Rainfall data	Rainfall data. Automated rainfall data is available for current automated stations via the SEPA website http://apps.sepa.org.uk/rainfall. Timescales available for download are: • Hourly data - 7 days • Daily totals - 12 months • Monthly totals – 13 months. For archived rainfall data or longer timeseries data and advice on data quality contact advice@sepa.org.uk
SEPA tidal gauge data	Tide levels at SEPA tidal gauges Tidal data from SEPA tidal gauges is available under Open Government Licence and can be readily shared. Contact advice@sepa.org.uk
RBMP data	Water body classification The RBMP data can be downloaded from the Water Classification Hub under SEPA Reuse statement. To download the full dataset as a .csv file click 'How do I download all the data' on the left hand side of the page.
Morphology pressures dataset	Physical pressures on water bodies. Available for rivers and coasts Can be supplied by SEPA under the terms and conditions of the data reuse statement. Request from advice@sepa.org.uk and direct to GIS team.

Coastal flood boundary dataset for Scotland	This dataset is available from SEPA and provides the industry standard for coastal extremes. Please note that this dataset is currently undergoing an update and is due to be completed in 2018. This dataset is not provided to local authorities as standard but can be requested using the form in Annex 4.
CEFAS hindcast	The data is produced by the Met Office, hosted by CEFAS and is available to use for flood risk projects under the UK Coastal Flood Forecasting (UKCFF) partnership arrangement. To download the data the risk management authority/ local authority (or consultant working for them) making the request will need to follow the steps outlined in the briefing note. The process generally consists of sending the form to SEPA to gain approval from CEFAS, then once received download the individual data points. Briefing note available in Annex 5. Commercial requests are required to be redirected to the Met Office.
Offshore Multivariate Dataset	A dataset equivalent to 10,000 years of wave and sea level data at seventeen offshore locations (corresponding to existing or proposed wave model grids) around the coast of Scotland. This data represents model events that when transformed to the coastline would lead to the most significant peak wave overtopping rates within a period of 10,000 years. This enables return period overtopping rates up to 1000 years to be estimated robustly for existing or proposed defences.This dataset if derived from the CEFAS hindcast and CFB dataset. Only some locations are currently available where CFB levels have been finalised. This dataset is not provided to local authorities as standard but can be requested using the form in Annex 4.

Table 4 provides other data available for flood studies **not held by SEPA.** Please request the datasets from the relevant organisations.

Table 4. Data available from other sources

Data	Data description	How to request it
LIDAR	Phase 1 and Phase 2 LiDAR is available under an Open Government Licence and can be downloaded from the Scottish Remote Sensing Portal. The Environment Agency have also published LiDAR data for parts of Scotland under an Open Government Licence which can be downloaded from the data.gov.uk site	SEPA have provided all LiDAR data which can be shared with third parties to Responsible Authorities under licence with a provision for sub-licensing. These datasets do not require SEPA involvement to sub-licence and should be requested directly from the relevant Responsible Authority.
Ordnance Survey Data	-	For the flood studies data should be requested from the local authority. The local authority should issue to their

		consultant with an OS Standard Contractor licence.
NEXTMap data	-	Data should be requested from the local authority
National Coastal Change Assessment (NCCA)	The NSCE and NCCA are complimentary datasets and it is recommended that they are used in conjunction.	Dataset held by Scottish Natural Heritage. It is available online: http://www.dynamiccoast.com/
National Susceptibility to coastal erosion (NSCE)	The NSCE and NCCA are complimentary datasets and it is recommended that they are used in conjunction.	Coastal Erosion Susceptibility Model is held by local authorities together with guidance on how to use it within the appraisal.
SNH data Hub	Natural Spaces dataset provided by SNH. Includes a wide range of the spatial data held by SNH.	https://gateway.snh.gov.uk/natural-spaces/
Forestry Commission data	Forestry Commission dataset including GIS data download and National Forest Inventory.	https://www.forestry.gov.uk/datasets
Scottish Flood Defence Asset Database (SFDAD)	SFDAD data is owned by the Local Authorities and cannot be supplied to consultants by SEPA.	Access to view data in SFDAD can be gained by emailing SFDAD@sepa.org.uk with the individuals name, email address, company or organisation, reason for access and confirmation that they have read and agree to the Terms and Conditions of use. The terms and conditions of use can be found on the SFDAD Portal. If the consultants wish to hold a copy of the data themselves then this request should be directed to the relevant local authority. The only data SEPA can supply related to SFDAD is a Flood Defences layer. For detailed SFDAD data SEPA recommends that consultants contact the local authority in their area of interest.
CALMAC	CALMAC hold tidal data for their sites.	Contact CALMAC to request their data directly.
Port authorities data	Forth ports, Port of Cromarty, Clydeport port hold tidal gauge data.	Contact the relevant port for their data

Scottish Water data	Integrated Catchment Studies and associated analysis and report outputs; Hydraulic Models, (including Section 16 Hydraulic Model Upgrades), and report outputs.	Please contact Scottish Water Flood Risk Management Team for details of the availability of any data relevant to the study:- FRM@SCOTTISHWATER.CO.UK

Annex 1: Supplementary information on prioritisation process

The prioritisation process for cycle 2 will be carried out using a multi-criteria approach based on a range of monetary and non-monetary criteria. This applies to actions to address all sources of flooding whether surface water, river or coastal. The actions, structural and non-structural, which will fall within the scope of the prioritisation are shown in table 5.

Table 5. Structural and non-structural actions for prioritisation

Proposed structural actions			
Flood protection schemes and works	NFM schemes and works	Relocation	Property level protection
Proposed non-structural actions			
Strategic mapping improvements	Flood studies and SWMPs	New flood warning	Review flood warning
Awareness raising	Self help	Community resilience / flood action groups	Enhanced emergency planning

A set of prioritisation principles has been developed to support the delivery of sustainable flood risk management and promote best practice. The principles were circulated to responsible authorities in June 2017. A framework for prioritisation based on the Scottish Government Sustainable Flood Risk Management Outcomes was subsequently developed and circulated in December 2017. The framework has informed the development of a draft prioritisation method for all sources of flooding.

More detail on the criteria, metrics and information requirements is presented in table 6. As part of method development we will be considering how to capture information and actions that provide an improved understanding of flood hazard and risk.

Please note that not all criteria will apply to all actions and this is allowed for within the method. These criteria are still draft and undergoing testing and may still change. Further guidance will be provided at later stage.

The table below indicates what information SEPA expects to be captured during options appraisal in order to support the prioritisation process. Once development and testing of the prioritisation method are complete SEPA intends to provide a summary format to aid consistent capture of the relevant information. *(Note: the metrics in this section are still under development and supplementary guidance will be available once the metrics have been finalised. The information provided below should be used as a guide for what the metrics will consider)*

Table 6. Draft prioritisation criteria listed per Scottish Government Sustainable Flood Risk Management Outcomes

Prioritisation criteria - broad themes	Criteria: to what extent does the action…?	Metric(s) related to:	Anticipated data requirements*
1. A reduction in the number of people, homes and property at risk of flooding as a result of public funds being invested in actions that protect the most vulnerable and those areas at greatest risk of flooding.			
Manage the overall impact of flooding to communities	Target communities at greatest current flood risk	FR1: Current (baseline) flood risk for objective target area	Current baseline flood risk score to be taken from 2018 NFRA. Flood studies and surface water management plans may include a more detailed assessment of flood risk for a particular community. If there are significant differences between NFRA data and the study data it may be necessary to take the more detailed data into account. In this situation any significant improvements in hazard data should be identified for future mapping improvements.
		FR2: Proportion of community at risk	Ratio of flooded to non-flooded properties (homes and businesses) in the 1 in 200 event for the community. - Total no of RPs - Total no of NRPs - RPs impacted in 1 in 200 event - NRPs impacted in 1 in 200 event - Ratio (RPs + NRPs) to (RPs + NRPs in 1 in 200) - Description/mapped extent of community For detailed study data, the community in this instance is to be viewed as a cohesive community unit, not just the area protected by the potential flood protection scheme. Where the community is not properly defined or mapped, SEPA will use the community as defined in the NFRA.

		FR3: Frequent flooding to community	Counts of properties at risk - RPs impacted in 1 in 10 event - NRPs impacted in 1 in 10 event - RPs impacted in 1 in 200 event - NRPS impacted in 1 in 200 event - Ratio of (RPs + NRPs in 1 in 10) to (RPs + NRPs in 1 in 200) - Description/mapped extent of community For detailed study data the community in this instance is to be a cohesive community unit, not just the area protected by the potential flood protection scheme. Where the community is not properly defined or mapped, SEPA will use the community as defined in the NFRA.
		FR4: Social vulnerability to flooding	Social vulnerability class based on Mapping Flood Disadvantage Scotland study data. - Data from 2018 NFRA will be used. - Description/mapped extent of community (see FR3 for information on how this is defined).
	Reduce the impact of flooding to communities	FR5: Reduction in economic damages	Reduction in flood damages: - Present value flood damages (baseline) (£) - Present value flood damages avoided (benefits) (£) - Clear description of methods used to calculate damages and benefits
		FR6: Benefits to vulnerable receptors	List and counts of vulnerable receptors benefiting. This can include the following, amongst others (non-exhaustive list): Hospitals, care facilities, sheltered accommodation, emergency services, schools, universities, doctors surgeries, infrastructure related to energy production and transmission, telecommunications, water/waste water treatment, waste and recycling facilities.
		FR7: Benefits to people and communities through a reduction in the occurrence and impacts of flooding.	Counts of residential properties benefiting (for the range of return periods assessed) but which should include the 1 in 200 event.

Prioritisation criteria - broad themes	Criteria: to what extent does the action…?	Metric(s) related to:	Anticipated data requirements*
2. Rural and urban landscapes with space to store water and slow down the progress of floods **AND** **3. Integrated drainage that decreases burdens on our sewer systems while also delivering reduced flood risk and an improved water environment**			
Work with natural processes to manage flood risk in urban and rural areas and deliver multiple outcomes	Work with natural processes to manage flood risk in urban and rural areas	MB1: Working with natural processes and biodiversity	This metric will consider the extent to which the proposal works with natural processes and supports biodiversity, specifically the scale of delivery of Green Infrastructure and Natural Flood Management techniques. Where the options appraisal determines that these techniques should be progressed, proposals should be described with reference to current conditions.Contributions to restoring existing habitats and developing habitat networks should also be specified, described and quantified wherever possible.
	Deliver Multiple Benefits	MB2: Protect and improve the water environment	This metric focuses on improvements to the condition of the water environment, specifically whether an action helps to deliver the objectives of the River Basin Management Plans.
		MB3: Reduce the burdens on our sewer systems	This metric is intended to score actions for reducing surface water in sewers. This may be through a range of actions including attenuating surface water before it enters the combined sewer, removing surface water from the combined sewer. Information on how the action supports this metric should be clearly described and quantified wherever possible.
		MB4: Contribute to carbon mitigation	This metric will look at the overall balance between hard engineering and natural flood management/green infrastructure. Where the options appraisal considers lower carbon design and/or how to lower the waste and emissions created during construction of hard defences this should be specified, described and quantified wherever possible, for example, through carbon calculators, use of PAS2080, etc.
		MB5: Deliver benefits to human health and wellbeing	This metric will look at the improvements to the quality of places to live, based on current local provision and/or need in the area identified. This includes, but is not limited to, improving active travel opportunities, improved access to green space and nature, improving the quality and / or extent of greenspace in an area. Information on how the action supports this metric should be clearly described and quantified wherever possible.

Prioritisation criteria - broad themes	Criteria: to what extent does the action…?	Metric(s) related to:	Anticipated data requirements *
4. A well informed public who understand flood risk and adopt actions to protect themselves, their property or their businesses			
Improve public awareness of, and community resilience to, current and future flood risk	Improve public awareness and community resilience	PA1: Improve public awareness and community resilience	This metric has not been finalised but will use information such as time since last flood, frequency of flooding, current actions in the community and proposed actions. The assessment will use information which SEPA has available and any additional information presented in the flood study.
5. Flood management actions undertaken that will stand the test of time and be adaptable to future changes in the climate			
Understand and plan for future flooding, including climate change	Target communities where future change in flood risk is high	CC1: Change in future flood risk	Data will be supplied by 2018 NFRA, but possible use of flood study data on economic damages (£) under climate change scenarios.
	Ensure adaptability to future climate change	CC2: Adaptability to future flood risk	SEPA would like to encourage a managed adaptation pathways approach. Recognising that managed pathways are not yet embedded into practice, scoring in this cycle is likely to be kept simple and will be based on a baseline assessment of adaptability opportunities and uptake of opportunities, particularly low regret options. We are looking for consideration of the impacts of future flood risk, use of the most up to date information on climate change and a range of climate change scenarios to be considered.

Prioritisation criteria - broad themes	Criteria: to what extent does the action…?	Metric(s) related to:	Anticipated data requirements*
None (Cross-cutting)			
Best use of public money	Deliver value for money	VFM1a: Benefit-cost ratio	Benefit-cost ratio
		VFM1b: Whole life cost benefit relationship	To be finalised. Information for this metric will be developed based on strategic level whole life costings and overall benefits associated with the action. Information provided on benefits as part of other prioritisation criteria will be used to support the scoring of this metric.
	Achieve multiple aims by being delivered alongside other actions	VFM2: Co-delivery with other actions	This metric will be used as a flag to recognise joint working across delivery and or funding bodies.

* Flood study outputs will be used, where possible, in the prioritisation of proposed schemes and works. Data from SEPA's 2018 NFRA and SEPA's strategic appraisal will also be used, where appropriate, for schemes and works and for other action types.

Prioritisation criteria were developed from a number of existing guidance, including the Scottish Government Options appraisal for flood risk management (2016), Surface Water Management Planning Guidance (2013), The Benefit Cost Analysis of Options to Manage Surface Water Flooding (December 2014), SEPA Natural Flood Management Handbook (2015), Scottish Government guidance to SEPA and responsible authorities: Delivering Sustainable Flood Risk Management (June 2011) and the SEPA Costing of Flood Risk Management Measures (2013)(F4006). For full references see '*Key literature referenced in this document and key guidance'* of this check-list.

Annex 2: Non-exhaustive list of structural and non-structural actions that can be considered as part of a flood study

Category	Action
Relocation	Relocation of properties/infrastructure away from flood risk areas
Local Planning Policies	Specific policies/guidance in local development plans in addition to National Planning Policy
	Use of Strategic Flood Risk Assessment to inform local development plans
	Land allocations for the purpose of flood risk management for inclusion in local development plans
	Protection of land with a role for flood risk management in local development plans
Runoff (NFM)	Woodland creation (riparian, floodplain, catchment woodlands, cross-slope and gully woodland planting)
	Land management, including; soil and bare earth improvements, agriculture and upland drainage modifications.
	Creation / restoration of non-floodplain wetlands
	Agricultural and upland drainage modification
River/floodplain restoration (NFM)	River morphology and floodplain restoration
	Creation of riparian/floodplain woodland
	In-stream structures
	Washlands/offline storage ponds
Sediment management (NFM)	Managing channel instabilities (such as sediment management through river restoration)
	Overland sediment traps
	Bank restoration (e.g. riparian planting, green bank restoration)
Wave attenuation (NFM)	Multiple techniques, including: ▪ Beach recharge schemes ▪ Sand dune restoration ▪ Coastal shingle restoration ▪ Machair restoration
Surge attenuation (NFM)	Creation/ restoration of intertidal area including mudflats and saltmarsh, managed realignment and regulated tidal exchange
Storage (engineering)	Flood storage online
	Flood storage offline
Conveyance	Increased conveyance through channel modification – deepening / widening / two-stage channel
	Relief/diversion channel / Bypass tunnel/culvert
	Realign channel
	Culvert
	Removal of hydraulic constrictions
	Bridges
Control structures	Sluice gate / penstock / flap valve
	Weir
	Trash Screens
	Pumping Stations
Coastal Engineering	Revetments
	Groynes
	Breakwaters
	Artificial reefs and detached breakwaters
	Gates and Tidal Barriers

Category	Action
Direct Defences	Embankment
	Wall
	Adaptable Wall (can be added to)
	Demountable / temporary defences
Watercourse Maintenance	Routine and event specific watercourse maintenance
Property level protection	Individual property protection
	Resilient property design (retrofit)
Flood Forecasting and Warning	Flood Warning Schemes
	River Track (community) flood warning
Self Help	Business Continuity Planning
	Flood Insurance
	Community Flood Action Groups
Awareness raising	E.g. Community awareness events
Emergency Plans and Site Protection Plans	Emergency Response Plans and businesses/ infrastructure site protection plans
Improved understanding	Further modelling, data gathering and/or monitoring

See SWMP Guidance for a list of potential actions for managing surface water flooding.

Annex 3: Table to be completed by local authorities when requesting SEPA data (permission to sub-licence form)

Terminology

Licensor – Organisation providing permission to sub-licence the data.
Licensee – Individual / Organisation requesting permission to sub-licence.
Contractor – Individual / Organisation working for Licensee for whom permission to sub-licence is required.

Please note - Permission to sub-license can only be provided for contractors working directly for the local authority submitting the request. The reference number supplied must related to a signed contract between local authority and the contractor.

Licensor Questions	**Licensee Responses**
Project name: (Name of project for which contractor has been appointed and permission to sub-license is requested)	
Name and reference number of Contract between Licensee and Contractor:	Name: Reference Number:
Contract Purpose: (Brief description of contract purpose)	
Contract Duration (mm/yy – mm/yy):	
Contractor Name: (Organisation Branch/Office/Subsidiary, if applicable. If multiple sub-licencees for same contract please include details for each organisation receiving the data)	
Contractor Parent Company/Head Office: (Complete if different Parent Company / Head office details are different to the Contractor details provided above)	
Contractor Registered Details: (If multiple contractors working on the same project please complete for each contractor)	Registered name: Company Number: Registered Office address:
Contractor: Data Recipient Name: (if SEPA is in direct contact with the contractor)	
Contractor: Data Recipient Postal Address: (if SEPA is in direct contact with the contractor)	
Contractor: Data Recipient Email Address: (if SEPA is in direct contact with the contractor)	
Licensee Contact: (SEPA's usual contact at the responsible authority requesting permission to sub-licence):	Name: Office address: Email address:

Please send completed forms to advice@sepa.org.uk

Annex 4: FRM Studies and SWMP Data Request Form

To request data for your Study please complete this form and send it to advice@sepa.org.uk unless otherwise stated.

Please select the data you require from the tables below, please also include a GIS compatible file of your study area. If you are requesting permission to sub-licence (PtSL) please complete the PtSL table provided in Annex 3.

Advice Route to Strategic FR

Flood Hazard Map data - as viewable on the SEPA Website

Dataset Name		Return Period (yrs) CC indicates with Climate Change			
		10	200	200CC	1000
River	**Extent**				
	Depth				
	Velocity (Magnitude)				
	Velocity (Direction)				
Surface Water	**Extent**				
	Depth				
	Velocity (Magnitude)				
Coastal	**Extent**				
	Depth				

If you require additional return periods or gridded Flood Hazard Map Data please list this below:

Flood Risk Maps, Natural Flood Management, Ground Water Susceptibility & Observed Flood Events

Flood Risk Maps	
All Risk Maps	
Agriculture	
Airports	
Commercial Properties	
Community Services	
Railways	
Roads	
Utilities	
Environmental Sites Potentially Affected by IPPC Installations	
IPPC Installations	
Environmental Sites	
Population	

Natural Flood Management (NFM)	
All NFM layers	
Floodplain Storage	
Runoff reduction	
Sediment Management	
Estuarine Surge Attenuation	
Wave Energy Dissipation	

Ground Water Susceptibility	
National Susceptibility to Coastal Erosion (NSCE) [1]	
Extract from Observed Flood Event Database for study area	

[1] *Please note that Scottish Natural Heritage hold the National Coastal Change Assessment (NCCA) dataset. The NSCE and NCCA are complimentary datasets and it is recommended that they are used in conjunction.*

Coastal Datasets – Coastal Flood Boundary Data, Multivariate Data

Coastal Flood Boundary Dataset	
Offshore Multivariate Dataset	

Please note, CEFAS Hindcast data cannot be requested using this form please see Annex 5 of the Flood Study Checklist to request. CEFAS data requests to be sent directly to Flooding@sepa.org.uk

SFDAD Flood Defences [2]

All Flood Defence Layers	
Defence Scheme	
Floodgate	
Pump	
Embankment	
Wall	
Culvert	
Storage Area	
Channel Improvement	
Area of Benefit	

[2] *This dataset provides a non-exhaustive spatial representation of formal flood defences built under the Coastal Protection (Scotland) Act 1949, Flood Prevention (Scotland) Act 1961 or the Flood Risk Management (Scotland) Act 2009. It does not contain any documentation, drawings or photographs of defences, the ownership of these documents is retained by Local Authorities. Please note this dataset has not been updated in recent years.*

FRM Strategies, Appraisal Baseline (Input and Output Receptors), Annual Average Damage (AAD) Grids & Potentially Vulnerable Area (PVA) Boundaries

FRM Strategy information can be viewed on SEPA website. Outputs of the 2018 National Flood Risk Assessment will be published in December 2018.

Appraisal Baseline Input Receptor Datasets	
Appraisal Baseline Outputs [3]	
AAD Grids (1km *1km)	
FRM Strategies 2015 PVAs	

[3] *Please note that the Appraisal Baseline Pluvial Outputs superseded any Regional Pluvial Baseline Impacts data previously provided.*

Hydraulic and Forecasting Models

Please list below any models required. Please include the source (e.g. River, Coastal & Surface Water) and intended use of model(s) in your study. If know, please also include the name of the model(s) you require.

Annex 5: Briefing Note: Requests by Local Authorities for Cefas WaveNet Hindcast Data

What is WaveNet?

WaveNet is a UK-wide partnership between multiple national agencies, co-ordinated by the UK Coastal Flood Forecasting group (UKCFF, formally UKCMF) and hosted by the Centre for Environment, Fisheries and Aquaculture Science (Cefas). SEPA is an active member of the UKCFF and as such, gains access to various products to assist with our coastal forecasting capabilities. WaveNet is one of these products, which is a network of wave buoys deployed in UK coastal waters, of which four are located on the Scottish coastline.

The WaveNet hindcast dataset is a sister product of WaveNet, where the Met Office has run their WaveWatch III model using hindcast forcing conditions dating back to 1980. The dataset is on a 8km grid extending to around 10km from the coast, with several parameters including wave height, period, direction, in addition to wind vectors, energy and swell data. As observed wave buoy data records can be limited, this dataset provides a continuous and consistent dataset to aid the development and calibration of wave models. SEPA have used this dataset on several projects in recent years.

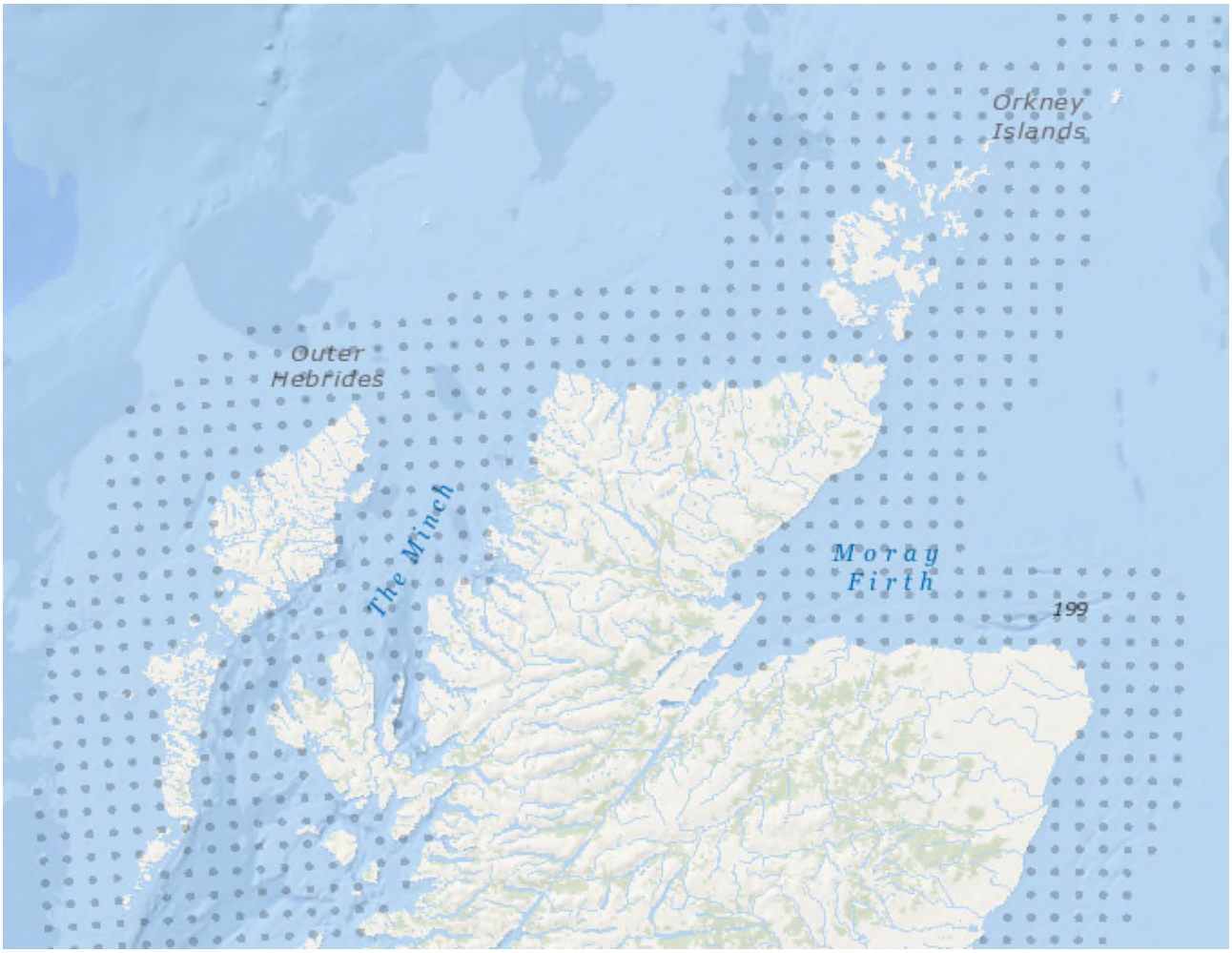

Figure 1: Wave hindcast points in the north of Scotland.

Why does this matter?

Until recently, the hindcast dataset was only available to national UK agencies for use in their flood risk management projects. As such, staff of these agencies have been pre-approved to download the data from the Cefas website. The dataset has now been opened up to include local authorities, however Cefas preferred the national agencies to approve the requests of their local authorities, rather than having to pre-approve every local authority in the UK on their systems.

In response to this, SEPA have created a process to allow local authorities to request the data from Cefas, which will be routed to SEPA for approval. It is important to note that SEPA will not be downloading the data on behalf of the local authority or consultant working on their behalf, we will only approve or decline the request.

How does the new process work?

Step 1

The local authority should fill out the form attached at the end of this document with all the relevant information. This form should be sent to the flooding@sepa.org.uk mailbox before any data download from the Cefas website has been requested. This will give SEPA staff advance warning that requests, either from the local authority or a consultant working on their behalf (the Requester), are imminent. This document also helps SEPA monitor that only the data requested is being downloaded, as the data is for non-commercial purposes and only for use by national agencies and now local authorities for their statutory FRM responsibilities.

Step 2

Upon receipt of the completed form from the local authority, the Requester can visit the Cefas website and request to download the data. The Flooding mailbox should be used as the Project Manager's Email in the Authorisation section on the Cefas website (Fig.2), which will generate an email advising of the information advised by the Requestor and the data that is being requested, e.g. time period, parameters, point ID etc.

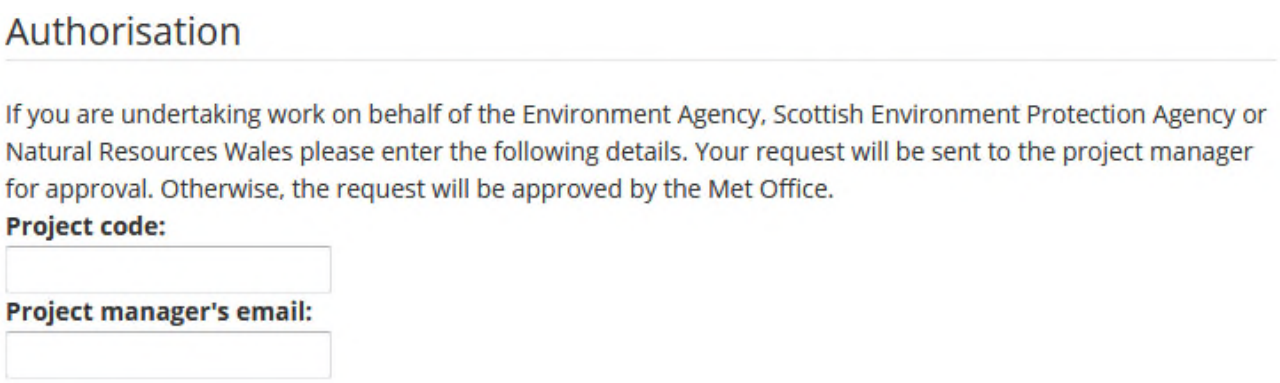

Figure 2: Authorisation section where the Flooding mailbox should be entered.

Step 3

SEPA staff who monitor the Flooding mailbox will cross-check the information provided by the local authority in the document and the information in the email from the Requester. If the information is all in order, the request will be approved by SEPA staff. If a discrepancy is identified, this will be flagged and further clarification from the local authority will be required before approval is granted.

Step 4

Once approval has been granted, a final email is automatically generated by the Cefas website and is sent to the Requester containing a link to download the data.

It should be noted that the Cefas website cannot process batch requests, so data points have to be requested individually, resulting in the likelihood of SEPA having to approve multiple requests for a single project.

Why do I need to know this?

There has already been requests via other routes into SEPA for access to this data. It is important that all requests are co-ordinated via the process defined above. As SEPA have been entrusted to vet and approve external access to this data, it is imperative we make sure we are doing all we can to ensure this data is only being used for the purposes it has been developed and granted access for.

SEPA will keep a record of all requests and will work with local authorities to make sure this dataset is being used as fully and as widely as possible, within the terms of licence.

What should I do if asked about this dataset?

If SEPA staff are asked about access to the wave hindcast dataset, particularly by a local authority, they should direct the person(s) to the Flooding mailbox, asking for the form to be sent to them for completion. Any technical questions can be directed to the Flood Forecasting and Warning team.

Request for Cefas WaveNet Hindcast Data

This document should be completed by a Local Authority if WaveNet Hindcast data is required for a project under statutory responsibilities detailed by the Flood Risk Management (Scotland) Act 2009. Upon completion of this document, it should be forwarded to flooding@sepa.org.uk before any download has been requested via the Cefas website (http://wavenet.cefas.co.uk/hindcast). Upon receipt of this document, the Local Authority or consultant acting on their behalf should enter the above email address when downloading the points from the Cefas website in the Project Manager's Email field. SEPA staff will approve this request if the information specified in the download request correlates with this document. SEPA staff will not download the data on behalf of others.

Local Authority Information	
Local Authority:	
Project Title:	
Contact Name:	
Address:	
Telephone:	
Email:	
Date of request:	

Consultant Information	
Consultant:	
Contact Name:	
Address:	
Telephone:	
Email:	

Download Request Details	
Who will download the data?	Local Authority / Consultant
Project Code*:	
No. points to be requested:	
List of point ID(s):	

Start Date:		End Date:	
Parameters (delete as necessary):	dir fp hs hs0 hs1 hs2 hs3 pe0 pe1 pe2 pe3 si0 si1 si2 si3 sip0 sip1 sip2 sip3 spr tm te te0 te1 te2 te3 th0 th1 th2 th3 thp0 thp1 thp2 thp3 tm0 tm1 tm2 tm3 tp0 tp1 tp2 tp3 tz tz0 tz1 tz2 tz3 u10 v10		

* This does not have to be an official project code, but a description or abbreviation of the Project Title and should be consistent with all download requests detailed within this document.

Please contact flooding@sepa.org.uk if you require further information.
