Flood Risk Management Strategies

Digest of consultation responses

December 2015

Digest of Consultation Responses: Contents

Executive Summary

About the consultation

SEPA and the 14 lead local authorities jointly consulted on the delivery of flood risk management in Scotland. The purpose of the consultation was to seek views from everyone – from individuals and businesses at risk of flooding, from interested community groups as well as from those organisations with an interest in how flood risk is managed and delivered. This digest contains a summary of the responses and explains how we have taken account of these views in preparing the Flood Risk Management Strategies.

SEPA is responsible for producing a Flood Risk Management Strategy for each of the 14 Local Plan Districts. These strategies will set objectives and select the most sustainable combinations of actions to address flooding in the areas at greatest risk, where the benefits of intervention can have the greatest impact. Taken together, the 14 Flood Risk Management Strategies will provide a national plan for Scotland.

Who responded?

We received responses from 220 individuals or organisations and wish to thank everyone who took the time to tell us their views. The majority (72%) of respondents were individuals. There were also a large number (16%) of interest and community groups (including charitable organisations and non-governmental organisations) that responded. The remainder were responsible authorities designated under the Flood Risk Management (Scotland) Act 2009 (5%), other public bodies (2%), businesses (4%), and consultancy (<0.5%).

SEPA has worked in close partnership with responsible authorities to produce the Flood Risk Management Strategies; hence 27 of the 36 responsible authorities chose not to respond to the consultation.

Key messages from the responses

1. Flood risk management planning

There was support for the production of the Flood Risk Management Strategies and the collaborative approach taken to long-term flood risk management planning. A number of community groups, non-government organisations and public bodies expressed a desire to be more closely involved in flood risk management planning as the actions are developed and planned in detail. A small number of respondents recognised and emphasised the importance of taking a catchment-based approach to managing flooding. Some respondents wished to see greater consideration of erosion as part of flood risk management planning.

2. Understanding of flood risk

The consultation set out our current understanding of flood risk in each Local Plan District, based on work by SEPA and the responsible authorities to share and collate their knowledge. Most respondents agreed the information presented was accurate, and a number of respondents provided additional information on historical floods. A large number of

respondents expressed low confidence in the coastal assessment of flood risk (predominately in the North East Local Plan District) due to lack of inclusion of the impacts of wave overtopping. Some respondents also felt the assessment of flood risk should give greater consideration of flood damages to other receptors, including effects on human health and wellbeing.

3. Objectives to managing flood risk

In the consultation, we proposed objectives to manage flood risk: these objectives are a common set of goals agreed by SEPA and the responsible authorities. There was general support for the objectives, with very few respondents expressing disagreement. Some respondents requested new or amended objectives for their community.

4. Actions to manage flood risk

We proposed a shortlist of actions to meet the objectives. There was good support for flood warning, land use planning and surface water actions, but a mixed support for other actions. New actions were requested for a number of communities. Respondents wished to see more information on the proposed actions. A number of respondents identified criteria that they consider to be important for the selection and prioritisation of actions.

Next steps

We note the support for the overall approach to flood risk management planning, the understanding of flood risk, and the proposed objectives and actions. This gives us confidence to proceed with producing the Flood Risk Management Strategies.

In preparing the Flood Risk Management Strategies, we have taken account of the responses to the consultation in the following ways:

- Reviewed and, where appropriate, amended descriptions of past floods based on the information provided by respondents;
- Included objectives for managing flood risk to transport, utilities, and designated environmental and cultural heritage sites;
- Reviewed the requests for new actions: these actions are included, in many cases, in flood protection and natural flood management studies;
- Developed more detailed descriptions of the actions, including their economic, social and environmental impacts and links with river basin management planning;
- Included greater recognition of flood risk from wave overtopping when selecting and prioritising actions;
- Grouped together the delivery of some flood protection and natural flood management actions across catchments to emphasise the importance of considering upstream and downstream effects as well as effects across coastal areas.

The Flood Risk Management Strategies will be published in December 2015.
Shortly afterwards in June 2016, the lead local authority in each Local Plan District – on behalf of the local authorities in Scotland – will publish delivery plans clearly setting out how flood risk will be managed, coordinated, funded and delivered between 2016 and 2021.

1 Introduction

SEPA and the 14 lead local authorities jointly consulted on the delivery of flood risk management in Scotland. The purpose of the consultation was to seek views from everyone – from individuals and businesses at risk of flooding, from interested community groups as well as from those organisations with an interest in how flood risk is managed and delivered. This digest contains a summary of the responses and explains how we have taken account of these views in preparing the Flood Risk Management Strategies.

1.1 About Flood Risk Management planning

The Flood Risk Management (Scotland) Act 2009 introduced a new plan-led approach to flood risk management in Scotland. The legislation aims to reduce overall flood risk in the most sustainable manner.

SEPA, in collaboration with partners, is producing Flood Risk Management Strategies to set out the future direction and priorities for managing flooding. The strategies will:

- Identify the hazards and risk of flooding from rivers, the sea and surface water;
- Set objectives for managing flood risk;
- Select the most appropriate combination of actions to meet the objectives;
- Prioritise the delivery of actions to one of three cycles (2016 - 2021; 2022 - 2027; 2028 and beyond).

The strategies will be supplemented with Local Flood Risk Management Plans produced by lead local authorities that describe the delivery and funding arrangements for the agreed priorities. Flood Risk Management Strategies and Local Flood Risk Management Plans are at the heart of our coordinated efforts to tackle flooding in Scotland.

For the purposes of flood risk management planning, Scotland has been arranged into 14 Local Plan Districts. Within each Local Plan District, SEPA has identified priority areas where the risks of flooding are agreed to be nationally significant: these areas are known as Potentially Vulnerable Areas (PVAs). The Local Plan Districts and Potentially Vulnerable Areas were identified following a public consultation by SEPA in 2011[1].

1.2 Preparing the plans

SEPA and the lead local authorities have worked in partnership with other responsible authorities (local authorities, Scottish Water, National Park Authorities and the Forestry Commission Scotland) to prepare the Flood Risk Management Strategies and Local Flood Risk Management Plans. This has been done through formal partnership groups for each Local Plan District. SEPA will continue working in partnership with responsible authorities to support the delivery of actions and the preparation of future Flood Risk Management Strategies and Local Flood Risk Management Plans. Given the extent of collaboration with responsible authorities as part of the preparation of the Flood Risk Management Strategies,

[1] SEPA (2011) Flooding in Scotland: a consultation on Potentially Vulnerable Areas and Local Plan Districts: http://www.sepa.org.uk/regulations/consultations/closed-consultations/

27 of 36 responsible authorities chose not to respond to the consultation (see section 1.5 below).

Scottish Natural Heritage, Category 1 responders and other stakeholders have been involved in the preparation of the plans through national and local advisory groups, forums, and through specific requests for specialised advice.

Cross border coordination and input from the responsible authorities in England was facilitated by the Cross Border Advisory Group.

1.3 Consultation arrangements

SEPA and the lead local authorities jointly consulted on the Flood Risk Management Strategies and Local Flood Risk Management Plans for a period of 23 weeks from 22 December 2014 to 2 June 2015.

Each Local Plan District had its own consultation containing the following information:

- A short overview document defining the Local Plan District, the flood risk authorities involved and a summary of flood risk;
- Documents describing flood risk from rivers, the sea and surface water across the Local Plan District;
- Documents describing flood risk and existing actions to manage flood risk in Potentially Vulnerable Areas;
- Proposed objectives and a shortlist of potential actions to manage flood risk. Each action was accompanied by a generic description of the type of action, but was not described in detail at this short-listing stage.
- A delivery plan developed by the lead local authority that set out the proposed timescales and funding arrangements for implementation. (Responses to this section of the consultation will be analysed by lead local authorities.)

The consultation was carried out in two phases. From 22 December 2014 background information on current and future flood risk was available; from 2 March 2015 further information on how flooding should be managed, co-ordinated, funded and delivered was available, along with consultation questions.

SEPA also consulted on a Strategic Environmental Assessment Environmental Report, which identified the significant environmental effects of the Flood Risk Management Strategies. The consultation responses to the Environmental Report do not form part of this consultation digest.

1.4 Format of consultation

The main access channel for the consultation was through an online hub accessible from the SEPA website that provided a central point of access for the 14 individual Local Plan District consultations. The online hub was designed to be straightforward for members of the public to identify their relevant consultation via postcode search facilities or by using the interactive map. Once within a consultation, the documents were broken down into smaller

sections to enable responders to navigate to their area of interest easily, again via use of the interactive map. Documents could be viewed online or downloaded and people were able to respond to questions and upload supporting information if required.

Paper copies were placed in 11 SEPA offices for the public to view. Electronic copies were provided to National Advisory Group members and local authorities, some of whom held community events and provided additional copies of relevant documents and response forms in community facilities such as public libraries.

Local authorities were able to publicise the link to the online hub through their own materials and web pages. Opportunities were provided in the online consultations and in all SEPA promotion materials (see below) to contact SEPA via phone, email or letter for any queries, including requests for documents in different formats or languages.

The consultation was publicised in the following ways:

- Public notices in The Herald, Edinburgh Gazette, Scotsman and Press and Journal;
- SEPA communication channels: SEPA press release; SEPA Update, SEPA website, SEPA social media channels and the Floodline website;
- National Farmers Union Scotland communication channels: information provided by SEPA to distribute to members;
- Adverts in Scottish Farmer, The Herald, Scotsman and Press and Journal;
- Consultation notice included in Flooding Gateway, SEPA's public newsletter on flooding;
- Article in Royal Environment Health Institute of Scotland magazine;
- SEPA publicised and attended some regional events to promote the consultation;
- A reminder was sent through social media channels one month prior to the consultation close.

We also used our flood risk management advisory groups to ensure that organisations with a particular interest in flooding were consulted. This included:

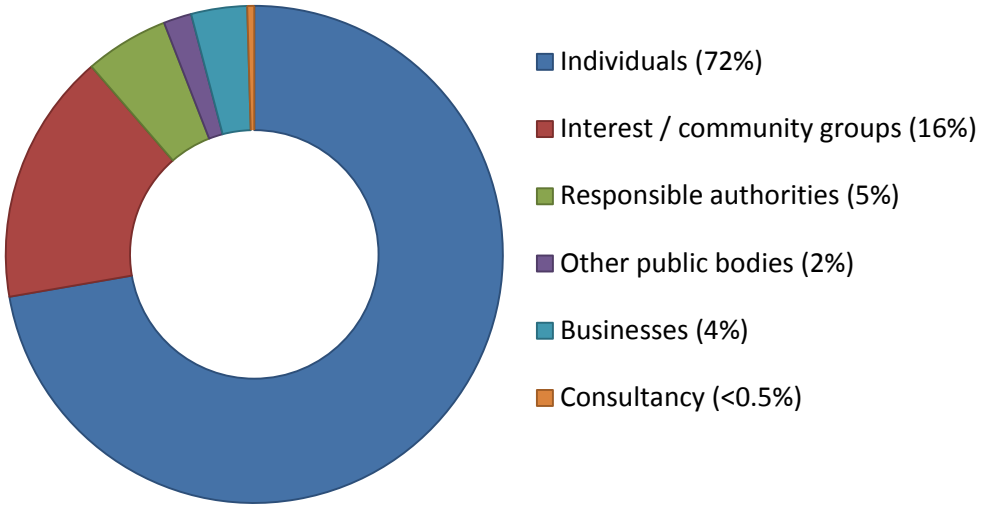
- Specific briefings to Local Advisory Groups on the content of the consultation and how to respond;
- Letters to National Advisory Group members to inform them at the start of the consultation.

1.5 Who responded?

We received responses from 220 individuals and organisations, and wish to thank everyone who took the time to tell us their views. The majority (72%) of respondents were individuals. There were also a large number (16%) of interest and community groups (including charitable organisation and non-governmental organisations) that responded. The remainder were responsible authorities designated under the Flood Risk Management (Scotland) Act 2009 (5%), other public bodies (2%), businesses (4%), and consultancy (<0.5%). Figure 1.1 shows a summary of the respondents by type.

Over half the responses (134) were for the North East Local Plan District, predominantly due to a high interest in the consultation from the Stonehaven community. We also received a notable number of responses (25) for the Forth Estuary Local Plan District, predominantly due to interest from the communities in Denny and Dunipace. All other Local Plan Districts received between two and 12 responses. A full list of respondents for each Local Plan District can be found in appendix 1.

Figure 1.1: Respondents by type*



* A rounding of percentages has been applied

2 Flood risk management planning

Flood risk management planning in Scotland aims to take a risk based approach to managing flooding in the most sustainable way. It requires organisations to work in partnership to manage flooding across river catchments and coastal areas. In their consultation responses, respondents told us their views on the overall approach to flood risk management planning. The key points are summarised below.

2.1 Overview

There was support for the production of the Flood Risk Management Strategies and the collaborative approach taken to long-term flood risk management planning, predominantly but not exclusively from national responders. One responsible authority recognised the positive relationships that have developed among flood risk management organisations as a result of the partnerships and forums set up to support flood risk management planning.

2.2 Involvement of other organisations

A number of community groups, non-government organisations and public bodies expressed a desire to be more closely involved in flood risk management planning, particularly as the actions are developed and planned in detail.

2.3 Catchment scale approach

The Flood Risk Management Strategies aim to take a catchment-based approach to managing flooding by considering an area of flood risk within its wider geographical context. A small number of respondents emphasised the importance of this approach by considering, for example, the upstream and downstream effects of actions, the effects of actions in combination with each other, and the effects of actions across coastal areas.

2.4 Erosion

The Flood Risk Management Act (Scotland) 2009 does not require SEPA or responsible authorities to assess or manage coastal erosion. Coastal erosion is addressed in legislative terms under the Coast Protection Act 1949, which provides local authorities with permissive powers to undertake works to protect the coast against erosion and encroachment by the sea.

A number of respondents noted that coastal and river erosion is not explicitly factored into flood risk management planning. Respondents requested that erosion should be considered alongside flood risk and asked for actions to help reduce erosion.

One public body noted the importance of developing flood risk management actions with full consideration of the interaction between coastal flooding and erosion. It also noted local areas where national-scale models of coastal erosion susceptibility do not accurately reflect the local coastal processes.

SEPA response
We welcome the support for the production of the Flood Risk Management Strategies. We also welcome responses from individuals and organisations who expressed an interest in being more closely involved, and we will agree with local authorities how best to involve these parties in future planning.

The approach to flood risk management planning uses a catchment scale approach (see section 2.3 above). In the Flood Risk Management Strategies, we have grouped together the delivery of some flood protection and natural flood management actions across catchments to emphasise the importance of considering upstream and downstream effects as well as the effects across coastal areas.

Under legislation, SEPA does not have powers to specifically address coastal erosion but we have included consideration of erosion in the Flood Risk Management Strategies by identifying areas that are likely to be susceptible to erosion and therefore where erosion can exacerbate flood risk. As part of considering where actions might deliver multiple benefits, we have looked to see where the focus of coastal flood risk management studies coincides with areas of high susceptibility to coastal erosion. Subsequent detailed studies and scheme design will need to consider how coastal actions interact with coastal erosion as this cannot be assessed at the strategic level.

3 Understanding flood risk

In producing the Flood Risk Management Strategies, we have collectively significantly advanced the understanding of flood risk across Scotland. We have produced a National Flood Risk Assessment, as well as more targeted detailed flood hazard and flood risk mapping, which for the first time provides a national picture of flood risk. Knowledge of flooding, including information on historical floods, has been shared among flood risk management organisations. This information provides the evidence we and others need to take a risk-based approach to managing flooding.

The consultation contained a summary of the flood risk in each Local Plan District, and described the flooding caused by rivers, surface water and the sea. We also included detailed information on flooding for each Potentially Vulnerable Area. We asked respondents to express their views on the accuracy of the information presented.

3.1 Overview

We published information on flooding in each Local Plan District and asked:

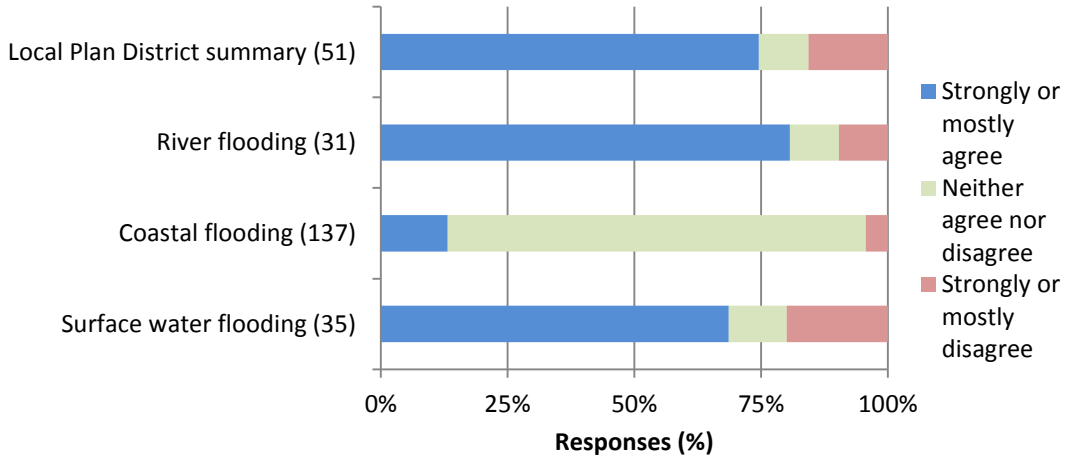
- *Do you agree or disagree with the accuracy of flooding information provided in this Local Plan District?*
- *Do you agree or disagree with the accuracy of information provided on river flooding?*
- *Do you agree or disagree with the accuracy of information provided on coastal flooding?*
- *Do you agree or disagree with the accuracy of information provided on surface water flooding?*

There was general agreement on the accuracy of flood risk information (see figure 3.1). Around three quarters of responses strongly or mostly agreed with the accuracy of information on river flooding and surface water management flooding, and the Local Plan District summary.

The agreement on the accuracy of coastal flooding was different to that for river and surface water flooding. A majority of responses - 113 of 137 responses (82%) - neither agreed nor disagreed with the accuracy of coastal flooding information. These 113 responses were all from the Stonehaven community, where respondents agreed that the description of coastal flooding was broadly accurate but disagreed with the risk described for Stonehaven; this is discussed further below. Of the remaining responses for the rest of the country, three quarters of responses strongly or mostly agreed with the accuracy of coastal flooding information.

We have summarised the key themes from the responses in sections 3.2 – 3.5 below.

Figure 3.1 Views on the accuracy of flooding information by source of flooding (number of responses in parentheses)



3.2 Coastal flood modelling

Over half of respondents raised concerns over the accuracy of coastal flood modelling. Concerns were mostly, but not exclusively, for the North East Local Plan District (notably for Stonehaven, Banff and Macduff). The respondents expressed a lack of confidence in the coastal flood hazard models due to the lack of inclusion of wave overtopping in the models. The respondents also felt that climate change, sea level rise and storm surge were not appropriately accounted for in the models. The respondents therefore felt that flood damages were underestimated, and that new objectives and actions were required for affected communities.

SEPA response

We acknowledge that coastal flood risk may be underestimated in some locations. This is because the underlying national modelling carried out by SEPA does not include the effects of wave overtopping. Wave overtopping cannot be accurately modelled at a national scale due to the importance of local factors such as prevailing wind conditions, the depth and profile of the near-shore sea bed or the influence of any existing defences or management structures.

To address this, in a number of locations where more detailed local models were available they have been incorporated into the development of the Flood Risk Management Strategies. Where wave overtopping has been specifically identified as a concern – but where no further detailed modelling is available – particular compensation has been made in the selection of appropriate actions to address coastal flood risk.

In some areas local authorities have prioritised future studies that specifically consider the issue of wave overtopping. To support local authorities, SEPA is developing guidance on the modelling of all sources of flooding including coastal flooding and the consideration of wave

overtopping. The outputs of local models, if developed by local authorities in accordance with the guidance, will be included in SEPA's future national flood maps and assessments.

We have also updated the data used to prioritise flood protection studies so as to accommodate this risk to a greater extent. Even using the best available data and information, local coastal flood risk may remain underestimated in the Flood Risk Management Strategies.

SEPA recognises the risks posed by future climate change and is developing guidance on how to apply the latest information to forthcoming flood risk management studies. This will improve the resilience of actions to manage future flooding.

3.3 Assessment of flood risk

Over half of respondents raised concerns that our assessment of current flood risk may have been underestimated. The main reasons for concern are summarised below.

- A large number of respondents felt that the coastal flood modelling underestimates flood hazard and therefore flood risk (see 3.2 above);
- A large number of respondents felt that flood damages were too focussed on economic damages to property. These respondents requested that greater consideration should be given to damages to other receptors, for example, environmental and historic sites, human health and wellbeing, agricultural land, recreation opportunities, businesses, tourism, and vulnerable infrastructure in rural areas;
- A small number of respondents queried the accuracy of datasets used to establish our assessment of flood risk. For example, where flood risk has altered or increased due to recent development; or where baseline damages do not included a receptor known to have flooded in the past;
- Some respondents queried why the annual average damages in the consultation were lower than those published in SEPA's National Flood Risk Assessment and lower than damages observed in an actual flood event.

A small number of organisations made suggestions for improving the assessment of baseline damages and offered data on infrastructure assets for use in future planning cycles. One public body expressed concern that an increased incidence of flooding in the future, due to climate change, may have an adverse effect on some designated environmental sites.

SEPA response

SEPA's assessment of flood risk is based upon standard flood risk management appraisal methods used across the UK by local and national government, industry and academia. Our appraisal method has been peer reviewed and agreed with responsible authorities and the Scottish Government.

Our assessment of flood risk is already based on a combination of economic, social and environmental factors. Some aspects can be readily monetised and this enables a consistent comparison of flood damages, and associated benefits from avoiding these damages. Where monetary information is not readily available, we have used quantitative and qualitative information to help assess other impacts of flooding. Impacts on environmental sites and cultural heritage sites have been agreed with Scottish Natural Heritage and Historic Scotland. A full method statement can be found on the SEPA website from December 2015.

The assessment is strategic and does not quantify every possible flood impact. The assessment required nationally consistent datasets. Where additional data sources have been suggested, we will investigate these for future assessments.

Since the publication of the National Flood Risk Assessment, we have developed our flood models to enable the estimation of flood hazard, including depth and velocity of flooding, for a wider range of return periods. An improved ground model also supported the development in flood hazard estimation hence the discrepancy between estimates of flood damages (which have now been significantly improved). Our estimates of flood damages are economic damages (to the nation) and are adjusted based on the probability of flooding: they are therefore not directly comparable with the damages from a single flood event, where damages are usually financial costs (to the individual).

3.4 Historical floods

We asked respondents whether all major floods had been identified within the Flood Risk Management Strategies. We received a large number of responses identifying floods that had not been included in the consultation or providing additional information on sources, pathways, receptors and damages for floods already described. Additionally, respondents from Stonehaven felt that the description of historical floods did not appropriately describe the social and human health impacts of flooding.

SEPA response

We welcome the information provided by respondents on past floods.

We have checked the descriptions provided and updated the Flood Risk Management Strategies where appropriate. Some of the information is too detailed for us to publish in the Flood Risk Management Strategies but will be used to inform further studies.

A number of the floods described by respondents were not considered to be nationally significant for inclusion in the Flood Risk Management Strategies.

The information provided by respondents will be added to the national flood event database

and can be used to help inform future flood hazard modelling and flood risk assessments, and may be used to inform local studies.

3.5 Other comments

We received a small number of other comments, including:

- **Flood modelling**
  One business requested that SEPA improve the granularity of flood maps in Scotland to enable property level assessment. We also received a request from an individual for greater investment in national flood modelling.
  A small number of respondents identified structures that provide protection from coastal flooding and erosion or identified studies that might provide additional information on flood hazard.

- **Surface water management**
  One community council felt that issues such as health and safety should also inform the identification of surface water management priority areas, in addition to the property and damages thresholds.

- **Boundaries of Potentially Vulnerable Areas**
  We received a small number of requests to clarify why Potentially Vulnerable Areas include areas of elevated ground that are not at risk of flooding. We also received a small number of requests to geographically expand Potentially Vulnerable Areas.

SEPA response

Flood maps

SEPA's national flood maps are not appropriate to use for assessing flood risk to an individual property and are therefore not permitted for use by insurance companies. We are continuing to invest in flood mapping: we are improving our strategic flood models and maps for a range of river and coastal catchments, and are increasing the coverage of maps for surface water flooding.

Surface water management priority areas

Surface water management priority areas have been identified where there is a significant surface water flood risk. These areas have been agreed with local authorities who will lead in taking forward plans and actions in these areas. We do not intend to adjust them at this stage. The basis for defining significant risk was the National Flood Risk Assessment that SEPA carried out in 2011, which used a threshold of 50 or more residential properties at risk of flooding in the 1 in 200 year flood event or Weighted Annual Average Damages equivalent to 50 residential properties.

When identifying the areas of significant surface water flood risk SEPA recognised that in addition to using the SEPA strategic surface water modelling and mapping to determine when thresholds were reached, consultation with the Local Plan District groups was important to ensure the SEPA information was verified and supplemented with local knowledge. This allowed other evidence to inform the identification of priority areas such as evidence from historical surface water flooding and any other evidence from responsible authorities e.g. more detailed modelling.

Boundaries of Potentially Vulnerable Areas

Potentially Vulnerable Areas are subcatchment units that contain areas of nationally significant flood risk: their designation does not imply that the entire Potentially Vulnerable Area is at risk of flooding. The boundaries of Potentially Vulnerable Areas were designated in 2011 following a public consultation and will not be altered for the publication of the first Flood Risk Management Strategies. Boundaries will be reviewed as part of the second National Flood Risk Assessment (due in 2018). Local authorities may include objectives and actions to address flood risk outwith Potentially Vulnerable Areas in the Local Flood Risk Management Plans.

4 Objectives for managing flooding

The Flood Risk Management Strategies set objectives to manage flood risk. The objectives were developed in partnership with the relevant responsible authorities and advisory groups prior to consultation.

The objectives set out our agreed aims and ambition for managing flooding. There are three different types of objectives that have been set: to reduce flood risk; to maintain existing actions and accept flood risk; and/or to avoid an increase in flood risk. We asked respondents to tell us whether they agreed with the proposed objectives.

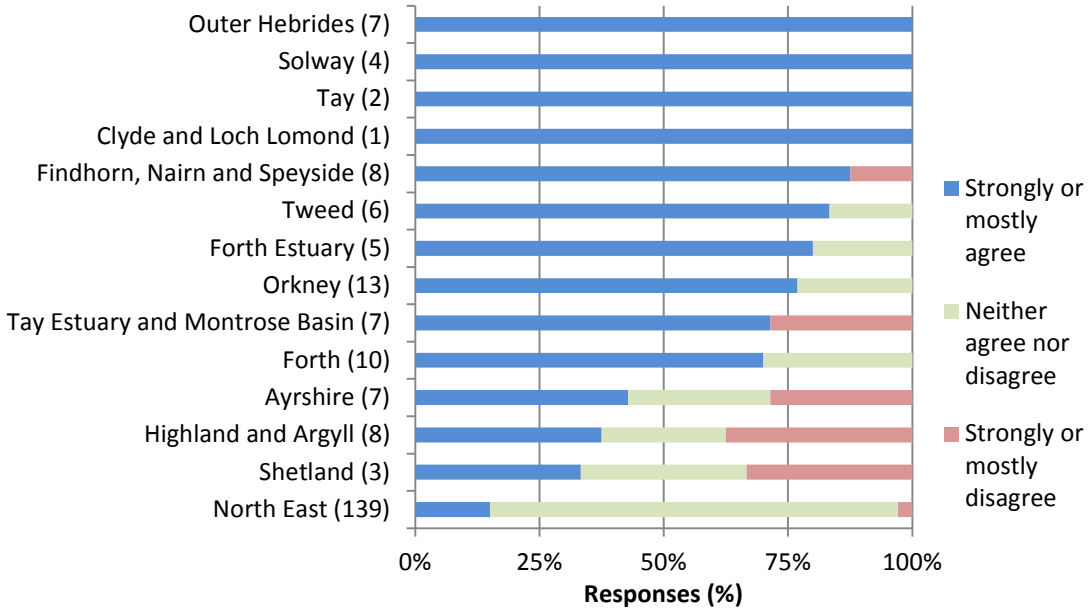
4.1 Overview

We set objectives for managing flood risk and asked:

- *Do you agree or disagree that the objectives address the flood risk described in this Potentially Vulnerable Area?*

There was general support for the proposed objectives: across all 14 consultations, only 13 responses (out of a total of 220) mostly or strongly disagreed that the objectives address flood risk.

Figure 4.1 Views on whether the objectives address flood risk, by Local Plan District (number of responses[2] in parentheses)



[2]Number of responses received from all Potentially Vulnerable Areas in the Local Plan District. A respondent may have responded to this consultation question for more than one Potentially Vulnerable Area.

The level of support within each Local Plan District is shown in figure 4.1. In 10 Local Plan Districts, over 50% of responses strongly or mostly agreed with the proposed objectives (Outer Hebrides, Solway, Tay, Clyde and Loch Lomond, Findhorn Nairn and Speyside, Tweed, Forth Estuary, Orkney, Tay Estuary and Montrose Basin, and Forth). Note that there are small numbers of responses for many Local Plan Districts so patterns should be interpreted with caution.

The largest number of responses (139) was received for the North East Local Plan District. The majority of responses (82%) for this Local Plan District neither agreed nor disagreed that the proposed objectives would address the flood risk described; all these 'neither' responses were from the Stonehaven community and the reasons for this are discussed in section 4.2 below.

Where respondents disagreed with the objectives, the reasons for disagreement in many cases related to requests for additional actions rather than to the objectives *per se*. We have summarised the relevant key themes from the responses in sections 4.2 – 4.3 below.

4.2 Requests for new or amended objectives

A large number of respondents requested new or amended objectives to address flood risk. These are summarised below:

- **New communities**
  There were a small number of requests to set new objectives to address flood risk in communities (e.g. Catterline (PVA 06/23); Falkland (PVA 07/19); Eday (Orkney Local Plan District); Dallas (upstream of PVA 05/05)), or to amend existing objectives to include adjacent parts of the community (e.g. Dalbeattie (PVA 14/19), Stronsay (PVA 03/02), Lewiston (PVA 01/21)).

- **New receptors**
  There were a small number of requests to amend objectives to include other receptors, such as the inclusion of transport links in Drumnadrochit/ Kilmichael (PVA 01/21) or inclusion of all receptors at flood risk in Denny/Dunipace and Bonnybridge/Banknock (PVA 10/11).

- **New sources of flooding**
  There were a large number of requests for additional or amended objectives to protect their communities from other sources of flooding, for example:
  - In the North East Local Plan District, there were requests for objectives to reduce flood risk from wave overtopping in Banff (PVA 06/03), Macduff (PVA 06/04), and Stonehaven (PVA 06/23) and wave overtopping and surface water in Catterline (PVA 06/23). Similarly, in Golspie (PVA 01/16), there was a request for objectives to address wave action and overtopping;
  - There were a number of requests for objectives to address erosion and bank stability in the River Carron, around Denny and Dunipace (PVA 10/11).

- **Wider drivers or constraints**
  There were also a small number of requests for objectives to include wider drivers or constraints that may influence the selected actions: these include recognition of strategically important hydropower assets (PVA 01/26), recognition of climate change (PVA 12/03), and managing rural rivers in a sustainable way (PVA 01/21).

SEPA response
The objectives have been set to focus on flood risk management and they have been developed and agreed with other responsible authorities. Following consultation responses, we have added objectives for transport, utilities, historic sites and environmental sites, and these have been agreed with the relevant public body or asset owner.

We have reviewed the requests for new or amended objectives for communities. We have added new objectives to reduce flood risk along the Solway and Ayrshire coastlines. In some cases, the underlying flood risk did not meet national thresholds set for significance and so specific objectives have not been set.

Requests for objectives for communities outwith Potentially Vulnerable Areas will be considered by local authorities and may be included in the Local Flood Risk Management Plans.

Wider drivers and constraints, including links between erosion and flooding (see section 2.4) are considered as part of the appraisal of actions and will be considered further during more detailed studies.

4.3 Other comments

One community / interest group requested justification for why objectives had not been set for all areas or receptors shown to be at flood risk within a Potentially Vulnerable Area.

SEPA response
Within a Potentially Vulnerable Area, objectives have been set only where areas or receptors are at significant flood risk. This approach retains a focus on areas where actions will deliver the most benefit.

We have also set objectives to avoid an increase in flood risk, which apply across all Local Plan Districts. Actions such as land use planning, flood alerts, property level protection, self-help and awareness raising will help to meet these objectives.

5 Actions to manage flooding

The Flood Risk Management Strategies will select a range of actions to meet the objectives for managing flood risk. The actions may include engineered structural actions such as flood protection schemes or flow control structures, natural flood management actions such river restoration or managed realignment, and non-structural actions such as flood warning, land use planning and surface water management planning.

In the consultation, we presented a shortlist of actions under consideration for each objective. The consultation sought views from the public and interested organisations on the potential actions. The consultation responses and an assessment of costs and benefits have helped inform the final selection of actions.

5.1 Overview

We published a list of potential flood risk management actions to meet objectives at both the scale of the Local Plan District and Potentially Vulnerable Area. We asked:

- *Do you agree or disagree with the proposed flood warning actions set to achieve the objectives in this Local Plan District?*
- *Do you agree or disagree with the proposed land use planning actions set to achieve the objectives in this Local Plan District?*
- *Do you agree or disagree with the surface water management actions set to achieve the objectives in this Local Plan District?*
- *Do you agree or disagree that the potential actions achieve the objectives in this Potentially Vulnerable Area?*

There was good support for flood warning, land use planning and surface water actions (figure 5.1) with over 77% of responses strongly or mostly agreeing that these actions would meet the objectives in the Local Plan Districts. Less than 6% of responses strongly or mostly disagreed with these actions. Patterns of responses were similar across all Local Plan Districts.

There was mixed agreement on whether the other potential actions achieve the objectives for Potentially Vulnerable Areas, with different patterns of responses across Local Plan Districts (figure 5.2). In nine Local Plan Districts, over 50% of responses strongly or mostly agreed with the proposed actions (Outer Hebrides, Findhorn Nairn and Speyside, Clyde and Loch Lomond, Forth Estuary, Orkney, Forth, Shetland, Tweed and Ayrshire). Note that there are small numbers of responses for many Local Plan Districts so patterns should be interpreted with caution.

The largest numbers of responses were for the North East Local Plan District where over 85% of responses strongly or mostly disagreed with the proposed actions, predominantly from the community in Stonehaven.

We have summarised the key themes from the responses in sections 5.2 – 5.6 below.

Figure 5.1 Views on whether the flood warning, land use planning and surface water actions address the flood risk management objectives (number of responses in parentheses)

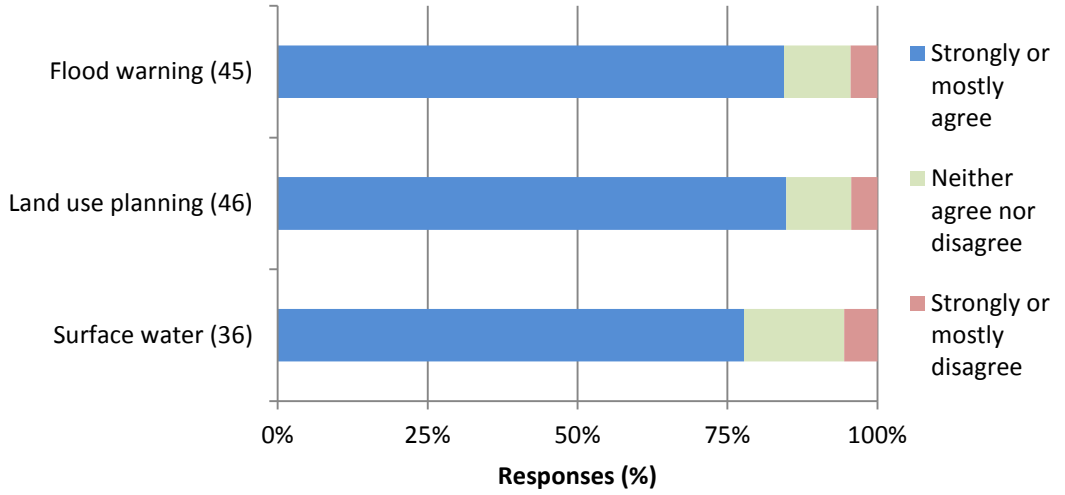
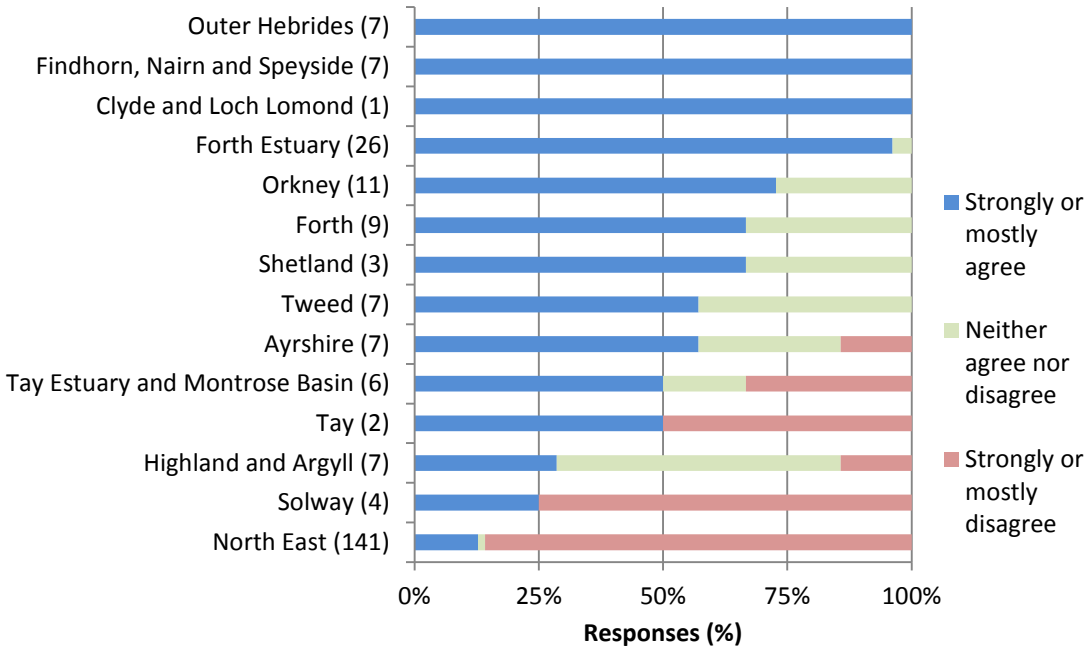


Figure 5.2 Views on whether the potential actions address the flood risk management objectives, by Local Plan District (number of responses[3] in parentheses)



[3] Number of responses received from all Potentially Vulnerable Areas in the Local Plan District. A respondent may have responded to this consultation question for more than one Potentially Vulnerable Area.

5.2 Support and concerns for actions

There was support for a range of different actions across different Potentially Vulnerable Areas. Two national organisations supported many of the natural flood management actions and welcomed actions that can help to deliver multiple benefits. Another national organisation expressed particular support for flood warning schemes, land use planning actions and property level protection, and suggested mechanisms to help maximise the benefits of these actions.

A small number of respondents expressed concern over the appropriateness or efficacy of some actions. Some structural actions were thought to be inappropriate, given hydropower activities (Castle Douglas (PVA 14/11)) or local environmental considerations (several Potentially Vulnerable Areas in the North East Local Plan District and Kinlochewe (PVA 01/13)). One business expressed concern over the use of prime agricultural land for flood storage and one individual felt property level protection would be ineffective.

SEPA response

We welcome the general support for flood risk management actions. Land use planning actions, property level protection, flood warning schemes and many natural flood management actions have been subsequently selected for inclusion in the Flood Risk Management Strategies. Local authorities will be able to draw upon the responses provided to help implement actions.

We note the potential constraints of some of the actions – these concerns will be examined in subsequent detailed studies. These studies will take into account the specific local conditions and concerns to ensure that the solutions developed are effective, balanced and appropriate.

In a small number of cases, actions have been removed from the Flood Risk Management Strategies, simultaneously removing concerns raised by respondents.

5.3 Requests for new actions

We received requests for a wide range of new actions, from actions to protect individual properties to actions that are relevant across the whole of Scotland.

Actions relevant across the whole country include a small number of requests to improve the effectiveness of sustainable drainage systems (SUDS) regulation and to improve accountability of landowners to manage runoff from their land.

There were also a number of suggestions for improvements to flood warning services and expansion of flood warning services to new areas.

We received suggestions for new actions for over 30 Potentially Vulnerable Areas (to meet requests for new or amended objectives; see section 4.2 above). A range of actions were requested, for example:

- Wider consideration of potential for natural flood management;
- Consideration of flood risk to be included in the licence conditions for tree felling;
- Studies to improvements the understanding of existing surface water drainage (Scone (PVA 08/11), Peebles (PVA 13/04));
- Actions to address wave overtopping and to reduce river flood risk in Stonehaven (PVA 06/23).

SEPA response

Sustainable drainage systems
There are a number of public bodies involved in the approval, adoption and maintenance of sustainable drainage systems. A working group has been set up with SEPA, Scottish Government, Scottish Water and local authorities to address the issues raised by the responses that relate to implementation of sustainable drainage systems.

Flood forecasting and warning service
Of those areas where new flood warnings were requested, one area includes a flood warning scheme which is already being planned and two areas have been identified for further examination and potential flood forecasting development in the first planning cycle. One further area has been identified for further examination in the second planning cycle.

Flood warning services are not planned for the remaining areas as the flood risk (a) did not meet the nationally significant criteria and/or (b) using current forecasting capabilities it is not feasible to deliver effective warnings due to technical factors (such as a very quick response time of the watercourses and/or the availability of sufficient river and rain gauges).

New actions
Actions have been included in the Flood Risk Management Strategies that will address many of the requests received in the consultation. In the majority of cases, these actions are included in flood protection and natural flood management studies that will examine a wide range of solutions in more detail. For the Stonehaven community, a coastal study has been specifically included to examine opportunities to reduce coastal flood risk.

The studies will examine the types of actions identified in the Flood Risk Management Strategies, but may also examine other actions that might be locally relevant. In Denny and Dunipace, for example, respondents requested action to address river bank stability: this type of action although too detailed for description in the Flood Risk Management Strategies should be included as part of the flood protection study for this community.

Surface water management plans will look at surface water flooding and interactions with drainage systems. For example, the surface water management plan for Scone will further investigate existing drainage systems in Scone.

Actions to maintain watercourses are included in the Flood Risk Management Strategies and will be planned in more detail by local authorities.

Actions to protect privately owned property, including commercial property, remain the responsibility of the property owner. The Flood Risk Management Strategies recommend actions such as self-help, property level protection and flood warning services that will assist owners in taking steps to protect their own property.

5.4 Descriptions of actions

Several respondents told us that the descriptions of the actions were too generic and contained insufficient detail on the type, location and timing of the action to enable them to provide a specific response.

One example is 'sediment management': as sediment management can encompass a wide range of actions with hugely different environmental impacts, environmental organisations found it difficult to comment. A second example is 'improved understanding': this was sometimes misunderstood as an action to raise public awareness, rather than an action to carry out studies to improve understanding of flood sources, pathways and receptors.

SEPA response

The expectation of some respondents on the level of detail was clearly different to what was presented in the consultation; we believe this is due to:

- Consulting on the shortlist of actions, which contained a wide range of feasible actions rather than detailed descriptions of preferred actions;
- Differences in the expectations of the detail within a strategic level plan;
- Expectations that the timescales and delivery dates would be set in the Flood Risk Management Strategies, when in fact these will be set by the Local Flood Risk Management Plans.

The Flood Risk Management Strategies now contain additional and clearer descriptions of the selected actions, at a level of detail appropriate to a strategic study.

5.5 Appraisal of actions

A small number of individuals and some national organisations identified criteria that they consider to be important for the selection and prioritisation of actions, including:

- The benefits of reducing flood risk to other receptors (e.g. human health and wellbeing, the historic and natural environment) not just to properties;
- The recognition of wider positive and adverse effects in the selection and prioritisation of actions. These include consideration of where natural flood management actions may contribute to achieving river basin management planning objectives but also where these actions might have negative effects on the environment;

- Impact of actions on flooding and erosion elsewhere in the catchment or coastal area, including consideration of the effects of actions in combination with each other;
- Consideration of climate change when selecting coastal actions;
- Protection of existing natural features that help to mitigate flooding;
- The appraisal of existing and on-going actions.

SEPA response

At the time of the consultation, we provided a shortlist of feasible actions that were being considered to meet the objectives. We have subsequently carried out an appraisal of the costs and benefits of the actions to help inform selection and prioritisation. In doing so, we have looked at the effects on flood risk reduction and wider social, environmental and economic impacts. Links with river basin management planning have been included in our assessment of multiple benefits. More information on our method can be found in section 3.3 above.

Our appraisal uses the best available data and takes account of existing detailed studies and appraisal in support of proposed schemes. The selection and prioritisation of actions has been reviewed by local authorities and revised to incorporate additional supporting data. The prioritisation of actions has been designed to account for both economic and non-monetary elements, to acknowledge that many impacts cannot be economically assessed. We believe this addresses the concerns raised by respondents.

5.6 Delivery of existing and proposed actions[4]

We received comments relating to the delivery of existing actions, including:

- In several Local Plan Districts, respondents expressed dissatisfaction with the delivery of existing actions – notably the maintenance of flood protection structures and of clearance and repair work carried out by local authorities;
- There were a small number of responses that expressed dissatisfaction with the provision of existing flood alerts and/or flood warnings where respondents felt the warnings were too general and requested a more targeted warning;
- A number of respondents were dissatisfied with planning decisions made under the current land use planning regime, as they felt that new development was inappropriately sited in a flood risk area or that it led to an increase in flooding to other areas;
- Two respondents felt that existing sustainable drainage systems (SUDS) regulation was ineffective.

A small number of respondents expressed concern over the funding, capacity or ability of public bodies to deliver the proposed actions.

[4]Note that consultation responses on the delivery plan will be analysed and considered by the lead local authorities and so are not considered in this digest.

SEPA response

Flood forecasting and warning service

We have examined the comments relating to flood alerts and flood warnings. In three locations, SEPA is launching flood warning schemes that will provide targeted warnings. In some cases, respondents may have misunderstood the difference between flood alerts and flood warnings and may not be fully aware of the services we currently offer for their communities. SEPA flood advisors have identified areas where we will take steps to improve public awareness of and subscription to the Floodline service.

Land use planning decisions

We note the comments concerning land use planning decisions, which are a matter for the local planning authorities. SEPA's role is to provide advice on a range of environmental issues (including flood risk) to planning authorities. We continually review, update and refine the land use planning guidance relating to flood risk that is available to planning authorities and other stakeholders (such as developers) to make it more relevant and accessible. In addition, we are monitoring the effectiveness of our planning advice and will review how we provide our advice to improve its effectiveness if required.

Sustainable drainage systems

We note the concern over the existing delivery of sustainable drainage systems. In section 5.3 above, we describe the actions being taken to review implementation.

Ability and capacity to deliver the actions

The Flood Risk Management Strategies will prioritise the delivery of actions to one of three planning cycles, based on the technical understanding of the underlying risk and in agreement with the delivery bodies and their capacities. The Local Flood Risk Management Plans will provide further information on the funding and delivery of individual actions. Together these documents represent a plan of action for managing flood risk in Scotland.

6 Summary and next steps

6.1 Summary of responses

Flood risk management planning
There was support for the production of the Flood Risk Management Strategies and the collaborative approach taken to long-term flood risk management planning. A number of community groups, non-government organisations and public bodies expressed a desire to be more closely involved in flood risk management planning as the actions are developed and planned in detail. A small number of respondents recognised and emphasised the importance of taking a catchment-based approach to managing flooding. Some respondents wished to see greater consideration of erosion as part of flood risk management planning.

Understanding of flood risk
The consultation set out our current understanding of flood risk in each Local Plan District, based on work by SEPA and the responsible authorities to share and collate their knowledge. Most respondents agreed the information presented was accurate, and a number of respondents provided additional information on historical floods. A large number of respondents expressed low confidence in the coastal assessment of flood risk (predominately in the North East Local Plan District) due to lack of inclusion of the impacts of wave overtopping. Some respondents also felt the assessment of flood risk should give greater consideration of flood damages to other receptors, including effects on human health and wellbeing.

Objectives to managing flood risk
In the consultation, we proposed objectives to manage flood risk: these objectives are a common set of goals agreed by SEPA and the responsible authorities. There was general support for the objectives, with very few respondents expressing disagreement. Some respondents requested new or amended objectives for their community.

Actions to manage flood risk
We proposed a shortlist of actions to meet the objectives. There was good support for flood warning, land use planning and surface water actions, but a mixed support for other actions. New actions were requested for a number of communities. Respondents wished to see more information on the proposed actions. A number of respondents identified criteria that they consider to be important for the selection and prioritisation of actions.

6.2 Addressing consultation responses and next steps

We note the support for the overall approach to flood risk management planning, the understanding of flood risk, and the proposed objectives and actions. This gives us confidence to proceed with producing the Flood Risk Management Strategies.

In preparing the Flood Risk Management Strategies, we have taken account of the responses to the consultation in the following ways:

- Reviewed and, where appropriate, amended descriptions of past floods based on the information provided by respondents;
- Included objectives for managing flood risk to transport, utilities, and designated environmental and cultural heritage sites;
- Reviewed the requests for new actions: these actions are included, in many cases, in flood protection and natural flood management studies;
- Developed more detailed descriptions of the actions, including their economic, social and environmental impacts and links with river basin management planning;
- Included greater recognition of flood risk from wave overtopping when selecting and prioritising actions;
- Grouped together the delivery of some flood protection and natural flood management actions across catchments to emphasise the importance of considering upstream and downstream effects as well as the effects across coastal areas.

The Flood Risk Management Strategies will be published in December 2015.
Shortly afterwards in June 2016, the lead local authority in each Local Plan District – on behalf of all local authorities in Scotland – will publish delivery plans clearly setting out how flood risk will be managed, coordinated, funded and delivered between 2016 and 2021.

Appendix 1: List of respondents by type and Local Plan District

Table A1 lists the respondents to the consultation and identifies which Local Plan Districts the respondent commented on. Note that:

i. A respondent may have commented on more than one Local Plan District
ii. A respondent may have provided comment at a national scale as well as for a specific Local Plan District
iii. For a small number of organisations, more than one respondent submitted a response. Each respondent has been counted separately.

In total, we received responses from 220 respondents.

Table A1: Number of responses received, by respondent type and by Local Plan District

Respondent	National	Local Plan Districts													
		Highland and Argyll	Outer Hebrides	Orkney	Shetland	Findhorn, Nairn and Speyside	North East	Tay Estuary and Montrose Basin	Tay	Forth	Forth Estuary	Clyde and Loch Lomond	Ayrshire	Tweed	Solway
All respondents (220 respondents)															
All	10	12	2	5	2	5	134	9	5	6	25	5	8	8	9
Individuals (159 respondents)															
Individual		6		3			116	5		1	13	3	4	5	3
Responsible authorities (12 respondents)															
Scottish Water	1														
Forestry Commission Scotland	1														
Comhairle nan EileanSiar			1												
The Moray Council						1	1								
Aberdeenshire Council							3	1							
Clackmannanshire Council										1					
Falkirk Council Planning and Environment Unit										1	1				
Falkirk Council											1				
Fife council											1				
Glasgow City Council												1			

Respondent	National	Local Plan Districts													
		Highland and Argyll	Outer Hebrides	Orkney	Shetland	Findhorn, Nairn and Speyside	North East	Tay Estuary and Montrose Basin	Tay	Forth	Forth Estuary	Clyde and Loch Lomond	Ayrshire	Tweed	Solway
Other public bodies (4 respondents)															
Historic England	1														1
Historic Scotland	1														
Scottish Canals	1														
Scottish Natural Heritage	1	1	1	1	1	1	1	1	1	1	1	1		1	1
Interest/community groups (36 respondents)															
RSPB Scotland	1	1		1						1	1				
Scottish Flood Forum	1														
Castletown & District Community Council		1													
Conon Bridge Community Council		1													
Glen Urquhart Community Council		1													
Dallas flood group						1									
Newtonmore Community						1									
Spey Catchment Initiative						1									
Banff and Macduff Community Council							1								
Bennachie Community Council							1								
Catterline Braes Action Group							1								
Catterline Harbour Trust							1								

Respondent	National	Local Plan Districts													
		Highland and Argyll	Outer Hebrides	Orkney	Shetland	Findhorn, Nairn and Speyside	North East	Tay Estuary and Montrose Basin	Tay	Forth	Forth Estuary	Clyde and Loch Lomond	Ayrshire	Tweed	Solway
Newtonhill, Muchalls & Cammachmore Community Council							1								
Stonehaven Flood Action Coastal Flooding Group							1								
Stonehaven Flood Action Group							3								
Stonehaven Town Partnership							1								
Falkland Flood Action Group								1							
Fettercairn Flood Resilience Group								1							
Blair Atholl & Struan Community Council									1						
Scone & District Community Council									1						
The Carse of Stirling Project										1					
Carronvale Tenants and Residents Association											2				
Communities Along the Carron Association											1				
Denny & District Community Council											2				
Transition Linlithgow											1				
Peebles Community Council														1	

Respondent	National	Local Plan Districts													
		Highland and Argyll	Outer Hebrides	Orkney	Shetland	Findhorn, Nairn and Speyside	North East	Tay Estuary and Montrose Basin	Tay	Forth	Forth Estuary	Clyde and Loch Lomond	Ayrshire	Tweed	Solway
Cree Valley Community Council & Cree Valley Flood Action Group															1
Moffat Flood Action Group															1
Names not provided							1						1	1	1
Businesses (8 respondents)															
Scottish Power	1	1									1		1		1
Association of British Insurers	1														
Lerwick Port Authority					1										
CO-OP Supermarket							1								
Meikleour Trust									1						
Scottish Land & Estates Committee and Tay Local Advisory Group									1						
Irvine Young Ltd													1		
Name not provided							1								
Consultancy (1 respondent)															
AECOM													1		