



Review of preliminary flood risk assessments (Flood Risk Regulations 2009): guidance for lead local flood authorities in England

25 January 2017

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We can't do this alone. We work with government, local councils, businesses, civil society groups and communities to make our environment a better place for people and wildlife.

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1. Introduction

Flood risk management plans (FRMPs), as required by the Flood Risk Regulations (2009), play an important part in how we protect lives and livelihoods from the risk of flooding. The plans give us an opportunity to bring together information about all sources of flooding and the measures and actions being considered to manage risk and improve resilience.

The Environment Agency worked with lead local flood authorities (LLFAs) to publish the first set of FRMPs, covering the 10 river basin districts in England, on 17 March 2016. These plans set out how risk management authorities are working together, and with communities, to manage flood and coastal risk over the next 6 years up to December 2021.

We now need to review, and where needed, revise our risk assessments, maps and plans. By doing this we can make sure we improve the quality of flood risk management across England to reflect improving flood risk information and knowledge (including climate change predictions) and lessons from the floods we experience.

The Flood Risk Regulations 2009 (FRR) implement the EU Floods Directive in England. They provide a framework for managing flood risk over a 6 year cycle, comprising:

- preliminary flood risk assessment (PFRA)
- identification of areas of potential significant risk, referred to as flood risk areas (FRAs)
- mapping of flood hazards and risk and
- Flood Risk Management Plans (FRMPs), setting out measures and actions to reduce the risk

The FRR state that each of the above four elements must be reviewed, and updated where necessary, at least every 6 years.

Each LLFA completed a PFRA and identified FRAs for local flood risk, primarily surface water runoff, groundwater and ordinary watercourses, in 2011. This document sets out guidance from the Environment Agency to help LLFAs complete the first review by 22 June 2017, as required by the FRR. Defra has provided guidance on significant risk for identification of FRAs, and this is incorporated within this guidance document for convenience. LLFAs should no longer apply guidance issued by the Environment Agency or Defra in 2010, but apply the new 2017 guidance from Defra and the Environment Agency as presented in this document.

Depending on the approach taken to EU exit, there may be potential to make changes to the FRR in the coming years. EU exit does not, however, alter the requirement for LLFAs to review preliminary assessment reports and FRAs by 22 June 2017 as the UK will still be a full member of the EU at that point. Any proposals to refine the approach to mapping flood hazard and risk or preparing FRMPs will be consulted on later in the cycle.

Since 2011, LLFAs have developed local flood risk management strategies (LFRMS). The original PFRA helped LLFAs establish the risk assessment for the LFRMS. Similarly, the PFRA review is an opportunity to ensure that those assessments remain up to date and fit for purpose.

In summary, this guidance has been shaped by the following principles:

- enhance current management of local flood risk
- avoid placing constraints on future approaches to planning and managing flood risk
- be proportionate and efficient so as not to place undue burdens on LLFAs
- meet the relevant legal requirements

2. Approach to the review

In this section, we describe the approach to the PFRA review. We introduce the supporting materials we are providing for LLFAs, and the timetable for review and submission. Our approach will provide a useful opportunity for LLFAs to reconsider how flood risk has been assessed and enhance their current management of local flood risk.

2.1. Preliminary flood risk assessment

PFRA is a high level screening exercise to determine if there is a significant flood risk in an area, and identify areas affected by the risk as flood risk areas (FRAs).

Identification of an area as a FRA means that, over the rest of the cycle, the LLFA has duties to prepare:

- a flood risk map
- a flood hazard map, and
- a flood risk management plan for the FRA

The outputs required from the original PFRA in 2011 were:

- a preliminary assessment report for the LLFA area, describing past floods and the harmful consequences of future floods
- identification of FRAs, which determined where maps and FRMPs for 2016 to 2021 for local sources of flooding were required

2.2. Roles and responsibilities

LLFAs' responsibilities for PFRA and identification of FRAs relate only to local sources of flood risk, primarily surface water runoff, groundwater and ordinary watercourses. LLFAs do not need to consider the risks from main rivers or the sea, but should consider interactions between these other sources and local risks.

The overall timetable for review of preliminary assessment reports and identification of FRAs is set out in Table 1. It includes a 6 month review and collation process by the Environment Agency to ensure national consistency.

LLFAs must therefore submit their reviews to the Environment Agency by 22 June 2017.

Table 1 Timetable for the first review of preliminary assessment reports and FRAs

	LLFAs to complete and submit reviews to the Environment Agency	Environment Agency to review LLFA submissions
Preliminary assessment report	By 22 June 2017	By 22 December 2017
Identification of FRAs	By 22 June 2017	By 22 December 2017

Every LLFA is required to review both its preliminary assessment report **and** its identification of FRAs, whether or not it identified a FRA or FRAs in its area in 2011.

LLFAs in neighbouring areas may wish to work together to manage the review process efficiently.

LLFAs should work closely with local Environment Agency staff to ensure the review process works efficiently. We advise LLFAs to raise any questions or concerns with us as early as possible, so we can provide support well ahead of the review submission deadline.

LLFAs should complete and agree their reviews in accordance with their own internal scrutiny processes. This may be through consideration by cabinet, council or an overview and scrutiny committee. The purpose of such scrutiny is to ensure the LLFA is satisfied that it has met its requirements under the FRR, and its approaches to assessing flood risk are fit for purpose.

2.3. Supporting information and tools for the review

LLFA should use all relevant sources of flood risk data and information to carry out the review. Guidance provided by the Environment Agency for the original PFRA in 2011 advised LLFAs to set up the necessary systems to collect, store and manage flood risk information for the purpose of flood risk assessment and future reviews. LLFAs will have done considerable work since 2011 to investigate and understand flood risk to inform the LFRMS, so much knowledge and information is likely to be readily available for the review.

Self-assessment form and addendum template

Alongside this guidance document we have provided a standard self-assessment form and addendum template to help LLFAs complete the review efficiently. Completing the self-assessment may also be useful for the LLFA to identify potential improvements to the flood risk assessment underpinning the LFRMS.

The self- assessment form prompts LLFAs to:

- demonstrate that appropriate flood risk data collection and management systems are in place in the area
- summarise the main changes in understanding of risk for the area compared to 2011, and the primary reasons for those changes
- update the statements of flood risk from the original preliminary assessment report to reflect the current understanding of risk for the area
- update the annexes to your original preliminary assessment report to record past floods since 2011 and new information on potential future floods (required for reporting to the European Commission (EC))
- confirm the FRAs for the second planning cycle (required for reporting to the EC)
- complete an addendum template, which can serve to update the preliminary assessment report

The self-assessment takes the form of a series of questions, requiring the answer 'yes' or 'no'. The form includes space for comment on any key matters to support the answers. Summary points are sufficient. The form also includes space to note actions arising from the review, for example actions to review or update the LFRMs.

Certain information from the review is required for reporting to the European Commission. We have made it clear in the self-assessment form where this is the case. We have also made it clear where that information should be added to update the spreadsheet annexes of your original preliminary assessment report. We will not other report information from your self-assessment to the European Commission.

When reporting past floods, information is only required on floods which have occurred since December 2011 and which had significant harmful consequences. Our advice is that LLFAs report those floods for which there was a subsequent investigation under section 19 of the FWMA, or those floods which have shown a need to address risks not previously anticipated in the LFRMS.

The form includes a template for an addendum to update the original PFRA report.

Provided the self-assessment form and addendum have been properly completed, and the annexes to the original preliminary assessment report have been appropriately updated, it will not be necessary for a LLFA to otherwise revise, or write a new, report subsequent to this review.

To assist with the review and identification of FRAs (see chapter 3 below), we are providing:

- indicative FRAs for the second planning cycle, including GIS layers
- summary information on what is currently at risk within the indicative FRAs

To help LLFAs in considering the potential future impacts of climate change as part of the review (see section 2.5 below), we are providing a pdf map and GIS layer showing locations susceptible to increasing intensity of rainfall.

Maps in pdf format, GIS shapefiles and supporting information are available from 31 January 2017 through the Environment Agency's [Partner Data Catalogue](#).

2.4. Relationship with local flood risk management strategies

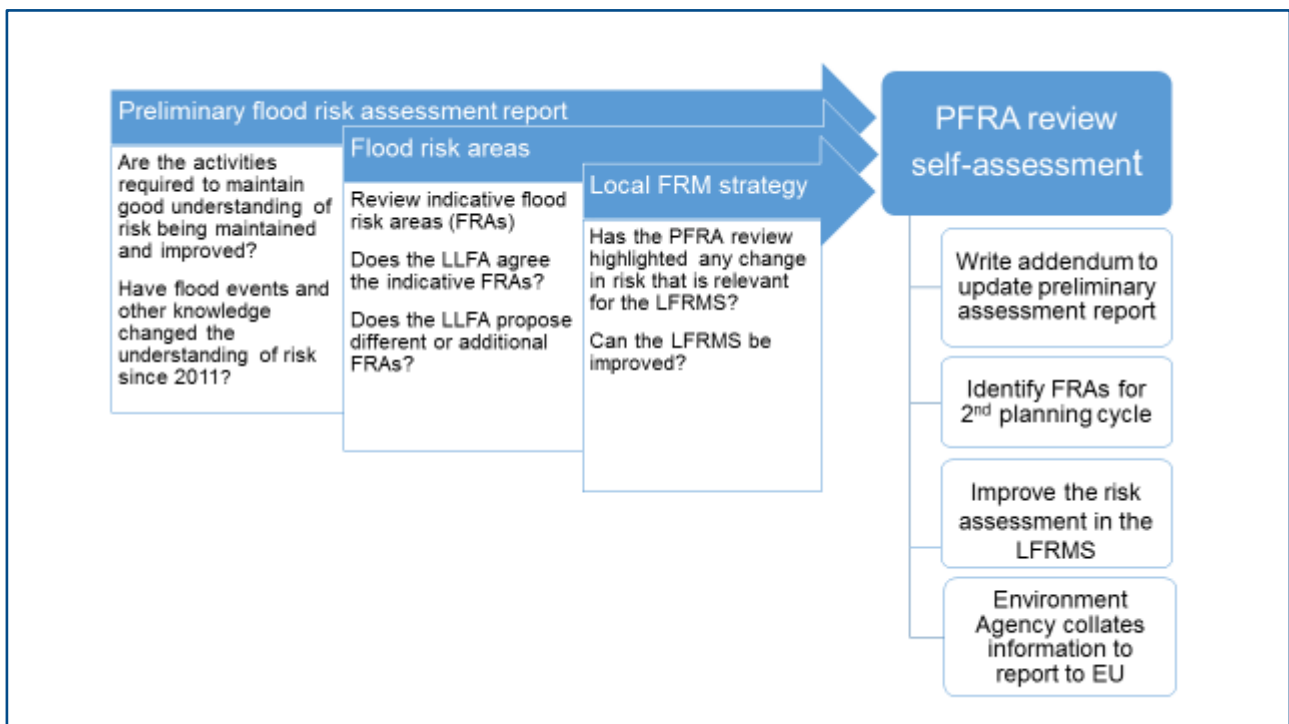
The Flood and Water Management Act 2010 requires the Environment Agency to develop, maintain and apply a national flood and coastal erosion risk management strategy for England. Similarly, LLFAs are required to develop LFRMS. A local strategy must cover local flood risk, which is likely to include surface water flooding, groundwater flooding and flooding from ordinary watercourses.

The original PFRA in 2011 provided LLFAs with much of the evidence base for their LFRMS. This review is therefore a logical point to reconsider how flood risk has been assessed within the LFRMS and make sure that the quality of that assessment is also current and fit for purpose.

While the primary purpose of the self-assessment described in 2.3 above is to meet the requirements of the FRR, the form is designed so that LLFAs can capture actions arising from the review that could be taken to reinforce, and improve the assessment of risk within the LFRMS. Recording actions for the LFRMS in the form is for the benefit of the LLFA. Only the information which is included in your updated annexes and in the addendum will be reported to the European Commission. These sections are highlighted within the self-assessment form for clarity.

Figure 1 below shows how the self-assessment can both meet the FRR requirements and contribute to improving the LFRMS.

Figure 1. What the PFRA review will cover and what it will provide



2.5. Climate change and long-term development

The FRR require that the assessment of future floods includes the predicted impacts of climate change and any other long-term developments.

Generally, preliminary assessment reports in 2011 described only the broad implications of climate change at river basin district level, based on UK Climate Projections, 2009 (UKCP09). Since then, some LLFAs have carried out local studies that included climate change assessments on flood risk. Where that is the case, the understanding from those studies could help inform this review.

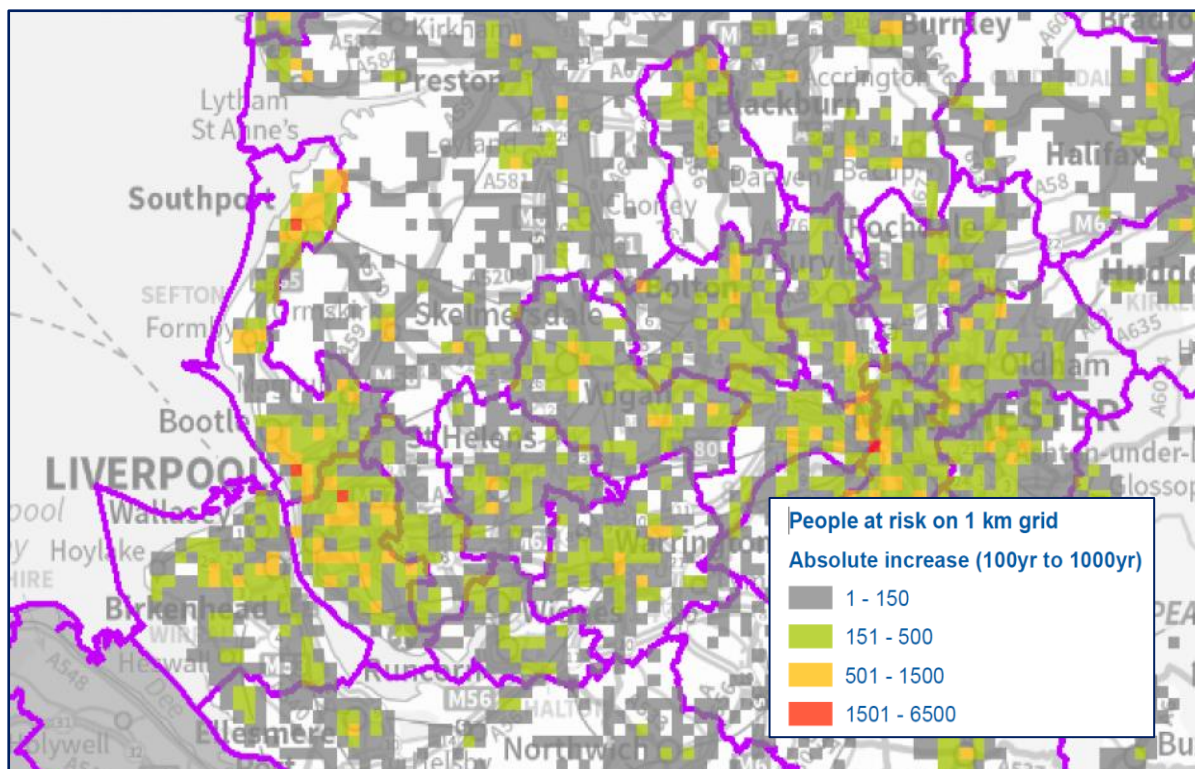
It is recognised, however, that the implications of climate change for local flood risk are still not well understood. To help LLFAs in this review, we have carried out a simple analysis at the national level to compare the number of people at risk from surface water flooding from a rainfall event with a 1% chance of occurring in any year to the number at risk from an event with a 0.1% chance of occurring in any year. The numbers of people at risk are counted per 1 kilometre grid square across England. The resulting 'heat map' shows how the absolute number of people at risk increases between these two rainfall events for each 1km grid square.

This method is not based on climate projections, and it does not account for future population growth. It does provide a simple way, however, of identifying areas that could be susceptible to increased rainfall intensity as a proxy for climate change. It is a reasonable proxy for an upper end climate change scenario for the end of the century, both in the pattern of change across the country and the percentage increase in intensity compared to the current climate.

This information may be useful in supplementing LLFA understanding of how climate change may affect local flood risk in the future. It may also be helpful when considering the indicative FRAs as part of this review.

Figure 2 below shows an extract from the 'heat map'. Red and orange squares indicate the highest increase in numbers of people at risk, and green and grey indicate lower increases.

Figure 2. Extract from the 'heat map' illustrating absolute increase in numbers of people at risk from surface water flooding for a 0.1% rainfall event compared to a 1% event



Maps in pdf format and GIS shapefiles for the 'heat map' for the whole of England, together with supporting data on properties at risk by LLFA area, are available from 31 January 2017 through the Environment Agency's [Partner Data Catalogue](#).

LLFAs should also consider the impact that long-term development may have on flood risk within the LLFA area. LLFAs may have information on potential demographic changes in the future, for example. This could be useful in considering how the number of people at risk of flooding from local sources could increase.

LLFAs should also consider if new or proposed major developments since 2011 have consequences for local flood risk.

3. Identifying FRAs for the 2nd cycle

The FRR require an LLFA to determine whether any part of its area faces significant risk of local flooding, and to identify any such area or areas as FRAs.

In 2010, Defra provided guidance for identification of FRAs for the first planning cycle. Thresholds for FRAs for local sources of risk were set very high in the first cycle, which resulted in only 10 FRAs being identified across England. This was in order to constrain the number of LLFAs involved in the first cycle. These FRAs were then subject to further investigation through mapping of flood hazards and risk, and development of risk management actions that are now being implemented through FRMPs for 2016 to 2021.

The approach to the second cycle FRMPs is not yet decided. It is likely to differ from the first cycle, as a consequence of ambitions for more integrated catchment management, and desire for better alignment with local strategies.

As these ideas develop, LLFAs will be fully consulted and have the opportunity to shape future FRMPs. In the meantime, identification of FRAs for the second cycle is an opportunity to create closer join-up between local strategies and the FRR.

3.1 Developing the indicative FRAs

FRAs in the first cycle focused on areas with the highest levels of risk. It is logical now to widen the focus. Defra has provided ministerial guidance on significant risk for identification of FRAs. For convenience, we have incorporated the Defra guidance in this document at annex A. We have applied this guidance to provide a set of indicative FRAs which are shown in figure 3 below.

The approach uses a similar clustering methodology to that used in 2010, and is supplemented with information based on the 'communities at risk' approach developed in the Environment Agency since 2010, based on Office for National Statistics built-up area (BUA) and built-up area sub-divisions (BUASD).

There are more indicative FRAs for the second cycle than in the first, but it is considered that this provides a more complete picture of local risk across England.

More information on the two methodologies used to develop the indicative FRAs for the second cycle is included in Annex B.

Maps in pdf format and GIS shapefiles for the indicative FRAs, plus supporting information on what is at risk within the indicative FRAs, are available to download from 31 January 2017 through the Environment Agency's [Partner Data Catalogue](#).

3.2 Reviewing the indicative FRAs

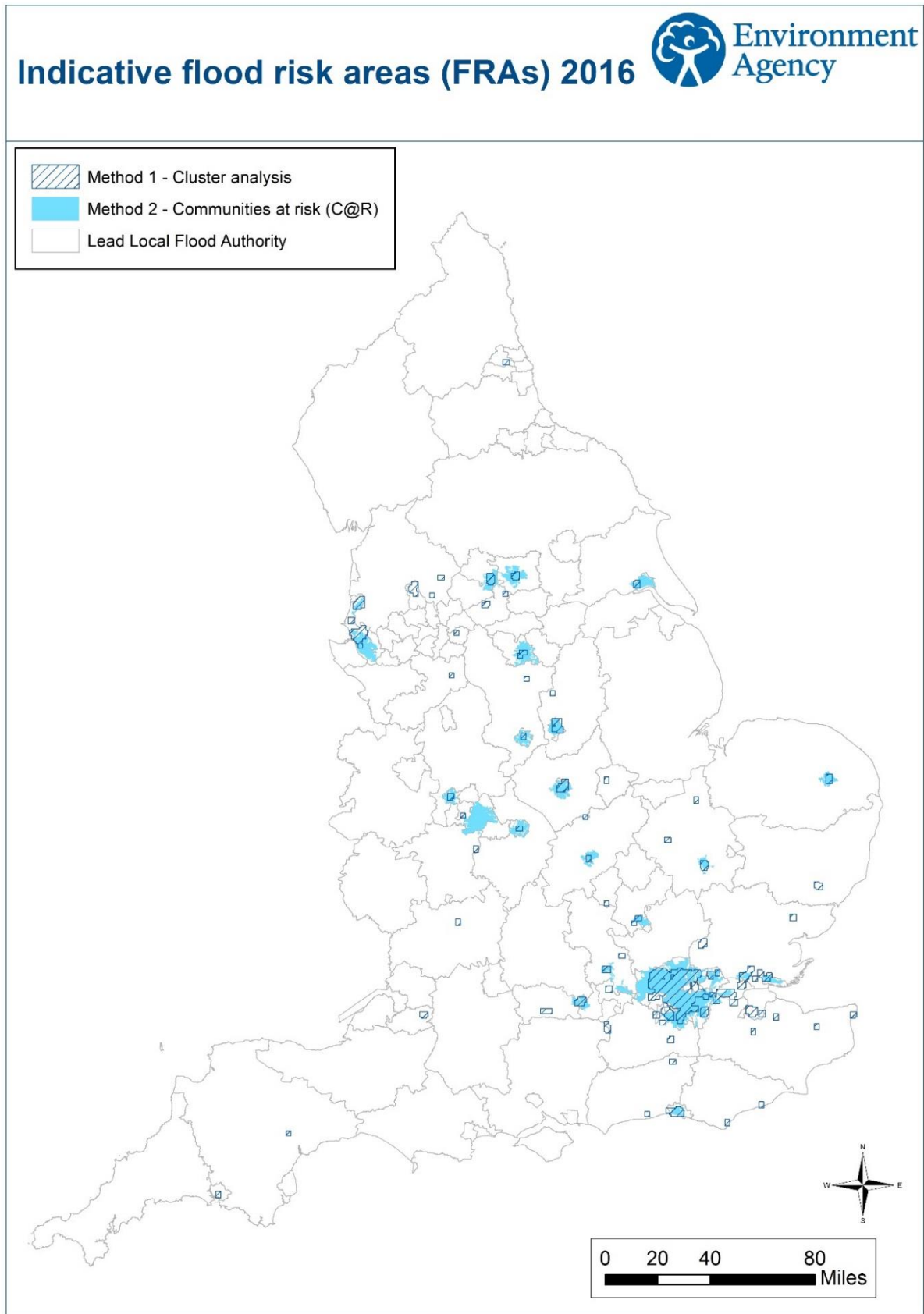
LLFAs should review the indicative FRAs that have been provided in light of local knowledge.

The indicative FRAs only represent risk from surface water flooding. All LLFAs should review the indicative FRAs against their own best current understanding of surface water flood risk.

There may then be other local factors which influence the consideration of risk such as:

- other sources of flooding eg groundwater, ordinary watercourses, or the combined impact of multiple sources
- sites of importance for environment or cultural heritage
- roads, rail and other similar infrastructure
- location of Integrated Pollution Prevention and Control (IPPC) sites and / or Control of Major Accident Hazard (COMAH) sites
- vulnerable local sites, such as caravan parks or camp sites

Figure 3. Indicative FRAs for the FRR second cycle review



LLFAs may wish to suggest amendments to the indicative FRAs, or propose additional FRAs, on the basis of some of these factors. Where this is the case, we urge LLFAs to have discussions about potential changes or additions with the Environment Agency as early as possible. Similarly, should an LLFA disagree with an indicative FRA, we urge early discussion with the Environment Agency on the supporting evidence.

Some LLFAs may have areas that are susceptible to more frequent, less extensive flooding that could, over a period of time, result in significant flood damages. Such areas may not have been identified by the methodology for identifying indicative FRAs, but may have been identified through work on the LFRMS. As much as possible LLFAs should take the opportunity to align the information in the LFRMS with the FRR.

On the whole, where an LLFA wishes to amend, or propose additional, FRAs, we expect those FRAs will be comparable in terms of the magnitude of flood risk to the indicative FRAs. Where an LLFA wishes to amend or propose additional FRAs in areas that are susceptible to more frequent flooding, these locations should be broadly comparable in flood risk to the indicative FRAs. For instance, a location that might flood from a rainfall event with a 5% per annum chance of occurring, and resulting in 25% of the impact compared to a flood from a 1% event, would be broadly similar to the definitions we have used for the indicative FRAs. Or, a rainfall event with a 2% per annum chance, and 80% of the impact compared to a 1% event, would also be broadly similar.

This is the same approach advised in guidance for identifying additional FRAs in the first planning cycle.

3.3 GIS data and other information

All GIS shapefiles and maps in pdf format referred to in this guidance document are available to download from 31 January 2017 through the Environment Agency's [Partner Data Catalogue](#). Data is supplied alongside a licence agreement.

If you require data or information in alternative formats, or if you need a further copy of the self-assessment form or other information, please contact your Environment Agency Partnership and Strategic Overview team in the first instance.

4. Review and publication

The Environment Agency has a duty under the FRR to review the determination and identification of flood risk areas and collate and publish all the preliminary assessment report and flood risk area revisions.

We will check that the requirements of the FRR have been met to protect against the risk of infraction proceedings and associated fines. Part of the review will involve us looking at the determination of FRAs by LLFAs to ensure that we agree the right areas have been identified for attention in the next stages of the planning cycle. We will check that any changes are justified and nationally consistent.

If we do not agree with a LLFA's conclusions on an FRA or FRAs, we will discuss this with the LLFA concerned with a view to seeking consensus. If, however, there is still disagreement, the issue will be referred to the appropriate RFCC and, if necessary, to the minister for a final decision.

5. Reporting to Europe

The Environment Agency will collate the relevant material from the LLFA review and report to the European Commission by the required deadline. Where we can, we will make all reported material publically available.

Annex A - Ministerial guidance - FRAs

This annex presents guidance from Defra on significant risk for the identification of flood risk areas for the second cycle of the FRR. This guidance was agreed in January 2017 and replaces previous Defra guidance on significant risk published in 2010.

Defra guidance on significant risk for the identification of flood risk areas

Introduction

This is guidance issued under regulation 14(3) of the Flood Risk Regulations 2009 (the Regulations) for Lead Local Flood Authorities (LLFAs) about the criteria for assessing and reviewing whether a risk of flooding is significant. The Regulations require LLFAs to determine whether any part or parts of their area face significant risk of flooding and to identify any such areas as Flood Risk Areas (FRAs).

LLFAs are only required to do this in relation to local flood risks, including risks of flooding from surface water, groundwater and ordinary watercourses. They do not need to consider risks of flooding from the sea, main rivers or reservoirs, except where these may affect flooding from another source. Flood hazard and risk maps and flood risk management plans must subsequently be prepared for the FRAs identified.

Flood Risk Areas were first identified in 2011 and the first review must be completed before 22 June 2017. This guidance applies to the review and replaces previous Ministerial guidance issued in 2010. There are some changes to the criteria for assessment of significant flood risk which reflect improved national information on surface water risk and adjustments to the method for clustering risk areas.

This guidance should be read alongside the Environment Agency document 'Review of preliminary flood risk assessments (Flood Risk Regulations 2009): guidance for lead local flood authorities in England', issued under regulation 12(7) of the Regulations.

The future allocation of resources to manage flood risk will take into account all assessments of flood risk including local and national strategies. Funding will not be limited to Flood Risk Areas identified under the Regulations.

The Criteria

Table 1 below sets out for people, services, properties and communities, the level of flood risk which LLFAs should consider to be significant for the purposes of the Regulations. These indicators and criteria relate to the risk of surface water flooding from a rainfall event with a 1% (or 1 in 100) chance of occurring in any one year.

To help LLFAs with their determinations, the Environment Agency has provided a set of indicative Flood Risk Areas for LLFAs to consider. They are included in the guidance mentioned at paragraph 2 above.

The Environment Agency has used two methods and information held nationally to derive these indicative areas. The methods are:

The Flood Risk Areas cluster method, as used in the first cycle to identify high concentrations of risk. The country was divided into 1km squares and national information used to identify the squares meeting one or more of the cluster method related criteria in Table 1. A cluster is formed wherever, within a 3x3 km square grid, there are at least 5 squares meeting the criteria. Often multiple grids that meet this requirement will overlap. Overlapping grids are unified to form a larger cluster. All clusters, large and small are identified as indicative Flood Risk Areas.

The Environment Agency's Communities at Risk method, developed since 2010 which complements and validates the cluster method by identifying built up areas where total flood risk is high. Indicative flood risk areas are identified wherever there are 3000 or more reportable properties (residential and non-residential) at risk within a [built-up area \(BUA\) or built-up area sub-division \(BUASD\)](#) as defined by the Office for National Statistics.

When determining their Flood Risk Areas, LLFAs should begin with the Environment Agency's indicative Flood Risk Areas and use their local knowledge and information to review them.

In doing so, LLFAs should consider local information relevant to the indicators and criteria in Table 1 and whether this suggests any change is needed to the Environment Agency's indicative areas (which are based on national information).

LLFAs should also consider information in relation to the following local factors which are additional to the indicators and criteria in Table 1:

- flood risk from other local sources eg groundwater, local watercourses
- the combined impact of flooding from multiple sources
- areas susceptible to more frequent, less extensive flooding, that could over time result in significant damages
- consequences of flooding for agricultural land
- consequences of flooding for roads, rail or other infrastructure
- consequences of flooding for internationally or nationally designated environmental sites or internationally or nationally important cultural heritage features, and
- location of sites subject to Integrated Pollution Prevention and Control or Control of Major Accident Hazard regulation.

Any one of these local factors may be sufficient for a flood risk to be considered significant. An LLFA can therefore use these factors to identify a change from the indicative Flood Risk Areas. There are no national criteria for these local factors, but when considering whether a local factor related risk is significant, LLFAs should assess whether the magnitude of risk in relation to a local factor, or a combination of local factors, is comparable to the scale of the risk presented by the criteria in Table 1.

The process

LLFAs need to determine their Flood Risk Areas by 22 June 2017. The Environment Agency has a duty to review the Flood Risk Areas determined and identified by LLFAs. The aim of this process is to ensure that guidance for reviewing Flood Risk Areas has been applied appropriately and consistently by LLFAs across England.

If the Environment Agency does not agree with an LLFA's Flood Risk Area determination, it may recommend that the LLFA identifies a different Flood Risk Area, an additional Flood Risk Area or that no Flood Risk Area exists. If the LLFA disagrees with such a recommendation, the matter will be referred to the Minister for determination.

Table 1: Indicators and criteria for assessing whether the risk of local flooding is significant for the purposes of identifying flood risk areas

Method for determining indicative Flood Risk Areas	Definition	Indicator	Criteria
Cluster method	<p>A cluster is formed where, within a 3x3 km square grid, at least 5 of the 1km squares meet the criteria for one or more of the indicators.</p> <p>Where multiple overlapping grids meet the requirement, these are unified to form a larger cluster.</p> <p>All of the clusters (both small and large) have been identified as indicative flood risk areas.</p>	Number of people at risk of surface water flooding*	<p>200 people or more per 1km grid square</p> <p>Number of people taken as 2.34 times the number of residential properties at risk.</p>
		Number of key services at risk of surface water risk* eg utilities, emergency services, hospitals, schools	More than one per 1km grid square
		Number of non-residential properties at risk*	20 or more per 1km grid square
Communities at risk method	Community areas, as defined by the Office for National Statistics built-up areas (BUAs) and built-up areas subdivisions (BUASD), where there is a large number of properties at risk.	Number of reportable properties (residential and non-residential) properties at risk*	3000 or more reportable properties (residential and non-residential) within a BUA/BUASD.

*Risk of surface water flooding from a rainfall event with a 1% (or 1 in 100) chance of occurring in any one year

Annex B - Methods used to develop indicative FRAs for the second cycle

We used two methods to identify areas of potentially significant risk as the basis for the indicative FRAs. In each case we used national information from the current (2016) Risk of Flooding from Surface Water (RoFSW) map - previously known as the updated Flood Map for Surface Water (uFMfSW) - and a rainfall event with a 1% chance of occurring in any year.

Method 1 - cluster analysis for concentrations of people/property at risk

In this method, 1km grid squares of places where surface water flood risk is an issue ("blue squares") were identified wherever at least 200 people or 20 non-residential properties or more than 1 key service might be flooded.

In some areas these blue squares are densely packed together representing a concentration of high consequences from surface water flooding and providing a way of identifying areas where flood risk could be significant. Where many grid squares are close together (clustered) and the risk is most concentrated, these clusters form indicative FRAs.

All clusters contain at least 5 adjacent blue squares. The flood risk indicators used in the identification of indicative Flood Risk Areas are summarised in the table below. These are similar to those used to develop indicative FRAs in 2011, but using a rainfall event with a 1% chance of occurring in any year rather than 0.5% chance as in 2011. This is because current surface water risk products do not include the assessment of a 0.5% chance rainfall event.

Definition of flood risk indicators used in cluster analysis		
Indicator	Definition	Threshold
People	Number of people at risk taken as 2.34 times the number of residential properties at risk of flooding	200 people or more per 1km grid square
Key Services	Number of key services at risk, for example utilities, emergency services, hospitals, schools	More than one per 1km grid square
Non-residential Properties	Number of non-residential properties at risk from flooding	20 or more per 1km grid square

Method 2 - Communities at risk (C@R)

Method 1 identifies locations where the density of flood risk is highest across the country. There are other locations where the total flood risk is high but not as concentrated as those areas identified in method 1. So, to complement method 1, we have used information from our C@R work.

For C@R we have analysed the surface water flood risk for communities according to [Office for National Statistics built-up areas \(BUAs\) and built-up areas sub-divisions \(BUASDs\)](#).

Built-up areas (BUAs) are characteristic of settlements including villages, towns or cities. In 2011 across England and Wales 95 per cent of the usually resident population lived in BUAs. They

include areas of built-up land with a minimum of 20 hectares (200,000m²). Any areas with less than 200 metres between them are linked to become a single BUA, with BUASDs identified.

Where available, we have used BUASDs to provide greater granularity of communities in large urban areas. Where this approach identifies 3000 or more reportable properties at risk of surface water flooding, the BUA/BUASD forms an indicative FRA. As with method 1, this is for a rainfall event with a 1% chance of occurring in any year.

The National Receptor Database (NRD2014) property point dataset with the uFMfSW Property Point v3 attributes was used to classify a property as 'at risk' of flooding from surface water. 'At risk' properties were counted by BUASD boundary (to exclude non-reportable property points e.g. telephone boxes, advertising hoardings).

Combining method 1 and method 2 and identifying indicative FRAs

In some locations, clusters of blue squares from method 1 and BUA/BUASDs from method 2 overlap. Where this is the case, the indicative FRA is the total extent of the two areas combined.

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