# Research on using flood risk information in spatial planning

## Project report

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Version: FRS18204/R1

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# Executive summary

## Introduction

Effective planning is essential for getting the right kind of sustainable growth in the right places. This includes avoiding development in flood risk areas and creating and maintaining places that are resilient to flooding. This report describes how flood risk information is used in strategic spatial plans and decision making across England, and the barriers and opportunities to enhance this. The evidence gathered has been used to develop good practice criteria, which is also presented.

Whilst the project scope included Wales, there were limitations to gathering enough relevant evidence and therefore the subsequent review is largely limited to England. Therefore the report focusses on recommendations for England planning policy and plan making. A separate set of recommendations for Wales is included (Appendix B).

This study is documented in 2 reports:

- FRS18204/R1: Project report (this report)
- FRS18204/R2: Evidence report: developing good practice criteria

A further output was produced using the evidence and feedback gathered through this study: A strategic flood risk assessment good practice guide for England.

This report (FRS18204/R1) explains how the research has been carried out, what has been learned from it and recommendations for future work.

## Background

Local development plans and policies are the main tools used to locate sites for new development in areas with the lowest risk of flooding and to create opportunities to reduce the impacts of flooding in existing communities.

The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities (DLUHC), 2021) requires that strategic flood risk assessments (SFRAs) are carried out in England and their findings used to inform local development plans and policies. SFRAs are used to apply a sequential approach that steers development to areas of the lowest flood risk and to develop tests and protocols for safe and resilient building design. Welsh planning policy (Planning Policy Wales, 2021 and Technical Advice Note 15 Development and Flood risk, (TAN15), Welsh Government, 2004) advises that if a planning authority identifies flood risk as a strategic issue then a

precautionary approach should be adopted steering development away from areas at high risk of flooding. The Plan Strategy, policies and allocations will need to be justified and supported with evidence, that is, a Strategic Flood Consequence Assessment (SFCA). Planning policy also requires that all sources of flood risk (river, sea, surface water, groundwater, sewers, and reservoirs) are considered as part of this process.

In 2018, the Environment Agency, Natural Resources Wales, the Welsh Government and the Department for Environment, Food & Rural Affairs (Defra) commissioned AECOM to research how flood risk information is currently applied in spatial planning, and to compile, analyse and share good practice and innovative approaches. The research focuses on SFRAs and SFCAs to identify the extent that current local development plans considered all sources of flooding. Readers should note that the planning policies and guidance documents available at the time of writing (2018-2019) were used in this study.

## Approach

This project aimed to compile, analyse and share good practice and innovative examples of where local planning authorities (LPAs) have successfully used flood risk information to achieve flood risk management outcomes across England, Wales and Scotland. The evidence gathered is summarised in FRS18204/R2.

The research reviewed national flood risk planning policies and available guidance on its implementation in England and Wales. The recommendations from previous research on strategic flood risk assessments (Defra 2009) were also reviewed.

Following interviews with national interested groups, the research made recommendations to improve currently available guidance and practice in England (Appendix A). Some of these have been progressed using the findings of this project (Appendix C). Due to the limited engagement with Welsh stakeholders and availability of specific guidance for Wales, similar recommendations based on evidence has not been possible. Separate recommendations for Wales have been made (Appendix B).

The research found that there was no consistent definition of ‘good practice’ across the guidance or among planners and flood risk management staff in relation to producing and using SFRAs. The project developed some good practice criteria based on national planning policy requirements (for example considering all sources of flood risk, climate change and cumulative risk), and feedback from the interviews (including collaborative working and using the SFRA to inform wider outcomes). These criteria were then used to identify a

shortlist of good practice examples for detailed analysis and interviews to investigate LPAs' experiences.

SFRA examples were used to develop good practice criteria to meet planning policy requirements in England.

## Main findings

The national flood and coastal erosion risk management strategy for England (Environment Agency, 2020) describes the importance of the role spatial planning has in developing places resilient to flooding and coastal change. One of the three key ambitions is to ensure today's growth is resilient to tomorrow's climate. This means that local development plans and policies need to be informed and developed with evidence on flooding and coastal change.

The SFRA provides the evidence base on flooding and coastal change and is used to consider flood risk when making planning decisions. The research found that the content and availability of SFRAs has improved in recent years (against the context of the NPPF current at the time of writing (2019)), however, no 'exemplar' SFRAs were found and they varied in how comprehensively they addressed all planning policy requirements. Nevertheless, multiple examples were identified that demonstrated one or more of the good practice criteria identified by the research. These included:

- how to produce SFRAs collaboratively between LPAs and other partners
- using resources efficiently through collaboration and early engagement
- assessing surface water, groundwater and reservoir flood risk and using that information to make strategic development plan decisions
- publishing SFRA outputs online and in interactive formats that are user friendly so that future updates can be done quickly and cost effectively.

Views among planners and flood risk management staff on the helpfulness of the current planning policy and SFRA guidance in England differed widely. Many were in favour of creating user-friendly guidance and good practice examples of how to meet the requirements of flood risk planning policy.

## How the research will be used

The research has made recommendations to strengthen planning guidance in England and Wales to ensure that flood risk and coastal erosion is considered adequately within spatial planning.

Due to limitations in gathering relevant evidence in Wales, the evidence, analysis and recommendations are primarily targeted to England. There have been opportunities throughout the project to make progress with several of the recommendations that are within the control of the Environment Agency. For

example, the guidance on ‘How to prepare a strategic flood risk assessment’ (Gov.uk, 2019) was updated using information gathered in this study. To complement this, a good practice guide for SFRAs has been produced to share the examples found in this project and support peer to peer learning across LPAs.

A separate set of recommendations for Wales is included within the report Appendix B for Natural Resources Wales and Welsh Government.

# Introduction

## Research context

Around 5.2 million properties in England and over 245,000 properties in Wales are at risk of flooding from rivers, the sea and surface water (Environment Agency, 2009, and Natural Resources Wales, 2019). Other flood risks to properties include flooding from groundwater, reservoirs and sewers. As the populations of both nations grow, a significant number of new homes and regeneration of land within existing communities will be needed. Making the right planning decisions will be vital to keep pace with population growth and climate change.

Adapting to climate change to create flood resilient places are key themes of the national flood and coastal erosion risk management strategies and policies for England and Wales (Environment Agency, 2020, and Welsh Government, 2020). These recognise that a robust planning process is essential to getting the right kind of sustainable growth in the right places.

Effectively implementing current government planning policy can also limit most of the potential flood damages to properties (Environment Agency, 2019, Long-term investment scenarios).

National planning policy for England and Wales requires flood risk to be assessed and managed to an acceptable level (DLUHC, 2021 and Welsh Government, 2021). The overall policy approach is to assess, avoid, reduce, manage and mitigate the risk of all sources of flooding to developments.

Planning policy in England current as of 2019 was reviewed for this study (DLUHC, 2019). It requires that a sequential, risk-based approach, referred to here as the ‘sequential approach’, is applied to steer development away from areas at highest risk of flooding. Where the development is necessary, planning policy requires that the type of development is appropriate to the level of flood risk and that the development is designed to be safe for its lifetime without increasing flood risk elsewhere. Additionally, planning policy states that plans should use opportunities provided by new development to reduce the causes and impacts of flooding, with the 2018 update to the NPPF adding emphasis on the use of natural flood management techniques, where appropriate (DLUHC, 2019). Additionally, where it is not possible for development to be located in areas at a lower risk of flooding, the ‘exception test’ may need to be applied, depending on the vulnerability of the site. To pass the exception test, it needs to be demonstrated that the development would provide wider sustainability benefits that outweigh the flood risk and that the development will be safe for its lifetime without increasing flood risk elsewhere and ideally reducing flood risk. In

Wales the advice in TAN15 adopts a precautionary framework that steers development away from high risk areas and then the sequential application of justification tests if the development is located in an identified flood zone.

Evidenced-base documents that assess the risk from all sources of flooding (strategic flood risk assessments (SFRAs) in England and strategic flood consequence assessments (SFCAs) in Wales) are used to steer development towards areas of lowest flood risk to meet specific tests (sequential test in England and justification test in Wales) set out in national planning policies.

The findings of an SFRA/SFCA should also inform:

- local flood risk policies within local development plans, their associated sustainability appraisal and supplementary planning guidance
- strategic infrastructure delivery plans and subsequent capital spending and mitigation funded through planning obligations
- individual development management decisions

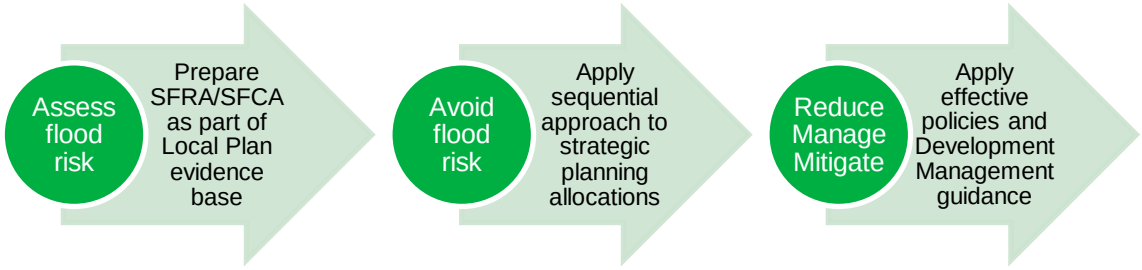


**Figure 0-1 Approach to development and flood risk in England**

Local planning authorities (LPAs) have democratic accountability for approving proposals for new development. Through spatial planning they are instrumental in managing flood risks to, and as a result of, new development. They are responsible for commissioning/preparing the SFRAs/SFCAs and applying the sequential approach to potential land allocations, and windfall developments. LPAs should use the SFRA/SFCA alongside specific policies and to influence sustainable development that is resilient to future flood risk and coastal change. Figure 1-1 shows the main steps in developing local development plans in England. This has been adapted from the previous research on assessing the quality and influence of SFRAs, which has 5 stages: Assess, avoid/prevention, substitution, control and mitigation (Defra, 2009). In Wales, the process for preparing and implementing development plans to meet the Planning Policy Wales is set out in the Development Plans Manual (Welsh Government, 2020).

The flood risk management authorities (RMAs), statutory consultees for planning applications and other interested groups have important roles in providing data for and advising on planning decisions at both strategic and individual planning application levels. The organisations include the Environment Agency, Natural Resources Wales, lead local flood authorities

(LLFAs), district councils, water and sewerage companies, internal drainage boards (IDBs) and highways authorities. The Environment Agency and Natural Resources Wales are statutory consultees for planning applications in flood risk areas. LLFAs are statutory consultees for major development, providing technical advice on surface water drainage to LPAs. All are consultees on the preparation of local development plans (LDPs). This helps to ensure that properties that could be at risk at any point in their lifetime are consistently built to ensure resilience to flood risk from the outset.

LPAs have taken considerable steps forward to understand the risk of flooding when preparing LDPs, and as part of development management decisions taken on a day-to-day basis.

In 2020, the government's flood and coastal erosion risk management policy statement (Defra, 2020) committed to ensuring that planning policy is appropriately applied and effectively implemented across England. It states that a common approach to using flood risk information in spatial planning within and between local authorities will be promoted, and a flexible, easily adaptable system to get the right kind of growth in the right places will be encouraged (Defra, 2020).

This research has sought to gather evidence on how assessments of flood risk use flood risk information to consider all sources of flood risk (river, sea, surface water, groundwater, reservoirs and other artificial sources and sewers), and how SFRAs/SFCAs can help to provide opportunities to reduce existing levels of flood risk (net gain). The evidence collected is further explained in FRS18204/R2.

LDPs play a vital role in providing new development and regeneration that will be sustainable in the future as well as maintaining and enhancing existing communities.

## Research objectives

A key focus of this research was to assess how all sources of flooding are being considered in spatial planning approaches. This was identified as a research gap by the Joint Research Programme. The research aimed to compile, analyse and share good practice and innovative examples where LPAs have successfully considered all sources of flooding in existing spatial planning and decision-making approaches, such as SFRAs/SFCAs. The research was limited to 4 tasks:

1. Review the national context for planning and flood risk

- Review national policy, guidance and practice to understand current processes, skills/knowledge capacity, and barriers to and opportunities for improving development decisions regarding flood risk.
- Provide recommendations on how current guidance documents could be improved in England and Wales.

2. Compile and analyse local good practice examples

- Compile and analyse examples where flood risk information has been applied in spatial planning at the local level.
- Establish a set of criteria to define what is considered ‘good practice’ in how flood risk information is applied in spatial planning.
- Engage with LPAs and LLFAs to understand the processes, skills/knowledge capacity, barriers and opportunities to apply good practice criteria.
- Identify potential ways to improve development decisions regarding flood risk.

3. Develop a good practice evidence base

- Develop an evidence base of good practice and innovative examples to demonstrate how existing tools and processes can use flood risk information effectively in spatial planning in England.

4. Share findings

- Explore the potential to share emerging findings on good practice with LPAs, and incorporate their use of the findings into the research.

The evidence gathered for objectives 1 and 2 is not described in this report. It is presented in report FRS18204/R2.

## Research outputs

A summary of the outputs from the research are set out below. These are focussed on England due to the project limitations that arose around evidence collection and stakeholder engagement in Wales.

### FRS18204/R1 Project report (this document)

- FRS18204/R1 Project report: A project report describing the research carried out, the findings, conclusions and next steps as part of the research project ‘Using flood risk information in spatial planning’.
- Appendix A: Recommendations for planning policy and guidance in England
- Appendix B: Recommendations report for Natural Resources Wales and Welsh Government
- Appendix C: Descriptions of two follow-on pieces of work that have used the results from this research (exploring national approach to applying the sequential test to all flood sources, and a good practice guide for SFRAs).

### FRS18204/R2 Evidence report

- FRS18204/R2 Evidence report of how flood risk information is used in strategic spatial plans and decision making, and developing good practice criteria. This report describes the research's method and findings associated with objectives 1 and 2. It provides a review of the national context for flood risk in planning and initial recommendations in England for improving guidance. It identified LPA good practice examples, as well as barriers to and opportunities for improving the use of flood risk information in spatial planning.
- Appendix A: National documents reviewed
- Appendix B: Good practice examples
- Appendix C: Review of the recommendations made in FD2610 study (Defra, 2009)

### Other reports

Following the research, a further document was produced: Strategic flood risk assessments, a good practice guide. This describes the good practices established during the research with supporting examples. It provides a checklist and advice to help LPAs in England scope, produce and use SFRAs.

# Method

## Review of national policy and guidance

### Literature review

The research reviewed various documents, including the 'Planning practice guidance - Flood risk and coastal change' (PPG) for England (DLUHC), guidance on 'How to prepare a strategic flood risk assessment' (Environment Agency) and 'flood risk standing advice' (Environment Agency). The review was carried out on the published versions current in October 2018.

Other relevant national documents relating to spatial planning and development in areas at risk of flooding were also reviewed, including current and superseded general and technical guidance, research studies, and consultations. Ongoing analysis was carried out on the Construction Industry Research and Information Association's (CIRIA's) research study 'Delivering better water management through the planning system' (RP1057), which took place at the same time as this research (CIRIA, 2019). Relevant emerging findings and similarities were identified to support this research. Progress on the recommendations from a previous review of SFRAs (Defra 2009) was also assessed and further steps identified to help where recommendations remained outstanding.

Relevant planning policy from Wales and Scotland were included in the review to help identify good practice and a Great Britain-wide context. A total of 58

documents were collated. A full list of the national level documents that were reviewed is included in FRS18204/R2 Appendix A.

The Welsh Government was reviewing and updating TAN15 (Welsh Government, 2004) during the lifetime of this project. A detailed review and recommendations on TAN15 has therefore not been included as part of this research. It is worth noting that the review of TAN15 identified specific recommendations to inform further research on SFCAs. No specific SFCA guidance has been published in Wales.

## Interviews with national interested groups

Interviews were held with organisations (England or UK level) to learn more about the content of the documents they owned or had written and/or those of other organisations, and how they are used within the planning and flood risk management sectors.

The organisations were:

- Department for Levelling Up, Housing and Communities (at the time this was the Ministry of Housing, Communities & Local Government (MHCLG))
- Environment Agency
- Construction Industry Research and Information Association (CIRIA)
- Peter Bide (joint project lead on CIRIA's 'Delivering better water management' study and lead author of the PPS25 Practice Guide)
- Royal Town Planning Institute (RTPI)
- Town and Country Planning Association (TCPA)
- Chartered Institution of Water and Environmental Management (CIWEM)

Interviews were requested with Defra and the Institution of Civil Engineers (ICE) but they were not available.

Interviews with Welsh LPAs were sought as part of the project but were not available to participate.

The interviews were semi structured to capture responses to a range of set questions and to explore views on key matters. The interviews and findings are described in FRS18204/R2.

## Recommendations for improving English guidance

Based on the findings of the literature review and interviews, the project identified potential improvements to the content of the 2018 versions of the PPG, SFRA guidance and flood risk standing advice. The project made recommendations on these improvements to the Environment Agency Flood

and Coastal Risk Management and Sustainable Places teams for them to consider and discuss with DLUHC.

## Analysis of good practice examples

### Compiling and analysing examples

Good practice examples were defined as those relating to work carried out by an LPA, LLFA or partnership of local authorities that demonstrated how flood risk information is currently applied effectively in strategic spatial planning.

Potential good practice examples in England, Wales and Scotland were collated from the contractor project team, the Environment Agency, NRW and SEPA. Projects were suggested for a wide range of reasons, including good partnership working between organisations; comprehensive assessment of flood risk or new modelling techniques; projects that had led to specific flood risk policies being developed; innovative ways of carrying out the sequential test in England considering all sources of flooding; and examples where the SFRA/SFCA met more than the minimum requirements.

The examples were recorded in a data register and categorised based on the type of document (for example, PDF document or website), geography, the flood source(s) assessed and the type of approach. This helped to facilitate how the documents were then assessed and to make sure that the examples represented all categories.

A total of 117 potential local good practice examples were identified. A full list is provided in FRS18204/R2 Appendix B.

### Defining ‘good practice’

The research found that there was no consistent definition of ‘good practice’ across the guidance or among planners and flood risk management staff in relation to producing and using SFRAs. Therefore, a set of good practice criteria was developed using information drawn from national planning policy requirements, an analysis of national and local documents and interviews with local and national practitioners from both spatial planning and flood risk management sectors. The resulting criteria provide an indication of the type of aspects that may be considered ‘good practice’ against national planning policy and within the scope of this research.

### Shortlisting and analysis

The good practice criteria were applied to the long list of good practice examples and an initial proposed shortlist was developed for further detailed analysis.

It was reviewed to make sure it represented the different geographies, flood sources and document types to ensure the focus of the detailed analysis remained on spatial planning tools and examples of collaborative working between LPAs when preparing local development plan evidence base documents.

For each example on the shortlist, the document was analysed and a description of the elements considered ‘good practice’ was recorded.

### Interviews

Deep-dive interviews were conducted by telephone with individuals from the relevant LPA and/or LLFA across England for the shortlisted local good practice examples. In some cases, the interviewees were the individuals involved in commissioning or producing the document. In other cases, the interviewees had worked with the document in the implementation phase. The interviews were semi structured to capture responses to a range of set qualitative and quantitative questions and to explore views on key matters.

Potential Welsh local authority interviewees were approached, however they were not available to participate. The deep-dive interview exercise therefore comprised only English participants, and the findings consequently relate only to views expressed on spatial planning and flood risk arrangements in England. As a result, the good practice guide has been developed for use in England only.

## Sharing findings

Once the good practice criteria had been defined, good practice examples were analysed.  An exercise was then carried out to explore the potential to share the emerging findings on good practice with LPAs. The intention was to trial the good practice and provide LPAs with access to the research’s emerging findings to incorporate into how they scope, produce and use their SFRAs.

The project team contacted a number of LPAs in England who were due to scope and produce a new SFRA or update an existing one. The team had discussions with the LPAs regarding the trial and the good practice findings, including the potential for collaboration between LPAs on their flood and water evidence base. Due to timetable, budget and other constraints the LPAs concluded they would not be able to take part in the research. The research did not progress, at this stage, to share emerging findings and analysis. Instead, a ‘Strategic flood risk assessments, a good practice guide’ was later developed using the findings of this research.

Since then one LPA is progressing with evidence individually, and two continue to procure water evidence preparation as a shared planning service. The

research scope helped to inform those SFRA briefs to contain more integrated water management, and a higher level of ambition.

# Findings

## Review of English PPG, SFRA guidance and standing advice

The review highlighted a number of key issues that were common across the PPG, the online guidance for 'how to prepare a strategic flood risk assessment' and flood risk standing advice (2018 published versions and referred to below as current guidance) used in England, particularly about where the content and links to supporting information sources could be improved. These findings are presented below.

- There is no available guidance on how flood risk from reservoirs and groundwater should be assessed in an SFRA and taken account of in a local development plan.
- Current guidance on explaining how surface water flood risk should be assessed in an SFRA, for example the sequential test, and taken account of in a local development plan is inadequate.
- Current guidance on how LPAs should develop locally specific flood policy (not just repeating what is included in the NPPF) is inadequate.
- The data sources on surface water, groundwater and reservoir flood sources to be used for spatial planning purposes and how to apply that data (for example, flood depths) should be clarified.
- Current guidance on explaining how opportunities to reduce existing levels of flood risk (net gain) should be considered is inadequate, particularly in relation to guidance on the exception test, which has an explicit requirement to reduce flood risk overall.
- Review if and how the Environment Agency's normal requirement for freeboard should be considered in setting appropriate ground floor levels for properties.
- Current guidance on what climate change allowances should be applied to surface water, groundwater and reservoir flood risk is inadequate.
- Current guidance does not clearly highlight that LPAs can incorporate flood risk into s106 and Community Infrastructure Levy policies for strategic solutions.
- Current guidance does not clearly highlight that the PPS25 Practice Guide has been superseded by the PPG and SFRA guidance and should no longer be used.

The interviews undertaken for this study asked about existing guidance and how it was viewed and used.

With respect to available guidance, the research found that overall the now withdrawn PPS25 Practice Guide (PPS25) was viewed favourably. It was frequently noted in interviews that the current NPPF and PPG do not provide guidance to the same degree and detail on a range of SFRA-related topics, however, some considered the PPS25 Practice Guide a large and complex document to follow. As the PPS25 Practice Guide has been superseded by the NPPF and PPG, interviewees requested clarification on the status and relevance of the PPS25 Practice Guide.

With regards to the online SFRA guidance local authority flood risk management practitioners tended to have a more detailed understanding of it than spatial planners. Opinions were divided as to how helpful the current SFRA guidance is: half found it helpful; half considered it 'mixed' or unhelpful. Some of the reasons for this were that it was too technical, too complex, not comprehensive enough and not detailed enough compared to the previous PPS25 Practice Guide.

There was a wide mix of views as to whether the current SFRA guidance should be divided into separate versions for spatial planners and flood risk management practitioners. In general, it was considered that the guidance does need to be technical in nature, but that there were particular elements that were missing or needed to be improved and clarified. However, there was no consensus whether creating separate versions was the best way to address those points.

Overall, the interviewees considered that senior management in their organisation had adequately understood and implemented their LPA's SFRA. SFRA implementation appears to currently focus on meeting its purposes of informing the local development plan. Only one example had gone further than that to date, however several interviewees considered that their SFRAs might follow suit in the longer term.

There was a strong consensus in favour of creating easily accessible good practice examples and techniques for commissioning, developing and implementing SFRAs.

Recommendations based on the above points were provided to the Environment Agency's national Flood and Coastal Risk Management and Sustainable Places team to consider during future revisions to its SFRA guidance and flood risk standing advice, and to inform its advice to DLUHC on future revisions to the PPG. These recommendations are presented in

FRS18204/R2. They have since been reviewed and updated and are presented in Appendix A.

A separate report on recommendations for Natural Resources Wales and Welsh Government was produced as part of this research and presented in Appendix B.

## Review of FD2610 'Assessing the quality and influence of SFRAs'

A research project, known as the '2009 SFRA review' assessed the quality and influence of SFRAs (Defra, FD2610, 2009). Whilst this was produced before the NPPF of 2012, it is a key reference document in England and no review of SFRAs has been undertaken since. The report describes the influence SFRAs should have on the development of core strategies, sustainability appraisal and land use decision making. It identified issues with data sharing and interpretation, and the need for wider training and support for local authorities. The recommendations made in the report were reviewed to determine whether they have been implemented, superseded or remain outstanding. The review's findings and further steps to help implementation are detailed in FRS18204/R2 Appendix C.

In summary, the review found that of the 6 core 2009 recommendations:

- 3 had been adequately implemented, meaning they had been addressed to some degree but further work would be beneficial. These were to: clarify the role of SFRA in the planning process, clarify responsibilities for data sharing, and use surface water management plans to facilitate surface water and sewer flood risk assessment in SFRAs
- 2 had been partially implemented. These were to improve the integration of the sequential approach in core strategies, and to provide local criteria on what constitutes "safe" development. Whilst this is adequate for river and sea flood risks, other sources of flooding have been found to not be well integrated or considered in the criteria for "safe" development.
- 1 has had minimal implementation. This recommendation was for all SFRAs to include a communications plan between LPA departments and interested groups.

Three of the 14 supplemental recommendations were judged to have been adequately implemented (although further work would be beneficial for some of them), 10 have been partially implemented and one has had minimal implementation. The research considered whether further work was still necessary, in line with the current NPPF and PPG, and highlighted what these steps would be. These have been used to make the final recommendations from this report, and some have been picked up in the SFRA good practice guide.

## Review of CIRIA RP1057 ‘Delivering better water management’ study

This research into flood risk and spatial planning ran at the same time as CIRIA’s ‘Delivering better water management’ study. The focus of the CIRIA study was to support effective planning for water by achieving integrated water management (IWM). Its scope included approaches for LPAs to avoid and mitigate the risks of water pollution, too little water and too much water (flooding). The number one outcome from integrated water management, listed in the report, is reduced risk from flooding. The CIRIA study was analysed to identify relevant findings and case studies of SFRAs or local plan policies.

IWM case studies such as Cambridge city, Brighton and Hove city, Arun district and Hull city illustrated the wider value that SFRAs can have in helping to make sustainable development decisions.

The review found that CIRIA’s findings were broadly similar to those from this research, namely the critical success factors of understanding the topic, having supportive local policy, early engagement, partnerships and good management (SFRA or IWM Plan production and implementation).

## Identifying good practice examples across England

As outlined above, TAN15 and its review was not included as part of this research and there were no available Welsh participants for the deep-dive interviews. Therefore, the findings outlined below focus on spatial planning and flood risk arrangements in England.

The content and availability of SFRAs in England had improved since the last review in 2009, with virtually all LPAs now having produced one (see further evidence in FRS18204/R2 Appendix C).

In literature and among national and local planning and flood risk management practitioners, there was no single outstanding example of a good practice SFRA, or a ‘top 5’ identified in England. There were no particular groups of good practice examples identified geographically or by local partnerships.

There was no consensus among either planning or flood risk management practitioners in England, Wales or Scotland regarding what were considered good practice examples. This finding led to the development of a list of good practice criteria, as described in section 0, and presented in FRS18204/R2.

In general, the current quality of SFRA and sequential test examples was mixed. No single good practice example met all of the good practice criteria. Nevertheless, multiple examples were identified that demonstrated one or more

of the good practice criteria identified by the research, with their remaining elements judged to be of average quality.

The research found that the quality of SFRAs and sequential tests often relies on:

a) how familiar the LPA is with local flood risk management issues and available information, and

b) the extent and timeliness that flood risk management authorities (RMAs) were requested to input to the SFRA process and provide supporting data and advice.

Where SFRAs were led within a LPA by the team with flood risk management skills and experience (for example, flood risk management teams in unitary authorities), there were often higher quality outputs than those led by another team.

The inadequate amount of guidance on how to apply the PPG and SFRA guidance and lack of associated training (such as webinars and workshops) prevented LPA staff from learning or improving their skills and knowledge on how to apply the PPG and SFRA guidance in the real-life situations they regularly encounter.

The current strengths and obstacles to LPA staff having adequate skills and knowledge on how to effectively produce and use SFRAs were reviewed. Examples of current strengths, include skills in partnership working, data and information sharing and communication with the public. Examples of obstacles include inadequate funding to gain and maintain the required skills and knowledge. These mirrored findings of the research FD2680 ‘Evaluation of the arrangements for managing local flood risk in England’ (Defra 2017), which focused on LLFAs and their local flood risk management roles.

Based on these findings, it was recommended that new or revised guidance on how to produce and use SFRAs should be published. This should also be accompanied by awareness raising and training initiatives to embed the associated skills and knowledge within LPA staff and RMA partners, where relevant. In addition, SFRA skills and knowledge requirements of LPAs should be included alongside LLFAs in future FCRM skills/knowledge/capacity surveys.

## Good practice findings

An objective of this research was to collate and share good practice for using flood risk information in spatial planning. Using examples collated, and feedback from the project team and interviewees, the project created criteria for defining ‘good practice’. The intention was to indicate the variety of aspects of

an SFRA that would be considered ‘good practice’ against national planning policy to deliver outcomes for flood and coastal risk management. These are described in FRS18204/R2 and summarised in the sections below.

## Incorporating surface water, groundwater and reservoir sources of flooding and an integrated assessment of all flood sources

Interview findings demonstrated that LPAs understand the role of the SFRA to inform the sequential test and exception test. Within the shortlist the sequential test and exception test had been widely applied, using river and sea flood risk information. There were 9 examples where the sequential test had been applied to surface water and/or groundwater flood sources. Varying approaches were used to rank the sites according to flood risk. However, adopting a sequential approach within the potential development sites was still considered the main way of managing surface water and groundwater flood risk rather than using the sequential test. This prevented potential sites from accommodating new development. Within the shortlist, there were 2 examples where the sequential test was applied to assess flood risk from a reservoir.

Some people interviewed said that they would like more information on how to apply the sequential test and exception test when considering surface water, groundwater and reservoir flood sources, and how to rank sites at risk of flooding from multiple sources.

This prompted the project team to assess the viability of creating a national approach for applying the sequential test considering all sources of flooding.

## Cumulative impact of development on flood risk

Within the shortlist, there were 6 examples where an approach had been established to either assess or address the cumulative impact of development on flood risk. Differing approaches were adopted in each, with varying levels of detail and purpose.

The potential for cumulative impact of development on flood risk needs to be assessed to enable an informed and appropriate strategy to address these impacts.

Assessing cumulative risk did not appear to be critical in informing decisions on housing allocation nor producing local plans, and therefore LPAs did not see it as an essential part of the SFRA. Further guidance is needed on how cumulative impacts should be assessed and addressed.

## Accounting for future changes in flood risk

There is widespread application of climate change allowances to river and sea flood risk in line with the latest Environment Agency guidance for flood risk assessments and climate change allowances (Environment Agency 2019). In

many cases, where it is available, this is provided within the hydraulic modelling outputs supplied by the Environment Agency for use in SFRAs and flood risk assessments.

The with-defences present model scenarios routinely consider climate change impacts (increased river flows and or sea levels). The model scenarios used to create the flood zones (Environment Agency's Flood Map for Planning) do not consider the presence of defences, and typically more detailed model scenarios of climate change impacts on the natural floodplain (defences are assumed not to exist) are not available.

To determine the impact of climate change on surface water sources, a more extreme flood scenario (for example, the 0.1% annual exceedance probability (AEP) event) is routinely referred to, rather than carrying out any additional modelling.

No examples were found of accounting for climate change in groundwater or reservoir flood risk assessments, and guidance is needed on how climate change should be applied to these flood sources.

There would be value in having a single national webpage for climate change mapping in England to be displayed.

### Comprehensive scoping

Interviews and document analysis identified that the ultimate success of an SFRA depends on the quality of the work when scoping and commissioning it. The research identified that a 'produce first, consult later' approach risks missing issues and opportunities that can be more challenging and expensive to incorporate later.

Liaising with other LPA and LLFA teams during the scoping exercise (for example, on infrastructure planning, management of green spaces and development management) provided useful input and identified similarities that helped save time and money.

The value of the flood risk information provided by an SFRA and associated tools extended beyond just informing an LDP and development allocations. Early LPA engagement helped inform other LPA teams and RMAs' own work before producing an SFRA, during its development and afterwards.

### Wide spatial scale and collaborative working

When LPAs collaborate to produce an SFRA, this promotes a consistent approach to assessing flood risk where it goes beyond LPA boundaries. It helps to manage flood risk at a river catchment scale more effectively, or encourage a

similar ‘catchment’ approach for other flood sources. It also makes it easier to share costs and allows significant savings in time and budget.

How successfully an SFRA is produced and implemented depends on the quality of the work carried out when it is commissioned. Proactive, informed leadership that coordinates the input of data and advice from RMAs can capture all the known flood issues and opportunities to be explored when the SFRA is produced.

There are potential opportunities to be gained by RMAs proactively supporting an LPA with its SFRA. One example would be to prepare data and flood risk issues to explore that can be provided to the LPA early in the commissioning phase. Doing so can allow a comprehensive SFRA scope to be prepared.

Differing timetables for councils preparing their local development plans are sometimes seen as a barrier to working together to produce SFRAs across a number of LPAs.  Moving to online SFRAs that are easier to update may make this more achievable.

### Informing other plans, emergency planning, governance, net flood risk reduction

There were conflicting views on the extent to which SFRAs should be used to develop specific local flood risk policies. In order for planners to be able to use the recommendations within SFRAs to write policy, they need to be clearly written and easily understood. Interviews found that those SFRAs where drainage or flood risk specialists within the LPA had worked closely with planners resulted in more useful recommendations and subsequently more useful policy.

Some development management officers are not suitably equipped to address flood risk issues as they arise in planning applications. Close working between the development management team and those involved in the LLFA role is required; this is often more successful in unitary authorities rather than across 2-tier structured authorities.

There were good examples of local supplementary planning documents (SPDs) or advice notes where LPAs had established guidance for a specific area with specific flood risk issues. However, not all LPAs recognise the need for these. Some but not all SFRAs/ SPDs clearly present the criteria needed to demonstrate safe development.

Limited evidence was found of SFRAs being used to inform other plans and strategies, such as Infrastructure Delivery Plans, Green Infrastructure Plans, Community Infrastructure Levy and Suitable Alternative Natural Greenspaces.

### Windfall development

Very few examples were found where the LPA had set out an approach for windfall sites. The interviews identified the need for more guidance for windfall sites. There was a perception that Level 2 SFRAs focus on an LPA's preferred allocation sites rather than all potential sites that may come forward.

In one example the LPA (Dover) successfully set out specific requirements for applying the sequential test to windfall sites. Guidance produced by the LPA included a map of the geographical areas of search that should be used, a list of documents from which applicants should identify alternative sites for comparison, and requirements for comparator assessments considering all sources of flooding.

In another example, the LPA (Sheffield) had included a clause within its policy that prevented future residential development in high flood risk areas until a particular date, effectively applying the sequential approach for windfall sites for a certain period.

### Document format and accessibility

SFRAs that are produced in a format that is accessible and easy to understand are potentially of greater value to LPAs, RMAs, developers and communities.

SFRAs often include extensive mapping outputs, useful guidance and checklists for applicants/developers. Moving to an online format makes these much more obvious as links can be provided in suitable locations on the LPA's website.

Creating web-based SFRA products may encourage other departments within the LPAs, such as those preparing Infrastructure Delivery Plans and Green Infrastructure Plans to use them more. This approach may reduce the number of inappropriate planning applications and the need for associated LPA and RMA resources.

The costs to design, produce and maintain SFRAs as 'live documents' (whether as a result of lots of hard copy mapping or the costs to host an online mapping platform) were sometimes seen as a challenge or a barrier.

However, interviews found that the costs associated with online mapping platforms can be shared between LPA departments and/or external partners, where SFRAs are prepared collaboratively.

# Overview of recommendations for England

Based on the research's findings, recommendations for England were developed and provided to the relevant Environment Agency teams. The recommendations included developing new or updated guidance for producing

and implementing SFRAs, roles and approaches for working together, and the format of SFRAs.

The Environment Agency has reported on the progress of those recommendations up to January 2020, and the status of these is provided in Appendix A: Recommendations for England. Of the 28 recommendations, 7 are complete, 18 are in progress and 3 yet to be addressed.

# Overview of recommendations for Wales

Given the scope parameters and limited available data from Wales the main findings and recommendations of this research are focused on the spatial planning and flood risk arrangements in England.

A subsequent assessment was carried out to find out if the recommendations for England could be applied to flood risk and spatial planning policy and guidance in Wales. The results of that exercise and recommendations for Wales are provided in a separate report, presented in Appendix B. Due to differences in Welsh planning policy, the majority of recommendations for England are not relevant to Wales.

# Conclusions

The findings identify that local development plans and strategic spatial planning decisions across England are being supported by detailed flood risk documents, particularly SFRAs.

The SFRAs have significantly advanced since the previous research was carried out (Defra, 2009) and a notable level of detailed information is often produced, with widespread consideration of climate change.

This research found there was no national or local consensus on what comprised ‘good practice’, for either the process of producing an SFRA or implementing its outputs. The lack of consensus of any recognised ‘top 5’ or even single good practice SFRA example was notable among spatial planning and flood risk management practitioners. Therefore, this research developed a set of good practice criteria covering how to commission, produce and implement SFRAs.

Applying the good practice criteria, relatively few SFRAs in the sample selected were found to meet a good standard of practice or comprehensively address all planning policy requirements. Of those SFRAs that were identified, only a number of elements in each were found to comprise good practice, with the

remaining elements deemed of average quality. No SFRA was identified that displayed a majority of the 16 good practice criteria.

However, there were multiple examples of SFRAs that demonstrated one or more of the good practice criteria. These included:

- how to produce SFRAs collaboratively between LPAs and other partners
- using resources efficiently through collaboration and early engagement
- assessing surface water, groundwater and reservoir flood risk and using that information when making strategic development decisions
- assessing cumulative impacts from development on flood risk and identifying opportunities to reduce existing levels of flood risk (net gain)
- publishing SFRA outputs in online, interactive formats that are user friendly and enable future updates to be done quickly and cost effectively

Planning policy on flood risk in England has continued to be updated in recent years, however accompanying guidance has not kept pace. The need for additional or updated guidance was identified for a range of policy requirements.

The research found a broad spectrum of views among planning and flood risk management practitioners on the helpfulness of the current planning policy guidance and SFRA guidance in England. There was a strong consensus in favour of creating a user-friendly compilation of good practice examples.

# Next steps

## Implementing the recommendations

The research has made specific recommendations for England regarding updates to their flood risk planning policy and guidance. In light of these, a programme for monitoring and updating progress should be made. For Wales, recommendations to help inform future updates to planning policy and guidance have been made and are presented in Appendix B.

## SFRA good practice guide for England

Using the findings from this research an SFRA good practice guide was produced, endorsed by the Environment Agency, ADEPT and CIWEM.

This should be used to raise awareness among the spatial planning and flood risk management sectors of good practice examples and be used to support peer to peer learning.

Further good practice examples are likely to emerge, so a mechanism should be established to identify and collate these. The content of the good practice

guide should be periodically reviewed and updated to include new examples so that it remains an up-to-date and informative tool for spatial planning and flood risk management practitioners.

It is recommended that the relevance of the findings of this research and specifically the content of the good practice guide is reviewed in light of future changes to spatial planning policy, flood and coastal risk management policy and updates to available flood risk information.

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# List of abbreviations

ADEPT: Association of Directors of Environment, Economy, Planning & Transport

CIRIA: Construction Industry Research and Information Association

CIWEM: The Chartered Institution of Water and Environmental Management

Defra: Department for Environment, Food & Rural Affairs

DLUHC: Department for Levelling Up, Housing and Communities

FCERM: Flood and Coastal Erosion Risk Management

ICE: Institution of Civil Engineers

IDB: Internal drainage board

IWM: Integrated water management

LFRMS: Local flood risk management strategy

LDP: Local development plan

LPA: Local planning authority

LLFA: Lead local flood authority

MHCLG: Ministry of Housing, Communities & Local Government

NPPF: National Planning Policy Framework

NRW: Natural Resources Wales

PPG: Planning practice guidance

PPS25: Planning Policy Statement 25

RMA: Risk management authority

RTPI: Royal Town Planning Institute

SEPA: Scottish Environment Protection Agency

SFCA: Strategic flood consequence assessment

SFRA: Strategic flood risk assessment

SPD: Supplementary planning document

TAN: Technical Advice Note

TCPA: Town and Country Planning Association

# Appendix A: Recommendations for England

This appendix outlines the recommendations made to the Environment Agency from this research during 2018 and 2019 and a summary of progress made up to June 2021.

## Incorporating surface water, groundwater and reservoir flood sources and an integrated assessment of all flood sources

| Recommendation | Progress up to June 2021 |
|---|---|
| Provide additional guidance on approach for defining flood zone 3b, especially in areas of existing or planned development. | Incorporated into the Environment Agency's August 2019 version of the SFRA guidance. |
| The 'risk of flooding from surface water flooding' mapping defines areas of high, medium and low risk of surface water flooding. However, there is no guidance on how this corresponds to the equivalent planning zones (flood zones) used for flooding from rivers and the sea. Further clarification and/or guidance should be required to address this gap. | The good practice guide encourages locally defined approaches to be shared between LPAs in the absence of national guidance. |
| Clarify that surface water, groundwater and reservoir sources of flood risk should be included when applying the sequential test. | NPPF states the sequential test should be applied to all flood sources. |
| Provide guidance on how surface water, groundwater and reservoir sources of flood risk should be included when applying the sequential test. | Initial examples and approaches are provided in the good practice guide. |
| Provide guidance and/or examples on how to rank sites at risk of flooding from multiple flood sources, so sequential test can be applied. | Initial examples are provided in the good practice guide. |

## Cumulative impact of development on flood risk

| Recommendation | Progress up to June 2021 |
|---|---|
| Examine whether the SFRA is the best channel to share wider NPPF flood policies such as assessing cumulative impact and achieving net flood risk reductions. | Not yet addressed. |
| Examine who is best placed to carry out monitoring and assessment of the cumulative impact of development on flood risk at a practical level, which can then be used to inform plan making. | Not yet addressed. |
| Provide guidance to clarify what is required within an SFRA to assess and address the cumulative impact of development on flood risk and to achieve net flood risk reductions. | Environment Agency 2019 SFRA guidance includes more detail on cumulative impacts and opportunities to reduce the causes and impacts of flooding. However, the need for further guidance will be kept under review. |
| Consider removing permitted development rights in areas that contribute to locations of high surface water flood risk. | Discussions ongoing with DLUHC regarding future updates to the PPG. |

## Accounting for future changes in flood risk

| Recommendation | Progress up to June 2021 |
|---|---|
| Provide guidance on if and how climate change should be applied to groundwater and reservoir flooding. | In May 2021 the Environment Agency published new Risk of flooding from reservoir maps. The new data can support LPAs to assess climate change impacts on reservoir flooding. Risk of Flooding from Reservoirs - Maximum Flood Extent (Web Mapping Service) - data.gov.uk.<br><br>The Independent Reservoir Safety Review Report (publishing.service.gov.uk) also looked at how climate change is or can be accounted for in flood estimates for reservoir safety evaluation. |
| If 'future flood zones' taking into account climate change are to be a | PPG and SFRA guidance state that SFRAs must assess the impact of climate change |

| Recommendation | Progress up to June 2021 |
|---|---|
| requirement of SFRAs, consider how this will impact the scope of river modelling studies in defended areas and include climate change scenarios for undefended scenarios. | on all flood sources, including identifying those circumstances when a site-specific FRA will be needed. The need for additional guidance on modelling will be kept under review. |
| Consider the best place for 'future flood zones' to be displayed; the SFRA or the Environment Agency Flood Map for Planning. | Requirements for any national level presentation of data on climate change projections for flood zones and for surface water, groundwater and reservoirs, will be kept under review. There are no immediate plans to build climate change into the Environment Agency's national Flood Map for Planning. LPA improvements to accessibility of SFRA outputs, such as maps, will improve access to climate change information for developers and interested groups. National Flood Risk Assessment 2, from 2024, will significantly improve our ability to nationally map future flood risk from rivers and the sea and for surface water. |

## Comprehensive scoping

| Recommendation | Progress up to June 2021 |
|---|---|
| Consider how to encourage LPAs to consult early and comprehensively on the scope of an SFRA. | The Environment Agency 2019 SFRA guidance, and the latest update to NPPF (DLUHC, 2021) include revisions that highlight this requirement. Examples are also provided in the good practice guide. |

## Wide spatial scale and commissioning an SFRA

| Recommendation | Progress up to June 2021 |
|---|---|
| Examine how to raise awareness of the opportunities associated with the role of leading SFRA commissioning and the role of RMAs in supporting SFRA commissioning and production. | The Environment Agency 2019 SFRA guidance includes a revised section on the early stages of SFRA commissioning. Examples are provided in the good practice guide. |
| Consider how consultees can better collaborate with LLFAs and LPAs, and how this could be made more efficient. Consider ways to encourage the collaborative production of SFRAs across catchments. | The Environment Agency 2019 SFRA guidance includes revisions that encourage joint working and highlights the benefits of doing so. Examples are provided in the good practice guide. |
| Build on established flood risk forums/partnerships to encourage closer and earlier discussions between LPAs/LLFAs and the Environment Agency to plan in advance for future SFRA work. | The Environment Agency 2019 SFRA guidance includes revisions to encourage joint working and highlights the benefits of doing so. Examples are provided in the good practice guide. |
| SFRA skills and knowledge requirements of LPAs should be included alongside LLFAs in future FRM skills/knowledge/capacity surveys. | This research's findings have been shared with the Environment Agency's FRM skills lead and ADEPT to inform the scope of future local authority skills/capacity surveys. The National FCERM Strategy Action Plan states – "By autumn 2021, the Environment Agency will work with the Town and Country Planning Association (TCPA) to develop online learning. This will help planners better account for flood risk and climate change." |

## Informing other plans, emergency planning, governance, net flood risk reduction

| Recommendation | Progress up to June 2021 |
|---|---|
| Consider how LPAs can be encouraged to establish specific flood risk policies that go beyond the basic requirements for 'no increase in flood risk'. | The Environment Agency 2019 SFRA guidance highlights that LPAs should identify opportunities to reduce the causes and impacts of flooding. The research's |

| Recommendation | Progress up to June 2021 |
|---|---|
| | findings are being used to inform DLUHC's future PPG updates. |
| Examine whether there needs to be a trigger mechanism (in PPG or SFRA guidance) to provide a clear driver for when SPGs or a specific flood policy is required, so LPAs can see the need. | Not yet addressed. |
| There is a need to more coherently use flood risk information to inform other plans, to identify opportunities and funding mechanisms that can be used to achieve wider flood risk management and net gain in the local area. Examine whether this is/ should be the role of the SFRA. Consider how this fits with the role of the LFRMS prepared by LLFAs. | The Environment Agency SFRA guidance sets out in the 'reducing the causes and impacts of flooding' section that building or funding new flood defences should be considered in the SFRA recommendations. Examples are included in the good practice guide. |
| Consider adding a bullet point in PPG Paragraph 010 to include 'identify requirements for safe development'. | The research's findings are being used to inform DLUHC's future PPG updates. |

## Windfall development

| Recommendation | Progress up to June 2021 |
|---|---|
| Provide further guidance on how the sequential test should be applied to windfall developments and individual development sites. The sequential test assumes a pool of sites is available, which is not the case in these situations. | The research's findings are being used to inform DLUHC's future PPG updates. |

## Document format and accessibility

| Recommendation | Progress up to January 2020 |
|---|---|
| Consider how to encourage LPAs to adopt online mapping for SFRAs. | The Environment Agency 2019 SFRA guidance includes revisions to highlight this. Examples are included in the good practice guide. |
| Consider how the role of the LLFA to map historic flooding and prepare mapping and LFRMS can be used to support the production phase of SFRAs, to avoid duplication of LPA work and outputs. Consider how closer collaboration on flood-related spatial planning and risk management authorities' (RMAs) flood risk management work could move forward. | The Environment Agency 2019 SFRA guidance includes revisions that encourage the incorporation of historic flood maps from the Environment Agency, LLFAs and water companies. It also encourages SFRAs to be consistent with and make use of information from other strategic flood and coastal risk management plans and strategies. |

## Additional recommendations

| Recommendation | Progress up to June 2021 |
|---|---|
| Consider if strengthening the status of SFRA guidance in the planning system would improve the quality of SFRAs and local plan housing allocation decisions. | DLUHC and the Environment Agency are considering the scope of both the PPG and the SFRA guidance to ensure clarity in future versions. |
| Improve links within PPG and SFRA guidance to Defra-Environment Agency research publications FD2320 & FD2321 for information on defining flood hazard and safe development. | The Environment Agency SFRA guidance includes links to relevant research for hazard classification. |
| Revise existing SFRA guidance to highlight the benefits of using SFRAs to inform other plans and strategies such as Infrastructure Delivery Plans and Green Infrastructure Plans. | The Environment Agency 2019 SFRA guidance includes revisions to highlight how other LPA departments and external interested groups should use an SFRA. |
| Revise existing PPG and SFRA guidance to provide equal guidance for all flood sources. | The Environment Agency 2019 SFRA guidance includes revisions to highlight that equal consideration should be given to all flood sources. DLUHC are considering this topic for future PPG updates. |

# Appendix B: Recommendations report for Natural Resources Wales and Welsh Government

## Introduction and approach

The general approach of Welsh planning policy is to direct new development away from areas at high risk of flooding and sets out a precautionary framework to guide strategic and individual planning decisions. The purpose of this research was to identify how flood risk information is used in strategic spatial plans and decision making, and identify the barriers and opportunities to enhance this.

Recommendations for Wales are presented in this report, which could inform future updates to planning policy and guidance.

## Approach and findings

### Policy and guidance for planning and flood risk in Wales

The project reviewed the Welsh policy and guidance regarding flood risk and spatial planning. This included:

- Planning Policy Wales (PPW) edition 10 (at the time of undertaking the research), containing the national planning policy on development and flood risk
- The draft Wales National Development Framework 2020 to 2040, setting the strategic direction for development and addressing key national priorities through the planning system
- Technical Advice Note 15 (TAN15, 2004), technical guidance that supplements Planning Policy Wales and provides a framework for assessing flood risk
- Technical Advice Note 14 (TAN14, 1998), which provides similar technical guidance on assessing coastal erosion risk
- The 2019 draft, consultation edition of the revised TAN15 that updated and combined the original TAN15 and TAN14 technical guidance
- Welsh Government's Local development plan manual edition 2
- Welsh Government planning directions and letters to chief planning officers
- Welsh Government's national strategy for flood and coastal erosion risk management, 2011 and draft 2019 editions
- Development advice maps
- Natural Resources Wales' flood risk maps
- FD2320 flood risk assessment guidance for new development (phase 2)
- FD2603 risk assessment and management in small urban catchment areas

The Welsh Government had carried out a separate review of TAN15, including recommendations for revising it. Although the scope of the TAN15 review did not assess

the impact of SFCAs on plan making, a detailed review of TAN15 was not included in this research. It should be noted that recommendations from the Welsh Government review identified the need for further research needs including research on the influence and benefits of SFCAs.  No specific SFCA guidance has been published in Wales.

### Good practice examples

The research developed criteria applicable to Wales and England to provide a consistent definition of what 'good practice' means in relation to the strategic assessment of flood risk and the sequential approach. These criteria were then used to identify a shortlist of good practice examples for further analysis.

Eleven good practice examples were found against the Welsh Planning Policy and good practice criteria.

One of these is the joint Local Development Plan produced by Isle of Anglesey County Council and Gwynedd Council (Policy ARNA 1 of the Anglesey and Gwynedd Coastal change management area). This has great influence on the shoreline management plan policy (SMP2) and has been important for setting approaches to relocate places where long term flood protection may become unsustainable (for example Fairbourne).

Another is the Ystrad Barwig Isaf decision notice by the Planning Inspectorate Wales. This appeal has had a big impact on planning decisions in Wales. Since then the policy stance in the majority of cases has been for no highly vulnerable development where the entire site is within flood zone C2, even if evidence can be provided that the risks can be managed.

The project aimed to carry out deep-dive interviews with a range of the owners and authors of the local good practice examples. Potential local authorities in Wales were approached for interview, however they were not available to participate. Due to the limited sample size of Welsh SFCAs included in the analysis, and no interviews taking place, a representative analysis could not be carried out on the content and implementation of SFCAs in Wales. This could be carried out at a later date when other cases and interviewees can be provided, using the method and learning developed in this study.

This meant that the research's main findings and recommendations were focused on flood risk and spatial planning arrangements in England (Appendix A).

## Recommendations

The project undertook analysis to understand how applicable the recommendations contained in Appendix A for England are to Wales.  Given the divergence between Wales and England in development and flood risk policy, standards and terminology it was determined that, a like for like comparison was not appropriate.

A separate set of recommendations for Wales have been developed and are detailed below.

For the purposes of this report, the 2004 edition of TAN15 is referred to as the ‘current TAN15’ and the 2019 draft, consultation edition as the ‘proposed TAN15’. It should be noted that at the time of this report the draft, consultation edition of TAN15 remains work in progress and subject to revision by the Welsh Government.

### Recommendations for Wales

- It is recommended that Wales-specific guidance is developed on preparing and using SFCAs. Currently there is no available guidance in Wales on this topic
- Consider a Wales-specific good practice guide for SFCAs
- Provide further guidance on how the justification tests should be applied to windfall developments, and individual development sites. The current and proposed TAN15 provide advice on certain circumstances but do not specifically address windfall sites
- Examine how to encourage LPAs to consult early and comprehensively on the scope of a SFCA and raise awareness of the opportunities and benefits collaborative working can achieve
- Consider how the role of the LLFA to map historic flooding and prepare local flood risk management strategies and plans can be used to support the production phase of SFCAs and avoid duplication of LPA work and outputs
- Provide guidance to clarify how an SFCA should assess the cumulative impact of development on flood risk and clarify an LPA’s role in managing these effects
- Consider the removal of permitted development rights in areas that contribute to locations of high surface water flood risk
- Consider how to encourage LPAs to develop online mapping capabilities for SFCAs.

## Conclusions

The following conclusions have been made from the limited sample size obtained and analysed from Wales, along with the findings of the analysis of examples from England.

### Current tools

SFCAs have been prepared across Wales to support the preparation of local development plans. Not all SFCAs are readily accessible through LPA websites and a comprehensive review of all SFCAs was outside the scope of this research.

As outlined in the recommendations a further comprehensive study of Development Plans and SFCAs in Wales may be beneficial to identify good practice in Wales and gaps where additional policy and guidance is needed.

### Available guidance

There is currently no national SFCA guidance in Wales., While SFCAs are mentioned in flood risk management documents, such as the National Flood and Coastal Erosion Risk Management Strategy for Wales (Welsh Government, 2019), planning sector practitioners may be less familiar with these. The proposed TAN15 is expected to include a specific section on SFCAs that highlights their value and the requirement for LPAs to produce them.

The current TAN15 provides technical guidance and sets out ‘acceptability criteria’ for flooding consequences. This criteria helps local authorities to determine if the flood risks are acceptable and can be managed over the lifetime of a development. It is expected that the scope of this guidance will be expanded in the proposed revised TAN15. The proposed TAN15 will also highlight the importance of SFCAs in the development planning process.

Currently, there is no Wales-specific guidance on how to produce SFCAs. NRW also provides guidance and advice on the commissioning and preparation and completion of SFCAs. In addition, NRW has guidance notes on appropriate methodologies for estimating flood frequency, hydraulic modelling and modelling blockage and breach scenarios. These cover certain aspects relevant to producing a SFCA but do not offer comprehensive SFCA guidance.

Given the divergence between Wales and England in development and flood risk policy, standards and terminology, it is recommended that producing Wales-specific guidance on how to produce and use SFCAs be considered. Further guidance is also sought on how the SFCA should be applied to the different stages and products of the local development plan.

Other gaps in guidance identified by this study for England may be applicable to Wales. These include how to consider the impact of climate change for groundwater and reservoir flood risks; methods for considering all sources of flood risk in a proportionate manner; assessing the cumulative impact of development on flood risk; and providing specific advice on the approach to windfall development.

## Roles and responsibilities

The study’s findings are equally applicable to Wales in that the quality of SFCAs and efficiencies in how they are produced can be improved through proactive LPA leadership and early collaborative working with flood risk management authorities. In addition to NRW, there are 3 regional LLFA groups and 4 coastal groups in Wales that offer effective support and data to LPAs.

There are also potential opportunities for neighbouring LPAs to collaborate and produce collective SFCAs. The number of LPAs and flood risk management authorities in Wales means the roll out of guidance via workshops could cover all of Wales very effectively, as has been done on other flood and coastal risk management related topics. Examples include workshops for the development and/or implementation for the statutory Sustainable Drainage Systems, National FCERM Strategy and Floods Directive Flood Risk Management Plans.

# Appendix C Taking forward the recommendations in England

## Exploring the potential for a national approach across England to applying the sequential test to all sources of flooding

The research found that there is no national guidance on how to apply the sequential test to surface water, groundwater or reservoir flood risk. Most LPAs analysed in this research did not use their SFRA to apply the sequential test to all sources of flooding.

Further analysis was carried out to explore the potential to establish a nationally consistent approach.

The research found that LPAs understood the role of the SFRA to inform the sequential test and 11 of the shortlisted examples had applied the sequential test to consider all sources of flooding. However, it was noted that across the 11 examples, the approach used to rank the sites based on all sources of flooding was different. This reflected the specific sources of flooding in each area as well as the variation between each source of flooding in terms of the severity of flooding, the perceived ease with which it can be mitigated and the data sets on which it is based:

- the severity of the flood risk from each flood source - for example, the risks from reservoir flooding and surface water flooding are different in terms of both likelihood and resulting flood depths, velocity and damage
- the perceived ease with which the risk from each flood source could be mitigated - for example, there is a perception among practitioners that flooding from surface water or groundwater is easier to mitigate than flooding from rivers or the sea and therefore doesn't need so much weight given to it during site selection and strategic planning
- the reliability of the data used to assess the risk - for example, hydraulic modelling carried out to determine the risk of river and sea flooding is more detailed and comprehensive than national or regional scale mapping of groundwater flood risk based on a high-level understanding of geology.

In the examples, several LPAs had been able to define what level of surface water or groundwater flood risk they considered to be equal to the river flood risk defined by the published flood zones. Such examples covered both urban and rural locations. However, these examples were the exception, and overall, no strong rationale was identified to establish equivalent zones for surface water, groundwater or reservoir flooding and flood zones for river and sea flooding.

Having considered the availability of data sets on surface water, groundwater and reservoir flood risk, there is enough data available to apply a sequential approach in every SFRA.

The research concluded that LPAs tended to use a sequential approach rather than the sequential test to flood risk within potential development sites, which could prevent

potential sites from accommodating new development. An approach should be locally defined, clearly documented and implemented using the best available data. LPAs should consult with the LLFA and Environment Agency on their proposed approach.

The findings outlined above informed recommendations for England to clarify how the sequential approach should be applied to surface water, groundwater and reservoir flood risk, alongside river and sea flood risk.

## Developing a good practice guide for England

Once the project was completed the results were used to produce an SFRA good practice guide for England to share the good practice case studies and criteria. The format and content were shaped by feedback from the local and national level interviews and in consultation with national interested groups from the planning and flood risk management sectors.

Feedback from the interviews showed that large guidance documents are often hard to access and navigate, so the good practice guide was developed as an interactive PDF divided into specific sections targeted to a range of users. The good practice guide is structured around a checklist that an LPA can follow to scope, produce and implement an SFRA. Examples that support the checklist are included to indicate how LPAs have applied the good practice criteria.

The guide describes the policy outcomes to be achieved and good practices that can be used to achieve them. The good practice examples include:

- how to produce SFRAs collaboratively within and between several LPAs and with risk management authorities and other interested groups
- realising resource efficiencies through collaboration and early engagement on scoping the local issues an SFRA needs to assess
- deciding when and how to assess flood risk at a catchment level rather than at an individual LPA’s boundary
- publishing SFRA outputs online, in interactive formats that are user friendly for developers and enable future updates to be done quickly and cost effectively
- assessing surface water, groundwater, reservoir and other artificial sources of flooding and applying the sequential approach or sequential test based on all sources of flooding
- supporting measures that use development to achieve ‘net gain’ reductions in existing levels of flood risk
- embedding emergency planning and safe design effectively in spatial planning
- using outputs to inform other plans and strategies

Although its focus is on managing flood risk, the guide includes examples of managing coastal erosion through spatial planning that are transferrable to managing flood risk and vice versa.

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