



Strategic Flood Risk Assessment
of Chichester

VOLUME III
MANAGEMENT AND UPDATE GUIDE

July 2008

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Issue box

The Chichester District Council Strategic Flood Risk Assessment (SFRA) is a "live" document. The current version is developed using the best information and concepts available at the time.

As new information and concepts become available the document will be updated and so it is the responsibility of the reader to be satisfied that they are using the most up-to-date information and that the SFRA accounts for this information.

All revisions to this summary document are listed in the table below.

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Foreword

Chichester District Council is required to prepare a Strategic Flood Risk Assessment (SFRA) to support the development of their Local Development Framework.

The SFRA creates a strategic framework for the consideration of flood risk when making planning decisions. It has been developed with reference to Planning Policy Statement 25 (PPS25): development and flood risk and additional guidance provided by the Environment Agency.

The fundamental concepts that underpin the SFRA are outlined in PPS25. The guidance provided in this document requires local authorities and those responsible for development decisions to demonstrate that they have applied a risk based, sequential approach in preparing development plans and consideration of flooding through the application of a sequential test. Failure to demonstrate that such a test has been undertaken potentially leaves planning decisions and land allocations open to challenge during the planning process.

The underlying objective of the risk based sequential allocation of land is to reduce the exposure of new development to flooding and reduce the reliance on long-term maintenance of built flood defences. Within areas at risk from flooding, it is expected that development proposals will contribute to a reduction of flood risk.

SFRAs are essential to enable a strategic and proactive approach to be applied to flood risk management. The assessment allows us to understand current flood risk on a wide-spatial scale and how this is likely to change in the future.

The main objective of the Chichester District SFRA is to provide flood information:

- so that an evidence based and risk based sequential approach can be adopted when making planning decisions, in line with PPS25;
- that is strategic, in that it covers a wide spatial area and looks at flood risk today and in the future;
- that supports sustainability appraisals of the local development frameworks; and
- that identifies what further investigations may be required in flood risk assessments for specific development proposals.

The SFRA is presented in a number of documents:

- VOLUME I – user guide
- VOLUME II – technical report and flood maps
- VOLUME III – management guide
- VOLUME IV – assessment of sites of interest

The SFRA is a live document which is intended to be updated as new information and guidance becomes available. The outcomes and conclusions of the SFRA may not be valid in the event of future changes. It is the responsibility of the user to ensure they are using the best available information.

1. Introduction

Strategic Flood Risk Assessments (SFRAs) provide flood risk information to inform a range of activities, including land use planning, emergency planning, development control and the development of specific flood risk management policy.

The level of detail included in the SFRA depends on the intended use. The Chichester District Council SFRA was developed to inform the district wide Local Development Framework, and thus the scale and detail within the assessment reflects this intended use. A Level 1 (initial assessment) has been undertaken over the whole of the District, with a Level 2 (more detailed assessment) undertaken in key locations. Detailed flood risk assessments will be required on a site specific basis if, due to non-

The Chichester SFRA has been developed using a range of data from a variety of sources. To ensure that the SFRA is transparent and evidence-based, it is vital that users can easily access the source and certainty of these datasets.

For these reasons, an SFRA management system is required. This document describes the data management system and management protocols agreed by Chichester District Council (CDC) to help users manage existing and new datasets used in the SFRA, update the SFRA reports, and manage the SFRA process so that it remains current and suitable for informing land use planning decisions into the future.

Whilst these systems are in place, there will inevitably be a lag between issue of new data and incorporation into the SFRA. It is thus the responsibility of the user to ensure that the latest information has been incorporated into the SFRA when using it to inform land use planning and other decisions.

2. Data management system

2.1. Introduction

A data management system was developed to support the SFRA data collection and management process. This system was used during the first stage of the SFRA to support initial data collection and record datasets produced during the development of the SFRA.

GIS data, documents and metadata (key information regarding individual datasets) were supplied on project completion in the form of an Electronic Document Management System. This system was designed to support the long-term usefulness and application of the SFRA datasets and guidance.

Additional datasets that become available should be included in the system to ensure that they are considered during future iterations of the SFRA.

2.2. Data collection

The main datasets used in the Chichester SFRA were derived from:

- The Environment Agency - existing flood studies and hydraulic models such as Catchment Flood Management Plans (CFMP), non flood risk datasets including topographic data (LiDAR and SAR), historic flood incidents, and the National Flood and Coastal Defence Database (NFCDD). Data was issued to CDC under guidance provided by the Environment Agency pertaining to the provision of data to Local Authorities for SFRA's.
- Chichester District Council (CDC) - historic flood incidents, existing flood studies and OS mapping. These datasets are held under a variety of licence and copyright agreements and include the Ordnance Survey Mapping Service Level Agreement (MSA).

Records of historic flooding incidents and other flood related information was requested from the following organisations:

- West Sussex Fire Brigade.
- West Sussex County Council (including Highways Depots)
- Southern Water Services

Variable response was received from the above sources. All datasets received were logged in the SFRA meta-database. It is recommended that during future iterations of the SFRA, the above organisations are contacted to ensure that the most up-to-date records have been received.

2.3. Data processing

The following data processing was undertaken during the development of the SFRA:

- Datasets were clipped where their extents were larger than the Chichester District administrative boundary. The same should be done for datasets included in the SFRA in the future.
- Topographic datasets (LiDAR and SAR) were processed and merged to produce catchment specific Digital Terrain Models (DTMs). The ESRI GRID SAR dataset was supplied in 10km x 10km tiles. The higher resolution LiDAR dataset was also supplied in ESRI GRID format

as a series of 2km x 2km and 0.5km x 0.5km tiles. As LIDAR data is more accurate than SAR data, it was given precedence when combining datasets.

- Datasets were produced during the analyses described in Volume II of the SFRA.
- Maps and figures were produced using map templates developed for the SFRA reports. Overview maps were produced using MapInfo and site allocation maps were produced using a batch output tool in ArcGIS.

2.4. Data ownership

The datasets obtained for use in the SFRA have come from a number of sources under licence agreement. These datasets can not be passed to external sources without permission from the owner. Datasets produced during the SFRA are owned by CDC and can be passed to external parties at their discretion. The key datasets are summarised in Table 2.1.

Table 2.1 Key datasets

List of Key Data Sets	Ownership	Licence Required	Contact
Flood plain topography – LiDAR and topographic survey	Environment Agency	Yes	Flood Mapping & Data Environment Agency
Flood Zones	Environment Agency	Yes	Flood Mapping & Data Environment Agency
Channel topography	Environment Agency	Yes	Flood Mapping & Data Environment Agency
Mastermap	Environment Agency	Yes	Flood Mapping & Data Environment Agency
OS Mapping	Ordnance Survey	Yes	Ordnance Survey
OS Landline	Environment Agency	Yes	Flood Mapping & Data Environment Agency
Historic flood information	Various	Yes	Various
Detailed hydraulic models	Environment Agency	Yes	Flood Mapping & Data Environment Agency
SFRA reports and maps	CDC	No	WBC and ADC
CFMP model files and results	Environment Agency	Yes	Flood Mapping & Data Environment Agency
SFRA model files and results	CDC	Yes	WBC and ADC

2.5. SFRA data management system

The data management strategy developed for the SFRA was designed to account for possible issues with data maintenance, data processing and project outputs. The final deliverables of the SFRA were delivered in two forms:

- Hardcopies of the SFRA reports – the SFRA contents were divided into several volumes and chapters to allow easier update during future iterations.
- A portable hard-drive containing the following electronic datasets:
 - Raw GIS data - SFRA flood outlines and additional GIS data layers used to provide the SFRA maps and figures. These were obtained under licence from the Environment Agency and CDC. All data was provided in a format compatible with CDC's existing corporate GIS infrastructure which uses ESRI ArcGIS 9.1.
 - Electronic document management system - PDF versions of all maps and reports produced during the SFRA.
 - Customised GIS workspaces – a duplication of the PDF maps and reports in non-PDF format, allowing modifications to the maps.

3. Management team

3.1. Introduction

To ensure that the SFRA remains 'live' it is important to nominate a Management Group with responsibility for monitoring, managing and maintaining the SFRA, as shown in Figure 3.1.

By following this process of information dissemination and review, the management team can ensure a consistent and up to date supply of strategic flood risk information to all levels of planning process.

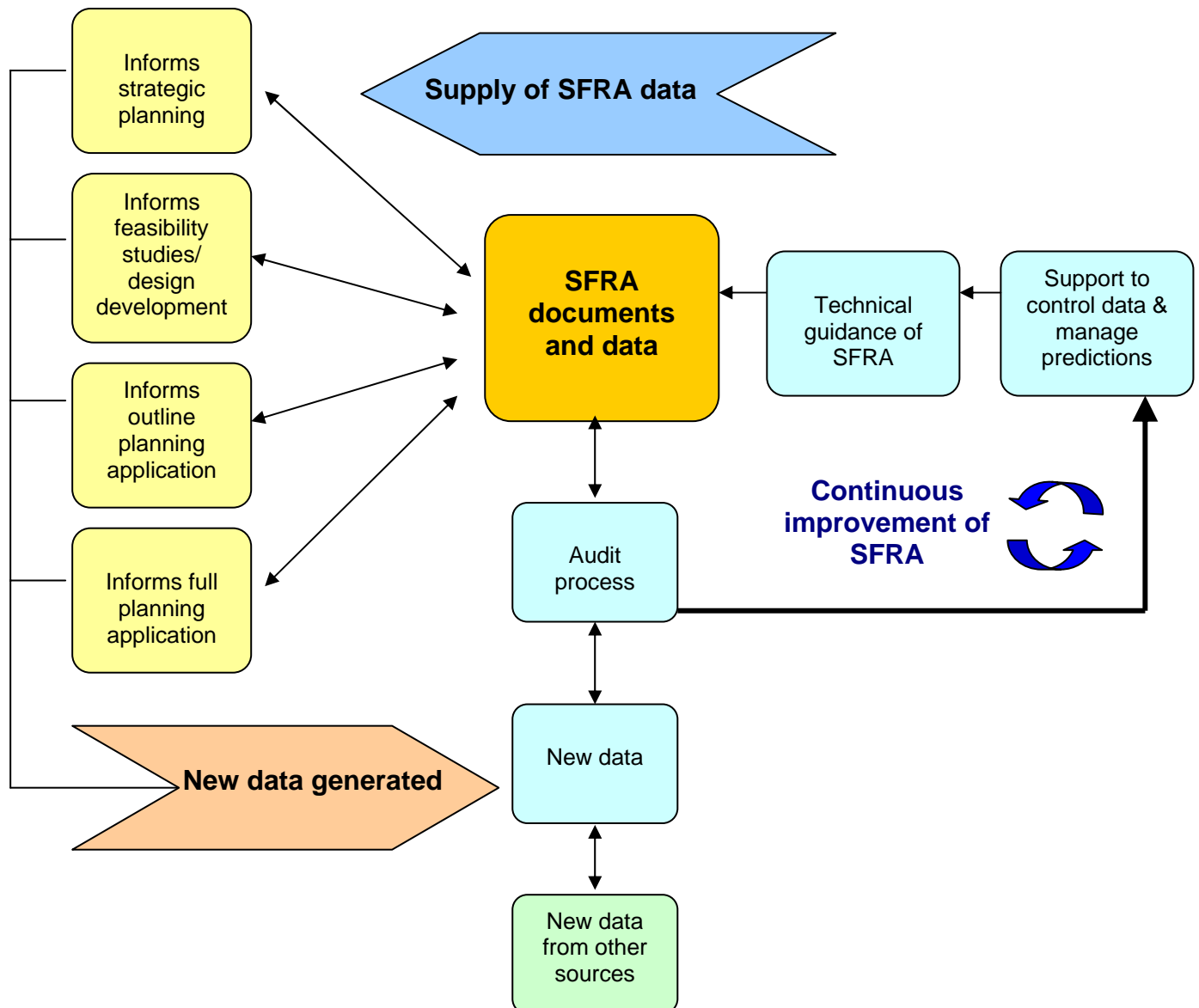


Figure 3.1 Conceptual SFRA management process

3.2. Roles and responsibilities

The SFRA custodian and GIS leader roles will be assigned by Chichester DC. When an individual is unavailable to fulfil the role, and/or in the interim while the role is being assigned, Planning & Engineering Services at each local authority will take joint ownership of the responsibilities detailed below.

(1) Chichester SFRA Custodian

Responsibilities:

- Undertake a review of the SFRA annually and determine whether a formal revision of the SFRA is required, as per Section 4.1.
- If necessary attend a meeting with the Environment Agency annually to discuss the need for updates and then undertake identified actions, as per Section 4.1.
- Arrange additional studies where appropriate. Arrange for GIS Leader to incorporate findings of new projects into the SFRA database as per Section 4.2. Arrange for findings of new projects to be incorporated into the SFRA documents as per Section 4.3.
- Arrange for issues of SFRA data and findings to external parties where appropriate, as per Section 4.4.

(2) Chichester SFRA GIS Leader

Responsibilities:

- Identify new datasets relevant to the SFRA when they become available (including checks for datasets known to be regularly updated see table 4.1)
- Manage incoming datasets as per Section 3.3 (upload new datasets in the system and add superseded flag to old datasets).
- Issue outgoing datasets as per Section 3.5 (with information regarding source and currency of information and appropriate licence arrangement).

3.3. Communications plan

It is envisaged that information in the SFRA will be distributed to a number of different internal and external parties. Table 3.1 contains a list of likely communication links and agreed methods of communication for the Chichester SFRA.

Table 3.1 SFRA communications plan

Contact	Information provision	Method of communication	Timetable
Relevant departments Chichester District Council	SFRA findings and datasets (where necessary)	Use in LDF and other District documents Internal meetings	Internal meetings to take place within 1 month of completion of SFRA

The SFRA Custodian	SFRA datasets and findings New incoming datasets	Through any method	As required
Council Members	Findings of the SFRA study	Briefing of relevant Council members Use in LDF and other District documents	Briefing of members to take place within 2 months of completion of SFRA
Environment Agency	Findings of the SFRA study Amendments to the SFRA	Annual meeting to be arranged by the Environment Agency Contact throughout all stages of the planning process	As required
Emergency Planners	Findings of the SFRA	Internal meeting	Within 1 month of completion of SFRA
Regional Planning Body	Findings of the SFRA	Through any method	As required
Developers	Findings of the SFRA	Use in LDF and other District documents Datasets to interested parties including licenses etc.	As required
General public	Findings of the SFRA	Internet Use in LDF and other District documents	Findings of SFRA to be on Council websites and in Council publications within 2 months of completion of SFRA

4. Management and update protocols

4.1. Monitoring the SFRA

It is in CDC's interest that the SFRA remains current and up-to-date. To help facilitate this, the Southern Region of the Environment Agency has indicated that they would like to organise an annual meeting with administrative bodies to review SFRA's within their boundary. It is envisaged that the Custodian (see Section 3.2) will be contacted on an annual basis with details of this meeting.

Prior to this meeting it is recommended that the following maintenance checks be undertaken:

- Review the currency of datasets used in the SFRA.
- Consider whether a formal review of the SFRA is necessary.

Whilst all datasets should be checked for updates and key organisations listed in Section 2.2 should be contacted, Table 4.1 contains a list of datasets that are known to be updated regularly.

Table 4.1 Datasets that are known to be updated regularly

Dataset	Owner	Comment
Flood Zones	Environment Agency	Updated quarterly
Catchment Flood Management Plans and Shoreline Management Plans	Environment Agency	Updated every five years
National Flood and Coastal Defence Database (NFCDD)	Environment Agency	Ongoing updates
System Asset Management Plans	Environment Agency	Unknown
Historic flood incidents	Environment Agency, Water companies, Fire Brigade, Highways Depots	Unknown, however large updates are likely after significant flood events

4.2. Incorporating new datasets

The data management system described in Section 2 was developed to manage current and existing datasets used in the Chichester SFRA. It is envisaged that this database will be merged into the existing CDC data management system yet maintain its own SFRA entity.

The following tasks should be undertaken when including new datasets in the Chichester SFRA:

- Identify new dataset (as per Section 4.1).
- Log new dataset/information in meta-database.
- Add superseded flag to old dataset.
- Save new dataset/information in the SFRA section of the CDC GIS system.
- Record new information in log so that next update can review this information.

4.3. Updating SFRA reports and figures

Volume II provides a record of all of the technical analyses used to develop the Chichester SFRA. In recognition that the SFRA will be updated in the future, the report has been structured in chapters according to the six sources of flooding investigated. By structuring the report in this way, it is possible to undertake further analyses on a particular source of flooding and only have to supersede the relevant chapter, whilst keeping the remaining chapters unaffected.

In keeping with this principle, the following tasks should be undertaken when updating SFRA reports and figures:

- Undertake further analyses as required after SFRA review (see Section 3.2).
- Record all new datasets in SFRA data management system.
- Document all new technical analyses by rewriting and replacing relevant Volume I chapter/s.
- Amend and replace relevant SFRA Maps.
- Review and if required, amend Chapter 2 of Volume II.
- Reissue to CDC, Environment Agency and other stakeholders.

4.4. Issuing SFRA information to other parties

A large amount of data has been collected and analysed during the development of the Chichester SFRA. It is likely that other parties will want to access this information when undertaking parallel and/or more detailed studies. The data management system described in Section 2 has been developed to manage current and existing datasets used in the Chichester SFRA. This system can be adapted to manage the outgoing data to external parties.

The following tasks should be undertaken when issuing SFRA datasets to other parties:

- Log data request in CDC data request system.
- External parties should be given the SFRA reports and maps in the first instance. In this way they can be asked to request specific and relevant pieces of information, rather than the entire dataset.
- Locate and compile dataset.
- Identify and issue relevant licence agreement.
- Provide details of the original source and currency of information. Advise that the user should go directly to the source of data to check that the latest information is at hand.
- Request a summary of findings of the study and copies of any additional data generated.
- Log details of outgoing data in CDC data request system.

5. Glossary and notation

ABD	Area Benefiting from Defences
Actual risk	The risk that has been estimated based on a qualitative assessment of the performance capability of the existing flood defences
AEP	Annual probability of exceedence. The annual chance of experiencing a flood with the corresponding flood magnitude, i.e. a 1% AEP flood is a flood with a flow magnitude that has a 1% chance of occurring in each and every year
Breach or failure hazard	Hazards attributed to flooding caused by a breach or failure of flood defences or other infrastructure which is acting as a flood defence.
CDC	Chichester District Council
CFMP	Catchment flood management plan
DCLG	Department for Communities and Local Government.
EA	Environment Agency
Flood defence	Natural or man-made infrastructure used to prevent flooding
Flood risk	<i>Flood risk is a combination of two components: the chance (or probability) of a particular flood event and the impact (or consequence) that the event would cause if it occurred (EA 2003).</i>
FRA	Flood risk assessment
Flood risk management	<i>Flood risk management can reduce the probability of occurrence through the management of land, river systems and flood defences, and reduce the impact through influencing development in flood risk areas, flood warning and emergency response (EA 2003).</i>
Flood zones	This refers to the Flood Zones in accordance with Table 1 of PPG25. For the purpose of the SFRA, the definition of flood zones varies slightly from PPG25 in that it shows the extent of flooding ignoring the presence of flooding defences, "except where the 'actual risk' extent is greater"
LDD	Local development documents
LDF	Local development framework
m	metres (measure of distance)
m/s	metres per second (measure of velocity)

NGR	National grid reference
ODPM	Office of the Deputy Prime Minister (ODPM). Former government body responsible for PPG25 and PPS25. DCLG is now the responsible Government body.
OS	Ordnance survey
PPG25	Policy Planning Guidance Note 25: Development and Flood Risk - Guidance explaining how flood risk should be considered at all stages of the planning and development process in order to reduce future damage to property and loss of life.
PPS25	Planning Policy Statement Note 25: Development and Flood Risk. Currently at consultation draft status (October 2005).
Precautionary principle	<i>"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation"</i> . The precautionary principle was stated in the Rio Declaration in 1992. Its application in dealing with the hazard of flooding acknowledges the uncertainty inherent in flood estimation.
RBMP	River basin management plan.
Residual risk	Flood risks resulting from an event more severe than for which particular flood defences have been designed to provide protection.
RFRA	Regional flood risk assessment
RSS	Regional spatial strategy
Sequential risk-based assessment	Priority in allocating or permitting sites for development, in descending order to the flood zones set out in Table 1 of PPG25, including the sub divisions in Zone 3. Those responsible for land development plans or deciding applications for development would be expected to demonstrate that there are no reasonable options available in a lower-risk category (PPG25 paragraph 30).
SFRA	Strategic flood risk assessment
SFRM	Strategic Flood Risk Management. Current Environment Agency framework for commissioning flood mapping products (2003 - 2008).
SMP	Shoreline management plan
SREP	Strategic risk evaluation procedure
S105	National Section 105 Framework Agreement (NATCON 257) (1998 to 2003). Previous Environment Agency framework for commissioning flood mapping products under Section 105 of the Water Resources Act (1991).

TUFLOW	A two-dimensional fully hydrodynamic modelling package developed by WBM Oceanics Australia. The TUFLOW model differs from the ISIS model in that it models the whole floodplain as 2D domains, providing a more complete description of flood behaviour where complex overland flows and backwater filling occur.
1D	1 Dimensional
2D	2 Dimensional
1 in 100 year return period flood event	<p>A flood with an average return period of 100 years. This term is not used in the SFRA as it can be misleading, in that it is possible that this size flood will not occur once in a 100 year period and likewise it is possible that it will occur more than once.</p> <p>The flood is also known as 1 per cent annual probability of exceedence (1% AEP) flood and this term is used throughout the SFRA .</p>