

Appendix A - Data sources used in the SFRA

1 Introduction

1.1 SFRA mapping

The data used in this SFRA and associated mapping can be found on Dorset Council's 'Dorset Explorer' web viewer.

2 Historical Flooding

Dorset Council as Lead Local Flood Authority provided details of historical flooding events and hotspots in the district. The Environment Agency's Historic Flood Map was also used and downloaded from the Partner data share catalogue.

3 Fluvial flooding

3.1 Flood Zones 2 and 3a

Flood Zones 2 and 3a are from the Environment Agency's Flood Map for Planning (which incorporates latest modelled data), where available.

Over time, the online mapping is likely to be updated more often than the SFRA, so SFRA users should check there are no major changes in their area.

3.2 Flood Zone 3b (the Functional Floodplain)

Flood Zone 3b, as shown in Appendix A mapping, has been compiled for the study area as part of this SFRA and is based on the 5% AEP (1 in 20 chance of flooding in any given year) or 4% AEP (1 in 25 chance of flooding in any given year) extents produced from Environment Agency detailed hydraulic models, or existing 2D generalised models, where outputs were available (see Figure B-1 for model coverage).

For areas not covered by detailed EA models, a precautionary approach should be adopted for Flood Zone 3b with the assumption that the extent of Flood Zone 3b would be equal to Flood Zone 3a. If development is shown to be in Flood Zone 3a (or Flood Zone 3b derived from 2D generalised modelling), further work should be undertaken as part of a detailed site-specific Flood Risk Assessment to define the extent of Flood Zone 3b.

If the area of interest is in an area that has seen some major changes to the extent of the Flood Zones, having checked the online mapping, developers will also need to remap Flood Zone 3b as part of a detailed site-specific Flood Risk Assessment.

4 Climate change

4.1 Climate change data

Where available, climate change data has been used in the assessment of flood risk, particularly regarding fluvial and tidal flood risk. As part of this SFRA, additional climate change modelling was undertaken for the following models:

Table 4-1: Climate change modelling

Study	Year	Type
River Frome Model Improvement Study	2014	ISIS-TUFLOW, 1D-2D Fluvial
Bridport Model Enhancement	2020	ESTRY-TUFLOW, 1D-2D Fluvial
Lower Stour	2020	Flood Modeller-TUFLOW, 1D-2D Fluvial
Gillingham	2006	TUFLOW, 2D Fluvial
Crane and Moors	2020	Flood Modeller-TUFLOW 1D-2D Fluvial

As it is not practical to update all of the modelling in the study area, these models were chosen based on their locations and where it was determined that there could be implications for site allocations in the Local Plan. This approach was discussed and agreed with Dorset Council and the Environment Agency.

Additionally, the Risk of Flooding from Surface Water (RoFSW) mapping has been updated with climate change modelling. Increased flows of 20% and 40% were applied to the 1% AEP event

5 Surface water

Mapping of surface water flood risk in study area has been taken from the Risk of Flooding from Surface Water (RoFSW) maps published online by the Environment Agency. These maps are intended to provide a consistent standard of assessment for surface water flood risk across England and Wales in order to help LLFAs, the Environment Agency and any potential developers to focus their management of surface water flood risk.

The RoFSW is derived primarily from identifying topographical flow paths of existing watercourses or dry valleys that contain some isolated ponding locations in low lying areas. They provide a map which displays different levels of surface water flood risk depending on the annual probability of the land in question being inundated by surface water (Table B-1).

Table 5-1: RoFSW risk categories

Category	Definition
High	Flooding occurring as a result of rainfall with a greater than 1 in 30 chance in any given year (annual probability of flooding 3.3%)
Medium	Flooding occurring as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
Low	Flooding occurring as a result of rainfall of between 1 in 1,000 (0.1%) and 1 in 100 (1%) chance in any given year.

Although the RoFFSW offers improvement on previously available datasets, the results should not be used to understand flood risk for individual properties. The results should be used for high level assessments such as SFRAs for local authorities. If a site is indicated in the Environment Agency mapping to be at risk from surface water flooding, a more detailed assessment should be considered to more accurately illustrate the flood risk at a site-specific scale.

6 Groundwater

Mapping of groundwater flood risk has been based on the JBA Groundwater Flood Map to 5m Resolution.

The JBA Groundwater Flood Map has been developed at a national scale. The high resolution dataset represents the relationship between peak groundwater levels and return period, thus allowing the characterisation of risk for a specific flood return period. The product allows for a detailed assessment of groundwater flood hazard. The source data utilised, modelling technique applied and degree of calibration undertaken are commensurate with the enhanced resolution of the map. The modelling involves simulating groundwater levels for a range of return periods (including 75, 100 and 200 years). Groundwater levels are then compared to ground surface levels to determine the head difference in m; a zero head suggesting artesian discharge of groundwater at the surface. Head difference is defined on a 5m grid. The likelihood of flooding is classified below:

Table 6-1: Groundwater flood hazard classification

Groundwater head difference (m)*	Gridcode	Class Label
0 to 0.025	4	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	3	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	2	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event. There is a risk of flooding to subsurface assets but surface manifestation of groundwater is unlikely.
>5	1	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	0	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.		

The JBA groundwater data should be used only in combination with other information, for example local data or historical data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale. Section 5.7 of the Main Report explains groundwater flooding.

7 Sewers

Historical incidents of flooding are detailed by Wessex Water through their Hydraulic Flood Risk Register (HFRR). The HFRR database records incidents of flooding relating to public foul, combined or surface water sewers and displays which properties suffered flooding.

8 Reservoirs

The risk of reservoir inundation because of reservoir breach or failure of reservoirs within the area has been mapped using the outlines produced as part of the National Inundation Reservoir Mapping (NIRIM) study, and are shown online on the Long-Term Risk of Flooding website at the time of publication. The Environment Agency are currently updating their national reservoir flood maps and SFRA users should check there are no major changes to the reservoir maps before relying on the mapping in the SFRA. Section 5.9 of the Main Report presents the reservoirs affecting Dorset.

9 Flood Defences

The Environment Agency supplied the location of all flood defences within the district in their AIMS database, including information relating to the type of flood defence and their standard of protection. The Areas Benefitting from Defences shapefile was also considered. Chapter 6 of the Main Report provides information on flood defences and schemes.