



Flood Risk Overview

Sources of Flood Risk



The East Hampshire District is located in the north east of the PUSH sub-region, north of Havant. Only part of the District is within the PUSH sub-region, covering a total area of approximately 22km². East Hampshire has no coastal frontages. This part of the District has only 4 km of designated main river, all of which is found south of Rowlands Castle. The presence of dry valleys which have in the past flooded along the upper reaches of both the Wallington River west of Horndean and the Lavant Stream which flows through Horndean and Rowlands Castle do, however, pose a risk of flooding. At present, approximately 3% of the land area in this part of the District is designated as within Flood Zones 2 and 3 (see SFRA Map: *Flood Mapping Dataset*).

The SFRA demonstrates that unlike all other districts in the PUSH sub-region, the primary source of flood risk to this part of the District is not from fluvial or tidal flooding but from groundwater and overland flow flooding from intense rainfall. The upper reaches of the River Wallington and the Lavant Stream are dry valleys, due to the permeable nature of the geology in this area, which in the past have flooded because of intense rainfall over a short period, normally associated with summer storms.

Due to their topography, these dry valleys have been developed in parts and serve as the location for main roads, further enhancing the topographic 'funnelling effect' of intense surface water flows. Clanfield and Horndean have been flooded in this way in the past and Flood Zones 2 and 3 do take account of this potential flow route despite the ephemeral nature of the watercourse.

It should be noted however, that due to the geology of this part of East Hampshire District, this type of flooding is only likely to occur following extreme rainfall events, the frequency of which cannot be directly compared with the return periods assigned to river flows or extreme tide levels. It is therefore suggested that this part of East Hampshire does not face the same high-level flood risk challenges as posed to the other Local Planning Authorities that constitute the PUSH sub-region.

Additionally, historical incidents of groundwater flooding in this part of the District have occurred mainly in the Lavant Stream valley south of Rowlands Castle, where the South Downs chalk ends and the stream meet less permeable bedrock. The affected areas have been flooded for long durations. This part of the District has also been susceptible to flooding from other sources including surface water and flooding caused by infrastructure failure.

Key physical characteristics that may constrain development

Approximately 27% of this part of East Hampshire District is currently covered by existing development. A number of environmentally designated areas represent a significant constraint on development in this part of the District, covering approximately 24% of its area. As such there may be only limited land upon which development can be permitted following consideration of other planning constraints.

The topography of this part of the District ranges from approximately 25 metres above ordnance datum (mAOD) in the Lavant Stream valley to 130 mAOD on the approach to Butser Hill in the north. In the northern half of this part of the District, relatively steep slopes (compared to the rest of the PUSH sub-region) contribute to the source of surface water flood risk to the settlements of Horndean and Clanfield.

Geologically, this part of the District is underlain by highly permeable bedrock formations to the north of Horndean, and low and moderately permeable bedrock formations to the south.

Vulnerability to Climate Change

It is anticipated that climate change will result in an increase in the frequency of storms and therefore an increase in the conditions leading to surface water and groundwater flooding. In this part of East Hampshire District, this is likely to put additional pressure on those settlements listed above that are located in or adjacent to areas currently at risk of flooding.

Existing defence assets and likely future investment

There are currently no flood defences in this part of East Hampshire District. The lack of either fluvial or tidal flood risk precludes the need to invest in defence assets in future. It should however, be noted that investment in sustainable drainage and runoff mitigation can be used to mitigate the effects of extreme surface water and overland flow flooding that has been previously experienced in this area of East Hampshire District. Opportunities may also be sought to improve conveyance within channels and culverts to ensure that flood water is efficiently conveyed during times of high surface water flows.

Sequential and Exception Test

National Planning Policy Framework (NPPF) and The Planning Practice Guidance sets out the Government's objectives for achieving sustainable development through the avoidance and management of flood risk. The NPPF aims to ensure that flood risk is taken into account at all stages of the planning process to avoid inappropriate development in areas of flood risk. To achieve this aim, the Planning Practice Guidance provides a decision making tool to ensure that sites with a low probability of flooding are developed in preference to areas at higher risk. The Sequential Test is the decision process which Local Authorities must demonstrate when developing their Local Plans. This SFRA has developed a suite of mapping outputs to assist Local Authorities in applying the Sequential Test.

When applying the Sequential Test, The *Flood Mapping* Dataset of the SFRA will provide all the necessary information required upon which to base decisions regarding the location of future development in relation to flood risk. Within The Flood Mapping Dataset, the key map required for applying the Sequential Test is the Environment Agency's Flood Map for Planning, shown as Flood Zone 2 and Flood Zone 3 in conjunction with the Historic Flood Map.

The Flood Mapping Dataset also contains 4 other Mapsets which provide useful information to support Local Authorities when applying the Sequential Test, these include:

Guidance Document: East Hampshire District Council (Partial)

- *Hazard Map* – Un defended Flood Hazard
- *Flooding from Other Sources* – including Surface Water, Groundwater, Sources of Overland Flow
- *Flood Warning Areas*
- *Climate Change* - Outlines for years 2025, 2055, 2085 and 2115

In the original SFRA published in 2007 these guidance documents included specific advice on how to apply the PPS25 Sequential and Exception Tests. This advice has since been updated and incorporated into other guidance notes. For the purpose of efficacy and ensuring this text remains contemporary, it will not be reproduced here and instead signposted from the key guidance below:

- [The National Planning Policy Framework](#)
- [Planning Practice Guidance: Flood Risk and Coastal Change](#)
- [Flood risk assessment for planning applications](#)
- [Flood risk assessment: standing advice](#)

It is requested that if in applying any of this guidance that links are found to be broken or require updating that contact is made with the SFRA helpdesk through contact details on the mapping webpage.

Planning Policy

Paragraph 100 of the National Planning Policy Framework (NPPF) seeks to direct development away from areas at highest risk of flooding. Local Plans should be supported by SFRA and develop policies to manage flood risk from all sources.

Local Plans should apply a sequential, risk based approach to the location of development. Development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding.

If, following application of the sequential test, it is not possible (consistent with wider sustainability objectives) for the development to be located in zones with lower probability of flooding, the exception test can be applied if appropriate. The exception test should demonstrate that there are wider benefits to the community which outweigh flood risk. It should also demonstrate, through a site specific flood risk assessment, that the development will be safe for its lifetime.

Chapter 10 of the NPPF provides full guidance on climate change, flooding and coastal change.

SFRA Mapping Outputs

The table below summarises the most relevant mapping outputs and their purpose, for each of the key users of the PUSH SFRA.

Key Users	Relevant SFRA Mapping Dataset	Purpose
Planning Policy	Flood Mapping: NPPF Sequential Test and Relevant Supporting Information	Flood Mapping Dataset provides all the necessary information to help planners apply the Sequential Test and Exception Test when allocating new sites for development. Flood Mapping Dataset also allows planners to identify sites with the lowest probability of flooding and lowest flood hazard / danger and how the extent of flooding is likely to change in the future due to climate change.
	Development Control	Flood Mapping Dataset helps Development Control personnel to: <ul style="list-style-type: none"> o Prepare specifications for site specific FRAs. o Review site specific FRAs for new development sites and check for compliance with the NPPF.
Risk Management	Flood Mapping: NPPF Sequential Test and Relevant Supporting Information	Flood Mapping Dataset helps Flood Risk Managers to identify variations in flood hazards / dangers to existing development. The data also provides mapping to show how the extent of flooding is likely to increase over time due to climate change.
	Infrastructure: Appropriate Defence Standards and Levels of Investment	Infrastructure Dataset helps Flood Risk Managers to: <ul style="list-style-type: none"> o Identify shortfalls in existing defences in providing appropriate standards of defence, now and in the future. o Identify indicative levels of investment required to provide the appropriate standards, now and in the future.
Emergency Planning	Flood Mapping: NPPF Sequential Test and Relevant Supporting Information	Flood Mapping Dataset can provide emergency planners with information on the variation of flood probability and hazard across the sub region. Such information can aid in the development of emergency plans and evacuation routes during flood events.
	Infrastructure: Appropriate Defence Standards and Levels of Investment	Infrastructure Dataset can help Emergency Planners to: <ul style="list-style-type: none"> o Identify indicative standards of defence, now and in the future.



Recommendations for Site Specific Flood Risk Assessments

Whilst the information presented in this SFRA will inform Local Authorities and facilitate their strategic allocation of sites for future development, it should not preclude the need for developers to undertake site specific flood risk assessments (FRAs). A SFRA, by its very nature, is a high level assessment of flood risk at the local authority level. It does not provide sufficiently detailed information to satisfy all of the requirements of a site specific FRA as outlined in the National Planning Policy Framework.

To improve the efficiency of disseminating general guidance, the Environment Agency has produced a suite of standing advice and guidance on producing Flood Risk Assessments.

- Flood Risk Assessment: Guidance for completing flood risk assessment to accompany a planning application
 - [When you need an assessment](#)
 - [When you don't need an assessment](#)
 - [When to follow standing advice](#)
 - [How to do an assessment](#)
 - [Get information to complete an assessment](#)

- Flood Risk Assessment: Guidance for planning authorities on review of flood risk assessments submitted as part of planning applications
 - [Check if you need to consult](#)
 - [Flood zone 1](#)
 - [Flood zone 2](#)
 - [Flood zone 3](#)
 - [What you need to check in an assessment](#)
 - [Extra flood resistance and resilience measures](#)

The following sections provide additional specific guidance for assessing flood risk at the site specific level within East Hampshire District and indicate how the outputs from the SFRA can inform such assessments.

Surface Water/Overland Flow Flooding

The dataset *Flood Mapping: Flooding from Other Sources* show both maps for potential surface water flooding and the variation in the potential source of overland flow across the PUSH sub-region. The areas shown in red and orange relate to areas of very high and high potential for generating overland flow. Notably, the urban areas are indicated as red or orange due to the high runoff potential from urban land uses.

Within East Hampshire there are a number of areas which have a high to very high potential for generating overland flow. FRAs for sites that are found to be within or in the vicinity of these areas, especially if the local topography places the site at a lower elevation than the surrounding land and



hence downstream of the source, should consider the impacts and management of flooding due to overland flow.

The data shows that new development located on greenfield land in East Hampshire is likely to have either a low or moderate impact on the surface water runoff regime. Nevertheless, site specific FRAs should consider the impact of development on the local surface water runoff regime and should investigate SUDS options to manage surface water where achievable.

Groundwater Flooding

Within the PUSH region the key areas at risk of groundwater flooding are where highly permeable geology meets lower permeability geology as shown in *Flood Mapping: Flooding from Other Sources: Groundwater*, which has been verified by inspection of the historical incident records.

This geological transition occurs across the southern extent of the East Hampshire District Boundary. Historically, groundwater flooding has occurred in the Lavant Stream Valley south of Rowlands Castle, Red Hill and in Denmead on the boundary with Winchester City Council.

There have been a number of incidences of groundwater flooding in this part of the District. It is recommended that all FRAs for development in these locations consider the risks of groundwater flooding. Furthermore, in addition to the locations of historical flooding, FRAs for developments in Hordean and Lovedean should consider the risks of groundwater flooding where sites are located downstream of where the highly permeable geology meets moderately permeable geology, as indicated *Flood Mapping: Flooding from Other Sources: Groundwater*.

Flooding from Infrastructure

Historically, the majority of flooding caused by problems relating to the drainage infrastructure has occurred in Horndean as shown in Dataset *Flood Mapping: Flooding from Other Sources*. When undertaking a site specific FRA for a large development site, especially in Hordean, consultation with Southern Water should always be undertaken to investigate whether the proposed development will have an adverse impact on the local drainage system.

Fluvial Flooding

The *Flood Mapping* Dataset shows the fluvial Flood Zones, which indicate that approximately 3% of the PUSH area of East Hampshire is classified as fluvial flood zone 2 or 3. However, the flow paths which these Flood Zones represent are ephemeral in nature and often dry. The Flood Zones in East Hampshire therefore represent the risk of fluvial flooding following extreme rainfall events and are likely to be a conservative estimate which should be refined when undertaking a site specific FRA.

Across East Hampshire District, gaps in available fluvial flood risk data exist. Therefore, for the purposes of this SFRA, Flood Zone 3b (defined by Planning Practice Guidance as the 'functional floodplain') has been defined as the entire extent of Flood Zone 3, as recommended by the Planning Practice Guidance. This is a precautionary approach and should be tested by site specific FRAs, where required.

Flood levels associated with the fluvial Flood Zones have not been identified as part of this SFRA. The variations in previous modelling approaches for the rivers within the PUSH sub-region, coupled with the spatial variation on flood levels along the river valleys, meant that it was not possible to provide a consistent approach to identifying fluvial flood levels without re-modelling a number of rivers. Such detailed assessments were outside the scope of this SFRA.

Developers undertaking a FRA for a site within the fluvial Flood Zones should obtain the most up to date flood risk data from the Environment Agency. If no further information is available then a site specific FRA may need to include a numerical assessment to refine the understanding of fluvial flood risk, and agree the form of this assessment with the Environment Agency.

Sustainable Urban Drainage Systems (SUDS)

Conventional surface water drainage systems have traditionally used underground pipe networks to efficiently convey water away from sites. In the past this has led to problems of downstream flooding, reductions in groundwater recharge and waste pollution incidents associated with surface water overwhelming combined sewers. Both 'Making Space for Water' and the 'Water Framework Directive' have highlighted the need for an improved understanding and better management of how our urban environments are drained. The SUDS management train approach is the principle that a range of SUDS which feed into each other can often offer benefits to the delivery of a successful surface water system/strategy.

NPPF states that Local Authorities should prepare and implement planning strategies that help to deliver sustainable development, by using opportunities offered by new development to reduce the causes and impacts of surface water flooding. By implementing policies to encourage developers to incorporate SUDS wherever possible, Local Authorities can help to mitigate the impacts that development has on surface water runoff rates and volumes.

Emergency Planning

As well as informing the development control process, the outputs of the SFRA can also be used by the Local Authority to inform their Emergency Planning Policies. The Flood Mapping Datasets are particularly useful when considering the feasibility and sustainability of key access routes within their administrative boundaries. The benefit of producing such outputs on a sub-regional scale mean that the Local Authority can also consider access to the District beyond their administrative boundary where key access routes (e.g. M27) cross a number of Local Authorities.



Additional Guidance

- [Flood risk assessment for planning applications](#); Environment Agency
- [Flood risk assessment: standing advice](#); Environment Agency
- [National Planning Policy Framework](#); DCLG
- [National Planning Policy Framework Quick Guide](#); Environment Agency
- [Planning Practice Guidance – Online web-based resource](#); DCLG
- [Flood and coastal risk guidance: climate change allowances](#); Environment Agency
- [Development and Flood Risk: Guidance for the Construction Industry](#) CIRIA (2004)
- [Flood Risk Assessment Guidance for New Development: FD2320/TR2](#) Environment Agency / DEFRA
- [Susdrain online resource: The community for sustainable drainage](#) CIRIA
- [East Hampshire DC emergency planning flooding – online resource](#)
- [East Hampshire DC Local Plan SFRA evidence – online resource](#)
- [South East Hampshire Catchment Flood Management Plan](#), Environment Agency
- [Local Flood Risk Management Strategy](#), Hampshire County Council