

Guidance Document: Gosport Borough Council

Flood Risk Overview

Sources of Flood Risk

Gosport occupies a central position in the PUSH sub-region, situated on the western side of Portsmouth Harbour. It covers a total area of approximately 25 km². The Borough has 10 km of open coastal frontage and 23 km of frontage onto Portsmouth Harbour. The River Alver is the only watercourse in the Borough, with a total main river length of 5 km. At present, approximately 21% of the Borough's land area is designated as within Flood Zones 2 and 3 (see SFRA Map: *Flood Mapping Dataset*).

The SFRA has shown that the primary source of flood risk to Gosport Borough is from the sea. The key parts of the Borough which are currently at risk of flooding from the sea are frontages around Haslar Creek, Forton Lake, Stokes Bay and areas fronting the western side of Portsmouth Harbour.

The secondary source of flood risk to the Borough is from fluvial sources to the River Alver. The River Alver discharges into the sea via a tidal outfall which is flapped to prevent tidal inundation of the river valley. If this defence were to fail, the Alver valley would be regularly inundated by tidal flows. As such, 'undefended' Flood Zones show the Alver valley as predominantly at risk of tidal flooding. The River Alver originates from a very small catchment and flows largely through an unconstrained and undeveloped floodplain such that the risk of fluvial flooding is therefore considered minimal.

Historically, Gosport 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 78% of Gosport Borough is currently covered by existing development, suggesting that much future development will need to be concentrated on brownfield sites. A number of environmentally designated areas represent a significant constraint on development in the Borough, covering approximately 18% of its area.

The topography of the Borough ranges from sea level to only approximately 12 metres above ordnance datum (mAOD). Further development in Gosport is likely to increase the pressure for further maintenance and improvement to existing flood defences, particularly with the impact of predicted sea level rise in the future.

Geologically, a narrow band of highly permeable bedrock running from Brookers Lane to Priddy's Hard splits the Borough. Above this band lies predominantly low permeability bedrock. Below this band lie moderately permeable bedrock formations overlain by largely moderately permeable superficial deposits. The implementation of Sustainable Drainage Systems (SUDS) may, therefore, be difficult for existing and new development in the northern third of the Borough.

Guidance Document: Gosport Borough Council

Vulnerability to Climate Change

The SFRA has generated predicted tidal outlines for a number of years up to 2115 (see SFRA Map: *Flood Mapping: Climate Change Dataset*). These outlines account for the most up-to-date predicted rises in sea-level over the coming century due to climate change and allow the identification of locations that will be most vulnerable to this change due to their topography. In Gosport Borough, the areas most vulnerable to rising sea levels include Haslar Creek, Forton Lake and Priddy's Hard. In addition to this effect of rising sea levels, it is anticipated that climate change will result in an increase in fluvial flood flows. This may put additional pressure on areas such as Rowner where some properties are adjacent to the present day River Alver floodplain.

Existing defence assets and likely future investment

Many of the coastal frontages in Gosport are relatively low-lying and are subject to some form of existing coastal defence structure. Elsewhere, ground levels are higher than predicted extreme sea levels and lie outside of an area considered at risk of flooding. The town centre frontage from Haslar Creek round to Priddy's Hard has a mixed standard of protection, with certain areas, such as Ministry of Defence site Royal Clarence Yard and Gosport Park not protected from a present day 1 in 20 year tidal flood.

The coastal defences in Gosport are also likely to be susceptible to climate change, as 100 years of predicted sea level rise would mean that most defences would fail, at their current level, to offer protection from a 1 in 20 year tidal flood. Notable exceptions to this are parts of the frontages from Gilkicker Point to Portsmouth Harbour and Priddy's Hard to Frater Lake. To sustain future development in Gosport, particularly in high risk or highly vulnerable parts of the Borough, significant investment in flood defences and flood defence infrastructure will be required (see SFRA Map: Infrastructure Dataset). In order to consider the sustainability of improving investment in defences, the 'danger to people from breaching' index (see SFRA Map: Infrastructure: Danger to Public/ Property Dataset) which will provide indications as to where the residual risk due to breaching may remain unfavourably high following improvements to defences to protect from extreme tidal floods.

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 Development Frameworks and Local Development Documents. 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:

- *Hazard Map* – Undefended 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 these guidance documents included specific advice on how to apply at the time 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 signposted to relevant 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.

PUSH Strategic Flood Risk Assessment – 2016 Update

Guidance Document: Gosport Borough Council



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: NPPF Sequential Test and Relevant Supporting Information	Flood Mapping Dataset helps Development Control personnel to: o Prepare specifications for site specific FRAs. o Review site specific FRAs for new development sites and check for compliance with 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: 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: o Identify indicative standards of defence, now and in the future.

Guidance Document: Gosport Borough Council

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 Gosport Borough and indicate how the outputs from the SFRA can inform such assessments.

Tidal Flooding

Flooding from tidal sources is the primary source of flood risk within Gosport Borough and the areas at risk are predicted to increase significantly by 2115. The *Flood Mapping* Dataset shows the existing areas at risk of tidal flooding and the associated undefended flood hazard. The index of flood hazard represents a gradation of hazard within the Flood Zones based on a combination of the depth of flood water and the velocity of the water (indicative ranges for which have been assumed based on distance from the coastline). It should also be noted that this dataset was derived during the evolution of the 2007 work package and the mapping has not been updated as part of the 2015 review. For this reason in areas where there have been flood mapping updates since 2007, there may be discrepancies in the data presented. Where this occurs it is recommended that further advice is sought from the SFRA Helpdesk team or local Environment Agency office.

Guidance Document: Gosport Borough Council

The frontages where existing defences provide the minimum standards required for new development (i.e. 1 in 200 years for tidal flooding), are identified in the *Infrastructure: Overview Dataset* by a purple line. Indicative Areas Benefiting from Defences (ABDs) are also shown in this dataset. The Indicative ABDs have been defined as areas where the crest levels of the existing defences are consistently equal to or higher than the present day 1 in 200 year extreme sea level.

If small lengths of defences have crest levels which fall below the 1 in 200 year extreme sea level (even for a short length), the area behind the defence has not been classed as an Indicative ABD. The frontage of Newtown is an example of where this study has not been able to define an Indicative ABD due to small lengths of defence where the crest levels fall below the 1 in 200 year extreme sea level. The gaps in the defence level can also be viewed in more detail using *Infrastructure: Defence Level*. It should be noted that other areas may potentially be classified as ABDs if more detailed modelling assessments of the defences, which is beyond the scope of this SFRA, are carried out.

The *Flood Mapping: Hazard Map Dataset* shows the flood hazard (in terms of danger to people) associated with a hypothetical breach in the defences for the whole of the tidal frontage. The Indicative ABDs shown in *Infrastructure: Overview* define which of the hazard maps is most appropriate for consideration. The Hazard Map for Flood Zone 2 is only appropriate for considering present day flood hazards within an ABD. To aid interpretation, the areas where this index is not appropriate for present day analysis are hatched out. The benefit of showing hazard information in the hatched out areas is to allow planners and developers to understand the likely residual risks that would remain if they were to invest in defending an area to a 1 in 200 year standard. The Hazard Map for Flood Zone 2 (Undefended Flood Hazard) should be used to assess the variation of flood hazard within the Flood Zones for all areas outside the Indicative ABDs.

The benefit of both the undefended flood hazard maps and the danger from breaching maps is that the gradation of flood hazard within the Flood Zones can facilitate both planners and developers to ensure that development is steered away from the areas of highest hazard. The hazard mapping presented in *Flood Mapping: Hazard Map*, however, should only be applied when appropriate consideration has been taken of alternative sites at a lower probability of flood risk (i.e. within Flood Zone 1) have been considered.

The flood hazard information, for both the undefended and breach scenario, developed as part of this SFRA, has been undertaken at a strategic level and is therefore at an appropriate level of detail to allow Local Authorities to strategically allocate sites for development. The hazard data has been classified into 4 categories to illustrate the gradation of flood hazard within Flood Zones 2 and 3 in line with best practice guidance as set out in Defra/ EA Guidance FD2320. The hazard data has not been calculated using modelling or other detailed numerical methods and is therefore not appropriate for identifying design parameters as part of site specific FRAs. It is therefore recommended that FRAs for sites located within the flood hazard zones should still include a quantitative assessment of flood hazard based on more detailed assessments of defence standards, defence failure scenarios and overland conveyance of flood flow.

The impact of climate change on increasing sea levels has a significant effect on the extents of Flood Zones 2 and 3 by 2115, especially on frontages on Portsmouth Harbour. The NPPF expects

Guidance Document: Gosport Borough Council

consideration to be given to both current and future flood zones at the site specific level, taking account of climate change. The climate change flood extents presented should be used when undertaking a site specific FRA to inform the assessment of the long term sustainability of developments currently within Flood Zone 1 and the likely increases in flood risk in Flood Zones 2 and 3.

The defence information provided in the *Infrastructure Dataset* can provide developers undertaking site specific FRAs with an indication of the equivalent tidal return period of the crest level of the existing defences in the present day and an indicative level of investment that may be required to raise defence standards to the minimum required for new development. Such investment could be secured through the development process by Community Infrastructure Levy or Section 106 agreements.

Wave Overtopping

The Wave Energy mapset included within *Flood Mapping: Flooding from Other Sources*, shows how exposure to wave energy varies along the frontage of the study area. Such information can be used to assess, at a high level, the risk of flooding caused by extreme wave overtopping. Gosport's harbour frontages experience low wave energies but its open coast frontage experiences moderate wave energies. Based on information from other similarly exposed frontages in the PUSH sub-region, it is recommended that all applications for development within the vicinity of the open coast frontage of Gosport Borough include an assessment of extreme wave overtopping, regardless of which Flood Zone the site is in. This will ensure that this risk is always considered for new development in the relevant locations. The assessment of extreme wave overtopping should be appropriate to the scale of risk and may, in some cases, be ruled out as a significant risk quite easily, but should nevertheless be addressed.

Fluvial Flooding

The River Alver poses a fluvial flood risk to parts of Gosport Borough, occupying a large open floodplain which is, for the majority, undeveloped. The undefended flood risk from tidal inundation of the River Alver is greater than the fluvial risk along the river's entire length and hence the hazard information provided is based on the dominant tidal processes. Developers undertaking site specific FRAs in Flood Zones 2 and 3 of the River Alver catchment should contact the Environment Agency to obtain the latest up-to-date flood risk information on the 'defended' fluvial flooding scenario. However, the FRA should also consider the residual risk of tidal flooding following failure of the defence which protects the River Alver from tidal inundation. Site specific FRAs in other areas of Gosport Borough do not generally need to consider fluvial flood risk. However, the risk of flooding from small localised drainage ditches and channels should still be assessed where they exist close to a development site.

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

Guidance Document: Gosport Borough Council

generating overland flow. Notably, the urban areas are indicated as red or orange due to the high runoff potential from urban land uses.

Within Gosport Borough 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. Site specific FRAs should therefore carefully 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 to the north of Gosport Borough in East Hampshire, Winchester, Eastleigh and Test Valley 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. There have been no observed incidences of groundwater flooding in Gosport. Site specific FRAs within Gosport Borough should not need to consider this form of flooding.

Flooding from Infrastructure

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

Sustainable 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 Borough 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
- [Gosport BC emergency planning flooding – online resource](#)
- [Gosport BC planning SFRA – online resource](#)
- [South East Hampshire Catchment Flood Management Plan](#), Environment Agency
- [Local Flood Risk Management Strategy](#), Hampshire County Council