

Revision Schedule

Horsham District Council Strategic Flood Risk Assessment – Final Report June 2007

Rev	Date	Details	Prepared by	Reviewed by	Approved by
D01	26/02/07	Horsham District Council SFRA	Michael Timmins Senior Flood Risk Engineer	Dr Rob Sweet Flood Risk Specialist	
D02	25/04/07	Revised Horsham District Council SFRA	Michael Timmins Senior Flood Risk Engineer	Dr Rob Sweet Flood Risk Specialist	Dr Damon O'Brien Technical Director
D03	07/06/07	Draft Final Report - Horsham District Council SFRA	Fay Tivey Flood Risk Specialist	Dr Rob Sweet Flood Risk Specialist	David Dales Director
F01	22/06/07	Final Report - Horsham District Council SFRA	Michael Timmins Senior Flood Risk Engineer	Dr Rob Sweet Flood Risk Specialist	Dr Damon O'Brien Technical Director

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6 Policy Review

National and local policies have been reviewed against the local flood risk issues and objectives identified by the Environment Agency in the CFMPs covering The River Adur and The River Arun and Western Streams. From these policies the following catchment wide and specific area strategies have been developed under the headings Flood Risk, SuDS, Flood Mitigation and the Water Environment. Integration of these suggested policy considerations into LDF / LDD should ensure that the objectives and aspirations of the Environment Agency and national policy are met whilst strengthening the position of the Local Planning Authority with regard to Flood Risk.

6.1 Flood Risk

Catchment Wide Strategies

1. Allocate all sites in accordance with the Sequential Test reduce the flood risk and ensure that the vulnerability classification of the proposed development is appropriate to the flood zone classification;
2. Flood Risk Assessments (FRAs) should be undertaken for all developments within Flood Zones 2 and 3 and sites with identified flooding sources (according to PPS25 Annex E) to assess the risk of flooding to the development and identify options to mitigate the flood risk to the development, site users and surrounding area;
3. Flood Risk Assessments are required for all major developments in Flood Zone 1 (according to PPS25 Annex E). These are residential developments consisting of sites greater than 0.5 ha or greater than 10 dwellings and commercial developments that are greater than 1 ha or have a floor area greater than 1000 m².
4. Flood Risk to development should be assessed for all forms of flooding;
5. Where floodplain storage is removed, the development should provide compensatory storage on a level for level and volume for volume basis to ensure that there is no loss in flood storage capacity.

Area Specific Strategies

1. Surface water flooding should be investigated in detail as part of site specific FRAs for developments located within Category 1 and 2 settlements and early liaison with the Environment Agency and Horsham District Council for appropriate management techniques.
2. Groundwater flooding should be investigated in more detail as part of site specific FRAs for developments located to the south of the District where a potential for groundwater flooding exists (see Level 1 GIS layers and mapping) or where a site is located within a defined groundwater emergence zone.

Through integration of these suggestions, the emerging LDF will comply with PPS25 and the aspirations and policies represented in following:

- Regional policy for the South East of England is split into three documents of which Regional Planning Guidance for the South East (RPG9) is relevant to the study area;
- South East England Regional Assembly – Regional Flood Risk Appraisal;
- Horsham District Council: Local Development Framework 2006;
- River Adur and River Arun & Western Streams Catchment Flood Management Plan;
- Biodiversity Action Plan for Sussex.

6.2 Sustainable Drainage Systems

A guide to Sustainable Drainage Systems (SuDS) is provided in Appendix G. Sustainable Drainage Policies should address the following issues as:

Catchment Wide Strategies

1. Sustainable Drainage Systems should be included in new developments unless where it is demonstrably not possible to manage surface water using these techniques;
2. PPS25 requires the use of SuDS as an opportunity of managing flood risk, improving water quality and increasing amenity and biodiversity;
3. Flood Risk Assessments are required for all major developments in Flood Zone 1 (according to PPS25 Annex E). These are residential developments consisting of sites greater than 0.5 ha or greater than 10 dwellings and commercial developments that are greater than 1 ha or have a floor area greater than 1000 m²;
4. Runoff rates from new developments on greenfield sites should be not exceed greenfield runoff rates pre-development and should allow for climate change;
5. Runoff rates from previously developed developable land should not exceed existing rates of runoff and should seek betterment. In addition, an allowance should be made for climate change;
6. Runoff and/or discharge rates should be restricted to greenfield runoff rates in areas known to have a history of sewer and/or surface water flooding.

Area Specific Strategies

1. At the site specific FRA level, the suitability of Sustainable Drainage Systems should be investigated for each development. Areas to north of the District (the High and Low Weald areas) may be more suited to attenuation systems.

A list of each site highlighting the underlying geology and soil, together with site specific recommendations for SuDS and FRAs is presented in the Broad Scale Assessment of SuDS at the end of [Appendix G](#).

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- Regional policy for the South East of England is split into three documents of which Regional Planning Guidance for the South East (RPG9) is relevant to the study area;
- South East England Regional Assembly – Regional Flood Risk Appraisal;
- Horsham District Council: Local Development Framework 2006;
- River Adur and River Arun & Western Streams Catchment Flood Management Plan;
- Biodiversity Action Plan for Sussex.

6.3 Water Environment

Catchment Wide Strategy

1. Development should not have a detrimental impact on the water environment through changes to water chemistry or resource;
2. Developments should look to incorporate water reuse and minimisation technology;
3. Any development should not be located within 8 metres of the river bank to ensure access for maintenance but amongst other things should ensure a riparian corridor for improvement of the riverine environment.

Through integration of these suggestions, the emerging LDF will comply with PPS25 and the aspirations and policies represented in following:

- Regional policy for the South East of England is split into three documents of which Regional Planning Guidance for the South East (RPG9) is relevant to the study area;
- South East England Regional Assembly – Regional Flood Risk Appraisal;
- Horsham District Council: Local Development Framework 2006;
- River Adur and River Arun & Western Streams Catchment Flood Management Plan;
- Biodiversity Action Plan for Sussex;
- Adur & Ouse and Arun & Western Streams Catchment Abstraction Management Strategies (CAMS).

Flood Risk Management Policies contained within the Catchment Flood Management Plans have been set out by the Environment Agency and assigned to different zones within the SFRA area. The strategies suggested above mesh with these aspirations and if integrated will aid to strengthen the position of the Local Planning Authority.

The area specific strategies have been updated following the application of the Sequential Test to provide more specific strategies for allocated development sites – this is presented in the Broad Scale Assessment of SuDS at the end of Appendix G.

7 Flood Risk Assessment Guidance

7.1 Site Specific Flood Risk Assessment Guidance

The assessment of flood risk is a fundamental consideration regardless of the scale or type of development. Understanding the flood risk to, and arising from, a development is key to managing the risk to people and property thereby reducing the risk of injury, property damage or even death. The effects of climate change may exacerbate future flood risk. Current predictions indicate that milder wetter winters and hotter drier summers will be experienced in the future and there will be a continued rise in sea levels. These changes will potentially lead to an increase in rainfall quantities thus altering the magnitude, frequency and intensity of flood events.

Flooding is not limited to just rivers and sea, in fact flooding can arise from a number of sources, each presenting their own type of risk and requiring management. In addition some areas currently defended from flooding may be at greater risk in the future as the effects of climate change take hold or defence condition deteriorates with age.

Opportunities to manage flooding whilst providing development exist through an understanding and mitigation of the risk. This includes the location, layout and design of developments to enable the management of flood risk through positive planning. This positive planning needs to consider the risks to a development from local flood sources but also the consequences a development may have on increasing flood risk to others. Early identification of flood risk constraints can ensure developments maximise development potential whilst achieving the principles of sustainability.

A Level 1 Strategic Flood Risk Assessment should present sufficient information to assist Local Planning Authorities to apply the Sequential Test and identify where the Exception Test may be required. These documents are predominately based on existing data. The scale of assessment undertaken for a Strategic Flood Risk Assessment is typically inadequate to accurately assess the risks at individual sites within the study area. The Environment Agency and SFRA Flood Zone Mapping do not account for all watercourses within Horsham District. Although, a watercourse may not have a flood zone mapped, as a precautionary principle, it is advised that a Flood Risk Assessment should be requested for all development proposals within 20 m of a watercourse (the water environment). This will ensure that flood risk is managed and that flooding is not increased within or to the surrounding area.

Site specific flood risk assessments are required to assess the flood risk posed to proposed developments and to ensure that, where necessary, appropriate mitigation measures are included in the development. This section presents the recommendations for site specific flood risk assessments prepared for submission with planning applications to South Hams District Council.

The guidance presented in the following sections has been based on:

- the recommendations presented in Planning Policy Statement 25 and the consultation draft of the Practice Guide companion to PPS25
- the information contained within this Level 1 SFRA report.

When is a Flood Risk Assessment Required?

When informing developers of the requirements of a flood risk assessment for a development site, consideration should be given to the position of the development relative to flood sources, the vulnerability of the proposed development and its scale.

In the following situations a Flood Risk Assessment should always be provided with a planning application:

- The development site is located in Flood Zone 2 or 3;
- The proposed development is classed as a major development and located in Flood Zone 1. These are residential developments consisting of sites greater than 0.5 ha or greater than 10 dwellings and commercial developments that are greater than 1 ha or have a floor area greater than 1000 m²;
- The development site is located in an area known to have experienced flooding problems from any flood source;
- The development is located within 20m (water environment) of any watercourse regardless of Flood Zone classification.

What does a Flood Risk Assessment require?

Annex E of PPS25 presents the minimum requirements for flood risk assessment. These include:

- The consideration of the risk of flooding arising from the development in addition to the risk of flooding to the development;
- Identify and quantify the vulnerability of the development to flooding from different sources and identify potential flood risk reduction measures;
- Assessment of the remaining 'residual' risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular development;
- The vulnerability of those that could occupy and use the development, taking account of the Sequential and Exception Tests and the vulnerability classification, including arrangements for safe access;
- Take consideration of the ability of water to soak into the ground may change with development, along with how the proposed layout of development may affect drainage systems;
- Fully account for current climate change scenarios and their effect on flood zoning and risk.

The Practice Guide Companion to PPS25 (consultation document) advocates a staged approach to site specific flood risk assessment with the findings from each stage informing the next and site master plans, iteratively throughout the development process.

The staged approach comprises of three stages:

Level 1 - Screening Study

A level 1 Screening Study is intended to identify if a development site has any flood risk issues that warrant further investigation. This should be based on existing information such as that presented in the Level 1 SFRA. Therefore this type of study can be undertaken by a development control officer in response to the

developer query or by a developer where the Level 1 SFRA is available. Using the information presented in the Level 1 SFRA and associated GIS layers a development control officer could advise a developer of any flooding issues affecting the site. A developer can use this information to further their understanding of how flood risk could affect a development.

Level 2 - Scoping Study

A level 2 Scoping Study is predominately a qualitative assessment designed to further understanding of how the flood sources affect the site and the options available for mitigation. The Level 2 FRA should be based on existing available information where this is available and use this information to further a developers understanding of the flood risk and how they affect the development. This type of assessment should also be used to inform master plans of the site raising a developer's awareness of the additional elements the proposed development may need to consider.

Level 3 – Detailed Study

Where the quality and/or quantity of information for any of the flood sources affecting a site is insufficient to enable a robust assessment of the flood risks, further investigation will be required. For example it is generally considered inappropriate to base a flood risk assessment for a residential care home at risk of flooding from fluvial sources on Flood Zone maps alone. In such cases the results of hydraulic modelling are preferable to ensure details of flood flow velocity, onset of flooding and depth of floodwater is fully understood and that the proposed development incorporates appropriate mitigation measures.

At all stages, the Local Planning Authority, and where necessary the Environment Agency and/or the Statutory Water Undertaker should be consulted to ensure the Flood Risk Assessment provides the necessary information to fulfil the requirements for Planning Applications.

Site Specific Guidance

Further FRA guidance can be found in the site-specific recommendations table at the end of Appendix H.

8 Summary and results of the Sequential Test undertaken by Horsham District Council

The following points provide a summary of this Strategic Flood Risk Assessment.

- Horsham District Council require a Strategic Flood Risk Assessment for the progression of their Local Development Framework, to assist development control and provide information for emergency planning.
- The main watercourses within the Horsham District administrative area are the Rivers Arun and Adur. These rivers are the predominant source of flood risk within the Horsham District with tidal flood sources affecting the south of the area. To a lesser extent, there is a risk of flooding from groundwater, surface water and sewer flooding.
- Focused assessments for urban areas within the categories 1 and 2 of the Sustainable Settlement Hierarchy identified for development have areas that lie within Flood Zone 2 and 3.
- The information provided within this SFRA and the associated appendices has allowed Horsham District Council to perform the Sequential Test as defined in PPS25 (see Appendix F and H).

Using the information provided within this SFRA, Horsham District Council have applied the Sequential Test for potential allocation sites. The following points summarise the results from the application of the Sequential Test.

- 47 of the potential allocation sites lie within Flood Zone 1, 4 sites had areas within Flood Zones 2 and 3 (see Table 8.1 below).

Table 8-1: Potential allocations sites at risk of flooding identified following Sequential Test by HDC.

LDF Allocation		Grid Ref	Site Area (ha)	Flood Zone 2		Flood Zone 3 + CC		Flood Zone 3a		Flood Zone 3b	
Policy	Notes			Area (Ha)	% of Area	Area (Ha)	% of Area	Area (Ha)	% of Area	Area (Ha)	% of Area
AL2	Lifestyle Ford Bishopric Horsham	E 516717.51 N 130656.25	1.400	0.074	5.26%	0.074	5.26%	0.074	5.25%	0.065	4.63%
CP7	Land west of Horsham west	E 515460.90 N 130191.74	50.580	0.548	1.08%	0.070	0.14%	0.025	0.05%	0.025	0.05%
	Land west of Horsham east	E 515460.90 N 130191.74	49.030	13.930	28.41%	9.829	20.05%	8.762	17.87%	7.421	15.14%
AL14	Brinsbury Centre of Excellence	E 506746.92 N 122558.29	58.760	1.444	2.46%	1.444	2.46%	1.205	2.05%	1.205	2.05%
AL15	Shoreham Cement Works	E 520351.71 N 108818.62	39.420	0.182	0.46%	0.215	0.55%	0.215	0.55%	0.215	0.55%

- Information presented within the Strategic Flood Risk Assessment has allowed Horsham District Council to redefine land use policies using the sequential approach. This has located all built environment within Flood Zone 1, allowing only informal open spaces and water compatible development within Flood Zones 2 and 3.
- It is recommended that a Level 2 SFRA is not required at present because all development can be located within Flood Zone 1. However, changes to the potential allocation sites would require revision of the Sequential Test and where required may facilitate the application of the Exception Test, thus requiring a Level 2 SFRA.

It is noted that CP7 is a strategically important site and has been adopted within the Core Strategy. Identification of alternative sites was therefore not possible. However, using the sequential approach, Horsham District Council has reallocated areas within these sites to ensure that development is located within areas of lowest flood risk. Appendix H provides the revised site layouts proposed for those sites identified in Table 8.1.

