Appendix B PPS25 Annex D, PPS25 Annex E: Requirements of a Flood Risk Assessment and Flood Risk Assessment Note 3

Annex D: The Sequential Test and Exception Test

The Sequential Test

D1. The risk-based Sequential Test should be applied at all stages of planning. Its aim is to steer new development to areas at the lowest probability of flooding (Zone 1).

D2. The Flood Zones are the starting point for the sequential approach. Zones 2 and 3 are shown on the Environment Agency Flood Map[18] with Flood Zone 1 being all the land falling outside Zones 2 and 3. These Flood Zones refer to the probability of sea and river flooding only, ignoring the presence of existing defences.

D3. Regional Flood Risk Appraisals (RFRAs) (see Annex E) will refer to Environment Agency Flood Maps and will utilise further information such as Strategic Flood Risk Assessments to allow flood risk to be taken into account in a broad regional context (see Annex E para. E4).

D4. Strategic Flood Risk Assessments (SFRAs) (see Annex E) will refine information on the probability of flooding, taking other sources of flooding (see Annex C) and the impacts of climate change into account. The SFRA will provide the basis for applying the Sequential Test, on the basis of the Zones in Table D.1. Where Table D.1 indicates the need to apply the Exception Test, the scope of the SFRA will be widened to consider the impact of the flood risk management infrastructure on the frequency, impact, speed of onset, depth and velocity of flooding within the Flood Zones considering a range of flood risk management maintenance scenarios. Where a SFRA is not available, the Sequential Test will be based on the Environment Agency Flood Zones.

D5. The overall aim of decision-makers should be to steer new development to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, decision-makers identifying broad locations for development and infrastructure, allocating land in spatial plans or determining applications for development at any particular location should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should decision-makers consider the suitability of sites in Flood Zone 3, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

D6. Within each Flood Zone, new development should be directed first to sites at the lowest probability of flooding and the flood vulnerability of the intended use matched to the flood risk of the site, eg higher vulnerability uses located on parts of the site at lowest probability of flooding.

[18] See website for further details on Flood Map. www.environment-agency.gov.uk/maps/info/floodmaps/?lang=_e

D7. The preparation and review of Regional Spatial Strategies (RSSs) and Local Development Documents (LDDs) should be used to review existing and proposed development in order to allocate land in lower flood risk zones suitable for existing vulnerable uses already in medium and high flood zones, and in doing so, to realise opportunities arising through redevelopment to improve the sustainability of communities.

D8. When seeking planning permission for individual developments on sites allocated in development plans through the application of the Sequential Test, informed by a SFRA, developers need not apply the Sequential Test, but should apply the sequential approach (see para. 14) to locating development within the site. The plan should specify requirements for Flood Risk Assessment (see Annex E).

Table D.1: Flood Zones

(Note: These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences)

Zone 1 Low Probability

Definition

This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).

Appropriate uses

All uses of land are appropriate in this zone.

FRA requirements

For development proposals on sites comprising one hectare or above the vulnerability to flooding from other sources as well as from river and sea flooding, and the potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new development on surface water run-off, should be incorporated in a FRA. This need only be brief unless the factors above or other local considerations require particular attention. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

Table D.1: contd.

Zone 2 Medium Probability

Definition

This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.

Appropriate uses

The water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in Table D.2 are appropriate in this zone.

Subject to the Sequential Test being applied, the highly vulnerable uses in Table D.2 are only appropriate in this zone if the Exception Test (see para. D.9.) is passed.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

Zone 3a High Probability

Definition

This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Appropriate uses

The water-compatible and less vulnerable uses of land in Table D.2 are appropriate in this zone.

The highly vulnerable uses in Table D.2 should not be permitted in this zone.

The more vulnerable and essential infrastructure uses in Table D.2 should only be permitted in this zone if the Exception Test (see para. D.9) is passed. Essential infrastructure permitted in this zone should be designed and constructed to remain operational and safe for users in times of flood.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Table D.1: contd.

Zone 3a High Probability *(continued)*

Policy aims

In this zone, developers and local authorities should seek opportunities to:

i. reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques;

ii. relocate existing development to land in zones with a lower probability of flooding; and

iii. create space for flooding to occur by restoring functional floodplain and flood flow pathways and by identifying, allocating and safeguarding open space for flood storage.

Zone 3b The Functional Floodplain

Definition

This zone comprises land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes).

Appropriate uses

Only the water-compatible uses and the essential infrastructure listed in Table D.2 that has to be there should be permitted in this zone. It should be designed and constructed to:

– remain operational and safe for users in times of flood;

– result in no net loss of floodplain storage;

– not impede water flows; and

– not increase flood risk elsewhere.

Essential infrastructure in this zone should pass the Exception Test.

FRA requirements

All development proposals in this zone should be accompanied by a FRA. See Annex E for minimum requirements.

Policy aims

In this zone, developers and local authorities should seek opportunities to:

i. reduce the overall level of flood risk in the area through the layout and form of the development and the appropriate application of sustainable drainage techniques; and

ii. relocate existing development to land with a lower probability of flooding.

Table D.2: Flood Risk Vulnerability Classification

Essential Infrastructure	• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk, and strategic utility infrastructure, including electricity generating power stations and grid and primary substations.
Highly Vulnerable	• Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.[19]
More Vulnerable	• Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste.[20] • Sites used for holiday or short-let caravans and camping, **subject to a specific warning and evacuation plan**.
Less Vulnerable	• Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non–residential institutions not included in 'more vulnerable'; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment plants. • Sewage treatment plants (if adequate pollution control measures are in place).

[19] DETR Circular 04/00 – para. 18: *Planning controls for hazardous substances*. www.communities.gov.uk/index.asp?id=1144377

[20] See *Planning for Sustainable Waste Management*: *Companion Guide to Planning Policy Statement 10* for definition. www.communities.gov.uk/index.asp?id=1500757

Table D.2: contd.

Water-compatible Development	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, **subject to a specific warning and evacuation plan**.

Notes:

1) This classification is based partly on Defra/Environment Agency research on Flood Risks to People (FD2321/TR2)[21] and also on the need of some uses to keep functioning during flooding.

2) Buildings that combine a mixture of uses should be placed into the higher of the relevant classes of flood risk sensitivity. Developments that allow uses to be distributed over the site may fall within several classes of flood risk sensitivity.

3) The impact of a flood on the particular uses identified within this flood risk vulnerability classification will vary within each vulnerability class. Therefore, the flood risk management infrastructure and other risk mitigation measures needed to ensure the development is safe may differ between uses within a particular vulnerability classification.

[21] See website for further details. www.defra.gov.uk/science/Project_Data/DocumentLibrary/FD2320_3364_TRP.pdf

Table D.3[22]: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability classification (see Table D2)		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone (see Table D.1)	Zone 1	✔	✔	✔	✔	✔
	Zone 2	✔	✔	Exception Test required	✔	✔
	Zone 3a	Exception Test required	✔	✗	Exception Test required	✔
	Zone 3b 'Functional Floodplain'	Exception Test required	✔	✗	✗	✗

Key:

✔ Development is appropriate

✗ Development should not be permitted

The Exception Test

D9. For the Exception Test to be passed:

a) it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA where one has been prepared. If the DPD has reached the 'submission' stage – see Figure 4 of PPS12: *Local Development Frameworks* – the benefits of the development should contribute to the Core Strategy's Sustainability Appraisal;

b) the development should be on developable[23] previously-developed land or, if it is not on previously developed land[24], that there are no reasonable alternative sites on developable previously-developed land; and

c) a FRA must demonstrate that the development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

[22] This table does not show: the application of the Sequential Test which guides development to FZ1 first, then FZ2, and then FZ3; FRA requirements; or the policy aims for each Flood Zone.

[23] Developable sites are defined in Planning Policy Statement 3 (PPS3) *Housing* as those sites which should be in a suitable location for housing development and there should be a reasonable prospect that the site is available for, and could be developed at the point envisaged.

[24] Previously-developed land definition (commonly known as Brownfield Land). See Annex B of Planning Policy Statement 3 *Housing*.

D10. The Exception Test should be applied by decision-makers only after the Sequential Test has been applied and in the circumstances shown in Table D.1 when 'more vulnerable' development and 'essential infrastructure' cannot be located in Zones 1 or 2 and 'highly vulnerable' development cannot be located in Zone 1. It should not be used to justify 'highly vulnerable' development in Flood Zone 3a, or 'less vulnerable'; 'more vulnerable'; and 'highly vulnerable' development in Flood Zone 3b.

D11. The Exception Test should be applied to LDD site allocations for development and used to draft criteria-based policies against which to consider planning applications. Where application of the Sequential Test indicates it needs to be applied, this should be done as early in the plan-making process as possible – in LDDs, including Supplementary Planning Documents (such as site development briefs). This will minimise the need to apply it to individual planning applications.

D12. Where the Exception Test has been applied in LDD allocations or criteria-based policies, the local planning authority should include policies in its LDDs to ensure that the developer's FRA satisfies criterion c) in para. D9. The Environment Agency and other appropriate operating authorities such as Internal Drainage Boards should be consulted on the drafting of any policy intended to apply the Exception Test at a local level.

D13. Compliance with each part of the Exception Test should be demonstrated in an open and transparent way.

D14. Criterion b) of para. D9 reflects the Government's commitment to making the most efficient and effective use of land in line with the principles of sustainable development. Reflecting this, Planning Policy Statement 3 (PPS3): *Housing*[25] sets out the Government's objectives for a flexible, responsive supply of land for housing which gives priority to the use of previously-developed land for development. However, flood risk should be taken into account in determining the suitability of the land for development.

Minor Development and Changes of Use

D15. Applications for minor development[26] and changes of use should not be subject to the Sequential or Exception Tests but will still have to meet the requirements for FRAs and flood risk reduction set out in Table D.1.

D16. Minor developments are unlikely to raise significant flood risk issues unless they would:

a) have an adverse effect on a watercourse, floodplain or its flood defences;

b) would impede access to flood defence and management facilities; or

c) where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.

[25] Communities and Local Government 2006 *Planning Policy Statement 3 (PPS3): Housing* www.communities.gov.uk/index.asp?id=1504592

[26] For definitions of minor development see footnote 7

D17. Developers should refer to Environment Agency's Standing Advice[27] for requirements regarding a FRA before designing their development and such extensions or alterations should be designed and constructed to conform to any flood protection already incorporated in the property being extended and should include flood resilience measures in the design.

Removal of Permitted Development Rights

D18. Where permitted development (that is, development granted a general planning permission by the Secretary of State) threatens to have a direct, significant and adverse effect on a flood risk area, or its flood defences and their access, or the permeability and management of surface water, or flood risk to occupants, the local planning authority should consider whether to make a direction under article 4 of the Town and Country Planning (General Permitted Development) Order 1995 (S.I. 1995/418). An article 4 direction would require a planning application to be made for specific permission to carry out the development. This would enable the local planning authority to assess the possible impacts of the works or change of land-use, and decide whether to grant permission, if necessary subject to conditions, or refuse it.

Caravans and Camping; Chalets and Mobile Homes (including Gypsy and Traveller Sites)

D19. Land used for holiday or short-let caravans and camping, other temporary occupancy sites and permanently occupied caravan, mobile home and 'park home' sites that use similar structures give rise to special problems in relation to flooding. Caravan or park-home sites intended for permanent occupation are regarded as 'highly vulnerable'. The instability of such structures places their occupants at special risk and they are likely to be occupied during periods when flood risk is likely to be higher.

D20. Sites intended for temporary occupation are classified as 'more vulnerable' because they are usually occupied at times of the year when flood events are less likely to occur, although they may be located for amenity and recreational reasons on coastal or riverside sites with a high residual risk of flooding. However, the attractiveness of waterside sites for holiday accommodation also has to be recognised, provided that proper warning and evacuation arrangements are put in place through appropriate planning conditions.

D21. In either case, the Sequential Test and Exception Test should be used by decision-makers (where applicable, – remembering that 'highly vulnerable' development should not be permitted in Zones 3a and 3b and 'more vulnerable' development should not be permitted in Zone 3b). FRAs should pay particular attention to the management of residual risk, flood warning arrangements and evacuation plans should be considered (see Annex G).

[27] The Environment Agency's Flood Risk Standing Advice (www.environment-agency.gov.uk) enables local planning authorities to clearly identify which applications they should consult the Environment Agency on and make decisions on low risk planning applications where, for example, flood risk is an issue, without directly consulting the Environment Agency for an individual response.

Annex E: The Assessment of Flood Risk

General Principles

E1. Properly prepared assessments of flood risk will inform the decision-making process at all stages of development planning. There should be iteration between the different levels of flood risk assessment.

E2. Any organisation or person proposing a development must consider whether that development will not add to and should where practicable reduce flood risk. The future users of the development must not be placed in danger from flood hazards and should remain safe throughout the lifetime of the plan or proposed development and land use.

E3. At all stages of the planning process, the minimum requirements for flood risk assessments are that they should:

- be proportionate to the risk and appropriate to the scale, nature and location of the development;
- consider the risk of flooding arising from the development in addition to the risk of flooding to the development;
- take the impacts of climate change into account (see Annex B);
- be undertaken by competent people, as early as possible in the particular planning process, to avoid misplaced effort and raising landowner expectations where land is unsuitable for development;
- consider both the potential adverse and beneficial effects of flood risk management infrastructure including raised defences, flow channels, flood storage areas and other artificial features together with the consequences of their failure;
- consider the vulnerability of those that could occupy and use the development, taking account of the Sequential and Exception Tests and the vulnerability classification (see Annex D), including arrangements for safe access;
- consider and quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and identify flood risk reduction measures, so that assessments are fit for the purpose of the decisions being made;
- consider the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes;
- include the assessment of the remaining (known as 'residual') risk (see Annex G) after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular development or land use;
- consider how 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; and
- be supported by appropriate data and information, including historical information on previous events.

Regional Flood Risk Appraisals (RFRAs)

E4. Regional Planning Bodies should prepare RFRAs in consultation with the Environment Agency to inform their Regional Spatial Strategies (RSSs) on flood risk issues. By undertaking a strategic analysis of flood risk, RFRAs should inform RSS consideration of regionally significant uses, including the identification of broad locations and establishing locational criteria to highlight flooding issues that local planning authorities should address through their SFRAs. RFRAs should be informed by the Flood Map and appropriate plans prepared by the Environment Agency and other operating authorities (such as River Basin Management Plans, Catchment Flood Management Plans and Shoreline Management Plans). A RFRA should be used to inform the Sustainability Appraisal (incorporating the SEA Directive) of the RSS.

Strategic Flood Risk Assessments (SFRAs)

E5. Local planning authorities (LPAs) and other decision-makers should prepare SFRAs in consultation with the Environment Agency, LPAs own functions of emergency response and drainage authority under the Land Drainage Act 1991, and where appropriate Internal Drainage Boards. Initially the SFRA will be used to refine information on the areas that may flood, taking into account other sources of flooding (see Annex C) and the impacts of climate change, in addition to the information on the Flood Map. Decision-makers should use the SFRA to inform their knowledge of flooding, refine the information on the Flood Map and determine the variations in flood risk from all sources of flooding across and from their area. These should form the basis for preparing appropriate policies for flood risk management for these areas. The SFRA should be used to inform the Sustainability Appraisal (incorporating the SEA Directive) of the Local Development Documents (LDDs), and will provide the basis from which to apply the Sequential Test and Exception Test in the development allocation and development control process (see Annex D).

E6. Where decision-makers have been unable to allocate all proposed development and infrastructure in accordance with the Sequential Test, taking account of the flood vulnerability category of the intended use, it will be necessary to increase the scope of the SFRA to provide the information necessary for application of the Exception Test. This should additionally, consider the beneficial effects of flood risk management infrastructure in generally reducing the extent and severity of flooding when compared to the Flood Zones on the Flood Map. The increased scope of the SFRA will enable the production of mapping showing flood outlines for different probabilities, impact, speed of onset, depth and velocity variance of flooding taking account of the presence and likely performance of flood risk management infrastructure.

E7. There may be considerable benefits in several LPAs, within a catchment area of high development pressure or a designated development area, joining together to undertake a sub-regional Strategic Flood Risk Assessment. This will help LPAs to consider the issues raised by flooding on the wider scale (of the river catchment and/or coastal cell). This will enable them to contribute to, and take account of, the River Basin Management Plans required to be published by 2009 by the Environment Agency as part of the implementation of the EC Water Framework Directive.

Site-specific Flood Risk Assessments (FRAs)

E8. At the planning application stage, an appropriate FRA will be required to demonstrate how flood risk from all sources of flooding to the development itself and flood risk to others will be managed now and taking climate change into account. Policies in LDDs should require FRAs to be submitted with planning applications in areas of flood risk identified in the plan.

E9. Planning applications for development proposals of 1 hectare or greater in Flood Zone 1 and all proposals for new development located in Flood Zones 2 and 3 (see Table D.1, Annex D) should be accompanied by a FRA. This should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed, taking climate change into account. For major developments in Flood Zone 1, the FRA should identify opportunities to reduce the probability and consequences of flooding. A FRA will also be required where the proposed development or change of use to a more vulnerable class may be subject to other sources of flooding (see Annex C) or where the Environment Agency, Internal Drainage Board and/or other bodies have indicated that there may be drainage problems.

E10. The FRA should be prepared by the developer in consultation with the LPA. The FRA should form part of an Environmental Statement when one is required by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 as amended.

Environment Agency

FRA Guidance Note 3: Development in Flood Zones 3 and 2 (Excluding Minor Extensions)

March 2007

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FRA Guidance Note 3: Development in Flood Zones 3 and 2 (Excluding Minor Extensions)

Environment Agency guidance on the requirements for undertaking a Flood Risk Assessment (FRA) for planning applications. This guidance note relates specifically to the commissioning and undertaking of flood risk assessment studies for development in Flood Zones 2 and 3 other than 'minor' extensions i.e. excluding householder extensions and non-domestic extensions with a footprint of less than 250m^2, which are covered separately in FRA guidance note 2.

Prior to investing resources in completing a FRA, applicants are advised to contact the Local Planning Authority (LPA) and discuss how the flood risk Sequential Test as set out in Planning Policy Statement 25 (PPS25) will affect the proposed development. It is possible that the development will be inappropriate and be refused planning permission irrespective of any FRA. Advice on the evidence required to show that the Sequential and Exception Test has been properly applied is set out in the Sequential Test table within the Environment Agency's Standing Advice on development and flood risk and in the draft Practice Guide to PPS25. The Environment Agency may require evidence that the Sequential Test has been properly applied before commenting in detail on FRAs for development in this category.

Why is a FRA required?

In Flood Zone 3, the flood risk from rivers and the sea is classified as 'high', while in Flood Zone 2 it is said to be 'low to medium'. This classification is simply based on the probability of flood events occurring and does not address the possible consequences including the effects of any flood defences in the area. A FRA is required to ensure that all aspects of flood risk are considered both to the proposed development itself and also the potential impact on people and property elsewhere within the catchment. The scale, nature and location of the proposed development will inform the scope of the FRA required.

What should be in the FRA?

The detail and technical complexity of a FRA will reflect the scale and potential significance of the development. FRAs can be of a relatively minor nature, evaluating a small development on a site at the margins of the flood plain, or conversely can comprise major basin-wide studies for significant infrastructure developments. On occasions, preliminary or scoping studies may be undertaken prior to a fuller assessment. The following list sets out the kind of information that should be submitted as a FRA for development in Flood Zones 2 and 3:

Plans

- A location plan that includes geographical features, street names and identifies the catchment, watercourses or other bodies of water in the vicinity.
- A plan of the site showing
  - existing site;
  - development proposals;
  - identification of any structures, which may influence local hydraulics. This will include bridges, pipes/ducts crossing the watercourse, culverts, screens, embankments, walls, outfalls and condition of channel.

Surveys

- Site levels related to Ordnance Datum, both existing and proposed
- Appropriate cross-section(s) of the site showing finished floor levels or road levels, or other relevant levels relative to the source of flooding, and anticipated water levels and associated probabilities.

Assessments

- Consideration of whether the site falls within the functional flood plain as defined by the draft Practice Guide to Planning Policy Statement 25 (PPS25), and if so, demonstration that development meets the vulnerability criteria set out in table D1 PPS25.
- Flood alleviation measures already in place, their state of maintenance and their performance.
- Information about all potential sources of flooding that may affect the site – from rivers and the sea, streams, surface water run-off, sewers, groundwater, reservoirs, canals and other artificial sources or any combination of these.
- The impact of flooding on a site including:
  - i. the likely rate or speed of surface water run-off with which flooding might occur;
  - ii. the order in which various parts of the location or site might flood;
  - iii. the likely duration of flood events
  - iv. the economic, social and environmental consequences of flooding on occupancy of the site
  - v. information on extent and depth of previous flood events or on flood predictions.
- An assessment of how safe access and exit can be provided for routine and emergency access under both frequent and extreme flood conditions.
- An assessment of how the layout and form of development can be used to reduce or minimise flood risk.
- An assessment of the capacity of any drains or sewers, existing or proposed, on the site during various flood events.
- An assessment of the volume of surface water run-off likely to be generated from the proposed development.
- Proposals for surface water management according to sustainable drainage principles, with the aim of not increasing, and where practicable, reducing the rate of runoff from the site as a result of the development
- The likely impact of any displaced water on third parties caused by alterations to ground levels or raising flood embankments.
- The potential impact on fluvial or coastal morphology and the likely longer-term stability and sustainability of existing defences.
- Estimates should be made of how climate change could affect the probability and intensity of flood events. The assessment should ensure that the development meets an acceptable standard of flood protection for the design life of the development. The hydrological analysis of flood flows and definition of defence standards needs to include the allowances for increased flows and sea level rise contained in DEFRA's project appraisal guidance for flood defence and in accordance with Appendix B of PPS 25 or the latest information from UKCIP.
- The residual risks to the site after the construction of any necessary defences and the means of managing those.
- Consideration of the proposal relative to any existing Strategic Flood Risk Assessment carried out by the local authority.

Exception Test requirements

In addition to the requirements listed above, when completing a FRA as part of meeting the requirements of the Exception Test, an assessment will be required of on and off site opportunities for reducing flood risk overall. This will include an appraisal of the strategic flood risk management measures to which the development can contribute.

For further information on the Exception Test contact the Local Planning Authority.

What is the Environment Agency's Role?

We will usually provide comments at the planning application stage on Flood Risk Assessments covered by this guidance note. (unless indicated otherwise by Environment Agency Planning Liaison team in the area where the development is proposed). We have three main interests:

- Ensuring that the calculation and design of the site drainage and flood risk management measures meet Environment Agency policies and plans where present, resulting in a contribution to sustainable development.
- If the proposal is within the Byelaw Distance [2] of a Main River [3] or flood defence structure, or includes the diversion or culverting of an Ordinary Watercourse [4] then formal consent for the proposal may also be required from us.
- Prior to carrying out a FRA, developers should contact the Environment Agency and other operating authorities (including the engineering department of the local authority or Internal Drainage Board as appropriate) to establish whether any information is available relating to flood risk at the site they propose to develop. It should be noted that, whilst we can provide information on flooding from rivers and the sea, we only record known problems relating to other sources. The absence of information in this respect does not mean that a site will not flood. Developers should also take full account of the local knowledge of flooding in the community and account for this within the FRA.

Sources of information:

1. www.environment-agency.gov.uk For information on SUDS best practice, flood proofing and flood resilient construction methods, flood warning, Flood Map and contact details for local Environment Agency offices.
2. www.ciria.org.uk Check 'publications' for details of relevant information
3. www.ciwem.com/directory/ For information on consulting engineers who may be able to carry out FRAs. This is by no means a definitive list.
4. www.hrwallingford.co.uk For information on an R&D project on flood risk assessment guidance for new development.

[1] **Flood Zone 2: This Zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.**
Flood Zone 3: This Zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

[2] **Byelaw distance varies across the country. To find out what distance applies in your area call 08708 506 506 and ask to speak to a member of the Development Control team in the area where the development is proposed.**

[3] **Main Rivers are watercourses designated as such on Main River maps and are generally the larger arterial watercourses. Main Rivers are indicated with a red line as part of the Flood Zones held by the Local Planning Authority and on maps held by the Environment Agency.**

[4] **An Ordinary Watercourse is any watercourse that doesn't form part of a Main River**

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