

Assessment of Flood Risk in Study Areas

8 Assessment of Flood Risk in Study Areas

PPS25 requires that LPAs prepare SFRA to an appropriate level of detail to allow the Sequential Test to be applied in the site allocation process. SFRA should refine information on the probability of flooding, taking other sources of flooding and the impacts of climate change into account.

This SFRA has gathered flood risk information in order to complete an initial Sequential Test for future development sites being considered by the LPAs, as at May 2008. The SFRA provides enough information to allow the Sequential Test to be completed for any other sites that are to be brought forward for consideration in the future.

The SFRA also identifies areas at risk of flooding from sources other than rivers and identify any flood risk management measures, including infrastructure and the coverage of flood warning systems. Guidance on the preparation of FRAs for future development sites and guidance on the likely applicability of different sustainable drainage systems (SuDS) techniques for managing surface water run-off at key development sites will also be included.

The majority of this information for the different sites is contained in the matrix which is in addendum of this report.

8.1

The Sequential Test

Existing undeveloped Local Plan allocations, sites with planning permission and strategic sites have been provided by the LPAs. The aim of the Sequential Test is to direct development away from areas at risk of flooding.

Development should be directed to Flood Zone 1 wherever possible, and then sequentially to Flood Zones 2 and 3, and to the areas of least flood risk within Flood Zones 2 and 3, as identified by the SFRA (see Table D.1 and Table D.2 of PPS25).

The Flood Zone maps show current best estimates of the risk of flooding from rivers and does not consider other sources. Therefore this principle of locating development in lower risk areas should be applied to other forms of flooding. Judgement can be used to identify those areas in which flood risk from other sources of flooding is likely to be higher. The sequential approach can then be applied to steer new development away from these higher risk areas.

Once the Sequential Test has been completed the following should be considered:

- Development in Flood Zone 3 should be seen as a last resort and certain uses (as identified in PPS25 Table D1) are inappropriate in high risk areas and should not be permitted at all.
- Development in Flood Zone 2 should not be seen as without risk of flooding.
- Appropriate measures to manage residual risk must be applied to any developments which are exceptionally constructed in flood risk areas. These measures must take into account effects of climate change.

8.1.1

Functional floodplain Flood Zone 3b

PPS25 defines a Functional Floodplain as land where water has to flow or be stored in times of flood. Specifically, this land:

- would flood with an annual probability of 1 in 20 (5%) or greater in any year, or at another probability to be agreed between the LPA and the Environment Agency (EA), or:
- is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the EA.

The functional floodplain relates only to river and coastal flooding and does not include areas at risk of flooding solely from other sources of flooding (e.g. surface water, sewers). The functional

floodplain (Zone 3b) is determined considering the effects of defences and other flood risk management infrastructure (i.e. if there is a defence in place there is no functional floodplain).

Flood Zone 3b (functional floodplain) is the highest risk zone and effort should be made to steer development (apart from water compatible) away from this zone.

The Practice Guide Companion to PPS25 gives further guidance on the definition of Flood Zone 3b and allows flexibility to subjective interpretation. More specifically it states that areas, which would be subject to flooding in the 5% (1 in 20 year) annual exceedance probability flood event but where the flow of flood water is prevented by existing infrastructure or by solid buildings or other solid barriers, will not be normally defined as Flood Zone 3b.

Modelled data is available for the Rivers Rother, Hipper and Doe Lea. Tidal flooding is not an issue in the area. The modelled flood extents for the 1 in 100 year and 1 in 100 year plus climate change events do not match the extents on the EA flood maps. Flood Zone 3b (Functional Flood Plain) has been produced for these modelled reaches (only in Chesterfield) where there are no defences.

8.2 Application of the Sequential Test

In "A Practical Guide Companion to PPS25" (February 2007) a flow chart is provided which shows how to apply the Sequential Test (see Figure 7) within the LDF process. This has been used as a basis to the application of the Sequential Test for the SFRA.

The data provided by the LPA (Appendix B) were brought into a GIS mapping system, displaying background OS maps and the Environment Agency's Flood Zones. In addition, information on other sources of flood risk including canals, ordinary watercourses and reservoirs were brought into the mapping as well as climate change flood maps.

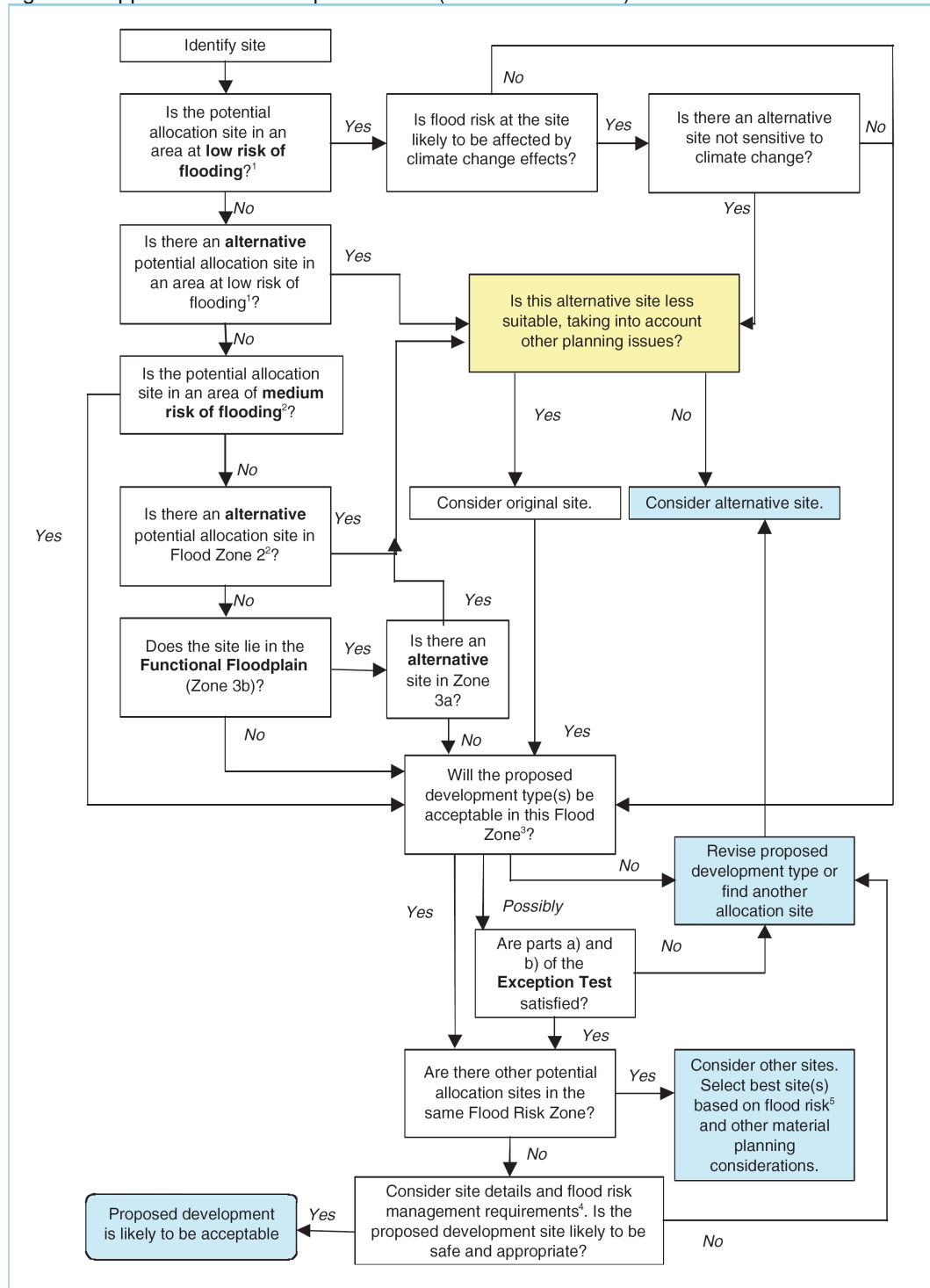
This allowed the filtering out of sites (received by April 2008) that are not thought to be directly at risk of flooding now and in the future (due to climate change). For these sites recommendations have been provided based on the size of the development site (see the addendum of the report). These recommendations include the need to consider surface water disposal and the implementation of SuDS. These sites have remained as point data but are still included in the flood risk matrix and potential future development sites database.

For the remaining potential development sites that were at risk of flooding, a more detailed approach was taken in order to identify the sites most at risk of flooding. This was completed using the GIS mapping and inputting the data into the flood risk matrix.

8.3 The Sequential Approach

The sequential approach should be carried out for sites located in areas at risk of flooding. The process aims to ensure that the parts of the site at least risk of flooding are developed in preference to the parts at higher risk. Developers should make the most appropriate use of land to minimise flood risk, substituting land uses so that the most vulnerable development is located in the parts at lowest risk. They should also make the most of opportunities to reduce flood risk, e.g. creating flood storage and flood pathways when looking at large-scale developments. The sequential approach should also be used at the regional level to identify broad areas for future development that avoid flood risk.

Figure 7: Application of the Sequential Test (taken from PPS25)



Notes

- 1 Flood Zone 1 for fluvial and tidal flooding and with a low risk of flooding from other sources.
- 2 Flood Zone 2 for fluvial and tidal flooding and with a medium risk of flooding from other sources.
- 3 As defined by the Sequential Test.
- 4 Development to be safe and to not increase flood risk elsewhere. Required to pass part c) of the Exception Test, where applicable.
- 5 Including susceptibility to future climate change and residual flood risk.

8.4

Flood risk matrix explanation

A flood risk matrix has been produced to identify the highest risk potential future development allocations and summarise recommendations. This can be found in the Addendum of this SFRA.

The matrix is made up of a list of sites down the first column and data inputs across the first row. The first few columns of the matrix are concerned with the potential development sites i.e. name, size, status.

The next column identifies the Flood Zone in which the site is located. If the site is affected by different Flood Zones then this is shown. Different recommendations will apply to different parts of the site.

For sites affected by multiple Flood Zones, the LPA should direct less vulnerable types of development towards the less vulnerable parts of the sites (taking into account flood hazard and the different flood extents).

The next column identifies what is the standard of protection of defences adjacent to the potential development site. This can also be applied to the river channel without defences, for example canalised sections of the River Rother will have a higher SoP than a natural river because it has been deepened and walled. These sections however are not classed as official raised defences.

By including this column we can identify which potential future development sites are served by flood defences and whether the indicative SoP is met. If defences are not protected from up to the 1 in 100 year fluvial flood then the SoP has not been met. Recommendations can then be made for improving the SoP of defences if there is a pressing need for development to take place here. Alternatively compensatory flood storage can be integrated into the design of new developments.

The flood risk profile column looks at the level of risk within a Flood Zone. This is based on flood velocity, depth and distance from defences (an explanation can be seen in section 6.2). This column allows us to distinguish higher risk locations within a Flood Zone.

The historical flooding column contains information provided by the councils, Severn Trent Water, Yorkshire Water and the EA regarding locations of historical flooding.

The assets column shows the presence of assets that could result in flooding. This would include culverts, outfalls, reservoirs, dams, weirs, flap valves, sluices etc.

The 'other influences' column provides details on other possible sources of flood risk, whether the defence SoP is met, if the site has been flooded in the past or is within a historic flood outline and whether the site is brownfield. These details allow an assessment of whether the site is more at risk from other sources compared to other sites. Also if a site is greenfield, not defended to a high enough standard or has a history of flooding, these sites can be put below other sites in terms of acceptability for development.

The 'current development site' column shows what the response to the current development site should be, according to PPS25.

In the recommendations column a brief recommendation is made, for more details on what is required for the development site, Table 18 and Figure 8 should be used (see Sections 8.6 and 8.7)

After each site there is a colour coding. This is based on the level of flood hazard and what Flood Zone the site is in. It should be possible, using the colour code key, to identify where the highest risk and lower risk potential future development sites are (or parts of sites).

The "Flood Levels" column indicates whether there is modelled or actual flood data available.

The "Comments" column provides a commentary regarding adjacent sites, where climate change may affect the site, or if there is some other extreme situation.

A summary of the Addendum is provided below but specific analysis (directing more vulnerable development away from high flood vulnerable sites) should be undertaken in more detail when producing the DPDs.

8.5

General summary

Within the development and flood risk matrix each site has been assessed according to its specific issues. The site has been split in line with which Flood Zone parts fall within it. This has then been colour coded. The key to the colour code can be seen on the matrix. The LPA should aim to divert development away from higher risk Flood Zones and the higher hazard ratings when planning what type of development should go where. A summary of the findings can be found below.

8.5.1

Chesterfield

Flood risk is a significant issue for regeneration in Chesterfield. Historically strong links have existed between industrial development in Chesterfield and the main watercourses, to provide power and material for processes, and in some cases transportation. Major structural change in the manufacturing industry has seen many of these industrial areas run down or closed, leaving Chesterfield with a legacy of former industrial sites in the urban area in need of regeneration, clustered along the river corridors on land affected by historic or potential flooding.

Given the previous history of many of these sites in heavy industrial use, forms of regeneration capable of providing remediation need to be sought. They also provide a rich stock of brownfield development land, often sustainably located close to existing urban centres, activities and transport facilities. Chesterfield Borough Council has sought to take a comprehensive, masterplanned approach to a number of these key sites, recognising the difficulties involved alongside their potential. These include:

- The A61 Corridor, former industrial land alongside the River Rother and Chesterfield Canal;
- Land South of Chatsworth Road, a complex of former mills and other industrial and commercial uses alongside the River Hipper;
- Staveley Works, a corridor of former chemical works, foundries and pipeworks along the route of the River Rother and Chesterfield Canal.

All of these sites contain areas within Flood Zones 2 and 3, which present significant challenges to their regeneration.

8.5.2

Bolsover

Bolsover district is situated in the North Derbyshire Coalfields area of the East Midlands, which extends between Sherwood Forest and the Peak District National Park. The district shares its northern boundaries with South Yorkshire. The 2001 Census recorded a population of 71,766 people. A significant proportion of this population is focused within the four towns of Bolsover, Shirebrook, Clowne and South Normanton. The expansion of settlements is constrained by settlement framework boundaries. The eastern part of the district lies predominantly on an outcrop of magnesian limestone whose fertile soils give rise to the largest tract of high-grade agricultural land in Derbyshire.

It is likely that the district will need to provide between 350 – 400 dwellings per year, although the final Regional Plan figure is yet to be announced. The sub regional employment land study recommends that the range of estimated demand could be between 165 and 220 hectares. The M1 bisects the district and there is considerable development pressure around junctions 28 and 30, particularly for employment.

8.5.3

NE Derbyshire

North East Derbyshire District lies on the edge of the Peak District National Park and surrounds Chesterfield District to the north, west and south. It covers an area of about 258 square kilometres and has a population of almost 100,000 people. With Sheffield and Rotherham lying to the north, the District is under considerable pressure for development. All settlements are constrained by Settlement Development Limits to ensure the protection of the surrounding countryside. The centres of population in the north of the District - Dronfield, Eckington and Killamarsh are constrained by the Green Belt, the purpose of which is to prevent the coalescence of Sheffield and Chesterfield. Clay Cross, together with the smaller settlements of

North Wingfield and Wingerworth, lie further to the south. The rest of the District is predominantly rural and much of it is Special Landscape Area. The eastern part of the District, in particular, is undergoing regeneration and structural change following the decline of the coal mining industry. The emerging East Midlands Regional Plan expects the District to provide land for about 330 new houses each year between 2001 and 2026.

8.6

General requirements for planning applications

Table 188 below can be used as a guide when considering a site brought forward for development through planning applications. This can be used as a checklist and should ensure all factors relating to flooding, drainage and development near to watercourses are taken into account at an early stage.

Table 18: General responses for all proposed developments

Development issue	General statements/requirements
Proposed developments within Flood Zone 3b	<p>All development proposals in this zone should be accompanied by a FRA, See Annex E of PPS25 for minimum requirements.</p> <p>Only the water-compatible uses and the essential infrastructure listed in Table D.2 of PPS25 that has to be there should be permitted in this zone.</p> <p>Refer to the SFRA (if site included) and refer to the site specific guidance. If not included, consider the sequential test requirements/ windfall sites, and general issues described.</p> <p>Use findings from SFRA to consider vulnerability and risk to people and property.</p> <p>The Environment Agency must be consulted.</p>
Proposed developments within Flood Zone 3a	<p>All development proposals in this zone should be accompanied by a FRA, See Annex E of PPS25 for minimum requirements.</p> <p>The water-compatible and less vulnerable uses of land in Table D.2 of PPS25 are appropriate in this zone.</p> <p>Refer to the SFRA (if site included) and refer to the site specific guidance. If not included, consider the sequential test requirements/ windfall sites, and general issues described.</p> <p>Use findings from SFRA to consider vulnerability and risk to people and property.</p> <p>The Environment Agency must be consulted.</p>

Development issue	General statements/requirements
Proposed developments within Flood Zones 2	<p>All development proposals in this zone should be accompanied by a FRA, See Annex E of PPS25 for minimum requirements.</p> <p>The water-compatible, less vulnerable and more vulnerable uses of land and essential infrastructure in Table D.2 of PPS25 are appropriate in this zone.</p> <p>Refer to site specific guidance in the SFRA development site matrix. If not included, consider the sequential test requirements/ windfall sites, and general issues described.</p> <p>Use findings from SFRA to consider vulnerability and risk to people and property.</p> <p>The Environment Agency must be consulted.</p>
Major developments ² within Flood Zone 1	<p>FRA to be undertaken for all major development sites, including those in Flood Zone 1, (EA is a statutory consultee for any development with an area greater than one hectare).</p> <p>Vulnerability to flooding from other sources as well as from river 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. See Annex E of PPS25 for minimum requirements and the requirements below for drainage requirements.</p>
Minor developments within Flood Zone 1	<p>All types of development are acceptable and a FRA is not required. Primary concern is the management of surface water (see drainage requirements below). Refer to the standard Environment Agency comments on managing surface water drainage: (www.pipernetworking.com/floodrisk/operational.html).</p>
Proposed developments adjacent to an Ordinary Watercourse	Land Drainage Act Consent information applicable.
Proposed development within 20m of a Main River	The Environment Agency must be consulted.
Development that requires culverting, operation or the control of the flow of any river or stream.	The Environment Agency must be consulted.
All drainage and sewer design for new developments.	<p>EA should be consulted as per above recommendations and when the surface water is to drain directly to a main river. Otherwise Water Companies and LPA consultation only will be required.</p> <p>Sewers should be designed to ensure that no flooding on site occurs from a 30 year design storm using the worst case critical duration considering 15, 30, 60, 120, 240, 480, 720 and 1440 minute events.</p>

² Major development is defined in The Town and Country Planning (Flooding) (England) Direction 2007 as:

(a) in respect of residential development, a development where the number of dwellings to be provided is 10 or more, or the site area is 0.5 hectares or more; or

(b) in respect of non-residential development, a development where the new floorspace to be provided is 1,000 square metres or more, or the site area is 1 hectare or more;

Development issue	General statements/requirements
	<p>For events with a return-period between 30 to 100 years, surface flooding of open spaces such as landscaped areas or car parks may be acceptable for short periods, but the layout and landscaping of the site must ensure flooding does not affect property FFL's or increase off-site flooding.</p> <p>A climate change allowance of 20% must be applied for industrial/commercial developments and 30% for residential developments.</p> <p>For greenfield sites, discharge rates must be reduced to 5 l/s per ha for the design (30 year) storm.</p> <p>For brownfield sites, discharge rates should match greenfield run-off rates (5 l/s per ha). Where it is impractical, it will be the responsibility of the developer to justify why this can not be achieved.</p> <p>SuDSs should be used on all development sites as a method of achieving the above criteria. Where SuDS are impractical, it will be the responsibility of the developer to justify why.</p>
Regional planning bodies and local authorities should promote the use of SuDS for the management of run-off.	LPAs should promote the use of SuDS for the management of run-off.

In addition, the figure below should be used when deciding what should be done when considering flood risk, drainage and the management of watercourses for certain development types. This table can be applied to all development types and should enable the correct consultation response and should be referred to as a first port of call for planning applications. The table below is a March 2007 version, the table is updated over time and the latest version can be found on the following website address.

<http://www.pipernetworking.com/floodrisk/matrix.html>

The boxes on the internet version are linked to Environment Agency guidance notes and definitions.

Figure 8: Flood Risk Assessment Matrix

Development Type	Relationship to sources of flooding and Flood Zones.				
	Development (including boundary walls etc.) within 20 metres of the top of a bank of a Main River	Includes culverting or control of flow of any river or stream	Within Flood Zone 3	Within Flood Zone 2	Within Flood Zone 1
Householder development and alterations (Note 1)	Consult EA	Consult EA with FRA showing design details of any culvert or flow control structure proposed	No consultation - see standard comment (Note 6)	No consultation - see standard comment (Note 6)	No consultation - No EA Advice
Non-residential extensions with a footprint of less than 250m ² (Note 2)	Consult EA	Consult EA with FRA showing design details of any culvert or flow control structure proposed	No consultation - see standard comment (Note 6)	No consultation - see standard comment (Note 6)	No consultation - No EA Advice
Change of use FROM Water Compatible TO 'Less Vulnerable' development (Note 3)	Only consult EA if site also falls within Flood Zone 3. FRA Required	No consultation - no EA advice	Consult EA with FRA	No consultation - no EA advice	No consultation - No EA Advice
Change of use RESULTING IN 'Highly Vulnerable' or 'More Vulnerable' development (Note 4)	Only consult EA if site also falls within Flood Zone 3 or 2. FRA Required	No consultation - no EA advice	Consult EA with FRA	Consult EA with FRA	No consultation - No EA Advice
Operational development less than 1 hectare (Note 5)	Consult EA	Consult EA with FRA showing design details of any culvert or flow control structure proposed	Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	No consultation - see standard comment (Note 7)
Operational development of 1 hectare or greater (Note 5)	Consult EA	Consult EA with FRA showing design details of any culvert or flow control structure proposed	Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	Consult EA with FRA and Sequential Test Evidence (and where required confirm Exception Test has been applied)	Consult EA with FRA

Colour Key – Red indicates consultations with the EA is necessary, Grey indicates that no consultation is required.

Standard comment - Floor levels within the proposed development will be set no lower than existing levels AND, Flood proofing of the proposed development has been incorporated where appropriate. Or Floor levels within the extension will be set 300mm above the known or modelled 1% (1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance each year) tidal & coastal flood level.

NB – for explanation of notes see following pages. This information was correct at the time of writing but is subject to change. For the most up to date information please see <http://www.pipernetworking.com/floodrisk/matrix.html>

Notes to Figure 8

Note 1 and 2 - Minor development:

- (i) development of an existing dwelling-house, or development within the curtilage of a dwelling-house, for any purpose incidental to the enjoyment of the dwelling-house as such;
- (ii) the extension of an existing building used for non-domestic purposes where the footprint created by the development does not exceed 250 square metres;
- (iii) the alteration of an existing building where the alteration does not increase the size of the building; "

'Householder' development includes "sheds, garages, games rooms etc. within the curtilage of the existing dwelling in addition to physical extensions to the existing dwelling itself. This EXCLUDES proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats".

Note 3 - 'Water-compatible' development and 'less vulnerable' development (see PPS25 Annex D, Table D.2). Consultation is intended to pick up those proposed developments which may increase flood risk.

The Environment Agency will have NO comment to make on any change of use RESULTING IN water-compatible development and should not be consulted.

Note 4 - 'Highly vulnerable' and 'more vulnerable' development' (see PPS25 Annex D, Table D.2). Consultation is intended to pick up proposed development which may increase flood risk. This will include changes of use WITHIN these categories.

Note 5 - 'Operational development' includes building, mining or engineering works and excludes development involving only a material change of use. The 1 ha threshold is based on the size of the application site as shown on the planning application form or site plan.

Note 6 – EA guidance (see below) is designed to cater for domestic extensions as well as the extension of an existing building used for non-domestic purposes where the footprint created by the development does not exceed 250 square metres.

In such circumstances:

Applicants should complete the table below and include it with the planning application submission. The table, together with the supporting evidence, will form the Flood Risk Assessment (FRA). It will act as an assurance to the Planning Authority that flood risk issues have been addressed as part of the development.

Planning Authorities should check the planning application and ensure that one or other of the mitigation measures proposed in the table have been incorporated into the development.

Applicant to choose one or other of the flood mitigation measures below.	Applicant to provide the LPA with the supporting information detailed below as part of their FRA	Applicant to tick one of the boxes below
Either: Floor levels within the proposed development will be set no lower than existing levels AND, Flood proofing of the proposed development has been incorporated where appropriate.	Details of any flood resilience and resistance techniques to be included in accordance with 'Preparing for floods' (ODPM 2003)	
Or: Floor levels within the extension will be set 300mm above the known or modelled 1% (1 in 100 chance each year) river flood level or 0.5% (1 in 200 chance each year) tidal & coastal flood level.	To be demonstrated by a plan that shows finished floor levels relative to the known or modelled flood level. All levels should be stated in relation to Ordnance Datum	

Cumulative Impact of Minor Extensions and the Removal of Permitted Development Rights.

In circumstances where local knowledge (SFRA/ letters from the parish council etc.) indicate that the cumulative impact of minor extensions may have a significant effect on flood risk (PPS25 paragraph D14), FRA guidance note 2 can be applied.

The Environment Agency will comment on minor applications e.g. residential extensions where

- (a) Permitted development rights have been removed for flood risk reasons, and
- (b) A local consultation protocol has been agreed between the Environment Agency and the Local Planning Authority

Note 7 - For operational developments³ of less than 1 hectare falling within Flood Zone 1, the main flood risk issue to consider will usually be managing surface water run-off (or other forms of flooding).

If a known drainage problem exists, the Local Planning Authority should seek assurance from the developer that flood risk has been addressed. Reference should be made to FRA note 1.

If the proposal part of a larger development site?

Reserved matters applications in Flood Zone 1 might be part of larger sites, which already have outline permission. In such cases, the LPA should ensure that any conditions that were applied to the larger site to manage surface water drainage are taken into account in the reserved matters application, in order to prevent a 'piecemeal' approach to drainage.

Best practice advice-Sustainable Drainage (SuDS) (see Section 9.3)

Surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management (SuDS). SuDS offer significant advantages over conventional drainage systems by attenuating the rate and quantity of surface water run-off from a site, promoting groundwater recharge, and improving water quality and amenity.

Support for the SuDS approach to managing surface water run-off is set out in Planning Policy Statement 1 (PPS): Delivering Sustainable Development and in more detail in Annex F of PPS 25.

Part H of the Building Regulations 2000 establishes a hierarchy for surface water disposal, which encourages a SuDS approach. SuDS should be the first option for surface water disposal followed by watercourses and then public sewer systems. It should be demonstrated that the SuDS options are feasible, can be adopted and properly maintained and would not lead to any other environmental problems e.g. the use of soakaways or other infiltration methods on contaminated land carries groundwater pollution risks and may not work in areas with a high water table. An appropriate assessment carried out under BRE Digest 365 should be completed for soakaways.

Flow balancing SuDS methods which involve the retention and controlled release of surface water from a site may be considered to maintain the local greenfield run off rate. Flow balancing should seek to achieve water quality and amenity benefits as well as managing flood risk.

For further information on SuDS see:

- Annex F of PPS 25;
- PPS25 Practice Guide;
- CIRIA C522 - Sustainable Urban Drainage Systems-design manual for England and Wales;
- Interim Code of Practice for Sustainable Drainage Systems;
- Section 9.3 of this report.

The Interim Code of Practice is available electronically on both the Environment Agency's web site at: www.environment-agency.gov.uk and CIRIA's web site at: www.ciria.org.uk

Disposal to public sewer

Where it is intended to dispose of surface water to a public sewer, either Severn Trent Water or Yorkshire Water should confirm that there is adequate spare capacity in the existing system.

Other flood risk issues to consider for development in Flood Zone 1 - Dry Islands

There are some areas within Flood Zone 1 that are surrounded by areas at a higher risk of flooding ('dry islands'). i.e. areas falling within Flood Zones 3 and 2. In some cases development in these areas can present particular hazards to public safety including risks associated with maintaining safe access and exit for occupants during flood events and access for the emergency services. The local Environment Agency Planning Liaison can advise on such locations within the greater Chesterfield area.

³ Operational developments are those which are not limited purely to material changes of use i.e. they involve works such as building, mining or engineering operations which could have an impact on surface water run-off.

The Environment Agency will release a new version of Flood Risk Standing Advice in January 2009. This will take account of the vulnerability classifications introduced in table D2 of PPS25, and will have more user-friendly applications designed for Planning Authority use, and for Developer and Applicants use. This will become available directly on their website

www.environment-agency.gov.uk

8.7

How to use the SFRA to apply the Sequential Test

(a) Local Development Framework

This SFRA has looked at existing development sites, sites with planning permission and strategic sites provided by the LPA. Other sites will be brought forward for consideration by the LPA through the SHLAA and as representations for the LPA's LDF (both by the LPA and by developers and landowners). The SFRA must be used by the LPA to sequentially test these additional sites and use the information provided to strategically assess development in relation to flood risk. This has in part been summarised in Sections 8.4 to 8.5.

The process of applying the Sequential Test should be followed as shown in Figure 8 above.

APPLICATION OF THE SEQUENTIAL TEST and EXCEPTION TEST

To sequentially test sites, the following information should be used.

1. GIS themes for the site(s), Flood Zone maps and any functional floodplain extent produced should be prepared by the LPA and brought up on background OS mapping. This will allow the identification of the Flood Zone in which the site is located.
2. Any climate change flood extents that have been produced can be made available by the LPA in GIS. These extents can be included to see if the site could be at risk of flooding in the future from climate change.
3. The functional floodplain (Flood Zone 3b) and climate change flood extents will only be available for certain river reaches which has been assessed during the SFRA. Other areas of functional flood plain may exist where there is no river modelling data.
4. The flood risk problems database and GIS theme should be used to identify potential flood risk from other sources. The SFRA has not established whether there is a low or medium risk of flooding from these other sources (see notes 1 and 2 from Figure 7).

If a developer is making an application then that developer should be notified if it is believed that the site could be at risk from other sources of flooding. The developer should then be asked to further investigate this during a FRA.

5. If the site is located in either Flood Zone 2 or Flood Zone 3 the Sequential Test should be applied to identify and confirm the location of other reasonably available other sites in lower flood risk zones within the LPA area in an effort to steer new development away from these flood risk areas. This applies to all types of development (except essential infrastructure and water compatible) irrespective of whether they are suitable for higher flood risk zones or not.
6. If there are no other reasonably available sites then consideration should be given to applying the Exception Test to allow sites to be brought forward safely.
7. Table D2 in PPS25 should be used to ascertain the vulnerability of a development. This is shown in Table 3, page 33. Table D3 from PPS25 also shown as Figure 5. This assessment can then be used to determine if the proposed development type could be acceptable in a particular Flood Zone (always provided there are not other suitable sites available).
8. Finally the Exception Test will need to be applied if there are other drivers (other than flood risk) requiring the development of certain land uses in Flood Zones 2 or 3.

(b) Development Control

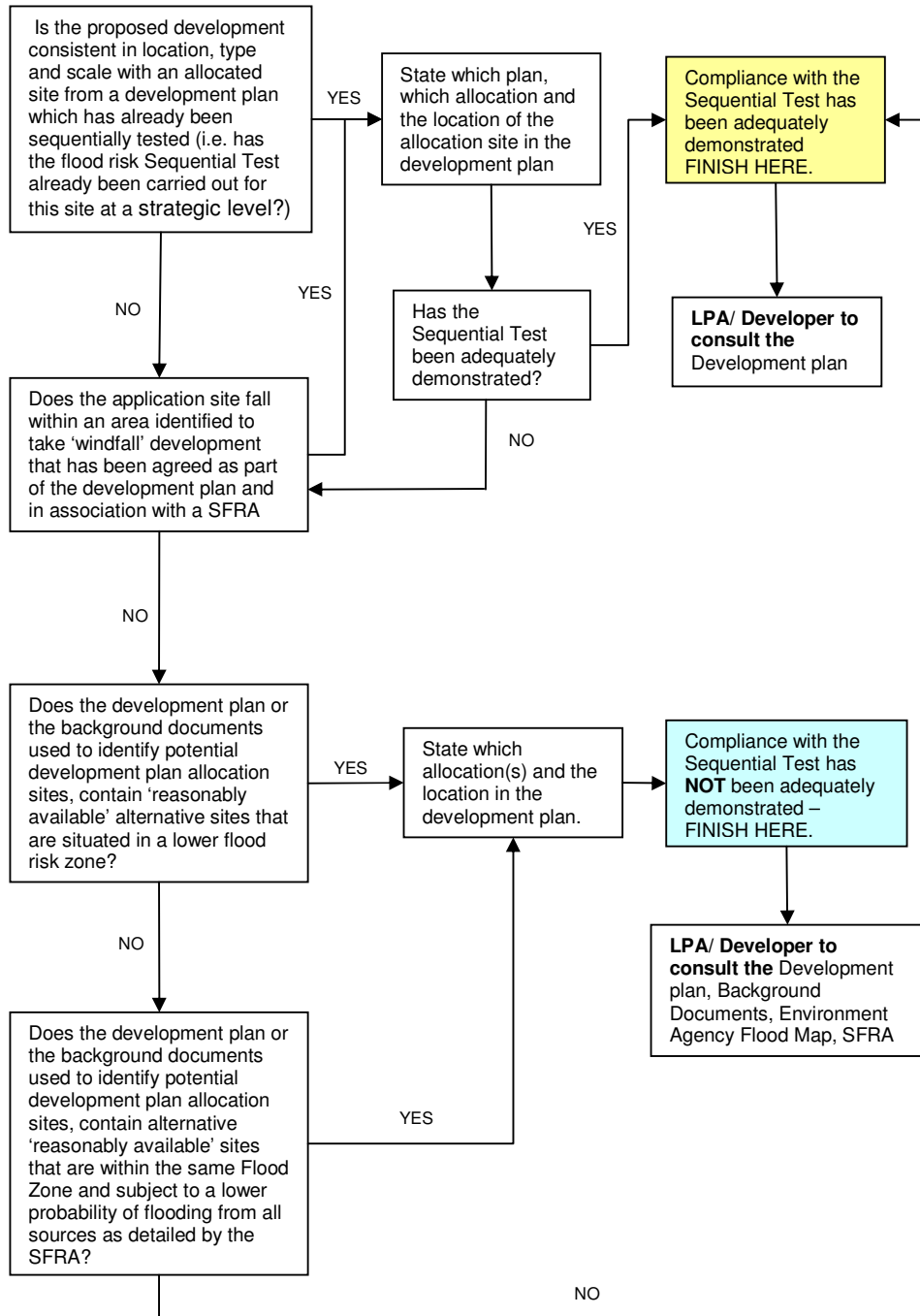
Figure 9 below sets out the information that the Environment Agency will require as evidence from LPAs as a demonstration that the flood risk Sequential Test has been properly applied. For prospective allocations this should be done as part of the LDF process. For windfall sites it will be the responsibility of the developer to submit sufficient justification to the LPA to provide to the EA.

Initially on a site specific basis Table 18 and Figure 8 should be used to find out who should be consulted, what guidance needs to be considered, what development is likely to be acceptable, the scope of an FRA and other factors that should be considered.

A developer of an individual site should identify if the site has already been assessed in the Addendum. This will provide more details on what is required for an FRA and any other factors to consider. For example other flood risk problems, not identified in the Flood Zone maps, could be identified. The developer should be able to find out from the Addendum whether the Sequential or Exception Test is required for the proposed development type. The basic requirements for an FRA should be identified. The developer can then go to PPS25 for further guidance and consult the LPA and Environment Agency to confirm the requirements.

For sites not contained within the Addendum, the developer should establish if the site has been assessed by the LPA through the LDF process. If it has been the subject of assessment, details on what is required for an FRA (as above) will be provided.

Figure 9: Sequential Test Requirements



Note: For prospective development allocations this should be done as part of the LDF process. For windfall sites it will be the responsibility of the developer to submit sufficient justification to the LPA to provide to the EA