

Flood Risk Sequential Test

Practice Note

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1. Introduction

Paragraphs 100-104 of the National Planning Policy Framework (NPPF) and policy BCS16 of the adopted Bristol Core Strategy (June 2011) set out a sequential, risk-based approach to the location of development to avoid people and property being exposed to the risk of flooding and manage any residual risk.

An important step in the sequential approach to flood risk is the application of a **Sequential Test** to proposals for development in areas at risk of flooding, which examines whether there are alternative sites less at risk of flooding that would be appropriate for the proposed development. If, following the Sequential Test, the council considers that there are no reasonably available sites in areas less at risk of flooding that would be appropriate for the proposed development, then the Sequential Test is passed and it may be appropriate for the proposed development to proceed subject to a site-specific flood risk assessment and appropriate mitigation measures to ensure that the development is made safe for its lifetime without increasing flood risk elsewhere.

This practice note explains how the Sequential Test will be applied through the development management process in Bristol. It is a priority of the Bristol Core Strategy to achieve regeneration across a wide range of areas within the city, and as such the council, while recognising the importance of avoiding and managing flood risk, will take a practical and pragmatic approach to the consideration of alternative sites for development as part of the Sequential Test when considering proposals for development.



2. The Sequential Test and Flood Zones

The Sequential Test is undertaken on the basis of the following flood zones, as set out in Table 1 of the Technical Guidance to the NPPF:

Flood zone	Associated flood risk
Zone 1	Low probability – This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year
Zone 2	Medium Probability – This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding or between 1 in 200 and 1 in 1000 annual probability of sea flooding in any year.
Zone 3a	High probability – This zone comprises land assessed as having a 1 in 100 or greater probability of river flooding or a 1 in 200 or greater probability of flooding from the sea in any year.
Zone 3b	The functional floodplain – This land comprises land where water <i>has</i> to flow or be stored in times of flood.

Fig.1: Summary of flood zones (see Technical Guidance to the NPPF: Table 1)

Table 2 of the Technical Guidance to the NPPF groups different development types into different vulnerability classifications, for example:

- Offices are defined as “less vulnerable”
- Dwelling houses are defined as “more vulnerable”
- Basement dwellings are defined as “highly vulnerable”

Table 2 is reproduced in full at Appendix 2 of this Practice Note.

For each flood zone, Table 3 of the Technical Guidance to the NPPF then sets out whether development of the various different vulnerability classifications is appropriate. If so, then the development may be able to proceed subject to a Sequential Test and, in some cases, an Exception Test. **If development within a certain vulnerability classification is identified as inappropriate, then planning permission will not generally be permitted.**

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 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.

Fig.2: Technical Guidance to the NPPF: Table 3

Maps of Flood Zones in England are maintained by the Environment Agency. In Bristol, however, the Sequential Test should usually be carried out with reference to the latest local flood risk evidence. The **Strategic Flood Risk Assessment** for Bristol (SFRA) and subsequent studies such as the forthcoming **Central Area Flood Risk Assessment** (CAFRA) model local flood risks in more detail, taking into account flood defences, and provide further information in certain areas on the depth and severity of the potential flooding.

The local flood risk evidence models not just the present day flood risk but also the potential future flood risk taking account of the likely effects of climate change. In Bristol, as required by policy BCS16 of the Core Strategy, the future flood risk with climate change should be taken into account in undertaking the Sequential Test. **Consequently, the flood zones used for the Sequential Test in Bristol will be the flood zones with climate change where such data is available.**

The Sequential Test in Bristol will seek sites in the following order of preference:

1. Sites in Flood Zone 1
2. Sites in Flood Zone 2
3. Sites in Flood Zone 3a

2.1. When is the Sequential Test not required?

Proposals for development within either Flood Zones 2, 3a or 3b¹ as existing or Flood Zone 3a with climate change require a Sequential Test **unless** any of the following apply:

- The proposal is for a **change of use** of existing building(s)².
Reason: As set out in the National Planning Policy Framework (para.104) and associated Technical Guidance (para.10).
- The proposal is for a **minor extension or alteration** to an existing building or its associated structures, defined as:
 - Minor non-residential extensions: industrial/commercial/leisure etc. extensions with a footprint less than 250m²;
 - Householder development: e.g. sheds, garages, games rooms etc. within the curtilage of the existing dwelling in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.
 - Alterations: development that does not increase the size of buildings e.g. alterations to external appearance or a replacement boundary treatment.

Reason: As set out in the National Planning Policy Framework (para.104) and associated Technical Guidance (para.10).

- The proposal is for the **replacement of an existing building**³.
Reason: As set out in the PPS25 Practice Guide (para.4.40). The replacement of an existing building with a new, suitably flood-resilient design is likely to be preferable

¹ Note that most types of development are not acceptable in principle in Flood Zone 3b (see Fig.2).

² This only applies to proposals that involve no extension to the building (above and beyond that considered to be a “minor extension or alteration” as set out above).

³ This only applies where there would be no increase in the intensity of use of the site, such as the replacement of an existing single dwelling house.

to the change of use of an existing building if the exposure of people or property to flooding is to be minimised.

- The proposal is for a **renewable energy project** (e.g. wind turbines).

Reason: As set out in the PPS25 Practice Guide (para.4.39).

- The council has already sequentially tested the site as part of an **allocation for development** within the development plan (including emerging development plan documents that have reached the Publication stage).⁴

Reason: As set out in the National Planning Policy Framework (para.104).

- The proposal is for a site with an **existing planning permission** (full or outline) for a comparable mix and intensity of uses.

Reason: As the principle of development has already been decided.

If an applicant for planning permission believes that their proposal is exempt from the need for a Sequential Test, they should justify this clearly as part of their application with reference to the exemptions set out above.

Proposals that pass the Sequential Test will also still require a site-specific **Flood Risk Assessment** (see 'Development that passes the Sequential Test' below).

2.2. Carrying out the Sequential Test

The applicant for any proposal not covered by one of the above exemptions will be expected to assemble the evidence to allow the council to consider whether the development passes the Sequential Test and submit it as part of their planning application. The Sequential Test should demonstrate that there are no reasonably available alternative sites appropriate for the proposed development in areas with a lower probability of flooding. If the applicant can demonstrate this to the council then the Sequential Test is passed.

Applicants submitting a Sequential Test should include the following information:

- A written statement explaining the area of search for alternative sites;
- A map or clear schedule identifying all alternative sites considered within areas of lower flood risk; and
- A written statement explaining why the alternative sites are not reasonably available.

2.2.1. Defining the search area

As set out in the PPS25 Practice Guide (paras.4.17-4.18), the area of search for alternative sites will normally be the whole local authority area. However, Bristol contains a number of areas in need of regeneration in which it would be appropriate to carry out the Sequential Test over a smaller area. Development in the following areas will not be expected to look for alternative sites in other parts of the city as part of the Sequential Test:

- **Bristol City Centre**, as defined in the emerging Central Area Plan, or, within the city centre, the regeneration areas of:

⁴ Except where the proposed development departs significantly from the terms of the site allocation, particularly where the proposal is for more vulnerable uses than those for which the site has been allocated (such a proposal to build housing on a site that has been allocated for offices), in which case a Sequential Test should be submitted with the planning application.

- **Bristol Temple Quarter;**
- **Bristol Shopping Quarter;**
- **Newfoundland Way;**
- **Nelson Street and Lewins Mead;**
- **Redcliffe Way;**
- **North Redcliffe;**
- **Central Harbourside;** and
- **Cumberland Basin.**

These regeneration areas reflect the areas identified by policy BCS2 of the Core Strategy as areas of focus for development and regeneration, city centre gateways in need of improvement or extensions to the city centre. Fig.3, overleaf, shows the location of the city centre regeneration areas.

- **South Bristol**, defined as all wards south of the River Avon, or, within South Bristol, the regeneration area of:
 - **Knowle West**, as defined by the Knowle West Regeneration Framework.
- **Inner East Bristol**, defined as those parts of Ashley, Easton and Lawrence Hill wards that are outside the city centre.
- The **Northern Arc**, defined as the wards of Lockleaze, Henbury, Southmead, Kingsweston and Horfield and the part of Avonmouth ward generally corresponding to the residential and mixed-use areas east of the A4.
- **Avonmouth Village**, defined broadly as the residential and mixed-use part of Avonmouth ward west of the A4.

An alternative area of search may be acceptable where it can be demonstrated with evidence that there is a specific need for the proposed development in that area that cannot be met elsewhere.

Defining the search area: conversions and replacement buildings

Bristol, particularly Bristol City Centre, has a number of existing buildings that have reached the end of their useful life for their present use and would benefit from conversion to other uses, but are at risk of flooding either at present or with climate change. It would be harmful to the continued regeneration and sustainable development of Bristol for these buildings to remain vacant and as such it will be a priority for the council to support applicants in finding viable ways to bring them back into use.

In situations where an existing building has become predominantly vacant because its existing use is no longer viable and a conversion to alternative uses is necessary to bring it back into use, the council will consider the regeneration benefits of its reuse and the implications of its remaining vacant. If the council is satisfied that the benefits that would arise from bringing the building back into use cannot be provided by development on an alternative site, then the search area for the Sequential Test can be the application site alone and the Sequential Test thereby passed.

In some cases, it will not be possible to bring the building back into use without some increase in floorspace, such as through the provision of additional floors or some degree of extension. In such cases the search area for the Sequential Test may still be the site alone, but the proposed additional floorspace should not be significantly more than is required for a deliverable scheme.

The replacement of an existing building with a new, suitably flood-resilient design is likely to be preferable to the conversion of an existing building if the exposure of people and

property to flooding is to be minimised. In such cases, subject to the considerations set out above, the search area for the Sequential Test can again be limited to the application site.

Applicants proposing that the search area for the Sequential Test should be limited to the site alone should set out clearly their justification for doing so as part of their planning application. The justification should relate specifically to the site itself, such as improving levels of activity and footfall in an important location in a shopping area, the improvement of an important pedestrian route that crosses or adjoins the site or the impact on the local area of the existing building remaining vacant.

2.2.2. Identifying alternative sites

The Sequential Test requires any alternative sites within the search area that are at lower risk of flooding and would be appropriate for the proposed development to be identified.

Alternative sites for major proposals of 10 or more dwellings or over 1,000m² of non-residential floorspace can be identified from the council's emerging Local Plan documents and the evidence produced to support them, particularly the Strategic Housing Land Availability Assessment (SHLAA).

Alternative sites for small-scale proposals of fewer than 10 dwellings or less than 1,000m² of non-residential floorspace cannot readily be identified from the above sources. Applicants wishing to pursue a proposal on such a site may instead gather evidence for a Sequential Test by consulting local property agents' listings. It is recommended that a minimum of two property agents be consulted.

2.2.3. Determining whether alternative sites are 'reasonably available'

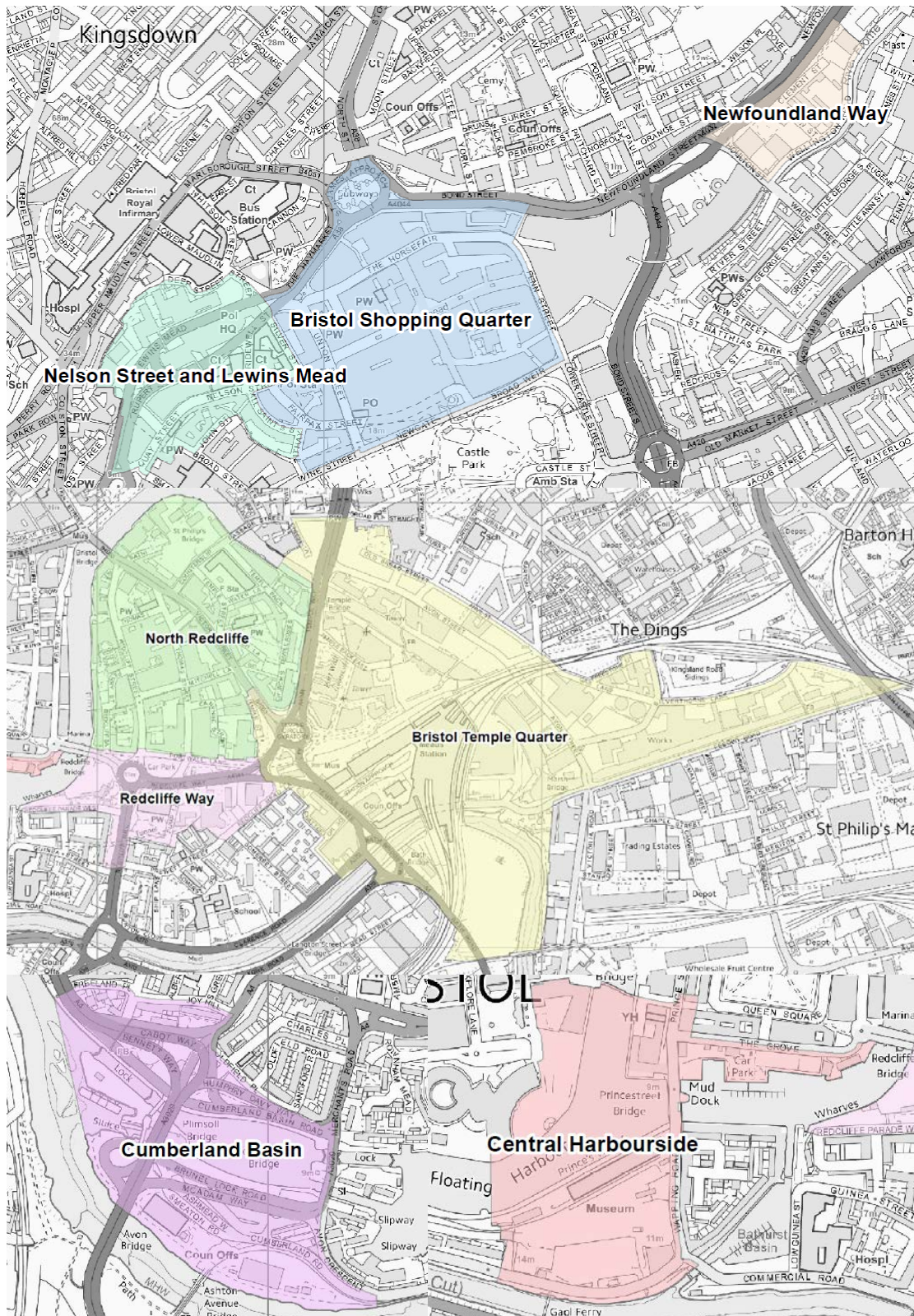
A development proposal will only fail to pass the Sequential Test if alternative sites are identified within the search area that are at lower risk of flooding, would be appropriate for the proposed development and are 'reasonably available' for development. A site is only considered to be reasonably available if it is both 'deliverable' and 'developable' as defined by the NPPF (Para.47, footnotes 11-12).

Additionally, a site is only considered to be reasonably available if **all** of the following apply:

- The site is within the agreed area of search.
- The site is of comparable size and can accommodate the requirements of the proposed development.
- The site is either:
 - Owned by the applicant;
 - For sale at a fair market value; or
 - Is publicly owned land that has been formally declared to be surplus and is available for purchase.
- The site is not safeguarded in the Local Plan for another use.

Sites are *not* considered to be reasonably available if they fail to meet any of the above requirements or already have planning permission for a development that is likely to be implemented⁵.

⁵ The Five Year Housing Land Supply report published annually by the council provides information on sites with planning permission that the council considers likely to be implemented.



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Fig.3: City Centre Regeneration Areas

3. Proposals that pass the Sequential Test (or do not require it)

Proposals that pass the Sequential Test (or do not require it) will still need to respond to and effectively mitigate the risk of flooding on the site. This is done through a process of site-specific **Flood Risk Assessment** and, in some cases, the application of the **Exception Test**.

3.1. The Exception Test

Table 3 of the Technical Guidance to the NPPF (see Fig.2) sets out the circumstances in which an Exception Test is also required. As set out in the NPPF (para.102), for the Exception Test to be passed:

- It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by the Strategic Flood Risk Assessment; and
- A site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users and the likely effects of climate change, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

In applying the Exception Test to proposals for the conversion or replacement of buildings, the council will consider the extent to which the provision of any additional floorspace is necessary to achieve a deliverable scheme that would provide wider sustainability benefits.

The Exception Test will not be applied to proposals that are also exempt from the Sequential Test, such as changes of use and minor extensions and alterations.

The applicant for proposals that require an Exception Test should set out clearly, as part of their application, their case for why the proposal should pass it.

3.2. Site-specific Flood Risk Assessment

Whether or not an Exception Test is required, all proposals for development on sites at risk of flooding should be accompanied by a site-specific Flood Risk Assessment. As set out in the Technical Guidance to the NPPF, 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 so that the development remains safe throughout its lifetime, taking climate change into account.

Making reference to the SFRA and related studies, the Flood Risk Assessment should take account of the likely effects of climate change over the lifetime of the development. For residential development this is generally held to be 100 years, while for non-residential development it is generally held to be 60 years. The consideration of safety should cover not just the use of the site or building(s) themselves, but also the provision of a safe route for access and escape suitable for all users in the event of a flood.

Proposals that pass the Sequential Test should still follow the **Sequential Approach** to site design. Within the site, the most vulnerable uses should be located on the parts of the site least affected by flood risk. The Flood Risk Assessment should demonstrate how the Sequential Approach has been followed in the layout of the development proposal.

Appendix 1: Sources of information

Flood Risk Data

- Flood risk maps are published and updated regularly by the [Environment Agency](#).
- The latest data for Bristol, including projections for flood risk with climate change, can be found in the [Strategic Flood Risk Assessment](#) and related studies. This also includes information on surface water flooding.

Reasonably Available Sites

- Bristol provides information about [housing sites](#) as part of its evidence base, including potential development sites and unimplemented planning permissions.
- Sites that have already been allocated for development (or are proposed to be) in Bristol are set out in the [Site Allocations and Development Management](#) document and [Bristol Central Area Plan](#).
- Further sites may be identifiable through local estate agents' listings.

Further Guidance

- Policies for planning and flood risk including the Sequential and Exception Tests are enshrined in the [National Planning Policy Framework](#) (NPPF) and its accompanying [technical guidance](#).
- The NPPF is currently still supported by the [PPS25 Practice Guide](#).
- The policies in the NPPF are also enshrined in policy BCS16 of the adopted Bristol [Core Strategy](#) (July 2011).
- The Environment Agency provides [Flood Risk Standing Advice](#) to further assist planners and developers.

Appendix 2: Flood Risk Vulnerability Classification

Table 2 of the Technical Guidance to the National Planning Policy Framework:

<p>Essential infrastructure</p> <ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
<p>Highly vulnerable</p> <ul style="list-style-type: none"> • 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 use³. • Installations requiring hazardous substances consent⁴. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as “essential infrastructure”)⁵.
<p>More vulnerable</p> <ul style="list-style-type: none"> • 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 waste⁶. • Sites used for holiday or short-let caravans and camping, <i>subject to a specific warning and evacuation plan</i>.⁷
<p>Less vulnerable</p> <ul style="list-style-type: none"> • Police, ambulance and fire stations which are <i>not</i> required to be operational during flooding. • Buildings used for shops, financial, professional and other services,

³ For any proposal involving a change of use of land to a caravan, camping or chalet site, or to a mobile home site or park home site, the Sequential and Exception Tests should be applied.

⁴ See Circular 04/00: *Planning controls for hazardous substances* (paragraph 18) at: www.communities.gov.uk/publications/planningandbuilding/circularplanningcontrols

⁵ In considering any development proposal for such an installation, local planning authorities should have regard to planning policy on pollution in the National Planning Policy Framework.

⁶ For definition, see *Planning for Sustainable Waste Management: Companion Guide to Planning Policy Statement 10* at

www.communities.gov.uk/publications/planningandbuilding/planningsustainable

⁷ See footnote 3.

<p>restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure.</p> <ul style="list-style-type: none"> • 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 works which do <i>not</i> need to remain operational during times of flood. • Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).
<p>Water-compatible development</p> <ul style="list-style-type: none"> • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence 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, <i>subject to a specific warning and evacuation plan</i>.

Notes to table 2:

- This classification is based partly on Department for Environment, Food and Rural Affairs and Environment Agency research on *Flood Risks to People (FD2321/TR2)*⁸ and also on the need of some uses to keep functioning during flooding.
- 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.
- 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.

