NORTH DEVON COUNCIL AND TORRIDGE DISTRICT COUNCIL

LEVEL 1
STRATEGIC FLOOD RISK ASSESSMENT

(PART 1 – STRATEGY DOCUMENT)

DOCUMENT CONTROL SHEET

Client: **NORTH DEVON COUNCIL/TORRIDGE DISTRICT COUNCIL**

Project: **STRATEGIC FLOOD RISK ASSESSMENT**

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	February 2009	First Issue

FOREWARD

This Strategic Flood Risk Assessment comprises of 3 Parts:

- **Part 1 – Strategy Document**
- **Part 2 – North Devon Council Data**
- **Part 3 – Torridge District Council Data**

Part 1 - Contents

1. EXECUTIVE SUMMARY

The Strategic Flood Risk Assessment (SFRA) is an overview of the flood risk within the North Devon Council (NDC) and Torridge District Council (TDC) areas.

A staged approach is recommended in PPS25 (Development and Flood Risks) to allow flexibility in the level of assessment (and detail) required.

A Level 1 SFRA is defined in the Practice Guide Companion to PPS25, as the level that provides the necessary information for undertaking the Sequential Test.

The Level 1 SFRA will provide general guidance to planning officers, developers and other interested parties in managing flood risk by the following:

1. Identifying specific areas of flood risk over the whole of the two Districts including part of the Exmoor National Park that falls within the NDC area.

2. Providing guidance notes for developers to minimise flood risk by including measures in site design to ensure there is no increase in surface water run-off.

3. Providing guidance to planning officers in the performance of their duties.

A Level 2 SFRA output would include:

• An appraisal of the condition of flood defence infrastructure and likely future policy;

• An appraisal of the probability and consequence of breach or overtopping of flood defence Infrastructure;

• Maps showing distribution of flood risk across Zones;

• Guidance on appropriate policies for making sites which satisfy parts (a) and (b) of the Exception Test safe, and the requirements for satisfying part (c) of the Exception Test; and

• Guidance on the preparation of FRAs for sites with varying flood risk across the Flood Zone.

Planning Policy Statement 25 states (Background page 1):

- "Flooding from rivers and coastal waters is a natural process that plays an important role in shaping the natural environment. However, flooding threatens life and causes substantial damage to property. The effects of weather events can be increased in severity both as a consequence of previous decisions about the location, design and nature of settlement and land use, and as a potential consequence of future climate change. Although flooding cannot be wholly prevented, its impacts can be avoided and reduced through good planning and management.

- Climate change over the next few decades is likely to mean milder wetter winters and hotter drier summers in the UK, while sea levels will continue to rise. These factors will lead to increased and new risks of flooding within the lifetime of planned developments.

- All forms of flooding and their impact on the natural and built environment are material planning considerations.

- "Positive planning has an important role in helping deliver sustainable development and ..... applying the Government's policy on flood risk management. It avoids, reduces and manages flood risk by taking full account in decisions on plans and applications of present

and future flood risk; involving both the statistical probability of a flood occurring and the scale of its potential consequences, whether inland or on the coast; and the wider implications for flood risk of development located outside flood risk areas.

- The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.

- Regional planning bodies (RPBs) and local planning authorities (LPAs) should prepare and implement planning strategies that help to deliver sustainable development by:

Appraising risk

- identifying land at risk and the degree of risk of flooding from river, sea and other sources in their areas;

- preparing Strategic Flood Risk Assessments (SFRAs)

Managing risk

- framing strategies for the location of development which avoid flood risk to people and property where possible, and manage any residual risk, taking account of the impacts of climate change;

- only permitting development in areas of flood risk when there are no reasonably available sites in areas of lower flood risk (flood zone 1) and benefits of the development outweigh the risks from flooding;

Reducing risk

- safeguarding land from development that is required for current and future flood management e.g. conveyance and storage of flood water, and flood defences;

- reducing flood risk to and from new development through location, layout and design, incorporating sustainable drainage systems (SuDS);

- using opportunities offered by new development to reduce the causes and impacts of flooding e.g. surface water management plans; making the most of the benefits of green infrastructure for flood storage, conveyance and SuDS; re-creating functional floodplain; and setting back defences;

A partnership approach

- working effectively with the Environment Agency, other operating authorities and other stakeholders to ensure that best use is made of their expertise and information so that plans are effective and decisions on planning applications can be delivered expeditiously; and

- ensuring spatial planning supports flood risk management policies and plans, River Basin Management Plans and emergency planning."

The information contained in this document should only be considered as a guide to assist in identifying the potential flood risk. Decisions will still need to be made to consider if further information is required by a developer in relation to flood risk. This will usually take the form of a site specific Flood Risk Assessment.

2. INTRODUCTION & BACKGROUND

2.1 GENERAL

Planning Policy Guidance Note 25 (PPG 25) has been superseded by Planning Policy Statement 25 (PPS 25) issued in December 2006. PPS 25 outlines how flood risk issues should be addressed in regional planning guidance, development plans and in the consideration of planning applications. A PPS 25 Practice Guide is available at (https://webarchive.nationalarchives.gov.uk/20091203183726/http://www.communities.gov.uk/publications/planningandbuilding/pps25practiceguide). It seeks where possible to reduce and certainly not to increase flood risk. It should help ensure that flood plains are used for their natural purposes, continue to function effectively and are protected from inappropriate development.
This study was carried out to evaluate and collate all the relevant available data and information to enable a strategic assessment of flood risk within the area. Parts 2 and 3 of this study provide more detailed information for some of the larger catchments.

This SFRA should be read in conjunction with PPS25 and the Practice Guide.

This document is a live document which will be updated as new information becomes available e.g. flood events, new flood modelling, new flood maps etc.

2.2 TOPOGRAPHY

Mid Devon and West Devon border the area to the south, Exmoor to the north-east, the Bristol Channel to the north-west and Cornwall to the west. Watercourses ultimately discharge to the north and north-west. In the west is a plateau area from which the Torridge drains to the east and the Hartland Streams to the west. The two largest river catchments are the River Torridge and the River Taw.

The River Torridge flows from its source near Bradworthy to the Torridge estuary at Bideford with its main tributary originating near to the town of Okehampton. Generally the river has a gentle slope of about 0.2%. (See Figure 1 appended).

The River Taw has its source within the Dartmoor National Park with the two largest tributaries the rivers Mole and Bray originating in the Exmoor National Park. Slopes are steep from the National Parks but then decrease into gentle slopes similar to the River Torridge. (See Figure 1 appended)

Both Councils have long lengths of coastline. NDC 62 kms (39 miles) and TDC 41 kms (25 miles). Generally the coastline consists of cliffs with some large sandy beaches. Towns such as Barnstaple, Bideford, Appledore, Westward Ho!, Ilfracombe, Braunton, Combe Martin and Lynmouth have risks relating to tidal and wave action. (See SFRA parts 2 and 3 for details)

2.3 GEOLOGY AND SOILS

The geology of the area is primarily Carboniferous with minor outcrops of more recent deposits. The coastal streams are underlain by Devonian sandstone.

The soils are generally loamy or silty and well drained but prone to seasonal waterlogging in the valleys and coastal regions. Impervious layers of shillit can cause rapid run-off leading to flooding.

The area is largely rural with land use being mainly agricultural pasture with some arable.

2.4 HYDROLOGY

NDC covers an area of 1,086 square kms (419 square miles) and TDC covers an area of 984 square kms (380 square miles).
Significant river catchments – River Taw, River Torridge, East and West Lyn, Fremington Stream, Venn Stream, East and West Wilder Brooks, River Yeo, River Bray, River Mole, River Caen, Knowl Water and the River Umber in the NDC area; the Rivers Torridge & Taw, the Yeo, Kenwith & Northam Streams, River Tamar and the Rivers Deer, Claw, Carey, Wolfe & the Abbey Stream in the TDC area.

On the River Taw tidal flooding extends as far upstream as Bishops Tawton and on the River Torridge as far as Weare Giffard

The majority of the rivers respond rapidly to rainfall, producing high flood peaks and water levels that fall quickly after rainfall has ceased.

Average annual rainfall varies between 800mm on the coast and 2000-2300mm on Exmoor.

2.5 METHODOLOGY

The following information has been considered in the formation of this document:

Historic flooding – Records of past flood events for specific areas, highlighting recorded data. South West Water and Devon County Council were consulted but unfortunately were unable to provide any data. The limited data provided has been taken from North Devon Council and Torridge District Council records including data from the Parish and Town Councils. The Environment Agency can also provided flood maps of past flooding.

Environment Agency Flood Zones – Flood plain mapping has been provided by the Environment Agency. This can also be found on the Environment Agency web site. The mapping shows Flood Zones 1, 2 and 3 as described in section 4.2.

Existing Flood Risk Assessments – During the planning process developers provide flood risk assessments for specific areas. Information can be gained from these assessments but may be limited.

Existing Coastal and Fluvial Flood Defence Standards – There are a number of areas that are protected by flood defences both tidal and fluvial. Information was taken from the National Flood and Coastal Defence Database at the Environment Agency.

Future risks - Climate change impacts should be considered in undertaking flood risk appraisals. In addition to sea level rise, short duration rainfall could increase by 30 percent and flows by 20 percent, and winters will become generally wetter. These effects will tend to increase both the size of Flood Zones associated with the sea and rivers, and the amount of flooding experienced from “other sources”.

Groundwater Flooding - Underground water collecting in natural formations and rising to ground level including natural springs and soaks.

Flooding from other sources - Non maintenance of trash screens, gullys, pumps, drains overloading and overland flooding i.e. runoff from fields/roads etc

Sandbags – Locations that sandbags are frequently used to try and prevent flooding.

Photographs – Photographs showing flooded areas.

South West Water, Devon County Council and Parish Councils – Any information that could be provided in respect to any type of flooding but generally from sewers and land drainage.
North Devon and River Tamar Catchment Flood Management Plans – These documents are presently in draft form and should be available winter 2008. They will provide an overall outlook to the main catchments in Devon. Some of the information has been utilised for this document.

3. FLOOD RISK

3.1 DEFINITION OF FLOOD RISK

Flood risk involves both the statistical probability of a flood occurring and the scale of the potential consequences. The impacts vary in their nature, scale and extent. Therefore terms of 'return period' and 'probability' are utilised.

Return Period – To aid design it is convenient to categorise the size of the peak flows/tides. For example a 1 in 10 year return period would mean that on average a certain size of peak flow/tide occurs once in 10 years. However, this is only an average and it is possible to experience more than one peak flow/tide in a short period of time.

Probability – The probability of an occurrence e.g. 1 in 100 year return period is 1%

3.2 CAUSES & SOURCES OF FLOODING

Rainfall - High intensity of rainfall is usually the root cause of all flooding.
Rainfall that is unable to soak into the ground or enter drainage systems can run quickly off land causing local flooding. Topography and geology can have a strong influence on land drainage and overland flow paths and barriers/obstacles should be taken into account in development planning.

Fluvial – Rivers flood when the amount of water in them exceeds the flow capacity of the river channel. Most rivers have a natural floodplain into which the water spills in times of flood. Flooding can either develop gradually or rapidly according to how steeply the ground rises in the catchment and how fast water runs off into surface watercourses. In a large, relatively flat catchment, flood levels will rise slowly and natural floodplains may remain flooded for several days, acting as the natural regulator of the flow. This is a function that the planning system should promote and enhance. In small, steep catchments, local intense rainfall can result in the rapid onset of deep and fast-flowing flooding with little warning. Such "flash" flooding, which may only last a few hours, can cause considerable damage and possible threat to life. Land use and the form of local development can have a strong influence on the velocity and volume of water and its direction of flow at particular points. Flooding can occur when culverts and bridges are blocked by debris. This relates to flooding from a watercourse. Many of the rivers and streams in the area have steep catchments.

Coastal – Flooding to low-lying land from the sea and tidal estuaries is caused by high tides and storm surges. Where tidal defences exist, they can be overtopped or breached during a severe storm, which may be more likely with climate change. The onset of flooding from the sea can be extremely rapid. Deep, fast-flowing water can create an extreme hazard. The severity of such flooding will depend on a number of factors, often in combination: the height of tides; weather systems; wind and wave conditions; topography; the effectiveness of drainage systems; and the condition of flood defences. The consequences and impacts of flooding from the sea and tidal waters are more severe than flooding from rivers. It is for this reason that Flood Zone 3 has a 0.5 per cent

annual probability boundary for flooding from the sea and tidal waters while from rivers it has a 1.0 per cent annual probability boundary.

Tide Locking – This occurs when water that usually discharges into a tidally affected watercourse is unable to discharge because of high water levels.

Groundwater – Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from springs along spring lines at geological boundaries. This tends to occur after much longer periods of sustained high rainfall. Generally groundwater flooding occurs during the winter and spring when groundwater levels reach their peak and start to come above ground in low lying areas. Groundwater flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground. Some groundwater flooding occurs in the Yeo Vale / Portmarsh Field areas of Barnstaple - these are the only known locations in the North Devon and Torridge areas.

Land Drainage – Land drainage is the use of piped drainage systems and ditches to drain fields. This speeds up the run-off from fields, overwhelms ditches downhill, which then run-off to neighbouring land, road and property.

Land Management – Polytunnels, crops and soil types. Land use change can have a direct impact upon a catchments flood response, and are hence of primary interest to fluvial flooding. Deforestation and urbanisation are examples where, without mitigation, runoff volumes can increase. Before the implementation of planning regulations in respect to hedgerow removal, farmers would often remove hedge banks to increase production. These hedgerows often provided a barrier to the run-off from storms thus slowing down the impact on watercourses.

Sewers – Many of the sewers in the area are combined i.e. surface water and foul sewage flow into the same pipework, both for public and private drainage. Surface water flows from existing and proposed developments have an impact on the sewerage system. All drainage has a limit in capacity some more than others, so there is always the possibility that any pipework will be overloaded by very large storms. There is a low incidence of storm water sewerage in watercourses.

Climate change – Raising of sea levels and higher intensity rainfall. Until further advice on climate change becomes available, planning authorities and the Environment Agency should take account of the potential effects reported by the UK Climate Impacts Programme in PPS 25 Appendix B, tables B1 and B2. Climate change will increase flood risk, which can be mitigated through ensuring new development avoids high risk areas and by improving existing or providing new flood defences.

Previous Developments – Construction within flood plains and increasing surface water run-off by the covering of permeable surfaces with non-permeable surfacing. Growth of built development within flood plains over the centuries has increasingly required engineering works to defend properties against the risk of flooding.

4. DATA COLLECTION AND QUALITY (CATCHMENT UNDERSTANDING)

4.1 INDICATIVE FLOOD PLAIN

The Environment Agency produces floodplain maps that show areas that could be effected by flooding either from rivers or the sea, if there were no flood defences. An example of these maps is shown on Figure 2 appended, note not all watercourses have been mapped. The Environment Agency provides information on flood plains on their internet site. (https://www.gov.uk/government/organisations/environment-agency). These maps are continuously under review. NDC & TDC are provided with updates approximately every 3 – 6 months. When

using this SFRA you should contact the Environment Agency to ensure that most recent maps have been used and if there are any updates available.

The Council should be consulted if any proposed development is within 10 metres of a watercourse where flood plains have not been indicated on the Environment Agency flood maps.

4.2 FLOOD RISK ZONES

PPS 25 uses flood zones to categorise flood risk and have been used to define the Flood Zones marked on the Environment Agency flood maps which ignore the presence of any flood defences.

Flood Zone 1 are areas at little or no risk to flooding. The annual probability of flooding being less than 0.1%. There are no constraints due to river, tidal or coastal flooding. Consideration should be given to local drainage for flood risk. A flood risk assessment will be required for developments greater than 1 hectare. The main flood risk issue to consider will usually be managing surface water run-off. For sites less than 1 hectare in Flood Zone 1, a formal FRA will not usually be required.

Flood Zone 2 are areas at low to medium risk of flooding and are the additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1% (1 in 1000) chance of occurring each year.
It is also the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. For a fuller explanation of flood likelihood, go to the Environment Agency web site. These areas will require risk assessments to consider if mitigation measures will be required. Essential services such as hospitals, fire stations and emergency depots should not be considered for development in these areas. A Flood Risk Assessment appropriate to the scale & nature of the development is required. Warning & evacuation procedures should be considered.

Flood Zone 3 are areas at high risk of flooding. These areas could be flooded from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year. Generally the whole of Flood Zone 3 should be classed as Functional Floodplain unless shown to be 3a. Flood Zone 3 can be categorised further as follows:

Flood Zone 3a – High Probability
The annual probability of flooding being 1% or greater. 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. Generally areas that have some form of defences - be they designed or act as e.g. railway embankments

Flood Zone 3b – The Functional Floodplain - There are two types of functional floodplain. 1 – land that is specifically designed to flood i.e. Kenwith Flood Storage Area (FSA), Pilton Park and Bradiford. 2- natural floodplains that need to flood in times of flood, which may include people's back gardens and road.

See PPS 25 Table D.1: Flood Zones for further information.

The above zones identified by the Environment Agency show the extent of flooding if there were no flood defences and are quite often indicative only. Some of the flood maps are better than others, but unless specific sections of river have had detailed modelling done they are only based on the best available flood data. Additionally, developers may need to carry out additional work to improve the quality of the maps.

Climate Change - Future climate change has not been taken into account by the Environment Agency in production of the flood zones maps. However a simple solution would be to: -

Fluvial maps - For a rough guide, areas that are currently Flood Zone 2 will become Flood Zone 3 if you include climate change.

Tidal Maps – Similar to the above, but sometimes in flat areas, e.g. Pottington, flood zones could extend further, perhaps 20m or more beyond current Flood Zone 2. Further information should be sought on the flood risks from the Councils or the Environment Agency.

4.3 HISTORIC FLOODING

Areas of historic flooding are obtained from records kept by the water companies Local Councils and the Environment Agency as well as other sources, if where available. The Environment Agency has comprehensive records on historic flooding that can be obtained by developers and the general public.

4.4 PREVIOUS FLOOD RISK ASSESSMENTS

In some cases previous flood risk assessments have been carried out by both private and public agencies. These are usually specific to a very localised area and could be useful to adjacent sites but may require a commercial licence. They have also been used to improve the Flood Zone maps.

4.5 NORTH DEVON AND RIVER TAMAR CATCHMENT FLOOD MANAGEMENT PLANS

The Environment Agency is at present compiling flood catchment plans for the Devon area. They are policy documents for considering the wider impact of flood risk management in relation whole catchments. The catchments that make up the North Devon Catchment Flood Management Plan (out for consultation) are the Taw, Torridge, North Devon coastal and Hartland coastal catchments.

4.6 PUBLIC FOUL AND SURFACE WATER DRAINAGE

Public foul and surface water sewers are owned and maintained by South West Water. South West Water hold a register of the location of properties at risk of sewage related flooding problems. These problems can be caused by either under capacity or storm flooding.

4.7 HIGHWAY DRAINAGE

Devon County Council own and maintain all adopted highway drainage and are also responsible for bridges and culverts under the highway.

4.8 LAND DRAINAGE

The District Councils are the Land Drainage Authorities and police this function but the responsibility for land drainage lies with different organisations, e.g. landowners, Parish Councils, District Councils, Internal Drainage Boards (IDBs) and the Environment Agency. IDB (Braunton Marshes) have powers and responsibilities similar to the Local Authority's.

4.9 FLUVIAL(River) FLOODING

The responsibility for carrying out maintenance of watercourses and flood defence assets lies primarily with the riparian landowners. The Councils have the responsibility for policing land drainage matters in non-main river situations and the Environment Agency in Main River situations. A map of main rivers is appended (Figure 1).

4.10 COASTAL

The District Councils are the Coastal Protection Authorities and police this function in conjunction with the Environment Agency but responsibility for coastal and flood defence assets lies with different organisations, e.g. landowners, Parish Councils, District Councils, IDBs and the Environment Agency. Shoreline Management Plans (SMP) held by the District Councils set out a general strategy for coastal defence. The original SMP's dated 1998 are in the process of being updated and should be available during 2010. Both Coastal and Land Drainage schemes are now administered by the Environment Agency and that arrangements for Local Authorities and Internal Drainage Boards are explained on the EA website (https://www.gov.uk/government/organisations/environment-agency).

4.11 EMERGENCY PLANNING (FLOODING)

Both North Devon and Torridge have Emergency Planning Officers who can be consulted in respect to flooding and also this document will provide them with additional information.

4.12 FLOOD WARNING

The Environment Agency has set up flood warning schemes on the coast and on most rivers at locations that are considered to be at particular risk from flooding. Within these areas, the EA can warn residents in advance when flooding may be likely and how severe the flooding could be. Exact details of the locations can be provided by the EA. The EA also publishes a number of flood warnings that are in force on their web site (https://www.gov.uk/government/organisations/environment-agency.) or by calling Floodline on 0845 9881188. This service is a last resort and should not be considered as a replacement for flood mitigation measures when considering sites for new development.

5. GUIDANCE FOR PLANNING OFFICERS AND DEVELOPERS

5.1 NORTH DEVON COUNCIL/TORRIDGE DISTRICT COUNCIL GENERAL STRATEGY FOR LOCAL DEVELOPMENT DOCUMENTS AND PLANNING APPLICATIONS.

The planning system is the main way to avoid and reduce flood risk to and from new development. It also offers opportunities to reduce flood risk to existing communities and developments through better management of surface water, provision for conveyance and of storage for flood water.

PPS25 requires flood risk to be taken into account at all stages of the planning process to avoid inappropriate development. This means using the hierarchy shown in Table 5.1.

Table 5.1 Flood Risk Management Hierarchy

Table 5.1 Flood Risk Management Hierarchy			
Flood Risk Management Stage	**Description**	**How**	**Key responsible parties**
Step 1 Assess	Undertake studies to collect data at the appropriate scale and level of detail to understand what the flood risk is.	Regional Flood Risk Appraisals (RFRAs), Strategic Flood Risk Assessments (SFRAs), Flood Risk Assessments (FRAs) and application of the sequential approach.	Planning bodies and developers
Step 2 Avoidance/ Prevention	Allocate developments to areas of least flood risk and apportion development types vulnerable to the impact of flooding to areas of least risk.	Use the Sequential approach (including the Sequential Test and then the Exception Test where relevant) to locate development in appropriate locations. At the plan level, the Sustainability Appraisal should show how flood risk has been weighted against other sustainability criteria.	Planning bodies and developers
Step 3 Substitution	Substitute less vulnerable development types for those incompatible with the degree of flood risk.		Planning bodies and developers
Step 4 Control	Implement flood risk management measures to reduce the impact of new development on flood frequency and use appropriate design.	Use River Basin Management Plans (RBMPs), Catchment Flood Management Plans (CFMPs), Shoreline Management Plans (SMPs), Surface Water Management Plans (SWMPs), Flood Risk Management Strategies, appraisal, design and implementation of flood defences.	Planning bodies, Environment Agency and other flood and coastal defence operating authorities, developers and sewerage undertakers. Developers are responsible for design of new developments.
Step 5 Mitigation	Implement measures to mitigate residual risks.	Flood risk assessments. Incorporating flood resistance and resilience measures. Emergency Planning Documents. Implementation of flood warning and evacuation procedures.	Planning bodies, Emergency planners, developers, the Environment Agency, other flood and coastal defence operating authorities and sewerage undertakers.

The 'Environment Agency's Flood Risk Standing Advice for England (PPS25) can be found at (https://www.gov.uk/government/organisations/environment-agency), and is an excellent tool for guiding by both Planning Officers and Developers through the processes involved in assessing proposed developments.

Flow charts guide the user through the various steps required for both minor and major development and should be used in conjunction with Parts 2 & 3 of this document.
The Sequential and Exception Tests are not required for 'minor development', the guide above will advise further on the requirements needed.
For major development proposed within Flood Zones 2 or 3 the Sequential Test would need to be applied and if failed planning permission refused.

The Sequential Test as stated in Planning Policy Statement 25 should be utilised together with the information provided for each Council in the attached documents.
If, following application of the Sequential Test in Annex D of PPS 25, it is not possible or consistent with wider sustainability objectives, for the development to be located in zones of lower probability of flooding, the Exception Test can be applied.

The Sequential Test

This Sequential Test should be applied at all stages of the planning process. The aim of this test is to steer new development to land with the lowest probability of flooding (Zone 1). Presently the Sequential Test will be based on the Environment Agency Flood Zones i.e. for proposed development in Zones 2 & 3.
New development should be steered to appropriate locations within Flood Zone 1. Where there are no reasonable available sites in Flood Zone 1 then Flood Zone 2 can be considered. However, flood risk vulnerability must be considered, applying the Exception Test if required. All development proposals in Zone 2 should be accompanied by a FRA. In this zone, developers and the local authority 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.

Only when there are no reasonably available sites in Flood Zones 1 and 2 should sites in Flood Zone 3 be considered, again applying the Sequential Test if required. All development proposals in this zone should be accompanied by a FRA.

In each flood zone development should be directed towards the areas that have a lower probability of flooding.

The Exception Test

Generally for this test to be passed it must be demonstrated that the development provides wide sustainability benefits to the community that outweigh the flood risk.

In addition the development should be on deliverable previously developed land where possible.

All development proposals will need to consider the vulnerability to flooding from other sources as well as from river and sea flooding should be considered. Also to be considered is 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.

These considerations should be incorporated in a Flood Risk Assessment (FRA). This need only be brief unless the factors above or other local considerations require particular attention. Developers and the local authority 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. The flood risk assessment for the site should demonstrate that the development is safe and does not increase risk elsewhere and proposals should reduce the overall risk of flooding in the area.

In applying the Exception Test Tables D2 and D3 in PPS 25 show Flood Risk Vulnerability classification and Flood Zone Compatibility. These tables can advise a developer if the proposed development is appropriate within a specific flood zone. Developers should always seek to manage surface water flows arising from the proposed site in a sustainable manner to mimic the surface water flows prior to development or indeed to improve on the previous conditions. This will need to be considered on a site to site basis as ground conditions can vary greatly in North Devon. Advice should be sought from both the Environment Agency and North Devon and Torridge Councils.

Planners/Developers should also refer to PPS 25 for further clarification on the Sequential and Exception Tests and how they apply to various types of development.

5.2 GENERAL GUIDANCE

Paragraph 8 of PPS 25 states that:

"LPAs should in determining planning applications:

• have regard to the policies in this PPS and, as relevant, in the Regional Spatial Strategy for their region, as material considerations which may supersede the policies in their existing development plan, when considering planning applications for developments in flood risk areas before that plan can be reviewed to reflect this PPS;

• ensure that planning applications are supported by site-specific flood risk assessments (FRAs) as appropriate;

• apply the sequential approach at a site level to minimise risk by directing the most vulnerable development to areas of lowest flood risk, matching vulnerability of land use to flood risk;

• give priority to the use of SuDS; and

• ensure that all new development in flood risk areas is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed."

6. RECOMMENDATIONS

- Stage 2 SFRA studies are undertaken for Bideford and Barnstaple as a matter of priority.
- The surface water run off arising for all proposed development should be minimised and taken into consideration in any assessment of flood risk.
- Planners and Developers should utilise the Environment Agency Standing Advice for England (https://www.gov.uk/government/organisations/environment-agency) in conjunction with the SFRA parts 2 and 3 to assess potential development areas.
- All development, where possible, should:
  - Minimise the extent of impermeable surfaces
  - Utilise SuDs where ground conditions permit, to avoid increasing the rate of surface water run off
  - Incorporate opportunities for harvesting rain water
  - Reduce surface water entering the foul sewerage system
- New development should be directed to Flood Zone 1, to reduce the risk of flooding in accordance with advice in PPS25

- Where critical infrastructure (including substations, pumping stations and treatment works) are within Flood Zone 2 and 3, they should be defended or relocated.

- Undeveloped land within Flood Zone 3, should where possible be managed to facilitate its potential for flood storage and enhance its role for nature conservation and green infrastructure.

7. GLOSSARY OF TERMS

CFMP	Catchment flood management plan – A strategic planning tool that the EA will seek to work with other key decision makers to agree strategies for flood risk management of whole catchments
COW	Critical Ordinary Watercourse – A watercourse that was not formerly classed as a main river and controlled by the Land Drainage Authority. The control of these COW's has been transferred to the EA
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
FRA	Flood Risk Assessment – A detailed site based investigation into flood risk of a development site undertaken by a developer at planning stage.
IDB	Internal Drainage Board - Independent 'operating authorities', created under statute to manage land drainage in areas of special drainage need.
LPA	Local Planning Authority
NDC	North Devon Council
PPS	Planning Policy Statement
RSS	Regional Spatial Strategy
SMP	Shoreline Management Plan
SuDS	Sustainable Drainage Systems - Sustainable drainage systems or sustainable (urban) drainage systems: a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.
SWW	South West Water - SWW own and maintain the foul and surface water public sewerage system
TDC	Torridge District Council

Functional floodplain - This zone comprises land where water has to flow or be stored in times of flood. Generally, the whole of Flood Zone 3 can be classed as Functional Floodplain except for areas that are behind defences (greater than 20 year protection).

Impermeable area - An non- porous surface that generates a surface water run-off.

Main River - Rivers that are controlled by the Environment Agency.

Riparian Landowners – The adjoining landowners to the watercourse, who own half the width of the watercourse. (Occasionally this may be the whole width of the watercourse depending on the details in the property deeds).

River catchment - the total area that is drained by that river, including areas away from the watercourse network.

Water Harvesting - A system that collects and re-uses rainwater from where it falls rather than allowing it to drain away. It includes water that is collected within the boundaries of a property, from roofs and surrounding surfaces.

8. REFERENCES

Environment Agency Web Site

North Devon Catchment Flood Management Plan commissioned by the Environment Agency and produced by Halcrow

Planning Policy Statement 25: Development and Flood Risk

Planning Policy Statement 25: Development and Flood Risk Practice Guide

APPENDIX A

Figure 1 - Council Areas and Main Rivers

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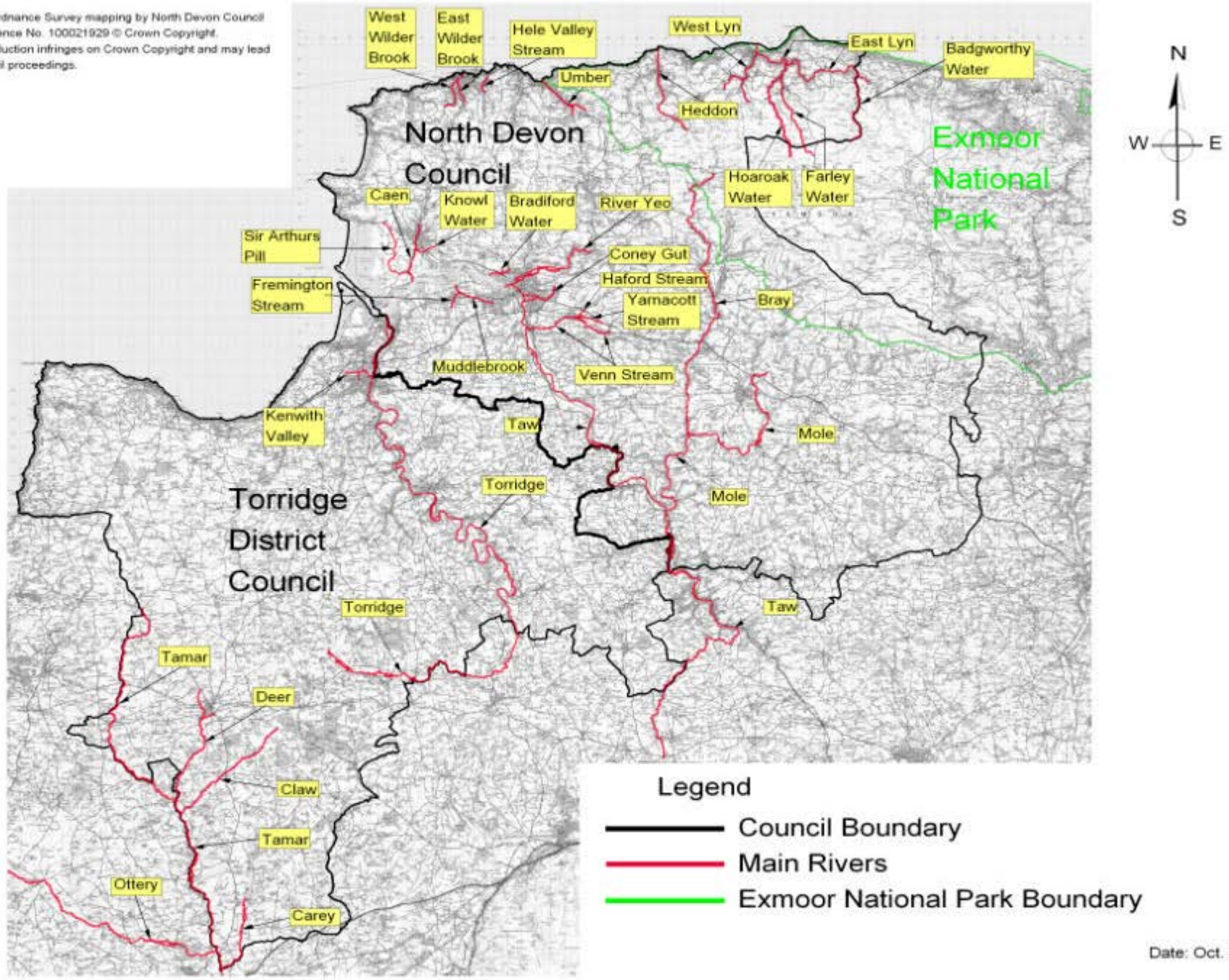

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