



Exmoor  
National Park  
Level 1 SFRA  
Addendum

Final Report

August 2014

47069430

Prepared for: Exmoor  
National Park Authority

UNITED  
KINGDOM &  
IRELAND



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ACRONYMS AND ABBREVIATIONS	
Acronym	Definition
ASTSWF	Areas Susceptible to Surface Water Flooding
DCC	Devon County Council
DSFRS	Devon and Somerset Fire and Rescue Service
ENPA	Exmoor National Park Authority
FRA	Flood Risk Assessment
FRIS	Flood Reconnaissance Information System
FMfSW	Flood Map for Surface Water
FWMA	Flood and Water Management Act
GIS	Geographical Information Systems
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
NPPF	National Planning Policy Framework
OSNGR	Ordnance Survey National Grid Reference
PPS25	Planning Policy Statement 25
RMA	Risk Management Authority
SCC	Somerset County Council
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage System
SWMP	Surface Water Management Plan
SWW	South West Water Ltd
uFMfSW	Updated Flood Map for Surface Water
WSC	West Somerset Council
WWS	Wessex Water Services Ltd

## EXECUTIVE SUMMARY

### Overview

Over the last five years there have been a number of changes in flood risk management in the UK. To make sure the Strategic Flood Risk Assessment (SFRA) document remains current and includes up to date flood risk information to inform planning decisions, Exmoor National Park Authority (ENPA) commissioned a Level 1 SFRA Addendum.

This addendum provides an update to the original Level 1 SFRA and allows the reader to clearly identify updates to the original Level 1 SFRA.

### Relevant Policy and Legislation Updates

Relevant policy changes and updates have been identified within the document including the National Planning Policy Framework (NPPF) (which has replaced Planning Policy Statement 25 (PPS25)) and the associated Planning Practice Guidance: Flood Risk and Coastal Change, published online in March 2014.

The NPPF retains key elements of the Sequential Test (compared to PPS25), but makes slight amendments to the Exception Test, by removing the requirement to pass 'part b' of the test, referring to previously developed land<sup>1</sup>.

The Flood and Water Management Act 2010 (FWMA) designates Somerset County Council (SCC) as the Lead Local Flood Authority (LLFA) for areas located within the SCC administrative area. This includes central and eastern areas of Exmoor National Park, which includes the principle settlements of Dulverton and Porlock. Devon County Council (DCC) is the designated the LLFA for the far western areas of the National Park, which includes the key settlements of Lynton and Lynmouth.

The LLFA has the 'lead' role in managing flood risk from surface water, groundwater and Ordinary Watercourses within their area. This involves close working with partners involved in flood and water management, known as Risk Management Authorities (RMAs).

### Data Updates and Review

New datasets were requested and received from relevant stakeholders to inform this Level 1 SFRA Addendum. This included up to date Flood Zone 2 and Flood Zone 3 (fluvial and tidal) extents for the study area and information on historic flood incidents that have occurred within the National Park since 2009.

In addition the updated Flood Map for Surface Water (uFMfSW) for the study area has been provided and used to inform on the risk posed by surface water flooding and minor watercourses, which are not covered by Flood Zone 2 and Flood Zone 3.

This new information has been incorporated into the SFRA Flood Mapping and Geographical Information System (GIS) layers where required. Where the new information has resulted in significant changes to the SFRA Flood Maps, for example in Porlock where Flood Zone 2 and Flood Zone 3 have been updated, the relevant figures have been reproduced as part of this Level 1 SFRA Addendum.

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<sup>1</sup> Part b of the Exception Test, which is no longer applicable, stated that: *'the development should be on developable, previously developed land or if it is not on previously developed land, that there are no reasonable alternative sites on developable previously developed land'*

**1 INTRODUCTION**

**1.1 Background**

In 2009 Exmoor National Park Authority (ENPA) and West Somerset Council (WSC) commissioned a Level 1 Strategic Flood Risk Assessment (SFRA) covering the ENPA and WSC administrative areas.

Over the last five years there have been a number of changes in flood risk management in the UK. These changes include the introduction of new planning policy with the publication of the National Planning Policy Framework (NPPF) in 2012, and also the release of new flood mapping and recent flood event data records across the National Park that can be used to identify areas prone to flooding and prioritise future works to mitigate flooding.

So that the SFRA document remains current and includes up to date flood risk information to inform planning decisions, ENPA commissioned the Level 1 SFRA Addendum. This addendum provides an update to the original (2009) Level 1 SFRA and allows the reader to clearly identify updates to the original Level 1 SFRA.

**1.2 Aim and Objectives**

The aim of this addendum is to provide an update to the original Level 1 SFRA and has been achieved through the following objectives:

1. Revision of flood maps/Geographical Information Systems (GIS) layer – regarding Porlock where the Flood Zones have been revised by the Environment Agency to distinguish between Flood Zone 3a and Flood Zone 3b. Identification of the Functional Floodplain (Flood Zone 3b) in discussion with the Environment Agency;
2. Update of information throughout the SFRA regarding recent evidence for sources of flooding focussing on the area within the National Park;
3. Examine the Surface Water Management Plan (SWMP) for Minehead to assess any evidence of identified flood risk from surface water within the National Park. This includes a review of the new updated Flood Maps for Surface Water (uFMfSW) recently published by the Environment Agency;
4. Provide an update in relation to data from the Environment Agency regarding maximum reservoir flood extent as shown on the draft Local Plan Proposals Map.

To improve accessibility, Table 1-1 provides a quick reference guide indicating where sections of this Level 1 SFRA addendum update the original Level 1 SFRA.

<b>TABLE 1-1: SFRA UPDATE QUICK REFERENCE GUIDE</b>	
<b>SFRA Addendum</b>	<b>Update to Original SFRA</b>
Chapter 2: Policy Context	Provides NPPF update to Chapter 3: 'Sequential Test'
Chapter 3: Data Collection and Review	Update to Chapter 4: 'Data Collection and Review'
Chapter 4: SFRA Mapping Updates	Update to Chapter 5: 'SFRA Flood Mapping'

## 2 POLICY CONTEXT

### 2.1 National Planning Policy Framework (NPPF)

The NPPF<sup>2</sup> was published on 27<sup>th</sup> May 2012 and replaces Planning Policy Statement 25 (PPS25): Development and Flood Risk as the core planning policy document with respect to flood risk management and climate change. Planning Practice Guidance: Flood Risk and Coastal Change<sup>3</sup> was published online in March 2014. This online document provides additional advice to Local Planning Authorities (LPAs) to guide the effective implementation of planning policy on development in areas at risk of flooding.

A review of the NPPF and comparison with the former flood risk policy PPS25 shows that the technical approach to flood risk management and flood risk assessment effectively remains unchanged. Flood risk takes a prominent role within the NPPF.

Section 10 of the NPPF provides national policy for development and flood risk. The overall approach to flood risk is broadly summarised in NPPF Paragraph 103:

*'When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:*

- *within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and*
- *development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.'*

The NPPF requires Local Plans to be supported by an SFRA and to develop policies to manage flood risk from all sources of flooding. In developing policies, Local Plans should apply a sequential, risk-based approach to the location of development in order to avoid flood risk to people and property, to manage any residual risk, and to take account of climate change.

In general, these requirements will be met by:

- Applying the Sequential Test and where necessary the Exception Test;
- Safeguarding land required for current and future flood risk management;
- Using opportunities offered by new development to reduce flood risk;
- Seeking opportunities to relocate development, including housing, to more sustainable locations where climate change is expected to increase flood risk.

### 2.2 Sequential Test

The NPPF and the associated Planning Practice Guidance retain key elements of PPS25 in relation to the application of the Sequential Test, but makes slight amendments to the Exception Test, by removing the requirement to pass 'part b' of the test, referring to previously developed land.

<sup>2</sup> Available online: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)

<sup>3</sup> Available online: <http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. The Flood Zones remain the starting point for this sequential approach. These are set out in Table 1 of the Planning Practice Guidance: Flood Risk and Coastal Change online document (reproduced in Table 2-1 of this report).

**The Flood Zone definitions, appropriate types of development, Flood Risk Assessment (FRA) requirements and policy aims for each Flood Zone remain the same as those previously stated in PPS25.**

Flood Zone 2 and Flood Zone 3 are shown on the Environment Agency Flood Map<sup>4</sup> with Flood Zone 1 being all the land falling outside Flood Zones 2 and 3. These Flood Zones refer to the probability of sea and river flooding, ignoring the presence of existing defences.

TABLE 2-1: NPPF FLOOD ZONE DEFINITIONS FOR TIDAL AND RIVER FLOODING (PLANNING PRACTICE GUIDANCE: FLOOD RISK AND COASTAL CHANGE, TABLE 1)	
Flood Zone	Definition
Flood Zone 1	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Environment Agency Flood Map – all land outside Flood Zone 2 and Flood Zone 3)
Flood Zone 2	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Environment Agency Flood Map)
Flood Zone 3a	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Environment Agency Flood Map)
Flood Zone 3b	Flood Zone 3b comprises land where water has to flow or be stored in times of flood. LPAs should identify in their SFRAs of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency (not separately distinguished from Flood Zone 3a on the Environment Agency Flood Map).

*(Note: 1. These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. 2. The NPPF and Planning Practice Guidance do not provide Flood Zone definitions for groundwater, sewer, surface water or artificial sources of flooding).*

The aim of the Sequential Test, set out in the NPPF, is to steer new development to the areas with lowest probability of flooding (i.e. Flood Zone 1). Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding.

Where there are no reasonably available sites in Flood Zone 1, the flood risk vulnerability (see Table 2-2) of the proposed development should be taken into account in locating development in Flood Zone 2, applying the Exception Test if required (see Table 2-3) and then Flood Zone 3 (applying the Exception Test if required (see Table 2-3)).

The NPPF makes it clear that the Level 1 SFRA documents prepared by ENPA will continue to provide the basis for applying the Sequential Test. SFRAs will continue to refine the probability of flooding (e.g. delineation of Flood Zone 3a and Flood Zone 3b) and take into account other sources of flooding and the impacts of climate change.

<sup>4</sup> Available online: <http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=e&topic=floodmap>

Within each Flood Zone, new development should be directed to sites with lower flood risk (towards the adjacent zone of lower probability of flooding) from all sources as indicated by the SFRA. Other sources of flooding (not considered within the Flood Zones), which require consideration when considering the location of new development allocations include:

- Flooding from the surface water;
- Flooding from groundwater;
- Flooding from sewers; and,
- Flooding from artificial sources.

**TABLE 2-2: NPPF FLOOD RISK VULNERABILITY CLASSIFICATION (PLANNING PRACTICE GUIDANCE: FLOOD RISK AND COASTAL CHANGE, TABLE 2)**

Vulnerability	Development Type
Essential Infrastructure	<ul style="list-style-type: none"> <li>• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk;</li> <li>• 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;</li> <li>• Wind turbines.</li> </ul>
Highly Vulnerable	<ul style="list-style-type: none"> <li>• Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.;</li> <li>• Emergency dispersal points;</li> <li>• Basement dwellings;</li> <li>• Caravans, mobile homes and park homes intended for permanent residential use;</li> <li>• Installations requiring hazardous substances consent. (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”).</li> </ul>
More Vulnerable	<ul style="list-style-type: none"> <li>• Hospitals;</li> <li>• Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels;</li> <li>• Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels;</li> <li>• Non–residential uses for health services, nurseries and educational establishments;</li> <li>• Landfill and sites used for waste management facilities for hazardous waste;</li> </ul>

	<ul style="list-style-type: none"> <li>• Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</li> </ul>
Less Vulnerable	<ul style="list-style-type: none"> <li>• Police, ambulance and fire stations which are not required to be operational during flooding;</li> <li>• Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure;</li> <li>• Land and buildings used for agriculture and forestry;</li> <li>• Waste treatment (except landfill and hazardous waste facilities);</li> <li>• Minerals working and processing (except for sand and gravel working);</li> <li>• Water treatment works which do not need to remain operational during times of flood;</li> <li>• Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).</li> </ul>
Water Compatible Development	<ul style="list-style-type: none"> <li>• Flood control infrastructure;</li> <li>• Water transmission infrastructure and pumping stations;</li> <li>• Sewage transmission infrastructure and pumping stations;</li> <li>• Sand and gravel working;</li> <li>• Docks, marinas and wharves;</li> <li>• Navigation facilities;</li> <li>• Ministry of Defence defence installations;</li> <li>• Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</li> <li>• Water-based recreation (excluding sleeping accommodation);</li> <li>• Lifeguard and coastguard stations;</li> <li>• Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms;</li> <li>• Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.</li> </ul>

**TABLE 2-3: NPPF FLOOD RISK VULNERABILITY AND FLOOD ZONE ‘COMPATIBILITY’ (PLANNING PRACTICE GUIDANCE: FLOOD RISK AND COASTAL CHANGE, TABLE 3)**

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone 1	✓	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception Test Required	✓	✓
Flood Zone 3a	Exception Test Required	✓	x	Exception Test Required	✓
Flood Zone 3b	Exception Test Required	✓	x	x	x

**2.3 Exception Test**

The NPPF states that following the application of the Sequential Test, if it is not possible for the development to be located in areas with a lower probability of flooding, the Exception Test should be applied. It should only be applied if appropriate to the type of development and Flood Zone (see Table 2-3) and if consistent with wider sustainability objectives.

**In PPS25 there were three elements to the Exception Test, the NPPF has refined this to two elements<sup>5</sup>. Both need to be passed for development to be allocated or permitted:**

- *it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; 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, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*

It will be necessary to increase the scope of the SFRA to provide the information necessary for application of the Exception Test. The increased scope of the SFRA will allow a more detailed comparison of sites located within the same flood zones taking into account flood risk management measures, flood depth, velocity and rate of onset of floodwaters.

Where the development type is highly vulnerable, more vulnerable, less vulnerable or essential infrastructure and a site is found to be impacted by a recurrent flood source (other than tidal or fluvial), the site and flood sources should be investigated further as part of an SFRA or site-specific FRA, regardless of any requirement for the Exception Test.

**2.4 Site-Specific Flood Risk Assessment**

The requirement to undertake a site-specific FRA to support applications for development proposed in flood risk areas or where proposed development may increase flood risk to third

<sup>5</sup> Part b of the Exception Test, which is no longer applicable, stated that: *‘the development should be on developable, previously developed land or if it is not on previously developed land, that there are no reasonable alternative sites on developable previously developed land’*

parties still applies under the NPPF. The NPPF states that site-specific FRAs are required to accompany planning applications for sites:

- Within Flood Zone 2 or Flood Zone 3;
- Or where the site lies within Flood Zone 1 and is greater than 1 hectare in area;
- Or is in an area in Flood Zone 1 which has critical drainage problems (as notified to the LPA by the Environment Agency)<sup>6</sup>.

The NPPF states that site-specific FRAs should be carried out to the appropriate degree, at all levels of the planning process and to inform the application of the sequential approach. They should assess the risks of all forms of flooding to and from development, taking climate change into account.

The Environment Agency website provides 'standing advice' on flood risk. Applicants for planning permission will find this advice helpful when preparing a site-specific FRA. The Environment Agency also provides standing advice to enable LPAs to clearly identify the type of planning applications on which they should consult the Environment Agency.

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<sup>6</sup> No Critical Drainage Areas have been identified within Exmoor National Park

### 3 DATA COLLECTION AND REVIEW

#### 3.1 Overview

This Chapter provides details of the data collection and review process undertaken to inform this Level 1 SFRA Addendum. All data received has been registered on receipt and its accuracy and relevance reviewed to assess a confidence level for contribution to the SFRA. All of the information/data was provided in GIS format, or the raw data was manipulated into this format for use within the study (where suitable).

#### 3.2 Programme of Services

- Identification of the local stakeholders;
- Issue of letters/emails to stakeholders requesting data;
- Followed-up data requests (where required);
- Collation and review of available data;
- Review of received data against the SFRA objectives;
- Update of mapping and GIS layers (where required).

All tasks were completed between January 2014 and May 2014.

#### 3.3 Stakeholder Consultation

Data from the following stakeholders has been used to inform this Level 1 SFRA Addendum:

- Exmoor National Park Authority;
- Environment Agency;
- Wessex Water Services Ltd (WWS);
- South West Water Ltd (SWW);
- Devon County Council (DCC);
- Somerset County Council (SCC);
- The Devon and Somerset Fire and Rescue Service (DSFRS).

All of the information/data was provided in GIS format, or the raw data was manipulated into this format for use within the study.

#### 3.4 Flooding from Rivers and Sea

To inform this Level 1 SFRA Addendum, ENPA has provided up to date Flood Zone 2 and Flood Zone 3 extents for the study area, which are available to LPAs via the Environment Agency DataShare website.

Together, Flood Zone 2 and Flood Zone 3 form the Flood Map for Planning (Rivers and Sea), which is available on the Environment Agency website<sup>7</sup> and identifies areas at risk of both

<sup>7</sup> Available online: <http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=e&topic=floodmap>

fluvial and tidal flooding in the study area. The Flood Map for Planning ignores the presence of flood defences and covers all Main Rivers and Ordinary Watercourses with catchment areas greater than 3 km<sup>2</sup>.

The Environment Agency undertakes quarterly updates of the Flood Map for Planning to make sure the most up to date and relevant flooding information is being used to inform planning decisions. So that ENPA is aware of any Flood Map updates, the Environment Agency will inform the ENPA SFRA Project Manager and accurately state where changes to the Flood Map have occurred within their administrative area.

For example the Environment Agency has recently informed ENPA that the Flood Zone 2 and Flood Zone 3 extents within Porlock have been revised through undertaking detailed flood modelling and that model outputs include flood extents for the 1 in 20 year, 1 in 100 year, 1 in 100 year plus climate change and 1 in 1000 year return periods.

The up to date Flood Zone 2 and Flood Zone 3 provided via the Environment Agency DataShare website incorporate the 1 in 1000 year and 1 in 100 year flood extents within Porlock. The 1 in 20 year flood extent has been used to distinguish between Flood Zone 3a and Flood Zone 3b within Porlock in liaison with the Environment Agency. Delineation of Flood Zone 3b forms one of the key objectives of the Level 1 SFRA as the Environment Agency Flood Map does not differentiate between these two Flood Zones.

### **3.5 Flooding from Surface Water**

#### **3.5.1 Surface Water Management Plans**

The Flood and Water Management Act (FWMA) 2010 designates SCC as the Lead Local Flood Authority (LLFA) for areas located within the SCC administrative area. This includes central and eastern areas of Exmoor National Park, which includes the key settlements of Dulverton and Porlock. DCC is the designated LLFA for the far western areas of the National Park, which includes the key settlements of Lynton and Lynmouth.

The LLFA has the 'lead' role in managing flood risk from surface water, groundwater and Ordinary Watercourses within their area. This involves close working with partners involved in flood and water management, known as Risk Management Authorities (RMAs).

The SWMP for Minehead (prepared by SCC) has been reviewed to inform this Level 1 SFRA Addendum. The SWMP outlines the preferred surface water management strategy for Minehead. In this context surface water flooding describes flooding from sewers, drains, groundwater, and runoff from land, small watercourses that occurs due to heavy rainfall.

Minehead is located within a natural low lying bowl, formed by the steep sided slopes of the National Park boundary, which encircles the town. Although Minehead is located outside of the National Park the headwaters of the Bratton Stream, Hopwood Stream and Holloway Stream, which flow through the town originate within the National Park boundary.

The SWMP identifies a number of historic and/or potential flooding issues within the town. The main issues relate to potential flooding from direct surface water runoff, limitations in the capacity of the surface water sewer network and the risk of flooding from tidal locking during a combined river-tidal event.

The SWMP identifies key mitigation strategies for Minehead. These include maintenance of the existing surface water sewer system, deculverting of watercourses and installation of sustainable drainage systems (SuDS) attenuation features within the catchment.

Although significant development within the upper catchments of the Bratton Stream, Hopwood Stream and Holloway Stream is unlikely, ENPA should make sure that future development does not exacerbate flooding issues within Minehead. Where opportunities arise, ENPA should work together with SCC and other relevant stakeholders to reduce the risk of flooding within Minehead.

### **3.5.2 Updated Flood Map for Surface Water**

To inform this Level 1 SFRA Addendum, ENPA has provided the uFMfSW for the study area, which is available to LPAs via the Environment Agency DataShare website.

This new surface water flood mapping is the result of the Environment Agency's latest national surface water flood mapping study. This updated mapping represents a significant improvement on previous studies, namely the Flood Map for Surface Water (FMfSW) in 2010 and the Areas Susceptible to Surface Water Flooding (ASTSWF) in 2009.

The Environment Agency undertook surface water modelling at a national scale and has produced mapping identifying those areas at risk of surface water flooding during 1 in 30 year, 1 in 100 year and 1 in 1000 year rainfall events. Flood extent, depth, velocity and hazard mapping has been produced for each rainfall event.

This new surface water flood mapping will help ENPA take a strategic overview of surface water flooding for planning purposes and assist the LLFA in their duties relating to management of surface water flood risk.

It should be noted that the surface water flood mapping has a number of limitations. The new surface water flood mapping picks out natural drainage channels, rivers, low areas in floodplains, and flow paths between buildings. However, it will only indicate flooding caused by local rainfall. It does not show flooding that occurs from overflowing watercourses, drainage systems or public sewers caused by catchment-wide rainfall events or river flow.

It is therefore very important that users apply local knowledge to assess how suitable the uFMfSW is for their needs. The maps should be used at the strategic level and not to identify flood risk for individual properties.

### **3.6 Flooding from Sewers**

The management of storm water/foul water for the study area is the responsibility of SWW, WWS, SCC and DCC. In addition, private individuals may be responsible for drainage systems that operate prior to discharge either into a watercourse or into a public sewer.

SWW and WWS are the statutory water undertakers responsible for the public sewer systems within the study area. SWW is responsible for the majority of the ENPA administrative area, including the principal settlements of Dulverton, Lynton and Lynmouth. WWS is responsible for public sewer systems within the principal settlement of Porlock.

To inform this Level 1 SFRA Addendum, SWW and WWS have reviewed their risk register (DG5 Register) to identify any problematic areas affected by sewer flooding within the study area. Both companies have confirmed that there are currently no flooding issues to properties attributable to the public sewer system within their area.

### **3.7 Flooding from Artificial Sources**

Flooding from artificial sources occurs when raised channels such as canals or storage features including reservoirs become overwhelmed as a result of dam or bank failure. Regular inspection and maintenance means that the likelihood of failure is low. However, in the event of a breach, the consequences are likely to be significant.

There are five operational impounding reservoirs located within the study area that may present a flood risk due to failure or overtopping. The reservoir names and approximate Ordnance Survey National Grid Reference (OSNGR) locations are provided in Table 3-1.

<b>TABLE 3-1: RESERVOIRS WITHIN STUDY AREA</b>	
<b>Reservoir Name</b>	<b>Ordnance Survey National Grid Reference</b>
Challacombe	SS697421
Pinkworthy Pond	SS723422
Holywell	SS763308
Nutscale	SS862434
Wimbleball	SS967293

**3.8 Historic Flood Incidents**

To inform this Level 1 SFRA Addendum records of recent flood incidents (2009 to present day) have been provided by the Environment Agency and the DSFRS. The Environment Agency has provided flood incident information from their Flood Reconnaissance Information System (FRIS) database. FRIS allows the identification of flooding attributed to different sources, where known.

Flood Incident reports prepared by DCC as required as part of their duties as LLFA under the FWMA have been reviewed and flood incidents within the Exmoor National Park boundary have been included in the relevant SFRA GIS Layer and mapping.

The DSFRS has also provided records from their database of where they have responded to flood incidents within the National Park boundary.

## 4 SFRA MAPPING UPDATES

### 4.1 Overview

This Chapter describes how the data reviewed in the previous Chapter has been used in the production of mapping and GIS deliverables for this Level 1 SFRA Addendum.

It is important that the methodologies, assumptions and limitations discussed below are understood before the mapping is used for planning purposes.

### 4.2 Requirements of the NPPF

The NPPF and its accompanying Planning Practice Guidance require SFRA to present sufficient information on all flood sources to enable LPAs to apply the Sequential Test within their administrative areas. In order to apply the Sequential Test, information is required on the probability (High, Medium or Low) associated with flooding from different sources.

In addition where possible, the assessment of probability should also account for the effects of climate change on a flood source for the lifetime of any development that would be approved through the emerging Local Plan. The following sections explain how the available data has been used to develop the mapping for use in undertaking the Sequential Test.

### 4.3 GIS Layers and Mapping

The Level 1 SFRA flood mapping is the key component to assist in the application of the Sequential Test, by providing flood risk information to guide decisions on location of future development. This addendum updates the following original Level 1 SFRA flood maps:

- Figure 3B – SFRA Fluvial and Tidal Flood Zone Map focussed on Porlock;
- Figure 4A to 4D – SFRA Historic Flood Incidents and Potential Flood Sources;
- Appendix F – Focussed Assessment for Porlock.

In addition to the figures shown above, this addendum updates the following GIS layers:

- SFRA Flood Zone 2, Flood Zone 3a and Flood Zone 3b (fluvial and tidal flooding);
- SFRA Historic Flood Incidents and Potential Flood Sources.

All other figures and GIS layers provided within the original Level 1 SFRA remain current.

The GIS mapping layers contain additional attribute data, which provides more detailed information regarding the date, location and cause of the flood event.

### 4.4 Fluvial and Tidal Flooding

#### 4.4.1 Flood Zones (Figure 3B)

NPPF requires fluvial and tidal flood zones to be identified to allow LPAs to undertake the Sequential Test. The definitions of these flood zones are provided in Chapter 2.

The SFRA Flood Zone 2 and Flood Zone 3a are based on the Environment Agency Flood Map Flood Zone 2 and Flood Zone 3. The only significant changes to Flood Zone 2 and Flood Zone 3 are within Porlock. The SFRA GIS layers and Figure 3B has been updated accordingly to incorporate these changes.

The Environment Agency Flood Zone Maps do not differentiate between Flood Zone 3a and Flood Zone 3b. Instead delineation of Flood Zone 3b forms one of the key objectives of the Level 1 SFRA.

The methodology for delineation of Flood Zone 3b was agreed with the Environment Agency during the original Level 1 SFRA. Within the principal settlements as indicated below, where the standard of protection of flood defences has an annual probability of 1 in 20 year or greater (as defined in the NFCDD), the adjacent floodplain would not be considered Flood Zone 3b. Additionally, developed areas where there is existing infrastructure and solid buildings have not been considered as Flood Zone 3b.

Principal settlements within Exmoor National Park:

- Dulverton;
- Porlock; and
- Lynton and Lynmouth.

Flood Zone 3b within Dulverton, Lynton and Lynmouth remain the same as identified within the original Level 1 SFRA. However, using the same methodology adopted in 2009, in liaison with the Environment Agency, Flood Zone 3b within Porlock has been updated using the 1 in 20 year return period flood extent provided by the Environment Agency to inform this addendum.

Outside of the largest settlements (Dulverton, Lynton & Lynmouth and Porlock), development to address the locally identified needs of communities is likely to be at a smaller scale, therefore a precautionary approach has been adopted whereby Flood Zone 3b has been assumed to equal the extent of Flood Zone 3a, until an appropriate site-specific FRA can demonstrate to the Environment Agency that it should be considered otherwise.

It should be noted that as the result of a flood zone challenge, an area in Hazery, Luxborough has been reclassified from Flood Zone 3b to Flood Zone 3a following analysis of watercourse flows. This has been updated both within Figure 3B and within the SFRA GIS layer.

#### 4.4.2 ***Climate Change***

It is predicted that climate change will bring milder wetter winters that are characterised by periods of long duration rainfall. In contrast, frequent and short duration, high-intensity rainfall linked with longer drier summers is predicted. These scenarios are likely to cause increased flooding from fluvial, surface water and sewer sources. In addition, the effects of climate change on sea level will increase the likelihood of coastal and tidal flooding in low lying areas.

The NPPF requires that Flood Zones are also mapped allowing for the predicted effects of climate change. Flood Zones should be mapped to account for the effects of climate change over the lifetime of any developments that may be granted planning permission within the lifetime of the Local Plan.

The NPPF Planning Practice Guidance identifies an indicative lifetime for residential developments of 100 years; consequently flood zones should be defined accounting for the effects of at least 100 years of climate change.

A 60 year development lifetime is generally accepted as the indicative lifetime for other forms of development (i.e. commercial/agricultural buildings and infrastructure).

#### 4.5 Surface Water and Minor Watercourses (Figures 4A to 4D)

The Environment Agency Flood Zone Mapping covers the majority of watercourses within the study area. However, where catchments are less than 3 km<sup>2</sup> in area, the Environment Agency mapping does not typically define Flood Zone 2 and Flood Zone 3. Consequently, there are some locations where Flood Zones are not defined. These are generally in areas of higher elevation within the headwaters of small catchments or minor tributaries.

In the absence of Flood Zone 2 and Flood Zone 3 the uFMfSW outputs (see Section 3.5.2) should be used to identify areas in the vicinity of minor tributaries prone to flooding. Where potential development sites are located within surface water flood map extent, this should act as a trigger for further investigation as part of a site-specific FRA.

As part of this Level 1 SFRA Addendum the uFMfSW extents during the 1 in 30 year, 1 in 100 year and 1 in 1000 year rainfall events have been included on the historic flood incidents and potential flood sources mapping (Figures 4A to 4D).

#### 4.6 Historical Flood Incidents (Figures 4A to 4D)

The historic flood incident information provided by the Environment Agency, DCC and the DSFRS, as described in Chapter 3, represents the main source of data for surface water, sewer and groundwater flood events. These databases also provide additional information on fluvial and tidal flooding within the study area.

The location of historic flood incidents have been provided on the Level 1 SFRA flood maps (Figures 4A to 4D). GIS points identify the general location of the flood incident and each flood source is represented by a different colour. The historic flood incident GIS layer, which accompanies this Level 1 SFRA Addendum, provides additional information regarding the flood incident.

Within the study area, the cause of flood incidents can be attributed to a single flood source or a combination of flood sources. For example there are many incidents where the cause of flooding is reported as fluvial/sewer. This may be due to the effect of an intense storm which causes river banks to overtop, while at the same time the capacity of the sewer is exceeded.

Historical flood incident information that was provided for this Level 1 SFRA Addendum primarily consisted of incidents post-2009. These incidents were combined with the information from the original Level 1 SFRA to create a new data layer within GIS. Most notably, since 2009 a number of tidal incidents have occurred in Lynmouth causing widespread flooding.

Data provided by the Environment Agency included additional pre-2009 historic flood incidents which were also incorporated into the new GIS data layer. These mainly included incidents within the vicinity of Porlock, including Allerford and Bossington.

In addition the Environment Agency provided specific photographs and reports relating directly to flooding in the winter of 2012 and 2014. Where possible, this information was incorporated into the GIS data layer. Most notably, in December 2012 fluvial flooding from the River Barle caused extensive flooding throughout Dulverton, damaging several properties.

It should be noted that in some areas (Chilly Bridge, Exford, Winsford and Withypool) no grid references or flood description were provided with the images therefore it was not possible to include these within GIS, but these will be provided to ENPA in digital format for their records.

As well as historic flood incidents, historic flood mapping was also provided by ENPA and the Environment Agency. This information has been included on the historic flood incidents and potential flood sources mapping (Figures 4A to 4D).

#### 4.6.1 **Artificial Sources**

The reservoir information provided by the Environment Agency, as described in Chapter 3, has been included within Figures 4A to 4D. GIS points represent the location of the reservoir within the study area. Further information regarding the reservoirs is provided in the reservoir GIS layer.

The Environment Agency has produced a Risk of Flooding from Reservoirs Map, which is publically available on their website<sup>8</sup>. This map provides further information regarding the area that could be flooded if a large reservoir (greater than 25,000 m<sup>3</sup>) were to fail and release the water it holds. The flooded extent shown map should be considered as the worst case scenario.

Excerpts from the Environment Agency Risk of Flooding from Reservoirs Map covering the main areas within Exmoor that may be affected if reservoirs were to fail and release the water that they hold are provided in Figures 4-1 to 4-5.

The Exmoor National Park Draft Local Plan 2011 – 2030 includes a Proposals Map with a series of Inset Maps centred around key settlements within the National Park. The Proposals Map indicates that maximum reservoir flood extents exist within Dulverton, Porlock, Brompton Regis, Challacombe, Simonsbath and Allerford. In these areas risk of flooding from reservoirs should be considered as part of the plan making process.

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<sup>8</sup> Available online: <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=reservoir#x=357683&y=355134&scale=2>

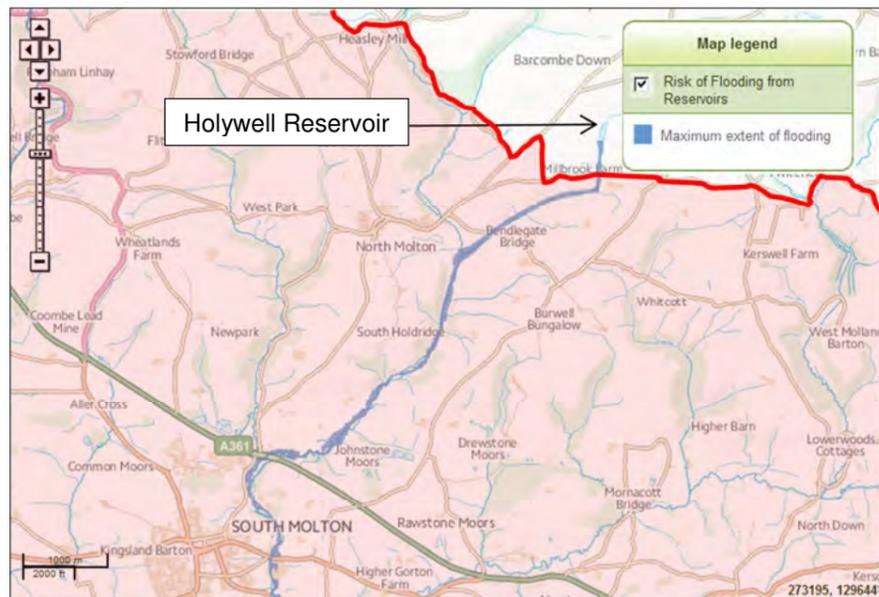


Figure 4-1: Holywell Reservoir (OSNGR: SS763308)

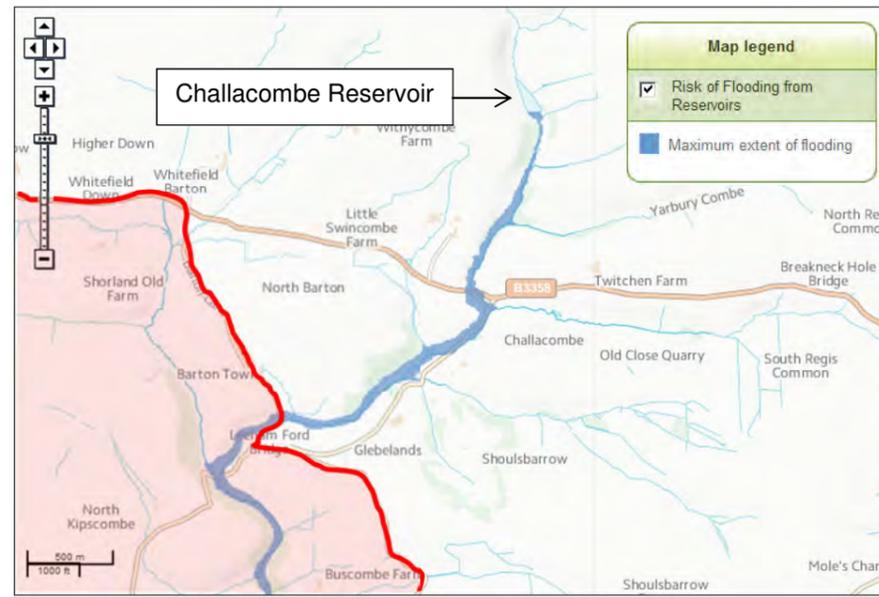


Figure 4-2: Challacombe Reservoir (OSNGR: SS697421)

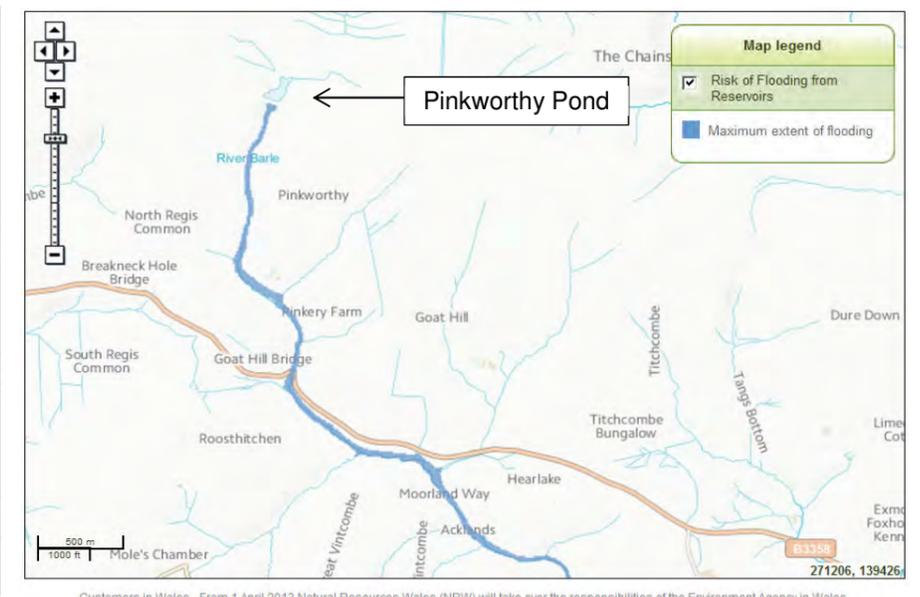


Figure 4-3: Pinkworthy Pond (OSNGR: SS723422)

Figure 4-1 – The Environment Agency Risk of Flooding from Reservoirs Map indicates that if the Holywell Reservoir were to fail, water would propagate south towards South Molton which is located outside of Exmoor National Park. There would be no significant flooding issues within the Park.

Figure 4-2 – A similar scenario is experienced with the Challacombe Reservoir, however according to the Flooding from Reservoir Map, areas within Challacombe, which is downstream of the reservoir, could experience flooding with estimated depths of up to 2m.

Figure 4-3 – The flood extent from the Pinkworthy Pond follows the River Barle to the south, where it is not considered to cause any flooding issues to the surrounding land.

Figure 4-4 – The flood extent from the Nutscale Reservoir could potentially cause flooding issues to a number of settlements near Porlock. According to the Environment Agency maps, Horner, West Luccombe, Allerford and Bossington could all become inundated if the Nutscale Reservoir were to fail.

Figure 4-5 – If the Wimbleball Lake were to fail, water would again propagate south away from Exmoor National Park. Areas near Dulverton could flood with estimated depths of over 2m; however Dulverton is shown to be located outside of the flood extent.

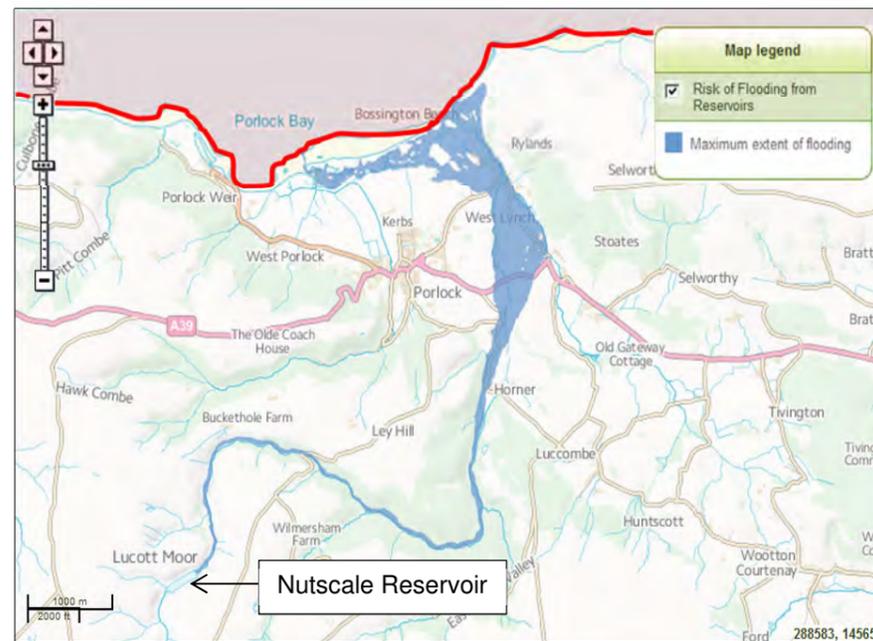


Figure 4-4: Nutscale Reservoir (OSNGR: SS862434)

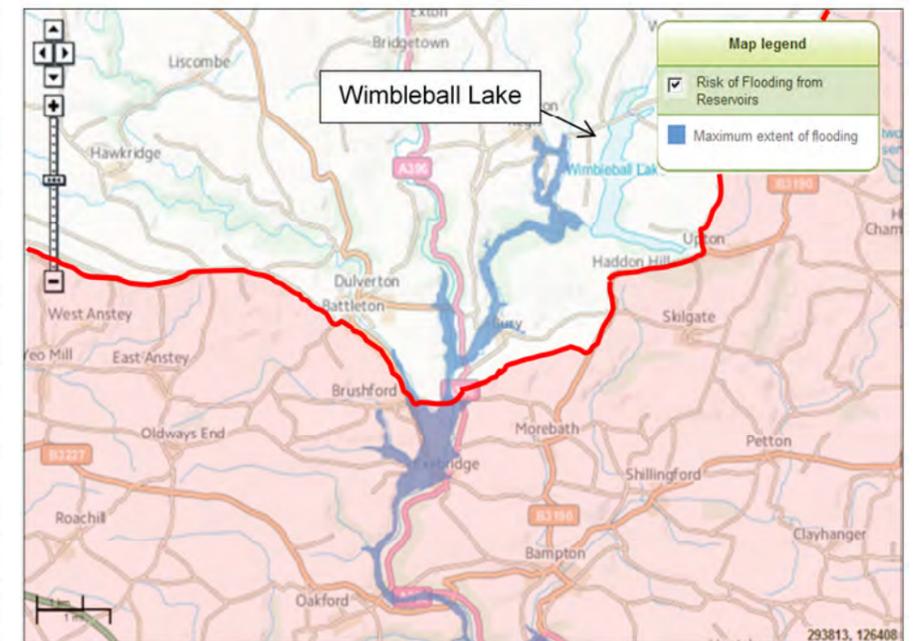


Figure 4-5: Wimbleball Lake (NGR: SS967293)

It should be noted that on each figure the red line represents the Exmoor National Park boundary and the highlighted area represents areas outside of the National Park

#### 4.7 Focussed Assessment (Appendix F)

The original Level 1 SFRA includes Focussed Assessments at each of the principal settlements within Exmoor National Park (see Section 4.4.1). The Focussed Assessment maps combine all the flood risk mapping information for the particular settlement, providing a practical format to assess the flood risk.

The updated Porlock Focussed Assessment includes the revised SFRA Flood Zones (Flood Zone 2, Flood Zone 3a and Flood Zone 3b). All of the updated Focussed Assessments include the updated historical flood incidents and potential flood sources GIS Layers and the uFMfSW extents for the 1 in 30 year, 1 in 100 year and 1 in 1000 year rainfall events.

## 5

**CONCLUSIONS**

The conclusions of this Level 1 SFRA Addendum are provided below:

- The NPPF retains key elements of PPS25 with regards to development and flood risk (including the Sequential Test), but makes slight amendments to the Exception Test;
- The FWMA designates SCC and DCC as the LLFAs for areas of Exmoor National Park located within Somerset and Devon respectively;
- LLFAs have a lead role in managing flood risk from local sources, such as, surface water, groundwater and Ordinary Watercourses within their area;
- The SFRA mapping has been updated with flood incident and mapping data (e.g. Flood Zones and the uFMfSW) from the Environment Agency, DCC and the DSFRS;
- SWW and WWS have confirmed that there are currently no flooding issues to properties attributable to the public sewer system within their area;
- The Environment Agency Risk of Flooding from Reservoir Map has been reviewed with relevant excerpts included within the addendum for consideration;
- Focussed Assessment Maps for the principle settlements have been updated with recent flood incidents and revised SFRA Flood Zones and the uFMfSW.

## FIGURES

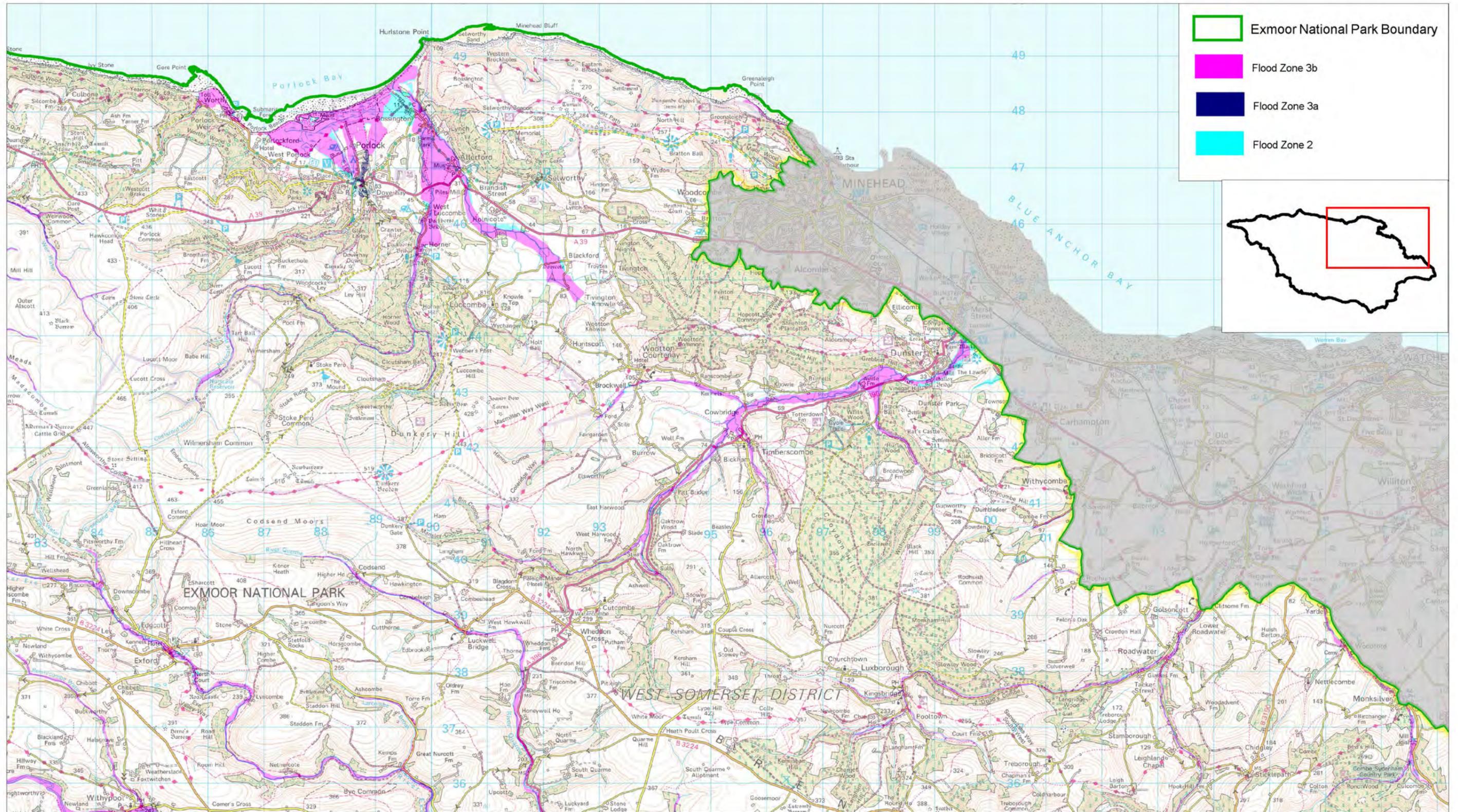
### **Figure 3B: SFRA Fluvial and Tidal Flood Zone Map**

Update of the original Level 1 SFRA Fluvial and Tidal Flood Zone Map - Focusing on Porlock.

(Figure 3B of the original Level 1 SFRA)

### **Figure 4A to 4D: SFRA Historic and Potential Flood Sources Map**

Update of the original Level 1 SFRA Historic Flood Incidents and Potential Flood Sources Map - Focusing on Exmoor National Park (Figure 4 A-F).



Project:  
**Exmoor National Park Level 1 SFRA Update**

Title:  
**SFRA Fluvial & Tidal Flood Zone Maps**

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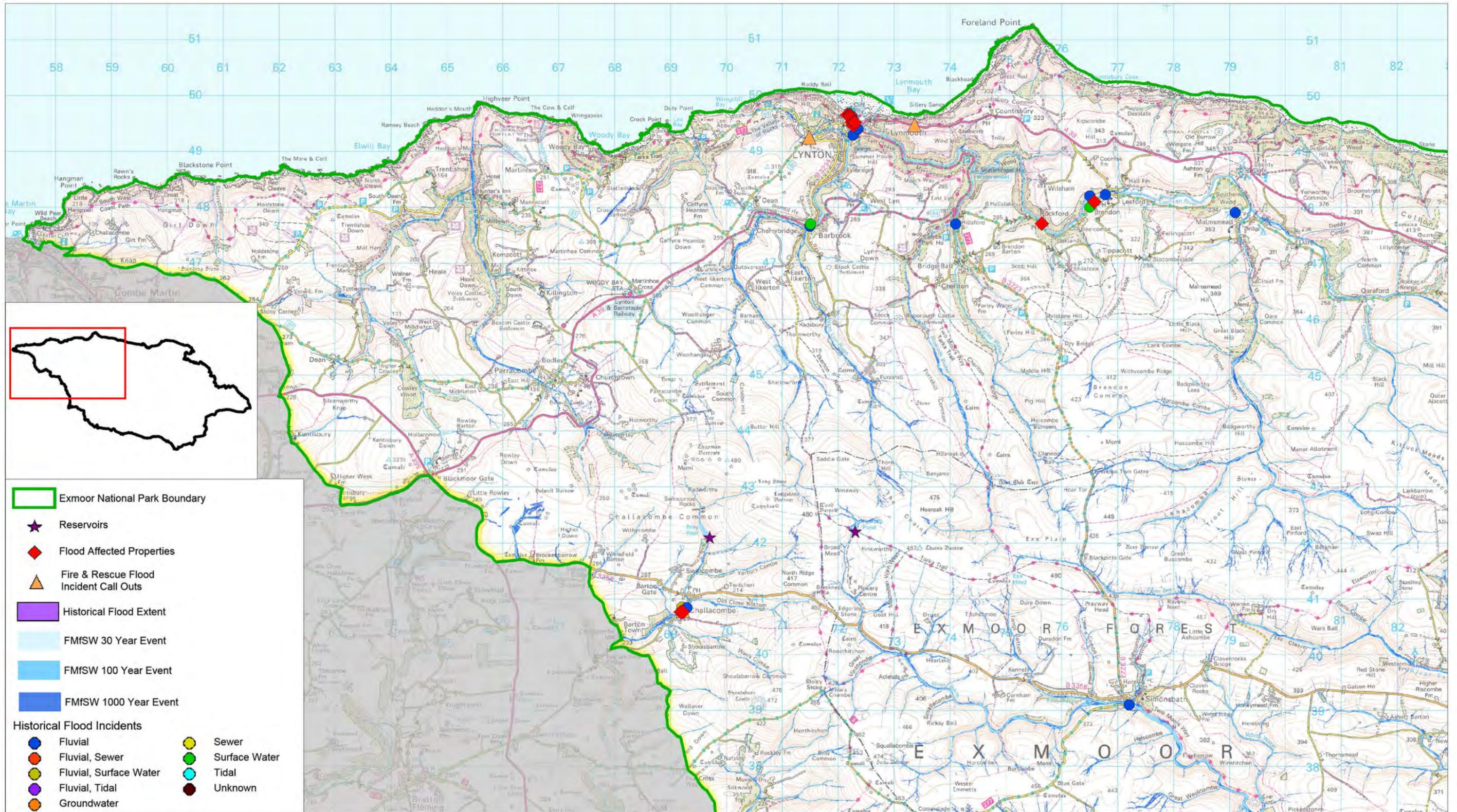
**Figure 3B**

Scale at A3: 1:65,000

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Project:  
**Exmoor National Park Level 1 SFRA**

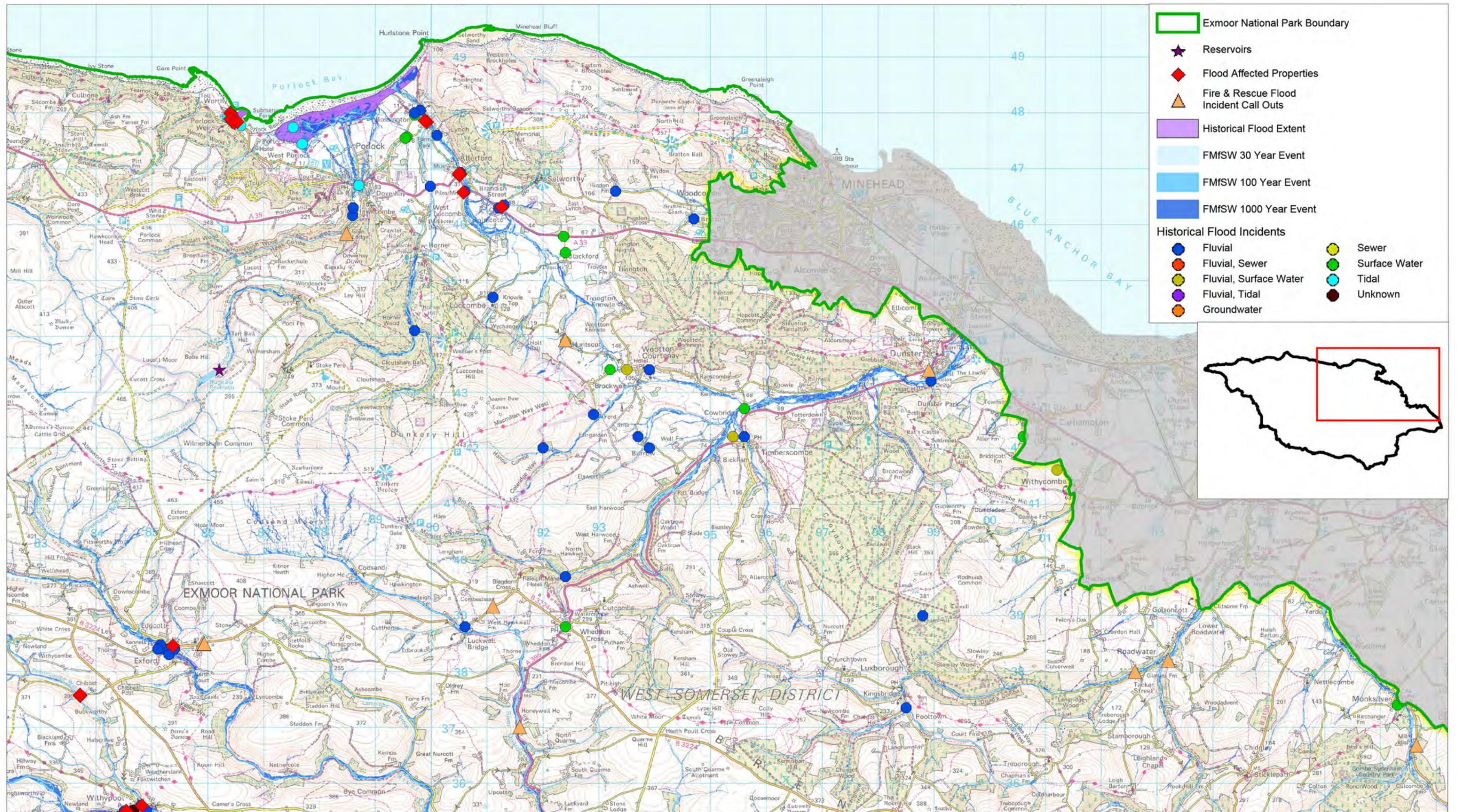
Title:  
**SFRA Historic Flood Incidents & Potential Flood Sources**

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<b>Figure 4A</b>			
Scale at A3: 1:65,000			
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**Exmoor National Park Level 1 SFRA**

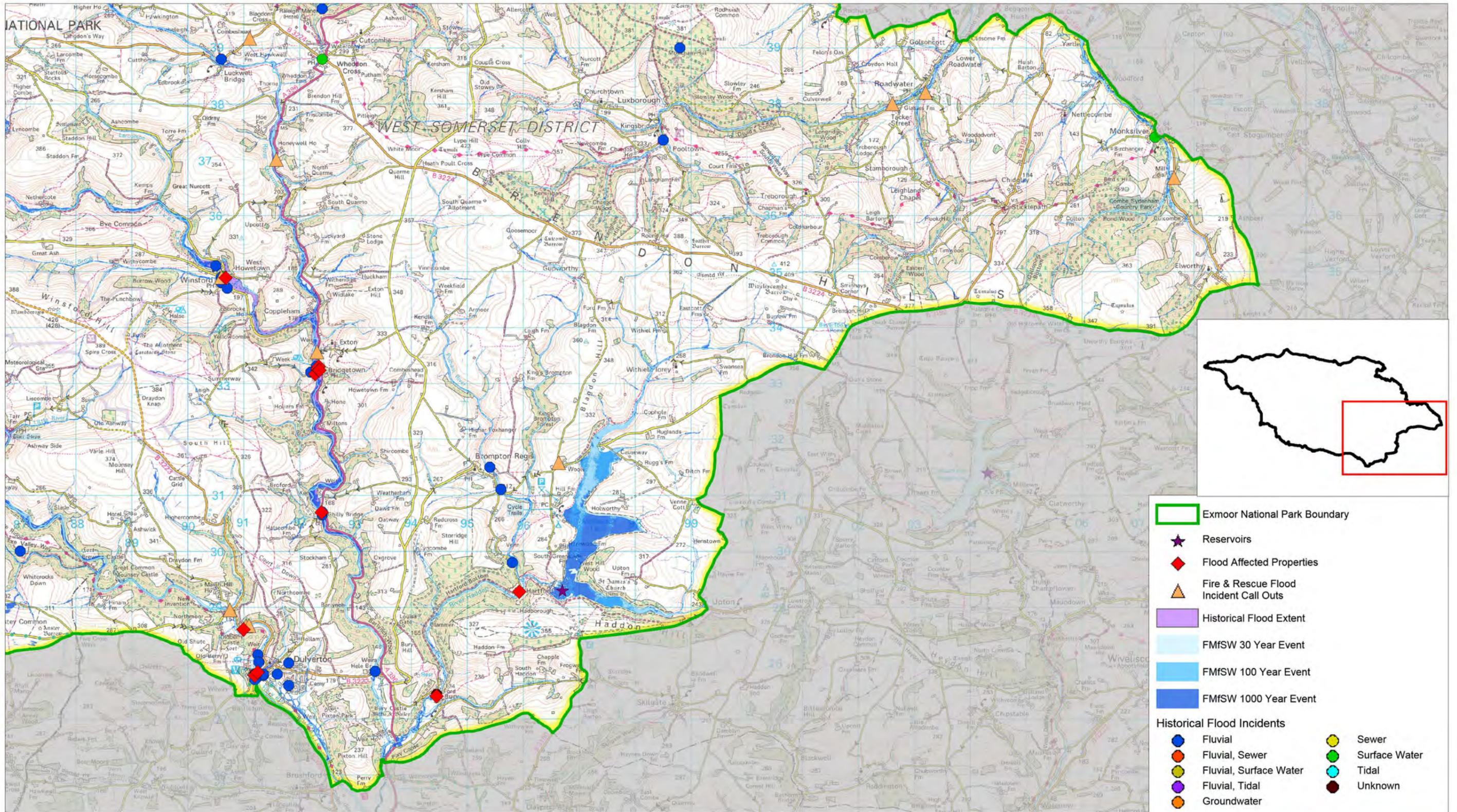
Title:  
**SFRA Historic Flood Incidents & Potential Flood Sources**

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<b>Figure 4B</b>				
Scale at A3: 1:65,000				
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Chk	MC	Date	03/04/14	



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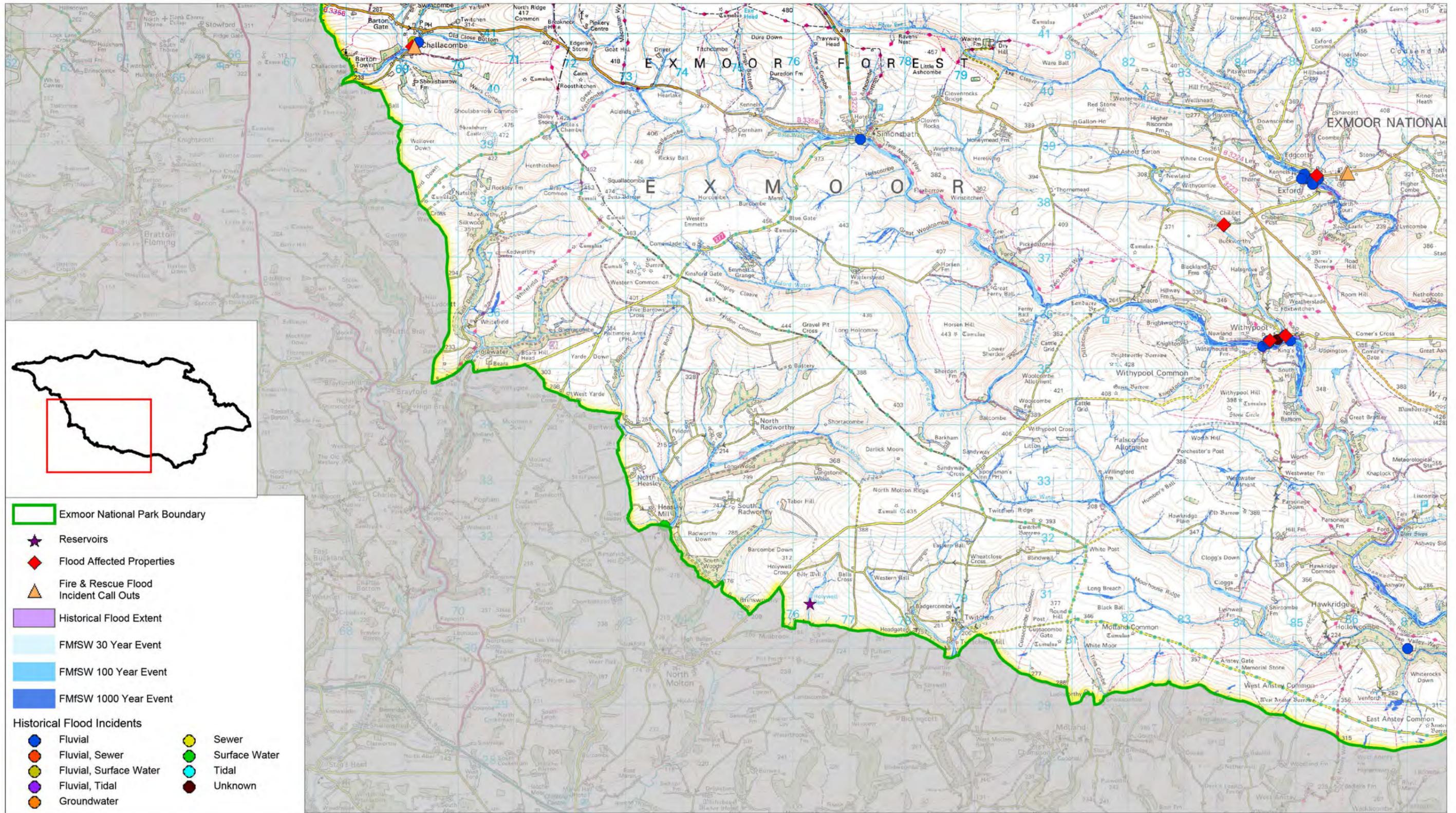
**Figure 4C**

Scale at A3: 1:65,000

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Project:  
**Exmoor National Park Level 1 SFRA**

Title:  
**SFRA Historic Flood Incidents & Potential Flood Sources**

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**Figure 4D**

Scale at A3: 1:65,000

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**APPENDIX****Appendix F: Focussed Assessments**

Update of the original Level 1 SFRA Focussed Assessment for Porlock, Dulverton and Lynton and Lynmouth.

(Appendix F of the original Level 1 SFRA).

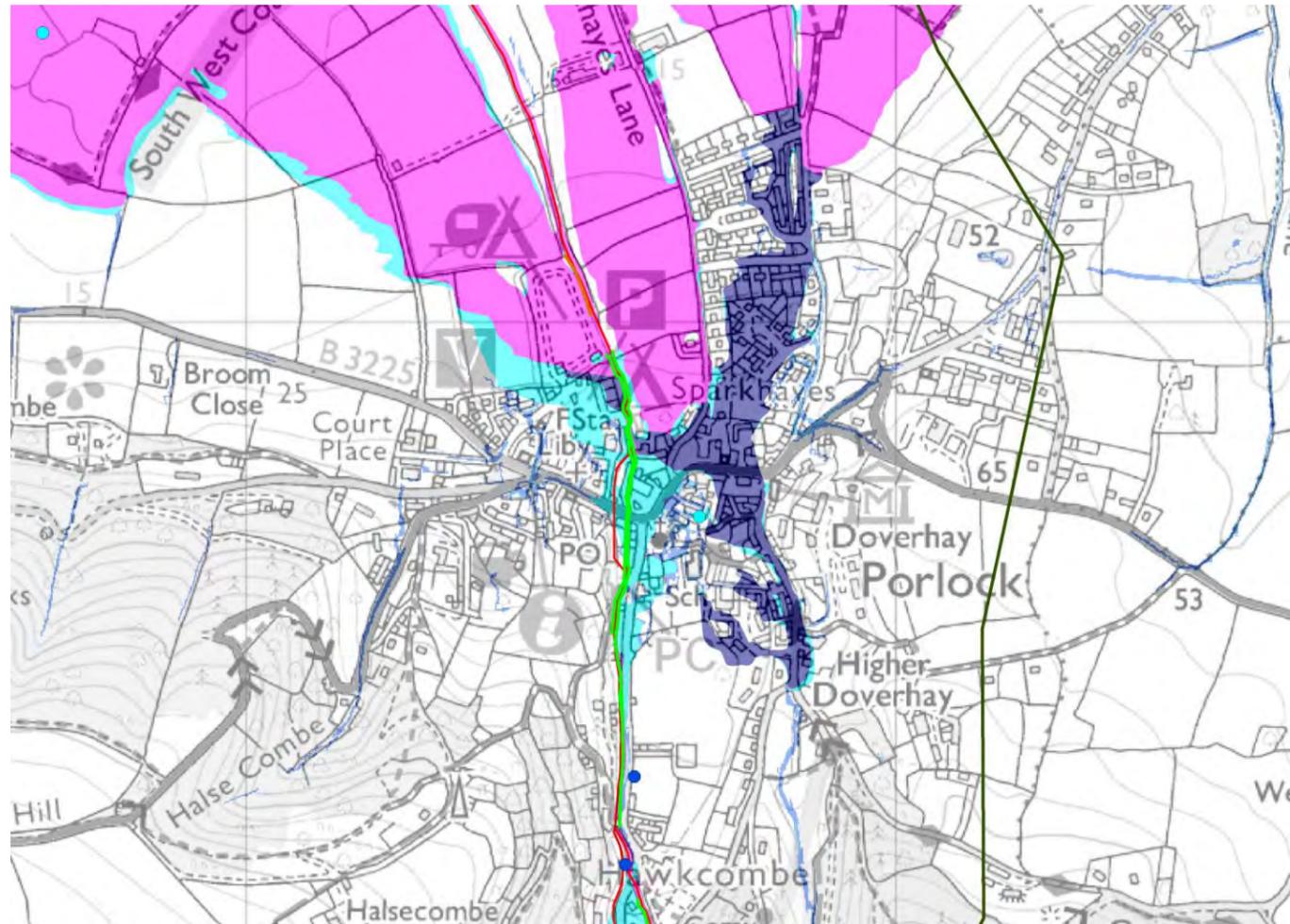
# Exmoor National Park Authority: Level 1 SFRA Addendum



Settlement Sustainability Hierarchy: Local Rural Centre

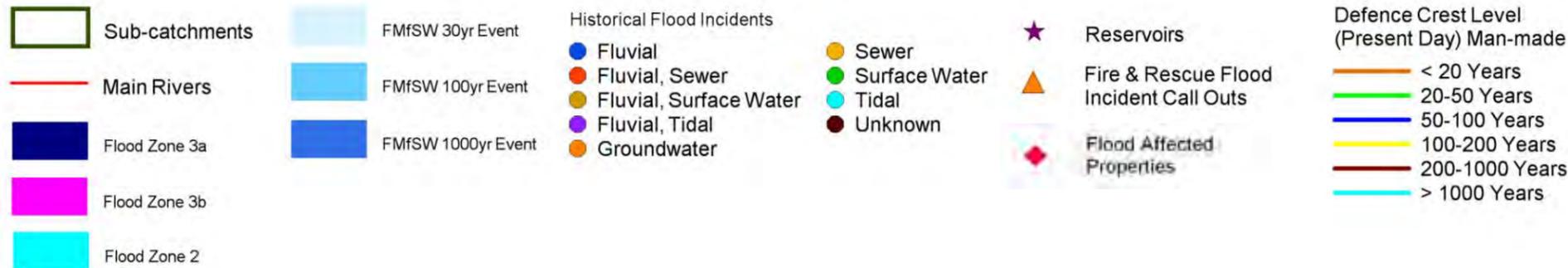
Settlement: Porlock

Planning Authority: Exmoor National Park Authority



## Preliminary Local Plan

<b>Flood Zone</b>	2 & 3 (Fluvial and Tidal)
<b>Potential Housing Allocation</b>	Policy S1 of the Exmoor National Park Local Plan identifies Porlock as a local rural centre. Local rural centres are considered to be the preferable locations for new development.
<b>Potential Employment Allocation</b>	Policy E1 of the Exmoor National Park Local Plan allows for new employment premises, extensions to existing business premises and the conversions of existing buildings to business use within or where necessary adjacent to a rural centres and villages.
<b>Main River</b>	Hawkcombe Stream
<b>Flood Record Information Data</b>	<p>Porlock is at risk from fluvial, combined fluvial/tidal and surface water flooding. Notable flood events which have been recorded in the town include:</p> <ul style="list-style-type: none"> <li>• Fluvial event in August and October 1960;</li> <li>• Fluvial flooding caused by structural blockages in September 1980;</li> <li>• Tidal flooding in December 1981; and</li> <li>• Fluvial flooding caused by structure blockages in January 1993</li> <li>• Tidal flooding in April 1996.</li> </ul>



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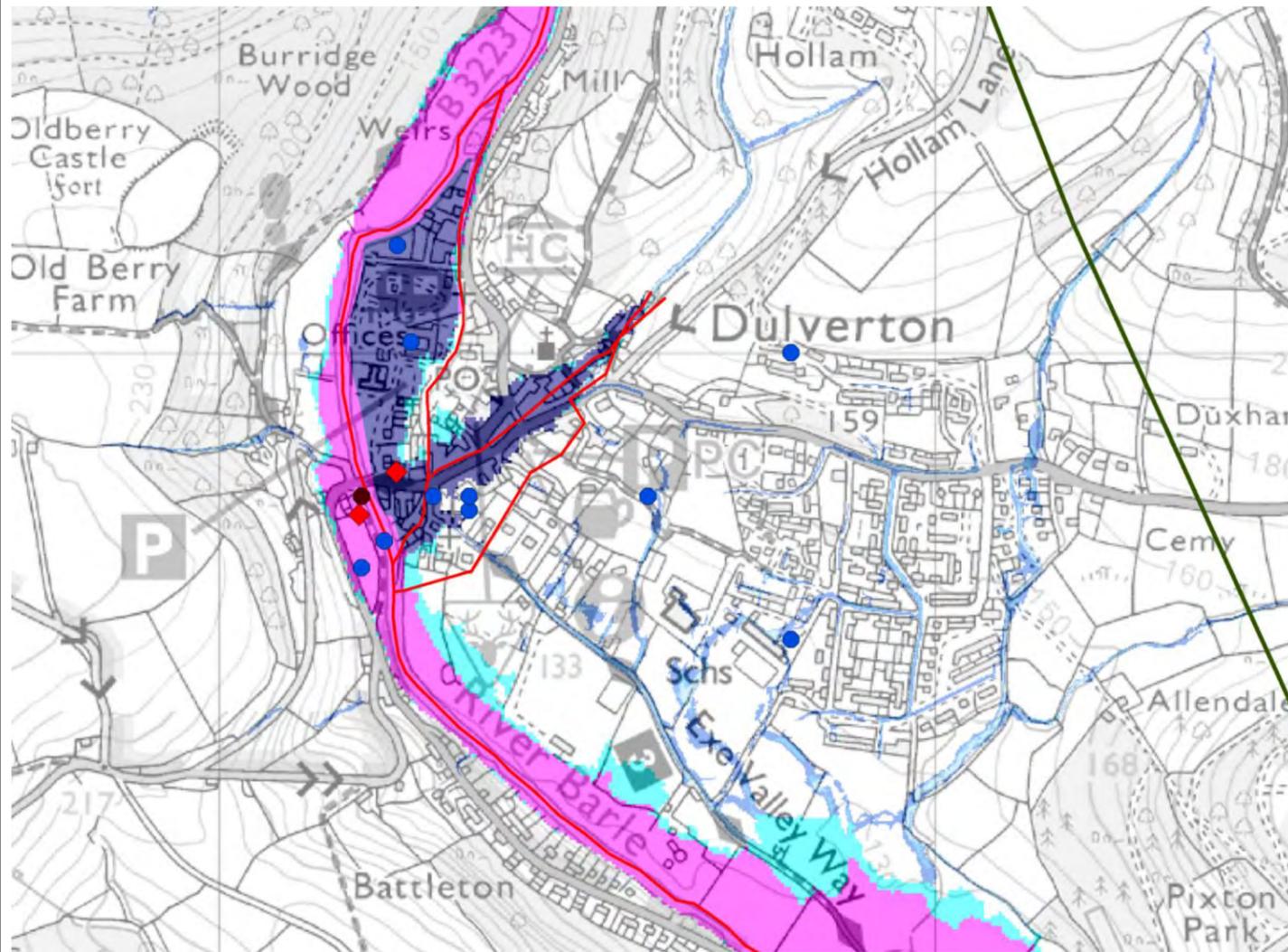
# Exmoor National Park Authority: Level 1 SFRA Addendum



Settlement Sustainability Hierarchy: Local Rural Centre

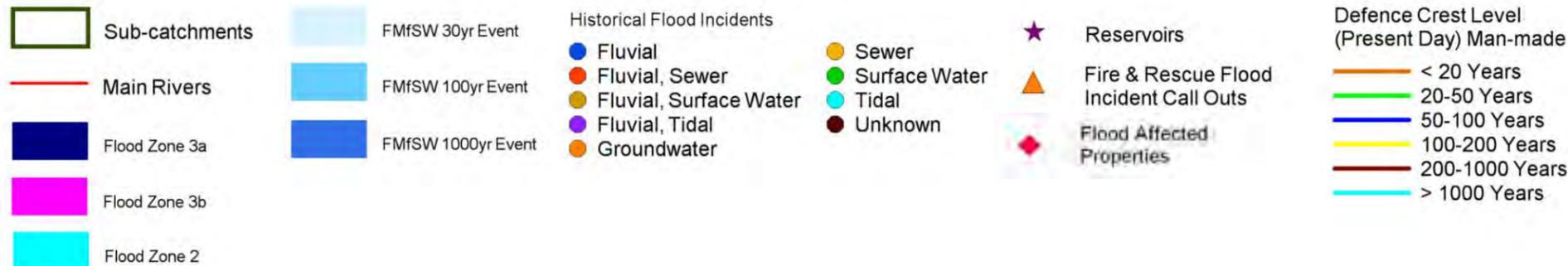
Settlement: Dulverton

Planning Authority: Exmoor National Park Authority



## Preliminary Local Plan

<b>Flood Zone</b>	2 & 3 (Fluvial and Tidal)
<b>Potential Housing Allocation</b>	Policy S1 of the Exmoor National Park Local Plan identifies Dulverton as a local rural centre. Local rural centre are considered to be the most suitable locations for new development.
<b>Potential Employment Allocation</b>	Policy E1 of the Exmoor National Park Local Plan allows for new employment premises, extensions to existing business premises and the conversions of existing buildings to business use within or where necessary adjacent to a rural centres and villages.
<b>Main River</b>	River Barle, Hollam Brook
<b>Flood Record Information Data</b>	<p>The majority of flood incidents shown on the focused assessment map are from fluvial flooding. A property affected by fluvial flooding has also been identified within the Environment Agency database. Notable flood events include:</p> <ul style="list-style-type: none"> <li>• Fluvial event in May 1950;</li> <li>• Flooding in December 1960 (source unknown) resulting in 25 properties and 9 shops to be inundated;</li> <li>• Sewer flooding in November 1963;</li> <li>• Surface water flooding in September 1969, March 1981 (13 private and 7 commercial properties affected) and December 1993;</li> <li>• Flooding in December 2004 and January 2004 from unknown source; and</li> <li>• Fluvial flooding from overtopping of local watercourses in September 1980, December 1982, December 1985 (affected 135 properties) and December 2012.</li> </ul> <p>The CFMP covering the area identifies that the police station and fire station in Dulverton are at risk of flooding, together transport routes around the town.</p>



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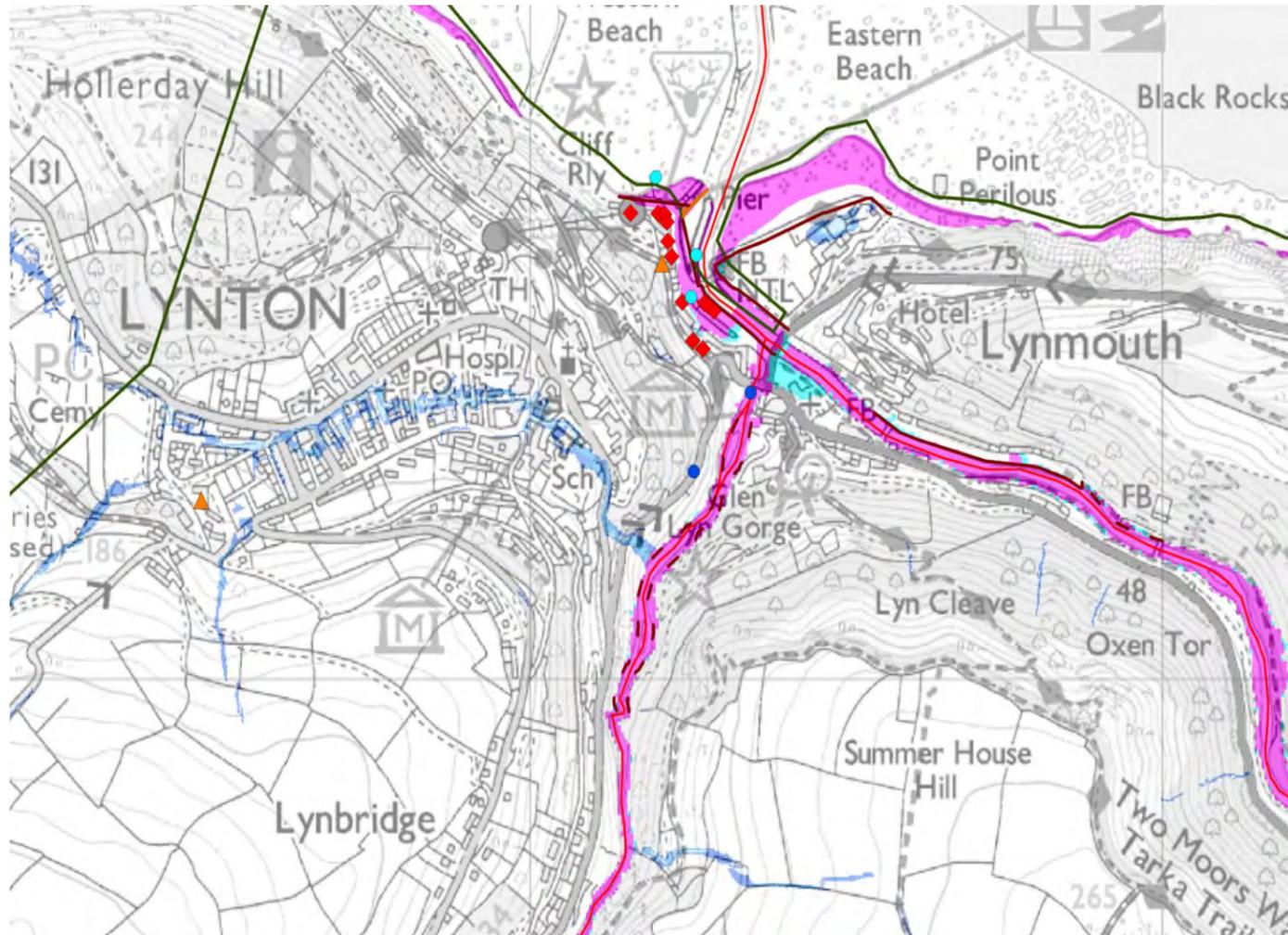
# Exmoor National Park Authority: Level 1 SFRA Addendum



Settlement Sustainability Hierarchy: Local Rural Centre

Settlement: Lynton and Lynmouth

Planning Authority: Exmoor National Park Authority



## Preliminary Local Plan

<b>Flood Zone</b>	2 & 3 (Fluvial and Tidal)
<b>Potential Housing Allocation</b>	Policy S1 of the Exmoor National Park Local Plan identifies Lynton and Lynmouth as a local rural centre. Local rural centre are considered to be the most suitable locations for new development.
<b>Potential Employment Allocation</b>	Policy E1 of the Exmoor National Park Local Plan allows for new employment premises, extensions to existing business premises and the conversions of existing buildings to business use within or where necessary adjacent to a rural centres and villages.
<b>Main River</b>	West Lyn, East Lyn
<b>Flood Record Information Data</b>	<p>The majority of flood incidents shown on the focused assessment map are from tidal flooding, however fluvial flooding has also occurred in the area. The most notable flood events include:</p> <ul style="list-style-type: none"> <li>December 1952 severe fluvial flooding from the East and West Lyn was experienced in Lynmouth. 34 lives were claimed, 93 houses and 123 vehicles affected;</li> <li>Fluvial flooding in January 1983 (3 properties affected) and October 2000;</li> <li>Tidal overtopping in February 1990, March 2006, October 2012 and January 2014; and</li> <li>Fluvial / Tidal flooding in May 1996 – exact number of properties affected during these events unknown;</li> </ul>



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