



Severn River Basin District Flood Risk Management Plan 2015-2021

Habitats Regulations Assessment

March 2016

Executive summary

The Flood Risk Management Plan (FRMP) for the Severn Basin District (RBD) provides an overview of the range of flood risks from different sources across the 10 catchments of the RBD and more specifically from local flood sources in the Bristol Flood Risk Area (FRA). This was identified as having higher local flood risk by the Preliminary Flood Risk Assessments. The Severn RBD catchments are defined in the River Basin Management Plan (RBMP) and based on the natural configuration of bodies of water (rivers, estuaries, lakes etc.).

The FRMP provides a range of objectives and programmes of measures identified to address these risks from all flood sources. These are drawn from the many risk management authority plans already in place, but also include a range of further strategic developments for the FRMP 'cycle' period of 2015 to 2021.

The Severn FRMP has been produced jointly between the Environment Agency and Natural Resources Wales as the responsible authorities for flood risk management in England and Wales respectively.

In England, the total numbers of measures for the Severn RBD FRMP are reported under the following types of flood management action:

Types of flood management measures	% of RBD measures
Prevention – e.g. land use policy, relocating people at risk etc.	37%
Protection – e.g. various forms of asset or property-based protection	38%
Preparedness – e.g. awareness raising, forecasting and warnings	20%
Recovery and review – e.g. the 'after care' from flood events	<2%
Other – any actions not able to be categorised yet	3%

In Wales, the new protection measures in the FRMP are focused on the communities at greatest flood risk and include the following:

Management Catchments	South East Valleys	Usk	Wye (cross border)	Severn Uplands (cross-border)
Communities at risk	Grangetown Riverside Duffryn Bluetown Llandaff North Leckwith Marshfield Llanhilleth Llanbradach Merthyr Tydfil Treorchy Rhondda Trehafod	Liswerry Rogiet Croesyceiliog Brecon Pontypool Broadstreet	Chepstow Llanwrtyd Wells Mathern	Llanllwchaiarn Llanidloes Caersws 1&2 Llandrinio

The purpose of the HRA is to report on the likely effects of the FRMP on the network of sites that are designated for protection (European sites) and the HRA has been carried out at the level of detail of the plan. Many measures do not have any expected physical effects on the ground and have been **screened out** of consideration including most of the measures under the categories of Prevention, Preparedness, Recovery and Review.

Risk management authorities (RMAs) have for a long time been addressing the range of flood risks through a range of plans and actions. So, much of the Severn RBD FRMP presents measures that are ongoing from existing plans which have already been subject to HRA. RMAs have considered the effects of these existing plan measures on European sites in published HRAs where required. These measures, their effects and agreed actions to mitigate the effects have been summarised under relevant RBD catchments and FRAs. Where RMAs have identified new flood risk management priorities for the next FRMP cycle period between 2015 and 2021, then the measures to implement these have been considered alongside existing plan measures in this HRA.

The following summarises the numbers of measures that the HRA has considered for the management catchments in England and the Bristol flood risk area:

FRMP RMA plans	Screened out measures	Measures from existing plans	New cycle 1 measures¹
Severn RBD catchments (Eng)	295	131	72
FRA Bristol	83	9	0
Total	378 (64%)	140 (24%)	72 (12%)

With respect to the Communities at Risk in Wales, the range of protection measures are shown below with the number of Communities at Risk they apply to in brackets.

- Assess conveyance requirements and implement maintenance (7)
- Undertake initial assessment and feasibility work for reducing flood risk (3)
- Develop scheme appraisal for Flood Alleviation Scheme (1)
- Design and construction of flood risk asset improvements or alleviation scheme (6)
- Carry out an assessment of existing structures to ensure they are fit for purpose (4)
- Implement alternative risk reduction measures (3)

The HRA has been carried out for the set of measures for each RBD catchment that address main river, sea and reservoir flooding alongside any measures volunteered by RMAs that address local flooding and thus form a 'RBD plan' within the FRMP. Measures within FRAs that address high risk of local flooding in these areas have been considered in the HRA as separate 'FRA plans' within the FRMP. Both 'RDB plan' and 'FRA plans' are further considered in-combination by the HRA. The findings are a summary of the risks to European sites and an indication of the need for future HRAs at a project level when developing local actions, as well as considering how to avoid and mitigate any residual risks to European sites.

For the parts of the Severn RBD FRMP in England, the main conclusions from the assessment of all RMA plans of the FRMP are as follows:

¹ Measures across several catchments are counted up for each catchment for HRA purposes which may be a different figure than reported in the FRMP.

A determination was made to **screen out** measures that would not have physical effects on any European sites.

The effects of the measures from **existing plans** include effects of measures to address coastal flooding from SMPs, measures to address main river flooding from CFMPs and measures to address local flooding from local strategies. Existing controls and mitigation from these plans include: for SMPs, development of estuary strategies, and for CFMPs and Local Strategies more detailed appraisal and assessment on plans or projects arising out of the plans to demonstrate meeting the requirements of the Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations).

The effects of the measures that are for **new flood risk management priorities** for the next FRMP cycle period of 2015 to 2021 have been considered within this strategic-plan level HRA as far as they can be assessed at this high level. This HRA considered the range of mitigation options that may be applicable. It is concluded that the measures are expected to be able to be avoided or mitigated as part of their development as local actions, and all measures have been identified as capable of being fully mitigated. It can therefore be concluded that at the plan level there is sufficient scope for ensuring no likely significant effects during its implementation. The detail of the controls and mitigation required will be assessed as part of requirements to meet consents under planning and other consenting mechanisms as part of a project level HRA, some of which may need to proceed to appropriate assessment in order to gather the necessary level of detail.

For the Wales parts of the Severn RBD FRMP, the main conclusions from the stages of assessment for the Communities at Risk within Wales are as follows:

- Of the 44 European sites within or linked to the Severn RBD, 27 of the sites were shown not to have any pathway for effects directly or indirectly from the FRMP measures and were not considered in the test of likely significant effect.
- Of the 17 European sites screened in to the test of likely significant effect, it was concluded that FRMP measures would have no likely significant effect on 7 of the sites.
- In the remaining 10 European sites the FRMP measures contain insufficient detail to ascertain significant effects and consequently the assessment for these measures have been deferred to lower tier plans or projects. Environmental Assessment and HRA will be undertaken of these lower tier plans or projects.

It is therefore concluded that the FRMP is not likely to have a significant effect on European protected sites and an Appropriate Assessment is not required subject to HRAs being carried out at the project level as set out above.

The HRA further considers the potential for in-combination effects with other plans and projects. Given the level of information currently available, the assessment has identified the plans where the greatest risk of in-combination effects occur, but a detailed assessment can only be undertaken at the project level when details of location and design are known. Key external plans to consider for in-combination effects are:

- **Local Plans** – plans of local planning authorities to determine consent for proposed developments including FCRM ‘Protection’ types of development and which require HRA for developments affecting European sites
- **Water resource management plans** – plans to manage the supply of water to communities by Water Companies.
- **River Basin Management Plan** – plans that seek to ensure the objectives of water dependent European sites are maintained.
- **Marine Plans** – plans to manage the sustainable use of marine resources for inshore areas.

This HRA does not remove the need for HRA at a subsequent level, i.e. lower tier strategies, plans or projects that implement measures. This plan-level HRA does not give any weight to subsequent lower-tier plans or projects and their HRA outcomes.

As local actions are developed at a project level and the details of their scope and scale are known, this may identify additional effects on European sites that have not been assessed here, or were not appropriate to consider at this spatial scale of plan.

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1 Introduction

1.1 Introducing this report

This report sets out the results of a strategic-plan level Habitat Regulations Assessment (HRA) into the likely significant effects on designated 'European sites' of the Flood Risk Management Plan (FRMP) for the Severn River Basin District published in December 2015. The HRA report has been prepared by the Environment Agency and Natural Resources Wales on behalf of the collective Risk Management Authorities (RMAs) that have responsibilities for information being published within the FRMP and are thus the 'competent authorities' for the HRA of their respective published information, as follows:

- Information on flooding from main river, sea and reservoirs being published for the catchments of the river basin district (RBD) are the responsibility of the Environment Agency (for English catchments) and Natural Resources Wales (for Welsh catchments).
- Information on flooding from local sources being published for any Flood Risk Areas (FRA) is the collective responsibility of Lead Local Flood Authorities within the FRA.

In preparing the HRA report the Environment Agency has consulted with Natural England (for English catchments) and Natural Resource Wales (for Welsh catchments). The Lead Local Flood Authorities in Flood Risk Areas are 'competent authorities' for HRA of their FRMP information and have agreed that this report will meet their HRA requirements.

FRMPs are new strategic plans for implementing the Flood Risk Regulations 2009 and existing National Flood and Coastal Erosion Risk Management (FCERM) Strategies for England and Wales. They have been developed for River Basin Districts (RBDs) and Flood Risk Areas (FRAs) and draw together information from a range of existing strategies and plans that are in place and continue to be maintained by Risk Management Authorities. The HRA has been carried out at the level of detail published in the FRMP and takes into account HRAs that have already been undertaken for measures in existing plans and at the level of detail provided by these existing plans. Whilst a HRA at this strategic level cannot obtain the level of detail necessary for in-depth assessment, the HRA summarises the likely risks and potential need for controls and mitigation and the range of generic mitigation options available, which will then proceed through further consideration once measures are developed as specific local actions. In this way, this high-level HRA will be helpful for future HRAs that consider the effects on European sites at a project level.

The report describes each of the main stages and results of the FRMP HRA as follows:

- Describing the network of European sites within the RBD (chapter 2)
- The approach to the HRA (chapter 3)
- Screening and assessing likely significant effects (chapters 4,5)
- Appropriate assessment, alternative solutions and IROPI (chapters 4,5)
- Conclusion and future HRAs (chapter 7)

1.2 Background to the FRMPs

Flood risk management plans (FRMPs) highlight the hazards and risks from rivers, the sea, surface water, groundwater and reservoirs and set out how risk management authorities,

such as the Environment Agency, Natural Resources Wales and local authorities will manage flood risk. They are required by the European Union Floods Directive and the Flood Risk Regulations 2009. The FRMPs must be reviewed and reissued every six years to describe progress.

The Environment Agency and Natural Resources Wales is required to prepare flood risk management plans for all of England and Wales covering flooding from main rivers, the sea and reservoirs. Lead Local Flood Authorities (county councils and unitary authorities) must prepare flood risk management plans for flood risk areas (there are ten flood risk areas in England and eight in Wales) where the risk of flooding from local sources is significant as identified in Preliminary Risk Assessments.

The 2015-2021 period will be the first cycle of the FRMPs, however RMAs already plan for flooding and a large proportion of the FRMPs are taken from existing plans that have already been consulted on and published. This includes plans such as Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs) as well as Local Flood Risk Management Strategies that have been developed by local authorities.

Some further strategic developments have been included for the 2015-2021 first cycle of the FRMP that build on existing plans and seek to address the key objectives of the Flood Risk Regulations 2009 such as: strengthening joint working of RMAs, developing more integrated management of the water environment, and updated priorities from any new understanding of flood risks including the implications of climate change.

1.3 The Severn RBD FRMP

The Severn River Basin District (RBD) covers an area of just over 21,500 km². The River Severn is the longest river in Britain, stretching 350km from its source to the mouth of the Bristol Channel. It has a varied landscape from the uplands of Wales, down through valleys and rolling hills through central England, to the lowlands and the Severn Estuary.

The area is home to more than 5.75 million people, and includes the major urban centres of Bristol, Cardiff and Coventry. Protected landscapes include the Brecon Beacons National Park and the Wye Valley Area of Outstanding Natural Beauty (AONB), and two Environmentally Sensitive Areas (ESAs) in the Upper Wye. A variety of habitats are internationally protected including the rivers Usk, Clun and Wye and the uplands of the Berwyn Mountains. The Severn Estuary and its surrounding area are protected for their bird populations, habitats and migratory fish species.

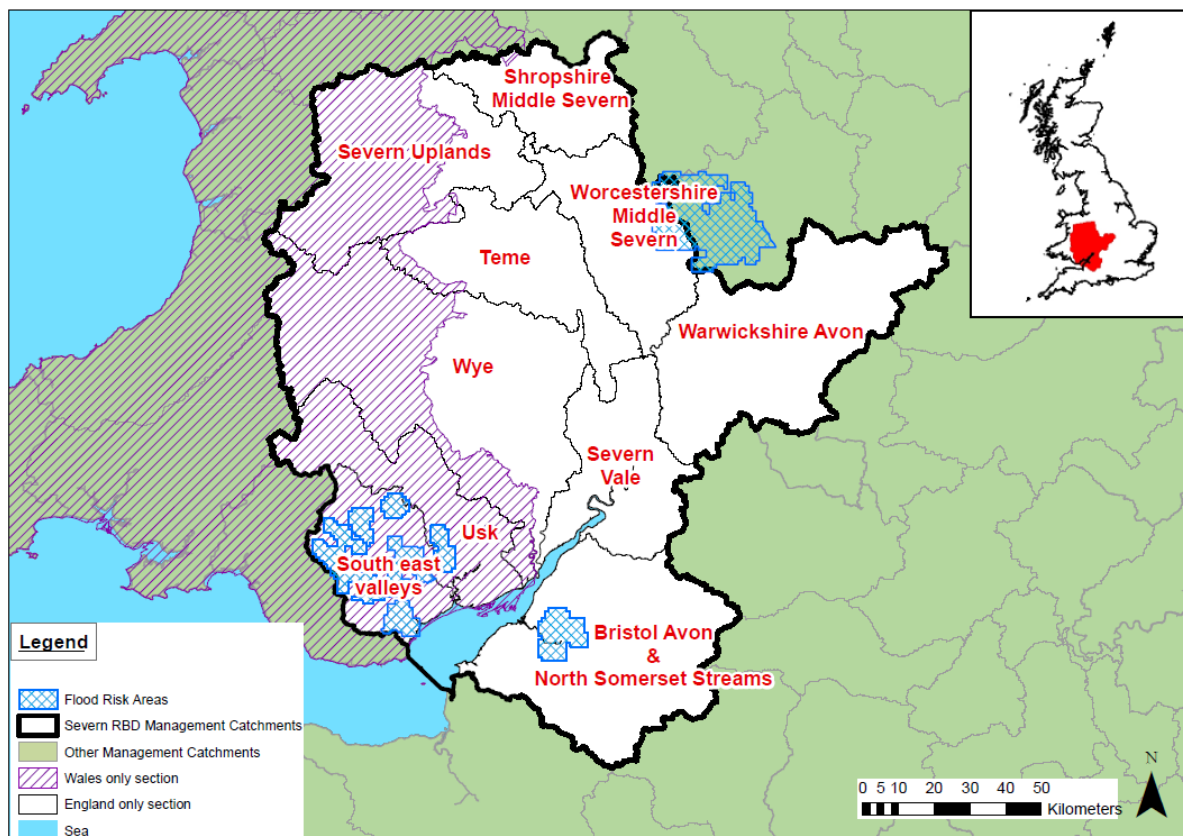
The FRMP describes the scale of flood risk in the Severn RBD which includes:

- Approximately 100,000 people, just under 2% of the population, are at medium to high risk of flooding from rivers and the sea. Other sources of flooding include that from reservoirs where 260,000 people, 4.5% of the total population in the RBD, are at risk of flooding. Approximately 120,000 people, just over 2% of the total population within the RBD, are at medium to high risk of flooding from surface water sources. Sewer flooding is also prevalent in the many urban centres located within the district.
- The upland areas within the RBD have many watercourses which respond rapidly to high levels of rainfall as a result of the steep topography. These include the Welsh

Mountains, the Brecon Beacons, along the Cotswold escarpment, in the Forest of Dean and Mendip Hills.

- Longer more sustained flooding is experienced over a significant area of the district in the middle to lower lengths of the larger watercourses such as the Rivers Wye, Severn, Warwickshire Avon and Bristol Avon. Here the topography is much flatter and the geology comprises of mudstones and clays that have low permeability and thus can become easily saturated. In these areas many medium to smaller sized communities are at high flood risk. In addition the groundwater table in these areas is also normally high contributing to the level of flood risk.
- The risk of tidal flooding is most prevalent along the coastlines of Wales and North Somerset, extending up the River Severn as far as Gloucester. Areas adjacent to the coast are relatively flat with very little elevation. Many of the areas adjacent to the coast are provided with a level of protection by defences.
- Within the RBD there are many examples of flood defences which reduce the risk of flooding to major urban areas, local communities, essential infrastructure and agricultural land. These defences take the form of earth embankments, flood walls, outfall structures, barrage, attenuation areas, engineered channels and individual property level protection.
- The river has a variety of flooding issues along its length and given the complicated nature and volume of tributaries there is a need to take a catchment-wide view to all changes within the RBD. Activities must seek to avoid passing risk on to others within the catchment without prior agreement.

Figure 1: Severn RBD showing Catchments, Flood Risk Areas and Wales and England only sections



The Severn FRMP has been produced jointly between the Environment Agency and Natural Resources Wales as the responsible authorities for flood risk management in England and Wales respectively. It sets out the objectives and measures to manage flood risk, from the Environment Agency, Natural Resources Wales and the Lead Local Flood Authorities for the Severn RBD. The measures have been developed by the Environment Agency, Natural Resources Wales and the Lead Local Flood Authorities (LLFAs) within the respective RBDs.

Measures within the FRMPs are either already developed, these are derived from existing plans, which have been separately consulted on and published with accompanying assessment, including Habitats Regulations Assessment (HRA); or are new measures, developed specifically for inclusion in the FRMP. The source of the measures has determined how they have been treated in the HRA.

Existing plan measures in the Severn FRMP are derived from the following source plans:

- Catchment Flood Management Plans (CFMPs)
- Shoreline Management Plans (SMP)
- Local Flood Risk Management Strategies (FRMS) developed by LLFAs
- Estuary Flood Risk Management Strategies
- Surface Water Management Plans

The measures derived from these plans have already been subject to consultation and assessment, including HRA. Where measures taken from existing plans have been deemed to potentially affect European sites, the HRAs of those source plans have been referred to.

The FRMP is divided into the separate plans that are the responsibility of different risk management authorities, as follows:

- RBD catchment measures that the Environment Agency (English parts) and Natural Resources Wales (Welsh parts) are responsible for,
- Measures within the Bristol Flood Risk Area (FRA) for local sources of flooding that FRA Lead Local Flood Authorities are responsible for.

Measures within the FRAs that are in Wales are being produced as separate FRMPs by the responsible Lead Local Flood Authorities.

1.4 Background to Habitats Regulations Assessment

In England and Wales, the Conservation of Habitats and Species Regulations 2010, as amended, commonly termed the Habitats Regulations, implements the European Union Habitats Directive (Directive (92/43/EEC) on the Conservation of natural habitats and of wild flora and fauna, and certain elements of the Wild Birds Directive (2009/147/EC). This legislation provides the legal framework for the protection of habitats and species of European importance in England and Wales.

Sites protected under the Habitats Regulations comprise Special Protection Areas (SPA), Special Areas of Conservation (SAC), candidate SACs (cSAC), Sites of Community Importance (SCI) and, as a matter of government policy, to potential Special Protection Areas (pSPA) and Ramsar sites (sites designated under the 1971 Ramsar Convention for their internationally important wetlands). These sites are referred to collectively as in this report as 'European sites'.

Regulation 9(3) of the Habitats Regulations requires that a 'competent authority' must consider the requirements of Habitats Directive in exercising any of its functions. Article 6(3) of the Habitats Directive defines the requirements for assessment of plans and projects potentially affecting European sites. This requires that a competent authority, before deciding to undertake, or give any consent or authorisation for a plan or project which is likely to have a significant effect on a European site, and is not directly connected with or necessary to the management of that site, must carry out an appropriate assessment. The term commonly referred to for the assessment process is 'Habitats Regulations Assessment'.

The Severn FRMP is considered to fit within the definitions of a 'plan' as defined by the Habitats Directive, and requires a Habitats Regulations Assessment (HRA). The FRMP is a high-level planning document for the Severn River Basin District (RBD) (see map in Figure 1), therefore potential impacts of the plan on European sites across the RBD are difficult to determine. Given the geographic scale and nature of the plan, the HRA needs to be tailored to be appropriate for the spatial area of coverage and the strategic nature of the plan.

The Habitats Regulations Assessment has followed a framework four distinct stages, only moving to the next stage if required by the results of that stage of the assessment. The four stages are:

Stage 1: Screening and Likely Significant Effects is the process which initially identifies the likely impacts upon a European Site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts may be significant. It is important to note that the burden of evidence is to show, on the basis of objective information, that there will be no significant effect; if the effect may be significant, or is not known, that would trigger the need for an Appropriate Assessment.

Stage 2: Appropriate Assessment is the detailed consideration of the impact on the integrity of the European Site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's conservation objectives and its structure and function. This is to determine whether there is objective evidence that adverse effects on the integrity of the site can be excluded. This stage also includes the development of mitigation measures to avoid or reduce any possible impacts.

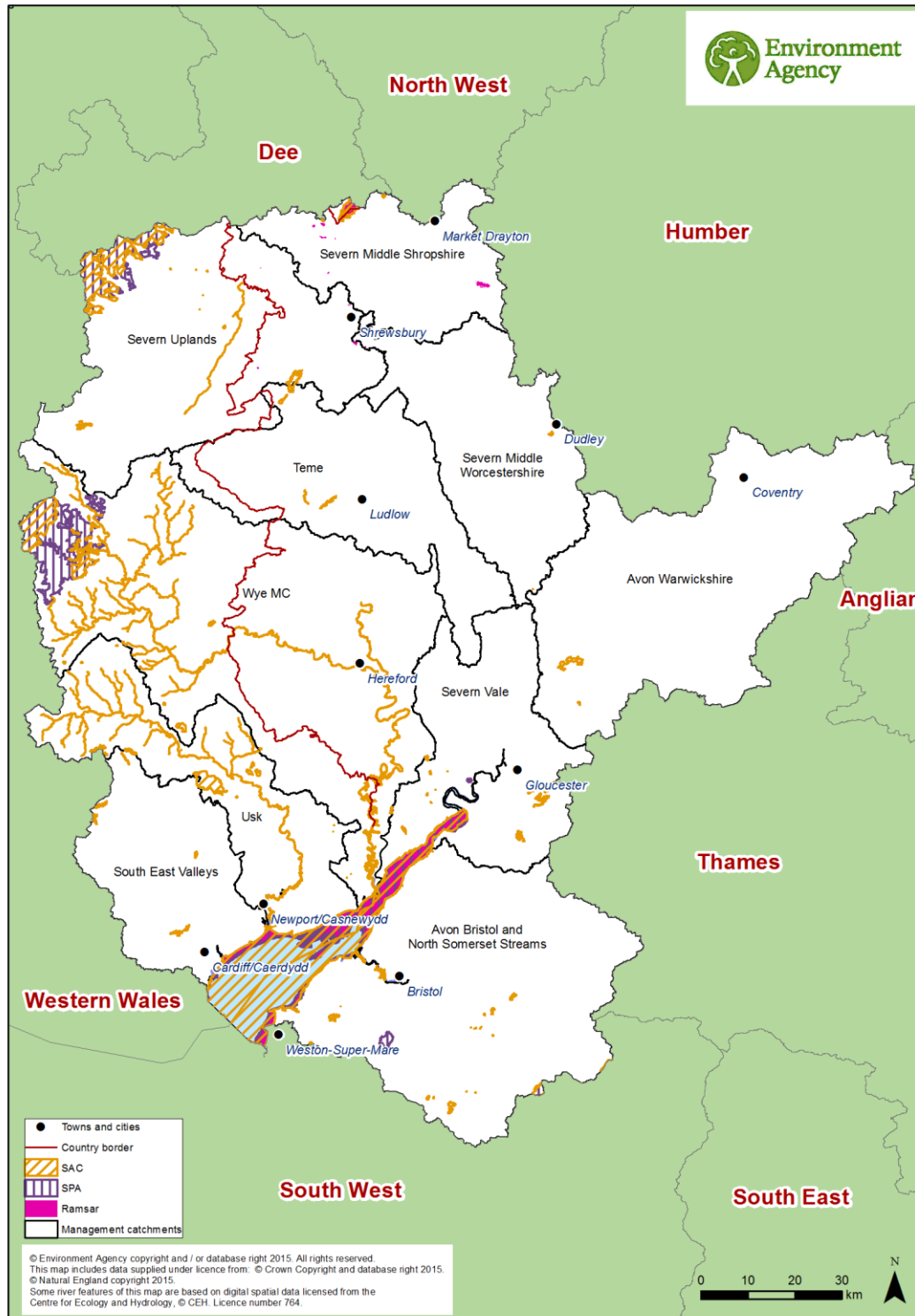
Stage 3: Assessment of alternative solutions is the process which examines alternative ways of achieving the objectives of the project or plan that would avoid adverse impacts on the integrity of the European Site, should avoidance or mitigation measures be unable to cancel out adverse effects.

Stage 4: Assessment where no alternative solutions exist and where adverse effects remain. At Stage 4 an assessment is made with regard to whether or not the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures.

2 European sites in the Severn RBD

Within the Severn RBD there are 43 SACs, 6 SPAs, and 4 Ramsar sites. Some of the sites have more than one designation such as the Severn Estuary, parts of which are designated as SPA, SAC and Ramsar.

Figure 2: Map of the European sites in the Severn River Basin District



The European sites within the Severn RBD encompass a wide diversity of habitat types. In addition to freshwater habitats such as rivers, lakes, canals and other wetlands, the RBD includes sites with estuarine, coastal and marine habitats. Other frequently occurring habitat types are woodlands, grasslands and heathlands.

Of the 4 Ramsar sites within the RBD the most extensive is the Severn Estuary, which is also designated as a SPA and SAC. The estuarine and river system of the Severn is one of the most diverse in the UK for fish species and a key migration route for species, such as salmon, sea trout, sea and river lamprey, twaite and allis shad and eel, which use the Severn Estuary to reach spawning grounds in the many tributaries that flow into the estuary including the Wye and Usk rivers. The site is also an important feeding and nursery ground for many fish species, particularly allis shad and twaite shad. The immense tidal range of the Severn Estuary results in extensive areas of intertidal habitats, comprising mudflats, sandflats, sandbanks, shingle and rocky platforms, together with adjacent areas of saltmarsh and lowland grazing marsh. These habitats and the food sources they support attract internationally important assemblages of overwintering and migratory birds, such as gadwall, dunlin, shelduck, redshank and greater white-fronted goose.

The inland Ramsar sites of the Midland Meres and Mosses occur across the Shropshire, Cheshire and Staffordshire Plain and are characterised by a complex of lowland open water and peatland sites that support nationally important flora and fauna. Although much smaller in size, the Ramsar/SPA of Walmore Common in Gloucestershire supports a variety of wetland habitats and in winter provides an important refuge and feeding area for wildfowl, particularly Bewick's swans. Located within the South West RBD, the Somerset Levels and Moors SPA/Ramsar site is situated immediately to the south of the Severn RBD border and is closely associated with the Severn Estuary SPA/SAC/Ramsar site. The site comprises a series of designated sites that cover extensive areas of flood plain drained by a large network of ditches, rhynes, drains and rivers. The site represents the largest area of lowland wet grassland and associated wetland habitat remaining in the UK. The area attracts internationally important numbers and assemblages of overwintering birds, such as Bewick's swan, lapwing and teal as well as representing one of the most important sites in southern England for breeding waders together with supporting diverse assemblages of aquatic invertebrates

The SPAs within the RBD and the migratory and breeding bird populations they support are highly variable. Sites range from the artificial reservoir of Chew Valley Lake near Bristol and its important overwintering population of northern shoveler, to the extensive upland sites of Berwyn and Elenydd - Mallaen in Wales and their populations of rare and vulnerable breeding birds, including merlin, hen harrier and red kite. In addition to the extensive lowland sites of the Severn Estuary, designated SPAs within the RBD include the open grasslands of Salisbury Plain and its important overwintering and breeding bird populations such as hen harrier, stone curlew and quail.

Across the RBD there is a wide variety of SACs. Some sites are designated primarily due to the species they support, such as the populations of great crested newts at Granllyn in Wales and Fens Pools in Dudley, the fresh water pearl mussel of the River Clun and the aquatic plant species (floating water plantain) associated with the Montgomery Canal and Brown Moss. A number of sites within the RBD are designated for supporting important populations of bat species, including sites at Bath and Bradford-on-Avon, North Somerset

and Mendip, Wye Valley and Forest of Dean, Usk, Mells Valley, and Tanat and Vyrnwy. Other sites are designated for supporting important invertebrate species. This includes the wet grassland sites of Aberbargoed and Blaen Cynan that support populations of marsh fritillary butterfly, and the rare invertebrates species, such as the violet click beetle, associated with ancient tree habitats at Bredon Hill and Dixton Wood. A primary reason for the designation of the River Wye and Usk SACs is the range of Annex II fish species they support, including sea, brook and river lamprey, bullhead, twaite shad and Atlantic salmon in addition to their well established otter populations. In the case of the River Clun SAC, fish species such as salmon and brown trout are also considered to be a feature of interest due to their importance in the life cycle of the freshwater pearl mussel.

Many of the sites within the RBD are also designated in respect of their qualifying habitats, such as riverine habitats of the Wye and the lakes, ponds, mires and bogs of the West Midlands Mosses. Other qualifying habitats subject to SAC designation include the woodlands of the Wye Valley and Avon Gorge, the Cardiff and Cotswolds beechwoods, the alluvial forests associated with Coed y Cerrig, and the oak woods of Sugar Loaf and Coedydd Llaur-y-Glyn. Other designated habitats represented in the RBD include the chalk grasslands of Salisbury Plain, the limestone grasslands of the Mendips, and the extensive *Molinina* meadows associated with Cwm Cadlan and Drostre Bank. Designated upland habitats and heathlands are also represented in the Brecon Beacons and Berwyn and South Clwyd Mountains together with the transitional dry heathland habitats of the Stiperstones and Hollies. Within the RBD sites designated for their wetland habitats range from the upland mires of Elenydd to the lowland raised bogs at Fenn's Whixall, Bettisfield, Wem and Cadney Mosses and Llangorse Lake, the largest lake in South Wales.

Annex B contains a summary of the European sites present within the management catchments of the Severn RBD. Table A2 in Annex A presents a summary of the European sites present within the management catchments. In a number of cases European sites cross over the boundary of two or more management catchments, therefore a number of European site names / designations may appear against more than one management catchment.

2.1 European sites that could be affected by the FRMP

The Severn RBD FRMP is a long term plan for the water environment, which could potentially affect both water dependent and non-water dependent European sites and their qualifying features.

Water dependent European sites are classified as protected areas under the WFD; each protected area European site has specific objectives to ensure their favourable conservation status. Supporting measures within the Severn River Basin Management Plan (RBMP) should predominantly be beneficial for the conservation status of water dependent European sites, and the Severn FRMP seeks to align with the objectives of the Severn RBMP wherever possible. Where feasible, FRMP measures that also aim to improve water body status within the Severn RBMP / RBD are identified. Indeed, FRMP measures that seek to change land use and promote floodplain restoration can serve to improve water quality and in turn benefit the conservation status of water dependent European sites.

It is not possible from the outset to rule out, at the RBD scale, any (water-dependent or non water-dependent) European sites from being affected by the Severn RBD FRMP. This HRA, in particular section 4 (and sections 5 for the FRA in the Severn RBD), reviews the European sites by management catchment, and determines whether any of the measures within the catchments are likely to lead to significant effects on European sites.

2.2 European sites and their status for FRMPs

The Severn RBMP provides summary information on the current status and baseline for water-dependent European sites as part of its monitoring data.

European sites in England and Wales, with the occasional exception, are also designated as SSSIs. Natural England and Natural Resources Wales monitor the conditions of SSSIs and their component units using six reportable condition categories: favourable; unfavourable recovering; unfavourable no change; unfavourable declining; part destroyed and destroyed.

The current status of water-dependent European site protected areas (in England) for the Severn RBD is summarised in table 1a below. This gives the current area of water-dependent SSSI units of European protected areas in different condition categories as currently recorded on Natural England's and Natural Resources Wales's designated site data system. SSSI units underpin European protected areas and Natural England and Natural Resources Wales only collects data at a SSSI unit level. When SSSI units are in favourable condition, they are deemed to be meeting their conservation objectives.

Table 1a: WFD status of water dependent SSSIs for the Severn RBD (England)²

Condition	Severn RBD (ha)
Favourable	11,668
Destroyed / Part destroyed	2
Unfavourable declining	208
Unfavourable no change	337
Unfavourable recovering	1,125
Total Area Unfavourable	1,670
% Unfavourable	13

The table shows that for the Severn RBD, 13% of water-dependent SSSI units of European protected area sites are currently not compliant with the condition requirements.

In Wales the reporting approach is different; the condition of designated habitats and species features in SACs / SPAs for the Habitats and Birds Directives cycle (2007-2012) was reported to the Joint Nature Conservation Committee (JNCC), on a designated habitat or species feature basis, rather than SSSI unit status. In addition there are slight differences to some of the categories used for reporting. Table 1b summarises the data for the Welsh section of the Severn RBD based on the number of designated habitats and species features in each category. The table indicates that for the parts of the RBD in Wales, over half of designated habitats and species features are in unfavourable condition.

² Source Extract from Natural England databases August 2015

Table 1b: Natura 2000 protected areas current condition for the Severn RBD (Wales)³

Current condition Number of Natura 2000 habitats and species	
Favourable: Maintained	4
Favourable: Recovered	3
Favourable: Un-classified	9
Unfavourable: Recovering	4
Unfavourable: No change	4
Unfavourable: Declining	1
Unfavourable: Un-classified	34
Destroyed: Partially	0
Destroyed: Completely	0
Not assessed	24
Total	83

The generic pressures on European sites in the Severn RBD include forestry, woodland and scrub management and agricultural practices such as levels of grazing. These pressures can affect the condition, quality and diversity of habitats present on a site as well as the particular species they support. In the Wye Valley Woodlands, for example, the cessation of traditional management practices such as coppicing and wood pasture is resulting in a loss of species diversity as the woodland structure and canopy becomes more uniform. Inappropriate woodland management and scrub control in the West Midlands Mosses is also serving to adversely affect the characteristic mire habitats as a result of increased shading, nutrient addition and the drying out of the sensitive wetland features. Pressures associated with overgrazing can lead to peat erosion as in the Fenn's, Whixall, Bettisfield, Wem, Cadney Mosses and also serve to degrade the habitats of qualifying species, such as the terrestrial foraging habitats for the amphibian populations of Fen's Pool. More generally changes in land management in areas surrounding a site can also impact qualifying features, such as Walmore Common where land management changes in neighbouring areas are affecting feeding and roosting areas used by its overwintering bird populations.

Other pressures typically linked to river and wetland sites, such as the River Wye and River Clun and the Meres and Mosses of the RBD, include diffuse water pollution and siltation as a result of surface water runoff from surrounding agricultural areas and areas of clear cut forestry, hydrological changes arising from abstractions and alterations to the drainage network, and physical modifications such as weirs presenting barriers to fish migration. The Severn Estuary is also subject to pressures from commercial and recreational fisheries and from development impacts both within and adjacent to the Estuary, as for example, associated with aggregate extraction, energy and residential and industrial developments. In the case of the Severn Estuary coastal squeeze is identified as a specific pressure. This is due to the presence of flood defences along the Estuary constraining the natural inland

³ Source Severn RBMP (2015 Update).

progression of estuarine habitats as sea levels rise, which in turn results in habitat loss with the consequent impact on the bird and fish species they support.

Invasive non-native species is a commonly identified pressure for a range of sites across the RBD and include signal crayfish as well as Himalayan balsam, Japanese knotweed, *Azolla* (water ferns), sycamore and cherry laurel. Pressures from public access and disturbance are similarly widespread, although varying in the specific type of impact to the qualifying features of the sites. For example, disturbance to bat colonies and sensitive cliff habitats is a particular issue for the Wye Valley Woodlands, whilst for Walmore Common and the Severn Estuary a key issue is disturbance to and displacement of their overwintering and migratory bird species. For riverine habitats, such as the River Wye, disturbance to species and habitats can result from recreational activities such as canoeing and angling. Habitat fragmentation is also an identified pressure for certain sites, such as the West Midlands Mosses, where the lack of habitat connectivity can hinder re-colonisation and affect species diversity.

There are also long term national threats to habitats and especially species, including climate change and alterations in hydrological and coastal processes.

2.3 European sites and their management

As part of a new strategic approach to managing all England's European sites, new measures needed to achieve favourable conservation status for all European sites in England have been developed by Natural England. These are collectively referred to as Site Improvement Plans (SIPs), and are being developed by the Improvement Programme for England's Natura 2000 sites (IPENS). SIPs were published for all European sites in England in 2015⁴.

In relation to the European sites within the Severn RBD, Site Improvement Plans (SIPs) developed by Natural England, in conjunction with Natural Resources Wales for sites that cross the border, include measures and actions for which flood risk management is identified as the mechanism for their delivery (see section 4.2 for further detail). The SIPs for all European sites in England were published in or before July 2015. For every European site in Wales (apart from cross-border sites) Natural Resources Wales are leading on the development of Prioritised Improvement Plan (PIPs).

The Severn FRMP recognises SIPs include actions where flood risk management is specifically a mechanism for their delivery. The following are the SIPs and PIPs for Severn RBD that include actions associated with flood risk management:

- River Clun
- River Wye
- Severn Estuary
- River Usk (PIP)

⁴ Site Improvement Plans for the Severn River Basin District can be found on: <http://publications.naturalengland.org.uk/category/6287197783195648>

3 Approach to the HRA

The steps undertaken to complete the HRA are as follows:

- describe the plan and the measures proposed
- screen and assess the likely significance of any effects on European Sites
- consider need for further stages of assessment (i.e. appropriate assessment, alternative solutions and IROPI)
- determine a plan level conclusion

3.1 Description of the FRMP programmes of measures

The Severn RBD FRMP is a joint publication of several plans required under the Flood Risk Regulations that are the separate responsibilities of specific Risk Management Authorities (RMAs), as follows:

- Severn River Basin District catchments (Environment Agency and Natural Resources Wales)
- Bristol Flood Risk Area (LLFAs within the FRA)

The Severn RBD is cross-border with areas in England and Wales. For those areas of the RBD in Wales Natural Resources Wales has taken the lead on the HRA, whilst for areas in England the Environment Agency has taken the lead on the assessment.

The approach to the HRA adopted by the EA and Natural Resources Wales has had to reflect the different ways the responsible authorities are seeking to deliver against their FRMP objectives for this first cycle of the plans.

In England, measures to meet FRMP objectives are taken from second generation SMPs, incomplete actions from the CFMPs, where still relevant, and from existing flood risk management strategies (that may vary SMP policies in some cases). This first plan also includes a number of new measures at the community level.

Natural Resources Wales has taken a risk based community approach to prioritise where best to direct investment and deliver measures to meet FRMP objectives. This is informed by the strategic framework provided by the CFMPs and second generation SMPs. The risk based community approach is implemented through Natural Resources Wales's Communities at Risk Register. This tool provides an indication of where the most vulnerable communities at risk of flooding from main rivers and the sea are located across Wales. This is then used to plan and prioritise investment, targeted at the most at risk communities.

Throughout the HRA process the Environment Agency and Natural Resources Wales have worked closely to ensure the respective approaches take account of cross-border areas and European sites.

3.1.1 River Basin District Catchments

FRMPs for the River Basin District (RBD) are being published by the Environment Agency (for English catchments) and Natural Resources Wales (for Welsh catchments), and jointly in the case of cross-border RBDs, and are focused on measures principally to address flood sources from main river, the sea and reservoirs. The measures have been aligned to

catchments based on the River Basin Management Plans (where they are called 'management catchments'). In the case of those areas of the Severn RBD within Wales, Natural Resources Wales has further prioritised its programme of measures according to communities identified at most risk of flooding.

Production of the FRMPs for the RBDs are the legal duty of the Environment Agency and Natural Resources Wales. Where any voluntary information on local sources of flooding within RBD catchments has been provided by LLFAs, these are published by joint agreement in the RBD FRMP. The Environment Agency and Natural Resources Wales are also the competent authority under the Habitats Regulations for the RBD FRMPs.

3.1.2 Flood Risk Areas

FRMPs for Flood Risk Areas (FRAs) are being published by the Lead Local Flood Authorities (LLFAs) where the FRAs lie within their administrative boundaries. Production of the FRMPs for the FRAs are the legal duty of the respective LLFAs. The LLFAs responsible for the FRA FRMPs are also the competent authority under the Habitats Regulations.

The Severn RBD includes more than one FRA. The assessment of the Bristol FRA FRMP is included in this document. The remaining six FRAs are located in Wales, where the LLFAs have made a commitment to produce separate FRMPs (and HRAs, where required). These FRMPs are being prepared to the same timescales as the Severn FRMP. These are being considered by Natural Resources Wales under their statutory duties when submitted.

The Severn RBD contains seven FRAs:

- Bristol (Avon Bristol and North Somerset Streams Management Catchment)
- Blaenau Gwent
- Cardiff
- Caerphilly
- Rhondda Cynon Taff
- Merthyr Tydfil
- Torfaen

While a small proportion of the West Midlands FRA overlaps the Severn RBD, it is predominantly located in the Humber RBD and is therefore addressed in the HRA for that RBD. The Bristol FRA is covered in a discrete separate HRA section (section 6) within this report.

3.1.3 Applying HRA

In applying the HRA process, each RMA plan was assessed separately. A final summary of conclusions and recommendations for future HRAs is provided that also draws on a high-level summary of the potential for in-combination effects of the FRMP with other key plans.

3.2 Screening and Likely Significant Effects

This first step of the HRA process requires consideration of screening and likely significant effects of measures on European Sites. As indicated above the detailed approach to the HRA by the Environment Agency and Natural Resources Wales has been adapted to reflect the different ways the responsible authorities are seeking to deliver against their FRMP

objectives. The tasks undertaken to complete this are as follows and set out in more detail below:

- in England, screening out catchments where no European Sites are present and in Wales screening out communities at risk where no pathways to European Sites are identified
- screening out measures that would not have physical effects
- considering measures from existing plans, with mitigation / controls already agreed in HRAs for any likely significant effects, or in some cases potential adverse effect on site integrity
- considering new measures and their likely significant effects, with mitigation / controls where considered necessary
- conclusion from screening and likely significant effects (Step 1)

The results of these tasks for each RMA's plan of the FRMP are provided in the following chapters:

- Chapter 4: The Severn River Basin District catchments
 - England (4.1)
 - Wales (4.5)
- Chapter 5: Bristol Flood Risk Area

3.3 Approach to the HRA in England

3.3.1 Screening out catchments where no European Sites are present

Where there are no European sites present in a catchment, it was determined that no further consideration of measures in the catchment is required. Given the level of detail in the plan where the FRMP measures are mainly strategic in nature and are not specific on their precise location, there is insufficient details to consider downstream or down drift effects beyond the catchment. However, such screening for cross-catchment effects will be a requirement in assessing local plans and projects.

3.3.2 Screening out measures that would not have physical effects

Every measure included within the FRMP is categorised according to one of the following 4 categories, accompanied by an M-code:

- **Prevention (M2)** - reducing the impacts of flooding through land use and development policy, relocation of assets at risk, or measures to divert the hazard to avoid harm.
- **Protection (M3)** - protecting people from the risk of flooding; for example, by the maintenance, refurbishment of existing defences or building new defences.
- **Preparedness (M4)** - by taking actions that prepare people for flooding; for example, by improving awareness of flood risk, or by providing warning and forecasting for floods.

- **Recovery and review (M5)** - supporting recovery after flooding has happened and reviewing how things can be improved; for example, by improving the availability of recovery services such as providing temporary accommodation.
- **Other (M6)** – measures not fitting in to any of the above categories.

Further definitions of each of the measures are set out in the FRMP according to a second tier of M-codes. For example, Prevention (M2) includes the second tier measure, M22, which is defined as “Prevention, removal or relocation measure to remove receptors from flood prone areas or to relocate receptors to areas of lower risk”. These measure definitions have been used as the basis for the initial screening out of the measures that require no further consideration within the HRA.

The measure codes and their definitions are included as Table A1 (in Annex A to this document). Measures under ‘Preparedness’ (M4) and ‘Recovery and review’ (M5) will not result in development, demolition or changes of management ‘on the ground’ that could result in affects on European Sites. These were therefore screened out from any further consideration. Similarly, under the ‘Prevention’ category (M2), only the removal or relocation of receptors from flood prone areas could potentially affect European sites. The measures that have been screened in to the assessment are set out below and have been highlighted in Table A1:

- M3 – Protection – all sub-categories

And in England, on a precautionary basis:

- M22 – Prevention – removal or relocation (category)
- M6 – Other – not yet defined.

3.3.3 Considering measures from existing plans

Risk Management Authorities have a range of plans in place for developing and implementing measures related to flooding from main river (in Catchment Flood Management Plans) and related to flooding from the sea (in Shoreline Management Plans) and related to local sources of flooding (e.g. in Local Flood Risk Management Strategies). These plans have been subject to HRA where relevant, and have reported on the effects on European sites consistent with the level of detail of the plans.

For this HRA, these existing HRAs have been used to summarise the effects of measures from existing plans that are now set out under specific RBD catchments or FRAs. For many RBD catchments and FRAs there are multiple existing plans covering the geographic area but also some existing plans that are split across RBD catchments or FRAs. Nonetheless the ‘screened in’ measures from individual existing plans were separated out and the HRA results that apply to them referenced.

The results from existing HRAs have considered the extent that they remain valid since they were published. This has been done by checking the status of the relevant European sites that were considered within the source plan’s HRA for any changes to site designations since the date of the HRA publication. The criteria were agreed with Natural England and comprised: whether there were any new / additional site designations, any changes in site boundaries, changes in designated site features, or any significant changes in site conditions.

The HRA results from Shoreline Management Plans are relatively recent with most published between 2010 and 2011. The HRA results from Catchment Flood Management Plans are a little older with most published between 2008 and 2010. The HRA results from Local Flood Risk Management Strategies are the most recent with the first ones being published around 2012 and most being published much more recently.

One of the main reasons for a likely change from when the effects of plan measures were reported in HRAs is where there have been boundary changes to European sites or to the scope of condition of the interest features of the sites i.e. specific habitats, species etc. Where advised that such changes have occurred and are significant then this has triggered further consideration of the validity of the existing HRA results that were relied upon.

3.3.4 Considering new measures for FRMP cycle 1

In reviewing the range of measure across existing plans covering all sources of flooding, Risk Management Authorities (RMAs) have taken the opportunity to put forward further strategic developments for the next 6 year cycle of the FRMP. These 'new measures' focus on: strengthening the joint working of RMAs across all flood sources; developing more integrated management of the water environment as set out in the River Basin Management Plans and other related plans; and updating flood risk information to help manage risks with communities.

For this HRA the set of new measures that have been 'screened in' for each catchment has been reviewed. As they are mostly 'strategic' measures without specific information on location or the form of action that would be developed on the ground, a range of factors that could give rise to any likely risks from this set of measures in a specific catchment were considered. These included:

- their general proximity in the catchment to European sites
- whether they aim to address sources of flooding that are local, or main river or related to the coast
- the mix of types of new measures within the catchment denoted by their M-codes (i.e. whether they are mainly maintenance, or channel works, or new solutions)

General proximity was considered by narrowing down the set of measures within a catchment to those that were closer in general and more likely to be connected to European sites by the hydrology of the catchment rather than applying specific buffer distances to individual measures.

3.3.5 Considering the need for further stages of assessment

HRA steps were carried out for each RBD catchment of the RBD plan that is the responsibility of the Environment Agency. Further HRA steps were carried out for each FRA (by catchment) that is the responsibility of respective Lead Local Flood Authorities. The determination for each catchment or FRA that there are no likely significant effects to European sites, is based on the following assumptions:

- that this HRA does not remove the need for HRA at a subsequent level, i.e. lower tier strategies, plans or projects that implement measures, nor does it give any weight to their outcomes. Consideration of potential impacts and options available to mitigate

for those impacts should assist, but not influence or constrain any lower-tier assessments.

- that as local actions are developed at a project level and the details of their scope and scale are known, that this may identify additional effects on European Sites that have not been assessed here, or were not appropriate to consider at this spatial scale of plan.

3.4 Approach to the HRA in Wales

3.4.1 Measures assigned nationally in Wales

The Floods Directive identifies that FRMPs and RBMPs are elements of integrated river basin management and that “the two processes should therefore use the mutual potential for common synergies and benefits, having regard to the environmental objectives of Directive 2000/60/EC, ensuring efficiency and wise use of resources”.

In support of this principle, Natural Resources Wales have proposed Flood Risk Management National Measures for the RBMPs & FRMPs:

- Identify opportunities to improve the water environment through existing programmes of work and scheme designs for Flood Risk Management.
- Natural Resources Wales will seek opportunities and influence others to utilise natural flood risk management measures where appropriate.
- Implement managed realignment and intertidal habitat creation through the National Habitat Creation Programme (NHCP).
- In water bodies designated as heavily modified due to flood and coastal protection, mitigation for Natural Resources Wales owned assets and activities will be reviewed and delivered on a prioritised basis.
- Contribute to the achievement of the WFD objective and favourable conservation status at priority Water Level Management sites.
- Contribute to research and development to identify best practice for managing hydromorphological pressures in the water environment.

These national measures are a commitment by Natural Resources Wales to ensure that operational flood risk management work is delivering, where possible, benefits for the water environment. These national measures will influence the proposed measures for each of the communities at risk and so have been taken into account, where appropriate, in the Test of Likely Significant Effect.

3.4.2 Measures assigned locally to communities at risk in Wales

Consistent with the approach in England, the FRMP in Wales consists of existing and new measures in four general areas: Prevention, Protection, Preparedness and Recovery & Review. The existing measures have been previously consulted on and have approved HRAs associated with them. These are the policies and actions set out in the second generation SMPs and CFMPs.

The new measures in the FRMP are focussed on the communities at greatest flood risk in Wales. The HRA does not revisit the SMP2 or CFMP HRA conclusions as these are still live

and accepted documents. It will however, consider whether the proposed measures are in line with the policies set out within those plans.

Consistent with the approach in England, the HRA focuses on the statutory flood risk management measures that set the framework for development consent, or make a decision about a particular option for managing flood risk on the ground, and are generally categorised as 'Protection' measures. Prevention measures and Preparedness measures have been scoped out. It is not possible to assess Recovery measures, as the location of them or type of activity is not known until flooding takes place. There are no specific Recovery and review measures included with the Wales part of the FRMP and therefore they have been scoped out of this HRA. Project level HRA would occur in accordance with Natural Resources Wales best practice.

3.4.3 Identifying relevant European sites in Wales

For each Community with a protection measure screened in a buffer was applied at 20km to ensure the HRA captured cross boundary sites, potential cumulative effects and also mobile species. This mapping exercise provided a list of European sites to be included within the HRA. In total 44 sites were identified (see Site Screening Table, Annex C).

It should be noted that although a 20km buffer was applied in most cases, there was no maximum buffer applied when sites are designated for fish. If a site was designated for fish, it was included in the list if it was up or downstream by any distance.

The HRA process was taken forward with all 44 European sites identified above. To ensure the HRA is focussed on the sites that are likely to be affected by the plan, a European site filtering exercise was then undertaken. This was carried out in a systematic manner to take into account sites directly affected by protection measures, but also to include consideration of sites with mobile interest features such as fish, birds, otters, bats and butterflies and damselflies as features.

The screening process undertaken is illustrated in Figure 3 and described below.

All of the 44 European sites identified as relevant to the HRA (Site Screening Table, Annex B) were considered during the European site screening stage (all sites within a 20km buffer of a Protection measure, or up or downstream of a fish site). As shown in the flow chart, the European site screening then considered each of the Communities at Risk where Protection measures are proposed and screened into the Test of Likely Significant Effect stage any sites that met the following criteria:

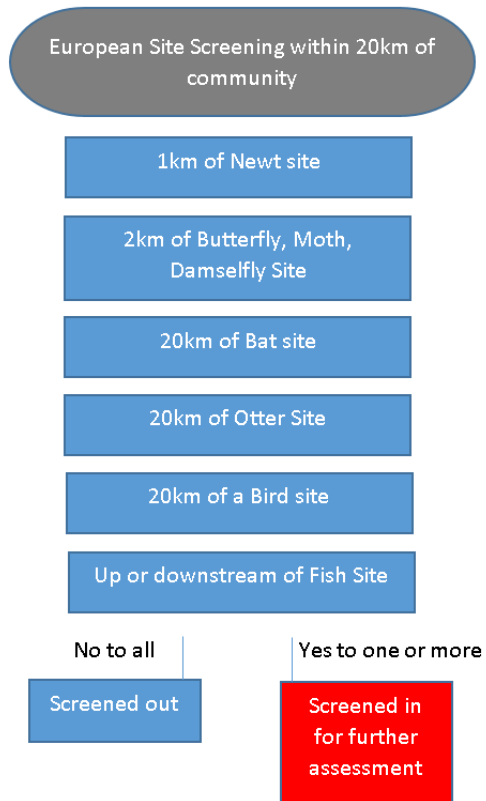
D – Direct: Any European site within or adjacent to a Community at Risk

M - Mobile species:

- Any site with bats, birds or otters as a feature within 20km of a community at risk.
- Any sites with Damselfly or Butterfly as a feature (but no other mobile species) were screened in if within 2km of a community at risk.
- Any sites with Great Crested Newt as a feature (but no other mobile species) were screened in if within 1km of a community at risk.

F – Fish: Any European Site that lists fish as a feature any distance upstream or downstream of a Community at risk.

Figure 3: Flow chart of European site screening process



The distances outlined above are in line with CCW legacy guidance on assessment of mobile species. Given the mobility of birds there could be a case for screening in all SPA and Ramsar sites. However, when considering the scale and nature of the protection measures, the potential impacts are likely to be localised and dependent upon further project level assessment. All SPAs were screened in for mobile species for birds if within 20km of a Protection Measure and all Ramsar sites within 20km if birds are listed as a qualifying feature.

4 Severn River Basin District Catchments HRA

This chapter sets out the results of carrying out the HRA on the measures for the Severn RBD catchments that are for flooding from main river, sea and reservoirs and for local flooding sources outside of Flood Risk Areas. This is the FRMP information for which the Environment Agency and Natural Resources Wales is the FRMP ‘statutory authority’ and HRA ‘competent authority’. The Flood Risk Area FRMP information for which other RMA’s have responsibility has been considered separately in later chapters of the HRA.

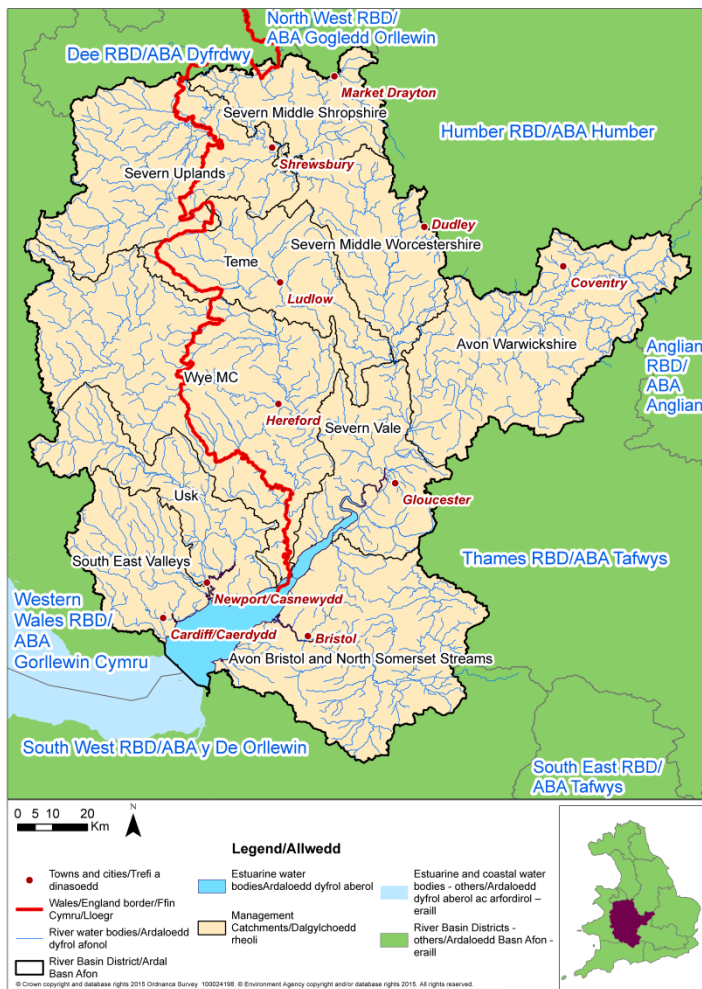
This section covers the following stages of the assessment:

- summary of measures being assessed
- screening and assessment of likely significant effects
- consideration of results and conclusion

4.1 Summary of Measures for England

The initial screening and assessment of likely significant effects reviewed the measures for each of the 8 management catchments within the Severn draft FRMP (The Usk and South East Valleys management catchments are only covered in the part of the assessment that addresses measures in Wales).

Figure 4 - Map of the Severn river basin district and management catchments



A summary of the measures and their screening is given below for each catchment for England. Section 4.2 contains an overarching summary for Wales.

Three of the catchments within the Severn RBD are cross-border: Teme, Wye, Severn Uplands. Given the small extent of the cross-border area within the Teme management catchment and the absence of any measures from the Environment Agency and Natural Resources Wales in this area, for the purposes of the FRMP the catchment is treated as entirely falling within England.

Table 2: Summary of measures by catchment for England

Management Catchment	No of measures screened in (out)	No of measures from existing plans ¹	No of measures related to types of existing plans ¹	No of new measures for cycle one ¹	No of new measures and known level of detail ¹	No of European Sites
Catchments with no screened in measures						
All catchments have some screened in measures.						
Catchments with all measures from existing plans						
Severn Middle Shropshire	1 (6)	1	1 from CFMPs 0 from LLFA plans	0	no new measures	5
Sub-total	1 (6)	1	1 from CFMPs	0		
<i>% all measures</i>	<i><1%</i>	<i><1%</i>		<i>(n/a)</i>		
Catchments with new measures for cycle 1 of the FRMP						
Severn RBD Wide and England only catchments	10 (18)	0		10	0 not in proximity 10 strategic/proximity unknown 0 specific/in proximity	n/a
Avon Bristol and North Somerset Streams	95 (85)	68	6 from CFMPs 33 from SMPs/other EA plans 29 from LLFA plans	27	10 not in proximity 8 strategic/proximity unknown 9 specific/in proximity	11
Avon Warwickshire	36 (87)	17	4 from CFMPs 0 from SMPs/other EA plans 13 from LLFA plans	19	11 not in proximity 8 strategic/proximity unknown 0 specific/in proximity	2
Severn Middle Worcestershire	8 (39)	6	4 from CFMPs 1 from SMPs/other EA plans 1 from LLFA plans	2	2 not in proximity 0 strategic/proximity unknown 0 specific/in proximity	3
Severn Vale	36 (41)	29	13 from CFMPs 16 from SMPs/other EA plans	7	1 not in proximity 1 strategic/proximity unknown 5 specific/in proximity	8
Wye (England)	7 (6)	3	3 from CFMPs	4	2 not in proximity 1 strategic/proximity unknown 1 specific/in proximity	6
Teme	6 (6)	3	3 from CFMPs	3	2 not in proximity 1 strategic/proximity unknown 0 specific/in proximity	3

Severn Uplands (England)	4 (8)	4	2 from CFMPs 2 from SMPs/EA other plans	0	0 not in proximity 0 strategic/proximity unknown 0 specific/in proximity	3
Sub-total	202 (290)	130	35 from CFMPs 52 from SMPs/other EA plans 43 from LLFA plans	72	28 not in proximity 29 strategic/proximity unknown 15 specific/in proximity	
<i>% all measures²</i>	40%	26%		14%	28 (5%) 29 (6%) 15 (3%)	
Overall Total	203 (295)	131	36 from CFMPs 52 from SMPs/other EA plans 43 from LLFA plans	72	see above	
<i>% all measures²</i>	41%	26%	36 (7%) 52 (10%) 43 (9%)	14%	see above	

¹ - all numbers are of 'screened in' measures

² - all %s are of total of all 'screened in and out' measures

'in proximity' means being generally in the same part of the catchment (specific distances are not applied)

'specific' is where a measure is more place specific, 'strategic' is where it is catchment or RBD-wide

³ Measures across several catchments are counted up for each catchment for HRA purposes which may be a different figure than reported in the FRMP.

Of the total of 498 measures 41% have been screened in for HRA consideration (59% screened out).

There are 28 measures that are RBD-wide or England only catchment wide and are considered in sections 4.3.4.1. and 4.3.4.2.

There are a number of measures from neighbouring river basin districts that are included in Severn RBD catchments including measures from the Humber RBD (under the Severn Middle Worcestershire section 4.3.4.6) and from the Anglian RBD (under the Avon Warwickshire section 4.3.4.8).

4.1.1 Risks from existing plan measures

26% of measures are screened in and from existing plans of which 7% are from CFMPs and 10% from SMPs/EA other plans and 9% from LLFA plans. Most risks are from SMPs/other EA plans measures where adverse effects identified in HRAs for specific policy areas are being addressed.

Most risks to European sites that are being addressed by existing plans relate to the 10% measures in SMPs/other EA plans and more specifically where the SMPs and other plans such as the emerging Severn Estuary Flood risk Management Strategy is managing likely adverse effects in the Severn Vale and Avon, Bristol and North Somerset Streams catchments.

4.1.2 Risks from new measures

14% of measures are screened in and new of which 6% are strategic, 5% are not in proximity to any European sites and 3% are more specific improvements that are in closer proximity to sites.

The most likely risks will be related to the development of local actions for the specific improvements in the next FRMP cycle and can be found in the Wye, Severn Vale and Bristol Avon and North Somerset Streams catchments. The future strategic measures may also present a risk depending on where they are implemented.

4.2 Summary of measures for Wales

In summary, the Habitats Regulations Assessment for the Communities at Risk within Wales concludes that:

1. Of the 44 European sites within or linked to the Severn RBD, 27 of the sites were shown not to have any pathway for effects directly or indirectly from the FRMP measures and were not considered in the test of likely significant effect.
2. Three of the communities at risk were screened out of the assessment as they were identified as being over 20km from the nearest European site with no pathways for effects to occur.
3. Of the 17 European sites screened in to the test of likely significant effect, it was concluded that FRMP measures would have no likely significant effect on 7 of the sites.
4. In the remaining 10 European sites the FRMP measures contain insufficient detail to ascertain significant effects and consequently the assessment for these measures have been deferred to lower tier plans or projects. Environmental Assessment and HRA will be undertaken of these lower tier plans or projects.

It is therefore concluded that the FRMP is not likely to have a significant effect on European protected sites and an Appropriate Assessment is not required subject to HRAs being carried out at the project level as set out above.

4.3 Screening and Likely Significant Effects (England)

The management catchments that make up the Severn RBD FRMP are set out in table 3 below. The colour coding in the table summarises the nature and source of the bundle of measures, which forms the basis for how each management catchment has been assessed. The following sub-sections consider each of the management catchments in turn.

Table 3: Management Catchments of the Severn RBD /FRMP

	Management Catchment Category	Management Catchments
	Management catchments with no European sites present.	None
	Management catchments with no 'screened in' measures.	None
	Management catchments with all measures from existing plans.	<ul style="list-style-type: none"> • Shropshire Middle Severn
	Management catchments with new measures.	<ul style="list-style-type: none"> • Severn Uplands (cross border) • Teme • Severn Vale • Wye (cross border) • Worcestershire Middle Severn • Warwickshire Avon • Bristol Avon & North Somerset Streams
	Management catchments entirely within Wales	<ul style="list-style-type: none"> • Usk • South East Valleys

4.3.1 Management catchments with no European sites present

All management catchments within the Severn RBD have European sites present, therefore no management catchments have been ruled out of further consideration on this basis.

4.3.2 Management Catchments with no 'screened in' measures

All management catchments within the Severn RBD have screened in measures, therefore no management catchments have been ruled out of further consideration on this basis.

4.3.3 Management Catchments with all measures from existing plans

The following management catchment in the Severn draft FRMP does not contain any FRMP new measures and contains only measures from existing plans.

Each of these plans has already been subject to consultation and assessment, including HRA. The HRA conclusions for those source plans have been referred to in each case.

4.3.3.1 Shropshire Middle Severn

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
5	0	0	1	6

The Shropshire Middle Severn management catchment contains 5 European sites comprising 3 SACs and 2 Ramsar sites⁵. The sites are mainly located to the north and east of the management catchment and typically comprise discrete sites associated with the area's characteristic meres and mosses.

There are no new measures within this catchment with all 7 measures derived from existing plans.

River Severn CFMP

The single screened in measure is from, the River Severn CFMP⁶, and relates to channel, coastal and floodplain works (M33). The CFMP protection measure included within the Shropshire Middle Severn management catchment implements the policies of the CFMP, which were assessed by the River Severn CFMP HRA⁷.

The River Severn CFMP HRA assessed potential effects on the European sites within the management catchment and concluded that the policies and actions within the CFMP were not likely to have a significant effect on three sites (Brown Moss SAC; West Midlands Mosses SAC; Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC). For the remaining

⁵ Midland Meres & Mosses - Phase 1 and Phase 2 Ramsar sites; Brown Moss SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, West Midlands Mosses SAC

⁶ The River Severn CFMP also incorporates the Seven Uplands, Teme, Worcestershire Middle Severn and Warwickshire Avon management catchments.

⁷ River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

sites with the management catchment, **the HRA concluded that the policies and actions within the CFMP will not have an adverse effect on their integrity.**

Proposed Mitigation: The HRA for the Severn CFMP states that avoidance measures have been considered and discussed with both Natural England and Countryside Council for Wales. The mitigation measures have been incorporated into the CFMP action plan to ensure that the plan has no adverse effect on the integrity of European sites. The results of the assessment and avoidance measures are summarised in the River Severn CFMP Environmental Report and Habitats Regulation Assessment.

Severn Trent Water Asset Management Plan

Six measures are drawn from the Severn Trent Water Asset Management Plan. All the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44).

4.3.4 Management Catchments with New Measures

4.3.4.1 Severn River Basin District

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
See Figure 2	7	16	0	1

The Severn FRMP includes 24 measures that apply to all management catchments across the Severn RBD (including Wales). Nearly all of these are new measures as part of the FRMP with only one measure derived from an existing plan.

New measures

A total of 23 new measures are from the Environment Agency and NRW, of which 16 are screened out of further consideration as they relate to: preparedness for flood events (M41, M42, M43, M44); flood risk prevention (M21, M23, M24); and recovery and review after flooding (M53).

Seven new measures relate to flood risk protection (M3) and are screened in for further consideration. These measures comprise 3 measures relating to natural flood management / runoff and catchment management; 2 measures covering channel, coastal and floodplain works (M33); 1 measure relating to water flow regulation (M32); and a further measure relating to other protection (M35) respectively.

At the scale of the RBD these measures do not specify particular locations and refer to general opportunities, such as working with Natural England, Natural Resources Wales and other partners to identify opportunities for floodplain restoration, encouraging best farming practices to reduce rapid surface water run-off and soil erosion and identifying where working with natural processes can help improve resilience to climate change. Other measures also refer in general terms to: the regulation of high risk reservoirs; the review of System Asset Management Plans with regard to the routine maintenance of existing assets;

securing funding and delivering emergency works where needed; and incorporating climate change allowances into flood risk management works.

Given the RBD wide context for these measures they are framed in general terms. The FRMP does not constrain how or where measures are implemented. When the measures are instigated, however, they will be subject to project level control through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A3, Annex A). Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites**. This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

Existing plan measures – River Severn CFMP

One measure is derived from the River Severn CFMP and relates to flood risk prevention (M21) and is hence screened out of further assessment.

4.3.4.2 England only management catchment wide measures

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
See Figure 1	3	1	0	0

Four new measures are from the Environment Agency and apply to all management catchments within England. One measure is screened out as it relates to flood risk prevention (M24). The three remaining measures relate to flood risk protection (M3) or 'other' (M6) and are hence screened in for further consideration. The catchment wide measures relate to:

- Natural flood management / runoff and catchment management (M31) and refers to investigating the benefits of planting wet woodlands to take forward the Woodlands for Water project
- Channel, coastal and floodplain works (M33) and undertaking a maintenance programme to replace/refurbish flood risk management assets when needed to reduce flood risk
- Partnership working across all RMAs, including water companies, to encourage the identification of opportunities to deliver measures in support of flood protection, prevention and resilience, including land and catchment management initiatives (M61).

At this scale the measures do not specify particular locations and refer to general opportunities and needs as they arise as informed by further investigation. The FRMP does not constrain how or where measures are implemented. When the measures are further developed, however, they will be subject to project level controls through the relevant consenting process and the associated requirement for the consideration of project level HRA (see Table A3, Annex A). Given the avoidance and mitigation options available to

ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites**. This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

4.3.4.3 Severn Uplands (England)

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
3	0	2	4	6

The Severn Uplands management catchment is cross-border with the area in England containing 3 European sites, comprising 1 SAC and 2 Ramsar sites⁸. (See section 4.5 for the coverage of this area in Wales). The upland area of The Stiperstones & The Hollies SAC extends across the southern border of the management catchment. The complex of discrete sites comprising the Midland Meres and Mosses (Phase 1 and Phase 2) Ramsar sites are distributed mainly to the east of the management catchment, although with outlying sites to the north near Morton and to the south near Marton.

In total there are 12 measures for the Severn Uplands management catchment. Of these, 2 are new measures as part of the FRMP and 10 measures are derived from existing plans.

New measures

Two new measures from the Environment Agency are screened out of further assessment as they relate to flood risk prevention (M23) and to public awareness and preparedness for flood events (M43).

Existing plan measures – River Severn CFMP

Two protection measures (M3) are screened in to the assessment from the River Severn CFMP and relate to channel, coastal and floodplain works (M33) and other protection (M35). These measures, in general terms, involve the review of the role of raised defences and reviewing maintenance operations, including opportunities for reducing their intensity.

The Severn Uplands management catchment is within the River Severn CFMP⁹. The protection measures included within the Severn Uplands management catchment implement the policies of the CFMP, which were assessed by the River Severn CFMP HRA¹⁰.

The River Severn CFMP HRA assessed potential effects on the 3 European sites with the management catchment and concluded that the policies and actions within the CFMP were not likely to have a significant effect on one site (The Stiperstones & The Hollies SAC). For the remaining two sites within the management catchment, **the HRA concluded that the policies and actions within the CFMP will not have an adverse effect on their integrity**.

⁸ Midland Meres & Mosses - Phase 1 and Phase 2 Ramsar sites; The Stiperstones & The Hollies SAC

⁹ The River Severn CFMP also incorporates the Shropshire Middle Severn, Teme, Worcestershire Middle Severn and Warwickshire Avon management catchments.

¹⁰ River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

Proposed Mitigation: The HRA for the River Severn CFMP states that avoidance measures have been considered and discussed with both Natural England and Countryside Council for Wales. The mitigation measures have been incorporated into the CFMP action plan to ensure that the plan has no adverse effect on the integrity of European sites. The results of the assessment and avoidance measures are summarised in the River Severn CFMP Environmental Report and Habitats Regulation Assessment.

Existing measures – Fluvial Severn Flood Risk Management Strategy (2006)

Two protection measures are screened in to the assessment from the Fluvial Severn FRMS and relate to other protection (M35). The measures generally involve the continuation of existing regimes for maintenance, flood warning and defence at various general locations (Milverley, Hayes, Red Abbey, Shrawardine and Montford) in a cluster to the north west of Shrewsbury.

There is no existing HRA available for the Fluvial Severn FRMS. However, the measures are not in close proximity to the European sites within the England part of the catchment, all of which are either upland areas or discrete sites associated with the area’s meres and mosses. The nearest European site to Milverley, Hayes, Red Abbey, Shrawardine and Montford is the Montgomery Canal SAC which is located in Wales and over 7km to the west at its nearest point to the this cluster of locations. Similarly, to the east the nearest European site includes the Midland Meres & Mosses Phase 2 Ramsar site, which is a discrete site located over 7km to the north east, with one of the complex of sites under the Midland Meres & Mosses Phase 1 Ramsar site located over 9km to the south east. Given these distances, **the measures from the Fluvial Severn Strategy are not likely to lead to significant effect on the European sites.**

Existing plan measures – Severn Trent Water Asset Management Plan

Six measures are drawn from the Severn Trent Water Asset Management Plan. All the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44).

4.3.4.4 Teme

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
3	3	0	3	6

The 3 European sites within the Teme management catchment are all SACs and comprise: the River Clun SAC; Downton Gorge SAC; and The Stiperstones & The Hollies SAC. The latter upland site is located to the north of the catchment and also extends to the adjacent Severn Uplands management catchment. The Downton Gorge SAC is located to the west of Ludlow on the River Teme. The River Clun SAC is located slightly further west of Ludlow between Leintwardine and Hopton Heath.

In total there are 12 measures for the Teme management catchment. Of these, 3 are new measures as part of the FRMP and 9 measures are from existing plans.

New measures

Three protection measures (M3) from the Environment Agency are screened in for further consideration. One measure relates to natural flood management (M31) and 2 measures relate to other protection (M35).

All of the new measures comprise investigations and appraisals with respect to:

- investigating opportunities for working with natural processes in the general area of the Shropshire Rivers (M31); and
- identifying potential flood risk management measures in the area of Tenbury Wells (River Teme) and Cleobury Mortimer (Pudding Brook) (M35).

The proposed M31 measure lacks detail with regards to the type of actions and the specific areas that will be affected. The FRMP does not constrain how or where measures are implemented and in this case the measure will involve further appraisal and investigation at the project level. The measure will also be subject to project level controls through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A3, Annex A). Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites**. This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

With respect to the two other protection measures (M35); Tenbury Wells (River Teme) is located to the south of management catchment and approximately 15km from nearest European site, whilst Cleobury Mortimer (Pudding Brook) is located at the eastern edge of catchment and over 20km from nearest SAC. Given these distances, **the measures are not likely to lead to significant effect on European sites**.

Existing plan measures – River Severn CFMP

Three protection measures (M3) are screened in to the assessment from the River Severn CFMP. These measures include 1 measure for channel, coastal and floodplain works (M33) and 2 measures for other protection (M35). These measures, in general terms, involve the ongoing reviewing the role of raised defences and the impacts of their possible removal/non-maintenance and reviewing maintenance operations, including opportunities for reducing their intensity.

The Teme management catchment is within the River Severn CFMP¹¹. The protection measures included within the Teme management catchment implement the policies of the CFMP, which were assessed by the River Severn CFMP HRA¹².

The River Severn CFMP HRA assessed potential effects on the three SACs sites with the management catchment and concluded that the policies and actions within the CFMP were

¹¹ The River Severn CFMP also incorporates the Shropshire Middle Severn, Severn Uplands, Worcestershire Middle Severn and Warwickshire Avon management catchments.

¹² River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

not likely to have a significant effect on two sites (The Stiperstones & The Hollies SAC; Downton Gorge SAC). For the remaining the site with the management catchment (River Clun SAC), **the HRA concluded that the policies and actions within the CFMP will not have an adverse effect on its integrity.**

Proposed Mitigation: The HRA for the River Severn CFMP states that avoidance measures have been considered and discussed with both Natural England and Countryside Council for Wales. The mitigation measures have been incorporated into the CFMP action plan to ensure that the plan has no adverse effect on the integrity of European sites. The results of the assessment and avoidance measures are summarised in the River Severn CFMP Environmental Report and Habitats Regulation Assessment. This includes the requirement that any change in existing practice/actions to manage flood risk would necessitate an appropriate assessment with consideration of impacts on the freshwater pearl mussel. It also commits to use of fish passes on any new or modified structure if work has the potential to obstruct the migration of salmonids.

Existing plan measures – Severn Trent Water Asset Management Plan

Six measures are drawn from the Severn Trent Water Asset Management Plan. All the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44).

4.3.4.5 Wye (England)

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
6	4	4	3	2

The Wye management catchment is cross-border with the area in England containing 6 European sites. (See section 4.5 for the coverage of this area in Wales).

The 6 European sites within the management catchment comprise the Wye Valley & Forest of Dean Bat Sites SAC, Wye Valley Woodlands SAC, River Wye SAC, and the Severn Estuary SAC/SPA/Ramsar site. The Wye Valley and Forest of Dean Bat Sites SAC is a complex of sites located towards the south of the management catchment in the general area of Cinderford and Lydney. The Wye Valley Woodlands SAC comprises a series of sites along the River Wye extending from Chepstow to near Ross-on-Wye. By contrast the River Wye SAC is an extensive linear designation extending throughout the length of the River Wye from its confluence with the Severn Estuary at Chepstow to its upper reaches south of Leominster (River Lugg) and the Welsh uplands at the western border of the catchment.

In total there are 13 measures for the Wye management catchment. Of these, there are 8 new measures as part of the FRMP and 5 measures are from existing plans.

New measures

The 8 new measures are from the Environment Agency and of these 4 are protection (M3) measures and hence screened in for further consideration. The remaining 4 measures have been screened out of further assessment as they relate to flood risk prevention (M23) and to public awareness and preparedness for flood events (M43).

One new protection measure relates to channel, coastal and floodplain works (M33) and refers to supporting the River Wye & Lugg SAC Restoration Plans. Given the scope of the measure, which will support the conservation objectives of the European site, it is not considered further in the assessment. This measure directly supports the delivery of the Wye SIP (199) with respect to Action 2a and the priority issue of physical modification.

Three of the new protection measures relate to other protection (M35) and involve investigations and appraisals of potential flood risk management measures at Ewyas Harold, Leominster, and Hampton Bishop. The 2 protection measures comprising investigations at Ewyas Harold and Leominster are some distance from the nearest European site. Ewyas Harold is located centrally in the catchment near Dulas Brook and over 19km upstream of the River Wye SAC. Leominster is located over 6km upstream of the River Wye SAC (on the River Lugg). Given these distances, **the measures are not likely to lead to significant effects on the European sites.**

The protection measure involving an appraisal of potential flood risk management measures in the area of Hampton Bishop is in closer proximity to a European site. The village of Hampton Bishop is located to the south east of Hereford and is situated near the confluence of the River Lugg and River Wye; at this point both watercourses are part of the River Wye SAC. The measure seeks to address flooding from main river and will be subject to further appraisal/investigation. The measure will also be subject to project level controls through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A3, Annex A). Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites.** This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

Existing plan measures – Wye and Usk CFMP

Five existing measures are derived from the Wye and Usk CFMP. Two of these measures are screened out of further assessment as they relate to public awareness and preparedness for flood events (M43) and avoidance measures (M21). The remaining 3 measures relate to other protection (M35) and refer to continuing existing levels of maintenance on the Lower Wye and to maintain existing levels of flood defence and drainage network maintenance within Hereford, Ross-on-Wye, Hay-on-Wye, Monmouth, Leominster and Pembridge where current flood defences exist.

The Wye management catchment is within the Wye and Usk CFMP. The CFMP also extends to the Usk management catchment (within Wales). The CFMP protection measures incorporated within the Wye management catchment, implement the policies of the CFMP, which were assessed by the Wye and Usk CFMP HRA¹³.

The Wye and Usk CFMP HRA assessed potential effects on all the sites within the England area of the management catchment. The appropriate assessment **concluded that the policies and actions within the CFMP will not have an adverse effect on their integrity.**

¹³ Wye and Usk CFMP, Appendix B (Environmental Report and Policy Appraisal Tables) (2009); Forms HR01 Assessment of Likely Significant Effects (2009) and HR02 Appropriate Assessment (2009)

Proposed mitigation: The avoidance measures identified in the appropriate assessment ensure that the CFMP policies can be implemented without an adverse effect on site integrity. The results of the assessment and avoidance measures are summarised in the Wye and Usk CFMP (Appendix B) and set out in detail in the Appropriate Assessment.

4.3.4.6 *Severn Middle Worcestershire*

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
3	2	33	6	6

The Severn Middle Worcestershire catchment contains 3 European sites, comprising one Ramsar site and two SACs¹⁴. The Midland Meres & Mosses (Phase 1) Ramsar site is located on the very northern boundary of management catchment. The Fens Pool SAC is located within the urban area of Dudley, whilst the Lyppard Grange Ponds SAC is located within the eastern suburbs of Worcester at the southern boundary of the catchment.

In total there are 47 measures for the catchment of which 35 are new measures as part of the FRMP with the rest drawn from existing plans.

New measures

Thirty two measures are from the Environment Agency, of which 31 are screened out of further assessment as they relate to public awareness and preparedness for flood events (M4) and flood risk prevention (M2). Only one Environment Agency proposed measure relates to channel, coastal and floodplain works (M33) and is screened in for further consideration.

The proposed measure comprises investigations and appraisals to identify potential flood risk management measures in the area of the Bromsgrove Tributaries and Spadesbourne and Battlefield Brooks. Bromsgrove is at eastern edge of the management catchment and a considerable distance from any European site (over 15km to the nearest SAC). In view of this distance and discrete hydrological characteristics of the two nearest SACs at Dudley and Worcester, **the measure is not likely to give rise to significant effect on European sites.**

Three new measures are from a LLFA (Dudley Metropolitan Borough Council) of which two are screened out of further assessment as they relate to flood prevention (M23) and recovery and review of flood events (M42). One flood risk protection measure (M3) is screened in and refers to Mushroom Green Dam (up stream of Mousesweet Brook) (River Stour waterbody) and the investigation options for the repair/replacement of the culvert. The nearest SAC to the general area of this measure is Fens Pool SAC. The site is over 2km to the north beyond the central urban area of Brierley Hill and associated with the Stourbridge Canal waterbody. Given this distance, the central urban location and the hydrologically distinct water bodies, **the measure is not likely to lead to significant effect on the European site.**

¹⁴ Midland Meres & Mosses - Phase 1 Ramsar site; Fens Pools SAC; Lyppard Grange Ponds SAC

Existing plan measures – River Severn CFMP

Four protection measures (M3) are screened in to the assessment from the River Severn CFMP. The measures include: 1 measure relating to channel, coastal and floodplain works (M33); and 3 measures relating to other protection (M35). These measures, in general terms, include determining the role of agricultural defences and maintaining existing defences and identifying opportunities for setting back defences in the general areas of Bromsgrove, Droitwich and Kidderminster; and maintaining conveyance.

The Worcestershire Middle Severn management catchment is within the River Severn CFMP¹⁵. The protection measure included within the Worcestershire Middle Severn management catchment implements the policies of the CFMP, which were assessed by the River Severn CFMP HRA¹⁶.

The River Severn CFMP HRA assessed potential effects on the European sites and concluded that the policies and actions within the CFMP were not likely to have significant effect on two sites (Fens Pools SAC and Lyppard Grange Ponds SAC). For the remaining the site within the management catchment (Midland Meres & Mosses (Phase 1) Ramsar site), **the HRA concluded that the policies and actions within the CFMP will not have an adverse effect on its integrity.**

Proposed Mitigation: The HRA for the River Severn CFMP states that avoidance measures have been considered and discussed with both Natural England and Countryside Council for Wales. The mitigation measures have been incorporated into the CFMP action plan to ensure that the plan has no adverse effect on the integrity of European sites. The results of the assessment and avoidance measures are summarised in the River Severn CFMP Environmental Report and Habitats Regulation Assessment.

Existing plan measures - Fluvial Severn Flood Risk Management Strategy (2006)

One protection measure (M3) is screened in from the Fluvial Severn FRMS and relates to other protection M35 and refers in general terms to continued channel maintenance and flood warning at various general locations (Shrewsbury, Monkmore, Ironbridge, Coalport, Hampton, Bridgnorth, Bewdley, Stourport-on-Severn, Holt Fleet, Bevere, Worcester).

There is no existing HRA for the Fluvial Severn FRMS. The majority of these locations are over 15km to the nearest European Site. Shrewsbury and Monkmoor are in closer proximity (approximately 4km) to the Midland Meres & Mosses (Phase 1) Ramsar site, whilst Worcester, Bevere and Holt Fleet are in closer proximity to the Lyppard Grange Ponds SAC. However, in both cases the European sites are discrete sites and not hydrological linked to the indicated locations and the main River Severn.

Given the general scope of the measure and the distances and the hydrological characteristics of the three European sites within the Worcestershire Middle Severn management catchment, **the measure is not likely to lead to significant effect on the European sites within the management catchment.**

¹⁵ The River Severn CFMP also incorporates the Shropshire Middle Severn, Severn Uplands, Teme and Warwickshire Avon management catchments.

¹⁶ River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

Existing plan measures - Staffordshire County Council Flood Risk Management Strategy

One protection measures (M35) is screened in from the Staffordshire County Council FRMS. The measure, however, relates to individual property protection at Kinver and is hence not considered further in the assessment given the scope of the measure.

Existing plan measures – Severn Trent Water Asset Management Plan

Six measures are drawn from the Severn Trent Water Asset Management Plan. All the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44).

4.3.4.7 Severn Vale

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
8	7	9	29	32

The Severn Vale management catchment contains 8 European sites. These comprise 4 SACs, 2 SPAs and 2 Ramsar sites¹⁷ all of which are in the southern half of the management catchment. The Severn Estuary SAC/SPA/Ramsar site extends along the River Severn to Frampton-on-Severn (to the south of Gloucester) in the southern part of the catchment. Walmore Common SPA/Ramsar site is a discrete site to the west of Gloucester, whilst Rodborough Common SAC is immediately to the south of Stroud. The Cotswolds Beechwoods SAC is a complex of sites towards the east of the management catchment in area north of Stroud and south west of Gloucester. The Wye Valley & Forest of Dean Bat Sites SAC is formed by a series of sites towards the west of the management catchment in the area north of Lydney and south of Mitcheldean.

In total there are 77 measures for the Severn Vale catchment, of which 16 are new measures as part of the FRMP and 61 measures are from existing plans.

New measures

There are 16 measures from the Environment Agency, of which 9 are screened out of further consideration as they relate to flood risk prevention (M23) and public awareness and preparedness for flood events (M43).

The 7 new protection measures (M3) comprise: 5 measures for channel, coastal and floodplain works (M33); 1 measure for surface water management; and 1 measure relating to other protection (M35).

Six of the proposed measures (M33, M35) comprise investigations and appraisals to identify potential flood risk management measures in the following areas in Gloucestershire: Alney Island (near Gloucester); Westbury-on-Severn; Severn Stoke; Upper Framilode; Minsterworth; and Hempstead and Rea (near Gloucester).

¹⁷ Severn Estuary SAC, SPA and Ramsar site; Walmore Common SPA and Ramsar site; Rodborough Common SAC; Cotswolds Beechwoods SAC; Wye Valley & Forest of Dean Bat Sites SAC.

Severn Stoke is in the north of the management catchment, to the east of Malvern Hills and over 10km to the nearest European site in the Avon Warwickshire management catchment. Given this distance, **the measure is not likely to give rise to significant effect on European sites.**

The other areas are located in the south of the management catchment and within the floodplain of the River Severn with all the proposed measures seeking to address flooding from main river. Alney Island is to the north Gloucester and over 8km from the nearest European site (Walmore Common SPA/Ramsar Site) and over 30km upstream from the Severn Estuary SAC/SPA/Ramsar site. Minsterworth and Hempsted and Rea are located to the south of Gloucester and approximately 4km from Walmore Common SPA/Ramsar site and a similar distance (30km) from the Severn Estuary SAC/SPA/Ramsar site. Westbury on Severn is in closer proximity (approximately 2km) to Walmore Common (SPA/Ramsar Site) and over 10km upstream from the Severn Estuary SAC/SPA/Ramsar site. Upper Framilode is the most southerly site and located 13km upstream of the Severn Estuary SAC/SPA/Ramsar site¹⁸. Most of these measures represent a further refinement of the preferred flood risk management response set out in the emerging Severn Estuary Coastal Erosion and Flood Risk Management Strategy (SEFRMS) (see below).

The final scope and content of the measures in these locations are not yet defined with all subject to further investigation and appraisal. It is hence difficult to predict potential impacts, particularly for the locations in closer proximity to the identified European sites in this general area. Depending on the nature, scale and types of solutions, there may be potential for effects on Walmore Common (SPA/Ramsar Site) and the Severn Estuary SAC/SPA/Ramsar site. All the measures need to be developed further through further investigations and appraisals and will be subject to project level controls through the relevant consenting process and the associated requirement for the consideration of project level HRA (see Table A3, Annex A). This will enable the projects to be designed to avoid or adequately mitigate for any adverse effects on European sites. Overall, given the distances and these controls, **the measures are not likely to lead to significant effect on European sites.**

The remaining proposed protection measure (M34) relates to promoting the use of Rural Sustainable Drainage Systems (RSuDs) in the Frome Catchment and Stroud Valleys as part of the Rural SuDS Pilot - River Frome Stroud Valleys. In this general area there are two European sites: Rodborough Common SAC and the Cotswolds Beechwoods SAC. The measure lacks detail with regards to the type of actions and the specific areas that will be affected. Given that the final scope and content of the measure has not yet been defined, the FRMP does not constrain how or where measures are implemented and the measure will be subject to project level controls through the relevant consenting process and the consideration of project level HRA (see Table A3, Annex A), **the measure is not likely to lead to a significant effect on European sites.**

Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the above strategic plan-level measures are screened as not likely to lead to significant effect on European sites.** This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

¹⁸ Nearest landward point approximately 3km.

Existing plan measures – River Severn CFMP

Seven measures are drawn from the Severn CFMP all of which relate to flood risk projection (M3) and are hence screened in for further assessment. The measures include: 2 measures for channel, coastal and floodplain works (M33); and 5 measures for ‘other’ protection (M35).

The northern part of the Severn Vale management catchment (north of Worcester) is within the River Severn CFMP, whilst the southern part of the management is within the Severn Tidal Tributaries CFMP. The CFMP protection measure included within the Severn Vale management catchment implements the policies of the CFMP, which were assessed by the River Severn CFMP HRA¹⁹.

Within the Severn Vale management catchment, there are no European sites north of Gloucester. The River Severn CFMP HRA, however, assessed potential effects on the Severn Estuary SAC/SPA/Ramsar site and **concluded that the policies and actions within the CFMP will not have an adverse effect on its integrity.**

Proposed Mitigation: The HRA for the River Severn CFMP states that avoidance measures have been considered and discussed with both Natural England and Countryside Council for Wales. The mitigation measures have been incorporated into the CFMP action plan to ensure that the plan has no adverse effect on the integrity of European sites. The results of the assessment and avoidance measures are summarised in the River Severn CFMP Environmental Report and Habitats Regulation Assessment.

Existing plan measures – Severn Tidal Tributaries CFMP

Nine measures are drawn from the Severn Tidal Tributaries CFMP of which 3 are screened out of further consideration as they relate to flood risk prevention (M21) and preparedness for flood events (M41). Of the remaining measures, 5 relate to flood risk protection (M3) and 1 is coded as ‘other’ (M6). These measures include: 3 measures for natural flood management / runoff and catchment management (M31); one measure for water flow regulation (M32); 1 measure for other protection; and one measure identified as other (M61) and referring to partnership working.

The Severn Tidal Tributaries CFMP protection measures, included within the Severn Vale management catchment, implement the policies of the CFMP, which were assessed by the Severn Tidal Tributaries HRA²⁰.

The CFMP HRA assessed potential effects on the European sites within the southern extent of the Severn Vale management catchment²¹ and concluded that the policies and actions within the Severn Tidal Tributaries CFMP **were not likely to have significant effect on any European sites.**

¹⁹ River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

²⁰ Severn Tidal Tributaries CFMP, Appendix B, Annex B (2009)

²¹ Severn Estuary SAC, SPA and Ramsar site; Walmore Common SPA and Ramsar site; Rodborough Common SAC; Cotswolds Beechwoods SAC; Wye Valley & Forest of Dean Bat Sites SAC.

Existing plan measures - Anchor Head to Lavernock Point SMP2 (Severn Estuary)

Six measures are derived from the Anchor Head to Lavernock Point SMP2 of which 4 are screened out as they relate to flood risk prevention (M23 and M21). The remaining measures relate to other protection (M35) and a general category (M61). The latter measure refers to ways of working in terms of seeking to ensure environmental Issues are taken into account in the design/construction of new defences on Severn Estuary. Similarly, the other screened in protection measure (M35) refers to ensuring that environmental Issues are taken into account in flood risk management measures.

Given that both measures relate to ways of working rather than potential flood risk management schemes, they are not considered further in the assessment.

Existing plan measures – Severn Estuary Flood Risk Management Strategy (SEFRMS)

A total of 26 measures are derived from the emerging SEFRMS. Just over half of these measures (14) are screened out of further assessment as they relate to flood risk prevention (M24) and preparedness for flood events (M44). The remaining measures all relate to flood risk protection (M3) and considered further below.

All the measures refer to other protection (M35) relate to maintaining and sustaining the standard of protection of existing defences along the Severn Estuary in the following areas: Minsterworth; Newnham & Westbury; Cleeve & Rodley; Awre; Quedgeley, Rea & Hempsted; Elmore Back; Weir Green; Epney/Fretherne; Slimbridge.

The emerging SEFRMS responds to the policies set out in the Severn Estuary Shoreline Management Plan Review (SMP2)²² and is intended to provide a framework for implementation of individual projects and schemes to manage coastal flooding and erosion risks over a period of 100 years. The SEFRMS covers a wider study area than the SMP2 extending from Lavernock Point (on Welsh side) to Gloucester Weirs at the upstream extent and to Hinkley Point (on English side) at the downstream extent. The SEFRMS identifies preferred flood risk management responses (measures) for a series of flood cells within the Severn Estuary. The HRA of the SEFRMS²³ draws on the previous HRA for the SMP2 and concluded that significant effects on the following European sites cannot be ruled out:

- Severn Estuary SAC/SPA/Ramsar site with respect to habitat loss/damage resulting from coastal squeeze and the footprint of defences;
- Severn Estuary SAC/SPA/Ramsar site and Somerset Levels and Moors SPA/Ramsar site (within the South West RBD) with respect to loss of supporting habitat resulting from coastal squeeze and the footprint of defences; and
- Severn Estuary SAC/SPA/Ramsar site and Somerset Levels and Moors SPA/Ramsar site with respect to loss estuary form or function resulting from loss of habitat/supporting habitat.

²² Consulted on 2009/10 and awaiting sign-off

²³ Severn Estuary Coastal Erosion and Flood Risk Management Strategy (SEFRMS) (2013)

A Statement of Case (SoC) for Imperative Reasons of Over-riding Public Interest (IROPI) and outline compensatory habitat proposals for the emerging SEFRMS is currently being developed for submission to the Defra Secretary of State and Welsh Minister for agreement.

Proposed mitigation: The emerging SEFRMS provides an overarching framework within which individual flood risk management projects will be further assessed in detail before implementation. This includes any requirement for Environmental Impact Assessment as well as any further requirement for HRA. HRAs will be undertaken for specific development proposals associated with this strategy in any case where they might affect a European site. HRAs of proposed projects may ultimately influence the implementation of specific policies on a site by site basis.

The emerging SEFRMS is accompanied by a Habitat Delivery Plan, which includes the identification of areas for compensatory habitat for offsetting losses of intertidal habitat due to coastal squeeze and for offsetting losses of designated habitats resulting from the construction of new or enlarged defences around the estuary. The Strategy has identified sufficient amounts of compensatory habitat can be created to offset the intertidal habitat losses that will occur as a direct result of the Strategy. Two habitat creation projects are complete: Stroat (including Alvington & Plusterwine) and Steart. The latter will deliver 237 Ha of intertidal habitat in the short term meeting the first epoch habitat losses. Another project (Congresbury Yeo) is in progress and will deliver 11 Ha of habitat.

It is planned that the Regional Habitat Creation Project (RHCP) and site condition monitoring (by Natural England and Natural resources Wales) will monitor the functionality of newly created habitat and its compensation for lost habitat. The extent of medium and long term compensatory habitats needed will be monitored and reviewed through the Strategy's monitoring plan and the RHCP with further compensatory sites being advanced as needed, based on climate change and sea level rise predictions and on-going discussions with landowners and others.

Existing plan measures – Fluvial Severn FRMS (Local Flood Risk Management Strategy)

Seven measures are derived from the Fluvial Severn FRMS of which 5 are screened out of further consideration as they relate to flood prevention (M24) and to preparedness for flood events (M43).

Two measures are screened in as they relate to flood protection (M3) and refer to other projection (M35) and to channel, coastal and floodplain works (M33).

There is no existing HRA available for the Fluvial Severn FRMS.

The M35 measure refers in general terms to reducing flooding in the area of Gloucester and the surrounding area. The location and precise nature of the measure are not yet defined, and hence it is difficult to predict potential impacts, particularly for European sites downstream of Gloucester. Depending on the nature and scale of the actions, there may be potential for effects on Walmore Common (SPA/Ramsar Site) and the Severn Estuary SAC/SPA/Ramsar site. The measures will be subject to subsequent appraisal and assessment at the project level and to project level controls through the relevant consenting process with the consideration of the need for project level HRA (see Table A3, Annex A).

Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites**. This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

The other protection measure (M35) refers to the continuation of channel maintenance and flood warning in locations generally in the north of the management catchment and including Kempsey, Severn Stoke, Hanley Castle, Upton on Severn, Bushley, Tewkesbury, Chaceley, Apperley, Tirley, The Haw, Leigh, Wainlode, Ashleworth, Longridge.

With the exception of Longridge (Gloucestershire), all these locations are at least 7km from the nearest European site and typically these sites are located in the adjacent management catchment with no hydrological connection. The village of Longridge is in closer proximity to the one of the sites of the Cotswolds Beechwoods SAC. Overall, however, given the focus of the measure on flood warning and channel maintenance, the distances to the nearest European site for the majority of the sites and or the lack of hydrological connectivity, overall **the measure is not likely to lead to significant effect on European sites**.

Existing plan measures – Severn Trent Water Asset Management Plan

Six measures are drawn from the Severn Trent Water Asset Management Plan. All the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44).

4.3.4.8 Avon Warwickshire

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
2	19	25	17	62

The Avon Warwickshire management catchment contains 2 European sites: Bredon Hill SAC and Dixon Wood SAC. Both sites are located near the south-western border of the management catchment, Bredon Hill SAC to the south west of Evesham and Dixon Wood SAC to the east of Tewkesbury.

In total there are 123 measures for the Avon Warwickshire management catchment, the majority of these are derived from existing plans with only 44 new measures as part of the FRMP from the Environment Agency and Lead Local Flood Authorities.

New measures

In total 37 measures are from the Environment Agency of which 24 are screened out of further assessment as they relate to flood risk prevention (M21, M23, M24) and public awareness and preparedness for flood events (M43, M44). Thirteen measures relate to flood risk protection (M3) and are screened in for further consideration. These measures include: 2 measures for natural flood management / runoff and catchment management (M31); 1 measure referring to surface water management (M34); and 10 measures relating to other protection (M35).

Seven of these measures give no details on the locations likely to be affected and refer in general terms to:

- working with natural processes and identifying locations where the approach recommended by 'Woodlands for Water' would be applied to reduce flood risk (M31);
- identifying suitable opportunities for Sustainable Drainage Systems (SUDS) (M34); and
- reducing the risk of flooding of community services, priority communities (residential and non-residential) and transport links (M35).

All the above measures seek to address flooding from main river and ordinary watercourses. The final scope, content and location of the measures have not yet been defined and the FRMP does not constrain how or where measures are implemented. When the measures are instigated, however, they will be subject to project level control through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A5, Annex A). This will enable the projects to be designed to avoid or adequately mitigate for any adverse effects on European sites. These measures are therefore **not likely to lead to significant effect on European sites.**

One new protection measure (M35) refers in general terms to an integrated WFD project in the Vale of Evesham and likely to address main river and ordinary watercourses. Although this general area is typically associated with the River Avon, the measure lacks detail with regards to the type of actions and the specific areas that will be affected. Given that the final scope and content of the measure has not yet been defined and the measure will be subject to project level controls through the relevant consenting process with the associated requirement for consideration of project level HRA (see Table A5, Annex A), **the measure is hence not likely to lead to significant effect on European sites.**

Three new protection measures (M35) relate to appraisals and investigations of potential flood risk management measures in the areas of: Snitterfield (Bell Brook); Stratford on Avon (Race Course Brook); and Warwick (St John's Brook). All these places are situated in the centre of the Avon Warwickshire management catchment and at a considerable distance to the European sites all of which are located towards the southern border of the catchment. A further new measure (M35) relates to investigating potential flood risk management measures at Wickhamford (Badsey Brook), located to the south east of Evesham. Wickhamford is over 8km from Bredon Hill SAC. Overall, given these distances, **the measures are not likely to give rise to significant effect on the European sites within the management catchment.**

An additional protection measure refers to implementing a flood alleviation scheme on the Badsey Brook to reduce risk of flooding to properties at Broadway, Childswickham and Murcot. The scheme has already been appraised and a planning application submitted to the local planning authority. The nearest European site to this area and Badsey Brook is Bredon Hill SAC, over 8km to the west. Given this distance, **it was determined that the measure is not likely to give rise to significant effect on the European sites within the management catchment.**

One measure is from Coventry City Council and is screened in for further consideration as it relates to channel, coastal and floodplain works (M33) and refers to flood risk management measures in the area of Coventry. This area is on the western urban edge of Coventry, which is located in the northern part of the management catchment. The two European sites within the catchment (Bredon Hill and Dixon Wood SAC) are located in the south of the management catchment. Given the distance to the nearest European site, **the measure is not likely to give rise to significant effect on the European sites.**

In total there are 6 measures from the Warwickshire County Council, of which 1 is screened out of further assessment as it relates to flood risk prevention (M2). Five measures are screened in for further consideration as they relate to flood risk protection (M3) with 1 measure referring to natural flood management / runoff and catchment management (M31); 1 measure for channel, coastal and floodplain works; and 3 measures to other protection (M35). Two of these measures refer to property level protection schemes in Rugby and given their scope are not considered further as they are not likely to give rise to significant effect on European sites.

The remaining measures refer to flood risk management measures in the areas of Cherington (Shipston-on-Stour), Southam and Fenny Compton. Fenny Compton is on the eastern border of the management catchment (south of Southam), whilst Shipston-on-Stour is further towards the south of the management. All these general locations are over 20km from the nearest European site. Given this distance, **the measures are not likely to give rise to significant effect on European sites.**

For those measures (above) that are required to be subject to project -level HRA, the avoidance and mitigation options available to ensure adequate project-level controls are in place, is the basis that **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites.** This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

Existing plan measures – River Severn CFMP

Four measures are derived from the River Severn CFMP, 1 of which relates to preparedness for flood events (M41) and is hence screened out of further assessment. The 3 remaining measures relate to flood risk protection (M3) and are screened in for further consideration.

Two measures relate to other protection (M35) and one measure relates to natural flood management / runoff and catchment management (M31). The measures, in general terms, refer to investigating habitat creation (north of Gloucester); reviewing maintenance operations, including reducing their intensity; and investigating improvements to conveyance through Tewkesbury.

The Warwickshire Avon management catchment is within the River Severn CFMP²⁴. The protection measures included within the Warwickshire Avon catchment implement the policies of the CFMP, which were assessed by the River Severn CFMP HRA²⁵.

²⁴ The River Severn CFMP also incorporates the Shropshire Middle Severn, Severn Uplands, Teme and Worcestershire Middle Severn management catchments.

The River Severn CFMP HRA assessed potential effects on these sites and concluded that the policies and actions within the CFMP were not likely to have significant effect on the European sites.

Existing plan measures – Severn Tidal Tributaries CFMP

One measure is drawn from the Severn Tidal Tributaries CFMP and screened in as it relates to natural flood management / runoff and catchment management (M31). The measure refers in general terms to working with the Cotwolds AONB to encourage appropriate land use change.

The Severn Tidal Tributaries CFMP protection measures, which implement the policies of the CFMP, were assessed by the Severn Tidal Tributaries HRA²⁶. The CFMP HRA concluded that the policies and actions within the Severn Tidal Tributaries CFMP **were not likely to have significant effect on any European sites.**

Existing plan measures – Community Action Plans (EA)

Three measures are derived from community action plans with all measures relating to preparedness for flood risk events (M4) and hence screened out of further assessment.

Existing plan measures – Northamptonshire County Council LFRMS

A total of 24 measures are derived from the Northamptonshire County Council LFRMS. Of these 15 measures are screened out of further assessment as they relate to preparedness for flood events (M41, M42, M43, M44), supporting recovery after flooding (M51) and flood risk prevention (M21, M23).

Nine measures are screened in to the assessment as they relate to flood risk protection (M3) and other (M61). These include 2 measures referring to natural flood management / runoff and catchment management (M31); 2 measures relating to surface water management (M34); 2 measures referring to other protection (M35); and 3 measures identified as other (M61).

The majority of these measures give no details on the locations likely to be affected and refer in general terms to:

- promoting in general terms environmental actions and WFD improvements (M31)
- undertaking of SWMPs for areas (M34)
- promoting partnership working to assess potential impacts of measures on biodiversity and heritage assets (M35)
- promoting partnership working across RMAs
- establishing funding arrangements to deliver the requirements of the Flood and Water Management Act
- using the LFRMS to influence other plans (M61)

In view of the general scope of these measures, they not considered further as they are unlikely to give rise to significant effects on European sites.

²⁵ River Severn CFMP Final Plan, Environmental Report and Habitats Regulation Assessment, Appendix C (Annex 1: HR01 and HR02) (2009)

²⁶ Severn Tidal Tributaries CFMP, Appendix B, Annex B (2009)

Only one measure (M34) relates to investigating the potential for flood risk improvement works at Stanford Road, Cold Ashby. The village is located on the northern border of the Avon Warwickshire management catchment. The nearest European sites are at a considerable distance near Northampton (over 20km to the south) and located in neighbouring management catchments within the Humber RBD. Given this distance, **the measure is not likely to give rise to significant effect on European sites.**

Existing plan measures – Redditch Borough Council

A total of 14 measures are derived from local authority development plans, of which 13 are screened out of further assessment as they relate to flood risk prevention (M2) and preparedness for flood events (M4).

One measure is screened in as it relates to natural flood management / runoff and catchment management (M31) and refers to the general requirement that development of any site should not lead to deterioration of EU Water Framework Directive (WFD) water body status nor have a negative impact on water quality. Given the scope of the measure, this is not considered further as it is not likely to give rise to significant effect on European sites.

Existing plan measures – Rugby Borough Council

A total of 18 measures are derived from the local authority development, all of which are screened out of further assessment as they relate to flood risk prevention (M2) and preparedness for flood events (M4).

Existing plan measures – Warwickshire Local Flood Risk Management Strategy

One measure screened in as relating to flood protection (M3) relates to the Warwickshire LFRMS and refers in general terms to the delivery of local flood risk management actions. The LLFA is responsible for meeting the requirements for HRA in the delivery of the strategy.

Existing plan measures – Severn Trent Water Asset Management Plan

Seven measures are drawn from the Severn Trent Water Asset Management Plan. Six of the measures are screened out of further consideration as they relate to flood risk prevention (M21, M23, M24) and preparedness for flood events (M44). One flood protection measure (M3) is screened in from the Asset Management Plan. The measure comprises investigation of options for flood risk management in the area of Withybrook (Warwickshire). The village is located on the northern border of the Avon Warwickshire management catchment. The nearest European site is at a considerable distance near Nuneaton (over 10km to the north west) and located in a neighbouring management catchment within the Humber RBD. Given this distance, **the measure is not likely to give rise to significant effect on the N2K sites within the management catchment.**

Existing plan measures – Anglian Water Asset Management Plan

Seven measures are derived from the Anglian Water Asset Management Plan, of which 6 are screened out as they relate to flood risk prevention (M2) and preparedness for flood events (M4). One measure is screened in for further consideration as it relates to other protection (M35) and refers in general terms to Anglian Water continuing a programme of flood resilience to their most susceptible water and water recycling assets. The main source

of flooding the measure seeks to address is surface water flooding. The measure is framed in general terms and no specific locations are identified at this stage given that the measure applies to the wider supply area of Anglian Water that extends to neighbouring RBDs. The FRMP does not constrain how or where measures are implemented. When the measure is instigated, however, it will be subject to project level control through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A3, Annex A).

Given the avoidance and mitigation options available to ensure adequate project-level controls are in place, **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites**. This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

4.3.4.9 *Avon Bristol and North Somerset Streams*

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
11	27	26	68	61

The Avon Bristol and North Somerset Streams management catchment contains 11 European sites. These comprise: 7 SACS, 3 SPAs and 1 Ramsar site²⁷. The majority of these sites are in the southern half of the management catchment, although the Severn Estuary SAC/SPA/Ramsar site extends along the entire length of the catchment's border with the estuary. The Avon Gorge Woodlands SAC is located on the western edge of Bristol, whilst the Chew Valley Lake SPA is located further to the south of Bristol. The Mendip Woodlands SAC and North Somerset & Mendip Bats SAC comprise a complex of sites along the southern border of the catchment to the south of Yatton and Midsomer Norton. Only a small part of the Salisbury Plain SAC/SPA is within the catchment to the west of Westbury. The Bath & Bradford on Avon Bats SAC comprises a series of sites between Bath and Chippenham. Similarly the Mells Valley SAC is a complex of sites between Frome and Holcombe. It is also worth noting that the complex of sites comprising the Somerset Levels and Moors SPA/Ramsar site are located immediately to the south of the management catchment, south of Wedmore and to the east of Glastonbury.

In total there are 182 measures for the Avon Bristol and North Somerset Streams management catchment of which 53 are new measures as part of the FRMP with the remaining measures from existing plans.

New measures

There are a total of 53 new measures, with the majority (43) from the Environment Agency and the remaining measures from LLFAs including Bath and North East Somerset (BANES) Council and South Gloucestershire Council.

Of the measures from the Environment Agency, 17 are screened out of further assessment as they relate to flood risk prevention (M21, M22, M23), preparedness for flood events (M41,

²⁷ Severn Estuary SAC, SPA, Ramsar site; Avon Gorge Woodlands SAC; Bath & Bradford on Avon Bats SAC; Mells Valley SAC; Mendip Woodlands SAC; North Somerset & Mendip Bats SAC; Salisbury Plain SAC and SPA; Chew Valley Lake SPA;

M43, M44) and recovery (M52, M53). Twenty six measures are screened in for further consideration as they relate to flood risk protection (M3). The majority of the measures (11 in each case respectively) relate to channel, coastal and floodplain works (M33) and to other protection (M35). Two measures relate to water flow regulation (M32) and a further 2 measures refer to natural flood management / runoff and catchment management (M31).

A number of measures give no or limited details of the locations likely to be affected and or refer in general terms to ways of working, as for example:

- working with partners to ensure effective management of drainage network around the Severn Estuary (M31)
- working with partners in the Bristol Frome upper catchment to explore floodplain restoration opportunities and investigate the benefits of planting wet woodlands (M31)
- investigating options to reduce flood risk on the Bristol Frome (M35) and River Avon between Bath and Bristol (M33)
- implementing section10 requirements (Reservoirs Act)
- working in partnership with the Bath Local Enterprise area (M35)

The main sources of flooding the above measures seek to address are flooding from main river and reservoirs (in the case of implementing section10 requirements). The final scope, content and location of these measures have not yet been defined, reflecting that the FRMP does not constrain how or where measures are implemented. When the measures are instigated, however, they will be subject to project level control through the relevant consenting process and the associated requirement for consideration of project level HRA (see Table A5, Annex A). This will enable the projects to be designed to avoid or adequately mitigate for any adverse effects on European sites. These measures are therefore **not likely to lead to significant effect on European sites.**

Over half of the proposed measures encompass investigations and appraisals to identify potential flood risk management measures in various locations. The majority of these are at a significant distance from a European site and include investigations in the following areas to address flooding from main river:

- Wiltshire: Melksham (located over 8km from a site covered by the Bath & Bradford on Avon Bats SAC; Chippenham (located over 5km from a site covered by the Bath & Bradford on Avon Bats SAC); and Malmesbury (located over 8km from the nearest N2K site in a neighbouring management catchment)
- Bristol: Brislington located on the south eastern outskirts of the Bristol urban area and Eastville in the north eastern area Bristol, with both over 5km from the Avon Gorge Woodlands SAC
- North Somerset: Wallbridge (Frome) located on the eastern edge of town with the nearest European site located to the west of Frome (Mells Valley SAC)
- Bath and North East Somerset: Midsomer Norton and Radstock located over 5km to nearest European site of Mells Valley SAC over 5km to the south

- South Gloucestershire: Yate/Chipping Sodbury on the River Frome with the nearest European site, the Severn Estuary SPA/SAC/Ramsar site, over 13km to the north west

Given the considerable distance to the nearest European site, **these measures are not likely to give rise to significant effect on European sites.**

A number of proposed investigations/appraisals aiming to address flooding from main river are in closer proximity to European sites and include locations in the general vicinity of:

- Bradford-on-Avon (Wiltshire) where the nearest site (approximately 3km) is the Bath and Bradford on Avon Bats SAC
- Ashton Vale located on the western edge of Bristol and within 2km of the Avon Gorge Woodlands SAC and Bristol city centre area which is within 3km of the same SAC
- Bath (River Avon) where a complex of small sites covered by the Bath and Bradford on Avon Bats SAC occur to the south east of the city

Taking account of the general characteristics of the nearest European sites and the distances and or urban context, and that the measures will be subject to further investigations and appraisals and to project level controls through the relevant consenting process with the consideration of project level HRA (see Table A3, Annex A), **the measures are not likely to lead to a significant effect on European sites.**

A limited number of new measures relate to areas which are potentially in close proximity to European sites and which seek to address flooding from the sea and main river. The areas include the following: Avonmouth located adjacent to Severn Estuary SPA/SAC/Ramsar site; Pill (North Somerset) located immediately upstream of the Severn Estuary SPA/SAC/Ramsar site; and Oldbury (South Gloucestershire) and Clevedon situated adjacent to the Severn Estuary SPA/SAC/Ramsar site. Similarly, a measure associated with investigating strategic options for flood risk management measures linked to the Bristol city tidal zone could extend to areas in the vicinity of the Severn Estuary SPA/SAC/Ramsar site and potentially the Avon Gorge Woodlands SAC.

For these measures depending on the nature, scale and location of the measures, there may be the potential for effects on the European sites. In the case of Clevedon the measure is likely to be a localised solution and the measure in the area of Oldbury is related to wider planning processes. For the other areas the final scope, content and location of the measures have not yet been defined and the measures will be subject to further investigations and appraisals. All the measures will also be subject to project level controls through the relevant consenting process with the consideration of project level HRA (see Table A3, Annex A). This will enable the projects to be designed to avoid or adequately mitigate for any adverse effects on European sites. These measures are therefore **not likely to lead to significant effect on European sites.**

One measure, improving Congresbury Yeo tidal banks (M33), is an active project and has been subject to a project level HRA. Having considered that the Congresbury Yeo Tidal Banks Scheme would be likely to have a significant effect on the Severn Estuary SAC/SPA/Ramsar and that the Congresbury Yeo Tidal Banks was not directly connected with or necessary to the management of the site for nature conservation, an appropriate

assessment (August 2014) has been undertaken of the implications of the proposal in view of the site's conservation objectives. **The assessment concluded that the project will not adversely affect the integrity of the Severn Estuary SAC/SPA/Ramsar.**

A further 10 new measures are from the LLFAs, Bath and North East Somerset (BANES) Council (9) and South Gloucestershire Council (1). Of these 9 measures are screened out of further consideration as they relate to flood risk prevention (M2). One measure from BANES Council is screened in as it relates to flood risk protection (M3) and refers to surface water management (M34). The measure is framed in general terms with respect to investigations for drainage improvement schemes across the local authority area in relation to flooding from ordinary watercourses and surface water flooding. The FRMP does not constrain how or where measures are implemented. Given that the measure is subject to further investigation and when developed further will need to adhere to project level controls through the relevant consenting process, including the consideration of project level HRA (see Table A3, Annex A), **the measure is not likely to lead to a significant effect on European sites.**

For those measures (above) that are required to be subject to project -level HRA, the avoidance and mitigation options available to ensure adequate project-level controls are in place, is the basis that **the strategic plan-level measures are screened as not likely to lead to significant effect on European sites.** This is a plan-level conclusion and does not remove the need for lower-tier HRA, nor does it influence the conclusions or specific need for appropriate assessment to investigate mitigation options in more detail.

Existing plan measures – Bristol Avon CFMP

A total of 2 measures are derived from the Bristol Avon CFMP, and both are screened out of the assessment as they relate to preparedness for flood events (M41).

Existing plan measures – North and Mid Somerset CFMP

A total of 3 measures are derived from North and Mid Somerset CFMP.

All three measures are screened in for further assessment as they relate to flood risk protection (M3) and comprise 2 measures relating to water flow regulation (M32) and 1 measure referring to channel, coastal and floodplain works (M33).

The North and Mid Somerset CFMP is one of three CFMPs covering the Avon Bristol and North Somerset Streams management catchment, the others comprising the Bristol Avon CFMP and part of the Severn Tidal Tributaries CFMP. The North and Mid Somerset CFMP protection measures included within the Avon Bristol and North Somerset Streams management catchment implement the policies of the CFMP, which were assessed by the North and Mid Somerset HRA²⁸.

The area covered by the North and Mid Somerset CFMP and included in Bristol Avon and North Somerset Streams management catchment encompasses the following European sites: Mendip Woodlands SAC; North Somerset and Mendip Bats SAC; Mendip Limestone Grasslands SAC; and Severn Estuary SAC/SPA/Ramsar site. The CFMP HRA assessed

²⁸ North and Mid Somerset CFMP, Environmental Report, Appendix B, Annex B, Forms HR01 and HR02 (2009)

potential effects on these sites and concluded that the policies and actions within the CFMP were not likely to have significant effect on the Mendip Woodlands SAC. For the remaining the sites considered, **the HRA concluded that the policies and actions within the CFMP will not have an adverse effect on the integrity of the European sites.**

Proposed mitigation: The appropriate assessment of the CFMP identified mitigation measures to be taken to ensure that significant adverse effects on the integrity of these sites could be avoided. The North and Mid Somerset CFMP (Appendix B) provides a summary of the mitigation measures.

Existing plan measures – Severn Tidal Tributaries CFMP

A total of 3 measures are derived from Severn Tidal Tributaries CFMP and all screened in for further consideration as they relate to flood risk protection (M3). Of these 1 measure relates to natural flood management / runoff and catchment management (M31); 1 measure refers to water flow regulation (M32); and 1 measure refers to channel, coastal and floodplain works (M33).

The Severn Tidal Tributaries CFMP is one of three CFMPs covering the Avon Bristol and North Somerset Streams management catchment, the others comprising the Bristol Avon CFMP and part of the North and Mid Somerset CFMP. The Severn Tidal Tributaries CFMP protection measures included within the Avon Bristol and North Somerset Streams management catchment implement the policies of the CFMP, which were assessed by the Severn Tidal Tributaries HRA²⁹.

The Severn Estuary SPA/SAC/Ramsar site is the only European site within this part of the CFMP area that is included within the Avon Bristol and North Somerset Streams management catchment. The CFMP HRA assessed potential effects on these sites and concluded that the policies and actions within the CFMP **were not likely to have significant effect on designated sites.**

Existing plan measures – Anchor Head to Lavernock Point SMP2 (Severn Estuary)

A total of 66 measures are drawn from the Anchor Head to Lavernock Point SMP2³⁰, of which 33 are screened out of the assessment as they relate to flood risk prevention measures (M23 and M24). The remaining measures (33) are screened in for further consideration as they relate to flood risk protection measures (M3).

There is one protection measure for surface water management (M34). This relates to developing an integrated drainage plan (surface water /sewer/river flooding) for the Royal Portbury Docks. Although this area is adjacent to the Severn Estuary SPA/SAC/Ramsar site, given the focus of the measure on preparing a plan, the measure is not considered further in the assessment

The majority of protection measures (32) relate to channel, coastal and floodplain works (M33). A large proportion of these measures, however, refer general ways of working rather than site/area specific flood risk management measures. The measures, for example, refer

²⁹ Severn Tidal Tributaries CFMP, Appendix B, Annex B (2009)

³⁰ Consulted on 2009/10 and awaiting approval

to ensuring that environmental issues are taken into account in flood risk management and to ensuring engagement with the County Archaeologist and Historic England.

Six of the protection measures relate to undertaking studies into opportunities to remove flood embankments. All of the measures are with the Sharpness to Gloucester Theme Area of the Severn Estuary Shoreline Management Plan Review (SMP2)³¹ and extend through Policy Units SHAR1-4,6 and 7. The draft policy options for these units over the different epochs (0-20 years; 20-50 years; 50-100 years) all refer either to hold the line (HTL) and or managed realignment (MR). A further measure is within the Kingston Seymour and Sand Bay Theme Area and refers to undertaking research to identify where/when management realignment could take place. The measure is within the KIN 1 Policy Unit, where the draft policy option over all three epochs is managed realignment. Another measure that refers to repairs to the sea wall at Clevedon is with Portishead and Clevedon Theme Area of SMP2 and Policy Unit Port 4 with hold the line as the preferred policy option.

The policies of the SMP2 have been assessed by the Severn Estuary Shoreline Management Plan Review (SMP2) HRA³². The HRA for the SMP2 considered 30 European sites that could potentially be affected by the implementation of the SMP2. After initial assessment, likely significant effects could not be ruled out at six of the 30 sites and an appropriate assessment was carried out. This concluded that the SMP2 could have potentially significant effects on the following sites: Severn Estuary SPA/SAC/Ramsar site and the Somerset Levels and Moors SPA/Ramsar site³³. The adverse impacts of the plan are due to:

- loss of intertidal habitat as a result of coastal squeeze
- loss of terrestrial and freshwater habitats as a result of managed realignment
- changes to the shape of the estuary as a whole, which could affect the way it works

The SMP2 is currently subject to a Statement of Case (SoC) for Imperative Reasons of Over-riding Public Interest (IROPI) and outline compensatory habitat proposals, which is under review by the Defra Secretary of State and Welsh Minister for agreement.

The SMP2 HRA also concluded that it was not possible to determine whether some of the possible effects of the SMP2 would be damaging and that more detailed assessment will be needed as part of the emerging Severn Estuary Coastal Erosion and Flood Risk Management Strategy (SEFRMS). The SEFRMS identifies preferred flood risk management responses (measures) for a series of flood cells within the Severn Estuary. The HRA of the SEFRMS³⁴ draws on the previous HRA for the SMP2 and concluded that significant effects on the following N2K sites cannot be ruled out:

³¹ The area covered by the Severn Estuary SMP2 extends from Lavernock Point (near Penarth in Wales), to Anchor Head, just north of Weston Bay with the upstream boundary at Haw Bridge, near Gloucester. The SMP2 has considered the whole of the Severn Estuary and its tributaries up to the tidal limits.

³² Severn Estuary Shoreline Management Plan Review (SMP2) (2010) Appendix I, Part B Habitats Regulation Assessment

³³ The Somerset Levels and Moors SPA/Ramsar site is located within the South West RBD, but situated immediately south of the Avon Bristol and North Somerset management catchment border.

³⁴ Severn Estuary Coastal Erosion and Flood Risk Management Strategy (SEFRMS) (2013)

- Severn Estuary SAC/SPA/Ramsar site with respect to habitat loss/damage resulting from coastal squeeze and the footprint of defences
- Severn Estuary SAC/SPA/Ramsar site and Somerset Levels and Moors SPA/Ramsar site (within the South West RBD) with respect to loss of supporting habitat resulting from coastal squeeze and the footprint of defences
- Severn Estuary SAC/SPA/Ramsar site and Somerset Levels and Moors SPA/Ramsar site with respect to loss estuary form or function resulting from loss of habitat/supporting habitat

A Statement of Case (SoC) for Imperative Reasons of Over-riding Public Interest (IROPI) and outline compensatory habitat proposals for the emerging SEFRMS is currently being developed for submission to the Defra Secretary of State and Welsh Minister for agreement.

Proposed mitigation: The emerging SEFRMS provides an overarching framework within which individual flood risk management projects will be further assessed in detail before implementation. This includes any requirement for Environmental Impact Assessment as well as any further requirement for HRA. HRAs will be undertaken for specific development proposals associated with this strategy in any case where they might affect a European site. HRAs of proposed projects may ultimately influence the implementation of specific policies on a site by site basis.

The SEFRMS includes a Habitat Delivery Plan which includes the identification of areas for compensatory habitat for offsetting losses of intertidal habitat due to coastal squeeze and for offsetting losses of designated habitats resulting from the construction of new or enlarged defences around the estuary. The Strategy has identified sufficient amounts of compensatory habitat can be created to offset the intertidal habitat losses that will occur as a direct result of the Strategy. Two habitat creation projects are complete: Stroat (including Alvington & Plusterwine) and Steart. The latter will deliver 237 Ha of intertidal habitat in the short term meeting the first epoch habitat losses. Another project (Congresbury Yeo) is in progress and will deliver 11 Ha of habitat.

It is planned the Regional Habitat Creation Project (RHCP) and site condition monitoring (by Natural England and Natural resources Wales) will monitor the functionality of newly created habitat and its compensation for lost habitat. The extent of medium and long term compensatory habitats needed will be monitored and reviewed through the Strategy's monitoring plan and the RHCP with further compensatory sites being advanced as needed, based on climate change and sea level rise predictions and on-going discussions with landowners and others.

Existing plan measures – South Gloucestershire LFRMS (outside of Bristol FRA)

One measure is derived from the South Gloucestershire LFRMS and is screened out of further consideration as it relates to flood risk prevention (M24).

Existing plan measures – Bristol City Council LFRMS (outside of Bristol FRA)

One measure is derived from the Bristol City Council LFRMS and is screened out of further consideration as it relates to flood risk prevention (M24).

Existing plan measures – North Somerset LFRMS (outside of the Bristol FRA)

A total of 39 measures are derived from the North Somerset LFRMS. Of these measures 16 screened out as they relate to flood risk prevention (M23, M24), preparedness for flood events (M43) and recovery and review (M53).

The remaining 23 measures are screened in as they relate to M3 and M6. These measures comprise: 2 measures for natural flood management / runoff and catchment (M31); 8 measures for channel, coastal and floodplain works (M33); 11 measures for surface water management (M34); and 2 measures for other protection (M35 North Somerset Council has undertaken a HRA of the LFRMS (July, 2013). The following European sites were considered: Avon Gorge Woodlands SAC; Chew Valley Lake Spa; Mells Valley SAC; Mendip Limestone Grasslands SAC; Mendip Woodlands; North Somerset and Mendip Bats SAC; Severn Estuary SAC/SPA/Ramsar site; Somerset Levels SPA/Ramsar site. The HRA concluded that the following sites were unlikely to require further assessment: Avon Gorge Woodlands SAC; Chew Valley Lake SPA; Mells Valley SAC; Mendip Limestone Grasslands SAC; Mendip Woodlands SAC; and Somerset Levels and Moors SPA/Ramsar site. Effects on the Severn Estuary designations were also considered to be either positive or '*de minimis*' negative. In order to ensure no likely significant effect on European sites, **the HRA advises that project level assessment HRA is undertaken for any schemes in Claverham, Congresbury East, Hutton, Winscombe and Wrington, due to potential effects on the grassland and woodland qualifying interests of the North Somerset and Mendip Bats SAC.**

Existing plan measures – North Somerset SWMP (outside of Bristol FRA)

A total of 4 measures are derived from the North Somerset SWMP. One measure is screened out as it relates to flood risk prevention (M24). Three measures are screened in as they relate to flood risk protection (M3) and all refer to surface water management (M34) and seeking to address surface water flooding and or from ordinary watercourses. For HRA purposes the LLFA made reference to the HRA of the LFRMS (see above) and included a commitment to undertake project level HRA.

Existing plan measures - Somerset LFRMS

Ten measures are drawn from the Somerset LFRMS, of which 7 are screened out. The remaining measures relate to natural flood management / runoff and catchment (M31) and to surface water management (M34). The latter measure refers to the production of guidance on SuDs, whilst the other measures refer in general terms to encouraging a catchment based approach and to reducing runoff in catchments (Upper Tone and Parrett) through land management. The HRA for the Somerset LFRMS³⁵ recommends measures to ensure the actions from the LFRMS comply with the requirements of the Habitats Regulations **and are not likely to have significant effects on European sites.**

4.4 Consideration of results and conclusion (England)

The assessment of likely significant effects has been carried out for each catchment in turn. The risks to European sites for those measures drawn from existing plans have been

³⁵ Somerset County Council Local Flood Risk Management Strategy, Habitats Regulation Assessment (Test of Likely Significance) (November, 2013)

considered with reference to existing HRAs and existing controls in place. The potential risks arising from new strategic priorities for the next FRMP cycle have also been considered.

In all catchments the conclusions are that likely significant effects can be avoided or mitigated by appropriate controls and actions that are currently in place or will be in place at a project level, when local actions are developed to implement the plan.

4.4.1 Risks from existing plan measures

26% of measures are from existing plans of which 7% are from CFMPs and 10% from SMPs/EA other plans and 9% from LLFA plans. Most risks are from SMPs/other EA plans measures where adverse effects identified in HRAs for specific policy areas are being addressed.

All risk management authorities responsible for implementing the measures in the FRMP that are sourced from the existing CFMPs and SMPs, where risks to European sites have been identified, are required to take account of the HRAs of those plans (as identified in section 4.2 above) and any mitigation proposals or statements made within them.

Most risks to European sites that are being addressed by existing plans relate to the 10% measures in SMPs/other EA plans and more specifically where the SMPs and other plans such as the emerging Severn Estuary Flood risk Management Strategy is managing likely adverse effects in the Severn Vale and Avon, Bristol and North Somerset Streams catchments.

4.4.2 Risks from new measures

14% of measures are new of which 6% are strategic, 5% are not in proximity to any European sites and 3% are more specific improvements that are in closer proximity to sites.

The most likely risks will be related to the development of local actions for the specific improvements in the next FRMP cycle and can be found in the Wye, Severn Vale and Bristol Avon and North Somerset Streams catchments. The future strategic measures may also present a risk depending on where they are implemented.

4.4.3 Control and Mitigation for main risks from new cycle 1 measures

Controls

The principal controls for the development of local actions from new FRMP measures that are more specific and are in the proximity of European sites comprise the consenting procedures, in place to assess proposed actions in order to authorise implementation. Actions involving construction or creation of new, or changes to, alteration or improvement of existing flood defence structures affecting main river are likely to require planning permission. In some cases, flood risk management may ordinarily be permitted development. Other types of actions may require controls under Flood Defence Consents from the Environment Agency for main rivers or Lead Local Flood Authority (LLFA) for non-main watercourses.

Where a European site is potentially affected, the need for project level HRA is determined through the planning or other consenting process, the required information is submitted with

the application for assessment. A determination is made in consultation with Natural England and Natural Resources Wales where Welsh sites are potentially affected. Even where the action would normally be permitted development, approval of the local planning authority is required where a development is likely to have a significant effect on a European site.

As part of these consenting mechanisms, the measures cannot receive approval to proceed until it has been demonstrated that they will not result in adverse effects on integrity of any affected European sites. Or, where an adverse effect cannot be avoided, a case for 'Imperative Reasons of Overriding Public Interest' (IROPI) that includes the identification of compensatory measures is approved by the Secretary of State for Environment, Food and Rural Affairs. Table A3 in Annex A provides additional detail on the consenting processes and the consideration of the Habitats Regulations as they relate to measures to address flooding from the various flooding sources (e.g. main river, ordinary watercourses, tidal, reservoir).

Mitigation

Implementation of measures at the subsequent tier of plan or project, if deemed likely to result in significant effect on one or more European sites, may need to include mitigation to avoid or reduce potential effects. Specification of mitigation should be tailored to the specifics of a project, and to the sites and features potentially affected, through the project level HRA process and through consultation with Natural England and Natural Resources Wales, ideally early in a project's appraisal and design. That way, mitigation can be incorporated into the way that the project is designed and built, tailored to the specifics of the site/s and their qualifying features, and therefore be most effective in avoiding or reducing potential adverse effects.

Project-level mitigation for European site species would consider the potential impacts arising from construction and operation of the project / measure, alongside any site specific sensitivities of the affected species. Depending on the nature of the project, identification of the use of habitats in proximity by qualifying species and the functioning role of those supporting habitats affected, may either be established by existing data / studies or may need to be established through site survey.

Construction-related mitigation should consider managing the timing of activities to avoid ecologically sensitive periods, such as breeding, over-wintering or migratory passage periods for birds, or migratory periods for anadromous fish. The exact timings for these construction 'windows' may vary for different sites in the RBD, depending on the presence, distribution and proximity of qualifying species present. Avoidance or reduction of visual or noise disturbance to species may also consider the use of techniques such as screening, segregation or establishing buffer zones, recognising that some species may be more vulnerable or sensitive than others (for example different bird species can vary in their flight response). For potential construction impacts on habitats, such as loss of habitat or physical damage, key construction-focused mitigation should focus on the avoidance of working on, or in proximity to sensitive habitats, and development of site sensitive construction techniques. This may for example include avoiding heavy plant usage in particular areas, or screening / creation of buffer zones to avoid any disturbance or physical damage. This can be informed through site specific / project-level HRA, and supporting survey where necessary, to establish the presence, nature and sensitivities of potentially affected habitats.

For potential operational effects, sensitive and sympathetic design can minimise or avoid effects, such as appropriate location or layout of any structures (set-back from sensitive habitats) or minimising footprints where possible. Project-level HRA should also consider potential changes in physical processes, such as changes to flows / velocities and the physical regime, and potential water quality changes, for example due to the addition or removal of a structure or a changed profile of the riparian zone / channel banks. Such effects, as identified through the HRA, should inform a project’s appraisal and the building of suitable mitigation into the design.

4.4.4 Conclusion

The assessment above has considered the FRMP information in RBD catchments that the Environment Agency are responsible for and has screened the measures as having no likely significant effect. This is concluded in light of the range of avoidance and mitigation measures available.

Regulatory controls will identify any risks to European sites when the actions required to implement the measures are developed. The FRMP itself also makes it clear that before any measures in the plan are implemented they must be subject to the requirements of the Habitats Regulations by the relevant competent authority. This is already the case for measures from existing plans where HRAs have identified risks to European sites and where any adverse effects that cannot be ruled out have been addressed through appropriate mitigation and compensatory provision.

It is concluded that at this strategic-plan level, the measures are screened as being not likely to have any significant effects on any European sites, alone or in combination with other plans or projects (see chapter 7). Given this conclusion, there is no requirement to progress to the next stage of the Habitats Regulations Assessment (an ‘appropriate assessment’ to examine the question of adverse effect on the integrity of European sites). Lower-tier assessments will be required and will be assisted by the information gathered in this high-level assessment, but their conclusions will not be influenced by this HRA, and each individual plan or project must be assessed as necessary in order to meet the requirements of the Habitats Regulations.

4.5 Initial screening of FRMP Measures for Communities at Risk (Wales)

Table 4: The Communities at Risk screened into the HRA for the Severn FRMP (Wales)

Management Catchments	South East Valleys	Usk	Wye (cross border)	Severn Uplands
Communities at risk	Grangetown Riverside Duffryn Bluetown Llandaff North Leckwith Marshfield Llanhilleth Llanbradach Merthyr Tydfil Treorchy Rhondda Trehafod	Liswerry Rogiet Croesyceiliog Brecon Pontypool Broadstreet	Chepstow Llanwrtyd Wells Mathern	Llanllwchaiarn Llanidloes Caersws 1&2 Llandrinio

The protection measures (M3) screened into the HRA are shown below with the number of Communities at Risk they apply to in brackets. Greyed out measures do not occur within Communities in this river basin district.

- assess conveyance requirements and implement maintenance (7)
- undertake initial assessment and feasibility work for reducing flood risk (3)
- develop scheme appraisal for Flood Alleviation Scheme (1)
- design and construction of flood risk asset improvements or alleviation scheme (6)
- carry out an assessment of existing structures to ensure they are fit for purpose (4)
- implement alternative risk reduction measures (3)
- maintain existing defences and inspection regime (0)

The measures screened into the HRA are highlighted in bold and are high level and many of them make recommendations for further assessment, design or maintenance of existing structures. The HRA cannot make conclusions on significant effect where the outcome of the assessments or designs is unknown. A precautionary approach has therefore been applied; where it is unclear or cannot be demonstrated that a FRMP measure will not have a significant effect it is scoped it out of the FRMP HRA, but deferred down to the project level HRA.

4.5.1 European Site Screening

Annex C shows the results of this European Site screening process in full, where sites that are screened out are highlighted green. The sites that were screened into the Test of Likely Significant Effect stage are listed in Table 5 below. Following the site screening process, 17 sites of the 44 sites considered relevant to the HRA were screened into the Test of Likely Significant Effect stage and the remainder were screened out from the HRA.

Three communities at risk (Treorchy, Rhondda and Trehafod) were screened out of further assessment as the site screening process identified that all were over 20km from the nearest European site with no pathways for effects.

Table 5: European sites screened into the HRA

European sites screened into the HRA for direct, mobile and fish impacts			
Ramsar	<ul style="list-style-type: none"> • Llyn Tegid • Severn Estuary (Wales and England) 		
SPA	<ul style="list-style-type: none"> • Berwyn • Elenydd – Mallaen • Migneint-Arenig-Dduallt • Severn Estuary (Wales and England) 		
SAC	<ul style="list-style-type: none"> • Wye Valley & Forest of Dean Bat Sites • Severn Estuary (Wales and England) • River Wye / Afon Gwy • Usk Bat Sites 	<ul style="list-style-type: none"> • Wye Valley Woodlands • Mendip Limestone Grasslands • River Dee and Bala Lake (Wales and England) 	<ul style="list-style-type: none"> • North Somerset & Mendip Bat Sites • Berwyn and South Clwyd Mountains • River Usk / Afon Wysg • Tanat and Vyrnwy Bat

4.5.2 Test of Likely Significant Effect

The Test of Likely Significance focussed on the potential effects of protection measures on the 17 European sites screened in during the site screening process. The results are documented in Annex C. This was undertaken based on the specific communities at risk to allow ease of reference when the measures are taken forward at project or lower tier plan level. The results below show a summary of the findings on a European site basis to allow consideration of in combination effects.

In undertaking the assessment, a cross check for compliance of the new measures against policies contained within the relevant SMP2 and CFMP was undertaken. The results are noted in Annex C.

4.5.3 Conclusion of Test of Likely Significant Effect

There were some limitations to undertaking the Tests of Likely Significance on a plan where the outcome of implementation of the measures is uncertain and will be subject to more detailed levels of plans and projects.

Whilst the location of the measures are broadly defined in the plan (the communities at risk are identified, but the specific project locations are not), the specific activities that are likely to take place are not known.

Following the Test of Likely Significant Effect reported in Annex C, it was possible to conclude 'No likely significant effect' as a result of the Plan on 7 European sites. These were:

- Llyn Tegid Ramsar site
- Elenydd – Mallaen SPA
- Migneint-Arenig- Dduallt SPA
- North Somerset & Mendip Bats SAC
- Mendip Limestone Grasslands SAC
- Tanat and Vyrnwy Bat sites Usk Bat Sites

Therefore these sites have been screened out from requiring further HRA at either strategic or project level.

Of the 17 European sites screened in, 10 were assessed as requiring further assessment at the project level. These sites are highlighted orange in Table 6 below.

The proposals in a plan which make provision for a type of change, but not the magnitude of the change or a specific location is more appropriately assessed in a lower tier plan or projects. Deferring the HRA down to lower tier plan or project is subject to the following criteria:

- a) the higher tier plan appraisal cannot reasonably predict the effects on a European Site in a meaningful way; whereas
- b) the lower tier, which will identify more precisely the nature/scale/location of the development, and thus its potential effects, retains sufficient flexibility over the exact

location, scale or nature of the proposals to enable an adverse effect on integrity to be ruled out (even if that would mean deleting the proposal); and

- c) the lower tier appraisal is required as a matter of law or Policy, so it can be relied upon

Many of the measures are recommending assessments, as for example, undertake initial assessment and feasibility work for reducing flood risk. These assessments will not in themselves result in any activities being undertaken other than surveys, monitoring and the production of business cases. It is therefore difficult to predict potential effects on European sites at this stage.

Natural Resources Wales undertakes Environmental Assessment and HRA at a project level to ensure environmental impacts are prevented, reduced or mitigated and to maximise delivery of multiple environmental outcomes. This is undertaken from inception of the project, through the initial assessment stage, options appraisal, outline design, detailed design and construction to ensure integration of environmental considerations with technical and economic considerations. This integration of environmental considerations ensures that the programme, design and location of the project can take into account the sensitivities of European sites to avoid effects where possible. This is undertaken under legacy body policy and / or as a legal requirement.

Project level assessments consider a broad range of options for flood risk management including construction of defences, upstream flood storage, bypass channels etc. Technical, economic and environmental objectives are taken into account in the selection of the preferred option. Natural Resources Wales seeks to deliver environmental outcomes through delivery of projects and this ranges from delivery of Biodiversity Action Plan habitat, improvements to fisheries habitat or fish passage, Water Framework Directive mitigation measures, treatment of invasive plants etc. In each case environmental outcomes would aim to at least have no effect on European sites and at best help to deliver actions to achieve favourable conservation of a European site.

The assessment of likely significant effect undertaken for the FRMP will provide high level information on the European sites and features that need consideration in the project level EIA and HRA.

Coastal projects cannot always rule out significant effects on European sites. In order to protect some coastal communities in line with SMP2 policy and the FRMP measure, projects can result in loss of coastal habitat through coastal squeeze. Welsh Government supports Natural Resources Wales in the management and delivery of the National Habitat Creation Programme. This aims to identify and deliver habitat creation projects around the coast of Wales to compensate for the losses predicted in the SMP2s. This will ensure that the habitat is established ahead of the predicted losses occurring and allows for ongoing maintenance and improvement of coastal defences in line with SMP2 policies.

Table 6: Summary results of the Assessment of Likely Significant Effects

g	No assessment was required as no link established
g	Measure results in no likely significant effect
o	Measure requires project level HRA
r	Measure requires further assessment before FRMP sign off (none identified)

Communities at risk (management)	European sites	Grangetown (SE Valleys)	Riverside (SE Valleys)	Liswerry (Usk)	Duffryn (SE Valleys)	Butetown (SE Valleys)	Llandaff north (SE Valleys)	Leckwith (SE Valleys)	Marshfield (SE Valleys)	Rogiet (Usk)	Croesyceiliog (Usk)	Llanhilleth (SE Valleys)	Llanbradach (SE valleys)	Merthyr Tydfil (SE Valleys)	Brecon (Usk)	Llanilwchaearn (Severn)	Pontypool (Usk)	Chepstow (Wye)	Llanidloes (Severn Uplands)	Broadsheet Common (Usk)	Caersws 1&2 (Severn Uplands)	Llanwrtyd Wells (Wue)	Matheron (Wye)	Llandrinio (Severn Uplands)
Ramsar	Llyn Tegid																							g
	Severn Estuary (Wales and England)	o	g	o	o	o	g	g	o	o	g	g	g				g	o		g			o	
SPAs	Berwyn																							o
	Elenydd – Mallaen																		g		g	g		
	Migneint-Arenig-Dduallt																							g
	Severn Estuary (Wales and England)	o	g	o	o	o	g	g	o	o	g	g	g				g	o		g			o	
SACs	Tanat and Vyrnwy Bat sites																							g
	North Somerset & Mendip Bats									g														
	Severn Estuary (Wales and England)	o	g	o	o	o	g	o	o	o	g	g	g				g	o		g			o	
	Mendip Limestone Grasslands	g	g			g	g																	
	Berwyn and South Clwyd Mountains																							o
	River Dee and Bala (Wales and England)																							o
	River Usk / Afon Wysg	g	g	o	o	g	g	g	g	g	g	g	g	g	o		g	g		g		g	g	
	River Wye / Afon Gwy			g						g						g	g	o	g	g	g	o	o	
	Usk Bat Sites										g	g		g	g			g						
	Wye Valley and Forest of Dean Bat Sites			g	g						g	g						g	o		g			o
	Wye Valley Woodlands			g							g	g						o		g				o

5 Bristol Flood Risk Area HRA

This section sets out the results of carrying out the HRA on the measures for the Bristol Flood Risk Area that are for flooding from local sources (ordinary watercourses surface water, groundwater, etc.) and are the responsibility of the Lead Local Flood Authorities (LLFAs) within the Flood Risk Area. This is the FRMP information for which these LLFAs are the FRMP 'statutory authority' and HRA 'competent authority'. This section covers the following stages of the assessment:

- summary of measures being assessed
- screening and assessment of likely significant effects
- consideration of results and conclusion

5.1 Summary of Measures

The text in this section summarises the initial screening of measures detailed within the Bristol Flood Risk Area (FRA), which is located entirely within the Avon Bristol and North Somerset Streams management catchment within the Severn RBD. An overall summary of the screening of LLFA FRA measures is presented in Table 7.

Figure 5: Map of the European sites in the Bristol FRA and Management Catchments

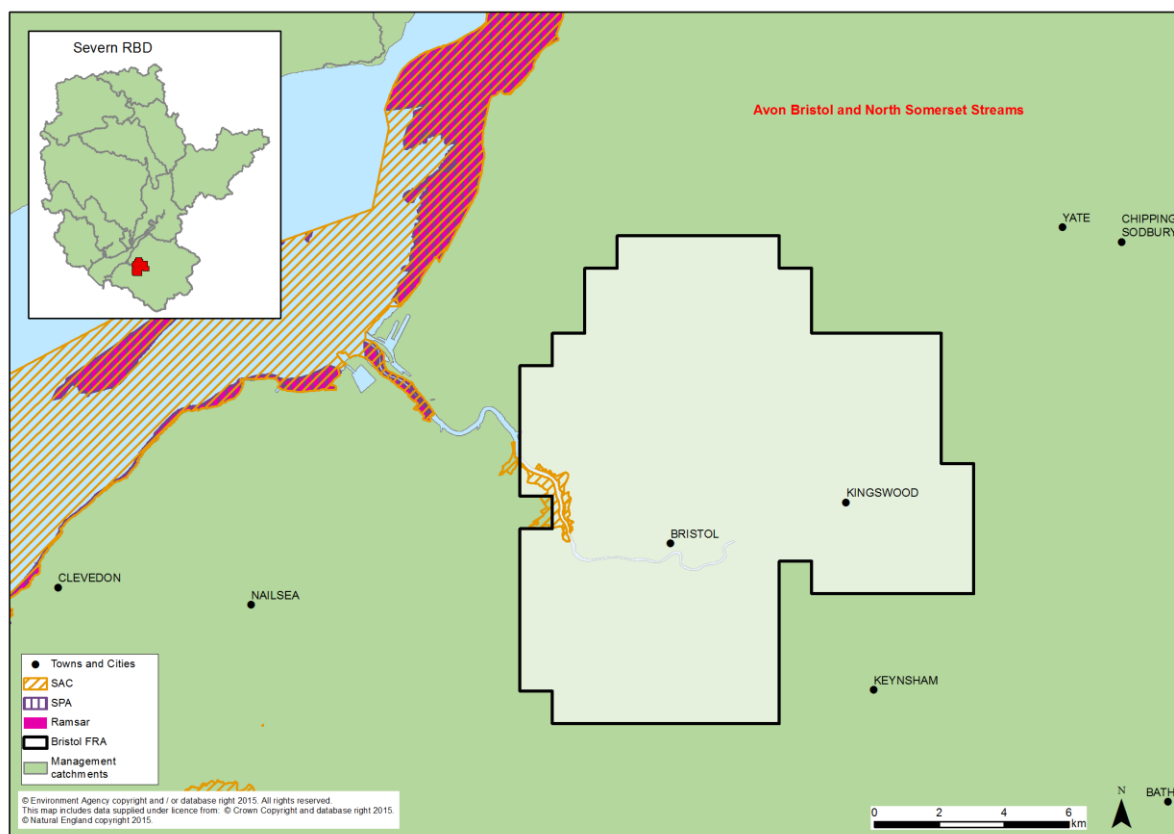


Table 7: Summary of measures by catchment

¹ - all numbers are of 'screened in' measures, except those in brackets

² - all %s are of total of all 'screened in and out' measures

Management Catchment	No of measures screened in (out)	No of measures from existing plans ¹	No of measures related to types of existing plans ¹	No of new measures for cycle one ¹	No of new measures and known level of detail ¹	No of European Sites
Catchments with no screened in measures						
All FRA catchments have some screened in measures.						
Catchments with all measures from existing plans						
Avon Bristol and North Somerset Streams	9 (83)	9	9 from Local Strategies	0	no new measures	11
Overall Total	9 (83)	9	9 from Local Strategies	0	see above	
% all measures	10%	10%	9 (10%)	0%	see above	

¹ - all numbers are of 'screened in' measures, except those in brackets.

² - all %s are of total of all 'screened in and out' measures.

'in proximity' means being generally in the same part of the catchment (specific distances are not applied, but further detail is provided in the assessment).

'specific' is where a measure is place specific, 'strategic' is where a measure is catchment or RBD-wide.

Of the total of 92 measures, 9 (10%) have been screened in for HRA consideration, and 83 (90%) screened out. All the measures are within the Avon Bristol and North Somerset Streams management catchment. Nine measures (10%) are from existing plans all of which are Local FCRM Strategies.

5.2 Screening and Likely Significant Effects

5.2.1 Avon Bristol and North Somerset Streams Management Catchment

European sites	New measures		Existing plan measures	
	Screened in	Screened out	Screened in	Screened out
12	0	0	9	83

The Avon Bristol and North Somerset Streams management catchment contains 11 European sites. These comprise: 7 SACs, 3 SPAs and 1 Ramsar site³⁶. The majority of these sites are in the southern half of the management catchment, although the Severn Estuary SAC/SPA/Ramsar site extends along the entire length of the catchment's border with the estuary. The Avon Gorge Woodlands SAC is located on the western edge of Bristol, whilst the Chew Valley Lake SPA is located further to the south of Bristol. The Mendip Woodlands SAC and North Somerset & Mendip Bats SAC comprise a complex of sites along the southern border of the catchment to the south of Yatton and Midsomer Norton. Only a small part of the Salisbury Plain SAC/SPA is within the catchment to the

³⁶ Severn Estuary SAC, SPA, Ramsar site; Avon Gorge Woodlands SAC; Bath & Bradford on Avon Bats SAC; Mells Valley SAC; Mendip Woodlands SAC; North Somerset & Mendip Bats SAC; Salisbury Plain SAC and SPA; Chew Valley Lake SPA

west of Westbury. The Bath & Bradford on Avon Bats SAC comprises a series of sites between Bath and Chippenham. Similarly the Mells Valley SAC is a complex of sites between Frome and Holcombe. It is also worth noting that the complex of sites comprising the Somerset Levels and Moors SPA/Ramsar site are located immediately to the south of the management catchment, south of Wedmore and to the east of Glastonbury.

Existing plan measures – South Gloucestershire LFRMS

A total of 55 measures are associated with the South Gloucestershire LFRMS. Of these 53 are screened out as they relate to flood prevention (M21, M24), preparedness for flood events (M43) and recovery and review (M51).

Two measures are screened in for further consideration as they relate to flood protection (M3) with both measures referring to water flow regulation (M32) and seeking to address flooding from main rivers plus and ordinary watercourses. The measures refer in general terms to working with partners to investigation flood risk management measures in the areas of the Bristol Frome river catchment and River Avon corridor (Bristol to Bath).

South Gloucestershire Council have undertaken a HRA (November, 2014) of the South Gloucestershire LFRMS in consultation with Natural England in order to identify and assess all potential impacts on European Sites. Eight sites were identified for consideration: Avon Gorge Woodlands SAC; Bath & Bradford on Avon Bats SAC; Chew Valley Lake SPA; River Usk/Afon Wysg SAC; River Wye/Afon Gwy SAC; Severn Estuary SPA and SAC; Wye Valley & Forest of Dean Bat Sites SAC; and Wye Valley Woodlands/Coetrioedd Dyffryn Gwy SAC. Of these, seven were scoped out, leaving one - the Severn Estuary SPA/SAC/Ramsar – for further consideration. Overall, **the HRA concluded that the LFRMS and its associated Action Plan will not have a significant effect or compromise the conservation objectives of the Severn Estuary SAC/SPA/Ramsar site, either on its own or in combination with other plans.** The main reasoning for this related to:

- the focus of the LFRMS on localised flooding rather than flood defences along the Severn Estuary which is addressed within other plans; and
- the role of the LFRMS as a general over-arching strategy for managing and countering localised flooding across the unitary area rather than directing works or flood alleviation solutions in the vicinity of the European site.

Existing plan measures - Bristol City Council LFRMS

A total of 34 measures are derived from the Bristol City LFRMS. Of these 28 are screened out as they relate to flood risk prevention (M21, M23, M24), preparedness for flood events (M41, M42, M43, M44) and recovery and review (M53).

Six measures are screened in as they relate to flood risk protection (M3). These measures include: 5 measures for surface water management (M34) and one measure for other protection (M35). Most of the measures seek to address flooding from a variety of sources including surface water, sewer, main river and ordinary watercourses. Only one measure, likely to involve a localised solution seeks to address flooding from the sea.

Bristol City Council has undertaken a HRA (2015) of the LFRMS. Two European sites were specifically considered: Avon Gorge Woodlands SAC and the Severn Estuary SAC/SPA and

Ramsar site. **Overall, the HRA concluded no likely significant effects with respect to European sites.** This conclusion was supported by the following reasoning:

- The type of local actions introduced in the LFRMS which do not primarily deal with land use activities or activities which would create potential effects or uncertain effects on the sites and their habitats and species;
- Identified local defence schemes are not considered to be in proximity to, or have potential to indirectly create a pathway which would create negative or significant effects on the sites;
- Feasibility studies and investigations studies of future defence schemes (e.g. River Avon; Avonmouth/Sevenside) will consider the potential effects on European sites, by undertaking appropriate and proportionate assessment work at the project level.

Existing plan measures - North Somerset LFRMS

Three measures are drawn from the North Somerset LFRMS. Two of these measures are screened out of further consideration as they relate to flood risk prevention (M24) and preparedness for flood events (M43).

One measure is screened in as it relates to flood risk protection (M3) and refers to surface water management (M34). The measure seeks to address flooding from ordinary watercourses and surface water flooding.

North Somerset Council has undertaken a HRA of the LFRMS (July, 2013). The following European sites were considered: Avon Gorge Woodlands SAC; Chew Valley Lake Spa; Mells Valley SAC; Mendip Limestone Grasslands SAC; Mendip Woodlands; North Somerset and Mendip Bats SAC; Severn Estuary SAC/SPA/Ramsar site; Somerset Levels SPA/Ramsar site. The HRA concluded that the following sites were unlikely to require further assessment: Avon Gorge Woodlands SAC; Chew Valley Lake SPA; Mells Valley SAC; Mendip Limestone Grasslands SAC; Mendip Woodlands SAC; and Somerset Levels and Moors SPA/Ramsar site. Effects on the Severn Estuary designations were also considered to be either positive or '*de minimis*' negative. In order to ensure no likely significant effect on European sites, the **HRA advises that project level assessment HRA is undertaken for any schemes in Claverham, Congresbury East, Hutton, Winscombe and Wrington, due to potential effects on the grassland and woodland qualifying interests of the North Somerset and Mendip Bats SAC.** None of these communities are within the indicative boundaries of the FRA, and located further to the south west.

5.3 Consideration of results and conclusion

All the measures for the FRA are derived from existing plans of the three component LLFAs. These plans have had HRAs undertaken that have concluded no likely significant effect on European sites. As part of these HRAs mitigation measures are referred to and summarised.

5.3.1 Conclusion

At this strategic-plan level of the Bristol FRA the measures are screened as being not likely to have any significant effects on any European sites, alone or in combination with other plans or projects (see chapter 6). Given this conclusion, there is no requirement to progress

to the next stage of the Habitats Regulations Assessment (an 'appropriate assessment' to examine the question of adverse effect on the integrity of European sites). Lower-tier assessments will be required and will be assisted by the information gathered in this high-level assessment, but their conclusions will not be influenced by this HRA, and each individual plan or project must be assessed as necessary in order to meet the requirements of the Habitats Regulations.

6 In combination effects with other plans and projects

The Habitats Directive and the Habitats Regulations require competent authorities to consider the assessment of effects on a European site in combination with other plans or projects. The Habitats Regulations assessment of the FRMP has demonstrated that, for those measures where there is a potential effect on a European site, there is insufficient detail available at this stage to understand the site-specific context in terms of location or outline design of the flood risk management solution to be able to assess the likely effects in the detail necessary to advise on site-specific avoidance and mitigation required. Rather, the assessment has set out the range of avoidance, mitigation and control measures that can be applied, and there is enough confidence in the breadth and type of measures available to screen out likely significant effects for the purposes of plan-level assessment.

The application of HRA requirements at the project or lower tier plan level will take place when a greater level of detail will be available. Given the lack of available information on the location and design of solutions and therefore the associated effects, it was not possible to meaningfully assess the in-combination effects with other plans and projects. This section has therefore set out the types of plans and projects where interactions are possible and more detailed consideration of these will be required in the HRAs for projects or lower tier plans.

The potential for in-combination effects lies with the following potential interactions:

- the RBD FRMP with the FRA FRMP
- between different RBD FRMPs
- the RBD FRMP with other external plans and projects within the RBD

The in combination effects with existing Risk Management Authority plans during the period of the plan, including Shoreline Management Plans, Catchment Flood Management Plans and Local Strategies, have been considered as part of the FRMP assessments undertaken within each RBD catchment and flood risk area (see previous sections). This is because the FRMP has already considered how the objectives and measures of these existing plans combine and relate to the 6 year cycle 2015 to 2021 of the FRMP.

6.1 RBD and FRA FRMPs

FRAs geographically overlay one or more RBD catchments and as distinct 'plans' addressing local flood sources may have measures that coincide with wider RBD catchment measures addressing flooding from main rivers, sea and reservoirs. Together these measures have the potential to cause in-combination effects on nearby European sites depending on their nature, location and relationship. At the strategic-plan level of the HRA such in-combination effects on specific European sites in unable to be considered. Instead the HRA highlights where risks of in-combination effects may in general be higher and which project level assessments should consider further as follows:

- Most FRAs are in urban areas where there are less European sites present so most measures are less likely to be in proximity to them
- Most measures in FRAs are drawn from existing plans (local strategies and surface water management plans) that will have considered their flood management

measures alongside any in the same strategic area under CFMPs and SMPs, including any in-combination effects on European sites in any HRA.

- The combination of measures with highest risks of in-combination effects not considered under existing plans, will be where there are specific improvement measures that are new in the FRMP for both the RBD catchment (main river/sea flooding) and the FRA (local flooding) that are in close proximity to each other and a European site.

6.2 In-combination effects between RBD FRMPs

The Severn RBD shares a border with seven other RBDs:

- Western Wales
- Dee
- North West
- Humber
- Anglian
- Thames
- South West

There are some European sites that span these borders of the Severn RBD. With respect to the North West and Humber RBDs this includes the complex of discrete sites represented by the Midland Meres and Mosses Phase 1 and 2 Ramsar sites, whilst for the Dee RBD the upland Berwyn and South Clwyd Mountains SAC and Berwyn SPA extend across the border. To the south and east the main cross-border sites are the Salisbury Plain SPA/SAC and the Severn Estuary SAC/SPA/Ramsar. The former site is primarily within the South West RBD. The Severn Estuary SAC/SPA/Ramsar site is mainly within the Severn RBD, but also extends to the South West RBD and the Western Wales RBD. To the west sites, such as the upland Elenydd – Mallaen SPA and Elenydd SAC extend across the border with the Western Wales RBD and further to the north also the Berwyn and South Clwyd Mountains SAC and Berwyn SPA.

In general more FRMP measures are located close to where the risks of flooding to people and property are greatest and as a result less are located close to the water shed margins of catchments that are the borders of RBDs. There are however, catchment or RBD wide measures that relate to these borders and often involve working with natural processes. At this level of the plan, the nature of such measures on any specific European sites that cross RBD borders are not sufficient to identify effects and such measures are considered to result in no likely significant effects to cross border European sites. Such effects may be important for lower tier plans and project level assessments to consider when more details of the measures and the effects are known.

Whilst the Severn RBD FRMP has been produced jointly by the Environment Agency and Natural Resources Wales, the approach to the HRA has had to reflect the different ways the responsible authorities are seeking to deliver against the FRMP objectives for this first cycle of plans. For the purposes of the HRA two management catchments with the Severn RBD have been treated as cross-border (Wye and Severn Uplands) with the Environment Agency leading on the HRA for areas within England, and Natural Resources Wales leading on areas in Wales. With respect to the areas in Wales, the Communities at Risk identified by

Natural Resources Wales includes 3 communities in the Wye catchment (Chepstow; Llanwrtyd Wells, Mathern) and 4 communities in the Severn Uplands catchment (Llanllwchaiarn; Llanidloes; Caersws 1&2; Llandrinio). The 3 communities within the Wye are located to the west and south of the management catchment and not in proximity to the new measures identified for the England part of the catchment. For two of the communities (Llanwrtyd Wells, Mathern) the HRA concluded no likely significant effect on European sites, whilst for Chepstow the need for project level HRA is identified. With respect to the Severn Uplands catchment the assessment concluded no likely significant effect for measures in 3 of the Communities at Risk (Llanllwchaiarn; Llanidloes; Caersws 1 & 2), with the need for project level HRA identified for Llandrinio. For the England part of the Severn Uplands there are no new protection measures as part of the FRMP with all measures derived from existing plans. The HRAs from these existing plans all concluded no effects on European sites.

6.3 In-combination effects with external plans

Potential for in-combination effects with external plans will depend on the specific locations and design of actions or measures arising from the FRMP, external plan or project. Nevertheless, a number of plans could give rise to projects that have the potential to contribute to an in-combination effect can be identified.

At this stage, given the uncertainty of location and design of measures in the FRMP, there is limited value in examining other plans in detail and speculating on where interactions might occur. The approach taken was to identify key plans that should be considered in the HRAs for projects or lower tier plans or strategies, as described below. However, this is not a definitive list; there are a range of plans and projects that will need to be taken account of in the HRAs for lower-tier plans projects, when considering potential in-combination effects.

Local plans: Local Plans set out a vision and a framework for the future development of the area, addressing needs and opportunities in relation to housing, the economy, community facilities and infrastructure – as well as a basis for safeguarding the environment, adapting to climate change and securing good design. During their development and before they are adopted, plans will be subject to an HRA where there is the potential for significant effects on a European site. Other local plans that may be relevant to also consider relate to transport, minerals and waste.

Water resource management plans: These plans sets out the investment needed to ensure that there is sufficient water to continue supplying communities over the 25 years from 2015 to 2040. A number of Water Companies have responsibilities across the Severn RBD including: Welsh Water, Severn Trent Water, Bristol Water, Wessex Water, Anglian Water and South Staffordshire Water. The HRAs of the plans concluded that they will have no significant effects on European sites within the Severn RBD alone or in combination with other known plans and projects. An exception is the plan for South Staffordshire Water, where it appears that no HRA was undertaken. However, an Strategic Environmental Assessment was deemed not to be required on the basis that there is no deficit in supply over the planning period and therefore options for increased supply were not under consideration.

River basin management plan (RBMP): RBMPs set statutory objectives for river, lake, groundwater, estuarine and coastal water bodies and summarise the measures needed to achieve them. Because water is linked to land, they also inform decisions on land-use

planning. The RBD that provides the spatial boundary for the FRMP is the same as that used for the RBD. The planning timeframe is also the same, so the plan for the period 2015-21 is currently being prepared. European sites are designated as “Protected Areas” under the Water Framework Directive, and the RBMPs include measures to ensure that the objectives for these areas are achieved. While it is unlikely that the plan will result in a significant effect on a European site, an HRA is being undertaken to identify any risks and unanticipated effects.

Marine plans: Marine plans set out priorities and directions for future development within the plan area, informs sustainable use of marine resources and helps marine users understand the best locations for their activities, including where new developments may be appropriate. Marine plans are proposed for the inshore and offshore areas. Only interactions with the inshore plan would be expected. Marine plans are required to be produced by 2021. Both the Welsh National Marine Plan and the South West (inshore) Marine Plan are under development and unlikely to be published prior to the FRMP. It is not possible to consider the potential for in-combination effects further at this stage. However, when published the plans will need to be taken into account in project level in-combination assessments.

7 Conclusion and Future HRAs

This HRA has been carried out at the level of published detail in the FRMP. For measures from existing plans, the HRA has summarised the results from existing HRAs of these plans. For any new strategic measures, provided for the new FRMP cycle (2015-2021), the HRA has considered the effects at a strategic level, as local actions will be developed at lower tiers of development of further plans or projects. The HRA has determined a conclusion for each of the two RMA plans: Severn RBD FRMP and the Bristol FRA FRMP. The HRA provides a basis to identify options to avoid or mitigate for impacts to give confidence that the FRMP can be screened as having no likely significant effect. The HRA also makes clear that these will require further case-specific consideration during determination of any authorisations or consents by the relevant competent authority as to their effects on European sites, and then inform the appropriate mechanisms to be applied to secure any mitigation required.

The strategic nature of the FRMP also limits the extent to which in-combination effects can be considered. Nevertheless, the potential for in-combination effects has been highlighted. The greatest risk lies with other plans and projects that are external to the FRMP and key plans that assessments at project level will need to consider have been identified.

The HRA conclusions for the FRMP is that there is sufficient scope for future avoidance and mitigation to have confidence that the plan can be screened out of any likely significant effects. This is based on controls already in place for measures from existing plans (with agreed HRAs and the necessary avoidance, mitigation or compensation secured), and controls that projects will have in place when developing local actions for any new strategic measures in the FRMP.

Future HRAs should make specific reference to this strategic-plan HRA for risks related to the 'screened in' measures where they are considered close enough to European sites to need detailed consideration at project level. Future HRAs should also make specific reference to HRAs for existing plans with agreed controls in place and to any further controls and mitigations in this strategic HRA related to any new strategic developments for the new cycle of the FRMP.

This HRA does not remove the need for HRA at a subsequent level, i.e. lower-tier strategies, plans or projects that implement measures, including the need for detailed appropriate assessment where required.

As local actions are developed at a project level and the details of their scope and scale are known, this may identify additional effects on European sites that have not been assessed here, or were not appropriate to consider at this spatial scale of plan.

ANNEX A

Table A1 HRA screening table for the FRMP measure categories

Measure code	Measure description	Screened in or out	Justification
M2 Prevention			
M21	Prevention, avoidance measure to prevent the location of new or additional receptors in flood prone areas such as land use planning policies or regulation	Out	Comprises prevention and avoidance measures therefore unlikely to result in physical intervention.
M22	Prevention, removal or relocation measure to remove receptors from flood prone areas or to relocate receptors to areas of lower risk	In	Removal or relocation measures may involve physical intervention, with potential for effects on European sites where these interventions are in proximity. Screened in on a precautionary basis.
M23	Prevention, reduction measures to adapt receptors to reduce the adverse consequences in the event of a flood actions or buildings, public networks etc	Out	Flood risk prevention / reduction / adaption to buildings etc will not result in physical interventions affecting European sites.
M24	Prevention, other prevention measures to enhance flood risk prevention (may include flood risk modelling and assessment, flood vulnerability assessment, maintenance programmes or policies etc)	Out	Flood risk modelling / assessment will not result in physical interventions affecting European sites.
M3 Protection			
M31	Natural flood management/run off and catchment management. Measures to reduce the flow into natural or artificial drainage systems such as overland flow interceptors and/or storage, enhancement of infiltration, etc and including in-channel, flood plan works and the reforestation of banks, that restore natural systems to help slow flow and store water.	In	Measures comprise physical activities or interventions resulting in actual changes on the ground or effects on flows / movement of water and changes to physical processes.
M32	Water flow regulation. Measures involving physical intervention to regulate flows such as construction modification or removal of water retaining structures (e.g. dams or other on-line storage areas) or development of existing flow regulation rules and which have significant impact on the hydrological regime.	In	
M33	Channel, coastal and floodplain works. Measures involving physical interventions to freshwater channels, mountain streams, estuaries, coastal water and flood prone areas of land, such as construction, modification or removal of structures or the alteration of channels, sediment dynamics, management dykes etc.	In	
M34	Surface water management measures involving physical interventions to reduce surface water flooding, typically, but not exclusively in an urban environment such as enhancing artificial drainage capacity or through SuDS	In	
M35	Other measures to enhance protection against flooding which may include	In	

Measure code	Measure description	Screened in or out	Justification
	flood defences, asset maintenance programmes or policies.		
M4 Preparedness			
M41	Flood forecasting and warning. Measures to establish or enhance a flood forecasting or warning system.	Out	Measures do not comprise or result in physical changes or interventions.
M42	Emergency event response planning/contingency planning measures to establish or enhance flood event institutional emergency response planning	Out	
M43	Public awareness and preparedness. Measures to establish the public awareness or preparedness for flood events.	Out	
M44	Other measures to establish or enhance preparedness for flood events to reduce adverse consequences.	Out	
M5 Recovery and review			
M51	Recovery and review (planning for recovery and review phases is in principle part of preparedness) individual and society recovery, clean up and restoration activities (buildings, infrastructure etc). Health and mental health supporting actions, inc managing stress disaster financial assistance (grants, tax) inc disaster legal assistance, disaster unemployment assistance, temporary or permanent, relocation, other.	Out	Measures on the whole do not comprise or result in physical changes or interventions. Measures involving physical activity are focused on restoration at a local level, i.e. buildings etc., none of which considered likely to result in physical effects on European sites.
M52	Environmental recovery, clean up and restoration activities (with several sub-topics as mould protection, well-water safety and securing hazardous material containers).	Out	
M53	Other recovery, review and lessons learnt from flood events, insurance policies.	Out	
M6 Other			
M61	Other measures not fitting in to any of the other categories (M2-4) or their sub-categories.	In	M61 code includes a variety of different kinds of measures, but includes measures such as habitat creation, floodplain restoration, managed realignment. Therefore screened in on a precautionary basis.

Table A2 Management Catchments and European sites in the Severn RBD / FRMP

Management Catchment	European Site	Management Catchment	European Site
Teme	<ul style="list-style-type: none"> • River Clun SAC • Downton Gorge SAC • The Stiperstones & The Hollies SAC. 	Severn Vale	<ul style="list-style-type: none"> • Severn Estuary SAC, SPA and Ramsar site • Walmore Common SPA and Ramsar site • Rodborough Common SAC • Cotswolds Beechwoods SAC • Wye Valley & Forest of Dean Bat Sites SAC
Severn Uplands (England)	<ul style="list-style-type: none"> • Midlands Meres & Mosses - Phase 1 and Phase 2 Ramsar sites • The Stiperstones & The Hollies SAC 	Severn Uplands (Wales)	<ul style="list-style-type: none"> • Berwyn SPA/SAC • Montgomery Canal SAC • Tanat and Vyrnwy Bat Sites SAC • Granllyn SAC • Coedydd Llawr-y-glyn SAC • Berwyn and South Clwyd Mountains SAC • Elan Valley Woodlands
Wye (England)	<ul style="list-style-type: none"> • Wye Valley & Forest of Dean Bat Sites SAC • Wye Valley Woodlands SAC • River Wye SAC • Severn Estuary SAC/SPA and Ramsar site 	Wye (Wales)	<ul style="list-style-type: none"> • Wye Valley & Forest of Dean Bat Sites SAC • Wye Valley Woodlands SAC • River Wye SAC • Severn Estuary SAC/SPA and Ramsar site • Usk Bat Sites SAC • Llangorse Lake SAC • Drostre Bank SAC • Mynydd Epynt SAC • Elenydd – Mallaen SPA • Elenydd SAC • Coetiroedd Cwm Elan SAC • Rhos Goch SAC
Shropshire	<ul style="list-style-type: none"> • Midland Meres & Mosses - Phase 1 and Phase 2 Ramsar sites 	Worcestershire Middle Severn	<ul style="list-style-type: none"> • Midlands Meres & Mosses - Phase 1 Ramsar site

Management Catchment	European Site	Management Catchment	European Site
Middle Severn	<ul style="list-style-type: none"> • Brown Moss SAC • Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC • West Midlands Mosses SAC 		<ul style="list-style-type: none"> • Fens Pools SAC • Lyppard Grange Ponds SAC
Warwickshire Avon	<ul style="list-style-type: none"> • Bredon Hill SAC • Dixton Wood SAC 	Avon Bristol and North Somerset Streams	<ul style="list-style-type: none"> • Severn Estuary SAC, SPA, Ramsar site • Avon Gorge Woodlands SAC • Bath & Bradford on Avon Bats SAC • Mells Valley SAC • Mendip Woodlands SAC • North Somerset & Mendip Bats SAC • Salisbury Plain SAC and SPA • Chew Valley Lake SPA
South East Valleys (Wales)	<ul style="list-style-type: none"> • Severn Estuary SAC, SPA, Ramsar site • Cardiff Beech Woods SAC • Blaen Cynon SAC • Cwm Cadlan SAC • Usk Bat Sites SAC • Brecon Beacons SAC • Aberbargoed Grasslands SAC • River Usk SAC 	Usk (Wales)	<ul style="list-style-type: none"> • River Usk SAC • Severn Estuary SAC, SPA, Ramsar site • Usk Bat Sites SAC • Brecon Beacons SAC • Mynydd Epynt SAC • Sugar Loaf Woodlands SAC • Cwm Clydach Woodland SAC • Coed y Cerrig SAC

Table A3 Mitigation and Control Measures

Flooding source	Legal / consenting processes and consideration of Habitats Regulations
<p>Measures to address flooding from rivers (main river)</p>	<ul style="list-style-type: none"> • Measures involving construction / creation of new, or changes to / alteration / improvement of existing flood defence structures and main river channels / floodplain generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures involving works <u>on or near a main river</u>, flood or sea defences requires Flood Defence Consent from the Environment Agency or Natural Resources Wales, under the Water Resources Act 1991, Flood and Water Management Act 2010. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application, determined by the Environment Agency or Natural Resources Wales as competent authority. • Smaller scale measures for flood defence works, improvements or alterations to main river channels, and measures comprising maintenance, such as replacement, repair or refurbishment of existing structures, may not require planning permission, but fall under The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined, and if likely significant effect is predicted, Regulation 73 of the Habitats Regulations places a condition of any planning permission granted by a general development order, requiring written notification of approval of the local planning authority. HRA process then as for planning permission.
<p>Measures to flooding from rivers (ordinary watercourses)</p>	<ul style="list-style-type: none"> • Measures involving construction / creation of new, or changes to / alteration / improvement of existing flood defence structures and ordinary watercourse river channels / floodplain generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures involving works <u>on or near all other watercourses that aren't main river</u> requires Ordinary Watercourse Consent from either the Lead Local Flood Authority (LLFA) or Internal Drainage Board (IDB) or Natural Resources Wales. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application, determined by the LLFA / IDB or Natural Resources Wales as competent authority. • Smaller scale measures for flood defence works, improvements or alterations to all other watercourses that aren't main river, and measures comprising maintenance, such as replacement, repair or refurbishment of existing structures, may fall under The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined, and if likely significant effects predicted, Regulation 73 of the Habitats Regulations places a condition of any planning permission granted by a general development order, requiring written notification of approval of the local planning authority.

Flooding source	Legal / consenting processes and consideration of Habitats Regulations
	HRA process then as for planning permission.
Flooding from the Sea	<ul style="list-style-type: none"> • Measures involving construction / creation of new, or changes to / alteration / improvement of existing coastal / tidal flood defence structures and estuary / coastal frontage (above mean low water) generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures involving works below the mean high water spring tidal limit (including the waters of every estuary, river or channel where the tide flows up to the mean high water spring tide limit) require a Marine Works Licence from the Marine Management Organisation (MMO) or Natural Resources Wales in Wales. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application. The HRA is determined by the MMO or Natural Resources Wales as competent authority. • Measures involving works on or near a main river, flood or sea defences requires Flood Defence Consent from the Environment Agency or Natural Resources Wales, under the Water Resources Act 1991, Flood and Water Management Act 2010. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application, determined by the Environment Agency or Natural Resources Wales as competent authority. • Maintaining coast protection works does not require a marine licence when carried out by, or on behalf of, the Environment Agency or a coast protection authority, provided the activity is carried out within the existing boundaries of the works being maintained. Some coast protection works maintenance activities also do not require planning permission, falling under the remit of The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined, and if likely significant effects predicted, Regulation 73 of the Habitats Regulations places a condition of any planning permission granted by a general development order, requiring written notification of approval of the local planning authority. HRA process then as for planning permission.
Coastal erosion	<ul style="list-style-type: none"> • Measures involving construction / creation of new, or changes to / alteration / improvement of existing coastal / tidal flood defence structures and estuary / coastal frontage (above mean low water) generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures involving works below the mean high water spring tidal limit require a Marine Works Licence from the Marine Management Organisation (MMO) or Natural Resources Wales in Wales. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application. The HRA is determined by the MMO or Natural Resources Wales as competent authority.

Flooding source	Legal / consenting processes and consideration of Habitats Regulations
	<ul style="list-style-type: none"> • Measures involving works on or near a main river, flood or sea defences requires Flood Defence Consent from the Environment Agency or Natural Resources Wales, under the Water Resources Act 1991, Flood and Water Management Act 2010. Where a European site is potentially affected, the need for HRA is determined through the consenting process, with a HRA submitted with the consent application, determined by the Environment Agency or Natural Resources Wales as competent authority. • Maintaining coast protection works does not require a marine licence when carried out by, or on behalf of, the Environment Agency or a coast protection authority, provided the activity is carried out within the existing boundaries of the works being maintained. Some coast protection works maintenance activities also do not require planning permission, falling under the remit of The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined, and if likely significant effects predicted, Regulation 73 of the Habitats Regulations places a condition of any planning permission granted by a general development order, requiring written notification of approval of the local planning authority. HRA process then as for planning permission.
Surface water flooding	<ul style="list-style-type: none"> • Measures involving construction / creation of new, or changes to / alteration / improvement of existing structures to address surface water flooding (e.g. culverts, drainage ditches / channels) generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures to address surface water flooding in proximity to main river or ordinary watercourses requires Flood Defence Consent / Ordinary Watercourse Consent from the Environment Agency/Natural Resources Wales / LLFA / IDB for work on or near all other watercourses that aren't main rivers. HRA requirements as for measures to address flooding from rivers (main river / ordinary watercourses). • Measures involving maintaining existing structures to address surface water flooding may not require planning permission, falling under the remit of The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined, and if likely significant effects predicted, Regulation 73 of the Habitats Regulations places a condition of any planning permission granted by a general development order, requiring written notification of approval of the local planning authority. HRA process then as for planning permission.
Groundwater flooding	<ul style="list-style-type: none"> • Measures to address groundwater flooding in proximity to main river or ordinary watercourses requires Flood Defence Consent / Ordinary Watercourse Consent from the Environment Agency/Natural Resources Wales / LLFA / IDB for work on or near all other watercourses that aren't main rivers. HRA requirements as for measures to address flooding from rivers (main river / ordinary watercourses). • Measures to address groundwater flooding involving the construction / creation of above ground structures generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning

Flooding source	Legal / consenting processes and consideration of Habitats Regulations
	<p>process, with HRA submitted with the planning application, determined by the local planning authority as competent authority.</p>
<p>Sewer flooding</p>	<ul style="list-style-type: none"> • Measures to address sewer flooding in proximity to main river or ordinary watercourses requires Flood Defence Consent / Ordinary Watercourse Consent from the Environment Agency / Natural Resources Wales/LLFA / IDB for work on or near all other watercourses that aren't main rivers. HRA requirements as for measures to address flooding from rivers (main river / ordinary watercourses). • Measures to address sewer flooding involving the construction / creation of above ground structures generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures to address sewer flooding involving the construction / creation of above ground structures generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority. • Measures to address sewer flooding by sewerage undertakers may fall within their Permitted Development powers under authority The Town and Country Planning (General Permitted Development) Order 1995 (as amended). Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority.
<p>Flooding from reservoirs</p>	<ul style="list-style-type: none"> • New reservoirs / impounding structures, or alterations or removals of existing structures, require an Impoundment Licence from the Environment Agency or Natural Resources Wales (Water Resources Act 1991 (as amended by Water Act 2003), Environment Act 1995, Water Resources (Abstraction and Impounding) Regulations 2006). Where a European site is potentially affected, the need for HRA is determined through the licensing application process, with HRA determined by the Environment Agency or Natural Resources Wales as competent authority. • Measures involving construction / creation of new reservoirs / impounding structures, or changes to / alteration / of existing structures generally require planning permission from the local planning authority under the Town & Country Planning Act 1990. Where a European site is potentially affected, the need for HRA is determined through the planning process, with HRA submitted with the planning application, determined by the local planning authority as competent authority.

Annex B – Severn RBD European sites

Site ID	Name of Site	SPA, SAC, Ramsar	Area (ha)*	WFD: Natura 2000 protected area site
UK0030071	Aberbargoed Grassland	SAC	40	Yes
UK0012734	Avon Gorge Woodlands	SAC	152	-
UK0012584	Bath and Bradford-on-Avon Bats	SAC	107	-
UK9013111	Berwyn	SPA	24188	Yes
UK0012926	Berwyn and South Clwyd Mountains	SAC	27221	Yes
UK0030092	Blaen Cynon	SAC	67	Yes
UK0030096	Brecon Beacons	SAC	270	Yes
UK0012587	Bredon Hill	SAC	360	
UK0030100	Brown Moss	SAC	32	Yes
UK0030109	Cardiff Beech Woods	SAC	116	Yes
UK9010041	Chew Valley Lake	SPA	576	Yes
UK0012766	Coed Y Cerrig	SAC	9	Yes
UK0030119	Coedydd Llaur-y-glyn	SAC	101	Yes
UK0030145	Elan Valley Woodlands	SAC	440	Yes
UK0013658	Cotswolds Beechwoods	SAC	586	-
UK0013585	Cwm Cadlan	SAC	84	Yes
UK0030127	Cwm Clydach Woodlands	SAC	29	-
UK0030135	Dixton Wood	SAC	13	--
UK0012735	Downton Gorge	SAC	69	
UK0012878	Drostre Bank	SAC	13	Yes
UK9014111	Elenydd - Mallaen	SPA	30022	Yes
UK0012928	Elenydd	SAC	8609	Yes
UK0012912	Fenn's, Whixall, Bettisfield, Wern and Cadney Mosses	SAC	949	Yes
UK0030150	Fens Pools	SAC	20	Yes
UK0030158	Granllyn	SAC	21	Yes
UK0012985	Llangorse Lake	SAC	216	Yes
UK0030198	Lyppard Grange Ponds	SAC	1	Yes
UK0012658	Mells Valley	SAC	28	-
UK0030048	Mendip Woodlands	SAC	254	-
UK0030213	Montgomery Canal	SAC	56	Yes
UK0030221	Mynydd Epynt	SAC	40	Yes
UK0030052	North Somerset and Mendip Bats	SAC	561	-
UK0014792	Rhos Goch	SAC	68	Yes
UK0030250	River Clun	SAC	15	Yes
UK0013007	River Usk/ Afon Wysg	SAC	1008	Yes
UK0012642	River Wye/ Afon Gwy	SAC	2235	Yes
UK0012826	Rodborough Common	SAC	104	-

Site ID	Name of Site	SPA, SAC, Ramsar	Area (ha)*	WFD: Natura 2000 protected area site
UK0012683	Salisbury Plain	SAC	21438	-
UK9011102	Salisbury Plain	SPA	19689	-
UK0013030	Severn Estuary	SAC	73715	Yes
UK9015022	Severn Estuary	SPA	24663	Yes
UK0030072	Sugar Loaf Woodlands	SAC	174	Yes
UK0014783	Tanat and Vyrnwy Bat Sites	SAC	12	-
UK0012810	The Stiperstones & The Hollies	SAC	601	-
UK0014784	Usk Bat Sites	SAC	1686	Yes
UK9007051	Walmore Common	SPA	53	Yes
UK0013595	West Midlands Mosses	SAC	184	Yes
UK0014794	Wye Valley and Forest of Dean Bat Sites	SAC	143	Yes
UK0012727	Wye Valley Woodlands	SAC	916	Yes
UK11081	Severn Estuary	Ramsar	24663	
UK11076	Walmore Common	Ramsar	53	
UK11043	Midland Meres & Mosses - Phase 1	Ramsar	511	
UK11080	Midland Meres & Mosses - Phase 2	Ramsar	1588	

**Area denoted is for the entire designated area rather than the area within the RBD boundary.*

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