Severn River Basin District Flood Risk Management Plan

Habitats Regulations Assessment

December 2022

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Table of Contents

1. Non-Technical Summary

Introduction

1.1 This is the Habitats Regulations Assessment (HRA) of the Severn River Basin District (RBD) Flood Risk Management Plan (FRMP). The HRA has been undertaken in accordance with The Conservation of Habitats and Species Regulations (The Habitat Regulations) 2017 (as amended) and considers the potential implications of the FRMP on designated European conservation sites. These sites contain species and habitats that are important at a European scale.

1.2 The FRMP, covering the years between 2021 and 2027, seeks to manage significant flood-related issues in the Severn RBD, including 5 specifically identified Flood Risk Areas. It covers an area of 21,000km^2, spanning from uplands in Wales to lowland valleys and estuaries in England. It is to be noted that the FRMP only covers the English part of the RBD, except where hydrological linkages to nearby Welsh European sites may exist. Overall, the Severn FRMP seeks to reduce a range of flooding threats, including from rivers, the sea, surface water, groundwater and sewers / canals / reservoirs.

1.3 The need for protecting human receptors should be viewed in the context of the environmental challenges present in the Severn RBD. While the population in the RBD is largely concentrated in the major urban centres of Bristol, Gloucester, Shrewsbury, Worcester and Coventry, many European sites away from these conurbations are subject to high levels of anthropogenic pressures. Of primary importance to the RBD is the River Severn (the longest river in Great Britain) and its estuary, including its major tributaries (e.g. the Rivers Wye and Usk – noting that the R. Usk is not covered by this FRMP and only parts of the R. Wye). These and other European sites within the RBD are experiencing a range of negative impacts, including recreational pressure, reduced water flow / level, declining water quality, coastal squeeze and visual / noise disturbance. The objective of this HRA is to assess the potential for the Severn FRMP to result in Likely Significant Effects (LSEs) and, where applicable, adverse effects on the integrity of European sites (i.e. the ability of those sites to achieve their conservation objectives).

Methodology

1.4 The Habitats Regulations 2017 (as amended) set out the specific assessment steps required for the HRA process.

1.5 The first step in the sequence of tests, often referred to as HRA screening, establishes whether a more detailed analysis known as Appropriate Assessment is required. The purpose of HRA screening is to determine, in view of the best available scientific knowledge, whether a plan or project, either alone or in-combination with other plans or projects, could result in LSEs on European sites in view of their Conservation Objectives. If the Competent Authority determines that no LSEs are present (both alone and in-combination), then no further assessment is necessary.

Test of Likely Significant Effects

1.6 All measures included in the Severn RBD were assessed for LSEs on the European sites across and within 10km of the RBD. None of the measures were identified to result in LSEs on any European site for several reasons, including that they are too

non-specific to assess meaningfully, already being implemented (thus having undergone HRA previously), being subjected to a separate consenting process (as applies to Local Flood Risk Management Strategies, Shoreline Management Plans (SMPs) and Coastal Strategies), desk-based and involving no physical activity on the ground, remote from vulnerable sites or worded such they are about 'investigating', 'reviewing' and 'identifying opportunities'.

1.7 One group of measures was found to commit to physical work on the ground by 'delivering' or 'implementing' flood management interventions, such as coastal defence structures or natural flood management approaches. The broad location of some measures, is known, enabling a broad assessment of their proximity to European sites and potential linking impact pathways. However, detailed HRA (including Appropriate Assessment) was deferred to either lower-tier plans or the planning application stage when details on the nature of proposals are available. This approach was adopted to account for the strategic (and thereby necessarily non-specific) nature of the FRMP, while also identifying the measures with the highest impact potential on European sites.

1.8 This document also identified that a range of measures in the Severn FRMP have the potential to improve the hydrological condition and water quality in European sites. For example, delivering natural flood management measures, undertaking tree planting and restoring floodplains are approaches that may contribute towards reinstating natural flow regimes and improving water quality (e.g. through reduced sedimentation). The FRMP represents the opportunity of building the ecological requirements of sensitive European sites into the initiative development process, with the ultimate aim of supporting site Conservation Objectives.

Other Plans and Projects

1.9 The potential for the FRMP to result in LSEs on European sites in-combination with (i.e. when considered alongside) other plans and projects was also assessed. Many such plans are proposed across the RBD, which are associated with their own impact potential. For example, local authorities are proposing a minimum of 392,711 new dwellings and 2,313.2ha of employment land within the timescales of their current Local Plans and Core Strategies. The Welsh part of the Severn RBD will be covered by its own FRMP, associated with potential cumulative impacts particularly where European sites receive hydrological inputs from catchments in both England and Wales. There is also a potential for cumulative impacts with Drought Orders and Permits, the Environment Agency National Drought Plan and SMPs.

1.10 Potential in-combination LSEs with Local Plan development were excluded due to most measures not being negatively linked to European sites, the fact that some measures are only included for completeness being driven by entirely separate plan processes, and the strategic nature of the FRMP, meaning that those measures with potential interactions with European sites depend upon considerable further development before the presence of any impact pathways can be clearly identified

2. Introduction and Approach to Assessment

Background and Description of the Severn River Basin District

2.1 This report forms the Habitats Regulations Assessment (HRA) of the Severn River Basin District (RBD) Flood Risk Management Plan (FRMP). This FRMP seeks to manage significant flood risks in 5 identified Flood Risk Areas (FRAs) in the Severn RBD. It is a second cycle FRMP, covering the years between 2021 to 2027.

2.2 The Severn RBD lies mainly in England, but also covers parts of Wales. It spans from the uplands in Wales to the valleys and lowlands in England and includes the Severn Estuary. Overall, the RBD covers an area of over 21,000km^2, which comprises 7,512km of rivers, 76 lakes, 36 canals, 40 groundwater bodies and 545km^2 of estuarine habitat. The nature of the flowing waterbodies ranges from energetic upland streams to slow-flowing lowland rivers. Of primary importance to the RBD is the River Severn, at 350km the longest river in Britain with several major tributaries, such as the R. Vyrnwy, R. Teme, R. Warwickshire Avon, R. Wye and R. Bristol Avon. For administrative purposes, the RBD is divided into 8 Management Catchments, of which five lie wholly in England and three straddle the border between England and Wales. Approx. 4.55 million people, largely concentrated in the major urban centres of Bristol, Gloucester, Shrewsbury, Worcester and Coventry, live in the RBD. The Severn FRMP proposes on delivering flood prevention and management measures to protect property and human lives. It is to be noted that the FRMP assessed in this HRA only covers the English part of the RBD, except where hydrological linkages to nearby Welsh European sites may exist.

2.3 In particular, the Severn RBD FRMP seeks to address the following threats:

- river flood risk
- coastal and tidal flood risk
- coastal erosion
- surface water and groundwater flood risk
- sewer, canal and reservoir flood risk
- land management and flooding
- managing flood risk in urban and rural areas

2.4 The Environment Agency leads development of the Flood Risk Management Plans (FRMP) for River Basin Districts in England and delivery of flood warning services. The draft second cycle FRMP is a plan to manage significant flood risks in designated flood risk areas (FRAs). The ambition is that the FRMP is a strategic, place-based plan which shows what is happening in flood risk management across the English part of the RBD. FRMPs focus on the more significant areas of flooding and describe the risk of flooding now and in the future. These plans will help:

- identify actions that will reduce the likelihood and consequences of flooding update plans to improve resilience whilst informing the delivery of existing flood programmes
- work in partnership to explore wider resilience measures, including nature-based solutions for flood and water
- set longer-term, adaptive approaches to help improve the nation's resilience

2.5 This document considers the potential effects of the draft FRMP on Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, either alone or in combination with other plans or projects, and in view of best scientific knowledge.

Legislative context

2.6 The National Site Network of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) is protected via the Conservation of Habitats and Species Regulations 2017 (as amended, most recently in 2019 to reflect Brexit). These regulations also set out the process for assessing potential adverse effects on such sites, known as HRA. Paragraph 181 of the National Planning Policy Framework[1] clarifies that, in England, the HRA process is also applied to another category of internationally important wildlife site called Ramsar sites.

2.7 The legislative basis for HRA is set in the Conservation of Habitats and Species Regulations 2017 (as amended). This states that 'A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives… The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site'.

2.8 The competent authority that carries out the HRA (in this case the Environment Agency) is required to apply the precautionary principle to European sites and can only adopt a plan once it has been ascertained that it will not adversely affect the integrity of the site concerned. However, even if significant adverse effects on the designated site are predicted, and in the absence of a suitable alternative solution, the plan can still be adopted in exceptional circumstances where there are deemed sufficient imperative reasons of over-riding public interest (IROPI). In such cases, however, compensatory measures must be implemented.

Overview of HRA process

2.9 The Habitats Regulations do not prescribe a particular methodology for carrying out an appraisal of plans or projects. However, it does set out the specific assessment steps involved. In February 2021 the government provided broad guidance on the HRA process[2]. The most detailed guidance on the HRA process in the UK has been produced by Scottish Natural Heritage (now NatureScot). They outline a series of thirteen steps. However, with cognisance of recent case law (refer to Table1) clarifying when mitigation can be taken into account in the HRA process, the process has been revised to constitute eleven stages (see Figure 1).

2.10 A four-stage methodology for HRA would therefore include:

- HRA Stage 1 – screening (including a 'likely significant effect' judgement)

- HRA Stage 2 – appropriate assessment
- HRA Stage 3 – assessment of alternative solutions
- HRA Stage 4 – assessment where no alternative solutions exist and where adverse effects remain (i.e. consideration of Imperative Reasons of Overriding Public Interest (IROPI) and identification of compensatory measures)

2.11 The first step in the sequence of tests is to establish whether an appropriate assessment is required. This is often referred to as HRA screening. The purpose of HRA screening is to determine, in view of best available scientific knowledge, whether a plan or project, either alone or in combination with other plans or projects, could have likely significant effects (LSE) on a European site, in view of that site's conservation objectives.

2.12 For this purpose, and as a result of case law 'likely' means 'possible', while a 'significant' effect is one which could undermine the Conservation Objectives of a European site. To this end the HRA process applies the 'Precautionary Principle'[3] to European sites. If the competent authority determines that there are no LSE (including 'in combination' effects from other plans or projects), then no further assessment is necessary and the plan or project can, subject to any other issues, be taken forward. If, however, the competent authority determines that there are LSE, or if there is reasonable scientific doubt, then the next step in the process must be initiated and a detailed appropriate assessment undertaken. While a judgment over likely significant effects must be precautionary, the court in R (Boggis) v Natural England [2009] EWCA Civ 1061 also noted that there must be a 'real', rather than a hypothetical, risk to European sites.

2.13 This is relevant to the assessment of the FRMP measures; while many measures commit to the production, update and/or delivery of other plans (such as Water Level Management Plans, WLMPs), or the assessment of options for, or a general commitment to, flood risk management assets in certain locations, the ability to identify 'real' rather than hypothetical impacts is constrained by the fact that considerable further work is needed at lower tiers to develop the plans or schemes in question before specific impact pathways can be identified with any confidence. For example, whether a given WLMP poses a likely significant effect on a given European site will depend entirely on the proposals it contains, which are not set by FRMP measures that commit to updating WLMPs. Similarly, the potential for likely significant effects to arise from 'implementing flood risk management improvements' will vary significantly depending on what is proposed and how it is to be delivered, which may not be determined at the FRMP level; a set-back flood embankment or a flood relief channel may have no implications for a given European site compared to sheet piling in the river.

2.14 The purpose of the appropriate assessment is to carry out sufficient scientific investigation to ascertain whether the plan or project, alone or in combination with other plans or projects, will not adversely affect the integrity of European sites, in view of their conservation objectives and considering any design modifications or mitigation (but <u>not</u> compensatory measures, which can only be considered in exceptional circumstances when requirements for the above HRA Stages 3 and 4 have been met).

2.15 Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are

no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network. To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

2.16 Over time the term HRA has come into wide currency to describe the overall process set out in the Regulations from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'.

2.17 The HRA has been carried out being mindful of the implications of European case law in 2018, notably the Holohan ruling and the People over Wind ruling, both discussed below.

Figure 1. Stages of the HRA process (adapted from SNH (2015)) Note that for the purposes of this FRMP Natural Resources Wales were also consulted.

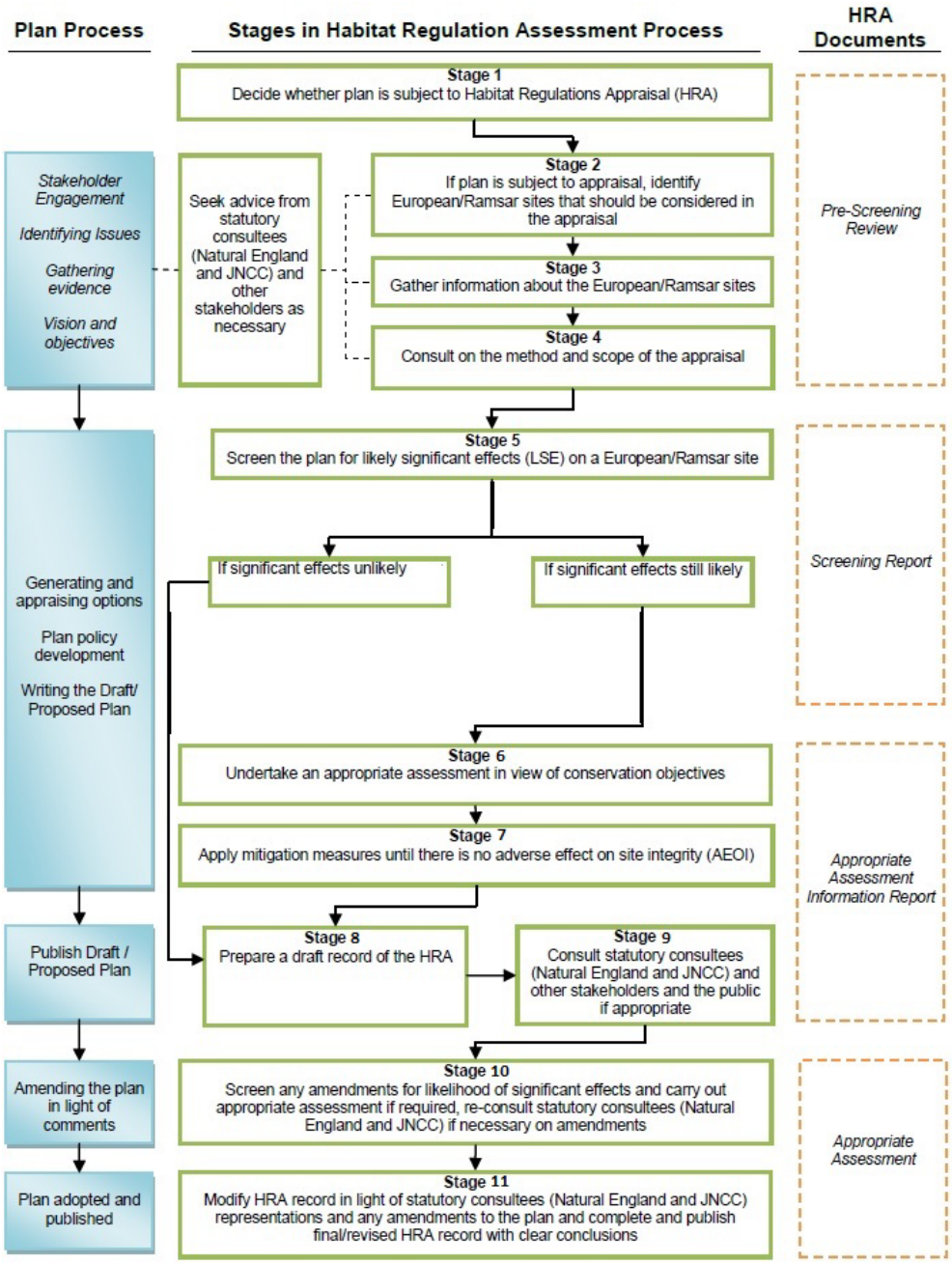


Figure 1 accessible description

Figure 1 shows the plan process, stages in Habitat Regulation Assessment process and HRA documents involved in the HRA process.

The first part of the plan process involves stakeholder engagement, identifying issues, gathering evidence and the vision and objectives. Advice may be needed from statutory consultees, such as Natural England and JNCC, and other stakeholders as necessary. The stages include:

1. Decide whether the plan is subject to Habitat Regulations Appraisal.

2. If the plan is subject to appraisal, identify European and Ramsar sites that should be considered in the appraisal.
3. Gather information about European sites and Ramsar sites.
4. Consult on the method and scope of the appraisal.

A pre-screening review document is needed for stages 1 to 4.

The second part of the plan process involves generating and appraising options, planning policy development and writing the draft/proposed plan. The stages include:

5. Screen the plan for likely significant effects (LSE) on a European or Ramsar site. If the significant effects are unlikely, then move on to stage 8. If significant effects are likely, then continue to stage 6.
6. Undertake an appropriate assessment in view of conservation objectives.
7. Apply mitigation measures until there is no adverse effect on site integrity (AEOI).

A screening report is needed for stage 5 and appropriate assessment information report is needed for stage 6 to 9.

The third part of the plan process involves publishing the draft or proposed plan. The stages include:

8. Prepare a draft record of the HRA.
9. Consult statutory consultees (Natural England and JNCC), other stakeholders and the public if appropriate.

The fourth part of the plan process involves amending the plan in light of comments. This includes stage 10:

10. Screen any amendments for likelihood of significant effects and carry out appropriate assessment if required, re-consult statutory consultees (Natural England and JNCC) if necessary, on amendments.

An appropriate assessment document is needed for stage 10 and 11 of the plan process.

In the fifth and final part of the process the plan is adopted and published. This includes stage 11:

11. Modify HRA record in light of statutory consultees (Natural England and JNCC) representations and any amendments to the plan and complete and publish final/revised HRA record with clear conclusions.

Relevant case law

2.18 As a consequence of the UK's exit from the EU, it was necessary for various amendments to be made to the Habitats Regulations. These changes were required to ensure that England and Wales (and Scotland through separate regulations) continue to maintain the same standard of protection afforded to European sites. The Habitats Regulations remain in force, including the general provisions for the protection of European sites and the procedural requirements to undertake HRA. The

changes made were only those necessary to ensure that they remain operable following the UK's exit from the EU.

2.19 Although the UK is no longer part of the EU, a series of prior rulings of the Court of Justice of the European Union (CJEU) are relevant and have been considered when preparing this document. These rulings and their implications for this HRA are summarised in Table 1.

Table 1. Case law relevant to the HRA of the FRMP

Case	Ruling	Relevance to the HRA of the FRMP
People Over Wind and Sweetman v Coillte Teoranta (C-323/17)	The ruling of the CJEU in this case requires that any conclusion of 'no likely significant effect' on a European site must be made prior to any consideration of measures to avoid or reduce harm to the European site. The determination of likely significant effects should not, in the opinion of the CJEU, constitute an attempt at detailed technical analyses. This should be conducted as part of the appropriate assessment.	NatureScot has published guidance on the implications of this ruling for HRA (SNH, 2019). It will be necessary to distinguish between those measures which are intended to avoid or reduce harmful effects on a European site and those elements of the flood management plan that may incidentally provide some degree of mitigation, but which are intrinsic or essential parts of the plan itself. SNH advises that intrinsic parts of a plan can be considered at the screening stage of HRA. If it can be concluded that the Flood management plan area will have no adverse effect on any European site, in the absence of mitigation, it will be possible to conclude 'no likely significant effects', and the need for further detailed appropriate assessment will be 'screened out'.
Waddenzee (C-127/02)	The ruling in this case clarified that appropriate assessment must be conducted using best scientific knowledge, and that there must be no reasonable scientific doubt in the conclusions drawn. The Waddenzee ruling also provided clarity on the definition of 'significant effect', which would be any effect from a plan or project which is likely to undermine the conservation objectives of any European site.	Adopting the precautionary principle, a 'likely' effect in this HRA is interpreted as one which is 'possible' and cannot be objectively ruled out. The test of significance of effects has been conducted with reference to the conservation objectives of relevant European sites.

Case	Ruling	Relevance to the HRA of the FRMP
Holohan and Others v An Bord Pleanála (C-461/17)	The conclusions of the Court in this case were that consideration must be given during appropriate assessment to: • effects on qualifying habitats and/or species of a SAC or SPA, even when occurring outside of the boundary of a European site, if these are relevant to the site meeting its conservation objectives, and • effects on non-qualifying habitats and/or species on which the qualifying habitats and/or species depend and which could result in adverse effects on the integrity of the European site.	This relates to the concept of 'functionally-linked habitat', i.e. areas outside of the boundary of a European site which supports its qualifying feature(s). In addition, consideration must be given to non-qualifying features upon which qualifying habitats and/or species rely.
T.C Briels and Others v Minister van Infrastructuur en Milieu (C-521/12)	The ruling of the CJEU in this case determined that compensatory measures cannot be used to support a conclusion of no adverse effect on site integrity.	Compensation can only be considered at the relevant stage of HRA and not during appropriate assessment. Compensation must be delivered when appropriate assessment concludes that there will be adverse effects on site integrity.

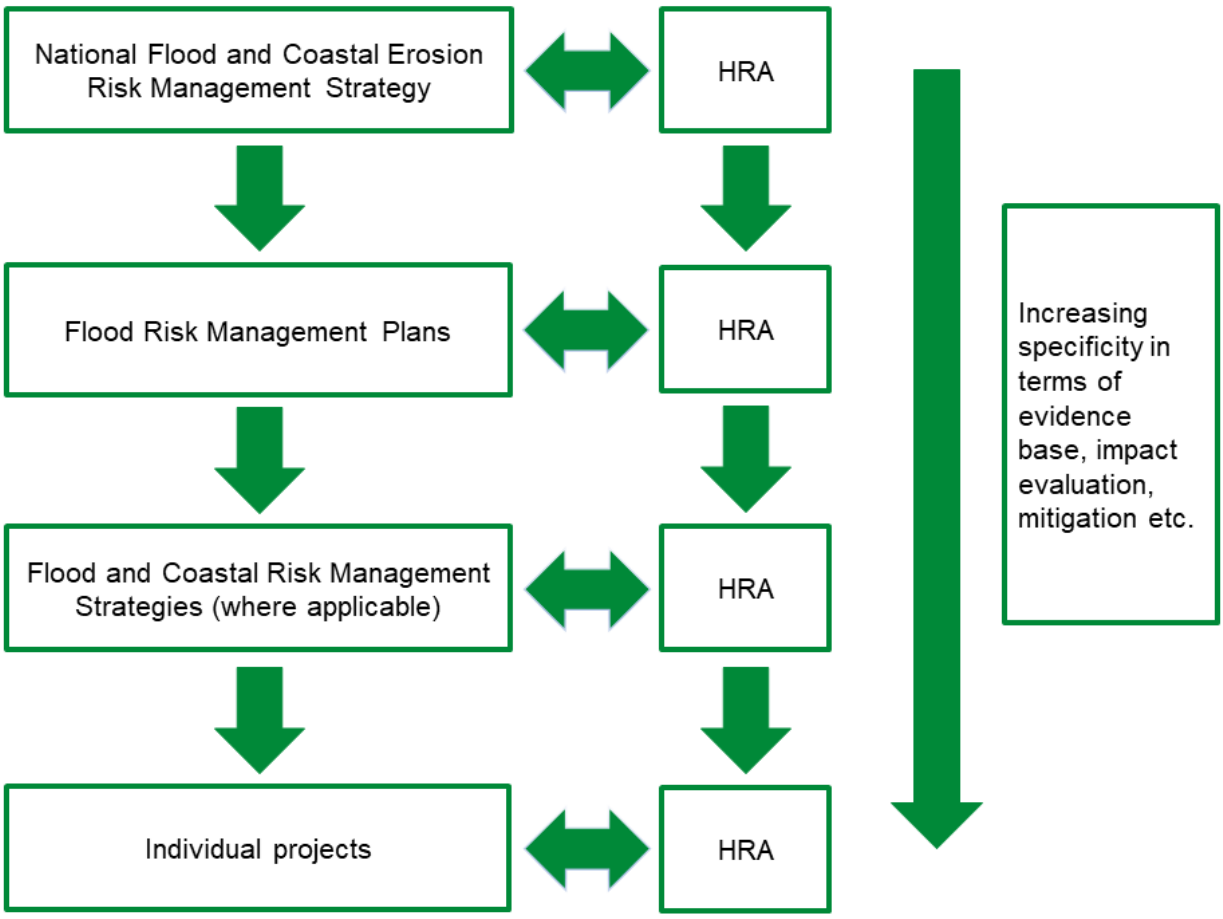
Purpose of this document

2.20 This document forms the HRA of the English Severn FRMP. It has been prepared with regard to best scientific knowledge and an examination of potential impacts of the Flood Risk Management Plan on European Sites.

2.21 Project-related HRA often requires bespoke survey work and novel data generation in order to accurately determine the significance of effects. In other words, to look beyond the risk of an effect to a justified prediction of the actual likely effect and to the development of avoidance or mitigation measures.

2.22 However, there is a tacit acceptance that HRA can be tiered and that all impacts are not necessarily appropriate for consideration to the same degree of detail at all tiers as illustrated in Figure 2 below. Note that some measures in the FRMPs come from other plans and are reflected in the FRMP for consistency and completeness.

Figure 1. Tiering in HRA of Land Use Plans



2.23 In any strategic plan, there are numerous measures for which there is a limit to the degree of assessment that is possible at this plan level. This is because either:

- the measure in question does not contain any specific details describing what will be delivered or where so literally cannot be assessed in detail at the plan level
- development of a specific type is identified but the nature of the potential impacts are dependent on exactly how the development will be designed and constructed and therefore cannot be assessed in detail at the plan level but rather at the scheme level

2.24 For example, NatureScot has published guidance[4] that indicates a measure or initiative in a higher tier plan can be screened out without further analysis if:

a. they are intended to protect the natural environment

b. they will not themselves lead to development or other change

c. they make provision for change but could have no conceivable effect on a European site

d. they make provision for change but could have no significant effect on a European site, or

e. effects on any particular European site cannot be identified because the measures are too general or lack any spatial definition.

2.25 Similarly, the Habitats Regulations Assessment Handbook[5] sets out three criteria in section F.10.1.5, that it considers would make it reasonable to defer further assessment to a lower tier plan or project:

a. the higher level plan assessment cannot reasonably predict any effect on a European site in a meaningful way

b. the lower level plan or project, which will identify more precisely the nature, timing, duration, scale or location of the measure, and thus its potential effects, will have the necessary flexibility over the exact nature, timing, duration, scale and location of the measure to enable an adverse effect on site integrity to be avoided

c. the HRA of the lower tier plan or project is required as a matter of law or government policy

2.26 In these cases, the HRA focusses on setting down-the-line requirements for more detailed assessment at the scheme level that can be included in the plan to ensure that whatever proposals come forward will not result in adverse effects on integrity. On these occasions the advice of Advocate-General Kokott[6] should be considered. She commented that: 'It would …hardly be proper to require a greater level of detail in preceding plans [rather than planning applications] or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure'.

2.27 Similarly, published EU guidance on HRA states: 'Where one or more specific projects are included in a plan in a general way but not in terms of project details, the assessment made at plan level does not exempt the specific projects from the assessment requirements of Article 6(3) at a later stage, when much more details about them are known.'[7]

2.28 It is also important to consider the approach taken regarding coastal defence schemes and strategies. The stance throughout all FRMP HRAs is that, provided measures are already covered by the SMP/Coastal Strategy process or another HRA process, then these measures are effectively included in the FRMPs for completeness. The FRMPs are not the source plans for these schemes and they are already committed elsewhere. The SMP and Coastal Strategies will be updated as part of their normal cycle and that will include revision to their HRAs which will take account of any changes in evidence. Each scheme will also have its own HRA before it is consented. In these cases, the DTA handbook states that plan elements can be screened out if they have, or will be subject to, HRA under another plan and this plan (the FRMP) would not materially change if they were omitted.

2.29 This is the approach taken in the HRA of the FRMP to avoid confusing the FRMP with other plan processes (such as Shoreline Management Plan (SMP) and Coastal Strategy processes) that have their own separate HRA, or the individual schemes that are referenced in the FRMP and will be taken forward subject to significant further work including outline design, detailed design, securing of funding, community consultation and securing of necessary consents and permits. The fact that a scheme is referenced in the FRMP does not prejudge the down-the-line permitting processes.

The ‘in Combination’ Scope

2.30 It is a requirement of the Habitats Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

2.31 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation, i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. The overall approach is to exclude the risk of there being unassessed likely significant effects in accordance with the precautionary principle. This was first established in the seminal Waddenzee[8] case.

2.32 For the purposes of this HRA, in-combination assessment is focussed on the plans and projects identified in the Strategic Environmental Assessment (SEA) Environmental Report of the FRMP. The plans and projects were identified in the SEA as having a significant interaction with the FRMP for biodiversity, flora and fauna and required consideration. The key relevant plans and projects with a potential for in-combination effects are:

- Forest of Dean Core Strategy and Allocations Plan (adopted June 2018)
- Telford & Wrekin Local Plan (adopted January 2018)
- South Staffordshire Core Strategy (adopted December 2012) and Site Allocations Document (adopted September 2018)
- Wolverhampton Unitary Development Plan (adopted June 2006)
- Dudley Borough Development Strategy (adopted March 2017)
- Bromsgrove District Plan (adopted January 2017)
- Borough of Redditch Local Plan No.4 (adopted January 2017)
- Stratford-on-Avon Core Strategy (adopted July 2016)
- Warwick District Local Plan (adopted September 2017)
- Coventry Local Plan (adopted December 2017)
- Rugby Local Plan (adopted June 2019)
- Wyre Forest Local Plan (adopted April 2022)
- South Worcestershire Development Plan (adopted February 2016), covering the authorities of Malvern Hills, Worcester City and Wychavon)
- Draft Shropshire Local Plan (currently undergoing examination)
- Herefordshire Local Plan Core Strategy (adopted October 2015)
- Gloucester, Cheltenham and Tewkesbury Joint Core Strategy (adopted December 2017)
- Cotswold District Local Plan (adopted August 2018)
- Stroud District Local Plan (adopted November 2015)

- South Gloucestershire Core Strategy (adopted December 2013)
- Wiltshire Core Strategy (adopted January 2015)
- Bristol Core Strategy (adopted June 2011)
- Bath and North East Somerset Core Strategy (adopted July 2014)
- North Somerset Core Strategy (adopted January 2017)
- Mendip Local Plan Part I (adopted December 2014) and Part II (adopted December 2021)
- National Flood and Coastal Erosion Risk Management Strategy for England (FCERM Strategy);
- Draft Severn River Basin Management Plan (RBMP);
- Local Flood Risk Management Strategies for Bristol, Bath & North East Somerset, Coventry City, Gloucestershire, Herefordshire, North Somerset, Shropshire, South Gloucestershire, Telford & Wrekin, Warwickshire and Worcestershire
- Surface Water Management Plans for Bristol, Coventry, Gloucestershire, Warwickshire and Worcestershire
- Emerging Bristol Avon Flood Strategy
- The Black Country Local Strategy for Flood Risk Management
- Dwr Cymru Welsh Water Drainage & Wastewater Management Plan
- Environment Agency FCRM Asset Management Strategy 2017-2022
- Ironbridge Temporary Flood Barriers Multi-Agency Plan
- Severn Estuary Shoreline Management Plan
- Draft Severn Estuary Flood Risk Management Strategy
- Severn Trent Water AMP7 Business Plan
- Severn Trent Water Climate Change Adaptation Report
- Severn Trent Water, Drainage and Wastewater Management Plan
- Shropshire SuDS Guidance Document for new developments
- Telford & Wrekin Climate Change Action Plan
- Surface Water Management Plans for Warwickshire and Worcestershire
- Wessex Water Drainage and Wastewater Management Plan

2.33 The potential for ‘in combination’ effects between these plans and projects and the FRMP are discussed later in this document.

3. Linking Impact Pathways

Direct Habitat Loss

3.1 Any permanent, irreversible, habitat loss from a designated site that will result in the loss of qualifying habitats and / or species, or habitats that support the designated species, will be adverse, although to affect the integrity of the site (the coherence of its structure and function) the loss must be sufficiently adverse that it materially impairs the achievement of the Conservation Objectives for the site.

3.2 Various developments can result in the loss of habitat in European Sites, either temporary or permanent. Temporary habitat loss (e.g. such as due to the need for a construction period footprint to encroach on a site) is potentially reversible depending on what the site is designated for, and there is also potential for deploying mitigation measures to avoid adverse effects on site integrity. In contrast, the permanent loss of designated habitat will result in a reduction of coverage of a potentially very rare ecosystem, with potential knock-on impacts on dependent qualifying species.

3.3 Plans or projects that result in the loss of land from a SAC can be approved in certain situations (please see Defra (2012)[9], even if the loss is sufficient to adversely affect the integrity of an SAC, if three sequential tests are met:

- no feasible alternative solutions to the plan or project exist that are less damaging
- imperative reasons of overriding public interest (IROPI)
- compensatory measures secured to ensure that the overall coherence of the European Site network is maintained

Inappropriate Coastal Management Including Coastal squeeze

3.4 Inappropriate coastal management covers any coastal management activities that would interfere with natural coastal processes to such an extent that they would potentially interfere with the ability of European sites to achieve their conservation objectives. Examples of inappropriate coastal management include:

- Reduced sediment supply to adjacent frontages, resulting in loss of habitat area. For example, defending the Holderness Coast in East Yorkshire results in a reduction in the amount of longshore sediment that would otherwise be transported into the Humber Estuary SAC/SPA/Ramsar site and this in turn could affect the persistence of features that require a continued supply of sediment, such as Spurn Point.
- Presence of flood risk management defences causing habitat erosion seawards of those defences due to wave reflection. This is more of an issue with some types of defence (such as sheet metal piling) than with other types of defence.
- Restriction of the area of intertidal habitat in front of the flood risk management defences.
- Coastal squeeze.

3.5 Coastal squeeze is defined by government as 'the loss of natural habitats or deterioration of their quality arising from anthropogenic structures or actions, preventing the landward transgression of those habitats that would otherwise naturally occur in response to sea level rise in conjunction with other coastal processes. Coastal squeeze affects habitat on the seaward side of existing structures.'[10]

3.6 Measures which involve a 'Hold the Line' approach by establishing a hard structure or maintaining the existing standard of protection by improving the defences, have the potential to result in the loss of seaward habitats as a consequence of coastal squeeze. The process of coastal squeeze prevents the landward transgression of habitats in response to climate change and resulting sea level rise. Over time, unmitigated coastal squeeze would inevitably lead to the cumulative loss of designated habitats and supporting functionally-linked habitats. Coastal squeeze impacts due to measures have already been fully explored and mitigation or compensation quantified if necessary through the SMP and Coastal Strategy process and their HRAs, and through the Flood and Coastal Erosion Risk Management (FCERM) National Strategy 2021 and compensation delivered in the form of the Habitat Compensation Programme. Therefore, coastal squeeze is scoped out of this HRA.

3.7 All the FRMPs contain measures which refer to implementing or updating Shoreline Management Plans or Coastal Strategies or flood and coastal erosion risk management schemes that are contained within those documents. In commenting on the draft version of the HRA, Natural England advised the SMP Health Check documents will include detail on what changes to SMP HRAs will be required to account for (for example) changes in sea level rise predictions. However, these reports have not yet been completed or published, and as such this information is not yet available.

3.8 The approach taken throughout all FRMP HRAs is that, provided such schemes are already covered by the SMP/Coastal Strategy process or another HRA process, these measures are effectively included in the FRMPs for completeness. The FRMPs are not the source plans for these schemes and they are already committed elsewhere. The SMP and Coastal Strategies will be updated as part of their normal cycle and that will include revision to their HRAs which will take account of any changes in evidence. Each scheme will also have its own HRA before it is consented.

Visual and Noise Disturbance

3.9 Flood risk management construction works can result in noise or visual disturbance of qualifying species in European sites, both during the construction and operational periods. For example, noise and visual disturbance arising from construction may result in temporary behavioural changes in otters (e.g. disturbance in holts, displacement from specific stretches of the river). Piling noise during construction of defences could displace over wintering or breeding birds for which an SPA is designated. Three of the most important factors determining the magnitude of disturbance from construction schemes appear to be species sensitivity, proximity of the disturbance source and timing / duration of the disturbance.

Birds

3.10 Development schemes (such as those for flood risk management assets) can result in the disturbance of qualifying SPA / Ramsar bird species in European sites or

functionally linked habitats and this can apply whatever activity the bird is undertaking, whether nesting, foraging, loafing or roosting. Noise and visual disturbance arising from construction activities may result in behavioural changes (e.g. flight from the nest, cessation of foraging) in birds. Furthermore, post-construction disturbance from site usage, road traffic and operational lighting might also arise. Three of the most important factors determining the magnitude of disturbance appear to be species sensitivity, proximity of the disturbance source and timing / duration of the disturbance. Generally, the most disturbing visual and auditory stimuli are likely to involve irregular, infrequent, unpredictable loud noise events, movements or vibrations. Birds are least likely to be disturbed by activities that involve regular, predictable and quiet patterns of sound or movement. The further any activity is from the birds, the less likely it is to result in disturbance.

3.11 An increasing amount of research on visual and noise disturbance of waterfowl from construction (and other activities) is now available. Both visual and noise stimuli may elicit disturbance responses, potentially affecting the fitness and survival of waterfowl and waders. Noise is a complex disturbance parameter requiring the consideration of multiple parameters, including the fact that it is not described on a linear scale, its nonadditive effect and the source-receptor distance. A high level of noise disturbance constitutes a sudden noise event of over 60dB or prolonged noise of over 72dB. Bird responses to high noise levels include major flight or the cessation of feeding, both of which might affect the survival of birds if other stressors are present (e.g. cold weather, food scarcity).

3.12 Generally, research has shown that above noise levels of 84 dB waterfowl show a flight response, while at levels below 55dB there is no effect on their behaviour[11]. These two thresholds are therefore considered useful as defining two extremes. The same authors have advised that regular noise levels should be below 70 dB at the bird, as birds will habituate to noise levels below this level[12]. The Waterbird Disturbance Mitigation Toolkit published by the Institute of Estuarine & Coastal Studies in 2013, summarises the key evidence base relating to the noise disturbance impact pathway[13]. Generally, noise is attenuated by 6 dB with every doubling of distance from the source. Impact piling, the noisiest construction process of approx. 110 dB at 0.67m from source, will therefore reduce to 67-68dB by 100m away from the source. The loudest construction noise should therefore have fallen to below disturbing levels by 100m, and certainly by 200m, away from the source even without mitigation. Note that this is a rule of thumb and does not obviate the need for application-level noise modelling. However, comparison with baseline noise levels will also be important in any assessment rather than purely using comparison with the 70 dB metric (see paragraph below).

3.13 An alternative approach to assessment is to consider the relative change in the noise levels experienced by birds, rather than an absolute noise threshold. There are no formal guidelines that define a change threshold that is deemed disturbing to waterfowl and waders, but they are thought to have hearing comparable to humans. For humans a change of 3 dB defines the threshold for a change in noise to be perceptible (in other words, a change of 1 or 2 dB cannot be detected by the human ear). However, there is a significant difference between being able to notice that a noise has gotten louder and finding the increase in noise to be sufficiently intolerable that it causes displacement or otherwise significantly disrupts activity. Therefore, 3 dB may be an excessively precautionary threshold to use for judging disturbance. Due to the logarithmic nature of the decibel scale a change of 5 dB increase at the receptor is approximately a 50% increase in perceived loudness while a 10 dB increase is a

doubling in perceived loudness or sound intensity. It is reasonable to assume that an increase of 10 dB would run a high risk of causing adverse impacts to bird behaviour such as flushing, for the duration of exposure.

3.14 Visual disturbance is generally considered to have a higher impact than noise disturbance as, in most instances, visual stimuli will elicit a disturbance response at much greater distances than noise[14]. For example, a flight response is triggered in most species when they are approached to within 150m across a mudflat. Visual disturbance can be exacerbated by workers operating equipment outside machinery, undertaking sudden movements and using large machinery. Some species are particularly sensitive to visual disturbance[15], including curlew (taking flight at 275m), redshank (at 250m), shelduck (at 199m) and bar-tailed godwit (at 163m). In some areas, greater distances have been agreed between Environment Agency and Natural England, at least for purposes of HRA Screening. For example, in the Humber Estuary area have agreed a precautionary distance of 300m for the purposes of assessment of bird disturbance.

Fish / Marine Mammals

3.15 Fish use sound for vital life functions, requiring it for completion of their life cycle as well as maintaining productivity. A review of 115 primary studies (66 of which were investigating fish species) highlights that noise disturbance leads to a wide range of impacts in fish, including their development, anatomy, physiology, stress levels and behaviour[16]. A study comparing the foraging behaviour of perch and roach, found that both species showed significantly fewer feeding attempts when exposed to motorboat noise[17]. For roach, which are better hearing than perch, no habituation to noise occurred over time. In a study of pink snappers (similar to many other commercial species such as tuna, cod and haddock), it was determined that a single seismic air gun with a source noise level of 222.6dB re 1uPa resulted in extensive damage to the ears, with no apparent recovery after 58 days[18]. The impacts of noise may not be immediately visible, as demonstrated by a noise playback experiment on perch, carp and gudgeon. Exposure of the fish to underwater ship noise, resulted in cortisol increases of between 81% to 120% compared to control values[19]. Furthermore, twaite and allis shad (both species are known to spawn in the R. Wye and R. Usk catchments), are sensitive to construction activities carried out in aquatic habitats. Depending on the frequency and magnitude of construction techniques, these fish may be subject to behavioural and physical impacts, including injury, many kilometres from noise sources. Notwithstanding this evidence, it is important to note that extrapolations from noise impact studies to different settings or species should be made with caution.

3.16 Construction noise also presents a significant threat (both regarding injury and mortality) to marine mammals, including harbour porpoise and grey seals. For example, the density of harbour porpoise has been shown to be significantly reduced for several kilometres surrounding seismic surveys and impact piling activities[20] [21]. Cetaceans produce and receive sound over a great range of frequencies for use in communication, orientation, predator avoidance and foraging. Interference with these important behaviours has the potential to result in significant negative impacts. Harbour porpoise are high frequency cetaceans that have low sensitivity thresholds to impulsive sound sources. Anthropogenic sound has the potential to result in direct effects on the hearing ability of mammals (among other impacts, such as behavioural responses and masking of other underwater sounds), including Permanent Threshold Shifts (PTS) and Temporary Threshold Shifts (TTS)[22]. Some construction works

within the marine environment may require Unexploded Ordnance (UXO) detonation, which involves impulsive sound elements stretching over tens of kilometres. In practice, it is typically not known whether such works will be required. Guidance from the Joint Nature Conservation Committee (as utilised for example in the HRA of the South-West England Marine Plan) confirms that a likely significant effect via underwater noise could affect European sites up to 50km distant depending on the nature of the works.

Hydrology

3.17 The water level, its flow rates and the mixing conditions are important determinants of the condition of European sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in wetlands and coastal waters, including current velocity, water depth, dissolved oxygen levels, salinity and water temperature. In turn these parameters indirectly determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition.

3.18 Many animal species are directly sensitive to hydrological changes, including the drying and excessive flooding of habitat. For example, many species (partially) restricted to the aquatic environment are sensitive to periodic or permanent drying, because this reduces the extent of supporting habitat available. This includes species such as the great-crested newt, southern damselfly, white-clawed crayfish and a diverse array of fish (e.g. Atlantic salmon, river lamprey, sea lamprey). In contrast, excessive flooding can result in sub-optimal water levels for foraging birds, such as small waders. If water is too deep, some species may not be able to access their primary prey species, with potential implications for foraging efficiency.

3.19 Wetland, riverine, estuarine and coastal habitats rely on hydrological connections with other surface water systems. A supply of water within natural limits is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range of plant and animal species. This might lead to the loss of the structure and function of aquatic habitats.

3.20 FRMPs generally propose measures to reduce the magnitude and impacts of potential flooding events. This may involve a wide range of interventions, such as flood defences and natural flood management techniques. If any such measures are delivered in the proximity to hydrology-dependent European sites, they may have implications for the water level in designated site boundaries. For example, a natural flood management intervention delivered immediately upstream of a designated floodplain or waterbody, while intended to restore the hydrological regime to a natural baseline, could reduce the volume of freshwater input to and flooding regime in that downstream European site.

Water Quality

3.21 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.

- Eutrophication, the enrichment of water with nutrients, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In freshwater ecosystems, plant growth is primarily determined by phosphorus concentrations, which are determined by a wide range of sources, including treated sewage effluent from Wastewater Treatment Works and urban surfaces such as roads.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

3.22 There is an obligation for flood risk protection, management and resilience schemes to consider water quality impacts. Under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016, it is illegal to pollute watercourses. Individual planning proposals will undergo Preliminary Ecological Appraisal (PEA) or Environmental Impact Assessment (EIA), if identified as Schedule 1 or Schedule 2 proposals by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. As such, water quality protection measures must by law be introduced on any scheme that could affect the water quality of the river or coastal environment, irrespective of whether part of that environment is designated as an SAC or SPA.

3.23 For this reason, this particular impact pathway has not been used as a basis to screen in measures in this FRMP or identify the need for down-the-line HRA at lower planning tiers, as protecting water quality will be an inherent element in delivery of all measures irrespective of the designation status of linked waterbodies, watercourses and sensitive sites.

Loss of Functionally Linked Habitat

3.24 While most European sites have been geographically defined in order to encompass the key features that are necessary for coherence of their structure and function, this is not the case for all such sites. Due to the highly mobile nature of waterfowl, it is inevitable that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of the European site for which they are an interest feature. However, this area will still be essential for maintenance of the structure and function of the interest feature for which the site was designated and land use plans that may affect this land should still therefore be subject to further assessment. This has been underlined by a recent European Court of Justice ruling (C-461/17, known as the Holohan ruling[23]) which in paragraphs 37 to 40 confirms the need for an appropriate to consider the implications of a plan or project on habitats and species outside the European site boundary provided that those implications are liable to affect the conservation objectives of the site.

3.25 Certain management approaches, while positive for coastal processes, could result in the loss of landward habitats, such as coastal grazing marsh, grassland, reedbeds and arable land. Birds are mobile species and are also dependent on sites outside of formal designations and rely on the availability of a network of feeding and roosting resources over the winter period.

Spread of Invasive Non-Native Species

3.26 Invasive non-native species can have detrimental impacts on native species and habitats. Their spread can occur during construction and operation of a development, and via multiple pathways (for example via watercourses or on the treads of construction machinery).

3.27 Under the Wildlife and Countryside Act 1981, as amended, and the Invasive Alien Species (Enforcement and Permitting) Order 2019, it is an offence to cause any plant to spread or grow in the wild outside of its native range. Appropriate biosecurity measures will therefore also be implemented during works carried out during both the construction and operational phases of any scheme to prevent the spread of invasive non-native species, irrespective of whether there are European sites in the vicinity.

4. Test of Likely Significant Effects (LSEs)

4.1 When seeking to identify relevant European sites, consideration has been given primarily to identified impact pathways and the source-pathway-receptor approach, rather than adopting a purely 'zones'-based approach. The source-pathway-receptor approach is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no possibility for an effect to occur. Furthermore, even where an impact is predicted to occur, it may not result in significant effects (i.e. those which undermine the conservation objectives of a European site). Briefly defined, pathways are routes by which a change in activity can lead to a significant effect upon a European site.

4.2 The likely zone of impact (also referred to as the likely 'zone of influence') of a plan or project is the geographic extent over which significant ecological effects are likely to occur. The zone of influence of a plan or project will vary depending on the specifics of a particular proposal and must be determined on a case-by-case basis with reference to a variety of criteria, including:

- the nature, size / scale and location of the plan
- the connectivity between the plan and European sites, for example through hydrological connections or because of the natural movement of qualifying species
- the sensitivity of ecological features under consideration
- the potential for in-combination effects

4.3 There is no geographical limit beyond which plans need not be considered by HRA. However, as a first step in identifying European sites which may be relevant, a search was made for sites within the River Basin District, or within 10km of the River Basin District[24]. Consideration was then given to their hydrological sensitivity and the potential for them to be connected to flood risk management measures. The European sites identified within this search area are listed in Table 2. Note that there are numerous European sites within the River Basin District or within 10km of it which are not hydrologically sensitive or likely to be affected by flood defences or are hydrologically sensitive but would not be linked to potential flood risk management activities. These are not listed below as they are scoped out of the HRA process.

4.4 Furthermore, while Table 2 lists hydrologically sensitive European sites in the Welsh part of the Severn RBD, the Flood Plan Explorer explicitly states that measures will only apply in England. The remainder of this HRA report focuses on European sites in the English part of the RBD, except where hydrological connections to European sites in Wales are present (e.g. in the case of some cross-border sites, such as the Severn Estuary SAC/SPA/Ramsar).

4.5 European sites with hydrological sensitivities in the Severn River Basin District can generally be categorised into freshwater and coastal habitats. The sites occur at relatively low density and are widely distributed across the RBD area. The largest cluster of European sites occurs in the southern part of the RBD around the Severn Estuary, including the Severn Estuary SPA / Ramsar / SAC, River Wye SAC and Wye Valley Woodlands SAC, which straddle the border with England and Wales. Most of the European sites in the northern part of the RBD (e.g. the Midland Meres and Moses Phase 1 Ramsar, Midland Meres and Mosses Phase 2 Ramsar and Fenn's,

Whixall, Bettisfield, Wem and Cadney Mosses SAC) are characterised by standing waterbodies, bogs, and associated wetland flora and fauna.

4.6 These European sites vary in their nature and degree of hydrological dependency. While some sites (e.g. the River Wye SAC, River Clun SAC and Severn Estuary SPA / Ramsar / SAC) form an integral component of the RBD because they constitute or receive freshwater bodies, others (e.g. the Ramsars in the north of the RBD) are not themselves freshwater bodies but rely on continuous freshwater input from surface waterbodies and groundwater sources for sustained flooding and / or permanent standing water. Generally, rivers and sites with strong hydrological linkages (e.g. those relying on sustained freshwater input), are likely to be most at risk from the measures contained in the Severn FRMP. Notwithstanding this, European sites with less obvious or unclear hydrological connections that rely on extended periods of wetting, are nonetheless included in this assessment.

4.7 Estuarine, coastal and some inland terrestrial European sites have additional sensitivities (beyond hydrology) potentially linking to FRMP measures. For example, all sites that depend on freshwater input are also sensitive to changes in water quality that can arise from the implementation of flood management interventions. Toxic pollutants can be accidentally released from faulty construction equipment and inadequately stored fuels, oils, paints and solvents. Sediment can be released from earthworks (e.g. excavations required for reinstating natural river meandering) as dust into the atmosphere or carried into waterbodies in suspension. Furthermore, estuarine SPAs, Ramsars and SACs (e.g. the Severn Estuary SPA / Ramsar / SAC) are designated for, or depend on, intertidal habitats such as Atlantic saltmarshes and mudflats. These habitats and associated faunal communities are under threat from coastal squeeze, whereby development or flood defences immediately inland, prevent their landward migration in response to sea level rise. FRMP measures adjoining these sites, such as the installation or renewal of hard flood defences (often referred to as the ‘Hold the Line’ approach), have the potential to exacerbate coastal squeeze. Furthermore, all SPAs / Ramsars, whether inland or on the coast, are sensitive to visual and noise disturbance arising during the implementation period of FRMP schemes, for example due to the presence of construction workers on-site or the use of noisy construction techniques (e.g. piling).

4.8 Overall, Table 4 shows that none of the measures in the Severn River Basin District FRMP have been identified to result in Likely Significant Effects (LSEs) on European sites. This is generally because most measures are:

- too non-specific to assess meaningfully
- already being implemented
- being subjected to a separate HRA consenting process (e.g. Local Flood Risk Management Strategies (LFRMSs) or SMPs will involve their own HRA process)
- essentially desk-based with a view to undertaking a study or enhancing knowledge
- remote from hydrologically sensitive European sites, or
- worded such that they are about ‘investigating’, ‘reviewing’ or ‘identifying opportunities for’ interventions, rather than committing to physical work on the

ground - any specific schemes that subsequently emerge from the investigation/review will be subject to their own down-the-line HRA process

4.9 One group of measures goes beyond 'investigating', 'reviewing' or 'identifying' by committing to 'delivering' or 'implementing' flood management interventions, making it clear that physical work on the ground will occur. In some instances, particularly for Management Catchment measures, the broad (and, occasionally, specific) location for these measures is known, while details of their implementation are not. Given the absence of details at the FRMP level, and in line with the approach to tiering of HRA set out in Section 2, HRA (including Appropriate Assessment as necessary) must be deferred to later scheme development, lower tier plans, the outline business case and/or the planning application stage. Measures where this screening outcome applies have been categorised as 'No Likely Significant Effect, but down-the-line HRA required'. This approach has been adopted to account for the strategic (and thereby necessarily non-specific) nature of the FRMP, while also identifying the measures with the highest impact potential on European sites.

4.10 A general measure that is proposed for the Severn RBD is 'Carry out a combination of natural flood risk management, tree planting and habitat creation in the Severn Valley.' Generally, it is acknowledged that natural flood management techniques (e.g. reinstating river meanders and floodplains) are likely to result in positive long-term effects on European sites by naturalising flow conditions and sediment input. Notwithstanding this, such approaches, where inadequately planned or sited, have the potential to result in undesirable effects on the hydrology and water quality in European sites. For example, natural flood management deployed immediately upstream could reduce the volume of freshwater input to European sites, resulting in suboptimal hydrological conditions (e.g. water level, mixing conditions) available to qualifying features. Similarly, works required to deliver this measure (e.g. excavations for new meanders or setting back of flood embankments) may result in water pollution through sediment release, affecting plant photosynthesis and increasing turbidity in aquatic habitats. Qualifying birds in SPAs and Ramsars are also prone to visual and noise disturbance, particularly where construction works are carried out within 300m of site boundaries or known parcels of functionally linked habitat. This measure broadly identifies the Severn Valley as a location for natural flood management, meaning that works could be carried out in the vicinity of the Severn Estuary SPA / Ramsar / SAC. Therefore, detailed flood risk management approaches will need to demonstrate that they would not result in LSEs and, where relevant, adverse effects on the SPA / Ramsar / SAC regarding hydrology, water quality, and visual and noise disturbance. Since it is a general non-specific measure, it is recommended that initiatives and schemes developed under this measure are subjected to down-the-line HRA as they emerge and the delivery of natural flood management measures is compatible with the international interest features of European sites. The ecological requirements of qualifying features should be built into the initiative development process.

4.11 'Use the updated Severn Estuary model to produce and progress delivery of a maintenance plan for future refurbishment of flood risk management assets in the Severn Estuary' is another measure proposed in the Severn RBD. While it aims at producing a maintenance plan for flood risk management assets (i.e. existing flood defences), it also proposes the implementation of this plan. As highlighted earlier, maintaining flood defences and a 'Hold the Line' approach contributes to coastal squeeze and the loss of intertidal habitats under sea level rise projections. The Severn Estuary SAC is designated for mudflats and Atlantic salt meadows, both of

which are habitats under pressure from coastal squeeze. Moreover, the qualifying waterfowl and waders in the Severn Estuary SPA / Ramsar depend on these habitats for foraging, roosting and resting. Effectively, prolonging the lifetime of flood defences through planned maintenance would maintain this 'Hold the Line' approach, meaning that adequate habitat compensation needs to be delivered to offset any future intertidal habitat loss. Maintenance works to existing flood defences are also associated with other impact pathways, including impacts on water quality and visual and noise disturbance.

4.12 Therefore, prior to its implementation, the maintenance plan will need to demonstrate that it will not result in LSEs and, where relevant, adverse effects on the SPA / Ramsar / SAC regarding coastal squeeze, water quality, and visual and noise disturbance. Regarding coastal squeeze this would particularly apply where extensions / expansions to flood management assets are planned or defended stretches of coastline are not already compensated for through an agreed mechanism (e.g. the relevant Habitat Compensation Programme). Since it is a general non-specific measure, it is recommended that initiatives and schemes developed under this measure are subjected to down-the-line HRA as they emerge and the maintenance of flood risk management assets is compatible with the international interest features of European sites. The ecological requirements of qualifying features should be built into the initiative development process.

Implications of FRMP Measures – Hydrology and Water Quality

4.13 One broader matter requiring consideration as part of the Likely Significant Effects screening is the extent to which any measures, through committing to the status quo, may be contributing to the exacerbation or persistence of existing water-related problems in European sites.

4.14 Overall, it is recognised that most FRMP measures are unlikely to result in any significant hydrological and water quality impacts in European sites. Several measures encompass natural flood management interventions, which, provided they are adequately sited (see cautionary note in paragraph 4.10, are likely to improve the long-term hydrological and water quality situation in European sites. Generally, for the Severn RBD, no specific measures have been identified that would obviously trigger or reinforce negative hydrological conditions, such as permanently reducing the water level in qualifying habitats. Furthermore, any detailed interventions with the potential for permanent significant effects (e.g. studies to assess the feasibility of beaver introductions in the south-west), would be subject to down-the-line HRA consenting.

Measures with Potential for Hydrological Improvements

4.15 Although not technically within the remit of HRA, it is noted that the FRMP contains several measures that present opportunities to improve the hydrological integrity of water-dependent European sites, in conjunction with nature recovery plans and catchment sensitive farming. These measures range from a broad, strategic level to relatively detailed proposals in specific areas. The following paragraphs discuss some of these measures in relation to European sites and associated hydrology-related sensitivities.

4.16 The water level in many European sites across the Severn RBD is under threat from historical activities, including drainage and peat digging. Past drainage processes can impact the water table significantly, draining away moisture from habitats and plant species with critical water dependence. Drainage is referred to as a pressure / threat to site integrity in the SIPs of many sites, including the West Midlands Mosses SAC, Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC and Brown Moss SAC.

4.17 Several high-level measures encompassed in the FRMP may help in working towards improving current and securing future beneficial hydrological conditions in European sites affected by drainage and periods of drying. Most of these measures entail natural flood management opportunities that naturalise rivers and their connections with adjoining floodplains, in turn restoring previous flow conditions. The following are identified as some of the measures with positive impact potential:

- carry out a combination of natural flood risk management, tree planting and habitat creation in the Severn Valley
- explore opportunities to reconnect rivers and their floodplains and restore natural processes in the Environment Agency Wessex area
- explore opportunities to work with stakeholders (including non-governmental organisations), maximising flood risk potential of green infrastructure projects in DCWW wastewater and water catchments
- monitor the effectiveness of natural flood management interventions in the Environment Agency West Midlands Area
- promote natural flood risk management as a complementary element of flood risk management schemes and work with landowners to identify locations for natural flood management measures in Gloucestershire
- where possible, incorporate measures in flood risk management schemes that will enhance the environment and increase climate resilience in the Telford & Wrekin Council area
- work with partners to review, update where required, and deliver Water Level Management Plans in the Environment Agency Wessex area
- work with partners, landowners and communities to continue the delivery of natural flood management interventions in and across Herefordshire
- work with partners, landowners and communities to deliver projects that will work with natural processes (including natural flood management) in appropriate catchments in Shropshire Council and Telford & Wrekin Council areas
- work with partners, landowners and communities to deliver projects that will work with natural processes (including natural flood management) in appropriate catchments in Worcestershire
- work with partners to undertake a catchment scale assessment of Natural Flood Management opportunities in key communities affected by flood risk

4.18 While the above measures do not commit to delivering interventions, their inclusion is considered to be positive for European sites. It should be noted that the benefits of

natural flood management, depending on the precise nature of schemes, are likely to extend beyond improving flow conditions. Natural flood protection (e.g. through reinstating meanders, setback of flood embankments or tree planting) has various beneficial 'side effects' including reduced erosion and sediment release, and wildlife habitat creation. Therefore, the above measures have the potential to help address some of the threats / pressures listed in the Site Improvement Plans (SIPs) for European sites, ultimately helping them meet their Conservation Objectives.

4.19 For example, the SIP for the River Clun SAC[25] specifies siltation as a major pressure on freshwater mussels. It states that 'siltation is a major issue affecting the health of freshwater mussels, both by acting directly on the adult mussels but also by preventing juvenile recruitment. Excessive delivery of fine sediment, from the catchment or artificially enhanced bank erosion, may lead to a range of problems relating to surface siltation, the compaction or concretion of river beds and to the in-filling of substrate interstices.' Clearly, the renaturalisation of waterbodies in the catchment of the SAC would help reduce excessive siltation by slowing water flow and reducing bankside erosion and sediment transport. In other European sites (e.g. the River Wye SAC), silt-laden runoff is caused by other issues (e.g. poorly sited infrastructure and lack of tree cover). The SIP[26] states that 'poor siting of infrastructure causes excessive (and silt laden) run-off (e.g. new windfarm or forestry track)… The planting of tree belts and strategic use of appropriate fencing on vulnerable land will help improve runoff.' The implementation of natural flood management interventions, such as the planting of new forests, would help address these issues in the future.

4.20 One of the above measures is to review, update and deliver Water Level Management Plans (WLMPs) across the Environment Agency Wessex area. Devising WLMPs for European sites is positive because this approach considers the optimum water requirements necessary to deliver site Conservation Objectives. Many estuarine and freshwater sites are designated for habitats and species with varying hydrological requirements. For example, swans generally require much deeper waters for foraging and resting than ducks and waders. Developing and refining site-specific targets, as has been done for some European sites, would represent significant progress in ensuring that adequate habitat patches within site boundaries are present to support the range of qualifying habitats and species that sites are designated for.

Coastal European sites

4.21 Hydrologically sensitive coastal European sites occupy the entre Severn coast within the River Basin District and up into the adjacent South West RBD. There are numerous measures in the Severn FRMP which refer to implementing or reviewing Coastal Strategies and SMPs. Such plans and strategies present considerable potential for impacts on sensitive coastal sites as set out in Section 3, particularly coastal squeeze, direct habitat loss from coastal defence footprints and (depending on use of land outside SPA boundaries by qualifying wildfowl and waders) loss of functionally-linked land.

4.22 However, the FRMP does not decide the content of either SMP's or Coastal Strategies (including the package of underlying schemes) as these are subject to their own independent development and assessment processes, including HRA. The FRMP's are essentially referencing these strategies and plans to create a complete picture of flood risk management in coastal areas. Therefore, despite the potential

SMPs and Coastal Strategies possess for affecting European sites, the FRMP measures relating to those plans will not result in likely significant effects.

Table 2. European sites within 10km of the Severn River Basin District and that are potentially linked to flood risk management measures

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
West Midlands Mosses SAC	Annex I habitats that are a primary reason for selection of this site: • Natural dystrophic lakes and ponds • Transition mires and quaking bogs	Link with the River Basin District (RBD) present. Natural dystrophic lakes / ponds and transition mires and quaking bogs represent freshwater ecosystems that are likely to depend on a combination of rainwater and surface water / groundwater. Hydrological conditions are critical to lakes because they determine the residence time of water and water level fluctuations. The SACO[27] highlights changes in hydrology (e.g. through flood control schemes) as a key factor for determining water levels within the SAC.
Midland Meres and Mosses Phase 1 Ramsar	Ramsar criterion 1: The site comprises a diverse range of habitats from open water to raised bog. Ramsar criterion 2: Supports a number of rare species of plants associated with wetlands including five nationally scarce species together with an assemblage of rare wetland invertebrates (three endangered insects and five other British Red Data Book species of invertebrates).	Link with the RBD present. The Midland Meres and Mosses Phase 1 Ramsar is designated for lowland wetland habitats, including open water and raised bog. These habitats (and associated wetland invertebrates) are inherently linked to the River Basin District.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Midland Meres and Mosses Phase 2 Ramsar	Ramsar criterion 1: The site comprises a diverse range of habitats from open water to raised bog. Ramsar criterion 2: Supports a number of rare species of plants associated with wetlands, including the nationally scarce cowbane *Cicuta virosa* and, elongated sedge *Carex elongata*. Also present are the nationally scarce bryophytes *Dicranum affine* and *Sphagnum pulchrum*. Also supports an assemblage of invertebrates including several rare species. There are 16 species of British Red Data Book insect listed for this site including the following endangered species: the moth *Glyphipteryx lathamella*, the caddisfly *Hagenella clathrata* and the sawfly *Trichiosoma vitellinae*.	Link with the RBD present. The Midland Meres and Mosses Phase 2 Ramsar is designated for lowland wetland habitats, including open water and raised bog. Furthermore, faunal and floral wetland specialists are present, including bryophytes, moths, caddisflies and sawflies. These habitats (and associated wetland invertebrates) are inherently linked to the River Basin District.
Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC	Annex I habitats that are a primary reason for selection of this site: • Active raised bogs (priority feature) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Degraded raised bogs still capable of natural regeneration	Link with the RBD present. While lowland raised bogs are typically primarily irrigated by precipitation, the SACO indicate that establishing an appropriate hydrological regime is important in re-wetting some of the drained farmland surrounding the marginal peat. Abstraction and water-intensive land uses are a key in maintaining water supply to the sand deposits underlying the peat. The importance of water supply to raised bogs is also indicated by the 'degraded raised bogs' feature, which is primarily due to declining water tables.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Brown Moss SAC	Annex II species that are a primary reason for selection of this site: • Floating water-plantain *Luronium natans*	Link with the RBD present. The Brown Moss SAC comprises a series of shallow pools associated with a range of semi-aquatic habitats, including marsh, swamp and fen. Hydrological input to the SAC is complex, with both field drains and shallow surface groundwater contributing to the water levels in the pools. Regarding the floating water-plantain, the SACO[28] state that the extent of supporting habitat should be maintained. It states: 'Restore and maintain the overall area of open, naturally-fluctuating or shallow standing water and their margins.'
Fens Pools SAC	Annex II species that are a primary reason for selection of this site: • Great-crested newt *Triturus cristatus*	Link with the RBD present. Great-crested newts depend on freshwater ponds in summer for successful reproduction. The SAC comprises three canal feeder reservoirs and a series of smaller pools, which are likely to be supplied by a combination of precipitation, surface water and groundwater sources. While the SACO state that the 'main water source for the site is rainfall and surface runoff draining into the site from the neighbouring impervious residential area', the SAC is included here as a precautionary measure.
River Clun SAC	Annex II species present as a qualifying feature, but not a primary reason for site selection: • Freshwater pearl mussel *Margaritifera margaritifera*	Link with the RBD present. The River Clun SAC is the second largest tributary to the River Severn. Being a riverine ecosystem, the site is an integral component of the River Basin District. Freshwater pearl mussels are critically dependent on freshwater during all stages of their life cycle, requiring fast flows to allow for adequate filter-feeding. Advice from Natural England in March 2022[29] identifies that the River Clun is also suffering from excessive phosphorus inputs from agriculture and treated wastewater.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Bredon Hill SAC	Annex II species that are a primary reason for selection of this site: • Violet click beetle *Limoniscus violaceus*	Link with the RBD present. The violet click beetle is associated with ancient trees, where it develops in undisturbed wood-mould at the base of central cavities in the trees. According to the SACO[30], the moist soils present in the SAC help sustain a humid micro-climate. These damp woodland floor conditions rely on subsurface water passing through the site.
Dixton Wood SAC	Annex II species that are a primary reason for selection of this site: • Violet click beetle *Limoniscus violaceus*	Link with the RBD present. The violet click beetle is associated with ancient trees, where it develops in undisturbed wood-mould at the base of central cavities in the trees. According to the SACO[31], the moist soils present in the SAC help sustain a humid micro-climate, which in turn promotes the process of tree decay. These damp woodland floor conditions rely on subsurface water passing through the site.
Wye Valley Woodlands SAC	Annex I habitats that are a primary reason for selection of this site: • Asperulo-Fagetum beech forests • *Tilio-Acerion* forests of slopes, screes and ravines (priority feature) • *Taxus baccata* woods of the British Isles (priority feature) • Annex II species present as a qualifying feature, but not a primary reason for site selection: • Lesser horseshoe bat Rhinolophus hipposideros	Link with the RBD present. Two qualifying woodland habitats in the SAC have hydrological dependencies, particularly in relation to associated bryophyte communities. For example, in relation to *Tilio-Acerion* forests, the SACO[32] highlight that 'humid seepages, spring lines and streams… will support a range of Atlantic bryophytes that are near their south-eastern limit in the UK. Natural flow rates and humidity levels should be maintained…'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
River Wye SAC	Annex I habitats that are a primary reason for selection of this site: • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Transition mires and quaking bogs Annex II species that are a primary reason for selection of this site: • White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* • Sea lamprey Petromyzon marinus • Brook lamprey *Lampetra planeri* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax* • Atlantic salmon *Salmo salar* • Bullhead *Cottus gobio* • Otter *Lutra lutra* Annex II species present as a qualifying feature, but not a primary reason for site selection: • Allis shad *Alosa alosa*	Link with the RBD present. The River Wye SAC is one of the longest near-natural rivers in England and Wales, being approx. 210km in length. Being a riverine ecosystem, the site is an integral component of the River Basin District. All qualifying habitats and species critically depend on sufficient hydrological flow and water quality during all stages of their life cycle. For example, in relation to otter the SACO[33] state that 'Permanent or long-lasting reductions in flow may affect the availability and diversity of prey. This could lead to otters moving into new areas, increasing the likelihood of conflict with other otters.' Generally, the natural flow regime of the river is to be restored in relation to all qualifying species.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Severn Estuary SAC	Annex I habitats that are a primary reason for selection of this site: • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • Sandbanks which are slightly covered by sea water all the time • Reefs Annex II species that are a primary reason for selection of this site: • Sea lamprey *Petromyzon marinus* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax*	Link with the RBD present. The Severn Estuary SAC, a large funnel-shaped estuary, has one of the highest tidal ranges in the world. By definition, estuaries receive input from both freshwater and sea water sources, the interplay of which will determine the abiotic conditions and, ultimately the integrity of qualifying habitats. All qualifying fish species, particularly anadromous species such as sea lamprey and river lamprey, depend on sufficient hydrological flows to reach their upstream spawning grounds.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Severn Estuary SPA	Qualifying species: • Bewick's swan *Cygnus columbianus bewickii* • Common shelduck *Tadorna tadorna* • Gadwall Anas strepera • Dunlin Calidris alpina alpina • Common redshank *Tringa tetanus* • Greater white-fronted goose *Anser albifrons albifrons* • Waterbird assemblage	Link with the RBD present. The SPA represents a large estuary that receives freshwater input from a variety of sources, including the River Severn, freshwater ditches and brackish ditches. Being an estuary, the site is inherently linked to the River Basin District. All qualifying species in the SPA depend on adequate freshwater supply, which determines mixing conditions, salinity gradients, sediment input and the distribution of foraging resources. The qualifying features are also directly and indirectly sensitive to water pollution and coastal squeeze.

Severn Estuary Ramsar	Ramsar criterion 1: Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities. Habitats Directive Annex I features present on the pSAC include: • H1110 Sandbanks which are slightly covered by sea water all the time • H1130 Estuaries • H1140 Mudflats and sandflats not covered by sea water at low tide • H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) Ramsar criterion 3: Due to unusual estuarine communities, reduced diversity and high productivity. Ramsar criterion 4: This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla*. It is also of particular importance for migratory birds during spring and autumn. Ramsar criterion 5: Assemblages of international importance of waterfowl with peak counts in winter.	Link with the RBD present. See previous commentary on the Severn Estuary SPA. In addition to the qualifying features of the SPA, the Ramsar is classified for unusual estuarine communities, reduced diversity and high productivity. The estuarine communities will also depend on the balance of tidal sea water and freshwater supply, thus depending on the integrity of the River Basin District.

	Ramsar criterion 6: Species / populations occurring at levels of international importance: • Tundra swan *Cygnus columbianus bewickii* • Greater white-fronted goose *Anser albifrons albifrons* • Common shelduck *Tadorna tadorna* • Gadwall Anas strepera strepera • Dunlin Calidris alpina alpina • Common redshank *Tringa tetanus* • Lesser black-backed gull *Larus fuscus graellsii* • Ringed plover *Charadrius hiaticula* • Eurasian teal *Anas crecca* • Northern pintail *Anas acuta* Ramsar criterion 8: The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla* use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary. The site is important as a feeding and nursery ground for many fish species particularly allis shad *Alosa alosa* and twaite shad *A. fallax* which feed on mysid shrimps in the salt wedge.	

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Berwyn and South Clwyd Mountains SAC	Annex I habitats that are a primary reason for selection of this site: • European dry heaths • Blanket bogs (priority feature) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites) • Transition mires and quaking bogs • Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) • Calcareous rocky slopes with chasmophytic vegetation	Link with the RBD present. Some of the qualifying habitats in the SAC depend on hydrological linkages to the River Basin District. For example, according to the Core Management Plan (CMP)[34], 'all areas of blanket bog should exhibit a high water table just below the surface of the ground for the majority of the year.' For transition mires and quaking bogs, the 'water table is above the surface of the substrate, giving rise to characteristic floating mats of vegetation.'
Montgomery Canal SAC	Annex II species that are a primary reason for selection of this site: • Floating water-plantain *Luronium natans*	Link with the RBD present. The Montgomery Canal SAC is a partially restored freshwater canal, supporting the largest population of floating water-plantain in lowland Britain. Being a freshwater ecosystem, the canal is inherently linked to the River Basin District. The CMP[35] highlights that the 'ecological status of the water environment, including elements of water quality, depth and clarity, will be sufficient to support species-rich canal vegetation…'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Granllyn SAC	Annex II species that are a primary reason for selection of this site: • Great-crested newt *Triturus cristatus*	Link with the RBD present. The great-crested newts in the SAC depend on ponds in summer for successful reproduction. The CMP[36] indicates that water depth is a key factor in protecting site integrity, with a minimum of 10cm water depth maintained during summer. The ponds in the SAC are likely to be supplied by a combination of precipitation, surface water and groundwater.
Elenydd SAC	Annex I habitats that are a primary reason for selection of this site: • Calaminarian grasslands of the *Violetalia calaminariae* • Blanket bogs (priority feature) • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea* • European dry heaths • Annex II species that are a primary reason for selection of this site: • Floating water-plantain *Luronium natans*	Link with the RBD present. The SAC comprises several habitats and species that are dependent on hydrological linkages within the River Basin District. For example, the CMP[37] highlights that the supply of water entering and leaving the oligotrophic lakes should continue following a natural seasonal cycle. The vision for floating water-plantain states that 'near-natural hydrological and geomorphological processes and forms will be operating in the 4 lakes e.g. water levels, water depth…'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Mynydd Epynt SAC	Annex II species that are a primary reason for selection of this site: • Slender green feather-moss *Drepanocladus vernicosus*	Link with the RBD present. The SAC lies in an area of Mynydd Epynt and is bisected by several small river valleys. The CMP[38] indicates that the slender green feather-moss depends on a water table that is maintained at or near the surface for most of the year within flushes, thus effectively being associated with permanently wet ground. Overall, 'flow throughout the year thought to be critical to survival of this species, associated with a combination of constant water level and water chemistry provided by the spring-fed conditions.'
Rhos Goch SAC	Annex I habitats that are a primary reason for selection of this site: • Active raised bogs (priority feature) • Transition mires and quaking bogs • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Bog woodland • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) (priority feature)	Link with the RBD present. The SAC lies in a flat valley floor that crosses the interfluve between the River Wye and R. Arrow, thus effectively in a flood plain that will be subject to repeated flooding. All qualifying habitats depend on high water tables and / or standing water. For example, for the active raised bogs, the CMP[39] identifies high water levels as a key factor for preserving the integrity of the habitat. Alluvial forests require surface water to be present throughout the year. As such, these habitats are inherently linked to the River Basin District.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Drostre Bank SAC	Annex I habitats that are a primary reason for selection of this site: • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) (priority feature)	Link with the RBD present. Both SAC habitats depend on hydrological linkages with the River Basin District. *Molinia* meadows typically occur on wet ground with impeded drainage. Alluvial forests are located on floodplains of waterbodies, thus experiencing wet ground / standing water conditions. The CMP[40] states that 'hydrology is important in maintaining wet woodland. New drainage ditches could cause drying out of the site, leading to a loss of alluvial forest in favour of drier woodland types.'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
River Usk SAC	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation Annex II species that are a primary reason for selection of this site: • Sea lamprey *Petromyzon marinus* • Brook lamprey *Lampetra planeri* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax* • Atlantic salmon *Salmo salar* • Bullhead *Cottus gobio* • Otter *Lutra lutra* Annex II species present as a qualifying feature, but not a primary reason for site selection: • Allis shad *Alosa alosa*	Link with the RBD present. The River Usk SAC comprises a long and narrow catchment, with short and steep tributaries contributing to its catchment. Being a riverine ecosystem, the site is an integral component of the River Basin District. All qualifying habitats and species critically depend on sufficient hydrological flow and water quality during all stages of their life cycle. For example, the CMP[41] states that 'Hydrological processes, in particular river flow (level and variability) and water chemistry, determine a range of habitat factors of critical importance to the SAC features, including current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature.'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Llangorse Lake SAC	Annex I habitats that are a primary reason for selection of this site: • Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation	Link with the RBD present. Being a freshwater body, the Llangorse Lake SAC is inherently linked to the River Basin District. The SAC is supplied with freshwater by a combination of precipitation and inflowing streams. The CMP[42] highlights that 'the supply of water entering and leaving the lake should follow a natural seasonal cycle. This is necessary for the life cycle of many of the animals and plants that live in the lake.'
Cwm Cadlan SAC	Annex I habitats that are a primary reason for selection of this site: • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Alkaline fens	Link with the RBD present. The Cwm Cadlan SAC is designated for habitats that depend on a continuous supply with freshwater. The CMP[43] indicates that drainage is a key factor in determining the condition of the *Molinia* meadows: 'The marshy grassland communities are strongly influenced by the quantity and base status of the groundwater. Reductions in the quality and quantity of the water in the springs and watercourses feeding the site may lead to a loss of marshy grassland or changes in community composition.'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Blaen Cynon SAC	Annex II species that are a primary reason for selection of this site: • Marsh fritillary butterfly *Euphydryas aurinia*	Link with the RBD present, but not connected to the English part of the RBD covered in this FRMP. The marsh fritillary butterfly is dependent on *Molinia* meadows, which typically occur on damp grassland. At least 50% of the area in the Blaen Cynon SAC is covered by marshy grassland. site area in the Blaen Cynon SAC is covered by wet grassland, comprised of acid flush and marshy grassland. The site is likely to be supplied by a combination of precipitation, surface water and groundwater sources.
Aberbargoed Grasslands SAC	Annex I habitats present as a qualifying feature, but not a primary reason for site selection: • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) Annex II species that are a primary reason for selection of this site: • Marsh fritillary butterfly *Euphydryas aurinia*	Link with the RBD present, but not connected to the English part of the RBD covered in this FRMP. The marsh fritillary butterfly is dependent on *Molinia* meadows, which typically occur on damp grassland. Over half of the area in the Aberbargoed Grasslands SAC is covered by marshy grassland. The CMP[44] states that 'the fields in the south and west of Aberbargoed Grasslands have impeded drainage and contain a mixture of marshy grassland communities.' The site is likely to be supplied by a combination of precipitation, surface water and groundwater sources.

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
River Dee and Bala Lake SAC	Annex I habitats that are a primary reason for selection of this site: • Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation Annex II species that are a primary reason for selection of this site: • Atlantic salmon *Salmo salar* • Floating water-plantain *Luronium natans* Annex II species present as a qualifying feature, but not a primary reason for site selection: • Sea lamprey *Petromyzon marinus* • Brook lamprey *Lampetra planeri* • River lamprey *Lampetra fluviatilis* • Bullhead *Cottus gobio* • Otter *Lutra lutra*	Link with the RBD present. Being a riverine ecosystem, the site is an integral component of the Dee RBD, approx. 1.5km to the north of the Severn RBD. All qualifying habitats and species critically depend on sufficient hydrological flow and water quality during all stages of their life cycle. For example, the SACO[45] state that 'river flow affects a range of habitat factors of critical importance to characteristic flora and fauna, including current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature. The maintenance of both flushing flows and seasonal base flows, based on natural hydrological processes, is vital.'

Site name	Qualifying feature(s)	Summary of connectivity with the River Basin District
Mottey Meadows SAC	Annex I habitats that are a primary reason for selection of this site: • Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	Potential link with the RBD present. The SAC lies approx. 1.7km to the east in the Humber RBD. Lowland hay meadows occur on moderately fertile soils in river and tributary floodplains, implying that they will be regularly flooded and experience a persistent degree of wetting. The SACO[46] state that flooding is crucial for meeting the Conservation Objectives for this feature: 'A non-optimal flooding regime can result in a shift from H6510 to other vegetation types (such as inundation grassland, swamps). Too little flooding may compromise the necessary conservation management due to reduced nutrient inputs…'
Ensor's Pool SAC	Annex II species that are a primary reason for selection of this site: • White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*	Potential link with the RBD present. The SAC is located approx. 1.8km to the east in the Humber RBD. The Ensor's Pool SAC is a body of standing water that supports white-clawed crayfish. This species is dependent on aquatic habitats, including hard-water streams and rivers. While the SAC is isolated from rivers, it is largely replenished by groundwater seepages. Studies by the Environment Agency indicate that the groundwater catchment for the SAC extends approximately 3km from the SAC boundary.

4.23 Having identified the European sites within 10km that are likely to be hydrologically linked to flood risk management activities, consideration was next given to the potential impact sources from the FRMP at all stages and pathways to European sites (including those located at distances of more than 10km if there is connectivity) by which effects could arise on qualifying features.

4.24 Based on all possible impacts, pathways, and receptors, the Test of Likely Significant Effects for each measure in the FRMP is undertaken in the following tables.

Table 3. Screening table showing the Test of Likely Significant Effects results for Lead Local Flood Authority (LLFA) national measures contained within all Flood Risk Management Plans

Measure ID	Measure	Likely Significant Effects on European sites
0299999007	Act as a consultee for major planning applications in their area	No likely significant effect – This measure describes the role of LLFAs
0299999011	Designate third party flood risk assets and maintain a register of designated flood risk assets in their area	No likely significant effect – Designating assets and maintaining a register will not affect European sites
0299999003	Implement relevant government guidance on taking climate change into account where necessary for flood risk decision making in their area	No likely significant effect – Taking climate change into account will not affect European sites
0299999018	Investigate local flood events where appropriate and necessary in their area	No likely significant effect – Investigating local flood events will not affect European sites
0299999002	Maintain, keep under review, apply and monitor a local flood risk management strategy in their area	No likely significant effect – The production of a local flood risk management strategy will not itself affect European sites
0299999015	Plan flood risk management projects to achieve wider environmental benefits where appropriate in their area	No likely significant effect – Ensuring that flood risk projects achieve wider environmental benefits will not negatively affect European sites
0299999006	Provide information to inform spatial and infrastructure planning, development and regeneration in their area	No likely significant effect – The provision of information will not affect European sites

Measure ID	Measure	Likely Significant Effects on European sites
0299999013	Regulate the condition of, and third party activity on, ordinary watercourses and review new works on ordinary watercourses in their area	No likely significant effect – Regulating activities and works will not affect European sites
0299999004	Start implementing steps to work towards net zero carbon in their area	No likely significant effect – Implementing net zero carbon will not affect European sites
0299999016	Support communities to increase their resilience to flooding in their area	No likely significant effect – Supporting communities to increase resilience to flooding will not affect European sites
0299999017	Support emergency response partners and communities to plan, prepare and exercise for future flood scenarios in their area	No likely significant effect – Supporting planning for emergency response to flooding will not affect European sites
0299999012	Take a risk based approach to develop and maintain a register of flood risk assets/features in their area	No likely significant effect – Maintaining a register of assets will not affect European sites
0299999005	Work in partnership with other risk management authorities to reduce the risk of flooding from all sources in their area	No likely significant effect – This is a wide-ranging measure and the details include that by 2027, risk management authorities will have developed and/or delivered a programme of flood risk management capital schemes and/or maintenance to reduce risk of flooding and coastal change and its adverse consequences for human health and wellbeing. Individual capital schemes may have an effect on European sites depending on what and where they are and how they are to be delivered. However, developing a programme of capital schemes will not itself lead to likely significant effects on European sites. Any individual capital schemes will need to be subject to HRA before being consented, in order to comply with legislation.

Measure ID	Measure	Likely Significant Effects on European sites
0299999009	Work with other flood asset owners and riparian landowners to raise awareness of, and where necessary enforce, maintenance responsibilities in their area	No likely significant effect – specific maintenance measures could have an adverse effect on European sites (although they are unlikely to be approved measures if so) but a requirement to raise awareness of, and enforce where required, necessary flood asset maintenance will not adversely affect European sites.
0299999010	Work with other risk management authorities to identify a programme of nature based approaches in their area	No likely significant effect – working with other authorities to identify a programme of nature-based approaches will not adversely affect European sites.
0299999008	Work with other risk management authorities to provide information where necessary to update flood maps in their area	No likely significant effect – providing information will not adversely affect European sites.
0299999014	Work with other risk management authorities to support the delivery of flood projects in their area	No likely significant effect – providing support to other authorities will not adversely affect European sites.
0299999019	Work with others to support communities through the recovery phase of a significant flood event in their area	No likely significant effect – supporting communities will not adversely affect European sites.

Table 4. Screening table showing the Test of Likely Significant Effects results for Environment Agency national measures contained within all Flood Risk Management Plans

Measure ID	Measure	Likely Significant Effects on European sites
0299999041	Continue to review flood events to improve and develop flood services in England	No likely significant effect – reviewing flood events will not adversely affect European sites.
0299999025	Designate flood risk assets where necessary in England	No likely significant effect – designating flood risk assets will not adversely affect European sites.

Measure ID	Measure	Likely Significant Effects on European sites
0299999046	Drive down carbon emissions and deliver the required flood risk management outcomes when planning and carrying out flood risk management works in England	No likely significant effect – driving down carbon emissions will not adversely affect European sites.
0299999030	In its strategic overview role, work with risk management authorities, including facilitating effective partnerships in local places in England	No likely significant effect – working with risk management authorities will not adversely affect European sites.
0299999044	Invest in flood risk management projects to contribute to improving the natural, built and historic environments	No likely significant effect – investing in projects will not adversely affect European sites.
0299999035	Issue and maintain guidance on taking climate change into account for flood risk decision making in England	No likely significant effect – issuing guidance will not adversely affect European sites.
0299999026	Maintain and update a database of its flood risk assets in England	No likely significant effect – maintaining a database will not adversely affect European sites.
0299999020	Monitor weather, tidal, rainfall and river conditions to provide flood forecasts in England	No likely significant effect – monitoring will not adversely affect European sites.
0299999042	Plan all flood risk management projects in England to achieve biodiversity net gain and wider environmental benefits	No likely significant effect – planning for biodiversity net gain will not adversely affect European sites.
0299999043	Plan all flood risk management projects in England to help achieve river basin management plan objectives	No likely significant effect – this measure is about achieving the environmental objectives of river basin management plans. This will not adversely affect European sites.

Measure ID	Measure	Likely Significant Effects on European sites
0299999033	Provide quality and timely planning advice to help avoid inappropriate development in areas at risk of flooding in England	No likely significant effect – provision of planning advice will not adversely affect European sites.
0299999031	Regulate large, raised reservoirs in England	No likely significant effect – regulating reservoirs to reduce the risk of flooding from dam and reservoir failures will not adversely affect European sites.
0299999028	Regulate new works to main rivers and sea defences in England	No likely significant effect – regulating new works to reduce the likelihood of flooding will not adversely affect European sites.
0299999039	Respond to flood events and support other emergency responders in England	No likely significant effect – responding to flood events to reduce the consequences of flooding will not adversely affect European sites.
0299999040	Support communities to increase their resilience to flooding in England	No likely significant effect – supporting communities to help them increase their resilience will not adversely affect European sites.
0299999023	Take a risk based approach to inspect, maintain and operate assets in England	No likely significant effect – adopting a risk based approach will not adversely affect European sites.
0299999027	Take targeted enforcement action where there are blockages or unpermitted structures in England	No likely significant effect – taking enforcement action regarding blockages or unpermitted structures will not adversely affect European sites.
0299999024	Understand the long term needs of its assets and plan for their whole life management in England	No likely significant effect – developing an understanding of long-term asset needs will not adversely affect European sites.
0299999045	Work with catchment partnerships, communities and other risk management authorities to maximise the use of nature based solutions in England	No likely significant effect – working to maximise the use of nature-based solutions rather than other methods of flood risk management will not adversely affect European sites.

Measure ID	Measure	Likely Significant Effects on European sites
0299999021	Work with emergency response partners to issue appropriate flood warnings in England	No likely significant effect – issuing flood warnings will not adversely affect European sites.
0299999022	Work with emergency response partners to plan, prepare and exercise for future flood scenarios in England	No likely significant effect – preparing for flood scenarios will not adversely affect European sites.
0299999032	Work with local planning authorities, developers and other place makers in England	No likely significant effect – working with other authorities to ensure all new development is resilient to flooding will not adversely affect European sites.
0299999029	Work with research partners and the wider scientific community in England	No likely significant effect – working with research partners into new approaches to reduce risk of flooding will not adversely affect European sites.
0299999036	Work with risk management authorities and other partners to implement the National Flood and Coastal Erosion Risk Management Strategy in England	No likely significant effect – individual proposals within the National Flood and Erosion Risk Management Strategy may pose likely significant effects to European sites but the Strategy has been subject to its own HRA. The measure concerns working with other authorities to implement the Strategy, which will not itself adversely affect European sites.
0299999038	Work with risk management authorities to identify a programme of future flood risk management projects in England	No likely significant effect – a commitment to identify a programme of future projects will not adversely affect European sites. Individual schemes and projects may have an effect on European sites depending on what and where they are and how they are to be delivered. However, all schemes will need to be subject to HRA before being consented, in order to comply with legislation.
0299999034	Work with risk management authorities to maintain and update where necessary flood maps in England	No likely significant effect – maintaining and updating flood maps will not adversely affect European sites.

Measure ID	Measure	Likely Significant Effects on European sites
0299999037	Work with risk management authorities to support the delivery of flood risk management projects in England	No likely significant effect – supporting risk management authorities in delivering flood risk management projects will not itself adversely affect European sites. Individual schemes and projects may have an effect on European sites depending on what and where they are and how they are to be delivered. However, all schemes will need to be subject to HRA before being consented, in order to comply with legislation.

Table 5. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the entire RBD

Measure ID	Measure	Likely Significant Effects on European sites
0203409053	Agree an approach to monitor and manage any impacts of existing beaver populations on Environment Agency flood risk management activities in the Environment Agency Wessex area	No Likely Significant Effect – While it is noted that the management of existing beaver populations could impact the water level in European sites, this measure is simply to agreeing on an approach for beaver impact monitoring and managing. Detailed approaches will require bespoke HRAs to ensure that beaver management measures do not result in LSEs and, where relevant, adverse effects on the integrity of European sites.
0209009140	Assess the need for water level and rain gauges and develop an early warning system for surface water flooding at priority locations in Gloucestershire	No Likely Significant Effect – Assessing the need for water level and rain gauges and developing an early warning system for surface water flooding in Gloucestershire is not associated with impact pathways linking to European sites. This is a desk-based measure that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0215509195	Assess the need for water level and rain gauges and develop early warning systems for flooding from Ordinary Watercourses at priority locations in the Shropshire Council area	No Likely Significant Effect – Assessing the need for water level and rain gauges and developing an early warning system for flooding in Shropshire is not associated with impact pathways linking to European sites. This is a desk-based measure that will not involve physical work on the ground.
0203809008	Carry out large scale tree planting and potentially create other habitats (peatland, wetlands etc), using evidence to target these to the right places in the River Severn catchment including the Avon, Wye and Teme	No Likely Significant Effect, but down-the-line HRA required – Delivering natural flood risk management, tree planting and habitat creation in the Severn Valley is likely to be positive for the long-term health of the environment, including European sites. Notwithstanding this, such measures can impact on the hydrology and water quality in European sites. There is also the potential for visual and noise disturbance to qualifying species, particularly in the construction period. The Severn Valley includes a range of European sites that are sensitive to water quality and hydrological changes, most notably the Severn Estuary SPA / Ramsar / SAC, River Wye SAC, River Clun SAC, and others. The FRMP is not specific about the improvements involved (as they have not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809010	Carry out a flood risk and asset management study in the River Severn catchment	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality, coastal squeeze and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203809235	Co-operate and collaborate with Lead Local Flood Authority led Section 19 flood investigations in STW wastewater catchments	No Likely Significant Effect – Co-operating and collaborating with Section 19 flood investigations across STW wastewater catchments will not lead to negative impact pathways linking to European sites. This measure, which will ultimately protect the water quality in European sites by identifying requirements for improvements to STW infrastructure, is already being implemented.
0209009122	Comment on planned critical infrastructure schemes through the planning process and Lead Local Flood Authority role in Gloucestershire	No Likely Significant Effect – Commenting on planned critical infrastructure schemes through the planning process is not associated with impact pathways linking to European sites. This strategic measure reflects the statutory requirements of the Environment Agency and does not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809182	Comment on planning applications (and Sustainable Drainage Systems Approving Body applications in neighbouring areas of Wales) to control the impact of new sewer connections in DCWW wastewater catchments	No Likely Significant Effect – Commenting on planning applications (including Sustainable Drainage Systems in neighbouring areas of Wales) is not associated with impact pathways linking to European sites. This measure form part of the generic asset management approach of the EA and does not involve any physical work on the ground.
0203809088	Complete a review of where trash screens on Main Rivers should be improved, added or removed and progress delivery of the outcome of that review in the Environment Agency West Midlands Area	No Likely Significant Effect, but down-the-line HRA required – Reviewing where trash screens in main rivers could be improved, added and removed, and delivering the outcome of that review, is likely to be positive for the environment (including European sites) such as through improvements to water quality. Notwithstanding this, such measures can lead to visual and noise disturbance and water quality changes in the installation period, as well as impeding the passage of anadromous fish post-installation. The Severn Valley includes a range of European sites that are sensitive to visual / noise disturbance, water quality and barriers to upstream migration, most notably the Severn Estuary SPA / Ramsar / SAC, River Wye SAC, River Clun SAC and others. The FRMP is not specific about locations where screens may be improved or added (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0209009138	Conduct a mapping exercise to review Highway flood reports with property and business flood reports and will co-ordinate priorities and works in Gloucestershire	No Likely Significant Effect – Conducting a mapping exercise to review Highway flood reports in tandem with property and business flood reports is not associated with impact pathways linking to European sites. This is a desk-based measure that does not involve any physical work on the ground.
0203809172	Consider partnership funding opportunities, together with other risk management authorities, in DCWW wastewater catchments	No Likely Significant Effect – Considering funding opportunities in DCWW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve physical work on the ground.
0203809217	Deliver a programme of Property Flood Resilience (PFR) measures in STW wastewater catchments	No Likely Significant Effect – Delivering a programme of Property Flood Resilience measures in STW wastewater catchments is not associated with impact pathways linking to European sites. Flood resilience is more concerned with reducing impacts on properties or preventing flood waters from entering properties rather than affecting flooding at source. Furthermore, this measure is already being implemented and would have undergone HRA appraisal.
0203809216	Deliver a programme of schemes to accommodate additional wastewater from new developments in STW wastewater catchments	No Likely Significant Effect – A commitment to deliver a programme of schemes to accommodate additional wastewater from new developments in STW wastewater catchments will not result in LSEs on European sites as it is a desk-based activity. The actual schemes will need to take account of environmental constraints (such as water quality in receiving watercourses and European sites) and will need detailed consideration of such constraints but providing additional capacity could be achieved by treating effluent to a higher standard and thus potentially addressing existing water quality issues at STWs. This positive measure is already being implemented.

Measure ID	Measure	Likely Significant Effects on European sites
0203809215	Deliver a programme of schemes to increase sewer capacity and manage runoff into sewers in STW wastewater catchments	No Likely Significant Effect – Delivering a programme of schemes to increase sewer capacity and manage runoff into sewers in STW wastewater catchments would not result in negative impact pathways to European sites and could be positive by reducing runoff into those sites and improving water quality. This positive measure is already being implemented and would have undergone HRA appraisal.
0288809047	Deliver legislative and locally agreed targets for Biodiversity Net Gain in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Delivering legislative and locally agreed targets for Biodiversity Net Gain in the Environment Agency Wessex and West Midlands Areas is not associated with negative impact pathways linking to European sites. This positive measure will enhance the environment and may benefit European sites. Biodiversity enhancements will be taken forward as part of future planning applications, which will be supported by bespoke HRAs.
0203809037	Develop its Habitat Creation Programmes to compensate for future habitat losses resulting from coastal squeeze due to the existence of flood defences in the Severn Estuary	No Likely Significant Effect – A commitment to develop the Habitat Creation Programme to compensate for habitat losses from coastal squeeze in the Severn Estuary will not lead to negative effects on European sites. This is a positive measure for coastal and estuarine European sites as it seeks to create replacement intertidal habitats through Managed Realignment and Do Nothing approaches. Furthermore, as noted on the Flood Plan Explorer, this measure is already being implemented and would have undergone prior HRA appraisal.
0203409042	Develop a Carbon Reduction Plan in the Environment Agency Wessex area	No Likely Significant Effect – Developing a Carbon Reduction Plan in the Environment Agency Wessex area is not associated with impact pathways linking to European sites. This is a positive measure, benefitting the wider environment by helping to mitigate climate change impacts, that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809173	Develop a first cycle Drainage & Wastewater Management Plan (DWMP), identifying future risks, mitigation options and opportunities for collaboration in DCWW wastewater catchments	No Likely Significant Effect – A commitment to develop a first cycle Drainage & Wastewater Management Plan (DWMP) for DCWW wastewater catchments will not result in LSEs on European sites. This is a desk-based measure focused on identifying rather than delivering future mitigation options, such that it will not involve any physical work on the ground.
0203809183	Develop a second cycle Drainage & Wastewater Management Plan (DWMP), identifying future risks, mitigation options and opportunities for collaboration in DCWW wastewater catchments	No Likely Significant Effect – A commitment to develop a second cycle Drainage & Wastewater Management Plan (DWMP) for DCWW wastewater catchments will not result in LSEs on European sites. This is a desk-based measure focused on identifying rather than delivering future mitigation options, such that it will not involve any physical work on the ground.
0215509007	Develop a severe weather plan in Shropshire	No Likely Significant Effect – Developing a severe weather plan in Shropshire is not associated with impact pathways linking to European sites. This is a desk-based measure focused on developing rather than delivering a plan, such that it will not involve any physical work on the ground.
0203809004	Develop a stakeholder engagement plan that will support delivery of projects and the development and ownership of the Adaptive Pathway Plan in the River Severn Partnership area	No Likely Significant Effect – Developing a stakeholder engagement plan that will facilitate the delivery of projects and the Adaptive Pathway Plan is not associated with impact pathways linking to European sites. This is a stakeholder engagement exercise that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809003	Develop an adaptive pathway plan that will set out and test different scenarios allowing for uncertainties in the climate and in growth in the River Severn Partnership area	No Likely Significant Effect – Developing an adaptive pathway plan that sets out and tests different scenarios in the River Severn Partnership area is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve any physical work on the ground.
0203809219	Develop and deliver a programme of retrofit sustainable drainage systems and blue green infrastructure schemes in STW wastewater catchments	No Likely Significant Effect – Developing and delivering a programme of retrofit Sustainable Drainage Systems and blue-green infrastructure is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809218	Develop and deliver a programme of schemes with other risk management authorities to reduce flood risk from multiple sources, including sewer flooding in STW wastewater catchments	No Likely Significant Effect – Delivering a programme of schemes to reduce flood risk from multiple sources (including sewer flooding) is not associated with impact pathways linking to European sites. This positive measure is already being implemented and would have undergone prior HRA appraisal.
0203809227	Develop and publish the next cycle of Severn Trent Water's Climate Change Adaptation Report in STW wastewater catchments	No Likely Significant Effect – Developing and publishing the next cycle of Severn Trent Water's Climate Change Adaptation Report is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203409043	Develop forecasting models for rapid response catchments where a flood warning service is offered in the Environment Agency Wessex area	No Likely Significant Effect – Developing forecasting models for rapid response catchments where a flood warning service is offered is not associated with impact pathways linking to European sites. This modelling exercise is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809002	Develop supporting tools and progress a long-term programme of actions in the River Severn Partnership area	No Likely Significant Effect, but down-the-line HRA required – Progressing a long-term programme of flood mitigation actions in the River Severn Partnership area is likely to be positive for human and environmental receptors. Notwithstanding this, flood management measures can be associated with a range of impact pathways linking to European sites. The Severn Valley includes a range of European sites that are sensitive to visual / noise disturbance, water quality and barriers to upstream migration, most notably the Severn Estuary SPA / Ramsar / SAC, River Wye SAC, River Clun SAC, River Usk SAC, Llangorse Lake SAC and others. The FRMP is not specific about the improvements involved (as they have not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203809224	Develop the first cycle of Drainage & Wastewater Management Plans (DWMP) in consultation with other risk management authorities in STW wastewater catchments	No Likely Significant Effect – A commitment to develop the first cycle Drainage & Wastewater Management Plan (DWMP) in STW wastewater catchments will not result in LSEs on European sites. This is a desk-based measure focused on identifying rather than delivering future mitigation options, such that it will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809232	Engage with communities affected by flooding including Flood Action Groups, and do this in collaboration with other risk management authorities in STW wastewater catchments	No Likely Significant Effect – Engaging with communities affected by flooding in collaboration with other risk management authorities is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203809038	Engage with infrastructure and key utility providers to update awareness of flood risk to their assets and encourage preparedness for flooding in the Severn Estuary	No Likely Significant Effect – Engaging with infrastructure and key utility providers to update awareness of flood risks to their assets is not associated with impact pathways linking to European sites. This is a strategic engagement exercise that will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203809007	Engage with operators of Environmental Permitting Regulations installations and facilities that are registered under Control of Major Accident Hazards Regulations to raise awareness of flood risk and to encourage preparedness in the Environment Agency West Midlands Area	No Likely Significant Effect – Engaging with operators of Environmental Permitting Regulations installations and facilities that are registered under Control of Major Accident Hazards Regulations to raise awareness of flood risk and encourage preparedness is not associated with impact pathways linking to European sites. This is a strategic engagement exercise that will not involve any physical work on the ground.
0203809033	Engage with property owners to improve their understanding of residual risk and measures they can take to prepare for flooding and recovery in locations in Gloucestershire where the Environment Agency is delivering property flood resilience measures	No Likely Significant Effect – Engaging with property owners to improve their understanding of residual risk and preparatory measures to take regarding flooding is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809236	Enhance existing ways of sharing Flood and Coastal Erosion Risk Management information, including risk locations and programmes, amongst risk management authorities in STW wastewater catchments	No Likely Significant Effect – Enhanced sharing information of Flood and Coastal Erosion Risk Management is not associated with impact pathways linking to European sites. This is a strategic measure for collaboration, which will not involve physical work on the ground.
0203809225	Enhance the natural environment and biodiversity as part of Severn Trent Water's Great Big Nature Boost campaign in STW wastewater catchments	No Likely Significant Effect – Enhancing the natural environment and biodiversity in STW wastewater catchments as part of Severn Trent Water's Great Big Nature Boost campaign is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809228	Ensure 100% energy use from renewable or renewable-backed sources, and electric or alternative low-carbon fuel in all Severn Trent fleet vehicles in STW wastewater catchments	No Likely Significant Effect – Ensuring 100% energy usage from renewable or renewable-backed sources in Severn Trent fleet vehicles is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203409046	Explore opportunities to reconnect rivers and their floodplains and restore natural processes in the Environment Agency Wessex area	No Likely Significant Effect – Exploring opportunities to reconnect rivers and associated floodplains is not associated with impact pathways linking to European sites. Reconnecting / naturalising freshwater bodies is generally regarded as positive for the wider environment. Management plans with the potential to change the hydrodynamic regime of rivers will need to be supported by bespoke HRAs, particularly to ensure that the water level, quantity and flow in European sites is not impacted. However, this measure explores rather than delivers opportunities, such that it will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809181	Explore opportunities to work with stakeholders (including non-governmental organisations), maximising flood risk potential of green infrastructure projects in DCWW wastewater and water catchments	No Likely Significant Effect – Exploring opportunities that maximise the flood risk potential of green infrastructure projects is not associated with impact pathways linking to European sites. This measure forms part of a generic asset management approach of the Environment Agency. It explores rather than implements opportunities, such that it will not involve any physical work on the ground.
0203409047	Explore opportunities to work with the Environment Land Management Programme in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Exploring opportunities to work with the Environment Land Management Programme is not associated with impact pathways linking to European sites. This measure explores rather than implements opportunities, such that it will not involve any physical work on the ground.
0209009141	Have worked together to create a centralised data base for flood alleviation schemes to effectively co-ordinate where future resources can be targeted in Gloucestershire	No Likely Significant Effect – Working together to create a centralised data base for flood alleviation schemes for effective coordination in Gloucestershire is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve any physical work on the ground.
0203809180	Identify critical wastewater infrastructure and plan for the risk of critical asset failure in DCWW wastewater and water catchments	No Likely Significant Effect – Identifying critical wastewater infrastructure and plan for the risk of asset failure in DCWW wastewater and water catchments is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203409045	Identify opportunities through a review of Environment Agency maintained assets in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Identifying opportunities for flood management interventions through a review of Environment Agency maintained assets is not associated with linking impact pathways to European sites. A broad-level assessment of opportunities will not involve any physical activities on the ground.
0203809089	Identify opportunities to decommission Environment Agency maintained assets where long term maintenance of current level of protection is uneconomical in the Environment Agency West Midlands Area	No Likely Significant Effect – Identifying opportunities to decommission Environment Agency maintained assets (where long-term maintenance is uneconomical) is not associated with linking impact pathways to European sites. A broad-level assessment of opportunities for decommissioning will not involve any physical activities on the ground.
0203409038	Implement the "Next Flood Warning System" and ensure suitably trained flood warning duty staff in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Developing flood warning systems and ensuring adequately trained staff is available is not associated with impact pathways linking to European sites. This is a positive measure for human receptors because it will help prevent / reduce negative implications of flooding events. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809223	Install permanent monitors in the sewer network in STW wastewater catchments	No Likely Significant Effect – Installing permanent monitors in the sewer network in STW wastewater catchments is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809177	Investigate the attenuation or separation of surface water from the public sewer network as part of all wastewater capital schemes in DCWW wastewater catchments	No Likely Significant Effect – Investigating the attenuation or separation of surface water from the public sewer network as part of all wastewater capital schemes is not associated with impact pathways linking to European sites. Generally, increasing sewer separation is positive for European sites that are sensitive to water level and quality changes, as this will reduce the incidence of flooding with polluted water. Furthermore, the measure focuses on investigating rather than delivering separation, such that it is unlikely to involve physical work on the ground.
0217509184	Investigate, and if viable implement, schemes for properties affected by severe flooding in 2020 and in any other locations identified in the Telford & Wrekin Council area	No Likely Significant Effect – Integrating and implementing flood management schemes for properties affected by severe flooding will be beneficial to human receptors. Depending on the specific nature and location of flood defence schemes, impact pathways linking to European sites include water quality and water level. The Midland Meres & Mosses Phase 2 sits within the boundary of this measure and is sensitive to aquatic impact pathways. However, there is insufficient information at the FRMP level to undertake a meaningful analysis of this measure. Specific proposals will need to undergo HRA at the planning application stage, ensuring that there are no adverse effects on the integrity of European sites.
0203809097	Monitor the effectiveness of natural flood management interventions in the Environment Agency West Midlands Area	No Likely Significant Effect – Monitoring the effectiveness of natural flood management interventions in the Environment Agency West Midlands area is not associated with impact pathways linking to European sites. This measure proposes the monitoring of existing interventions rather than implementing new ones. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0209009120	Promote natural flood risk management as a complementary element of flood risk management schemes and work with landowners to identify locations for natural flood management measures in Gloucestershire	No Likely Significant Effect – Promoting natural flood risk management as a complimentary element of flood risk management schemes and identifying locations for such schemes is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203809222	Provide education to raise awareness of, and promote action against, disposing fats, oils, grease and un-flushable materials into the sewer network in STW wastewater catchments	No Likely Significant Effect – Providing education and raising awareness regarding the implications of disposing fats, oils and grease into the sewer network of STW wastewater catchments is not associated with impact pathways linking to European sites. This is a positive public engagement measure that is already being implemented and would have undergone prior HRA appraisal.
0215509196	Publish Shropshire specific developer guidance on the delivery of sustainable drainage systems in new development in the Shropshire Council area	No Likely Significant Effect – Publishing Shropshire-specific guidance on the delivery of Sustainable Drainage Systems (SuDS) in new developments across Shropshire is not associated with linking impact pathways to European sites. Increasing the use of SuDS is positive for the environment and European sites, as this will help reduce the volume of potentially polluted surface runoff. This a strategic, desk-based measure that will not involve any physical work on the ground.
0203809175	Raise awareness of, and promote action against, the disposal of fats, oils, grease and unflushable materials into the sewer network in DCWW wastewater catchments	No Likely Significant Effect – Providing education and raising awareness regarding the implications of disposing fats, oils and grease into the sewer network of DCWW wastewater catchments is not associated with impact pathways linking to European sites. This is a positive public engagement measure that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0209009121	Regularly review Local Flood Risk Management Strategy Action Plan, taking into account recent flood events, and produce a prioritised list of capital works in Gloucestershire	No Likely Significant Effect – Regularly reviewing the Local Flood Risk Management Strategy Action Plan and producing a prioritised list of capital works in Gloucestershire is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that is already being implemented and would have undergone prior HRA appraisal.
0203809233	Respond to incidents of sewer flooding including working with local resilience forums and Civil Contingencies Act Category 1 and 2 responders in STW wastewater catchments	No Likely Significant Effect – Responding to incidents of sewer flooding in STW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0207309198	Review Local Flood Risk Management Strategy Action Plan taking into account flooding in winter 2019/20 and discussions with General Scrutiny Committee in Herefordshire	No Likely Significant Effect – Reviewing the Local Flood Risk Management Strategy Action Plan (taking into account recent flooding events) in Herefordshire is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve any physical work on the ground.
0203809226	Review and comment on planning applications (using a prioritised risk based approach), and engage with developers in STW wastewater catchments	No Likely Significant Effect – Reviewing and commenting on planning applications and engaging with developers in STW wastewater catchments is not associated with impact pathways linking to European sites. This strategic measure encompasses the legal duty of the Environment Agency and does not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0215509190	Review and refresh information provided to communities, landowners and businesses to improve understanding and awareness of riparian responsibilities in the Shropshire Council area	No Likely Significant Effect – Reviewing and refreshing information provided to key stakeholders regarding their awareness of riparian responsibilities in Shropshire is not associated with impact pathways linking to European sites. This measure is a community / stakeholder engagement exercise and does not involve any physical work on the ground.
0209009118	Review and refresh the 'Waterside Living' leaflet and other published information provided to communities, landowners and businesses in Gloucestershire	No Likely Significant Effect – Reviewing and refreshing the 'Waterside Living' leaflet and other published information in Gloucestershire is not associated with impact pathways linking to European sites. This measure is a community engagement exercise that is already being implemented and would have undergone prior HRA appraisal.
0203409044	Review existing Water Framework Directive Heavily Modified Waterbodies in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Reviewing existing Heavily Modified Waterbodies in the RBD is not associated with impact pathways linking to European sites. This is a positive measure because it enhances our understanding of the current state of these waterbodies, including the identification of any threats / pressures to waterbodies that are designated European sites.
0209009139	Share information for reciprocal use to build up records of drainage assets and their condition in Gloucestershire	No Likely Significant Effect – Sharing information for reciprocal use in order to build up records of drainage assets and their condition in Gloucestershire is not associated with impact pathways linking to European sites. This is a strategic measure for collaboration and does not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0215509194	Share information for reciprocal use to build up records of drainage assets and their condition in the Shropshire Council area	No Likely Significant Effect – Sharing information for reciprocal use in order to build up records of drainage assets and their condition in Shropshire is not associated with impact pathways linking to European sites. This is a strategic measure for collaboration and does not involve any physical work on the ground.
0203809231	Support Lead local Flood Authorities to develop and deliver Surface Water Management Plans in STW wastewater catchments	No Likely Significant Effect – Developing and delivering Surface Water Management Plans in STW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203809230	Support Lead local Flood Authorities to develop, maintain, apply and review local flood risk management strategies in STW wastewater catchments	No Likely Significant Effect – Developing, maintaining, applying and reviewing local flood risk management strategies in STW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203809234	Support risk management authorities (RMAs) to develop and deliver RMA led flood alleviation schemes in STW wastewater catchments	No Likely Significant Effect – Developing and delivering flood alleviation schemes in STW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203809171	Take a prioritised investment approach to the reduction of flood risk for properties on the 'at risk' register in DCWW wastewater catchments	No Likely Significant Effect – Taking a prioritised investment approach to the reduction of flood risk for properties identified as ‘at risk’ in DCWW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203409040	Through the delivery of the Environment Agency's Future of National Telemetry (FONT) project, ensure all business critical telemetry sites are represented and operational in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Delivering the Environment Agency Future of National Telemetry (FONT) project, such as through ensuring all telemetry sites are operational, is not associated with impact pathways linking to European sites. This is a strategic measure that is already being implemented and would have undergone prior HRA appraisal.
0203409039	Transition to the new way of flood risk forecasting using over-topping rates in Wessex	No Likely Significant Effect – Transitioning to the new way of flood risk forecasting using over-topping rates in Wessex is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809174	Undertake a programme of risk-based maintenance in DCWW water and wastewater catchments	No Likely Significant Effect, but down-the-line HRA required – Undertaking a programme of risk-based maintenance of infrastructure assets in the DCWW water and wastewater catchments will be beneficial to human receptors. Depending on the specific nature and location of infrastructure maintenance measures, impact pathways linking to European sites include water quality, water level and visual / noise disturbance. The boundary of this measure covers a large area of the River Severn catchment encompassing several European sites sensitive to these impact pathways, including the River Wye SAC and the Severn Estuary SPA / Ramsar / SAC. However, there is insufficient information at the FRMP level to undertake a meaningful analysis of this measure. Specific proposals will need to undergo HRA at the planning application stage, appraising LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203809221	Undertake activities to maintain the sewer network in STW wastewater catchments	No Likely Significant Effect – Maintaining the sewer network in STW wastewater catchments is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809220	Undertake proactive and reactive risk prioritised maintenance and repair activities of the sewer network in STW wastewater catchments	No Likely Significant Effect – Undertaking proactive and risk-prioritised maintenance and repair activities of the sewer network in STW wastewater catchments is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0215509191	Update relevant documents to ensure that Shropshire Council can take action where riparian owners fail to comply with their riparian responsibilities in the Shropshire Council area	No Likely Significant Effect – Updating relevant documents to ensure that Shropshire Council can take action where riparian owners fail to comply with their responsibilities in the Shropshire Council area is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve any physical work on the ground.
0209009117	Update the Gloucestershire County Council website to improve signposting and accessibility to flood information and facilitate better flood reporting in Gloucestershire	No Likely Significant Effect – Updating the Gloucestershire County Council website to improve signposting and accessibility to flood-related information is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809009	Update the River Severn computer hydraulic model in the River Severn catchment	No Likely Significant Effect – Updating the River Severn computer hydraulic model for the River Severn catchment is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.
0203809034	Update the Severn Estuary model to improve understanding of the potential impacts of climate change on properties, land, environment and the economy in the Severn Estuary	No Likely Significant Effect – Updating the River Severn Estuary model to improve understanding of the potential implications of climate change is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0219509209	Update the county Surface Water Management Plan to include an assessment of potential future flood risk in Worcestershire	No Likely Significant Effect – Updating the county Surface Water Management Plan to include an assessment of future flood risk in Worcestershire is not associated with impact pathways linking to European sites. This measure proposes updating rather than implementing a new Surface Water Management Plan, such that it will not involve any physical work on the ground.
0219509212	Update with partners the Local Flood Risk Management Strategy, incorporating the experience from recent flood events such as in early 2020, in Worcestershire	No Likely Significant Effect – Updating the Local Flood Risk Management Strategy in Worcestershire is not associated with impact pathways linking to European sites. This measure proposes updating rather than implementing new measures in the Local Flood Risk Management Strategy, such that it will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203409048	Use existing tree planting opportunity mapping data to explore undertaking modelling at specific sites in the Environment Agency Wessex area	No Likely Significant Effect – Using existing tree planting data to explore flood risk modelling at specific sites in the Environment Agency Wessex area is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809035	Use the updated Severn Estuary model to produce and progress delivery of a maintenance plan for future refurbishment of flood risk management assets in the Severn Estuary	No Likely Significant Effect, but down-the-line HRA assessment required – Using the updated Severn Estuary model to produce and deliver a maintenance plan for the future refurbishment of flood risk management assets will be beneficial to human receptors. However, renewing or prolonging the life of flood defences can be associated with a range of impact pathways, including water quality, water level, coastal squeeze, visual / noise disturbance and the temporary / permanent loss of functionally linked habitat. This measure covers a relatively large area of the River Severn catchment and several European sites sensitive to these impact pathways, including the Severn Estuary SPA / Ramsar / SAC and Walmore Common SPA / Ramsar. However, there is insufficient information at the FRMP level to undertake a meaningful analysis of this measure. Specific proposals will need to undergo HRA at the planning application stage, appraising LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0217509185	Where possible, incorporate measures in flood risk management schemes that will enhance the environment and increase climate resilience in the Telford & Wrekin Council area	No Likely Significant Effect – Incorporating measures that will enhance the environment and increase climate resilience in flood risk management schemes is not associated with impact pathways linking to European sites. While this measure is likely to involve physical work on the ground, the environmental measures will form part of larger flood risk management schemes, which will need to be assessed through the HRA process. As such, any interventions that fall under this measure will automatically also be appraised.

Measure ID	Measure	Likely Significant Effects on European sites
0203809006	Work with regional groups and other partner organisations to identify opportunities, develop and if possible deliver joint water management solutions in the Environment Agency West Midlands Area	No Likely Significant Effect – Working with partner organisations to identify opportunities, develop and deliver joint water management infrastructure is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0215509192	Work with Local Resilience Forum partners to review and develop sources of flood recovery information and advice so that it can be provided more quickly and effectively in the Shropshire Council area	No Likely Significant Effect – Reviewing and developing sources of flood recovery information and advice in the Shropshire Council area is not associated with impact pathways linking to European sites. This is a strategic measure that relates to the availability of information and will not involve any physical work on the ground.
0203409034	Work with water companies to identify joint opportunities for meeting the objectives of their Drainage and Waste Water Management Plans and the Environment Agency FCRM and Environment Programmes in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Identifying joint opportunities for meeting objectives of the Drainage and Wastewater Management Plan and the Environment Agency FCRM / Environment Programmes is not associated with linking impact pathways to European sites. This measure focuses on identifying rather than delivering opportunities, such that it will not involve any physical activities on the ground.
0209009011	Work with communities at risk to raise awareness and increase their preparedness for flooding, including what they can do themselves in Gloucestershire	No Likely Significant Effect – Working with communities at risk to raise awareness and increase their preparedness for flooding is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203409036	Work with communities to deliver the Flood Warning Expansion Project in the Environment Agency Wessex area	No Likely Significant Effect – Working with communities to deliver the Flood Warning Expansion Project is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203409035	Work with communities to implement the Property Flood Resilience programme in the Environment Agency Wessex area	No Likely Significant Effect – Implementing the Property Flood Resilience programme in the Environment Agency Wessex area is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203409019	Work with farmers, farm advisors and partner organisations to investigate opportunities for flood risk reduction through soil health improvements in the Environment Agency Wessex area	No Likely Significant Effect – Investigating opportunities for flood risk reduction through soil health improvements is not associated with impact pathways linking to European sites. This is a transitional measure that has already undergone prior HRA appraisal.
0203809176	Work with local authorities to pilot approaches for data sharing and collaborative working in the interest of an improved understanding of flood risk in Herefordshire and Gloucestershire	No Likely Significant Effect – Piloting approaches for data sharing and collaborative working is not associated with impact pathways linking to European sites. This is a strategic measure that relates to collaboration and improved sharing of information, such that it will not involve any physical work on the ground.
0203809178	Work with local authorities, Environment Agency and Natural Resources Wales to develop integrated plans, strategies and associated funding mechanisms in DCWW wastewater catchments	No Likely Significant Effect – Developing integrated plans, strategies and associated funding mechanisms for DCWW wastewater catchments is not associated with impact pathways linking to European sites. This is a strategic, non-specific measure that develops rather than implements plans and strategies, such that it will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809179	Work with other local resilience forum partners, in role as a Civil Contingencies Act (Category 2) responder, to provide support during flooding in DCWW wastewater and water catchments	No Likely Significant Effect – Providing support during flooding in DCWW wastewater catchments (in its role as a Civil Contingencies Act (Category 2)) is not associated with impact pathways linking to European sites. This measure reflects the statutory role of the Environment Agency and centres on collaboration, such that it will not involve any physical work on the ground.
0203709067	Work with others to progress a water management scheme of measures that reduce flood risk, manage water resources and enhance the environment in the River Severn Valley	No Likely Significant Effect – Progressing a water management scheme of measures to reduce flood risk, manage water resources and enhance the environment is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203409037	Work with partners and communities to maintain, repair and improve the hydrometry and telemetry network in the Environment Agency Wessex and West Midlands Areas	No Likely Significant Effect – Maintaining, repairing and improving the hydrometry and telemetry network is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809036	Work with partners in the relevant Coastal Groups to investigate changes in habitat that have occurred due to the existence of flood defences in the Severn Estuary in England	No Likely Significant Effect – Investigating changes in habitat that have occurred due to the existence of flood defences in the Severn Estuary is not associated with impact pathways linking to European sites. This is a positive measure for coastal and estuarine European sites as it seeks to determine potential habitat losses resulting from coastal squeeze and identifies potential replacement intertidal habitats to be delivered under the HRA process. Furthermore, this is a strategic, desk-based measure that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809039	Work with partners in the relevant Coastal Groups to refresh the Shoreline Management Plan with updated data and evidence in the Severn Estuary	No Likely Significant Effect – Refreshing the SMP with updated data and evidence in the Severn Estuary is not associated with impact pathways linking to European sites. This measure seeks to refresh rather than implement the SMP. It is a strategic, desk-based measure that will not involve any physical work on the ground.
0204809051	Work with partners to achieve the objectives of the Local Flood Risk Management Strategy in Bath and North East Somerset	No Likely Significant Effect – Achieving the objectives of the Local Flood Risk Management Strategy in Bath and North-East Somerset is not associated with impact pathways linking to European sites. This is a transitional measure that has already undergone prior HRA appraisal. Furthermore, it is a commitment to implement an adopted strategy.
0203409052	Work with partners to explore opportunities and the feasibility of the introduction of beavers in the Environment Agency Wessex area	No Likely Significant Effect – Exploring opportunities and the feasibility of introducing beavers in the Environment Agency Wessex area is not associated with impact pathways linking to European sites. This measure explores opportunities and the feasibility of rather than implementing the introduction of beavers. Any detailed beaver introduction proposals will need to undergo HRA, particularly with regard to impacts on water quantity, level and flow in relevant European sites, prior to their implementation.
0203409041	Work with partners to review, update where required, and deliver Water Level Management Plans in the Environment Agency Wessex area	No Likely Significant Effect – Reviewing, updating and delivering Water Level Management Plan is not associated with impact pathways linking to European sites. This is a positive measure for European sites that depend on sufficient water levels because it will help identify optimum water requirements for sites and qualifying features, ultimately preserving site integrity. This is a strategic measure that does not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203409049	Work with partners to trial a Catchment Market approach in the Environment Agency Wessex area	No Likely Significant Effect – Trialling a Catchment Market approach in the Environment Agency Wessex area is not associated with impact pathways linking to European sites. This is a strategic measure that does not involve physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.
0215509193	Work with partners to undertake debriefs after flood events enabling lessons to be learnt and relevant procedures and plans to be revised accordingly in the Shropshire Council area	No Likely Significant Effect – Undertaking debriefs after flood events to enable relevant procedures / plans to be revised for the Shropshire Council area is not associated with impact pathways linking to European sites. This is a strategic measure that relates to collaboration and improved sharing of information, such that it will not involve any physical work on the ground.
0217509187	Work with partners to undertake debriefs after flood events enabling lessons to be learnt and relevant procedures/plans to continue to be revised in the Telford & Wrekin Council area	No Likely Significant Effect – Undertaking debriefs after flood events to enable relevant procedures / plans to be revised for the Telford & Wrekin Council area is not associated with impact pathways linking to European sites. This is a strategic measure that relates to collaboration and improved sharing of information, such that it will not involve any physical work on the ground.
0209009129	Work with partners to undertake flood event debriefs to enable lessons to be learnt and relevant procedures and plans to be revised accordingly in Gloucestershire	No Likely Significant Effect – Undertaking debriefs after flood events to enable relevant procedures / plans to be revised for Gloucestershire is not associated with impact pathways linking to European sites. This is a strategic measure that relates to collaboration and improved sharing of information, such that it will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203409050	Work with partners to undertake the engagement, studies and investigations required in areas along the Aust to Sharpness frontage	No Likely Significant Effect – Undertaking the engagement, studies and investigations required in areas along the Aust to Sharpness frontage is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0207309202	Work with partners, landowners and communities to continue the delivery of natural flood management interventions in and across Herefordshire	No Likely Significant Effect – Continuing the delivery of natural flood management interventions in and across Herefordshire is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0215509188	Work with partners, landowners and communities to deliver projects that will work with natural processes (including natural flood management) in appropriate catchments in Shropshire Council and Telford & Wrekin Council areas	No Likely Significant Effect, but down-the-line HRA assessment required – Delivering projects that will work with natural processes (e.g. natural flood management measures) in appropriate catchments in the Shropshire Council and Telford & Wrekin Council areas is unlikely to be associated with impact pathways linking to European sites. Generally, the implementation of natural flood management measures is likely to be beneficial for both human and environmental receptors. Notwithstanding this, such measures can impact on the water quality and level in European sites, particularly in the construction period. The measure boundary includes a range of European sites that are sensitive to these impact pathways, including the Midland Meres & Mosses Phase 1 Ramsar, Midland Meres & Mosses Phase 2 Ramsar and River Clun SAC. However, the FRMP is not specific about the projects to be delivered (as they have not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0219509203	Work with partners, landowners and communities to deliver projects that will work with natural processes (including natural flood management) in appropriate catchments in Worcestershire	No Likely Significant Effect, but down-the-line HRA assessment required – Delivering projects that will work with natural processes (e.g. natural flood management measures) in appropriate catchments in Worcestershire is unlikely to be associated with impact pathways linking to European sites. Generally, the implementation of natural flood management measures is likely to be beneficial for both human and environmental receptors. Notwithstanding this, such measures can impact on the water quality and level in European sites, particularly in the construction period. The boundary of this measure includes one European site that is sensitive to these impact pathways, the Lyppard Grange Ponds SAC. The FRMP is not specific about the projects to be delivered (as they have not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0215509189	Work with the National Flood Forum to establish Flood Action Groups in communities at risk and engage with them to produce community flood action plans in the Shropshire Council area	No Likely Significant Effect – Establishing Flood Action Groups in communities at risk and engage with them to produce community flood action plans is not associated with impact pathways linking to European sites. This is a strategic measure that proposes community engagement and will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809298	Continue to work with partners to further engage with businesses and local communities to improve awareness and promote action that delivers multiple benefits in the Environment Agency West Midlands and Wessex Areas	No Likely Significant Effect – Engaging with businesses and local communities to improve awareness and promote action that delivers multiple benefits is not associated with impact pathways linking to European sites. This is a strategic community engagement exercise that will not involve physical work on the ground.
0203809299	Further work with the River Severn Partnership and Catchment Partnerships to strengthen an evidence-led, integrated catchment-based approach to delivery in the River Severn Partnership Area	No Likely Significant Effect – Working with the River Severn Partnership and Catchment Partnerships to deliver an integrated catchment-based approach is not associated with impact pathways linking to European sites. This is a desk-based strategic measure that will not involve physical work on the ground.

Table 6. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Avon Bristol and Somerset North Streams Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0213109029	Work with partners to achieve the objectives of the Local Flood Risk Management Strategy in North Somerset	No Likely Significant Effect, but down-the-line HRA assessment required – A commitment to achieve the objectives of the Local Flood Risk Management Strategy in North Somerset will not result in LSEs on European sites as it is simply a commitment to implement an adopted strategy. This measure would have undergone prior HRA appraisal as part of the Local Flood Risk Management Strategy (LFRMS) consenting process. Depending on the nature and specific location of detailed proposals, impact pathways linking to European sites may include water quality, water level, coastal squeeze, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. Several European sites within the boundary of this measure are sensitive to these impact pathways, including the Severn Estuary SPA / Ramsar / SAC and North Somerset & Mendip Bats SAC. Bespoke HRAs will be needed at the planning application stage of more detailed flood management measures to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites.

Measure ID	Measure	Likely Significant Effects on European sites
0215909020	Work with partners to achieve the objectives of the Local Flood Risk Management Strategy in South Gloucestershire	No Likely Significant Effect, but down-the-line HRA assessment required – A commitment to achieve the objectives of the Local Flood Risk Management Strategy in South Gloucestershire will not result in LSEs on European sites as it is simply a commitment to implement an adopted strategy. This measure would have undergone prior HRA appraisal as part of the Local Flood Risk Management Strategy (LFRMS) consenting process. Depending on the nature and specific location of detailed proposals, impact pathways linking to European sites may include water quality, water level, coastal squeeze, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. The Severn Estuary SPA / Ramsar / SAC adjoins the boundary of this measure and is sensitive to the aforementioned impact pathways. Bespoke HRAs will be needed at the planning application stage of more detailed flood management measures to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites.
0203309033	Work with partners to develop a strategic approach for the next 100 years in the Upper Bristol Avon	No Likely Significant Effect – Developing a strategic approach for the next 100 years in the Upper Bristol Avon is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203309032	Work with partners to investigate options and develop a strategy for the radial gates in Chippenham	No Likely Significant Effect – Investigating options and developing a strategy for the radial gates in Chippenham is not associated with impact pathways linking to European sites given the distance of Chippenham from any sensitive European sites. This measure seeks to investigate options and develop a strategy, but it does not involve their implementation. It is a desk-based measure that will not involve any physical work on the ground.
0203309031	Work with partners to investigate options to reduce flood risk to residents and area in Corsham	No Likely Significant Effect – Investigating options to reduce flood risk to residents and the area in Corsham is not associated with impact pathways linking to European sites. This measure seeks to investigate rather than implement options and will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203409022	Work with partners to undertake a catchment scale assessment of Natural Flood Management opportunities in key communities affected by flood risk	No Likely Significant Effect – Undertaking a catchment-scale assessment of Natural Flood Management opportunities in key communities affected by flooding is not associated with impact pathways linking to European sites. This measure seeks to investigate rather than implement opportunities and will not involve any physical work on the ground.

Table 7. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Avon Warwickshire Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0218509167	Carry out a community capacity building programme to support communities to be more prepared for flooding and encourage local action in Warwickshire	No Likely Significant Effect – Carrying out a community capacity building programme to support communities to be more prepared for flooding in Warwickshire is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809058	Carry out a flood risk and asset management study in the River Avon catchment	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy in the River Avon catchment is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality, coastal squeeze and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203609070	Carry out works to repair and improve the Alcester flood risk management scheme to increase the standard of protection it provides in Alcester	No Likely Significant Effect – Carrying out works to repair and improve the Alcester flood risk management scheme to increase the standard of protection is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to the scheme-related impacts in the vicinity of Alcester. The closest sensitive European site is the Lyppard Grange Ponds SAC over 20km from Alcester, which is beyond the Zone of Influence of the measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809096	Continue to work with partners to reduce run-off and identify further opportunities for river restoration in the Leam catchment	No Likely Significant Effect – Reducing run-off and identify further opportunities for river restoration in the Leam catchment is not associated with impact pathways linking to European sites. Reducing run-off rates will be positive for the environment (including European sites), as it will help improve water quality and maintain adequate water levels. The wording of the measure also suggests that it is already being implemented and would have undergone prior HRA appraisal.
0203809055	Create/update computer hydraulic models or carry out associated work in accordance with the modelling programme including in Sedgeberrow, Leamington Spa and Shipston on Stour	No Likely Significant Effect – Creating / updating computer hydraulic models in accordance with the modelling programme in Sedgebarrow, Leamington Spa and Shipston on Stour is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0218509169	Deliver a programme of Property Flood Resilience schemes in high risk areas, and where possible natural flood management schemes, in Warwickshire	No Likely Significant Effect, but down-the-line HRA required – Delivering a programme of Property Flood Resilience schemes and natural flood management schemes in high-risk areas will be positive for human receptors. Flood resilience is more concerned with reducing impacts on properties or preventing flood waters from entering properties rather than affecting flooding at source. Depending on the nature and specific location of detailed flood management proposals, impact pathways linking to European sites may include water quality and water level. The Ensor's Pool SAC, which lies in the northern section of the measure boundary, is sensitive to these impact pathways. Bespoke HRAs will be needed at the planning application stage of more detailed flood resilience measures to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203809110	Engage with communities at risk of rapid onset flooding to raise awareness and increase preparedness, including what they can do themselves in Broadway and Charlton	No Likely Significant Effect – Engaging with communities at risk of rapid onset flooding to raise awareness and increase preparedness is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203809103	Expand the flood warning service and engage with communities to encourage sign up in Kenilworth, Warwick and Tewkesbury	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203609072	Investigate and implement, if viable, a flood risk management scheme to better protect properties in The Cape, Warwick	No Likely Significant Effect – Investigating and implementing a flood risk management scheme in The Cape, Warwick is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to potential scheme-related impacts in the vicinity of Warwick. Furthermore, this transitional measure has already undergone prior HRA appraisal. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203609071	Investigate and implement, if viable, a flood risk management scheme in Wootton Wawen	No Likely Significant Effect – Investigating and implementing a flood risk management scheme in Wootton Wawen is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to the scheme-related impacts in the vicinity of the scheme. The closest sensitive European site is the Lyppard Grange Ponds SAC at over 20km distance, which is beyond the Zone of Influence of the measure. Furthermore, the Flood Plan Explorer highlights that the measure has already been assessed through the obligatory consenting process. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0203609073	Investigate and progress, if viable, flood risk management schemes in Kenilworth, Stratford upon Avon, Warwick, Leamington Spa, Wolston, Southam, Barton and Lillington	No Likely Significant Effect – Investigating and progressing flood risk management schemes in Kenilworth, Stratford upon Avon, Warwick, Leamington Spa, Solihull, Wolston, Southam, Barton and Lillington is not associated with impact pathways linking to European sites. While such schemes can be associated with a range of impacts, none of the settlements referred to in this measure lie in the proximity to European sites that are hydrologically sensitive. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0218509168	Investigate and trial a surface water flood warning system to help Warwickshire County Council and communities to take a more proactive approach during times of flood in Warwickshire	No Likely Significant Effect – Investigating and trialling a surface water flood warning system in Warwickshire is not associated with impact pathways linking to European sites. This is a desk-based measure that will not involve physical work on the ground.
0203609074	Investigate flood risk management options including natural flood management in Yelvertoft	No Likely Significant Effect – Investigating flood risk management options including natural flood management in Yelvertoft is not associated with impact pathways linking to European sites. This measure investigates rather than delivers flood management options, such that it will not involve physical work on the ground.
0203809030	Investigate the benefits of slowing the flow of tributaries into Tewkesbury and identify optimum locations for natural flood management measures and river restoration in the catchments of the Carrant Brook, Tirle Brook and River Swilgate in/upstream of Tewkesbury	No Likely Significant Effect – Investigating the benefits of slowing the flow of tributaries into Tewkesbury and identifying optimum locations for natural flood management measures and river restoration in the catchments of relevant brooks / rivers is not associated with impact pathways linking to European sites. This measure investigates benefits and identifies optimum locations, rather than delivering these interventions. Therefore, it will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809085	Investigate the feasibility of replacing non-fixed assets that are currently deployed in flood incidents with alternative flood risk management measures in Pershore	No Likely Significant Effect – Investigating the feasibility of replacing non-fixed assets that are currently deployed in flood incidents with alternative measures is not associated with impact pathways linking to European sites. This measure investigates the feasibility of rather than actually replacing these assets and will not involve physical work on the ground.
0203709057	Investigate, and depending on the outcome progress, flood risk management schemes in Evesham, South Littleton and Bretforton	No Likely Significant Effect – Investigating and progressing flood risk management schemes in Evesham, South Littleton and Brethforton is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0209009143	Support volunteer flood wardens in Tewkesbury	No Likely Significant Effect – Supporting volunteer flood wardens in Tewkesbury is not associated with impact pathways linking to European sites. This is a community support measure that will not involve physical work on the ground.
0218509166	Undertake a review of the current high risk priority areas including considering climate change in Warwickshire	No Likely Significant Effect – Undertaking a review of the current high risk priority areas in Warwickshire is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure that will not involve physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.
0218509165	Update the existing Local Flood Risk Management Strategy to take into account the new National Strategy and improved flooding records in Warwickshire	No Likely Significant Effect – Updating the existing Local Flood Risk Management Strategy (LFRMS) to take into account the new National Strategy and improved flooding records in Warwickshire is not associated with impact pathways linking to European sites. The Local Flood Risk Management Strategy (LFRMS) would have undergone HRA appraisal as part of the statutory consenting process. Furthermore, this measure updates rather than implements the LFRMS.

Measure ID	Measure	Likely Significant Effects on European sites
0203809029	Use the updated River Severn model and other relevant models to improve understanding of the potential impacts of climate change in Tewkesbury	No Likely Significant Effect – Using the updated River Severn model and other relevant models to improve understanding of potential impacts of climate change in Tewkesbury is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground.
0209009115	Work closely with communities and partners to identify and deliver preferred option(s) for a capital scheme in Bishops Cleeve	No Likely Significant Effect – Identifying and delivering preferred options for a capital scheme in Bishops Cleeve is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to potential scheme-related impacts in the vicinity of Bishops Cleeve.
0203809095	Work with local flood action groups to identify and deliver natural flood management interventions in the River Stour catchment upstream of Shipston on Stour	No Likely Significant Effect – Identifying and delivering natural flood management interventions in the River Stour catchment upstream from Shipston-on-Stour is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to potential scheme-related impacts in the vicinity of Shipston-on-Stour.
0203809031	Work with partners, landowners and communities to deliver natural flood management and blue/green infrastructure in Bishops Cleeve	No Likely Significant Effect – Delivering natural flood management and blue / green infrastructure in Bishops Cleeve is not associated with impact pathways linking to European sites. While this measure is likely to involve works on the ground, there are no European sites sensitive to potential scheme-related impacts in the vicinity of Bishops Cleeve.

Measure ID	Measure	Likely Significant Effects on European sites
0203809093	Work with the local Flood Action Group to investigate and, if viable, deliver natural flood management interventions in the Finham Brook upstream of Kenilworth	No Likely Significant Effect – Investigating natural flood management interventions in the Finham Brook upstream of Kenilworth is not associated with impact pathways linking to European sites. This measure investigates rather than delivers interventions and will not involve physical work on the ground.

Table 8. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Severn Middle Shropshire Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0203809047	Carry out a flood risk and asset management study for the River Tern catchment in Shropshire	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy in the River Tern catchment is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203809102	Expand the flood warning service and engage with communities to encourage sign up in Ellesmere and other locations as identified	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203709066	Investigate, and progress if viable, flood risk management measures in Ellesmere and Wem	No Likely Significant Effect – Investigating and progressing flood risk management measures in Ellesmere and Wem is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Table 9. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Severn Middle Worcestershire Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0203809053	Create/update computer hydraulic models or carry out associated work in accordance with the modelling programme including in Halesowen and for the Illey Brook	No Likely Significant Effect – Creating / updating computer hydraulic models in accordance with the modelling programme in Halesowen and for the Illey Brook is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203709111	Engage with communities at risk of rapid onset flooding to raise awareness and increase preparedness, including what they can do themselves in Much Wenlock, Coalbrookdale and Astley	No Likely Significant Effect – Engaging with communities at risk of rapid onset flooding to raise awareness and increase preparedness is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809105	Expand the flood warning service and engage with communities to encourage sign up in Bromsgrove and Halesowen	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203709061	Implement, if viable, flood risk management schemes in Toronto Close (Worcester) and Bewdley	No Likely Significant Effect – Implementing flood risk management schemes in Toronto Close (Worcester) and Bewdley is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809081	Investigate and implement, if viable, a Property Flood Resilience Scheme in Halesowen	No Likely Significant Effect – Investigating and implementing a property Flood Resilience Scheme in Halesowen is not associated with impact pathways linking to European sites. Flood Resilience Schemes can be associated with a range of potential impact pathways, including water quality and water level. However, the closest European site to Halesowen that is sensitive to these impacts, the Fens Pools SAC, lies at approx. 5.8km distance upstream in the catchment. Therefore, there is no pathway of impact to the scheme. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203709064	Investigate options for property level protection and, depending on the outcome, progress measures in Himbleton and Worcester	No Likely Significant Effect – Investigating and progressing options for property level protection in Himbleton and Worcester is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203709060	Investigate, and depending on the outcome progress, flood risk management schemes in Barbourne, Bridgnorth, Droitwich, Hagley, Ironbridge, Stourbridge and Wolverley	No Likely Significant Effect – Investigating and progressing flood risk management schemes in Barbourne, Bridgnorth, Droitwich, Hagley, Ironbridge, Stourbridge and Wolverley is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203709059	Investigate, and depending on the outcome progress, measures in Bromsgrove	No Likely Significant Effect – Investigating and progressing flood management measures in Bromsgrove is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809005	Progress an integrated approach that supports resilient growth and establishes a long term joint framework for managing flood risk and drainage in and across Worcester city	No Likely Significant Effect – Progressing an integrated approach which supports resilient growth and long-term joint framework for managing flood risk and drainage in Worcester city is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809091	Work with Birmingham and Black Country Wildlife Trust, Severn Rivers Trust, Worcestershire Wildlife Trust and others to deliver river restoration and reconnect floodplains in the Stour and its tributaries	No Likely Significant Effect, but down-the-line HRA assessment required – Delivering river restoration and reconnecting floodplains in the Stour and its tributaries will result in long-term benefits to the environment and hydrologically linked European sites. However, such proposals also have the potential to result in impacts on water quality and water level, particularly in the construction period. Individual proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Table 10. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Severn Uplands Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0203709068	Assess the role of raised defences and develop a flood risk and asset management study in the River Severn/River Vyrnwy confluence area	No Likely Significant Effect – Assessing the role of raised defences and developing a flood risk and asset management strategy in the River Severn / River Vyrnwy confluence area is not associated with impact pathways linking to European sites. This measure assesses the role of defences and develops rather than implements a strategy, such that it will not involve physical work on the ground. Furthermore, it is already being implemented and would have undergone prior HRA appraisal.
0203709112	Engage with the community at risk of rapid onset flooding to raise awareness and increase preparedness, including what they can do themselves in Llanyblodwel	No Likely Significant Effect – Engaging with communities at risk of rapid onset flooding to raise awareness and increase preparedness is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203809106	Expand the flood warning service and engage with communities to encourage sign up in Shrewsbury, Montford Bridge, Melverley, Llanyblodwel and other communities identified	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203809083	Investigate the feasibility of replacing demountable/non-fixed assets which are currently deployed in flood incidents with alternative flood risk management measures in Shrewsbury	No Likely Significant Effect – Investigating the feasibility of replacing non-fixed assets that are currently deployed in flood incidents with alternative measures is not associated with impact pathways linking to European sites. This measure investigates the feasibility of rather than actually replacing these assets and will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203709065	Investigate, and progress if viable, flood risk management measures in Shrewsbury and Church Stretton	No Likely Significant Effect – Investigating and progressing flood management measures in Shrewsbury, Church Stretton and Rea Valley is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203709069	Work together with other risk management authorities, including Severn Trent Water, to deliver an integrated plan in Oswestry	No Likely Significant Effect – Delivering an integrated flood management plan in Oswestry is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809092	Work with partners and the community on the Reaction project to identify and deliver natural flood management measures in the Rea catchment	No Likely Significant Effect, but down-the-line HRA assessment required – Identifying and delivering natural flood management measures in the Rea catchment will result in long-term benefits to the environment and hydrologically linked European sites. However, natural flood management measures also have the potential to result in impacts on water quality and water level, particularly during their implementation. Several European sites within the boundary of this measure are sensitive to these impact pathways, including the Midland Meres and Mosses Phase 1 Ramsar, Midland Meres and Mosses Phase 2 Ramsar, The Stiperstones and The Hollies SAC, Montgomery Canal SAC and Granllyn SAC. The FRMP is not specific about the natural flood management measures involved (as they have not yet been determined) and thus there is insufficient detail for a meaningful assessment of this measure. Individual proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Table 11. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Severn Vale Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0203809054	Create/update computer hydraulic models or carry out associated work in accordance with the modelling programme including in the Cam and Wicksters Brook, Slad Brook, River Frome, Horsbere Brook, Painswick Stream and River Chelt	No Likely Significant Effect – Creating / updating computer hydraulic models in accordance with the modelling programme in the Cam and Wicksters Brook, Slad Brook, River Frome, Horsbere Brook, Painswick Stream and River Chelt is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.
0203809238	Deliver a strategic sewerage scheme in Stroud	No Likely Significant Effect – Delivering a strategic sewerage system in Stroud is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone prior HRA appraisal.
0203809087	Develop a long term local asset management strategy for managing existing flood risk assets in Kempsey	No Likely Significant Effect – Developing a long-term local asset management strategy for managing existing flood risk assets is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategy and will not involve physical work on the ground.
0203809028	Engage with communities and partners to improve flood awareness, warning and response in rapid response catchments (Lydney, Cinderford/Ruspidge, Charlton Kings, Nailsworth and Slad Brook)	No Likely Significant Effect – Engaging with communities to improve flood awareness, warning and response in rapid response catchments is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this transitional measure has already undergone the relevant consenting process.

Measure ID	Measure	Likely Significant Effects on European sites
0203809109	Expand the flood warning service and engage with communities to encourage sign up in Nailsworth, Stroud, and Lower Tuffley	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203809027	Explore opportunities as part of built developments in Gloucestershire including Gloucester, Cheltenham, Tewkesbury, and Stroud	No Likely Significant Effect – Exploring flood management opportunities as part of built developments in Gloucester, Cheltenham, Tewkesbury and Stroud is not associated with impact pathways linking to European sites. This measure explores rather than implements opportunities and will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone the relevant consenting process, including HRA.
0203709062	Implement, if viable, a flood risk management scheme in Severn Stoke	No Likely Significant Effect – Implementing a flood risk management scheme in Severn Stoke is not associated with impact pathways linking to European sites. While this measure will involve physical work on the ground, Severn Stoke lies far away from any European sites that are sensitive to any scheme-related impacts. Furthermore, the Flood Plan Explorer indicates that this transitional measure has already undergone the relevant consenting process. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0203809032	Investigate and, where viable, deliver property flood resilience measures for residential properties in areas between Tewkesbury and Gloucester along the River Severn, and in Longney, Dudbridge, Cam and Dursley	No Likely Significant Effect – Investigating and delivering property flood resilience measures for residential properties in areas between Tewkesbury and Gloucester along the River Severn is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone the relevant consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0209009142	Investigate flood risk and, if viable, carry out works in Lydney	No Likely Significant Effect, but down-the-line HRA assessment required – Investigating and carrying out flood management works in Lydney will benefit human receptors. However, flood management measures have the potential to result in impacts on European sites, including water quality, water level, coastal squeeze, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. The conurbation of Lydney adjoins the Severn Estuary SPA / Ramsar / SAC and also lies in the wider functional landscape of the Wye Valley and Forest of Dean Bat Sites SAC. The FRMP provides insufficient detail for a meaningful assessment of this measure, as potential scheme-related impacts will depend on the specific nature and location of proposals. Individual proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. It should be noted that viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809084	Investigate measures to increase the resilience of the flood risk management scheme in Powick	No Likely Significant Effect – Investigating measures to increase the resilience of the flood risk management scheme in Powick is not associated with impact pathways linking to European sites. This measure investigates rather than implements measures and will not involve any physical work on the ground.
0203809044	Investigate, and if viable, progress a scheme in Nailsworth	No Likely Significant Effect – Investigating and progressing a scheme in Nailsworth is not associated with impact pathways linking to European sites. While flood management schemes can be associated with potential impacts, the Severn Estuary SPA / Ramsar / SAC, at over 13km distance the closest European site with hydrological sensitivity, lies beyond the Zone of Influence of the scheme. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0203809170	Refurbish the Lapperditch Pumping Station enabling pumping of floodwater from land to continue in the future in Longney	No Likely Significant Effect, but down-the-line HRA assessment required – Refurbishing the Lapperditch Pumping Station in Longney to enable pumping of floodwater from land to continue, will benefit human receptors. However, the refurbishment works have the potential to result in impacts on European sites in the construction period, including water quality, water level, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. Longney lies approx. 5km from the Severn Estuary SPA / Ramsar / SAC, which is sensitive to these impact pathways. The FRMP provides insufficient detail for a meaningful assessment of this measure, as potential scheme-related impacts will depend on the specific nature of the proposal. The refurbishment works will need to be supported by a bespoke HRA that adequately appraises LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809043	Repair the River Frome outfall to the Severn Estuary, repair badger damage in the River Frome embankment and carry out associated environmental works in the Upper Framilode area	No Likely Significant Effect, but down-the-line HRA assessment required – Repairing the River Frome outfall to the Severn Estuary and badger damage in the River Frome embankment will benefit human receptors. However, the repair works have the potential to result in impacts on European sites, including water quality, water level and visual / noise disturbance. The River Frome runs alongside the River Severn before feeding into the Severn Estuary SPA / Ramsar / SAC at Sharpness. The SPA / Ramsar / SAC is sensitive to the potential scheme-related impact pathways. The FRMP provides insufficient detail for a meaningful assessment of this measure, as potential scheme-related impacts will depend on the specific nature of works to be undertaken. The repair works will need to be supported by a bespoke HRA that adequately appraises LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0209009127	Understand areas at flood risk due to poor sluice gate maintenance and management by riparian owners, and educate them on roles and responsibilities, in Stroud	No Likely Significant Effect – Understanding areas at flood risk due to poor sluice gate maintenance and management by riparian owners, and providing education, is not associated with impact pathways linking to European sites. This measure furthers understanding and provides education, such that it will not involve any physical work on the ground.
0209009126	Understand areas at risk of flooding due to blocked culverts in Stroud	No Likely Significant Effect – Understanding areas at flood risk due to blocked culverts is not associated with impact pathways linking to European sites. This measure furthers understanding rather than implementing measures, such that it will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809041	Work together to assess and agree the model/s to be used that best represent/s current and future level of flood risk in Stroud	No Likely Significant Effect – Assessing and agreeing the models to be used that best represent current / future flood risk in Stroud is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground.
0203809213	Work with partners to encourage a more strategic approach to improving resilience and recovery in locations in the River Severn floodplain from Tewkesbury to Gloucester	No Likely Significant Effect – Encouraging a more strategic approach to improving resilience and recovery in locations in the River Severn floodplain is not associated with impact pathways linking to European sites. This measure identifies a strategic approach rather than implementing specific measures. Furthermore, the Flood Plan Explorer indicates that this transitional measure has already undergone the relevant consenting process.

Measure ID	Measure	Likely Significant Effects on European sites
0209009128	Work with partners to investigate the feasibility, and if appropriate progress implementation, of a scheme in Cam and Wicksters Brook catchments	No Likely Significant Effect, but down-the-line HRA assessment required – Investigating the feasibility and implementing a flood management scheme in the Cam and Wicksters Brook catchments will benefit human receptors. However, flood management schemes have the potential to result in impacts on European sites, including water quality, water level, coastal squeeze, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. The Cam Brook and Wicksters Brook are small rivers that traverse long geographic distances to the east of the Severn Estuary. Numerous European sites sensitive to the above impact pathways fall within their catchments, including the Severn Estuary SPA / Ramsar / SAC, North Somerset and Mendip Bats SAC, Mendip Limestone Grasslands SAC, Chew Valley Lake SPA and Bath and Bradford on Avon Bats SAC. The FRMP provides insufficient detail for a meaningful assessment of this measure, as potential scheme-related impacts will depend on the specific nature and location of schemes. Individual proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809040	Work with partners, landowners and communities to deliver natural flood management and blue/green infrastructure in the Forest of Dean	No Likely Significant Effect, but down-the-line HRA assessment required – Identifying and delivering natural flood management measures in the Forest of Dean will result in long-term benefits to the environment and hydrologically linked European sites. However, natural flood management measures also have the potential to result in impacts on European sites regarding water quality, water level, visual / noise disturbance and temporary / permanent loss of functionally linked habitat, particularly during their 'construction' period. Several European sites within the boundary of this measure are sensitive to these impact pathways, including the Severn Estuary SPA / Ramsar / SAC, Wye Valley and Forest of Dean Bat Sites SAC, Wye Valley Woodlands SAC and River Wye SAC. The FRMP provides insufficient detail for a meaningful assessment of this measure because scheme-related impacts will depend on the specific nature and location of natural flood management measures. Individual proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0209009042	Work with partners, landowners and communities to deliver natural flood management measures in the Stroud Valleys, including headwaters	No Likely Significant Effect – Delivering natural flood management measures in the Stroud Valleys is not associated with impact pathways linking to European sites. A decision to proceed with this measure has been made and it would have undergone the relevant statutory consenting process, including HRA.

Table 12. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Teme Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0203809086	Develop a flood risk and asset management study in the River Teme catchment	No Likely Significant Effect – Developing a flood risk and asset management strategy in the River Teme catchment is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategy and will not involve physical work on the ground.
0203809107	Expand the flood warning service and engage with communities to encourage sign up in Craven Arms, Wyson and Brimfield	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203709063	Implement, if viable, a flood risk management scheme in Tenbury	No Likely Significant Effect – Implementing a flood risk management scheme in Tenbury is not associated with impact pathways linking to European sites. While this measure will involve physical work on the ground, Tenbury Wells lies far away from any European sites that are sensitive to potential scheme-related impacts (the closest being the River Wye SAC at over 15km distance). Furthermore, the Flood Plan Explorer indicates that this transitional measure has already undergone the relevant consenting process. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0207309201	Investigate and, if viable, implement flood risk management projects in Herefordshire including in Brimfield, Orleton and Little Hereford	No Likely Significant Effect – Investigating and implementing flood risk management projects in Herefordshire, including in Brimfield, Orleton and Little Hereford, is not associated with impact pathways linking to European sites. While this measure will involve physical work on the ground, the settlements included in this measure lie far away from any European sites that are sensitive to potential scheme-related impacts (the closest being the River Wye SAC at over 14km distance from Orleton). Furthermore, the Flood Plan Explorer indicates that this transitional measure has already undergone the relevant consenting process. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809050	Investigate and, if viable, progress flood risk management schemes in Leintwardine and Walford, Eardiston, Ludlow, Bucknell and Cleobury	No Likely Significant Effect – Investigating and progressing property flood risk management schemes in Leintwardine and Walford, Eardiston, Ludlow, Bucknell and Cleobury is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809056	Update the computer hydraulic model for the River Teme in Herefordshire and Worcestershire	No Likely Significant Effect – Updating the computer hydraulic model for the River Teme in Herefordshire and Worcestershire is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA appraisal.

Table 13. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Wye Management Catchment

Measure ID	Measure	Likely Significant Effects on European sites
0288809038	Agree an approach to monitor and manage any impacts of existing beaver populations on Environment Agency flood risk management activities in Herefordshire	No Likely Significant Effect – While it is noted that the management of existing beaver populations could impact the water level in European sites, this measure is simply to agreeing on an approach for beaver impact monitoring and management. Detailed approaches will require bespoke HRAs to ensure that beaver population management measures do not result in LSEs and, where relevant, adverse effects on the integrity of European sites.
0203809048	Carry out a flood risk and asset management study for the River Lugg catchment in Herefordshire	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy in the River Lugg catchment is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality, coastal squeeze and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809049	Carry out a flood risk and asset management study for the River Wye catchment in Herefordshire	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy in the River Wye catchment is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0207309199	Carry out a programme of modelling and feasibility studies to reduce flood risk from brooks in Hereford, Wellington and Canon Pyon	No Likely Significant Effect – Carrying out a programme of modelling and feasibility studies to reduce flood risk from brooks in Hereford, Wellington and Canon Pyon is not associated with impact pathways linking to European sites. This is a desk-based modelling and feasibility exercise that will not involve physical work on the ground.
0203809052	Create/update computer hydraulic models or carry out associated work in accordance with the modelling programme including in the River Wye, and the Dulas Brook and its confluence with the River Dore	No Likely Significant Effect – Creating / updating computer hydraulic models in accordance with the modelling programme in the River Wye and Dulas Brook is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0203809108	Expand the flood warning service and engage with communities to encourage sign up in Stoke Prior, Coleford and Ewyas Harold	No Likely Significant Effect – Expanding the flood warning service and engaging with communities to encourage sign up is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0209009137	Investigate and implement a flood alleviation scheme in Coleford	No Likely Significant Effect – Investigating and implementing a flood alleviation scheme in Coleford is not associated with impact pathways linking to European sites. A decision to proceed with this measure has been made and it would have undergone the relevant statutory consenting process, including HRA.
0207309200	Investigate and, if viable, implement flood risk management projects in Herefordshire including in Eardisley and Hope-under-Dinmore	No Likely Significant Effect, but down-the-line HRA assessment required – Investigating and implementing flood risk management projects in Herefordshire, including in Eardisley and Hope-under-Dinmore, will benefit human receptors. However, flood risk management projects have the potential to result in impacts on European sites, including water quality, water level and visual / noise disturbance. Eardisley lies approx. 3.2km from the River Wye SAC, which is sensitive to potential scheme-related impacts. The FRMP provides insufficient detail for a meaningful assessment of this measure, as potential scheme-related impacts will depend on the specific nature and location of flood management projects to be undertaken. More detailed proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. It is worth noting that the viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203809051	Investigate and, if viable, progress flood risk management schemes in Eardisland, Ewyas Harold, Pontrilas, Hampton Bishop, Hereford, Ross on Wye, Bishops Frome and Kington	No Likely Significant Effect – Investigating and progressing flood risk management schemes in Eardisland, Ewyas Harold, Pontrilas, Hampton Bishop, Hereford, Ross on Wye, Bishops Frome and Kington is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809082	Investigate the feasibility of replacing demountable/non-fixed assets which are currently deployed in flood incidents with alternative flood risk management measures in Hereford	No Likely Significant Effect – Investigating the feasibility of replacing non-fixed assets that are currently deployed in flood incidents with alternative measures is not associated with impact pathways linking to European sites. This measure investigates the feasibility of rather than actually replacing these assets and will not involve physical work on the ground. Furthermore, the measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA.
0203809046	Work with partners to address agricultural diffuse pollution and run off in Herefordshire	No Likely Significant Effect – Addressing agricultural diffuse pollution and runoff in Herefordshire is not associated with impact pathways linking to European sites. This measure will be positive for the environment (including European sites) because it will help reduce the input of excess nutrients and pollutants into local watercourses. Furthermore, the measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA.

Measure ID	Measure	Likely Significant Effects on European sites
0203809045	Work with research institutions to research the effectiveness of measures aimed at improving the water storage capacity in soils in Herefordshire	No Likely Significant Effect – Researching the effectiveness of measures aimed at improving the water storage capacity in soils in Herefordshire is not associated with impact pathways linking to European sites. This measure involves a desk-based research study that will not include any physical work on the ground. Furthermore, it is already being implemented and would have undergone the relevant statutory consenting process, including HRA.
0203809296	Work with other risk management authorities and environmental non-government organisations to explore opportunities in the River Lugg Internal Drainage Board Area	No Likely Significant Effect – Working with other risk management authorities and environmental non-governmental organisations to explore opportunities in the River Lugg Internal Drainage Board Area is not associated with impact pathways linking to European sites. This is a desk-based, strategic measure that will not include any physical work on the ground.
0203809297	Work with partners to identify key issues and potential opportunities, develop a vision and deliver nature based solutions in the River Arrow catchment	No Likely Significant Effect – Identifying key issues and potential opportunities, and delivering nature-based solutions in the River Arrow catchment is not associated with impact pathways linking to European sites. While this measure may involve work on the ground, the River Arrow catchment is relatively remote from any European sites that are sensitive to potential impacts. The closest European sites with potential hydrological linkages are the Lyppard Grange Ponds SAC and Fens Pools SAC at over 15km distance.

Table 14. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Bath (Risk of Flooding from Rivers and Seas; RoFRS) Flood Risk Area – closest hydrologically sensitive site: Chew Valley Lake (approx. 15.4km from the boundary of this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0203409002	Continue engagement with partners on developing and funding the wider Flood Risk Management Strategy in Bath	No Likely Significant Effect – Continuing engagement with partners on developing and funding the wider Flood Risk Management Strategy in Bath is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA.
0203409007	Review recent modelling and identify if improvements to defences are required in the Midford Catchment, Bath	No Likely Significant Effect – Reviewing recent modelling and identifying potential improvements to defences in the Midford Catchment, Bath is not associated with impact pathways linking to European sites. A decision to proceed this measure has already been made and it would have undergone the relevant statutory consenting process, including HRA.
0203409006	Undertake a specialist asset survey and work with partners to identify options to deliver any required improvements to defences in Green Park Mews	No Likely Significant Effect – Undertaking a specialist asset survey and identifying options to deliver improvements to defences in Green Park Mews is not associated with impact pathways linking to European sites. This measure undertakes a survey and identifies rather than delivers options, such that it will not involve any physical work on the ground. Furthermore, a decision to proceed has already been made and the measure would have undergone the relevant statutory consenting process, including HRA.
0203409005	Undertake modelling of tributaries in Bath (Saint Catherine's Brook, Newton Brook and Lam Brook)	No Likely Significant Effect – Undertaking modelling of tributaries in Bath is not associated with impact pathways linking to European sites. This is a desk-based modelling exercise that will not involve any physical work on the ground. Furthermore, a decision to proceed has already been made and the measure would have undergone the relevant statutory consenting process, including HRA.

Measure ID	Measure	Likely Significant Effects on European sites
0203409004	Work with partners to develop a strategy for Pulteney Radial Gate in Bath	No Likely Significant Effect – Developing a strategy for Pulteney Radial Gate in Bath is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategy and will not involve any physical work on the ground. Furthermore, a decision to proceed has already been made and the measure would have undergone the relevant statutory consenting process, including HRA.
0203409003	Work with partners to replace Twerton Gates in Bath	No Likely Significant Effect – Replacing Twerton Gates in Bath is not associated with impact pathways linking to European sites, given the distance of these gates from sensitive European sites. This transitional measure has already undergone the relevant statutory consenting process, including HRA.
0203409023	Work with partners to undertake a catchment scale assessment of Natural Flood Management opportunities in rural and urban catchments affecting Bath and its surrounding communities	No Likely Significant Effect – Undertaking a catchment-scale assessment of Natural Flood Management opportunities in rural and urban catchments affecting Bath is not associated with impact pathways linking to European sites. This measure seeks to assess rather than implement opportunities and will not involve any physical work on the ground.

Table 15. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Bristol (RoFRS) Flood Risk Area – closest hydrologically sensitive site: Severn Estuary SPA / Ramsar / SAC (adjoining the boundary of this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0203409013	Deliver the Ecology Mitigation and Flood Defence project in the Avonmouth and Severnside Enterprise Area (ASEA) and will work with Network Rail and the Bristol Port Company to identify and deliver a viable solution for new dock gates and mid-section of the railway	No Likely Significant Effect, but down-the-line HRA assessment required – Delivering the Ecology Mitigation and Flood Defence project in the Avonmouth and Severnside Enterprise Area (ASEA) is associated with impact pathways linking to the Severn Estuary SPA / Ramsar / SAC. Generally, deploying

Measure ID	Measure	Likely Significant Effects on European sites
		permanent structures to reduce coastal flood risk (e.g. earth embankments, sheet pile walls, glass panels, flood gates) is associated with a range of impact pathways, including hydrology, water quality, coastal squeeze and visual / noise disturbance. However, down-the-line HRA will not be required for this element of the measure, because work on this scheme has already started and it has undergone the relevant statutory consenting process, including HRA. Specifically, mitigation for coastal squeeze is being delivered by creating two new coastal wetland habitats at Hallen Marsh and Northwick, amounting to approx. 80ha. Identifying and delivering a viable solution for new dock gates and mid-section of the railway will be positive for the enterprise area. However, the Royal Portbury Dock and Royal Edward Dock in the Avonmouth area lie adjacent to the Severn Estuary SPA / Ramsar / SAC, which is sensitive to potential scheme-related impacts in the construction period, including in relation to water quality, water level and visual / noise disturbance. The FRMP provides insufficient detail for a meaningful assessment of this element of the measure, as the impacts will depend on the specific nature and location of works to be undertaken. Once a more detailed proposal of works is available, this will need to be supported by an HRA that adequately appraises LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.

Measure ID	Measure	Likely Significant Effects on European sites
0203409009	Engage with Bristol City Council and other partners on new development areas in Bristol	No Likely Significant Effect – Engaging with Bristol City Council on new development areas in Bristol is not associated with impact pathways linking to European sites. This is a strategic engagement exercise that will not involve physical work on the ground. Furthermore, this transitional measure has already undergone the relevant consenting process.
0203409012	Investigate flooding issues and develop a strategy to deliver the required improvements in the River Malago	No Likely Significant Effect – Investigating flooding issues and developing a strategy to deliver required improvements in the River Malago is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategy and will not involve any physical work on the ground.
0203409011	Investigate options for improving the flow through Old Colliters Brook in Bristol	No Likely Significant Effect – Investigating options for improving the flow through Old Colliters Brook in Bristol is not associated with impact pathways linking to European sites. This measure investigates rather than delivers options and will not involve any physical work on the ground.
0203409015	Refurbish the flood defence assets in the lower reaches of the Bristol Frome	No Likely Significant Effect – Refurbishing the flood defence assets in the lower reaches of the Bristol Frome is not associated with impact pathways linking to European sites. While this measure involves work on the ground, the Severn Estuary SPA / Ramsar / SAC lies over 7km from central Bristol (where the Frome feeds into the River Avon). This is beyond the distance for which potential scheme-related impacts are considered relevant for the SPA / Ramsar / SAC. Furthermore, this transitional measure has already undergone the relevant consenting process.

Measure ID	Measure	Likely Significant Effects on European sites
0203409018	Support Bristol City Council to achieve the objectives of the Local Flood Risk Management Strategy in Bristol	No Likely Significant Effect – Achieving the objectives of the Local Flood Risk Management Strategy (LFRMS) in Bristol is not associated with impact pathways linking to European sites. While this measure is likely to involve physical work on the ground, this measure is simply committing to implementing an adopted strategy (the LFRMS), which would have been subject to its own statutory consenting process, including HRA.
0203409017	Undertake modelling and identify options for improving the flood defences in Siston and Warmley	No Likely Significant Effect – Undertaking modelling and identifying options for improving the flood defences in Siston and Warmley is not associated with impact pathways linking to European sites. This measure is a desk-based modelling exercise and involves identifying rather than implementing options. Furthermore, a decision to proceed has already been made and the measure would have undergone the relevant statutory consenting process, including HRA.
0203409010	Undertake modelling in the Ashton Vale catchment	No Likely Significant Effect – Undertaking modelling in the Ashton Vale catchment is not associated with impact pathways linking to European sites. This measure is a desk-based modelling exercise that will not involve any physical work on the ground. Furthermore, a decision to proceed has already been made and the measure would have undergone the relevant statutory consenting process, including HRA.
0203409008	Work with partners to develop a flood strategy in the River Avon	No Likely Significant Effect – Developing a flood strategy in the River Avon is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategy and will not involve any physical work on the ground. Furthermore, this measure has undergone the relevant statutory consenting process.

Measure ID	Measure	Likely Significant Effects on European sites
0203409016	Work with partners to develop a strategy and deliver works in Pill	No Likely Significant Effect, but down-the-line HRA assessment required – Developing a strategy and delivering flood management works in Pill will benefit human receptors. However, flood management works have the potential to result in impacts on European sites, including in relation to water quality, water level, coastal squeeze, visual / noise disturbance and temporary / permanent loss of functionally linked habitat. Pill adjoins the Severn Estuary SPA / Ramsar / SAC, which is sensitive to potential scheme-related impacts. The FRMP provides insufficient detail for a meaningful assessment of this measure, as such impacts will depend on the specific nature and location of flood management works to be undertaken. More detailed proposals will need to be supported by bespoke HRAs that adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0203409014	Work with partners to develop an investment strategy for up to the next 100 years in the Bristol Frome catchment	No Likely Significant Effect – Developing an investment strategy for up to the next 100 years in the Bristol Frome catchment is not associated with impact pathways linking to European sites. This measure entails a strategic funding exercise that will not involve any physical work on the ground. Furthermore, this transitional measure has already undergone the relevant statutory consenting process.

Measure ID	Measure	Likely Significant Effects on European sites
0203409021	Work with partners to undertake a catchment scale assessment of Natural Flood Management opportunities in rural and urban catchments affecting Bristol and its surrounding communities	No Likely Significant Effect – Undertaking a catchment-scale assessment of Natural Flood Management opportunities in rural and urban catchments affecting Bristol is not associated with impact pathways linking to European sites. This measure seeks to assess rather than implement opportunities and will not involve any physical work on the ground.

Table 16. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Bristol (Risk of Flooding from Surface Water; RoFSW) Flood Risk Area – closest hydrologically sensitive site: Severn Estuary SPA / Ramsar / SAC (adjoining this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0206009030	Complete the Bedminster Green River Restoration project, including measures to better protect East Street, in Bristol	No Likely Significant Effect – Completing the Bedminster Green River Restoration project (including measures to better protect East Street) in Bristol is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone the relevant statutory consenting process, including HRA.
0206009025	Review the evidence in the Ashton catchment	No Likely Significant Effect – Reviewing the evidence in the Ashton catchment is not associated with impact pathways linking to European sites. This measure forms part of the Local Flood Risk Management Strategy (LFRMS), which has undergone its own consenting process, including HRA. Furthermore, reviewing evidence is desk-based and will not involve any physical work on the ground.
0206009024	Undertake a groundwater flood risk assessment in Bristol	No Likely Significant Effect – Undertaking a groundwater flood risk assessment in Bristol is not associated with impact pathways linking to European sites. This measure forms part of the Local Flood Risk Management Strategy (LFRMS), which has undergone its own consenting process, including HRA. Furthermore, undertaking a risk assessment will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0206009026	Work with developers on the River Frome Gateway Masterplan in the lower Frome catchment	No Likely Significant Effect – Working with developers on the River Frome Gateway Masterplan in the lower Frome catchment is not associated with impact pathways linking to European sites. This measure proposes work on a masterplan rather than implementing such a plan and will not involve any physical work on the ground.
0206009028	Work with partners to achieve the objectives of the Local Flood Risk Management Strategy in Bristol	No Likely Significant Effect – Achieving the objectives of the Local Flood Risk Management Strategy (LFRMS) in Bristol is not associated with impact pathways linking to European sites. While this measure is likely to involve physical work on the ground, it is simply committing to implement an adopted strategy (the LFRMS), which would have been subject to its own statutory consenting process, including HRA.
0206009027	Work with partners to implement the Surface Water Management Plan in Bristol	No Likely Significant Effect – Implementing the Surface Water Management Plan in Bristol is not associated with impact pathways linking to European sites. This measure forms part of the Local Flood Risk Management Strategy (LFRMS), which has undergone its own consenting process, including HRA. Furthermore, this measure is already being implemented, affirming that HRA would have been undertaken on it.

Table 17. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Cheltenham (RoFSW) Flood Risk Area – closest hydrologically sensitive site: Walmore Common SPA / Ramsar (more than 20km from the boundary of this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0209009024	Work with partners to engage with communities, increase preparedness and plan to address flooding issues in Cheltenham, including in the rapid response catchment of Charlton Kings,	No Likely Significant Effect – Engaging with communities at risk to raise awareness and help them increase their preparedness, including in the rapid response catchment of Charlton Kings, is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0209009145	Engage with heritage stakeholders and partners to identify opportunities to increase the flood resilience of heritage assets in Cheltenham	No Likely Significant Effect – Identifying opportunities to increase the flood resilience of heritage assets in Cheltenham is not associated with impact pathways linking to European sites. This measure identifies rather than implements opportunities and will not involve any physical work on the ground.
0203809025	Expand the flood warning service to areas at risk which are not currently covered, and encourage sign up in Cheltenham	No Likely Significant Effect – Expanding the flood warning service in areas at risk and encouraging sign up in Cheltenham is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203809023	Investigate and if viable progress a flood risk management scheme in Charlton Kings	No Likely Significant Effect – Investigating and progressing a flood risk management scheme in Charlton Kings is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Charlton Kings is relatively remote from any European sites that are sensitive to potential scheme-related impacts. The closest European sites with potential hydrological linkages are the Walmore Common SPA / Ramsar and the Severn Estuary SPA / Ramsar / SAC, at over 20km distance. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0209009123	Investigate and, if viable, carry out works at Sandy Lane in Cheltenham	No Likely Significant Effect – Investigating and carrying out flood risk management works in Sandy Lane, Cheltenham, is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Cheltenham is relatively remote from any European sites that are sensitive to potential scheme-related impacts. The closest European sites with potential hydrological linkages are the Walmore Common SPA / Ramsar and the Severn Estuary SPA / Ramsar / SAC, over 20km away. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0209009124	Investigate flood risk, and if viable, carry out works in Pilley in Cheltenham	No Likely Significant Effect – Investigating and carrying out flood risk management works in Pilley, Cheltenham, is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Cheltenham is relatively remote from any European sites that are sensitive to potential scheme-related impacts. The closest European sites with potential hydrological linkages are the Walmore Common SPA / Ramsar and the Severn Estuary SPA / Ramsar / SAC, over 20km away. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0209009125	Investigate the feasibility, and if viable progress implementation, of surface water attenuation on Upper Hearne Brook in Cheltenham	No Likely Significant Effect – Investigating and progressing the implementation of surface water attenuation on the Upper Hearne Brook in Cheltenham is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Cheltenham is relatively remote from any European sites that are sensitive to potential scheme-related impacts. The closest European sites with potential hydrological linkages are the Walmore Common SPA / Ramsar and the Severn Estuary SPA / Ramsar / SAC, over 20km away. Furthermore, a decision to proceed this measure has already been made and it would have undergone the statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0209009114	Maintain schemes delivered as an outcome of the Surface Water Management Plan (including the Priors and Oakley FAS) in Cheltenham	No Likely Significant Effect – Maintaining schemes that have been delivered as an outcome of the Surface Water Management Plan in Cheltenham is not associated with impact pathways linking to European sites. This measure maintains schemes that have already been delivered, such that it is unlikely to involve additional impacts. Furthermore, a decision to proceed this measure has already been made and it would have undergone the statutory consenting process, including HRA.
0209009144	Understand the potential impact of climate change and develop adaptive pathways for flood risk management in Cheltenham	No Likely Significant Effect – Understanding the potential impact of climate change and developing adaptive pathways for flood risk management in Cheltenham is not associated with impact pathways linking to European sites. This measure centres on studying climate change impacts and develops rather than implements adaptive pathways, such that it will not involve any physical work on the ground.
0209009116	Work closely with communities and partners to identify and deliver preferred option(s) for a capital scheme in Pittville	No Likely Significant Effect – Identifying and delivering preferred options for a capital scheme in Pittville is not associated with impact pathways linking to European sites. A decision to proceed this measure has already been made and it would have undergone its own statutory consenting process, including HRA.
0209009026	Work with key service and infrastructure providers to raise awareness of flood risk to their assets and to encourage them to develop plans in Cheltenham	No Likely Significant Effect – Raising awareness of flood risk to service and infrastructure assets to encourage plans to be developed in Cheltenham is not associated with impact pathways linking to European sites. This is a strategic, desk-based measure and will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0209009022	Work with partners, landowners and communities to deliver natural flood management and blue/green infrastructure in Cheltenham	No Likely Significant Effect – Delivering natural flood management and blue / green infrastructure in Cheltenham is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Cheltenham is relatively remote from any European sites that are sensitive to potential scheme-related impacts. The closest European sites with potential hydrological linkages are the Walmore Common SPA / Ramsar and the Severn Estuary SPA / Ramsar / SAC, at over 20km distance.

Table 18. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Coventry (RoFSW) Flood Risk Area – closest hydrologically sensitive site: Ensor's Pools SAC (approx. 7.1km from the boundary of this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0207409154	Continue to coordinate implementation of the current and updated version of the Coventry Local Flood Risk Management Strategy in Coventry	No Likely Significant Effect – Continuing to coordinate implementation of the current and updated version of the Coventry Local Flood Risk Management Strategy (LFRMS) in Coventry is not associated with impact pathways linking to European sites. While this measure is likely to involve physical work on the ground, the LFRMS would have been subject to its own statutory consenting process, including HRA.
0207409162	Continue to engage with communities at high risk to raise awareness of their flood risk with advice and guidance including what they can do themselves in Coventry	No Likely Significant Effect – Continuing to engage with communities at high risk of flooding to raise awareness and increase preparedness in Coventry is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone prior HRA appraisal.

Measure ID	Measure	Likely Significant Effects on European sites
0207409155	Continue to implement strategic approaches and actions in the Coventry Surface Water Management Plan in Coventry	No Likely Significant Effect – Continuing to implement strategic approaches and actions in the Coventry Surface Water Management Plan is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409161	Continue to improve records of cross-boundary flood risk assets in Coventry and Warwickshire	No Likely Significant Effect – Continuing to improve records of cross-boundary flood risk assets in Coventry and Warwickshire is not associated with impact pathways linking to European sites. This is a desk-based measure that will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409159	Continue to investigate all reports of flooding, assign responsibility and identify actions which reduce risk of reoccurrence in Coventry	No Likely Significant Effect – Continuing to investigate all reports of flooding and identifying actions that reduce risk of reoccurrence in Coventry is not associated with impact pathways linking to European sites. This is a desk-based measure and focuses on identifying rather than implementing measures, such that it will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409156	Continue to maintain and update records of surface water drainage assets in Coventry	No Likely Significant Effect – Continuing to maintain and update records of surface water drainage assets in Coventry is not associated with impact pathways linking to European sites. This is a desk-based measure that will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone its own statutory consenting process, including HRA.

Measure ID	Measure	Likely Significant Effects on European sites
0207409164	Continue to promote integrated catchment planning in Coventry	No Likely Significant Effect – Continuing to promote integrated catchment planning in Coventry is not associated with impact pathways linking to European sites. This is a strategic measure that will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409160	Continue to promote nature based solutions such as natural flood management and sustainable drainage systems in Coventry	No Likely Significant Effect – Continuing to promote nature-based solutions (e.g. natural flood management and sustainable drainage systems) in Coventry is not associated with impact pathways linking to European sites. Promotion is a strategic measure and does not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409157	Continue to update surface water and integrated flood risk modelling in high flood risk areas in Coventry	No Likely Significant Effect – Continuing to update surface water and integrated flood risk modelling in high flood risk areas in Coventry is not associated with impact pathways linking to European sites. This measure is a desk-based modelling exercise that will not involve any physical work on the ground. Furthermore, this measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0207409158	Continue to work with developers in Coventry	No Likely Significant Effect – Continuing to work with developers in Coventry is not associated with impact pathways linking to European sites. This measure focuses on strategic collaboration and will not involve any physical work on the ground. Furthermore, it is already being implemented and would have undergone its own statutory consenting process, including HRA.

Measure ID	Measure	Likely Significant Effects on European sites
0203809101	Expand the flood warning service and engage with communities to encourage sign up in Coventry	No Likely Significant Effect – Expanding the flood warning service and encouraging sign up in Coventry is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203609079	Install property flood resilience measures and implement nature based solutions in and upstream of Allesley respectively	No Likely Significant Effect – Installing property flood resilience measures and implementing nature-based solutions in Allesley is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Allesley is remote from any downstream European sites that are sensitive to potential scheme-related impacts. The closest European site with hydrological sensitivity is the Ensor's Pools SAC, approx. 10km from Allesley. However, aside from the long distance, the SAC also lies in a different hydrological catchment to Allesley.
0203609080	Install property flood resilience measures and implement nature based solutions in and upstream of Upper Eastern Green respectively	No Likely Significant Effect – Installing property flood resilience measures and implementing nature-based solutions in Upper Eastern Green is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Upper Eastern Green is remote from any downstream European sites that are sensitive to potential scheme-related impacts. The closest European site with hydrological sensitivity is the Ensor's Pools SAC that lies over 10km from the settlement. However, in addition to the long distance, the SAC also lies in a different hydrological catchment to Upper Eastern Green.
0203609078	Investigate and implement, if viable, flood risk management schemes in Coventry	No Likely Significant Effect – Investigating and implementing flood risk management schemes in Coventry is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0207409163	Provide information and support infrastructure owners to help them assess their flood risk and take adaptive measures in Coventry	No Likely Significant Effect – Providing information and supporting infrastructure owners in assessing flood risk / taking adaptive measures in Coventry is not associated with impact pathways linking to European sites. This measure focuses on information sharing and collaboration, such that it is unlikely to involve physical work on the ground. Furthermore, as highlighted above, Coventry lies far from any downstream European sites that are sensitive to hydrological impact pathways.

Table 19. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Gloucester (RoFRS) Flood Risk Area – closest hydrologically sensitive site: Walmore Common SPA / Ramsar (approx. 5.4km from the boundary of the Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0209009135	Carry out an assessment for a flood storage area on Dimore Brook in the Fishers Meadow area in Gloucester	No Likely Significant Effect – Carrying out an assessment for a flood storage area on Dimore Brook in the Fishers Meadow area in Gloucester is not associated with impact pathways linking to European sites. This type of assessment is undertaken to obtain scientific data and will not involve any physical work on the ground.
0209009132	Complete a survey of invasive species, their sources and distribution in watercourses and their impact on bank stability in Gloucester	No Likely Significant Effect – Completing a survey of invasive species, their sources, distribution and impact on bank stability in Gloucester is not associated with impact pathways linking to European sites. This survey is undertaken to obtain scientific data and will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809020	Work with partners to engage with communities at risk to raise awareness, increase preparedness and plan to address flooding issues, including what they can do themselves, in Gloucester	No Likely Significant Effect – Engaging with communities at risk to raise awareness and help them increase their preparedness in Gloucester is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground.
0203809021	Engage with heritage stakeholders and partners to identify opportunities to increase the flood resilience of heritage assets in Gloucester	No Likely Significant Effect – Identifying opportunities to increase the flood resilience of heritage assets in Gloucester is not associated with impact pathways linking to European sites. This measure identifies rather than implements opportunities and will not involve any physical work on the ground.
0203809019	Expand the flood warning service to areas at risk which are not currently covered, and encourage sign up in Gloucester	No Likely Significant Effect – Expanding the flood warning service to areas at risk that are not currently covered and encouraging sign up in Gloucester is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0203809016	Investigate and if viable carry out works to increase the standard of protection provided by the flood risk management scheme in Alney Island, Gloucester	No Likely Significant Effect – Investigating and carrying out flood risk management works to increase the standard of protection provided by the scheme in Alney Island, Gloucester, is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0209009136	Investigate and implement, if viable, an extension of the wetland area at Plock Court in Gloucester	No Likely Significant Effect – Investigating and implementing an extension of the wetland area at Plock Court in Gloucester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, it is considered very unlikely that increasing the wetland area at Plock Court would affect the seasonal inundation / flooding pattern in the Walmore Common SPA / Ramsar, which is located over 10km downstream from that part of Gloucester. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0209009131	Investigate culverts and pinch points to identify critical assets, improve maintenance regimes and understand resilience of assets to future changes in Gloucester	No Likely Significant Effect – Investigating culverts and pinch points to identify critical assets, improve maintenance regimes and understand asset resilience in Gloucester is not associated with impact pathways linking to European sites. A decision to proceed this measure has already been made and it would have undergone its own statutory consenting process, including HRA.
0209009130	Investigate flood incidents to understand the associated rainfall and flooding mechanisms in Gloucester	No Likely Significant Effect – Investigating flood incidents to understand the associated rainfall and flooding mechanisms in Gloucester is not associated with impact pathways linking to European sites. This study is undertaken to obtain scientific data and will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0209009133	Investigate, and if viable, carry out works to improve storage and provide amenity and biodiversity enhancements in council-owned balancing ponds in Gloucester	No Likely Significant Effect – Investigating and carrying out works to improve storage and provide biodiversity enhancements in council-owned balancing ponds in Gloucester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, it is considered very unlikely that enhancing the flood storage capacity in balancing ponds would affect the seasonal inundation / flooding pattern in the Walmore Common SPA / Ramsar, which is located over 10km downstream from the conurbation of Gloucester. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809018	Review where trash screens on River Severn tributaries should be improved, added or removed and progress delivery of the outcome of the review, in Gloucester	No Likely Significant Effect – Reviewing where trash screens on River Severn tributaries should be improved, added or removed in Gloucester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, the installation of trash screens will only lead to small-scale, localised impacts in terms of water quality, water level and visual / noise disturbance. The Walmore Common SPA / Ramsar, at approx. 10km distance the closest European site sensitive to these impact pathways, lies beyond the Zone of Influence for potential scheme-related impacts.
0203809012	Update computer models of Main Rivers in Gloucester to improve understanding of current flood risk and the potential impact of climate change in Gloucester	No Likely Significant Effect – Updating computer models of Main Rivers in Gloucester to improve understanding of current and future flood risks is not associated with impact pathways linking to European sites. This measure is a desk-based modelling exercise that will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809017	Work with key service and infrastructure providers to raise awareness of flood risk to their assets and to encourage them to develop plans in Gloucester	No Likely Significant Effect – Raising awareness of flood risk to key service / infrastructure assets and encouraging stakeholders to develop plans is not associated with impact pathways linking to European sites. This measure focuses on strategic collaboration and developing rather than implementing plans, such that it will not involve any physical work on the ground.
0203809013	Work with partners to agree a strategic approach that integrates management of current and future flood risk with other plans in Gloucester	No Likely Significant Effect – Agreeing a strategic approach that integrates management of current and future flood risk in Gloucester is not associated with impact pathways linking to European sites. This measure develops rather than implements a strategic approach and will not involve any physical work on the ground.
0203809015	Work with partners to investigate and if viable carry out works in the Sud and Twyver catchments	No Likely Significant Effect – Investigating and carrying out flood risk management works in the Sud and Twyver catchments is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809014	Work with partners, landowners and communities to deliver natural flood management and blue/green infrastructure in Gloucester	No Likely Significant Effect – Delivering natural flood management and blue / green infrastructure in Gloucester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Gloucester lies approx. 10km from the Walmore Common SPA / Ramsar, the closest European site that is sensitive to potential scheme-related impacts. This is beyond the likely Zone of Influence of scheme-related impacts.

Measure ID	Measure	Likely Significant Effects on European sites
0209009134	Work with relevant partners to engage with communities and implement source control interventions to reduce run-off entering urban watercourses in Gloucester	No Likely Significant Effect – Implementing source control interventions to reduce runoff entering urban watercourses in Gloucester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Gloucester lies approx. 10km from the Walmore Common SPA / Ramsar, the closest European site that is sensitive to potential scheme-related impacts in the construction period. This is beyond the likely Zone of Influence of scheme-related impacts. Furthermore, reducing the volume of potentially polluted runoff entering watercourse is positive for the integrity of aquatic ecosystems.

Table 20. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Henley-in-Arden (RoFRS) Flood Risk Area – closest hydrologically sensitive site: Lyppard Grange Ponds SAC (more than 20km from the Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0203809214	Assess the potential impacts of climate change on the town including on the standard of protection provided by the flood risk management scheme in Henley-in-Arden	No Likely Significant Effect – Assessing the potential impacts of climate change on the town, including the standard of protection provided by the flood risk management scheme, in Henley-in-Arden is not associated with impact pathways linking to European sites. This assessment is undertaken to obtain scientific data and will not involve any physical work on the ground.
0203809100	Work with partners to engage with communities and businesses to raise awareness, increase preparedness and plan to address flooding issues, including what they can do themselves, in Henley-in-Arden	No Likely Significant Effect – Engaging with communities and businesses at risk to raise awareness and help them increase their preparedness in Henley-in-Arden is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809077	Engage with heritage stakeholders and partners to identify opportunities to increase the flood resilience of heritage assets in Henley-in-Arden	No Likely Significant Effect – Identifying opportunities to increase the flood resilience of heritage assets in Henley-in-Arden is not associated with impact pathways linking to European sites. This measure identifies rather than implements opportunities and will not involve any physical work on the ground.
0203609075	Investigate and implement, if viable, a flood risk management scheme in Henley-in-Arden	No Likely Significant Effect – Investigating and implementing a flood risk management scheme in Henley-in-Arden is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0203809076	Work with key service and infrastructure providers to raise awareness of flood risk to their assets and to encourage them to develop plans in Henley-in-Arden	No Likely Significant Effect – Raising awareness of flood risk to key service / infrastructure assets and encouraging stakeholders to develop plans is not associated with impact pathways linking to European sites. This measure focuses on strategic collaboration and developing rather than implementing plans, such that it will not involve any physical work on the ground.
0203809094	Work with partners to identify and deliver natural flood management interventions in the River Alne catchment upstream of Henley-in-Arden	No Likely Significant Effect – Delivering natural flood management interventions in the River Alne catchment upstream of Henley-in-Arden is not associated with impact pathways linking to European sites. While this measure involves work on the ground, Henley-in-Arden is remote from any European sites that would be sensitive to scheme-related impact pathways.

Table 21. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Redditch (RoFSW) Flood Risk Area – closest hydrologically sensitive site: Lyppard Grange Ponds SAC (located within this Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0203809099	Carry out a flood risk and asset management study in the River Arrow catchment	No Likely Significant Effect, but down-the-line HRA required – Carrying out a flood risk and asset management strategy in the River Arrow catchment is inherently designed to benefit human receptors. Depending on the location and nature of strategy schemes, a range of impact pathways linking to European sites may be present, including hydrology, water quality and visual / noise disturbance. Given its strategic nature, the FRMP is not specific about the strategy content (as this has not yet been determined) and thus there is insufficient detail at the FRMP level to undertake a detailed assessment of this measure. Bespoke HRAs will be needed at the planning application stage of more detailed proposals to adequately appraise LSEs and, where relevant, adverse effects on the integrity of European sites. In line with the guidance quoted in paragraph 2.24, down-the-line assessment will be required as further details emerge regarding what will be done to deliver this measure.
0219509207	Continue to check major new developments for flood risk, including the potential impact of climate change in Redditch Borough	No Likely Significant Effect – Continuing to check major new developments for flood risk, including the potential impact of climate change, in Redditch Borough is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0219509206	Investigate potential natural flood management schemes and options for regulating low flow regimes in the natural watercourse network in Redditch Borough	No Likely Significant Effect – Delivering natural flood management schemes and investigating options for regulating low flow regimes in the natural watercourse network in Redditch Borough is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA.

Measure ID	Measure	Likely Significant Effects on European sites
0219509204	Draw up a Multi-Agency Flood Risk Asset Maintenance Plan in liaison with communities, landowners and businesses in Redditch Borough	No Likely Significant Effect – Drawing up a Multi-Agency Flood Risk Asset Maintenance Plan in liaison with stakeholders in Redditch is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0219509208	Engage with communities to raise awareness, help them to prepare for flooding and enable them to plan to reduce risk of flooding in their communities in Worcestershire	No Likely Significant Effect – Engaging with communities at risk to raise awareness and help them increase their preparedness in Redditch Borough is not associated with impact pathways linking to European sites. This is a community engagement exercise that will not involve physical work on the ground. Furthermore, this measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0219509205	Investigate and if viable implement a programme of works for maintenance and improvement schemes in Redditch Borough	No Likely Significant Effect – Investigating and implementing a programme of works for maintenance and improvement schemes in Redditch Borough is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA. Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.
0219509210	Undertake a review of community flood warning for surface water flooding events in Worcestershire	No Likely Significant Effect – Undertaking a review of community flood warning for surface water flooding events in Worcestershire is not associated with impact pathways linking to European sites. This is a desk-based measure and will not involve any physical work on the ground.
0219509211	Work with owners and the community to identify priority infrastructure and key services at flood risk and to decide how to make assets more resilient in Redditch Borough	No Likely Significant Effect – Identifying infrastructure and key services at flood risk and making these more resilient in Redditch Borough is not associated with impact pathways linking to European sites. This is a desk-based and community engagement measure, such that it will not involve any physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809098	Work with partners to investigate and deliver natural flood management interventions in the River Arrow Catchment upstream of Redditch and Alcester	No Likely Significant Effect – Investigating and delivering natural flood management interventions in the River Arrow catchment upstream of Redditch and Alcester is not associated with impact pathways linking to European sites. While this measure involves work on the ground, this area is remote from any European sites that would be sensitive to scheme-related impact pathways (e.g. the Lyppard Grange Ponds SAC over 20km from Alcester, which also lies in a different Management Catchment).

Table 22. Screening table showing the Test of Likely Significant Effects results for measures contained within the Severn Flood Risk Management Plan for the Wolverhampton (RoFSW) Flood Risk Area – closest hydrologically sensitive site: Fens Pools SAC (located within the Flood Risk Area)

Measure ID	Measure	Likely Significant Effects on European sites
0219409147	Create a database containing details of landowners with responsibility for maintaining defences and notify them of their duties and responsibilities in the Wolverhampton Borough area	No Likely Significant Effect – Creating a database containing details of landowners with responsibility for maintaining defences and notifying them of their duties in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This is a desk-based and community engagement measure, such that it will not involve any physical work on the ground.
0203809104	Expand the flood warning service and engage with communities to encourage sign up in Wolverhampton	No Likely Significant Effect – Expanding the flood warning service and encouraging sign up in Wolverhampton is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0219409151	Have developed a joint planning policy to have better agreed principles of flood risk management for new proposed developments in the City of Wolverhampton Council, Walsall Metropolitan Borough Council, Dudley Metropolitan Borough Council and Sandwell Metropolitan Borough Council areas	No Likely Significant Effect – Developing a joint planning policy with agreed principles of flood risk management for new proposed developments is not associated with impact pathways linking to European sites. A decision to proceed this measure has already been made and it would have undergone its own statutory consenting process, including HRA.
0219409152	Implement a programme of measures in areas in Wolverhampton Borough	No Likely Significant Effect – Implementing a programme of measures in areas in Wolverhampton Borough is not associated with impact pathways linking to European sites. While this measure is likely to involve work on the ground, this area is relatively remote from any European sites that would be sensitive to scheme-related impact pathways (e.g. the Fens Pools SAC approx. 9km from the boundary of the measure).
0203809113	Investigate, and if viable progress, flood risk management measures in Wolverhampton (Smestow Brook and its tributaries)	No Likely Significant Effect – Investigating and progressing flood risk management measures in Smestow Brook and its tributaries in Wolverhampton is not associated with impact pathways linking to European sites. While this measure is likely to involve work on the ground, this area is relatively remote from any European sites that would be sensitive to scheme-related impact pathways (e.g. the Fens Pools SAC approx. 9km from the boundary of the measure). Moreover, viability of a scheme, by definition, would need to consider its environmental implications and one that did adversely affect European sites would not be viable.

Measure ID	Measure	Likely Significant Effects on European sites
0219409146	Publish a tool to raise awareness and enable residents, businesses, infrastructure owners and service providers to better prepare for flooding in the Wolverhampton Borough area	No Likely Significant Effect – Publishing a tool to raise awareness and enable local stakeholders to better prepare for flooding in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This is a desk-based and community engagement exercise that will not involve physical work on the ground.
0219409153	Review the heritage assets that may be at risk of flooding in the Wolverhampton Flood Risk Area	No Likely Significant Effect – Reviewing the heritage assets that may be at risk of flooding in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This is a desk-based assessment that will not involve physical work on the ground.
0219409149	Share information on communities at risk and owners of critical assets within the City of Wolverhampton Council and with other emergency responders in the Wolverhampton Borough area	No Likely Significant Effect – Sharing information on communities at risk and owners of critical assets with emergency responders in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This measure focuses on collaboration and information sharing, such that it will not involve physical work on the ground.
0219409148	Share risk and appropriate asset owner information with local community leaders enabling them to take ownership of managing flood risk in their area in the Wolverhampton Borough area	No Likely Significant Effect – Sharing risk and appropriate asset owner information with local community leaders to enable them to manage flood risk in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This measure focuses on collaboration and information sharing, such that it will not involve physical work on the ground.

Measure ID	Measure	Likely Significant Effects on European sites
0203809090	Work with Lead Local Flood Authorities to embed and enhance sustainable drainage systems within flood risk capital programmes, and identify funding opportunities for river restoration in the Black Country	No Likely Significant Effect – Embedding and enhancing sustainable drainage systems within flood risk capital programmes and identifying funding opportunities for river restoration in the Black Country is not associated with impact pathways linking to European sites. This measure is already being implemented and would have undergone its own statutory consenting process, including HRA.
0219409150	Work with National Flood Forum to set up community Flood Action Groups to raise their awareness of flood risk and help them to be better prepared in the Wolverhampton Borough area	No Likely Significant Effect – Setting up community Flood Action Groups to raise their awareness of flood risk and increase preparedness in the Wolverhampton Borough area is not associated with impact pathways linking to European sites. This measure focuses on community engagement and will not involve any physical work on the ground.

5. Other plans and projects

5.1 This section covers potential for effects in combination with other plans and projects. While the potential for the FRMP to occur 'in combination' with other FRMPs was considered for inclusion, each FRMP is specific to a relatively hydrologically self-contained River Basin District, meaning that potential for effects in combination with each other generally only exists where a European site straddles multiple RBDs. In this case the Severn Estuary SAC/SPA/Ramsar site straddles the boundary between the Severn FRMPs (the present one covering the English part of the RBD, as well as the Welsh one) and the South West FRMP. However, no mechanism has been identified for the actual measures in this FRMP (rather than any schemes that may emerge down-the-line) to operate in combination with those in the other FRMP.

5.2 Natural England suggested inclusion of Diffuse Water Pollution Plans in the 'in combination' assessment of FRMP HRAs. Diffuse Water Pollution Plans are environmentally positive and intended to reduce diffuse pollution through fairly broad measures such as 'influencing management of farm infrastructure such as farm tracks, yards, buildings etc' through agri-environment schemes and similar. As such, no adverse likely significant effects or conflicts are expected to arise with the FRMP HRAs.

5.3 Potential in combination effects with Minerals and Waste Local Plans were also considered. However, Waste Local Plans are rarely technology-specific and potential impacts depend very much on the type of facility the market decides to bring forward on a given allocated site, or within a broad area of search where these exist. Minerals excavation can affect hydrologically sensitive European sites through dewatering for example. However, many minerals allocations are extensions to existing consented facilities to enable the site to be worked for longer (rather than to enable a net increase in consented extraction) and whose acceptability of effects on European sites are kept under review through the minerals planning authorities' Review of Consents process as required by the Conservation of Habitats and Species Regulations 2017 (as amended). In addition, many Minerals Plans include 'areas of search' for minerals rather than making specific allocations, leaving the market to bring forward proposals at the planning application level. As such, no specific likely significant effects in combination with the FRMP measures have been identified.

Local Plans

5.4 A large number of other projects and development plans will be delivered across the Severn River Basin District at the same time as FRMP measures. For example, the Local Planning Authorities will deliver a total of at least 392,711 new dwellings and 2,313.2ha of employment land within their Local Plan timescales. While the majority of this development is unlikely to result in cumulative impacts with FRMP measures, a potential for in-combination effects on European sites cannot be excluded.

5.5 Impact pathways with potential interactions are varied and include loss of functionally linked habitat for SPAs / Ramsars, water level, water quality, coastal squeeze, and visual and noise disturbance. The potential for interactions largely depends on the specific location and nature of the proposed development, both in relation to European sites and FRMP measures. Taking impacts on the water level in European sites as an example, Local Plans have the potential to result in reduced water supplies to qualifying ecosystems due to increased water abstraction to meet the

household and industrial demand. However, a potential for interaction with a FRMP measure would only exist if both were to affect the hydrological catchment feeding the same European site.

5.6 This section focusses only on hydrologically sensitive European sites and on the main European sites where adverse effects from residential and employment development have been identified in Local Plan HRAs. The main hydrologically sensitive site that has been identified as being under potential threat from housing and employment development in Local Plans is the Severn Estuary SAC/SPA/Ramsar site itself. This site is sensitive to water quality impacts although it has not been identified by Natural England as a site that is suffering sufficiently from fluvial nitrogen to require nutrient neutrality. However, it is sensitive to recreational pressure and several local authorities (such as Stroud District Council) are developing recreational mitigation strategies for the site. Some areas of saltmarsh in close proximity to major roads are also potentially vulnerable to atmospheric nitrogen deposition from increased vehicle movements due to population growth.

5.7 It is also sensitive to loss of functionally-linked land outside the SPA/Ramsar boundary to housing and employment development. There is a long-standing mitigation strategy in the Bristol and Avonmouth area that has been specifically developed to address this matter. with the ‘String of Pearls’ project, which is a programme for the creation and expansion of a series of wetlands along the SPA/Ramsar site to act as high tide roosts or ‘stepping-stones’ for wildfowl and waders. The Avonmouth/Severnside area is subject to an existing 1957/58 Severnside Planning Consent and impact assessments have been undertaken of likely development which could take place within the Avonmouth employment area, including potentially feasible wind farm sites identified within the Bristol Citywide Sustainable Energy Strategy (BCSES).

5.8 The purpose of the study has been to address direct habitat loss and bird disturbance/displacement potentially affecting SPA Qualifying Species and the Qualifying Assemblage at locations within the study area which lie outside the Severn Estuary SPA and Ramsar site boundary. A mitigation strategy has been developed to identify land for habitat creation/enhancement as a means of addressing these potentially significant impacts. The Avonmouth and Severnside area is documented as an area of importance for the SPA and Ramsar site and the Avonmouth Severnside Enterprise Area (ASEA) Ecology Mitigation and Flood Defence Project[47] has been specifically devised to facilitate ongoing employment development in the area which also protecting the SPA and Ramsar site. The project will create a minimum of 85 hectares of new wetland habitat in the Hallen Marsh and Northwick areas to provide “high-tide roosts” for the birds. This will include wet grassland to encourage wading birds and open water to encourage wildfowl.

5.9 Another key anthropological pressure relating to European sites in the RBD is excessive phosphorus inputs, particularly from agriculture and also from treated sewage effluent. In advice to local planning authorities in March 2022 Natural England flagged that the following European sites of relevant to the RBD were suffering from excessive nutrients leading to eutrophication: River Wye SAC, River Clun SAC.

5.10 However, it is considered that the nature of the FRMP is such that no in combination effects will arise between adoption of the FRMP and delivery of housing and associated development across the sub-region. This is due either to the fact that the measures in the FRMP do not pose mechanisms to connect negatively to European

sites, or because the measures of the FRMP are sufficiently high level (generally consisting of identifying a scheme and committing to its further development, design and implementation without committing to details) that they allow flexibility for measures necessary to be designed into schemes to protect European sites to be incorporated at further planning tiers as each scheme is devised.

River Basin Management Plans

5.11 River Basin Management Plans (RBMPs) describe the challenges that threaten the water environment and how these challenges can be managed and funded. It is to be noted that the Severn River Basin Management Plan encompasses the geographic area covered by the EA Severn FRMP assessed in this HRA and the Natural Resources Wales Severn FRMP (applicable to the Welsh side).

5.12 The 2022 RBMP sets out a series of measures to bring about improvements in the waterbodies covered by the RBMP. By definition, the measures in the RBMP are positive and includes the following initiatives: partnership working with farmers and land managers, sustainable management of water resources, restoring rivers and removing man-made barriers to fish migration and controlling invasive non-native species.

5.13 The RBMPs generally include projects that improve the water environment, for example by:

- enhancing and restoring rivers and floodplains
- creating sustainable drainage
- cleaning up metal pollution
- improving habitats and water quality by addressing diffuse pollution issues
- adapting weirs to provide fish passage
- involving the community
- using existing regulations to tackle agricultural and rural land pollution, such as lagoon construction

5.14 Since the measures within RBMPs are positive and are often necessary to restore freshwater aquatic European sites to favourable condition, there is no mechanism for them to have a negative effect on European sites in combination with the measures in the FRMP.

Water Resource Management Plans

5.15 Welsh Water, Bristol Water and Severn Trent Water have all produced Water Resource Management Plans. These set out the water supply strategy for their areas and could therefore have negative effects on European sites in their own right. For example, the tributaries of the River Severn are a major supply source.

5.16 However, Water Resource Management Plans are required to have their own HRAs undertaken. The HRAs for each of the latest adopted WRMPs considered whether their future supply strategy to meet water needs would affect European sites and it was concluded that the supply needs of their areas could be met without an adverse effect on the integrity of European sites, primarily through a combination of improved water efficiency measures and bringing new water supply areas into consideration

that do not result in increased abstraction from European sites. As such, there would be no in combination effect with the FRMPs.

5.17 In addition to the WRMP, the water companies are also producing a Drainage and Wastewater Management Plans (DWMP). However, those plans have not yet been published and therefore cannot be included in this assessment.

Drought Plans, Permits and Orders

5.18 As discussed in the previous chapter, the Severn RBD encompasses European sites that are sensitive to a wide range of anthropogenic pressures, including hydrology, water quality, recreational pressure, coastal squeeze, visual / noise disturbance and others. Multiple simultaneously acting impacting pathways can compound negative impacts on qualifying habitats and species.

5.19 For example, water companies, under their duty of delivering potable water to households and businesses, can apply for drought permits, enabling them to abstract water beyond existing abstraction consents for an agreed period of time. Granting of drought periods has the potential for negative environmental impacts, particularly in European sites that are already subject to existing unfavourable water levels, including the Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC and Brown Moss SAC. While most measures included in the FRMP are likely to be positive for European sites by restoring natural hydrological function, inadequately planned or sited natural flood management and hard defence structures have the potential to negatively interact with Environment Agency Drought Orders and water company Drought Permits.

5.20 Drought conditions will also impose further pressures on designated sites such as by reducing water quality (reduced flows would typically result in higher nutrient concentrations, exacerbating the impact of treated sewage effluent) and water flow. In addition, climate change has the potential to increase the frequency and severity of drought conditions. Drought Plan Orders and Permits would compound drought issues and operate in-combination with impact pathways associated with the FRMP. However, drought plans will generally only operate at times of low water levels and low rainfall, which is the opposite scenario to when the majority of FRMP measures will be active.

5.21 Notwithstanding this, Drought Plans of water companies are subject to their own assessment process including HRA. This ensures that potential adverse effects on the integrity of European sites are adequately mitigated or, where this cannot be achieved, suitable compensation is provided. Overall, given that the Drought Plans of water companies undergo robust HRA, no in-combination effects with the Severn FRMP are anticipated.

Environment Agency National Drought Plan

5.22 The potential for in-combination effects of the Severn FRMP with the Environment Agency National Drought Action Plan has been assessed and no in-combination impacts are likely to occur. However, this should be considered further at the time of any potential implementation of drought management measures in liaison with the Environment Agency, particularly regarding local actions in the supply and water source catchment areas utilised by Severn Trent and other water companies operating in the Midlands. Moreover, drought plans will generally only operate at

times of low water levels and low rainfall, which is the opposite scenario to when the majority of FRMP measures will be active.

Wales FRMP

5.23 Natural Resources Wales (NRW) are currently working to produce an updated FRMP that covers all of Wales, replacing the FRMPs that were published in 2015 for the Severn, Dee and West Wales. The Wales FRMP will cover flood risk from main rivers, reservoirs and the sea. However, that FRMP is in the early stages of development and, at the time of writing, is not available for in-combination assessment. The English FRMP and accompanying HRA have been shared with NRW to inform their FRMP development, including the HRA assessment of any in-combination effects that may arise in European sites with cross-border hydrological catchments. In-combination effects are most likely to arise from national and local place measures (e.g. in the South-East and Mid sections of the Wales FRMP), which will require specific consideration in the Wales FRMP HRA and relevant scheme-level HRAs.

Shoreline Management Plans and Local Flood Risk Management Plans

5.24 SMPs provide overarching policy context for coastal zone management and development. As acknowledged throughout this document, SMPs and the Coastal Strategies that result from them often result in adverse effects on the integrity of European sites through a combination of coastal squeeze, loss of functionally-linked land for SPA/Ramsar birds, direct habitat loss due to defence footprint and changes to long-shore sediment transport and other aspects of natural sediment dynamics. They also present opportunities for positive effects on European sites if opportunities for managed realignment are included that will enable a more natural coastline to be established. The following SMPs are available within the public domain and were considered regarding in-combination impacts:

- SMP 19 Anchor Head to Lavernock Point (Severn Estuary)

5.25 The assessments for any potential in-combination impacts between the SMPs and the measures included in the Severn FRMP needs to consider factors such as spatial proximity, hydrological connectivity and the precise nature of works proposed. However, no in-combination LSEs with these plans exist, principally because the Severn FRMP only implements actions in the coastal environment that are already identified in SMPs and Coastal Strategies. These strategies are subject to their own consenting process (including HRA), which would ensure that no LSEs and, where relevant, adverse effects on the integrity of European sites occur.

5.26 Similarly, Local Flood Risk Management Plan measures for relevant areas within the River Basin District have been included within the FRMP so there is no potential for in combination effects as the same measures are contained in both sets of plans.

Conclusion

5.27 Overall, it is concluded that the strategic nature of the FRMP is such that no in combination effects will arise between the adopted FRMP and other development plans in the Severn RBD. This is due to the fact that the measures in the FRMP either are not associated with impact pathways linking to European sites, or they are sufficiently high-level and non-specific (generally consisting of identifying a scheme

and committing to its further development, design and implementation without committing to details) to allow for an in-combination assessment. For those measures flagged as requiring down-the-line HRA, their broad nature allows sufficient flexibility to design potential mitigation into schemes to protect European sites. It should be noted that notwithstanding references in the FRMP, scheme level HRAs will be undertaken as part of the business case for all schemes, and many schemes will also need planning consent, which will also be accompanied by an HRA, thus ensuring legal requirements are met.

6. Conclusion

6.1 This HRA assessed the potential implications of measures contained in the Severn FRMP for European sites, particularly in relation to the impact pathways direct habitat loss, coastal squeeze, visual and noise disturbance, water quality, hydrology, loss of functionally linked habitat and spread of invasive non-native species. A total of 28 European sites with sensitivity to hydrological changes or other linking impact pathways (e.g. visual and noise disturbance) were identified across the RBD, with two further sites being located in the adjoining Humber RBD. The FRMP proposes 308 measures, encompassing a wide range of flood prevention and management activities.

6.2 LSEs of the FRMP on all European sites, both alone and in-combination, could be excluded for all measures and an Appropriate Assessment was not required. This is for a variety of reasons, including that some measures are carried over from the cycle 1 FRMP (which would have been subject to the statutory consenting process, including HRA), already being implemented, not associated with linking impact pathways to European sites or too non-specific (either in terms of specific location, their nature or both) to allow for a detailed, meaningful assessment.

6.3 Twenty-six measures were screened out at the strategic FRMP, but recommended for down-the-line HRA. As the details of potential schemes are developed towards the planning application stage, the HRA process will ensure that adequate mitigation measures, where relevant, are incorporated and the integrity of European sites will be protected. It is to be noted that many of the flagged measures involve natural flood management approaches, which are likely to result in long-term benefits to hydrologically sensitive European sites. Notwithstanding this, potential negative impacts regarding hydrology, water quality, loss of functionally linked habitat and visual / noise disturbance must be considered.

Appendix A Information on European Sites

West Midlands Mosses SAC

Qualifying Features[48]

Annex I habitats that are a primary reason for selection of this site:

- Natural dystrophic lakes and ponds
- Transition mires and quaking bogs

Conservation Objectives[49]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats
- the structure and function (including typical species) of qualifying natural habitats
- the supporting processes on which qualifying natural habitats rely

Threats / Pressures to Site Integrity[50]

The following threats and pressures to the integrity of the West Midlands Mosses SAC have been identified in Natural England's Site Improvement Plan:

- water pollution
- hydrological changes
- air pollution: Impact of atmospheric nitrogen deposition
- inappropriate scrub control
- game management: Pheasant rearing
- forestry and woodland management
- habitat fragmentation

Midland Meres and Mosses Phase 1 Ramsar

Qualifying Features[51]

Ramsar criterion 1:

The site comprises a diverse range of habitats from open water to raised bog.

Ramsar criterion 2:

Supports a number of rare species of plants associated with wetlands including five nationally scarce species together with an assemblage of rare wetland invertebrates (three endangered insects and five other British Red Data Book species of invertebrates).

Threats / Pressures to Site Integrity[52]

Natural England do not publish Site Improvement Plans for Ramsar sites, but potential threats and pressures to site integrity can be deduced from the Information Sheet for Ramsar Wetlands. The following threats and pressures are identified:

- eutrophication
- introduction / invasion of non-native plant species

Midland Meres and Mosses Phase 2 Ramsar

Qualifying Features[53]

Ramsar criterion 1:

The site comprises a diverse range of habitats from open water to raised bog.

Ramsar criterion 2:

Supports a number of rare species of plants associated with wetlands, including the nationally scarce cowbane *Cicuta virosa* and, elongated sedge *Carex elongata*. Also present are the nationally scarce bryophytes *Dicranum affine* and *Sphagnum pulchrum*.

Also supports an assemblage of invertebrates including several rare species. There are 16 species of British Red Data Book insect listed for this site including the following endangered species: the moth *Glyphipteryx lathamella*, the caddisfly *Hagenella clathrata* and the sawfly *Trichiosoma vitellinae*.

Threats / Pressures to Site Integrity[54]

Natural England do not publish Site Improvement Plans for Ramsar sites, but potential threats and pressures to site integrity can be deduced from the Information Sheet for Ramsar Wetlands. The following threats and pressures are identified:

- eutrophication
- introduction / invasion of non-native plant species
- pollution – pesticides / agricultural runoff

Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC

Qualifying Features[55]

Annex I habitats that are a primary reason for selection of this site:

- active raised bogs (priority feature)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- degraded raised bogs still capable of natural regeneration

Conservation Objectives[56]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats
- the structure and function (including typical species) of qualifying natural habitats, and
- the supporting processes on which qualifying natural habitats rely.

Threats / Pressures to Site Integrity[57]

The following threats and pressures to the integrity of the Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC have been identified in Natural England's Site Improvement Plan:

- inappropriate water levels
- water pollution
- air pollution: Impact of atmospheric nitrogen deposition
- inappropriate scrub control
- overgrazing
- planning permission: General
- peat extraction
- invasive species

Brown Moss SAC

Qualifying Features[58]

Annex II species that are a primary reason for selection of this site:

- Floating water-plantain *Luronium natans*

Conservation Objectives[59]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of qualifying species
- the structure and function of the habitats of qualifying species
- the supporting processes on which the habitats of qualifying species rely
- the populations of qualifying species
- Tthe distribution of qualifying species within the site

Threats / Pressures to Site Integrity[60]

The following threats and pressures to the integrity of the Brown Moss SAC have been identified in Natural England's Site Improvement Plan:

- hydrological changes
- water pollution
- invasive species
- siltation
- air pollution: Impact of atmospheric nitrogen deposition

Fens Pools SAC

Qualifying Features[61]

Annex II species that are a primary reason for selection of this site:

- Great-crested newt *Triturus cristatus*

Conservation Objectives[62]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of the qualifying species
- the structure and function of the habitats of the qualifying species
- the supporting processes on which the habitats of the qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[63]

The following threats and pressures to the integrity of the Fens Pools SAC have been identified in Natural England's Site Improvement Plan:

- overgrazing

- inappropriate scrub control
- disease
- water pollution
- habitat fragmentation

River Clun SAC

Qualifying Features[64]

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Freshwater pearl mussel *Margaritifera margaritifera*

Conservation Objectives[65]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of qualifying species
- the structure and function of the habitats of qualifying species
- the supporting processes on which the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[66]

The following threats and pressures to the integrity of the River Clun SAC have been identified in Natural England's Site Improvement Plan:

- siltation
- water pollution
- low breeding success / poor recruitment
- disease
- physical modification
- invasive species
- change in land management

Bredon Hill SAC

Qualifying Features[67]

Annex II species that are a primary reason for selection of this site:

- Violet click beetle *Limoniscus violaceus*

Conservation Objectives[68]

With regard to the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of qualifying species
- the structure and function of the habitats of qualifying species
- the supporting processes on which the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[69]

The following threats and pressures to the integrity of the Bredon Hill SAC have been identified in Natural England's Site Improvement Plan:

- forestry and woodland management
- feature location / extent / condition unknown
- disease
- air pollution: Impact of atmospheric nitrogen deposition
- climate change

Dixton Woods SAC

Qualifying Features[70]

Annex II species that are a primary reason for selection of this site:

- Violet click beetle *Limoniscus violaceus*

Conservation Objectives[71]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of qualifying species
- the structure and function of the habitats of qualifying species
- the supporting processes on which the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[72]

The following threats and pressures to the integrity of the Dixton Woods SAC have been identified in Natural England's Site Improvement Plan:

- changes in species distributions
- forestry and woodland management
- disease

Wye Valley Woodlands SAC

Qualifying Features[73]

Annex I habitats that are a primary reason for selection of this site:

- *Asperulo-Fagetum* beech forests
- *Tilio-Acerion* forests of slopes, screes and ravines (priority feature)
- *Taxus baccata* woods of the British Isles (priority feature)

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Lesser horseshoe bat *Rhinolophus hipposideros*

Conservation Objectives[74]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring

- the extent and distribution of qualifying natural habitats and habitats of qualifying species
- the structure and function (including typical species) of qualifying natural habitats
- the structure and function of the habitats of qualifying species
- the supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- the populations of qualifying species

- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[75]

The following threats and pressures to the integrity of the Wye Valley Woodlands SAC have been identified in Natural England's Site Improvement Plan:

- deer
- forestry and woodland management
- invasive species
- habitat connectivity
- species decline
- air pollution: Impact of atmospheric nitrogen deposition
- disease
- public access / disturbance

River Wye SAC

Qualifying Features[76]

Annex I habitats that are a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Transition mires and quaking bogs

Annex II species that are a primary reason for selection of this site:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Sea lamprey *Petromyzon marinus*
- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*
- Atlantic salmon *Salmo salar*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

Conservation Objectives[77]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats and habitats of qualifying species
- the structure and function (including typical species) of qualifying natural habitats
- the structure and function of the habitats of qualifying species
- the supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[78]

The following threats and pressures to the integrity of the River Wye SAC have been identified in Natural England's Site Improvement Plan:

- water pollution
- physical modification
- invasive species
- hydrological changes
- forestry and woodland management
- fisheries: freshwater
- fisheries: fish stocking
- water abstraction
- public access / disturbance
- air pollution: Impact of atmospheric nitrogen deposition
- inappropriate scrub control
- undergrazing
- transportation and service corridors

Severn Estuary SAC

Qualifying Features[79]

Annex I habitats that are a primary reason for selection of this site:

- estuaries
- mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

- sandbanks which are slightly covered by sea water all the time
- reefs

Annex II species that are a primary reason for selection of this site:

- Sea lamprey *Petromyzon marinus*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*

Conservation Objectives[80]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats and habitats of qualifying species
- the structure and function (including typical species) of qualifying natural habitats
- the structure and function of the habitats of qualifying species
- the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[81]

The following threats and pressures to the integrity of the Severn Estuary SAC have been identified in Natural England's Site Improvement Plan:

- public access / disturbance
- physical modification
- impacts of development
- coastal squeeze
- change in land management
- changes in species distributions

- water pollution
- air pollution: Impact of atmospheric nitrogen deposition
- marine consents and permits: minerals and waste
- fisheries: recreational marine and estuarine
- fisheries: commercial marine and estuarine
- invasive species
- marine litter
- marine pollution incidents

Severn Estuary SPA / Ramsar

SPA Qualifying Species[82]

- Bewick's swan *Cygnus columbianus bewickii*
- Common shelduck *Tadorna tadorna*
- Gadwall *Anas strepera*
- Dunlin *Calidris alpina alpina*
- Common redshank *Tringa tetanus*
- Greater white-fronted goose *Anser albifrons albifrons*
- Waterbird assemblage

Ramsar Qualifying Features[83]

Ramsar criterion 1:

Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities.

Habitats Directive Annex I features present on the pSAC include:

H1110 Sandbanks which are slightly covered by sea water all the time

H1130 Estuaries

H1140 Mudflats and sandflats not covered by sea water at low tide

H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Ramsar criterion 3:

Due to unusual estuarine communities, reduced diversity and high productivity.

Ramsar criterion 4:

This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*,

and eel *Anguilla anguilla*. It is also of particular importance for migratory birds during spring and autumn.

Ramsar criterion 5:

Assemblages of international importance of waterfowl with peak counts in winter.

Ramsar criterion 6:

Species / populations occurring at levels of international importance:

- Tundra swan *Cygnus columbianus bewickii*
- Greater white-fronted goose *Anser albifrons albifrons*
- Common shelduck *Tadorna tadorna*
- Gadwall *Anas strepera strepera*
- Dunlin *Calidris alpina alpina*
- Common redshank *Tringa tetanus*
- Lesser black-backed gull *Larus fuscus graellsii*
- Ringed plover *Charadrius hiaticula*
- Eurasian teal *Anas crecca*
- Northern pintail *Anas acuta*

Ramsar criterion 8:

The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla* use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary. The site is important as a feeding and nursery ground for many fish species particularly allis shad *Alosa alosa* and twaite shad *A. fallax* which feed on mysid shrimps in the salt wedge.

SPA Conservation Objectives[84]

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- the extent and distribution of the habitats of the qualifying features
- the structure and function of the habitats of the qualifying features
- the supporting processes on which the habitats of the qualifying features rely
- the population of each of the qualifying features
- the distribution of the qualifying features within the site

Threats / Pressures to Integrity of SPA[85]

The following threats and pressures to the integrity of the Severn Estuary SPA have been identified in Natural England's Site Improvement Plan:

- public access / disturbance
- physical modification
- impacts of development
- coastal squeeze
- change in land management
- changes in species distributions
- water pollution
- air pollution: Impact of atmospheric nitrogen deposition
- marine consents and permits: Minerals and waste
- fisheries: recreational marine and estuarine
- fisheries: commercial marine and estuarine
- invasive species
- marine litter
- marine pollution incidents

Berwyn and South Clwyd Mountains SAC

Qualifying Features[86]

Annex I habitats that are a primary reason for selection of this site:

- European dry heaths
- Blanket bogs (priority feature)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites)
- Transition mires and quaking bogs
- Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
- Calcareous rocky slopes with chasmophytic vegetation

Conservation Objectives[87]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

Threats / Pressures to Site Integrity[88]

The following threats and pressures to the integrity of the Berwyn and South Clwyd Mountains SAC have been identified in Natural Resources Wales' Core Management Plan:

- fire
- inappropriate grazing levels
- tree / scrub encroachment
- drainage
- peat digging
- public access / disturbance
- climate change
- air pollution: Impact of atmospheric nitrogen deposition
- disease
- game management
- invasive species
- nutrient enrichment
- quarrying

Montgomery Canal SAC

Qualifying Features[89]

Annex II species that are a primary reason for selection of this site:

- Floating water-plantain *Luronium natans*

Conservation Objectives[90]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as

well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable.

Threats / Pressures to Site Integrity[91]

The following threats and pressures to the integrity of the Montgomery Canal SAC have been identified in Natural Resources Wales' Core Management Plan:

- water quality
- water clarity
- channel shading

Granllyn SAC

Qualifying Features[92]

Annex II species that are a primary reason for selection of this site:

- Great-crested newt *Triturus cristatus*

Conservation Objectives[93]

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Threats / Pressures to Site Integrity[94]

The following threats and pressures to the integrity of the Granllyn SAC have been identified in Natural Resources Wales' Core Management Plan:

- extent of breeding / display ponds
- water plant cover
- water depth
- extent of shading
- extent and quality of terrestrial habitat

- dispersal routes
- presence of wildfowl

Elenydd SAC

Qualifying Features[95]

Annex I habitats that are a primary reason for selection of this site:

- Calaminarian grasslands of the *Violetalia calaminariae*
- Blanket bogs (priority feature)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea*
- European dry heaths

Annex II species that are a primary reason for selection of this site:

- Floating water-plantain *Luronium natans*

Conservation Objectives[96]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as ‘favourable’ when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Threats / Pressures to Site Integrity[97]

The following threats and pressures to the integrity of the Granllyn SAC have been identified in Natural Resources Wales’ Core Management Plan:

- extent of breeding / display ponds
- water plant cover
- water depth
- extent of shading
- extent and quality of terrestrial habitat
- dispersal routes
- presence of wildfowl

Mynydd Epynt SAC

Qualifying Features[98]

Annex II species that are a primary reason for selection of this site:

- Slender green feather-moss *Drepanocladus vernicosus*

Conservation Objectives[99]

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Threats / Pressures to Site Integrity[100]

The following threats and pressures to the integrity of the Mynydd Epynt SAC have been identified in Natural Resources Wales' Core Management Plan:

- sheep grazing
- water flow
- water level
- water quality
- woody species / shrubs
- surface disturbance

Rhos Goch SAC

Qualifying Features[101]

Annex I habitats that are a primary reason for selection of this site:

- Active raised bogs (priority feature)
- Transition mires and quaking bogs

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- Bog woodland
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (priority feature)

Conservation Objectives[102]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its longterm maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

Threats / Pressures to Site Integrity[103]

The following threats and pressures to the integrity of the Rhos Goch SAC have been identified in Natural Resources Wales' Core Management Plan:

- grazing
- water level
- tree / scrub encroachment
- air pollution: Impact of atmospheric nitrogen deposition
- water pollution
- inadequate woodland management

Drostre Bank SAC

Qualifying Features[104]

Annex I habitats that are a primary reason for selection of this site:

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (priority feature)

Conservation Objectives[105]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

Threats / Pressures to Site Integrity[106]

The following threats and pressures to the integrity of the Drostre Bank SAC have been identified in Natural Resources Wales' Core Management Plan:

- livestock grazing
- extent of litter layer
- extent of bare ground
- drainage

River Usk SAC

Qualifying Features[107]

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:

- Sea lamprey *Petromyzon marinus*
- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*
- Atlantic salmon *Salmo salar*

- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

Conservation Objectives[108]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Threats / Pressures to Site Integrity[109]

The following threats and pressures to the integrity of the River Usk SAC have been identified in Natural Resources Wales' Core Management Plan:

- water flow
- water quality
- invasive species

Llangorse Lake SAC

Qualifying Features[110]

Annex I habitats that are a primary reason for selection of this site:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation

Conservation Objectives[111]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

Threats / Pressures to Site Integrity[112]

The following threats and pressures to the integrity of the Llangorse Lake SAC have been identified in Natural Resources Wales' Core Management Plan:

- water quality
- hydrology
- sediment loading
- recreational disturbance
- development
- fishery

Cwm Cadlan SAC

Qualifying Features[113]

Annex I habitats that are a primary reason for selection of this site:

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- Alkaline fens

Conservation Objectives[114]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

Threats / Pressures to Site Integrity[115]

The following threats and pressures to the integrity of the Cwm Cadlan SAC have been identified in Natural Resources Wales' Core Management Plan:

- livestock grazing
- drainage
- adjacent land use
- scrub encroachment
- atmospheric pollution

Blaen Cynon SAC

Qualifying Features[116]

Annex II species that are a primary reason for selection of this site:

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives[117]

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Threats / Pressures to Site Integrity[118]

The following threats and pressures to the integrity of the Blaen Cynon SAC have been identified in Natural Resources Wales' Core Management Plan:

- extent and quality of marshy grassland

Aberbargoed Grasslands SAC

Qualifying Features[119]

Annex I habitats present as a qualifying feature, but not a primary reason for site selection:

- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

Annex II species that are a primary reason for selection of this site:

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives[120]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Threats / Pressures to Site Integrity[121]

The following threats and pressures to the integrity of the Aberbargoed Grasslands SAC have been identified in Natural Resources Wales' Core Management Plan:

- livestock grazing
- anti-social behaviours
- off-road vehicles

River Dee and Bala Lake SAC

Qualifying Features[122]

Annex I habitats that are a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:

- Atlantic salmon *Salmo salar*
- Floating water-plantain *Luronium natans*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Sea lamprey *Petromyzon marinus*

- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Conservation Objectives[123]

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- its natural range and areas it covers within that range are stable or increasing
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future
- the conservation status of its typical species is favourable

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Threats / Pressures to Site Integrity[124]

The following threats and pressures to the integrity of the River Dee and Bala Lake SAC have been identified in Natural Resources Wales' Core Management Plan:

- bank and riparian zone vegetation
- eutrophication
- alien / introduced species
- water quality
- flow
- light levels
- river morphology
- compensation stocking of Atlantic salmon
- dredging
- disturbance by motorised craft

- exploitation
- food availability
- availability of breeding and resting sites
- dispersal and access routes
- anthropogenic mortality
- disturbance

Mottey Meadows SAC

Qualifying Features[125]

Annex I habitats that are a primary reason for selection of this site:

- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

Conservation Objectives[126]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of qualifying natural habitats
- the structure and function (including typical species) of qualifying natural habitats
- the supporting processes on which qualifying natural habitats rely

Threats / Pressures to Site Integrity[127]

The following threats and pressures to the integrity of the Mottey Meadows SAC have been identified in Natural England's Site Improvement Plan:

- water pollution
- hydrological changes
- water abstraction
- change in land management

Ensor's Pool SAC

Qualifying Features[128]

Annex II species that are a primary reason for selection of this site:

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

Conservation Objectives[129]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change.

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- the extent and distribution of the habitats of qualifying species
- the structure and function of the habitats of qualifying species
- the supporting processes on which the habitats of qualifying species rely
- the populations of qualifying species
- the distribution of qualifying species within the site

Threats / Pressures to Site Integrity[130]

The following threats and pressures to the integrity of the Ensor's Pool SAC have been identified in Natural England's Site Improvement Plan:

- changes in species distributions

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