



# Strategic Environmental Assessment - Environmental Report

## Second Cycle Flood Risk Management Plan for Wales

Version 2.0: Final for publication alongside draft FRMP

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# Non-technical Summary

## What is this document?

This is the non-technical summary of the environmental report that accompanies the consultation on the draft Flood Risk Management Plan (FRMP) for Wales.

## Flood Risk Management Plan

The second cycle FRMP provides information on the measures that NRW proposes to manage the risk of flooding from main rivers, reservoirs and the sea, across Wales, over the next 5 years.

The FRMP consists of 1 objective and 14 priorities that have been developed taking into account the framework set by NRW's draft Corporate Plan and the Welsh Government National Flood and Coastal Erosion Risk Management Strategy and the duties placed on NRW by the Environment Act (Wales) 2016 and the Well-being of Future Generations Act (2015).

The draft FRMP presents 58 national measures to be delivered across Wales and 266 local measures to address flood risk in the communities that are at highest flood risk. The local measures are presented in 6 place chapters to align with the Area Statements and promote integrated working.

## Strategic Environmental Assessment

A strategic environmental assessment (SEA) has been undertaken to ensure that environmental effects are considered during the development of the FRMP alongside technical, economic and other considerations. This report sets out the findings of the SEA.

The SEA is well aligned with the Sustainable Development (SD) and Sustainable Management of Natural Resource (SMNR) principles and so it is being used to not only assess the environmental effects of the FRMP but is a valuable tool to demonstrate how the FRMP is delivering and promoting:

- The 4 Aims for SMNR which contribute to meeting the SMNR objective;
- The national priorities set by the Natural Resources Policy (NRP) and the SoNaRR 2020 evidence, aims, trends and factors;
- Section 6 - Biodiversity and ecosystem resilience duty

and in doing so, contribute to the well-being objectives and goals.

Scoping was undertaken in Spring 2022 to focus the assessment on the likely significant effects of the FRMP. This concluded that significant effects on air quality were unlikely and therefore this topic was scoped out. The scoping also considered which FRMP measures are likely to lead to significant effects. No measures were scoped out of the assessment, all national and local measures have been considered at a national scale to reflect the level of detail of the FRMP measures. The spatial element of the local measures have allowed consideration of opportunities and constraints in the Place appendices (E-J).

During scoping, relevant policies, plans, programmes and legislation were reviewed to determine potential synergies and conflicts with the FRMP. A summary of

baseline information relevant to the FRMP was documented and developed to determine key issues and trends. This informed the development of assessment criteria that have been applied in the assessment of measures.

### **Habitats Regulations Assessment**

A Habitats Regulations Assessment (HRA) is being developed iteratively with the FRMP and the SEA and will be published in a separate draft report alongside the draft FRMP. The conclusions of the draft HRA have been considered within the SEA.

### **Summary of Significant Environmental Effects**

The SEA has been undertaken at a high level, appropriate to the national scale of the FRMP. However, the assessment, grouped under Flood Risk Management (FRM) activities, is presented in a manner that can be applied to, and influence, lower level plans and project level EIA. The Place Appendices identify opportunities and constraints relevant to delivery of measures in those locations and will also inform and encourage integrated work planning to deliver multiple benefits.

### **Population & Human Health**

All national measures will deliver significant determinants of health (economic, environmental and social factors) benefits in terms of either preventing or protecting people and properties, including more disadvantaged and vulnerable communities, from flood risk, with associated whole community benefits to health and well-being.

Robust, co-produced options appraisal and sensitive design of schemes will ensure that they benefit local communities and encourage opportunities to engage in healthy and active behaviours to maximise health and well-being, where appropriate.

### **Biodiversity, Flora and Fauna**

The maintenance and improvement of FRM assets and the development of new assets has the potential for adverse effects depending on the nature, scale and location of the activities proposed. Therefore, there is uncertainty over significance of the effects. The FRMP promotes nature-based solutions but traditional FRM measures are still likely to be required in some locations. It also promotes restoration of hydromorphological processes in Heavily Modified Water Bodies (HMWB) due to historic flood and coastal protection activities. The FRMP supports coastal and inland adaptation plans to address increased flood risk through climate change.

The FRMP also seeks to influence the Sustainable Farming Scheme (SFS) and UK Forestry Standard (UKFS) for the benefit of flood risk and this could have indirect benefits on biodiversity, flora and fauna, by encouraging management practice that reduces run-off and retains more water for the benefit of ecosystems.

### **Land use, Soil, Geology & Contaminated land**

The maintenance and improvement of FRM assets and the development of new assets has the potential to affect land use and land management practices and it cannot be predicted at this scale whether this would be beneficial or adverse. Projects delivered under the FRMP would consider land use, geology, soil and contaminated land effects in the options appraisal and would seek to minimise, avoid or mitigate any negative effects.

Coastal projects would adhere to SMP2 policy and consider coastal adaptation in the options appraisal. Coastal adaptation will result in mixed effects on this receptor, as a result of change in land use and land management with resulting effects on soil and geomorphology.

### **Water Resources & Quality**

Maintenance, improving and developing new assets can have benefits on water quality by restricting contaminant transport into watercourses and saline intrusion into freshwater areas. However, they can adversely impact on natural hydromorphological processes. Water Framework Directive (WFD) compliance assessment will influence project appraisal and design and the FRMP promotes restoration of hydromorphological processes.

Influencing SFS and UK forestry standards for the benefit of flood risk could have indirect benefits on water quality and resources, by encouraging management practice that reduces run-off and retains more water, resulting in a reduction in diffuse pollution

### **Climatic Factors**

All FRMP measures will result in significant benefits to climate change adaptation and resilience. Activities such as modelling and telemetry provide evidence for flood forecasting and warning which in turn, improves awareness and encourages adaptation both in land and at the coast. Advice provided through permitting and planning also prevent inappropriate development, promoting adaptation to climate change.

Measures to maintain, improve and develop new FRM assets must consider the carbon footprint associated with activities, designs and materials early in project development. Traditional hard engineering has the potential for negative effects with respect to mitigating climate change whereas designs that incorporate NFM can reduce or even be beneficial by sequestering carbon.

### **Material Assets**

FRMP measures aim to reduce flood risk and to encourage resilience and adaptation in existing important material assets and infrastructure which has the potential to significantly benefit local communities and national interests. Coastal adaptation and coastal infrastructure projects could have positive or negative effects on coastal infrastructure, including highways, rail and the Wales Coast Path (WCP) or National Cycle Network (NCN).

FRMP measures to deliver permitting, compliance, enforcement and planning advice seek to prevent inappropriate development and hence prevent an increase in flood risk. This will ensure that new housing, infrastructure and material assets are sustainable, adaptable and resilient now and in the future.

### **Cultural Heritage**

FRMP measures will reduce the flood risk to heritage assets within communities. There could be potential negative effects where heritage assets are not in areas

prioritised for investment, or where SMP2 policy requires coastal adaptation. Improving and operating flood forecasting and warning service will benefit the historic environment by allowing operators and owners of historic and cultural assets to prepare and respond to flood events, promoting resilience to climate change.

Projects to improve or construct new FRM assets can have adverse effects on the historic environment, either in terms of known historic monuments or listed buildings (eg bridges and weirs) or in terms of unknown archaeology.

### **Landscape & Seascape**

Maintenance and improvement of FRM assets and the development of new assets have the potential for adverse effects, dependent upon the nature and design of solutions proposed, therefore there is uncertainty over the significance of effects.

Beneficial landscape effects are to be gained from prioritising investment into nature-based solutions that are sensitive to the environment, and that deliver wide-reaching landscape benefits on both a regional and national scale.

### **Mitigation and Enhancement Opportunities**

- Project level environmental assessment in line with Operational Guidance Note (OGN) 87, HRA in line with OGN200 and WFD compliance assessment in line with OGN72 will ensure any adverse impacts are avoided, reduced or mitigated.
- Integration of project level Health Impact Assessment (HIA) will provide an opportunity to understand a whole community and the social vulnerabilities to assess the potential direct and indirect impacts on population groups of a specific scheme and community.
- The Place Appendices have identified where opportunities might be realised where priority communities for FRM overlap with other projects and programmes, for example: Heavily Modified Waterbodies (HMWB), River Restoration and fish passage/habitat improvement priorities.
- Working with natural processes, good environmental design on projects and sensitive approaches to maintenance activities should seek to enhance biodiversity, ecosystem resilience, hydromorphology, carbon sequestration / emissions reduction and landscape.
- Nature based solutions and influencing land management practices have potential benefits on soil and land management. Measures to reduce run-off would protect soil from erosion and maintain moisture, preventing desiccation at hotter times of year.
- At initial assessment stage of projects, it is standard practice to seek screening advice from the relevant Welsh Archaeological Trust to ensure the project can be appraised and designed to avoid impact on the historic environment.

### **Cumulative Effects of the FRMP**

Numerous relevant national and regional strategies and plans were considered in terms of cumulative effects. The FRMP is aligned with and complements Welsh

Government strategies such as the Welsh National Marine Plan and Future Wales: The National Plan 2040. NRW has worked with the Environment Agency in the development of the FRMPs in the cross border catchments of the Dee and Severn and there are not anticipated to be any cumulative effects from implementation.

The third cycle Western Wales River Basin Management Plan (RBMP) and Dee RBMP were adopted in July 2022. The RBMP3 includes complementary national measures with the FRMP national measures and so cumulative effects are not anticipated. However, there can be positive effects in delivering projects that contribute to the objectives of both plans.

### **Reasonable alternatives**

The SEA Regulations require that an environmental report includes an evaluation of the likely significant effects of the FRMP and reasonable alternatives.

The alternatives considered by NRW were:

1. Undertake at River Basin District (RBD) scale, as with the first cycle
2. Undertake at a Wales wide scale and focus on flooding from sea, main river and reservoir
3. Undertake at a Wales wide scale and integrate with Lead Local Flood Authority (LLFA) to include flooding from surface water and ordinary watercourses

Alternative 2 was selected to move towards a Wales wide FRMP for the second cycle. Since the first cycle, the Environment (Wales) Act 2016 has been introduced. This required NRW to produce Area Statements, setting out how we will work with partners to sustainably manage natural resources. This established 7 areas across Wales. To establish opportunities for integrated planning and delivery it was decided that the FRMP should be developed at two scales. National measures that apply throughout Wales and local measures for Flood Risk Areas aligned with the 6 terrestrial/coastal areas (the seventh area being the Marine Area Statement).

Alternatives have also been considered at a measures level after considering:

- the source and severity of the risk;
- what risk management processes are already in place;
- how the risk might change in the future; and
- what the options to address the risk are.

The most appropriate measure was selected after considering all of these factors. At a project delivery scale the technical feasibility, the cost, predicted environmental effects and engagement with stakeholders, including local communities will inform options identification, appraisal and selection.

### **Monitoring the significant effects of the FRMP**

Proposed monitoring of the FRMP significant effects has been included in this report and will be developed further following consultation. The proposed monitoring indicators are population and human health, biodiversity, water, climatic factors and material assets. The proposals for monitoring will be published in the Statement of Environmental Particulars alongside the adopted FRMP.

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## Acronyms

Acronym	Meaning
AA	Appropriate Assessment
AONB	Area of Outstanding Natural Beauty
cSAC	candidate Special Area of Conservation
CARR	Communities at Risk Register
CCRA	Climate Change Risk Assessment
DECCA	Diversity, Extent, Connectivity, Condition, Aspects
FCERM	Flood and Coastal Erosion Risk Management
FRA	Flood Risk Area
FRM	Flood Risk Management
FRMP	Flood Risk Management Plan
HMWB	Heavily Modified Water Body
HRA	Habitats Regulation Assessment
INNS	Invasive Non-Native Species
LLFA	Lead Local Flood Authority
NHCP	National Habitat Creation Programme
NSN	National Site Network
NFM	Natural Flood Management
NRP	Natural Resources Policy
NRW	Natural Resources Wales
NSFCERMW	National Strategy for Flood and Coastal Erosion Risk Management in Wales
PFRA	Preliminary Flood Risk Assessment
pSPA	potential Special Protection Area
RBD	River Basin District
RBMP	River Basin Management Plan
RIGS	Regionally Important Geological Sites
RMA	Risk Management Authority
SAC	Special Area of Conservation
SD	Sustainable Development
SEA	Strategic Environmental Assessment
SFS	Sustainable Farming Scheme
SMP	Shoreline Management Plan
SMNR	Sustainable Management of Natural Resources
SONARR	State of Natural Resources Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WCP	Wales Coast Path
WFD	Water Framework Directive
WGWE	Welsh Government Woodland Estate

# 1. Introduction

## 1.1 Introduction to the Flood Risk Management Plan

Natural Resources Wales (NRW) has a strategic oversight role for flood and coastal erosion risk management which involves the general supervision and communication of flood and coastal erosion risk management (FCERM) in Wales. We also have powers to manage flooding from main rivers, reservoirs and the sea.

In Wales, there are estimated to be 245,118 properties at risk of flooding from all sources of flood risk (flooding from the sea, rivers and surface water). This is approximately 1 in 8 properties in Wales. We take a risk-based approach to managing the risk of flooding through the activities we do.

The Flood Risk Management Plan (FRMP) is fulfilling our requirements under section 25 of the Flood Risk Regulations (2009). It will cover all of Wales and provides information on the measures that we propose to manage the risk of flooding over the next 5 years. The FRMP covers flooding from main rivers, reservoirs and the sea. Lead Local Flood Authorities (LLFAs) are responsible for the management of flooding from surface water and smaller watercourses, and they are working to update their Local Flood Risk Management Strategies and Plans.

The first cycle FRMPs were produced at River Basin District (RBD) scale and covered the Western Wales, the Severn and the Dee. The Severn and the Dee were produced jointly with the Environment Agency. This time we are taking a Wales wide view for our FRMP, whilst working closely with the Environment Agency and the LLFA to ensure that we are taking an integrated approach to how water is managed in our shared catchments.

We plan and implement our work within the framework set out within NRW's draft Corporate Plan and the Welsh Government National Flood and Coastal Erosion Risk Management Strategy. Our FRM activities all strongly contribute to the delivery of NRW's wellbeing objectives (including to have a Wales where nature and communities are resilient to climate change). They also deliver against the aim set by the Welsh Government Strategy (to reduce the risk to people and communities from flooding and coastal erosion), and the five key objectives in WG's Strategy. Our FRM activities play a fundamental part of NRW's response to the Climate and Nature Emergencies.

We have also developed our own objective for this FRMP and set out a range of priorities for our work. These sit within the context of our Corporate Plan and WG's FRM aims and objectives, complement them and ultimately set out detail as to how NRW intends to deliver against these overarching ambitions. These 'FRMP priorities' not only deliver vitally important flood risk outcomes, but also complement each other to enable the delivery of multiple sustainability benefits across a range of ecosystem services. They also all sit within the context of, and are subject to, available resources and capacity.

NRW's FRMP objective is to:

**Reduce the risk to life from flooding to people and communities from main rivers, reservoirs and the sea.**

To support the delivery of that objective, NRW's FRMP priorities are to:

**Priority 1:** Respond to the climate and nature emergencies by seeking innovative practices, promoting adaptation and preparing for future change.

**Priority 2:** Work with partners and stakeholders to develop and deliver catchment approaches to reduce flooding and contribute to ecosystem resilience.

**Priority 3:** Improve community resilience to current and future flood risk. Working to support communities to become more aware and take action to mitigate their own flood risk.

**Priority 4:** Promote opportunities for enhancement to the health and well-being of communities and the environment, and the wider benefits they provide, to support NRW's response to the Nature Emergency.

**Priority 5:** Increase resilience of flood risk management assets, to reduce the impacts of current and future flood risk.

**Priority 6:** Improve effectiveness of our key products and services, including our digital services, to provide improved services to the public.

**Priority 7:** Continuously improve understanding of current and future flood risk (including climate change) so that decisions are based upon the best available evidence and information.

**Priority 8:** Provide an effective and sustained response to flood events, working in collaboration with Risk Management Authorities and Professional Partners.

**Priority 9:** Continually improve our flood warning service to enable people to take more effective action in response to flooding.

**Priority 10:** Provide effective planning advice on flood risks and consequences to reduce inappropriate development in areas at risk of flooding.

**Priority 11:** Prioritise our work on a risk basis in alignment with Welsh Government's National FCERM Strategy and develop our evidence base to secure future investment in flood risk management.

**Priority 12:** Promote, support and implement nature-based solutions where appropriate to reduce the risk and impacts of flooding and to deliver wider ecosystem benefits.

**Priority 13:** Undertake our strategic oversight role to understand all sources of flood risk on a national basis to inform investment and optimise how we plan work including with other partners.

**Priority 14:** Ensure we have an FCERM workforce with the appropriate capabilities and skills required to meet our priorities and respond to future challenges.

The draft FRMP sets out national measures for managing the risk of flooding across Wales as well as more detailed measures for the communities that we are most concerned about. This is informed by the Communities at Risk Register (CARR) which considers a number of factors to identify the locations (communities) at greatest risk of flooding. The CARR is used to inform, plan and prioritise our investment programme to target investment. It is not an absolute ranking of risk; it is an indicator of relative significance of risk from location to location.

The CARR was used to inform the identification of Flood Risk Areas in the 2018 Preliminary Flood Risk Assessment (PFRA) reports. Where these areas are still high risk, the draft FRMP will describe what actions we are taking in these areas, along with other communities that we feel require action.

## 1.2 Content of the FRMP

Summary of Content	
<b>National Section</b>	
1	Introduction to the FRMP
2	Flood Risk Management in Wales
3	Where is at risk of flooding in Wales?
4	What is at risk of flooding in Wales in the future?
5	FRMP Objective and Priorities
6	FRMP National Measures
7	Monitoring and Review
<b>Place Sections (Mid, North East, North West, South Central, South East, South West)</b>	
1	Introduction
2	Description of Place
3	Historic Flooding
4	Current flood risk
5	Future flood risk
6	Recent flood risk management activity
7	Flood risk management work we are planning

Table 1: Content of the FRMP

## 1.3 Embedding Sustainable Management of Natural Resources (SMNR) and Sustainable Development (SD) into the FRMP

The FRMP has been developed within the context of the Well-being of Future Generations Act<sup>1</sup> and the Environment (Wales) Act<sup>2</sup>. Sustainable development is a key principle that has underpinned the FRMPs development, and this SEA has aimed to influence the development of the FRMP to maximise opportunities and minimise adverse effects.

In light of the extreme challenges that Wales is facing from the ongoing Nature and Climate Emergency, NRW's draft Corporate Plan (2023) sets out our wellbeing objectives that by 2030 in Wales:

- Nature is recovering
- Communities are resilient to climate change
- Harmful pollution is prevented

In focussing on these three well-being objectives together we also support the wider well-being of people and communities.

<sup>1</sup> Well-being for Future Generations (Wales) Act 2015: <https://gov.wales/topics/people-and-communities/people/future-generations-act/?lang=en>

<sup>2</sup> Environment (Wales) Act 2016: <https://gov.wales/topics/environmentcountryside/consmanagement/natural-resources-management/environment-act/?lang=en>

Our draft corporate plan sets the strategic direction for NRW. The FRMP sits directly beneath the objectives set out within this vision for a future Wales, the FRMP priorities and measures set out in this plan directly support the delivery of the above ambitions. They provide detail on the steps NRW intends to take in response to the Nature and Climate Emergency and outline the timescales we intend to deliver these actions. By doing this, the FRMP will set the framework for NRW to continue this approach and work in a collaborative and cohesive way to manage flood risk and in doing so, deliver under our well-being objectives to improve the social, economic, environmental and cultural well-being of communities (Figure 1).

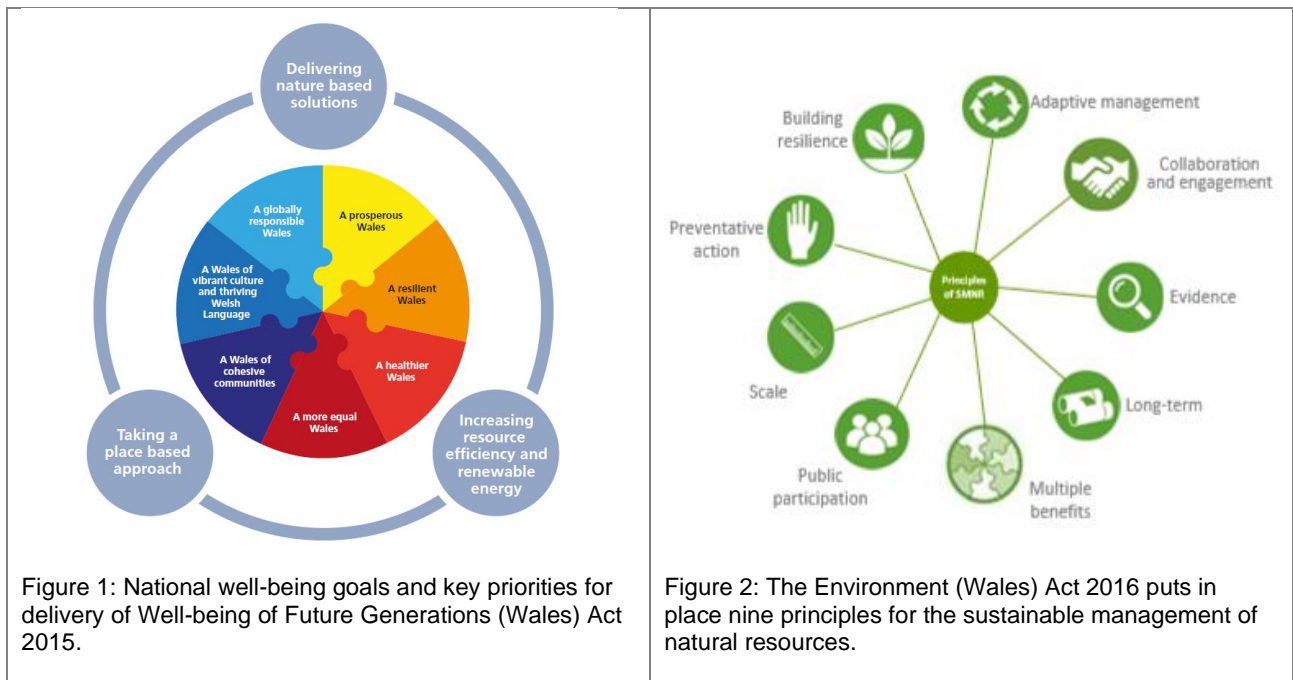
The Environment (Wales) Act 2016 established the objective of SMNR: "...using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide. In doing so, meeting the needs of current generations without compromising the ability of future generations to meet their needs, and contributing to the achievement of the well-being goals set out in the Well-being of Future Generations (Wales) Act 2015".

The nine principles for the sustainable management of natural resources are closely aligned to the SD Principles. The application of these principles to the FRMP encourages long-term thinking, a preventative approach, and working collaboratively with others to sustainably manage natural resources in Wales with the objective of maintaining and enhancing the resilience of ecosystems (Figure 2).

Welsh Government developed the Natural Resources Policy as required by the Environment (Wales) Act 2016. The policy sets out the national priorities for the sustainable management of natural resources and are the key ways in which natural resources contribute across all well-being goals. The national priorities are:

- Delivering nature-based solutions
- Increasing resource efficiency and renewable energy
- Taking a place-based approach – working locally in a joined-up way

They aim to address the challenges and realise the opportunities associated with our natural resources. The management of our rivers and coast as a natural resource means these priorities are at the heart of the FRMP.



Environment (Wales) Act also recognises the essential contribution biodiversity makes to SMNR and our well-being, by putting in place the section 6 - Biodiversity and ecosystem resilience duty. This duty requires public authorities to seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in doing so promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.

The SEA is well aligned with the SD and SMNR principles and so it is being used to not only assess the environmental effects of the FRMP but is a valuable tool to demonstrate how it is delivering and promoting:

- The 4 Aims for SMNR which contribute to meeting the SMNR objective,
- The national priorities of the Natural Resources Policy,
- Section 6 - Biodiversity and ecosystem resilience duty

and in doing so, contribute to the well-being objectives and goals.

A Habitats Regulations Assessment (HRA) is being developed iteratively with the FRMP and the SEA and will be published in a separate draft report alongside the draft FRMP. Natural Resources Wales, as Appropriate Nature Conservation Body, will continue to be engaged in the development of the HRA.

## 1.4 Purpose and structure of this SEA Environmental Report

A Strategic Environmental Assessment (SEA) is a legal requirement under the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004. NRW has determined that the FRMP requires SEA.

The purpose of SEA is:

1. To integrate environmental considerations and high-level protection of the environment into strategic decision-making.

2. To ensure the integration of environmental considerations into the preparation and adoption of plans and programmes, and to contribute to the promotion of sustainable development and environmental protection.

The SEA process is structured into five well-defined stages as outlined in Figure 3 and involve predicting, evaluating and mitigating the environmental effects of the FRMP.

Stage A and the associated tasks were reported in the Scoping Report that preceded this Environmental Report. During this scoping stage, the environmental baseline was considered in the context of current status and trends to allow identification of key issues relevant to the FRMP. As part of this process, relevant policies, plans, programmes and legislation were reviewed to determine potential synergies and conflicts with the FRMP. A summary of this baseline information is presented in Section 3.2 of this report.

The only receptor to be scoped out of the assessment was Air Quality. While individual actions may have a small, localised impact on air quality, at a strategic level, it is very unlikely that the FRMP would have a significant effect on air quality across Wales.

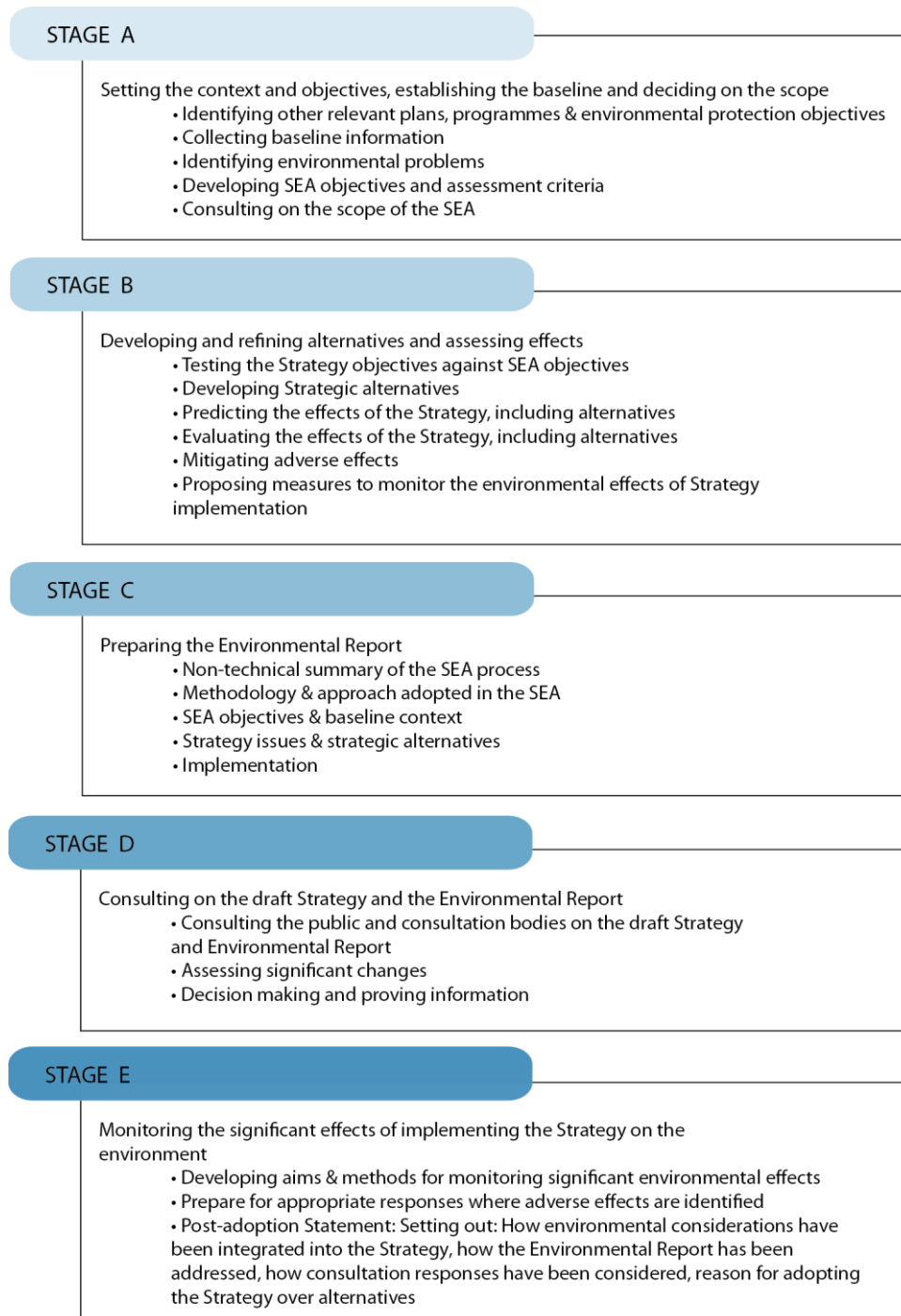
Whilst none of the national or local measures have been scoped out of the assessment, in order to make the SEA meaningful and proportionate the national measures have been grouped into the FRM activities. The local measures have also been tracked back to the national measure assessments. However, as there is spatial information, certain local measures have been considered further in the place appendices to identify opportunities and constraints that will be considered at a project level.

The Scoping Report was subject to statutory consultation with NRW and Cadw in April / May 2022. Annex A of this Report summarises the Scoping Report consultation responses and how they have been actioned.

This report documents Stages B and C in the SEA process and specifically:

- Identifies, describes and evaluates the significant environmental effects of implementing the FRMP and any alternatives
- Identifies actions to prevent, reduce or as fully as possible offset any adverse effects
- Provides an early and effective opportunity to engage through consultation in preparation of the FRMP
- Proposes measures to monitor the environmental effects of FRMP implementation

Stage D will involve consultation on the draft FRMP & Environmental Report, which will further develop the FRMP. Implementation and Monitoring (Stage E) will be an ongoing process for the duration of the FRMP to ensure adaptation and continual improvement.



**Figure 3: Required and implemented stages in the SEA process**



## 1.5 How SEA regulation requirements have been addressed in this Environmental Report

**Table 2: Environmental Report Requirements**

<b>SEA regulation requirements</b>	<b>How this has been addressed</b>	<b>Report section</b>
1. An outline of the contents and main objective and priorities of the FRMP, and of its relationship with other relevant plans and programmes.	Section 1.1 sets out the main objective and priorities and an outline of the content of the FRMP.  Section 3.1 & 3.2 sets out the relevant key themes arising from a review of relevant plans and programmes. A full list of plans reviewed is provided in Appendix A.	1, 3.1 and Appendix A
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the FRMP.	The environmental context for the FRMP was documented and consulted on in the Scoping Report and an amended and summarised version is presented in Section 3.2. This includes an overview of the current state and trends in the absence of the plan.	3.2
3. The environmental characteristics of areas likely to be significantly affected.	The assessment of effects on environmental receptors is documented in Appendix D and summarised in Section 4	4 & Appendix D
4. Any existing environmental problems which are relevant to the FRMP including those relating to any areas of a particular environmental importance, such as areas designated under the Habitats Regulations	Existing environmental problems are presented as part of the baseline in Section 3. Consideration of designated sites (SAC, SPA and Ramsar sites) is presented in the Habitats Regulations Assessment and summarised in Section 4 and Appendix D.	3, 4, Appendix D and Habitats Regulations Assessment
5. The environmental protection objectives, established at international or national level, which are relevant to the FRMP and the way those objectives and any environmental considerations have been taken into account during its preparation.	Environmental protection objectives are summarised as part of the review of relevant plans and programmes in Section 3.1 & Appendix A	3.1 and Appendix A
6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects.	The likely significant effects of the plan are described in Section 4 and Appendix D.	4 and Appendix D

7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the FRMP.	Mitigation measures and opportunities for additional environmental improvements are provided in Sections 4, 5 and Appendix D.	4, 5 and Appendix D
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.	Section 2.1 sets out the approach to assessing the FRMP, including difficulties encountered. Section 2.2 sets out the alternatives considered and the justification for the alternative presented in in Section 4.	2.1 & 2.2, 4
9. A description of the measures envisaged concerning monitoring.	Proposals for monitoring are provided in Section 5	5
10. A non-technical summary of the information provided under paragraphs 1 to 9.	A non-technical summary is provided at the front of this document.	

## 1.6 Consultation on the draft Strategy and SEA to date

The draft FRMP consultation document will be issued via the NRW consultation hub: [english - Natural Resources Wales Citizen Space - Citizen Space \(cyfoethnaturiol.cymru\)](https://www.naturalresources.wales/citizen-space)

Regulation 12(5) of the SEA Regulations requires consultation with the consultation bodies on the scope and level of detail of the SEA. An SEA scoping report was produced in Spring 2022 and consulted with Cadw and Natural Resources Wales, and the relevant transboundary consultation bodies, the Environment Agency, Historic England and Natural England were also consulted. A summary of the key points raised and how we responded is detailed in Appendix 2.

## 1.7 How to comment on the Environmental Report and draft FRMP

You can contact us via any of the following ways:

- Via the consultation hub: [english - Natural Resources Wales Citizen Space - Citizen Space \(cyfoethnaturiol.cymru\)](https://www.naturalresources.wales/citizen-space)
- Email: [floodriskmanagement.strategic@cyfoethnaturiolcymru.gov.uk](mailto:floodriskmanagement.strategic@cyfoethnaturiolcymru.gov.uk)

We have developed a series of consultation questions, to assist you in providing a consultation response:

- 1) Do you agree with the conclusions of the Environmental Report?
- 2) Do you agree with the conclusions of the Draft Habitats Regulations Assessment?
- 3) Are there any further significant environmental effects, either positive or negative, of the draft Flood Risk Management Plan which you think should be considered? It

may be useful to refer to the place based local sections of both the Flood Risk Management Plan and the local appendices of the Environmental Report.

4) Are there further opportunities to enhance any positive or mitigate any negative environmental effects that should be considered for the final Flood Risk Management Plan? It may be useful to refer to the place based local sections of both the Flood Risk Management Plan and the local appendices of the Environmental Report.

This consultation is open for a 12-week period, from March 2023 to May 2023.

## **2. Assessment Method**

### **2.1 Approach to assessing the FRMP**

Regulation 12 of the SEA Regulations requires that the assessment process identifies, describes and evaluates the likely significant effects on the environment of implementing the FRMP and reasonable alternatives with respect to the objective and priorities and the geographical scope. This assessment is made up of the following:

- Compatibility assessment of the FRMP objective and priorities (Appendix C)
- Assessment of Alternatives
- Assessment of national measures
- Identification of opportunities and constraints for certain local measures

### **2.2 Reasonable Alternatives considered**

Reasonable alternatives have been considered at various scales and stages for the FRMP.

At a national scale the FRMP itself is required under section 25 of the Flood Risk Regulations (2009). This also sets out the approach and contents of the FRMP. The FRMP is also guided by Welsh Governments National FCERM Strategy and NRW's Corporate Plan. So whilst alternatives must be considered, the regulations and Strategy provide important drivers for the content and direction of the FRMP.

NRW considered different approaches to the FRMP:

1. Undertake at RBD scale, as with the first cycle
2. Undertake at a Wales wide scale and focus on flooding from sea, main river and reservoir
3. Undertake at a Wales wide scale and integrate with LLFA to also include flooding from surface water and ordinary watercourses

It was decided to move towards a Wales wide FRMP for the second cycle. Since the first cycle, the Environment (Wales) Act 2016 has been introduced. This required NRW to produce Area Statements, setting out how we will work with partners to sustainably manage natural resources. This established 7 areas across Wales. To establish opportunities for integrated planning and delivery it was decided that the

FRMP should be developed at two scales. National measures that apply throughout Wales and local measures for FRA's aligned with the 6 terrestrial/coastal areas (the seventh area being the Marine Area Statement).

Opportunities were explored with the LLFA's to produce a combined FRMP. However, following discussions with LLFA's and Welsh Government, this was not pursued as there was a desire to embed LLFA FRMPs within their Local Flood Risk Strategies, which are being developed under different timeframes.

The Flood Risk Regulations require NRW to undertake a PFRA to enable the identification of the areas most at risk from flooding from the sea, main rivers and reservoirs. This assessment, along with actual flood events and the CARR has informed the identification of communities requiring local measures.

Implementation of measures will be considered at a local scale during the FRMP cycle. For example, for measures requiring initial assessment and feasibility work for reducing flood risk, projects will commence with identification of a long list of options. Project level environmental assessment will influence the options identification, appraisal and identification of the preferred option. Project options will range from Do Nothing through to major civil engineering works, with many other options also considered. So alternatives are also considered at a project/local scale.

The measures within this plan have been selected after considering:

- the source and severity of the risk;
- what risk management processes are already in place;
- how the risk might change in the future; and
- what the options to address the risk are.

The most appropriate measure was selected after considering all of these factors. At a project delivery scale the technical feasibility, the cost, predicted environmental effects and engagement with stakeholders, including local communities will inform options identification, appraisal and selection.

## **2.3 Scope of the Assessment**

### **2.3.1 Scoping the environmental receptors**

Scoping the assessment took into account the key environmental issues and trends across all SEA receptors and determined which were relevant to the FRMP (summarised in Section 3). It also reviewed policies, plans, programmes and legislation relevant to the FRMP. This information was used to develop assessment objectives and associated criteria, which are typically used in SEA to systematically identify the beneficial and adverse effects of a plan on individual environmental issues. We proposed a series of assessment objectives and criteria in the scoping report, against each of the environmental receptors. These were reviewed in light of scoping consultation responses.

We have scoped out air quality from the assessments. While individual actions may have a small localised impact on air quality, at a strategic level, it is very unlikely that

the Flood Risk Management Plan would have a significant effect on air quality across Wales.

The assessment criteria related to each environmental receptor are presented in Table 3 below.

**Table 3: Assessment criteria used in the assessment of the FRMP**

<b>SEA Objective encompassing the Well-being Objective</b>	<b>Guide Questions Will the draft FRMP:</b>
<p>1. Population &amp; Human Health: To support attractive, resilient and viable communities, maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>• Improve and enhance the physical and mental health and well-being of communities?</li> <li>• Improve awareness of flood risk and impacts of climate change?</li> <li>• Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>• Reduce levels of social, cultural and economic deprivation?</li> <li>• Reduce inequalities across the life course?</li> <li>• Maintain and enhance recreation and access opportunities?</li> </ul>
<p>2. Biodiversity, Flora and Fauna: To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>• Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>• Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>• Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>• Have any implications for Invasive Non-Native Species and plant health?</li> <li>• Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul>
<p>3. Land Use, Geology, Soil and Contaminated Land: To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1, 2)</p>	<ul style="list-style-type: none"> <li>• Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> <li>• Help to protect and avoid damage to Wales' geodiversity?</li> <li>• Influence land management practices to benefit FRM?</li> <li>• Support coastal adaptation?</li> <li>• Protect and conserve geology, geomorphology and geodiversity?</li> </ul>

<p>4. Water Resources and Quality: To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1, 2, 3)</p>	<ul style="list-style-type: none"> <li>• Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</li> <li>• Conserve water resources?</li> <li>• Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</li> </ul>
<p>5. Climatic Factors: To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<ul style="list-style-type: none"> <li>• Improve awareness of the significant flood risks now and the future in Wales?</li> <li>• Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</li> <li>• Contribute to Wales' ability to adapt to climate change?</li> </ul>
<p>6. Material Assets: To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<ul style="list-style-type: none"> <li>• Help identify social, economic and environmental assets at significant flood risks?</li> <li>• Provide data on areas benefiting from defences</li> <li>• Conserve and protect important material assets and infrastructure (highways, railway, utilities, waste, emergency services, National Trails, Wales Coast Path and National Cycle Network)?</li> <li>• Increase the resilience of important material assets and infrastructure to climate change?</li> </ul>
<p>7. Cultural Heritage: To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)</p>	<ul style="list-style-type: none"> <li>• Help identify historic and cultural assets at risk from flooding?</li> <li>• Protect, conserve and where possible enhance, heritage assets and the historic environment?</li> <li>• Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?</li> </ul>
<p>8. Landscape and Seascape: To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<ul style="list-style-type: none"> <li>• Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</li> </ul>

### 2.3.2 Scoping the assessment of national and local measures

The FRMP is presented as National Measures which are grouped under FRM activities that are undertaken across Wales. These activities are:

- WA1 - Management of flood risk assets
- WA2 - Reservoir management and regulation
- WA3 - Flood forecasting and issuing warnings
- WA4 – Hydrometry and Telemetry, Hydrology and Geomorphology
- WA5 - Community engagement and resilience
- WA6 - Understanding and analysing flood risk
- WA7 - Flood risk advice, permitting, compliance and enforcement

WA8 - Responding to flood incidents

WA9 - Strategic planning and oversight of investment

The national measures that sit under each of these activities have all been scoped into the assessment. The assessment has been undertaken at an activity level and is presented in Appendix D.

The six Place Sections of the FRMP each set out a number of measures for specific communities across Wales. These amount to approximately 266 local measures across Wales. Local measures have been considered in the national scale assessment. For example, the local measure to “Improve existing flood warning service” was assessed under WA3 which demonstrated significant beneficial effects or neutral effects across all receptors. Consideration at a local level would not alter these assessments.

Appendices E- J consider all the local measures in each Place and states how measures have been considered under the national assessment and which are considered further at a local scale. The measures considered at a local scale include:

- Undertake initial assessment and feasibility work for reducing flood risk
- Design and construction of flood risk asset improvement

Whilst these measures have been assessed under WA1 in the national assessment, the spatial alignment has allowed us to further consider constraints and opportunities in these places. The aim of this is to inform integrated planning across NRW and with our partners and to inform project level environmental assessment that will be undertaken as each of these measures progress.

Certain local measures are already undergoing project level environmental assessment and where this is the case, it has been identified.

### 3. The Environmental Context

#### 3.1 Policy, plan and legal context

The SEA Regulations require that consideration is given to the relationship with other policies, plans, programmes and environmental objectives set at an international or national level. Given the national context of this FRMP, this review has considered relevant national policies, plans, programmes and legislation. Table 4 sets out the key themes arising from the policy review. The purpose of the review is to align the FRMP to compliment and work with other environmental policies and legislation rather than against them. The plans and programmes most relevant to the development and implementation of the FRMP are briefly summarised below and listed in Appendix A. Details of the review were set out in the Scoping Report and consulted upon. Responses have been taken into account in revising the review.

**Table 4. Common Themes and influences from the Policies, Plans, Programmes and Legislation Review**

Topic	Key Objectives and Policy Messages	Implications for the SEA Criteria
<b>Population and Human Health</b>	<ul style="list-style-type: none"> <li>• Create sustainable, active, resource efficient, cohesive and inclusive communities (build resilient communities).</li> <li>• Tackle health inequalities and promote equality over the life course.</li> <li>• Protect and enhance Welsh language and culture.</li> <li>• Provide high quality living environments for healthy lifestyles including strengthening access to good quality green and blue infrastructure.</li> <li>• Promote improvements to health and well-being of present and future generations.</li> <li>• Minimise and mitigate environmental hazards.</li> </ul>	<p>The SEA Criteria should include objectives and/or guide questions relating to:</p> <ul style="list-style-type: none"> <li>• Place making principles</li> <li>• Wider Determinants of health - interactions and infrastructure</li> <li>• Understanding of drivers of deprivation and health inequalities</li> <li>• Social vulnerability to flood, and geographic and systemic flood disadvantage</li> <li>• Socially just FRM – understand interactions and provide opportunities; and</li> <li>• Promote Welsh language and culture.</li> </ul>
<b>Biodiversity, Flora and Fauna</b>	<ul style="list-style-type: none"> <li>• Protect and enhance international/national protected wildlife areas (including SAC, SPA and Ramsar sites).</li> <li>• Reverse the decline of Wales’ biodiversity.</li> <li>• Protect and enhance Wales’ biodiversity (habitats, species and ecosystems) through protecting and enhancing hydrological and morphological processes.</li> <li>• Identify opportunities for green infrastructure provision.</li> <li>• Create an ecological network that is resilient to changing pressures.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to the protection and enhancement of Wales’ biodiversity. Guide questions should additionally cover:</p> <ul style="list-style-type: none"> <li>• the conservation of internationally and nationally designated nature conservation sites;</li> <li>• green infrastructure provision;</li> <li>• reversing biodiversity decline;</li> <li>• improving the quality and connectivity of Wales’ habitats; and</li> <li>• maintaining and enhancing healthy, functioning and resilient ecosystems (terrestrial, aquatic, riparian and coastal).</li> </ul>



Topic	Key Objectives and Policy Messages	Implications for the SEA Criteria
	<ul style="list-style-type: none"> <li>• Improve the quality and connectivity of Wales' habitats.</li> </ul>	<ul style="list-style-type: none"> <li>• Protection and restoration of natural riverine (hydromorphological) processes, that create and sustain physical habitat, and species supported by these habitats.</li> </ul>
<b>Land Use, Geology, Soil and Contaminated land</b>	<ul style="list-style-type: none"> <li>• Promote sustainable patterns of land use.</li> <li>• Conserve and enhance soil quality.</li> <li>• Sustainably manage Wales' woodlands.</li> <li>• Conserve Wales' geodiversity.</li> <li>• Manage impacts on soil resources.</li> <li>• Preserve, where possible, the best and most versatile agricultural land.</li> <li>• Encourage the use of previously developed land.</li> </ul>	<p>The SEA Criteria should include objectives and/or guide questions relating to:</p> <ul style="list-style-type: none"> <li>• promoting the sustainable use of land;</li> <li>• reducing land contamination;</li> <li>• enhancing soil quality and function; and</li> <li>• protecting and avoiding damage to geologically important sites.</li> </ul>
<b>Water resources and Quality</b>	<ul style="list-style-type: none"> <li>• Ensure that the water and ecological quality of freshwater and marine environments is conserved and enhanced.</li> <li>• Prevent the pollution of groundwater.</li> <li>• Manage diffuse pollution.</li> <li>• Improve water efficiency.</li> <li>• Ensure the timely investment in water management infrastructure.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to the protection and enhancement of water quality and quantity linked to the Water Framework Directive and Marine Strategy Framework Directive. Guide questions should additionally cover:</p> <ul style="list-style-type: none"> <li>• the promotion of water efficiency;</li> <li>• ensuring the resilience of water resources;</li> <li>• reducing the discharge of pollutants to, and diffuse pollution in, the water environment; and</li> <li>• supporting the timely delivery of new water infrastructure.</li> </ul>
<b>Air</b>	<ul style="list-style-type: none"> <li>• Protect and enhance air quality.</li> <li>• Reduce the impact of air pollution on biodiversity and human health.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to air quality.</p>
<b>Climatic Factors</b>	<ul style="list-style-type: none"> <li>• Minimise the effects of climate change.</li> <li>• Reduce emissions of greenhouse gases that cause climate change.</li> <li>• Encourage the provision of renewable energy.</li> <li>• Move towards a low carbon economy.</li> <li>• Safeguard Wales' carbon stores.</li> <li>• Promote adaptation to the effects of climate change.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to climate change mitigation and adaptation.</p>

Topic	Key Objectives and Policy Messages	Implications for the SEA Criteria
<b>Material Assets</b>	<ul style="list-style-type: none"> <li>• Avoid development in areas of flood risk.</li> <li>• Reduce the risk of flooding arising from new development.</li> <li>• Promote the use of Sustainable Drainage Systems (SuDS).</li> <li>• Enhance resilience to flood risk.</li> <li>• Sustainable development and integrated management of coastal areas, balancing the mixed uses of the coastal environment such as nature conservation, fisheries, navigation, recreation and access, and coastal protection.</li> <li>• Aims for reduction of the risk of new development to coastal change and restriction of inappropriate development.</li> <li>• Promote the waste hierarchy (reduce, reuse, recycle, recover).</li> <li>• Increase the diversion of waste from landfill.</li> <li>• Ensure the adequate provision of waste management facilities.</li> <li>• Promote the efficient and sustainable use of mineral resources.</li> <li>• Increase the resilience of Wales' natural resources.</li> <li>• Avoid the sterilisation of mineral reserves.</li> <li>• Promote the use of substitute or secondary and recycled materials and minerals waste.</li> </ul>	<p>The SEA Criteria should include objectives and/or guide questions relating to:</p> <ul style="list-style-type: none"> <li>• Minimise flood risk to material assets and manage coastal change</li> <li>• the promotion of the waste hierarchy;</li> <li>• the sustainable use of minerals;</li> <li>• investment in infrastructure to meet future needs; and</li> <li>• increasing the resilience of Wales' natural resources.</li> <li>• Mitigation of any physical hydromorphological impacts and associated ecological pressures that are associated with existing FRM assets or maintenance</li> </ul>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>• Conserve and enhance Wales' cultural heritage assets and their settings.</li> <li>• Maintain and enhance access to Wales' cultural heritage assets.</li> <li>• Respect, maintain and strengthen local character and distinctiveness.</li> <li>• Improve the quality of the built environment.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to the conservation and enhancement of the Wales' cultural heritage.</p>
<b>Landscape and Seascape</b>	<ul style="list-style-type: none"> <li>• Conserve and enhance nationally and regionally designated landscapes (eg. Areas of Outstanding Natural Beauty, National Parks and Heritage Coasts).</li> <li>• Protect and enhance the quality and distinctiveness of natural landscapes and townscapes.</li> <li>• Promote access to the countryside.</li> </ul>	<p>The SEA Criteria should include a specific objective relating to the protection and enhancement of Wales' landscapes and seascapes.</p>

Topic	Key Objectives and Policy Messages	Implications for the SEA Criteria
	<ul style="list-style-type: none"> <li>• Promote high quality design that respects and enhances local character.</li> <li>• Placemaking through good design, embedding heritage references to new infrastructure.</li> </ul>	

### 3.2 Environmental baseline

This section of the report presents an overview of the existing state of the environment, particularly aspects of relevance to the FRMP. The information presented in this section is a summary of that documented in the scoping report, amended following consultation. It is at a strategic level, appropriate to the national scale of the FRMP and is broadly set out according to the environmental receptors listed in the SEA Regulations.

## Summary of Environmental Baseline

### 1. Population and Health

The population at risk of exposure to flooding is expected to increase over time as a result of changes in population size, land-use and climate. The population of Wales is increasing. On Census Day, 21 March 2021, the size of the usual resident population in Wales was 3,107,500; this was the largest population ever recorded through a census in Wales. The population of Wales has grown by 44,000 (1.4%) since the last census in 2011<sup>3</sup>. The population of Wales is distributed unevenly throughout the country, with over 60% of the population living and working at the coast.

Flood Risk Assessment Wales (2019) update on properties at risk of flooding in Wales estimates tidal flooding or flooding from the sea puts 72,000 properties at risk of flooding, 88,500 properties are shown to be at risk of river flooding and 135,600 properties are at risk of surface water flooding. The number of properties at risk of flooding from all three sources of flooding is estimated at 285,000 properties. Some properties are at risk from multiple sources, so taking out the double and triple counting the total number of properties at risk is 245,118. This is approximately 1 in 8 properties in Wales.

All types of flooding carry a risk to life, either for those directly affected or for others involved in attempting to help them. Short term health impacts are usually due to injuries, infections, exposure to chemical hazards and disruption to health services; the longer-term effects are less well understood and may arise from the

3. ONS Population and household estimates, Wales: Census 2021 [Population and household estimates, Wales - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/population-and-household-estimates/wales)

4. The English National Study for Flooding and Health: First year report. PHE Publications gateway number 2016575. CC 2017.  
5. Present and future flood vulnerability, risk and disadvantage: A UK assessment, Sayers, P., Penning-Rowsell, E., Horritt, M. (2017).

impact of damage to homes, loss of domestic utilities, having to move out until the home is habitable, and delayed recovery.

A study by Public Health England<sup>4</sup> recorded a significant association between displacement due to flooding and symptoms of depression, anxiety and post-traumatic stress.

A 2017 report for Joseph Rowntree Foundation<sup>5</sup> found that socially vulnerable neighbourhoods are over-represented in areas prone to flooding, but most significantly in areas prone to coastal and tidal flooding. Certain parts of society are less able to cope with the effects of flooding; the most vulnerable are the very young, the elderly and disabled or already in poor health, who may require additional support during a flood event.

The provision of flood warnings and activation of flood defence mechanisms not only prevent loss of life but allow people to act to protect themselves and their property. These can help to reduce the impact of other adverse health effects such as anxiety about flooding as well as injury or exposure to contaminants. Only 12% of residents in Wales are concerned about flooding to their property, but 55% are concerned about flooding to their area and 83% are concerned about flooding in other parts of Wales<sup>6</sup>.

Many land based recreational activities are linked with the water environment due to the rural corridors they provide and the variety of landscapes they pass through. Nationally significant paths include the Wales Coastal Path, covering 870 miles of often spectacular coastal scenery, and National Cycle Network routes such as Lon Teifi, which runs along the Teifi valley. Where safe to do so Flood Risk Management assets should provide and support access around the coast and along river corridors.

### **Issues relevant to the FRMP**

- Increasing population and land use change, e.g. housing growth is likely to be concentrated in existing urban areas with high population density, much of which is at the coast or along river corridors.
- Climate change is likely to further exacerbate this through coastal erosion, predicted sea level rise and increased storminess and peak river flows.
- 245,118 properties are at risk of flooding from all sources of flood risk (flooding from the sea, rivers and surface water).
- Flooding and FRM has potentially wide-reaching adverse impacts on human health which can be better understood and mitigated using the wider determinants of health model (which is inclusive of economic, environmental and social factors).
- 80% of the population live in towns and cities meaning robust urban place making principles are key e.g. access to high quality green and blue space is key to encouraging healthy behaviours. FRMP measures, particularly communities where there is a large dependency on access, should seek to maintain and enhance access networks to provide access for all, whilst

acknowledging that routes may need to change to allow climate change adaptation.

- Exposure to and a lack of resources to cope with environmental hazards, such as flooding, is unequal, disproportionately impacting those with lower levels of socio-economic status, income, employment, education and health. Some evidence shows a relationship between poor mental health outcomes and people who have experienced flood, are at risk of or disrupted by flood or flood mitigation measures.
- Enabling communities to be aware of the risks and co-benefits can have positive and negative impacts on health and well-being. Measures seek to primarily prevent flooding by ensuring appropriateness of development. Where there has been historic development, prioritising preparedness and/or protection for the most at risk communities and assessing long term sustainability using evidence, provides common purpose to work in collaboration with others to tackle this challenge.
- As a public body we must involve and collaborate with local communities using a Health all policies (HiAP) approach in the development and delivery of FRMP measures, ensuring that those people reflect the population and diversity of communities and places.

#### Likely evolution without the FRMP

- Climate change is likely to increase the risk of flooding and coastal erosion, with sea level rise, increased intensity of storm events and increase in peak river flows, leading to increased and sustained impacts across the determinants of health (economic, environmental and social factors) for people and whole communities.
- The risk to health and well-being (e.g. physical injuries and infections and anxiety, depression and Post traumatic stress) through not implementing any FRMP or enabling any associated flood programme is significant.
- Even without any increase in risk from climate change, the risk to people would still rise dramatically when existing assets come to the end of their working life.

## 2. Biodiversity, Flora and Fauna

Biodiversity underpins ecosystem resilience and the sustainable management of natural resources. Biodiversity and resilient ecosystems with their suite of habitats and species provide natural solutions that support human well-being and help adapt to the adverse impacts of climate change.

SoNaRR 2020 concluded that Wales is not yet achieving SMNR and this has an impact on the resilience of ecosystems. There has been a reduction in diversity, the extent of semi-natural habitat is considered low (31%), few habitats are in good condition and connectivity is at its lowest in lowland habitats.

The importance of biodiversity in Wales is reflected by the number and variety of international, national and local nature conservation designations. International and national legislation designates about 30% of Wales' land and water as

protected conservation sites, either for their wildlife, their scenic beauty or their value as geological sites.

Approximately 70% of the Wales coast is designated as either SAC or SPA, with a range of habitats such as coastal saltmarsh, grazing marsh, mudflats, reedbeds, cliffs, dunes and shingle.

The Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations 2017 includes specific objectives to prevent deterioration in the status of surface waters and groundwater, achieve good ecological status (or potential) of all surface water bodies, and to achieve compliance with any objectives and standards for favourable condition for “protected areas”.

The “Section 7 list” contains all the habitats and species of principal importance for Wales. Welsh Ministers must take all reasonable steps to maintain and enhance these habitats and species, in addition to encouraging others to take such steps. Of particular note, in relation to FRM activities are the Section 7 fish species including salmonids, european eel and lamprey.

The threat posed to our natural resources from both Invasive Non-Native Species (INNS) and other damaging pests or diseases has never been greater. Within the UK there is a great emphasis on biosecurity to prevent the introduction and spread of INNS and other pest and diseases. However, increased movement of plants and other material through trade, along with climate change, will continue to impact our environment.

#### Issues relevant to the FRMP

- FRMP measures should seek to improve biodiversity and ecosystem resilience, where possible, in line with the Section 6 duty. Considering the diversity, extent, condition and connectivity of habitats in study areas.
- Coastal and water dependent habitats and species can both benefit and be impacted by FRM activities. The FRMP must seek to maintain and, where possible, enhance designated sites. A Habitats Regulations Assessment has been undertaken to assess potential effects on NSN sites, the results will feed into the SEA.
- Constraints to physical processes, such as sea defences, are affecting habitat extent, condition and overall resilience, by impeding their ability to move inland in response to sea level rise<sup>4</sup> (coastal squeeze).
- Physical modifications, some of which would be as a result of FRM activities, is one of the primary reasons for WFD waterbody failure. Geomorphological implications must be considered in the construction, operation and maintenance of FRM assets
- Fish habitat and passage is a key consideration in the construction, operation and maintenance of FRM assets.
- FRMP measures should consider the appropriateness of nature based solutions by applying the options appraisal continuum, as required by the

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<sup>4</sup> SoNaRR2020

National Strategy for Flood and Coastal Erosion Risk Management in Wales 2020.

- FRMP measures should seek to develop resilient ecological networks include securing riparian buffer strips along every river in Wales. This will provide important corridors for wildlife, increasing connectivity, as well as providing a physical barrier to slow water run-off and reduce riverbank erosion.

Likely evolution without the FRMP

- The coastal environment is expected to undergo significant change in the next 10 to 20 years and beyond, as a result of sea level rise and increased erosion driven by climate change.
- Potential degradation and fragmentation of habitats, threatening the survival of species and resulting in declining biodiversity.

### 3. Land Use, Geology, Soil & Contaminated Land

Predominant land uses in Wales are agricultural (~80%), followed by forestry and woodlands (~15%) then built environment uses with integration of use and mosaics of land cover types.

The Agriculture (Wales) Bill includes the development of the Sustainable Farming Scheme (SFS), Welsh Government's new land management scheme. NRW are working with WG on the development of the SFS to ensure SMNR shapes future land policy in Wales.

Forests and woodlands in Wales form 15% of land cover with a further estimated 15 million trees found outside woodlands<sup>5</sup>. Protecting and enhancing woodland ecosystems are key to building and strengthening their natural resilience and adaptation capacity - to both withstand the effects of climate change and to facilitate the important mitigation role these ecosystems play in carbon sequestration, abatement of greenhouse gas emissions and slowing catchment run-off. In Low Carbon Wales, the Welsh Government set a target of planting more than 2000ha of trees per year, rising to 4000ha as rapidly as possible. If planted in the right place, and with appropriate management, this could help reduce flood risk.

NRW manages 7% of Wales' land area, including the Welsh Government Woodland Estate, National Nature Reserves, Internal Drainage Districts (IDD) and our flood defences and assets - 500km of flood defences and 4,000 assets (our target is to maintain 98% of assets in high-risk locations to condition and to deliver our flood risk management capital programme). The need to apply SMNR in the management of this area provides an opportunity to deliver multiple benefits and contribute to the achievement of NRW's well-being objectives.

There are 483 geological features of SSSI standard in Wales, as well as 847 regionally important geological and geomorphological sites (RIGS), covering

<sup>5</sup> Welsh Government Statistics for Wales. Woodlands for Wales Indicators 2015-2016. Available at <https://gov.wales/sites/default/files/statistics-and-research/2018-12/161220-woodlands-wales-indicators-2015-16-en.pdf> [Accessed at 31/01/20]

almost 50,000 ha. The geodiversity of Wales has led to the forming of landscapes and environmental settings that have strong cultural service value.

Soils provide a wide range of essential functions. In Wales there is a scarcity of high quality agricultural soils (7% of land area). Peat soils account for only 4.3% of Wales' land area, however, they are particularly rich in carbon, containing 157million tonnes of the 410mt of carbon that is stored in Wales' soils. Soils play a critical role in the water cycle through the storage of water and are therefore an important factor and influence in flood management.

Peatland across Wales is in poor condition, reducing its ability to mitigate climate change. The National Peatland Action Programme is a five year restoration programme with a dual target to ensure all peatlands with semi-natural vegetation are subject to favourable management/restoration (~30 000Ha) and to restore a minimum of 25% (~5000ha) of the most modified areas of peatland.

Soils in Wales have been contaminated or degraded from past and present human activity. At a local level, the implementation of flooding and coastal change infrastructure can affect contaminated sites, especially in urban areas. Associated remediation, can provide local benefits to economic regeneration as well as avoid potential risks to human health and the environment.

#### Issues relevant to the FRMP

- Influence SFS to promote good water management on agricultural and forested land.
- Seek opportunities to plant trees through FRMP measures to contribute to WG planting target.
- Influence location of tree planting to maximise benefit to FRM
- Seek to deliver multiple benefits through the management of land and assets under our control
- FRMP measures should seek to maintain and enhance geological and geomorphological sites and geodiversity where appropriate.
- FRMP measures should support coastal adaptation in line with Shoreline Management Plan policies, which may involve working with land managers at the coast to enable transition of land use.
- Measures should be taken through the FRMP to protect and enhance high quality agricultural soils and recognise them as a finite resource.
- FRMP measures should consider opportunities and constraints associated with existing and historic contaminated land. Where we are undertaking work on the ground measures to contain or remediate contaminated land should be considered.

#### Likely evolution without the FRMP

- Climate change is likely to exacerbate many of the physical pressures that soils face already, for example, hotter, drier conditions make soils more susceptible to wind erosion, coupled with intense rainfall incidents that can wash soil away. Since climate change is also likely to affect soil processes,



changes in key soil attributes such as organic matter content, water holding capacity, fertility and pH, are expected. Such changes directly affect the soil stability, further increasing the risks of wind and water erosion.

#### 4. Water Resources & Quality

Water is abstracted from waterbodies for many purposes, including public water supply in Wales and England, agriculture, industry and electricity generation. Certain catchments, for example the Dee, are actively managed both in terms of flood risk management, as well as for water abstraction and recreation.

The WFD Regulations provide a strategic approach to preventing the deterioration of all water bodies (marine/coastal, ground, surface waters etc), and provides a mechanism to improve and enhance their status over time. The regulations include objectives to reduce pollution of water, to lessen the effects of floods and droughts, and improve the chemical, biological and ecological status of water bodies. Under the standards set by the WFD Regulations, 40% of all Wales' surface water bodies in 2021 were at good or better ecological status (in comparison to 31% in 2009).

Physical modification is one of the Significant Water Management Issues identified in the third cycle RBMP. Physical modification of natural flows, physical forms and processes (hydromorphology) has a significant impact on reducing freshwater and coastal ecosystem resilience, particularly resilience to climate change. Traditional or historic FRM engineering such as hard bank protection or reinforcement, lowering of riverbeds, culverts and channel straightening are types of physical modification that can have a significant adverse impact on freshwater and coastal ecosystem resilience, particularly resilience to climate change. The WFD Regulations require surface waters to be managed to protect their hydrology and geomorphology ('hydromorphology') and ecology. To achieve good ecological status or potential, we need to avoid, minimise (reduce) or mitigate physical modification impacts including those associated with flood risk management.

Land management improvements mentioned above and delivery of NFM can have multiple benefits in terms of improving water quality by addressing diffuse pollution whilst also benefiting FRM by retaining water and reducing run off.

Opportunity Catchments identified in RBMP3 are catchments where NRW and partners are focussing efforts to maximise delivery of improvements. FRMP measures that fall in these catchments should seek to deliver wider benefits.

Over the coming years Welsh Government is investing in a River Restoration Programme in certain catchments across Wales. There are also LIFE projects on the Dee and Four Rivers (Usk, Teifi, Cleddau and Tywi). This work will invest millions of pounds to deliver multiple benefits such as fish habitat, fish passage, river corridor fencing, tree planting and NFM, amongst other things. Some of these measures will have localised benefits for FRM. Conversely, any FRMP measures that are delivered in these areas must seek to complement the proposed habitat restoration.

#### Issues relevant to the FRMP

- FRMP measures must undergo WFD compliance assessment to avoid, minimise (reduce) or mitigate physical modification impacts.
- FRMP measures should seek to deliver mitigation measures for Heavily Modified Waterbodies
- Approaches that work with natural processes can contribute to improving the condition of water bodies and provide an opportunity to naturalise heavily modified water bodies.
- At the coast, where the Shoreline Management Plan (SMP) policy is hold the line in the longer term, there is an opportunity to improve assets to incorporate a range of NFM solutions, including the addition of eco-enhancements to hard structures, the use of hybrid approaches (such as polders/saltmarsh creation in conjunction with harder defences) or softer approaches such as beach nourishment or shingle management.
- Seek to maximise opportunities in delivery by working with the LIFE programmes and River Restoration Programme.

#### Likely evolution without the FRMP

- Climate change projections show increases in storm intensity with associated extreme rainfall events, coupled with predicted sea level rises. This scenario would lead to an increasing risk of future flood events, with associated potential increase in pollution risk from contaminated land, agriculture, sewerage, and abandoned mines – the primary sources of water pollution in Wales.
- Missed opportunity of cross functional planning of works on rivers and coast.

### 5. Climatic Factors

It is now widely accepted that the world's climate is being affected by the increasing emissions of greenhouse gases into the atmosphere globally. Average mean rainfall in Wales has increased by 2% from the mid-1970's to the mid-2010s. UK wide sea level has risen by around 1.4mm per year since 1901 (16cm to date). The changes in climate that we are already experiencing are projected to continue and intensify. The amount of change will depend strongly upon how successful we are in reducing greenhouse gas emissions globally.

The Climate Change Risk Assessment 3 (CCRA3) summary for Wales identified the following risks, relevant to flood risk, that have a high future magnitude score and where more action is required to address them:

- Increased severity and frequency of flooding on homes, communities and businesses.
- The impact of coastal businesses due to sea level rise, coastal flooding and erosion.

- More frequent flooding and coastal erosion causing damage to our infrastructure services, including energy, transport, water and Information and Communication Technologies (ICT).

Impacts of climate change on the natural environment, including terrestrial, freshwater, coastal and marine species, forests and agriculture.

Historically, groundwater flooding has not been a major issue in Wales, principally because of the nature of Wales' geology. However, with a changing climate, groundwater flooding may become more of a problem in the medium to long term future, probably on a local scale rather than strategic.

In 2021 Welsh Government introduced a suite of regulations that increased Wales' decadal emission reduction targets to 37% by 2025, 63% by 2030 and 89% by 2040, with at least 100% (net zero) by 2050.

#### Environmental Issues relevant to the FRMP

- A primary consideration for the FRMP is the increased pressures that climate change will place on existing flood and coastal erosion management regimes, such as expected increases in rainfall and river flows, sea level rises and increases in storm intensity. FRMP measures will need to plan into the future and promote mitigation, adaptation and resilience.
- Delivery and implementation of FRMP measures must contribute to climate change mitigation by seeking to use innovative, sustainable solutions and materials and use of renewable energy (e.g., in pumping stations) to avoid or reduce carbon emissions. There should be application of the Carbon Calculator tool in capital projects to demonstrate how reductions in carbon are being maximised through options appraisal and design.
- FRMP measures should seek to protect and enhance the existing natural resources of Wales such as peatlands, wetlands, soils, forests, seagrass, saltmarsh and macro-algae that absorb and store carbon, in addition to new habitat creation, to contribute to climate change mitigation.

#### Likely evolution without the FRMP

- The frequency and intensity of rainfall events is predicted to increase with climate change, leading to increased river flows and risk of surface water flooding
- Based upon the emissions scenario that would result in an increase of 4°C globally, Wales is likely to experience summer mean temperature increases of 1.1°C by the 2050's and 2.3°C by the 2080's. There is likely to be a large difference in the patterns of summer and winter rainfall in the future. Increased winter rainfall is expected as a result of increased storminess leading to intense, but short-lived, rainfall events. The projected increases in winter average rainfalls in Wales are 5% by the 2050s, 13% by the 2080s. Most importantly with respect to the FRMP, statistics show historic

increases in the frequency of heavy rainfall events in UK and projected increases for the future.

## 6. Material Infrastructure & Assets

Material infrastructure and assets in the context of this report is limited to those assets relevant to flood and coastal erosion risk management. This considers maintaining Wales essential services such as water related infrastructure including water supply, water treatment works, pumping stations and sewerage treatment works and other types of important infrastructure such as utility stations, hospitals, fire service, ambulance and police stations and transport systems including road and rail.

NRW manages a network of over 500km of flood defences and 4000 assets with a target to maintain 98% of assets in high-risk locations to condition. This network is crucial in protecting property and infrastructure. Flood risk assets include earth embankments, walls, inlets, outlets, hydrometric stations, pumping stations. Properties that benefit from these assets are not removed from risk entirely because flood defences do not remove the chance of flooding as they can be overtopped or fail, but the risk is significantly reduced.

NRW delivers an annual flood risk management capital programme which prioritises investment in the most at risk communities. This aims to sustain and improve existing flood risk infrastructure and can also include new infrastructure. These will be presented in the FRMP as protection measures.

The FRMP sets out measures to manage the flood risk including preventing inappropriate development, building resilience in communities, providing information and warnings of flood events and, where necessary, measures to reduce or manage flood risks.

### Issues relevant to the FRMP

- FRMP measures will emphasise the importance of controlling flood risk by keeping inappropriate development away from the floodplain, and coastal areas identified as being at risk from coastal erosion and/or flooding.
- FRMP measures can improve the resilience of communities and infrastructure, contributing to a sustainable economy through measures to manage and adapt to the risk of flooding and coastal change. Measures associated with preparing for and recovering from flooding will also contribute to resilience.
- Construction of new or improved flooding or coastal infrastructure will use material resources and create waste. Sustainable procurement of materials, construction and waste management practices, taking into account the whole lifecycle of products from purchase to disposal, will help to promote the efficient use of resources and reduce waste.

### Likely evolution without the FRMP

- Projected climate change, sea-level rises and increases in extreme weather events, means that Wales faces significant future flood and erosion risk challenges to material infrastructure and assets located along our coastline. Potential risks to these assets are especially high without intervention and implementation of sustainable management policies.

## 7. Cultural Heritage

The historic environment of Wales is both unique and irreplaceable and contributes greatly to the Welsh sense of identity and culture and is an important economic and social asset. It provides many social, well-being and environmental benefits, including a stimulus for community involvement, learning leisure and recreation activities<sup>6</sup>.

In this context, cultural heritage is defined as below ground and upstanding evidence of past human activity and encompasses artefacts, buried and underwater archaeological sites, earthworks, buildings (including bridges), battlefields, historic gardens, historic landscapes, wrecks, hedgerows and ancient woodland.

There are four UNESCO world Heritage Sites in Wales and over 4000 Scheduled Monuments. There are over 30,000 listed buildings and structures throughout Wales and of these, 12% are located within Flood Zone 3<sup>7</sup>.

The Registered Landscapes of Outstanding or Special Historic Interest in Wales<sup>8</sup>, identified 58 landscapes across Wales which are regarded as representing the best examples of the variety of historic landscapes.

In Wales, there are more than 1,000 listed bridges which need regular maintenance and repair as a result of flood damage and scour. These bridges are essential for local communities and their closure can have devastating effects on local residents and businesses<sup>9</sup>.

The seas around Wales contain a wealth of archaeological sites and remains. Although, all of these have historic value, six currently have legal protection under the Protection of Wrecks Act 1973<sup>10</sup>.

Wales' cultural heritage assets are vulnerable to disturbance from development, land management and the effects of climate change. However, (as a broad indicator) the current figures indicate that after the ninth year of a ten-year programme of inspecting scheduled monuments, 62 per cent of scheduled monuments inspected are in a stable / improved condition and 14 per cent show

<sup>6</sup> Historic Environment and Climate Change in Wales Sector Adaptation Plan (Cadw, 2020)

<sup>7</sup> Historic Environment and Climate Change in Wales Sector Adaptation Plan (Cadw, 2020) [Historic Environment and Climate Change Sector Adaptation Plan \(gov.wales\)](https://gov.wales/government/department/cadw/historic-environment-and-climate-change-sector-adaptation-plan)

<sup>8</sup> Guide to good practice on using the register of landscapes of historic interest in Wales in the planning and development process, Cadw (2007)

<sup>9</sup> Historic Environment and Climate Change in Wales Sector Adaptation Plan (Cadw, 2020)

<sup>10</sup> Designated Historic Assets in Wales. 30.01.20 CADW  
<http://lle.gov.wales/catalogue/item/CADWProtectedWrecks/?lang=en>

deterioration such for them to be categorised as being at risk. The percentage of listed buildings in a stable or improved condition is 75 per cent.<sup>11</sup>

#### Issues relevant to the FRMP

- Heritage assets, many of which lie adjacent to water bodies or lie within flood or coastal zones, present potential constraints to flood and coastal erosion risk management. They may also be at risk from erosion or flooding, or changes in the water table may affect the preservation of archaeological remains in soils. Heritage assets are a fragile resource requiring stringent protection as lost heritage features cannot be recreated.
- Increased awareness of flood risk, improved management and maintenance of these structures, may be able to prevent some damage and loss. But not all archaeological sites can be protected from impacts of coastal change and erosion.
- Measures to re-connect floodplains or undertake managed realignment have the potential to conflict with heritage protection and conservation, although benefits are also possible.

#### Likely evolution without the FRMP

- The influence of climate change may exacerbate problems and risks to heritage assets and features. Rising sea levels from warmer mean temperatures and hotter drier summers, wetter winters with more flooding events, increased ground moisture and precipitation will result in potential loss or damage of historic settlements, impacting on heritage related coastal economy e.g., heritage tourism. Flooding could destabilise and result in the loss of potential coastal archaeology on foreshore or coastal edge and impact on coastal industries and installations or agricultural practices, and place increased pressure, damage and scour to bridges, buildings, and dams.

## 8. Landscape & Seascape

Wales is characterised by a beautiful and rugged landscape, which ranges from the mountains and lakes of Snowdonia, the estuaries of the mid-Wales coast to the beaches and cliffs of Pembrokeshire, and the industrial heritage of the South Wales Valleys. Wales is generally a predominantly pastoral landscape with agriculturally improved grassland being the single most extensive habitat type, followed by semi-improved grassland.

The National Landscapes of Wales comprise three National Parks covering 20% (287,830 ha) of Wales (Brecon Beacons, Snowdonia and Pembrokeshire Coast National Parks) and five Areas of Outstanding Natural Beauty (AONB) (one of which straddles England and Wales (the Wye Valley AONB), covering 65,926 ha. The Brecon Beacons and Snowdonia are also designated as International Dark Sky reserves. In the decade up to 2009 Wales lost 6% of its tranquil area, a size equivalent to the Brecon Beacons National Park.

<sup>11</sup> Well-being of Wales 2018-19 report <https://gov.wales/sites/default/files/statistics-and-research/2019-11/well-being-of-wales-2019.pdf>

Welsh Government in their programme for government (December 2021) are also proposing to designate a new National Park to cover the Clwydian Range and Dee Valley, an area currently designated as an AONB.

Other areas designated for their landscape quality include 495 km of Heritage Coast and 58 landscapes of outstanding/special historic interest. In total, over 52% of Wales is nationally or internationally valued for its scenic quality and character, often recognised as iconic landscapes with a clear sense of place and identity<sup>12</sup>.

The large area of designated landscapes throughout Wales demonstrates their value to people as a cultural service. Many people find beauty, tranquillity or aesthetic value in the landscapes and seascapes of Wales which in-turn promotes social and mental well-being as well as the physical benefits of recreational ways of appreciating such landscapes (such as walking, climbing and cycling).

#### Issues relevant to the FRMP

- A landscape scale, integrated catchment approach to managing natural resources, including flood risk management, will provide opportunities to deliver multiple benefits.
- FRMP measures may have a negative effect upon landscape features through changing the ways our flood and coastal zones look and function. Implementation of NFM has potential to revert floodplains back to their natural states, enabling fluvial and coastal processes to once again naturally shape our aquatic ecosystems.
- New natural habitats can be created and opportunities for new strategic habitat development may exist to strengthen local ecosystem resilience against climate change.

#### Likely evolution without the FRMP

- The environmental consequences of climate change and responses to predicted threats will impact our landscape and seascape. Climate change is likely to have significant direct (e.g. changing land cover) and indirect (e.g. by influencing land use decisions) impacts on landscape character, quality and local distinctiveness.
- Flooding and drought events, more frequent extreme weather, coastal erosion, wildfires, diseases affecting tree cover and changing land cover, habitats and species ranges are examples of how the landscape may change to a greater or lesser degree, in the short or long term.

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<sup>12</sup> SoNaRR 2020

## **4. Significant Effects of the FRMP**

### **4.1 Measures proposed within the FRMP**

The draft FRMP sets out a series of national measures and local measures. The national measures are categorised into 9 flood risk activities as listed below.

- WA1 Management of flood risk assets
- WA2 Reservoir management and regulation
- WA3 Flood forecasting and issuing warnings
- WA4 Hydrometry and Telemetry, Hydrology and Geomorphology
- WA5 Community engagement and resilience
- WA6 Understanding and analysing flood risk
- WA7 Flood risk advice, permitting, compliance and enforcement
- WA8 Responding to flood incidents
- WA9 Strategic planning and oversight of investment

Each of these categories has a number of more specific measures sitting under it. These are listed in the relevant assessment table in Appendix D. The assessment has been undertaken at a topic level to prevent duplication.

Local measures are listed in Place Appendices E-J and whilst the measures are generic, there is a spatial element to them. In order to assess significant effects of the local measures, we have linked them under the relevant national measures, as documented in the Place Appendices. The spatial element of the measures has allowed us to identify opportunities and constraints associated with measures where works on the ground might take place in this FRMP cycle.

### **4.2 Assessment of significant environmental effects of the FRMP**

This section draws together a summary of the assessment (Appendix D) under each environmental receptor to determine the overall significance of effects of the FRMP.

Assessment of significant environmental effects of the draft FRMP are presented in a comprehensive series of completed assessment matrices in Appendix D. Appendix D sets out the assessment of the national measures in a series of tables which group the measures by FRM topic (Tables WA1 to WA9). None of the national measures were scoped out of the assessment. Appendices E-J set out the opportunities and constraints for each of the local (Place) measures.

A judgement is made for each action on whether it is likely to lead to significant environmental effects, adverse or beneficial, and determines the level of significance, with associated colour-coded classification, as follows:



<b>++</b>	Significant positive effect – the proposed measure contributes significantly to the achievement of the SEA objective.
<b>+</b>	Minor positive effect - the proposed measures contribute to the achievement of the SEA objective.
<b>0</b>	Neutral effect - there is no clear relationship between the proposed measure and the achievement of the SEA objective (or it is uncertain and cannot be defined at this stage), or the relationship is negligible.
<b>-</b>	Minor negative effect - the proposed measures detract from the achievement of the SEA objective.
<b>--</b>	Significant negative effect - the proposed measures detract significantly from the achievement of the SEA objective.
<b>+/-</b>	Mixed effect - the proposed measures are likely to have both positive and negative effects

**Table5: Levels of significance**

Assessment of Significant Environmental Effects							
1.Population and Health							
Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA 2&3	WA 4	WA 5&8	WA 6	WA 7	WA 9
To support attractive, resilient and viable communities, maximising peoples physical and mental well-being. (2)	++	++	++	++	++	++	++
<p>All national measures will deliver significant determinants of health (economic, environmental and social factors) protection and benefits in terms of either preventing or protecting people and properties, including more disadvantaged and vulnerable communities, from flood risk, with associated whole community benefits to health and well-being by collaboration, integration and innovation across FRM activities</p> <p>Socio-economic status/deprivation has an influence across the determinants of health as does living in a flood risk area. This knowledge can support risk reduction policies, such as monitoring, maintenance and improvement of FRM assets, Flood forecasting and warning services, and the evidence that underpins them (hydrometry, telemetry, hydrology and geomorphology), and this will benefit health and well-being by ensuring communities, are involved, aware and informed. Tailoring the determinants of health and social vulnerabilities (socio-economic status/deprivation) to communities will support them to be better equipped to consider, prepare and respond to flood events and flood mitigation measures</p>							

Studies have concluded that commissioners and providers of community services and emergency planning need to be alert to the potential for poor mental health outcomes. By engaging with and supporting community volunteers will improve awareness in communities and will ensure greater outreach. Promoting and helping communities to develop flood plans and priorities will improve, awareness of flood risk, disruption and mitigation measures and promote health and well-being along with adaptation to climate change, land use and population increase.

Permitting, compliance, enforcement and planning advice seek to prevent inappropriate development/land use and hence prevent an increase in flood risk. This will ensure that new housing and development is sustainable, adaptable and resilient.

Coastal and inland adaptation plans (including use of nature-based solutions, where appropriate) to address increased flood risk through climate change could result in short term adverse effects on the determinants of health (economic, environment, social factors) where people might need to move away from the flood risk areas there would be short to long term adverse impacts and benefits by reducing flood risk to people, properties and whole communities

#### Mitigation and Opportunities

- Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.
- Integration of project level Health Impact Assessment (HIA) will provide an opportunity to understand a whole community, the social vulnerabilities in order to prioritise and assess the potential direct and indirect impacts on population groups of a specific scheme, community and place.
- FRMP measures should seek opportunities to maintain and enhance the determinants of health (economic, environmental and social factors): Global ecosystems climate stability and biodiversity, natural and built environment, Live, work, learn and play and Resilient communities and lifestyle. For example, equitable access to green and blue environments to enhance opportunities to engage in positive physical and mental health behaviours.
- Actions to reduce and manage flood risk and minimise impact on health and well-being e.g., poor mental health outcomes in vulnerable communities at risk should be linked in with the relevant project level assessments, local Well-being Plan and drawing upon local public health expertise, where appropriate.
- Adaptation plans will be developed collaboratively with RMA's and local communities.

## 2. Biodiversity, Flora and Fauna

	FRM Topics						
Receptor Objective & Well-being objectives	WA1	WA 2&3	WA4	WA5 &8	WA6	WA7	WA9

To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)

+/-	0	0	0	0	0	+/-
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The monitoring, maintenance and improvement of FRM assets and the development of new assets have the potential for adverse effects depending on the nature, scale and location of the activities proposed, therefore there is uncertainty over significance of the effects.

The FRMP promotes nature-based solutions but traditional FRM measures are still likely to be required in some locations. These might involve hard-engineered defences, which can result in reduction / fragmentation / reduction in quality of valuable habitat/ introduction of INNS along river corridors and in the coastal zone.

The FRMP encourages interventions that utilise nature-based solutions including hybrid options, that help to build ecosystem resilience and result in beneficial effects on biodiversity.

The FRMP seeks to restore hydromorphological processes in HMWB due to historic flood and coastal protection activities. The Place Appendices have identified where opportunities might be realised where priority communities for FRMP overlap with HMWB. WFD compliance assessment would be required on any future schemes or activities.

The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This will result in mixed effects. Where coastal communities must be protected from flooding, defences can result in coastal squeeze and the loss of intertidal habitats. However, the FRMP draws on the SMP policies, the HRA of which established the commitment to enable NHCP to deliver compensatory habitat where required. The promotion of nature-based solutions has potential beneficial effects on biodiversity, flora and fauna.

The FRMP supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon the habitats and species that are present. Intertidal habitats and species might benefit but freshwater habitats and species might be lost through saline intrusion and changes in coastal processes.

The FRMP aims to influence SFS and UK Forestry Standard for the benefit of flood risk and this could have indirect benefits on biodiversity, flora and fauna, by encouraging management practice that reduces run-off and retains more water for the benefit of ecosystems

The draft HRA of the FRMP screened out 49 of the 58 national measures and 199 of the 266 local measures as having no likely significant effect on National Site Network Sites. This conclusion has been made on the basis that any coastal projects will be undertaken under the SMP2 policy and HRA. The SMP2s remain as plans in their own right and where applicable and appropriate, certain sea flooding actions have been brought forward into the FRMP to provide a complete picture for a community of the measures that we propose to take to manage flood risk.

The remaining 9 national measures, and 66 local measures were taken forward for appropriate assessment (AA). This approach was taken on a precautionary basis in light of case law and the uncertainty of effects of certain measures of the FRMP.

The AA concluded that the criteria for deferring down the draft HRA to lower tier plans, programmes and projects were met and we are confident that they can be delivered without causing adverse effects on site integrity. Therefore, we propose deferring down the draft HRA to lower tier plans and projects for these measures. We will consult NRW and Natural England as Appropriate Nature Conservation Bodies on the draft HRA. Their comments will be taken into account along with any changes made to the FRMP through the consultation process. The final HRA will be published alongside the adopted FRMP.

#### Mitigation and Opportunities

- Integration of project level environmental assessment (OGN 87), HRA (OGN 200) and WFD Compliance (OGN72) with options identification, appraisal and selection will ensure any adverse impacts are avoided, reduced or mitigated.
- Opportunity to work with natural processes to manage flood risk and enhance biodiversity and ecosystem resilience through habitat creation, green engineering and natural management techniques, in line with Section 6 duty and resilience of ecosystems duty
- Seek to restore NSN site features where possible by delivering actions from Prioritised Improvement Plans.
- FRMP measures should seek to develop resilient ecological networks include securing riparian buffer strips. This will provide important corridors for wildlife, increasing connectivity, as well as providing a physical barrier to slow water run-off and reduce riverbank erosion.
- Seek to deliver wider benefits through our approaches to annual maintenance programmes, e.g. Amending mowing regimes, seeding flood embankments with high pollinator species,
- The NHCP provides a cost-effective means of offsetting overall impacts of FCERM on coastal habitats, where it is not possible to fully mitigate effects locally
- Potential to contribute to improving ecological status of water bodies by identifying synergies between FCERM solutions and WFD measures.

- The Place Appendices have identified where there might be potential opportunities to work with the River Restoration Programme and fish pass/habitat improvement projects.

### 3. Land Use, Geology, Soil & Contaminated Land

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA 2&3	WA4	WA 5&8	WA6	WA7	WA9
To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)	+/-	0	0	0	0	0	+/-

The monitoring, maintenance and improvement of FRM assets and the development of new assets has the potential to effect land use and land management practices and it cannot be predicted at this scale whether this would be beneficial or adverse. Projects delivered under the FRMP would consider land use, geology, soil and contaminated land effects in the options appraisal and would seek to minimise, avoid or mitigate any negative effects. Coastal projects would adhere to SMP2 policy and consider coastal adaptation in the options appraisal.

The FRMP promotes nature-based solutions which would result in land and soil protection, and a reduced risk of diffuse pollution from the transport of contaminants mobilised into watercourses. Where such measures are implemented, this will result in a significant beneficial effect on soil and contaminated land.

The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects on this receptor. Whilst this measure supports coastal adaptation, it might result in change of land use and land management with resulting effects on soil and geomorphology. The FRMP includes a commitment to enable NHCP to deliver compensatory habitat where required. The promotion of nature-based solutions has potential beneficial effects on this receptor.

The FRMP supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon the land use, geology, soil and contaminated land in the area.

The FRMP seeks to influence SFS and UK forestry standards for the benefit of flood risk and this would have benefits on soil and land management. Measures to reduce run-off would protect soil from erosion and maintain moisture, preventing desiccation at hotter times of year.

## Mitigation and Opportunities

- Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.
- Influencing SFS and forestry practice provides an opportunity to sustainably manage land and soil to deliver FRM benefits. This will improve water retention and soil structure.
- Potential to implement NFM techniques that deliver FCERM solutions with wider environmental benefits, such as reducing or slowing runoff that subsequently reduces both soil erosion and diffuse pollution.
- Seek opportunities to plant trees through FRMP measures to contribute to WG planting target.
- Influence location of tree planting to maximise benefit to FRM
- Seek to deliver multiple benefits through the management of land and assets under our control
- FRMP measures should seek to maintain and enhance geological and geomorphological sites and geodiversity where appropriate.
- FRMP measures should support coastal adaptation in line with SMP policies, which may involve working with land managers at the coast to enable transition of land use.
- Measures should be taken through the FRMP to protect and enhance high quality agricultural soils and recognise them as a finite resource.
- FRMP measures should consider opportunities and constraints associated with existing and historic contaminated land. Where we are undertaking work on the ground measures to contain or remediate contaminated land should be considered.

## 4. Water Resources & Quality

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA2&3	WA4	WA5&8	WA6	WA7	WA9
To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)	+/-	0	+	0	0	0	+/-

Measures to monitor, maintain, improve and develop new assets are likely to result in positive benefits on fresh and coastal water quality status, by restricting contaminant transport into local watercourses and prevention of saline intrusion to freshwater areas.

Dependent on the nature of proposed solutions, the natural hydromorphological functions could be impacted, resulting in negative effects. However, the FRMP promotes restoration of hydromorphological processes.

FRMP measures to maintain and operate hydrometry, geomorphology, hydrology and telemetry services across NRW is fundamental in water resource management as well as in FRM.

The FRMP promotes collaborative working through Area Statements and Opportunity Catchments. The latter being priority catchment improvements to benefit, amongst other things, the WFD status of 10 catchments across Wales. The Place Appendices identify locations where FRMP priorities are planned in Opportunity Catchments or RRP priority areas.

The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects. In places coastal defences protect freshwater habitat. But the presence of defences can affect the WFD status of coastal and estuarine waterbodies. This can be mitigated by the promotion of nature-based solutions.

The FRMP supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon the water resources present. Freshwater might be affected by saline intrusion.

The FRMP seeks to influence SFS and UK forestry standards for the benefit of flood risk. This could have indirect benefits on water quality and resources, by encouraging management practice that reduces run-off and retains more water, resulting in a reduction in diffuse pollution.

#### Mitigation and Opportunities

- Project level environmental assessment (OGN 87) and WFD Compliance Assessment (OGN72) will ensure any adverse impacts are avoided, reduced or mitigated.
- FRMP measures should seek to deliver mitigation measures where they occur in Heavily Modified Waterbodies.
- Seek to maximise opportunity to work with natural catchment processes for hydrological improvements by implementation of innovative alternatives to traditional grey engineered defences.
- At the coast, where the SMP policy is hold the line in the longer term, there is an opportunity to improve assets to incorporate a range of NFM solutions, including the addition of eco-enhancements to hard structures, the use of hybrid approaches (such as polders/saltmarsh creation in conjunction with harder defences) or softer approaches such as beach nourishment or shingle management.
- Seek to maximise opportunities in delivery by working with the LIFE programmes and River Restoration Programme.

## 5. Climatic Factors

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA2&3	WA4	WA5&8	WA6	WA7	WA9
To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)	++	++	++	++	++	++	++
<p>The monitoring, maintenance and improvement of FRM assets and the development of new assets will result in significant benefit to climate change adaptation and resilience in communities across Wales.</p> <p>Improving and operating flood forecasting and warning service will significantly contribute to the achievement of this objective by improving awareness of flood risk now and in the future and consequently encouraging adaptation.</p> <p>The FRMP aims to maintain, operate and improve hydrometry, telemetry, hydrology and geomorphology to provide evidence internally and externally. This provides evidence to inform FRM, from flood warning, and forecasting through to capital project design. These measures are fundamental in delivering significant benefits in terms of climate change resilience and adaptation.</p> <p>Improvement to community engagement, resilience and NRW flood incident response will contribute to the achievement of this objective by improving awareness of flood risk now and in the future and consequently encouraging adaptation.</p> <p>Understanding, analysing and communicating flood risk and applying that evidence through permitting and planning advice will significantly contribute to this objective by improving awareness and encouraging adaptation to climate change.</p> <p>The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This will allow climate change adaptation in line with SMP policies.</p> <p>The FRMP promotes nature-based solutions and sustainability which will protect and enhance existing ecosystems, build natural resilience and create new habitats. Habitat improvement and creation has the potential for beneficial climate mitigation effects e.g., creation of wetlands and carbon sequestration.</p> <p>Traditional hard engineering has the potential for negative effects with respect to mitigating climate change due to the carbon footprint associated with designs and materials.</p>							
Mitigation and Opportunities							



- Adopt solutions that work with natural processes such as NFM, wetland creation, woodland planting, can provide carbon sequestration, hence contributing to mitigating climate change whilst also benefit natural systems in adapting to effects of climate change.
- Delivery and implementation of FRMP measures must contribute to climate change mitigation by seeking to use innovative, sustainable solutions and materials and use of renewable energy (e.g., in pumping stations) to avoid or reduce carbon emissions. There should be application of the Carbon Calculator tool in capital projects to demonstrate how reductions in carbon are being maximised through options appraisal and design.
- FRMP measures should seek to protect and enhance the existing natural resources of Wales such as peatlands, wetlands, soils, forests, seagrass, saltmarsh and macro-algae that absorb and store carbon, in addition to new habitat creation, to contribute to climate change mitigation.
- Adaptation plans will be developed collaboratively with RMA's and local communities.
- Coastal adaptation projects and NHCP should be designed to have net carbon benefit by developing habitat that sequesters carbon and minimising use of materials that use carbon in their manufacture.

## 6. Material infrastructure & Assets

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA 2&3	WA4	WA 5&8	WA6	WA7	WA9
To promote sustainable management and resilience of existing material assets and infrastructure. (2)	++	++	++	+	++	++	++

The monitoring, maintenance and improvement of FRM assets and the development of new assets will reduce the flood risk to existing important material assets and infrastructure and has the potential to significantly benefit local communities and national interests.

Coastal adaptation and coastal infrastructure projects could have positive or negative effects on coastal infrastructure, including highways, rail and the Wales Coast Path (WCP) or National Cycle Network (NCN). In order to adapt, rerouting might be required where managed realignment is necessary. Mitigation would be considered at a project level.

Improving and operating flood forecasting and warning service will significantly contribute to the achievement of this objective by allowing operators and owners of material assets and infrastructure to prepare and respond to flood events, promoting resilience to climate change.

FRMP measures to deliver permitting, compliance, enforcement and planning advice seek to prevent inappropriate development and hence prevent an increase in flood risk. This will ensure that new housing, infrastructure and material assets are sustainable, adaptable and resilient now and in the future.

#### Mitigation and Opportunities

- Project level environmental assessment (OGN 87) will ensure any adverse impacts are avoided, reduced or mitigated.
- Construction of new or improved flooding or coastal infrastructure will use material resources and create waste. Sustainable procurement of materials, construction and waste management practices, taking into account the whole lifecycle of products from purchase to disposal, will help to promote the efficient use of resources and reduce waste.
- Opportunities to enhance assets to provide multiuser access.

## 7. Cultural Heritage

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA 2&3	WA4	WA 5&8	WA6	WA7	WA9
To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)	0	+	0	0	0	0	+/-

The monitoring, maintenance and improvement of FRM assets and the development of new assets will reduce the flood risk to heritage assets within communities. There could be potential negative effects where heritage assets are not in areas prioritised for investment. Areas of cultural importance may be at risk dependent on the type and location of flood and coastal infrastructure proposed.

Projects to improve or construct new FRM assets can have adverse effects on the historic environment, either in terms of known historic monuments or listed buildings (e.g., bridges and weirs) or in terms of unknown archaeology.

Approaches that work with natural processes may help to manage flood risk in a way that is less damaging to the historic environment.

Improving and operating flood forecasting and warning service will contribute to the achievement of this objective by allowing operators and owners of historic and cultural assets to prepare and respond to flood events, promoting resilience to climate change.

The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This will

reduce the flood risk to heritage assets within communities. Potential negative effects where heritage assets are not in areas prioritised for investment, or where coastal or inland adaptation is required.

#### Mitigation and Opportunities

- Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.
- At initial assessment stage of projects it is standard practice to seek screening advice from the relevant Welsh Archaeological Trust under the [Memorandum of Understanding](#). The WAT will scrutinise the Historic Environment Register and provide advice on the sensitivity of the study area for cultural heritage. This is done very early in the project to ensure the project can be appraised and designed to avoid impact on the historic environment.
- Prioritising FCERM actions should provide the benefit of helping to prioritise important heritage sites at risk from flooding and erosion for recording before they are lost.

## 8. Landscape & Seascape

Receptor Objective & Well-being objectives	FRM Topics						
	WA1	WA 2&3	WA4	WA 5&8	WA6	WA7	WA9
To maintain and enhance Wales' landscape and seascape character. (1,2)	0	0	0	0	0	0	+/-

The monitoring, maintenance and improvement of FRM assets and the development of new assets have the potential for adverse effects, dependent upon the nature and design of solutions proposed, therefore uncertainty over significance of effects.

Beneficial landscape effects are to be gained from prioritising investment into nature-based solutions that are sensitive to the environment, and that deliver wide-reaching landscape benefits on both a regional and national scale.

The FRMP supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects. Where coastal communities must be protected from flooding, defences can adversely affect landscape and seascape. However, the measure includes the promotion of nature-based solutions which can mitigate effects.

The FRMP seeks to influence SFS and UK forestry standards for the benefit of flood risk could have indirect benefits on landscape by promoting less intensive methods.

#### Mitigation and Opportunities

- Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.
- The promotion of nature-based solutions by the FRMP, has the potential to deliver positive effects on the landscape and seascape of Wales.
- Promoting solutions that work with natural processes, minimising damage to the environment and seeking to provide environmental benefits are all consistent with minimising adverse effects on the landscape.
- Where the use of hard engineering is unavoidable, innovative solutions and sympathetic design should be used to deliver designs that are sensitive to landscape character.

### 4.3 Cumulative effects of the FRMP with other policies, plans and programmes

This Section considers the cumulative and synergistic effects of the FRMP, considering its interaction with other policies, plans, programmes and legislation, and demonstrating performance under NRW well-being objectives and Natural Resources Policy. The relationship of the FRMP to some of these is discussed in the assessment above and therefore this section only identifies additional cumulative effects:

- The FRMP has been assessed as having a significant beneficial effect on the country's ability to adapt to **climate change**. This supports and will enhance wider policy initiatives to adapt to the impacts of climate change.
- The FRMP promotes and therefore complements the three priorities of the **Natural Resources Policy**. The need to demonstrate consideration of nature-based solutions and resource efficiency in our strategies and projects and justify where hard engineering options are the only technically and economically viable option, sets the framework for delivery of the NRP for the FRMP in Wales. The strong focus on working collaboratively with other RMA's and with local communities also reflects the place-based approach. The Place based approach is also reflected in the Place chapters of the FRMP. The FRMP also encourages cross policy work to ensure NFM is considered in wider land and water management, including agriculture and forestry management.
- NRW well-being objectives are our commitment to delivering the well-being goals. The assessment has demonstrated where the FRMP can contribute to these objectives.
- **Shoreline Management Plans (SMP)**, the second generation of which were adopted in Wales in 2013, set out the priorities and the strategic direction for all flood and coastal erosion risk management on the coast. They were developed according to areas of coastline within a littoral sediment cell. The SMP2s remain as plans in their own right and where applicable and appropriate, certain sea flooding actions have been brought forward into the

FRMP to provide a complete picture for a community of the measures that we propose to take to manage flood risk.

- The **English Severn FRMP and the English Dee FRMP** were produced by the Environment Agency and were adopted in December 2022. As with the Wales FRMP, they are high-level planning tools that set out objectives for flood risk management across each river catchment and estuary. The FRMPs are designed to set the overall direction of flood risk management, prioritised depending upon risk to communities. They identify broad flood risk management policies that are economically practical, have a potential life of 50 to 100 years, and help the EA to work with others to put them in place. Given that the FRMPs are rooted in UK legislation, the approach taken by NRW and the EA are very similar. Nationally the primary focus of English FRMPs is on areas that have been designated as being at particular risk of flooding from either rivers and sea or surface water (Flood Risk Areas).
- **English Dee FRMP** - There are no Flood Risk Areas within the English part of the Dee RBD. The Lache FRA is located in North Wales close to the English border in the shared river catchment of the Balderton Brook and wider River Dee. The Environment Agency work together with Natural Resources Wales to manage flood risk in this area.
- **English Severn FRMP**– There are 10 FRA's within the English part of the Severn RBD. Five of these are as a result of flood risk from rivers and sea (Weston Super Mare, Bath, Bristol, Gloucester, Henley in Arden and Burnham on Sea). Five of these are as a result of surface water flood risk (Bristol, Cheltenham, Coventry, Redditch and Wolverhampton). Some of these locations are at risk from tidal flooding (eg Bristol) and so there could be implications for the Severn Estuary NSN sites. However, all projects will be delivered in line with the Severn Estuary SMP2 and the relevant National FRM strategy and so there are not anticipated to be any cumulative effects.

- **Third Cycle River Basin Management Plans – Severn, Western Wales, Dee**

The third cycle Western Wales RBMP and Dee RBMP were adopted in July 2022 and the third cycle Severn RBMP was adopted in December 2022. The RBMP3 includes complementary national measures with the FRMP national measures and so cumulative effects are not anticipated. However, there can be positive effects in delivering projects that contribute to the objectives of both plans. RBMP3 measures relevant to the FRMP include:

- CYM5 - In waterbodies designated as heavily modified due to flood and coastal protection, mitigation for NRW owned assets and activities will be reviewed and delivered on a prioritised basis.
- WAL15 - All new flood alleviation schemes will integrate the principles of SMNR as required by the Environment (Wales) Act 2016 to deliver sustainable schemes which maintain and where possible improve ecological status or potential. Integrate, where appropriate natural flood management options in the delivery of flood risk management.
- WAL16 - Maintenance, repair and improvements to flood risk systems will be delivered sensitively, sustainably and will seek to deliver environmental and social benefits.

- WAL17 - Support Wales to have a coastline that is sustainable and resilient to climate change. Plan for coastal adaptation in line with Shoreline Management Plan policy for coastal defence management. Enable the National Habitat Creation Programme to deliver compensatory intertidal habitat where required. Integrate, where appropriate, nature-based solutions into the delivery of coastal defence schemes
- The **Welsh National Marine Plan** was published in November 2019. The plan provides policy guidance and spatial planning for the inshore and offshore marine areas. The inshore, coastal areas are considered relevant in relation to cumulative effects within the FRMP. The aim of the WNMP is: “To support the sustainable development of the Welsh Marine area by contributing across Wales’ well-being goals. Ensuring the SMNR by taking account of the cumulative effects of all uses of the marine environment”. The Sustainability Appraisal undertaken for the WNMP tested the emerging policies to ensure they support the policies and actions of SMPs. The WNMP is composed of cross-cutting safeguarding policies and sector specific policies, the former includes a policy stating that “Proposals should demonstrate how they are resilient to coastal change and flooding over their lifetime”. The implementation of the marine plan will promote a more considered approach to marine spatial planning, allowing cumulative effects to be determined for plans and projects affecting the coastal environment. The FRMP and WNMP are therefore complementary and will work towards the same goals for coastal management.
- The **Marine Area Statement**, developed by NRW alongside the 6 Place Area Statements, covers the inshore waters extending out to 12 nautical miles. They consider the resources the marine environment provides such as food, construction materials, renewable energy and a means of global trade, as well as the value of marine and coastal habitats and the value of the coastline to the communities of and visitors to Wales. There is overlap with the six Place Area Statements and whilst the local measures have been considered under the six terrestrial Places, there is obviously important links to be made with the Marine Area Statement where measures are coastal or estuarine. The marine environment can provide a source of clean, renewable energy, helping us to mitigate climate change. The threat of increased storms and rising sea levels mean we need to adapt to a changing coastline. The marine areas statement themes are:
  - Building resilience of marine ecosystems
  - Nature-based solutions and adaptation at the coast
  - Making the most of marine planning.

The AS recognises and promotes the need to adapt to climate change, in particular at the coast, this will result in rising sea levels and increased storm events. The FRMP measures (WA9.7, WA9.8 and WA9.9) align with the Marine AS as they support adaptation in line with SMP policy, supports NHCP as the compensatory mechanism to allow continued flood risk management of coastal communities and promotes the use of nature-based systems in coastal defence schemes.

- In **Sustainable Farming and Our Land (2019)** and the **Agriculture (Wales) White paper (2020)** Welsh Government set out how the principles of Sustainable Land Management will provide the long term framework for future agricultural policy and support. This holistic approach seeks to deliver economic, environmental and social outcomes from land management practice in Wales. The **Agriculture (Wales) Bill** is due to be introduced in the second year of the government's legislative programme (22/23). The **Sustainable Farming Scheme** is still under development and so cannot be considered in the strategic context review undertaken for this SEA. However, one of the outcomes for the SFS is to mitigate flood and drought risk. Encouraging farms to prepare for periods of low or high rainfall, reducing the risks to the farm and communities from flooding, drought and coastal erosion. The document highlights proposed actions such as restoring semi-natural peatland, creating new and managing existing agro-forestry and woodland, managing habitats and species, conserving and retaining water and natural flood management. These all have potential benefits for FRM and national measure WA9.10 "Influence and develop mechanisms to further implement nature-based solutions in response to flood risk, including FRM's advice to the Sustainable Farming Scheme and improvements to UK Forestry Standards" will help to maximise outcomes for FRM through the SFS.
- **Future Wales: The National Plan 2040.** Future Wales is Welsh Government's national development framework which was adopted in February 2021. It sets the long-term spatial direction for Government policy, action and investment and for others who the Government work with. The vision is to help deliver sustainable places by supporting positive placemaking and ensuring that our spatial choices direct development to the right places, make the best use of resources, create and sustain accessible, healthy communities, protect our environment and support prosperity for all. The framework sets out 11 outcomes that the Government aim to achieve in its 20-year life. This includes "the environmental, social and cultural value of our natural resources will be managed, maintained and enhanced, while economic benefits will be utilised sustainably and appropriately by promoting nature-based solutions and a circular economy. Across Wales better resource choices will be reflected in more sustainable places, which benefit from reductions in levels of pollution, and be healthier and more liveable."

Policy 8 of Future Wales is on flooding. It states: "FRM that enables and supports sustainable strategic growth and regeneration in national and regional growth Areas will be supported. The WG will work with Flood RMA and developers to plan and invest in new and improved infrastructure, promoting nature-based solutions as a priority. Opportunities for multiple social, economic and environmental benefits must be maximised when investing in flood risk management infrastructure. It must be ensured that projects do not have adverse impacts on international and national statutory

designated sites for nature conservation and the feature for which they have been designated.”

#### **4.4 Additional environmental mitigation and opportunities**

This assessment has identified the significant effects on the wider environment likely to occur as a result of implementation of the FRMP. The assessment process also identified opportunities to enhance the beneficial effects and mitigate any adverse significant environmental effects of actions proposed in the FRMP.

A number of these opportunities are incorporated directly within the proposed actions within the FRMP. For example, the national measure WA1.10 “We will ensure that all new flood alleviation schemes will integrate the principles of SMNR (Sustainable Management of Natural Resources) as required by the Environment (Wales) Act 2016 to deliver sustainable schemes which maintain and where possible improve ecological status or potential”. Additional safeguards exist to ensure that the environmental implications are addressed in related decision-making processes:

- Project level environmental assessment is undertaken on all FRM activities under OGN 86 and 87.
- Habitats Regulations Assessments are undertaken to determine whether a proposed, plan, strategy or project is likely to adversely affect the integrity of a NSN site. (OGN 200)
- Water Framework Directive compliance assessments are undertaken to ensure compliance with WFD objectives. (OGN72)



## 5. Monitoring the effects of the FRMP

### 5.1 Outline of proposed monitoring for significant environmental effects

Once the draft FRMP is finalised and adopted, Article 10(1) of the Strategic Environmental Assessment Regulations require its significant environmental effects to be monitored. This section presents an outline of the actions we expect to undertake in relation to monitoring the significant environmental effects of the FRMP.

**Table 6: Proposed monitoring of the effects of the FRMP**

Environmental Receptors	Proposed monitoring
Population and human health / Material Assets	<p>NRW is required to report to the Welsh Government an annual update of the number of properties at different levels of flood risk on an annual basis.</p> <p><i>Recommendation to collate information on the access and recreational improvements delivered through FCERM activities.</i></p>
Biodiversity, Flora and Fauna	<p>A monitoring programme supports and informs the NHCP. Annual reporting will seek to demonstrate that the extent and type of compensatory habitat delivered keeps pace with predicted losses. This will allow RMA's to continue to defend coastal communities at risk.</p> <p>The number of NFM and hybrid schemes undertaken will be reported to Welsh Government annually through grant reporting and reported to Welsh Ministers by NRW through Section 18 Reports.</p> <p><i>Recommendation to collate information on enhancements delivered that contribute to the NRP priorities and the Section 6 - Biodiversity and ecosystem resilience duty</i></p>
Water	<p>Monitoring is undertaken to determine progress towards meeting WFD objectives for water body status, including ecological status. This is reported every 5 years in the RBMPs. In coastal waters, the monitoring programme undertaken for the Marine Strategy Framework Directive (MSFD) applies to those aspects of Good Environmental Status which are not already covered by WFD (e.g. noise, litter, aspects of biodiversity).</p>
Climatic factors	<p>As one of the purposes of FCERM is to enable adaptation to the effects of climate change, evidence such as the Flood Risk Assessment Wales maps, annual topographic surveys by the Wales Coastal Monitoring Centre and the National Asset Database will allow NRW to monitor adaptation to climate change.</p> <p><i>Recommendation to utilise the Carbon Calculator through projects delivery to raise the profile of resource efficiency and contribute to climate change mitigation.</i></p>
Cultural Heritage	<p><i>Recommendation to collate information where FCERM activities have benefitted the historic environment.</i></p>

The proposals for monitoring the effects of the FRMP will be developed further in the preparation of the final FRMP and will be published in the Statement of Environmental Particulars, alongside the adopted FRMP.

## **5.2 Future strategic environmental assessment activities**

This environmental report concludes the main stage of the Strategic Environmental Assessment process for the FRMP. A Strategic Environmental Assessment 'Statement of Particulars' will be published alongside the adopted FRMP, explaining how consultation responses and the findings of this environmental report have influenced the plan-making process and how monitoring requirements have been finalised. Table 6 sets out monitoring that can be used to be taken into consideration in future reviews of the FRMP.

## Appendix A: Plans, Policies and Programmes reviewed for the SEA

Receptor	Scale	Plans, Programmes and Policies	Common Themes
<p align="center"><b>Biodiversity, Flora &amp; Fauna</b></p>	<p align="center"><b>International</b></p>	Rio Convention 1992	<p>Protection and enhancement of important habitats and species, both from a statutory basis (International and National conservation designations and protected species) and through policy objectives, such as for healthy functioning ecosystems and for BAP habitat creation. State of Nature Report highlights agricultural management, climate change, hydrological change, urbanisation, pollution, woodland management and invasive non-native species as among the most significant of pressures acting upon terrestrial and freshwater wildlife. At sea, climate change and fishing are having the most significant impact upon marine biodiversity</p> <p>Protect international/national protected wildlife areas (including Special Areas of Conservation, Special Protection Areas and Ramsar sites).</p> <p>Protect Wales' nationally designated nature conservation sites.</p> <p>Reverse the decline of Wales' biodiversity.</p> <p>Maintain and enhance Wales' biodiversity (habitats, species and ecosystems). Identify opportunities for green infrastructure provision.</p> <p>Create an ecological network that is resilient to changing pressures.</p> <p>Improve the quality and connectivity of</p>
		Bern Convention 1979	
		Bonn Convention 1975	
		Ramsar Convention 1971	
		Convention of Biological Diversity: Strategic Plan for Biodiversity 2011-2020 (under review)	
	<p align="center"><b>United Kingdom</b></p>	Marine and Coastal Access Act 2009	
		Natural Environment and Rural Communities Act 2006	
		Wildlife and Countryside Act 1981 (as amended)	
		Countryside and Rights of Way Act 2000	
		Salmon and Freshwater Fisheries Act 1975	
		UK Forestry Standard 2017 (review due by end of 2022)	
		The Eels (England and Wales) Regulations 2009	
		Conservation of Habitats and Species Regulations 2017	
		Protection of Badgers Act (1992)	
		State of Nature Report (2019)	
		Offshore Marine Conservation (Natural Habitats, &c.)	
		The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017	
		UK Biodiversity Indicators 2021 revised	
		The UK National Ecosystem Assessment 2011 & 2014	
	<p align="center"><b>Wales</b></p>	Future Wales: the national plan 2040 (2021)	
		The Environment (Wales) Act 2016	
Well-being of Future Generations (Wales) Act 2015			

		<p>The Welsh National Marine Plan 2019</p> <p>Planning Policy Wales (Edition 11) 2021</p> <p>Welsh Government Natural Resources Policy 2017 (next revision due 2022)</p> <p>Nature Recovery Action Plan: Our strategy for nature 2015</p> <p>Nature Recovery Action Plan for Wales 2020-21</p> <p>The State of Natural Resources Report 2020</p> <p>Vital Nature: making the connections between biodiversity and the people and places of Wales 2018-2022</p> <p>TAN 5: Nature Conservation and Planning 2009</p> <p>Defra (Various) Eel Management Plans</p> <p>Woodland for Wales Strategy 2009</p> <p>The Action Plan for Pollinators in Wales 2013</p> <p>Natural Resources Wales (various) Salmon Action Plans</p>	<p>Wales' habitats.</p> <p>The need to improve the resilience of ecosystems by taking into account their diversity, connectivity, extent, condition and their adaptability.</p> <ul style="list-style-type: none"> <li>• The need to improve the quality and connectivity of Wales' habitats including priority habitats.</li> <li>• The need to reverse the decline in Wales' biodiversity.</li> <li>• The need to protect and support the appropriate management and use of designated nature conservation sites.</li> <li>• The need to sustainably manage biodiversity assets, taking into account the effects of climate change.</li> <li>• The need to encourage green infrastructure provision.</li> </ul>
<p><b>Population &amp; Human Health</b></p>	<p><b>Regional / Local</b></p>	<p>Area Statements (2019)</p> <p>Local Biodiversity Action Plans (LBAPs), including Species and Habitats Action Plans (various)</p>	<p>Population and life expectancy is rising, but healthy life expectancy is not. The COVID-19 pandemic has amplified existing inequalities particularly for the most vulnerable.</p> <p>Population is aging. Emphasis on prevention and investing in improving health through the life course.</p> <p>Approximately one fifth of the Welsh population live in poverty and there are significant differences in 'healthy' life expectancy between the most and least deprived. Focus on reducing health inequalities and preventing inequalities of outcome caused by socio-economic disadvantage.</p>
	<p><b>International</b></p>	<p>Aarhus Convention 1998</p> <p>Children's Environment and Health Action Plan for Europe 2004 (WHO)</p> <p>Health 2020. A European policy framework and strategy for the 21st century (2013)</p> <p>World Health Organisation Global Strategy on Health, Environment and Climate Change (2020)</p> <p>Guidelines for Community Noise 1999 (WHO)</p> <p>The global action plan on physical activity 2018 - 2030</p>	
	<p><b>United Kingdom</b></p>	<p>National Parks and Access to the Countryside Act 1949</p> <p>Equality Act 2010</p>	
	<p><b>Wales</b></p>	<p>Public Health (Wales) Act 2017</p> <p>Active Travel (Wales) Act 2013</p>	

Active Travel Act guidance (2021)	<p>Consideration of the Wider Determinants of Health, lifestyle &amp; behaviours are influenced and driven by the environment around us &amp; our ability to make change. Creation of healthy and active environments with strong access to good quality green/blue open spaces, green networks and recreational spaces (including river and coastal areas). Apply Wellbeing of Future Generations Act five ways of working to enable and empower.</p> <p>Regulation, mitigation and collaboration between environment and &amp; health sectors is crucial to protect human health from the environmental risks and hazards, such as air, noise and water pollution.</p> <p>Climate change impacts to health: increasing high temperatures; disruption to the delivery of health and social care services due to a greater frequency of extreme weather; risk to health and life from greater frequency of extreme weather, flood and fires; wider impacts internationally may affect the UK, such as risks to food availability and to public health through increase to vector born diseases. Build resilient communities to respond proactively to new or adverse situations, to prepare for environmental change and deal better with crisis and hardship.</p>
Well-being of Future Generations Act (Wales) 2015	
Social Services and Well-being (Wales) Act 2014	
Welsh Language (Wales) Measure 2011	
Welsh Language Standards 2016	
Welcome to Wales: Priorities for the visitor economy (2020-2025)	
Future Wales: the national plan 2040 (2021)	
Planning Policy Wales (Edition 11) 2021	
Welsh Government Natural Resources Policy 2017 (under review)	
The State of Natural Resources Report 2020 - Aim 3	
A Noise and Soundscape Action Plan for Wales 2018 – 2023 (2018)	
Child Poverty Strategy for Wales (2015)	
TAN 6: Planning for Sustainable Rural Communities 2010	
TAN 11: Noise 1997	
TAN 13: Tourism 1997	
TAN 15 Development and Flood Risk	
TAN 16: Sport, Recreation and Open Space 2009	
TAN 23: Economic Development 2014	
A Healthier Wales: our plan for health and social care 2021	
Cymraeg 2050 – A Million Welsh Speakers	
Cymraeg 2050: our plan for 2021-2026	
Prosperity for All: economic action plan 2017	
Wales Infrastructure Investment Plan for Growth and Jobs: Project Pipeline 2021	
Learner Travel Statutory provision and operational guidance (2014)	
Age Friendly Wales: our strategy for an ageing society (2021)	
Evidence for the third UK Climate Change Risk Assessment (CCRA3): Summary for Wales	
Health Weight: Healthy Wales 2020	
Future Trends: 2021	

	<b>Regional / Local</b>	Local Wellbeing Plans (Various) Regional Population Assessments (various) Area Statements Local Planning Authority Local Plans (various)	
<b>Land use, Geology &amp; Soil</b>	<b>United Kingdom</b>	Environmental Permitting Regulations (England and Wales) 2016	<ul style="list-style-type: none"> <li>• Promote sustainable patterns of land use.</li> <li>• Conserve and enhance soil quality.</li> <li>• Sustainably manage Wales’ woodlands. <ul style="list-style-type: none"> <li>• Conserve Wales’ geodiversity.</li> <li>• Manage impacts on soil resources.</li> </ul> </li> <li>• Preserve, where possible, the best and most versatile agricultural land. <ul style="list-style-type: none"> <li>• Encourage the use of previously developed land.</li> </ul> </li> </ul>
		Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009	
		UK Geodiversity Action Plan 2011	
		Wildlife and Countryside Act 1981 (as amended)	
	<b>Wales</b>	Contaminated Land (Wales) Regulations 2006 (as amended)	
		Future Wales: the national plan 2040 (2021)	
		Planning Policy Wales (Edition 11) 2021	
		Agriculture (Wales) Bill	
		Sustainable Farming Scheme co-design of future farming 2020	
		Welsh Government Natural Resources Policy 2017 (under review)	
		National Peatland Action programme 2020-2025	
		The State of Natural Resources Report 2020	
		Food Strategy for Wales 2010-2020	
	TAN5: Nature Conservation and Planning 2009		
	<b>Regional / Local</b>	Local Planning Authority Local Plans (various)	
AONB Management Plans			
National Park Management Plans (various)			
Local Geodiversity Action Plans (LGAPs)			
<b>Water (Inc. Water Resources,</b>	<b>United Kingdom</b>	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017	<p>Conservation and enhancements of the water and ecological quality of freshwater and marine environments. Prevent the pollution of groundwater. Manage diffuse pollution. Sustainable</p>
		Flood Risk Regulations 2009	
		Flood and Water Management Act 2010	
		Marine and Coastal Access Act 2009	

<b>Quality, Flood Risk and Marine and coastal)</b>		Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended 2010)	development and integrated management of coastal areas, balancing the mixed uses of the coastal environment such as nature conservation, fisheries, navigation, recreation and access, and coastal protection. Aims for reduction of the risk of new development to coastal change and restriction of inappropriate development. Improve water efficiency. Ensure the timely investment in water management infrastructure. Avoid development in areas of flood risk. Reduce the risk of flooding arising from new development. Enhance resilience to flood risk. Manage coastal change.
		The Groundwater (England and Wales) Regulations 2009	
		Water supply (water quality) Regulations 2016	
		Nitrate Pollution Prevention (Wales) Regulations 2013	
		Water Act 2014	
		Water Industry Act 1991	
		Water Resources Act 1991	
		The Water Supply (Water Quality) Regulations (Wales) 2018	
		Draft Water resources (Control of Agricultural Pollution) (Wales) Regulations 2020	
		Land Drainage Act 1991 (Amended 1994)	
		Reservoirs Act 1975	
		Salmon and Freshwater Fisheries Act 1975	
		The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017	
		Groundwater Protection: Policy and Practice (GP3)	
		The Bathing Waters Regulations 2013	
		Shifting Shores (National Trust 2015)	
	Wales	The Environment (Wales) Act 2016	
		Well-being of Future Generations (Wales) Act 2015	
		Future Wales: the national plan 2040 (2021)	
		The Welsh National Marine Plan 2019	
	Planning Policy Wales (Edition 11) 2021		
	Welsh Government Natural Resources Policy 2017 (under review)		
	The State of Natural Resources Report 2020		
	Welsh Government Water Strategy for Wales 2015		
	National Strategy for Flood and Coastal Erosion Risk Management in Wales 2021		
	TAN 14: Coastal Planning 1998		

		Water for People and the Environment: Water Resources Strategy for Wales 2009	
	<b>Regional / Local</b>	TAN15: Development and Flood Risk 2004	
		Shoreline Management Plans (various)	
		Water Resources Management Plan (Various)	
		Drought Plan (Various)	
		Flood Risk Management Plans (various)	
		River Basin Management Plans (various)	
		Catchment Abstraction Management Strategies (CAMS) (various)	
		Local Planning Authority Local Plans (various)	
		Area Statements (2019) (various)	
<b>Air Quality</b>	<b>International</b>	Kyoto Protocol 1997	The health of the people of Wales depends on the quality of the environment in which we all live. This is most apparent in relation to the air we breathe, with poor quality air being the single biggest risk to human health. Beyond this, air quality affects our wider environment. Air pollution is damaging to our ecosystems, leading to degradation of habitats and waterways, which ultimately risks the quality of our food and water supplies.
		Geneva Convention on Long Range Transboundary Air Pollution 1979	
		Paris Agreement (2015)	
		Glasgow Climate Pact 2020	
	<b>United Kingdom</b>	Environmental Protection Act 1990	
		Clean Air Strategy (2019) DEFRA	
		The Clean Growth Strategy (Department for Business, Energy and Industrial Strategy) 2017	
		Air Pollution: Action in a changing climate (2010 ) DEFRA	
		The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (July 2007)	
		Air Pollution in the UK 2019	
		Climate Change Act 2008	
	<b>Wales</b>	The Environment (Wales) Act 2016	
		Well-being of Future Generations (Wales) Act 2015	
		The Air Quality Standards (Wales) Regulations 2010	
		Future Wales: the national plan 2040 (2021)	
Planning Policy Wales (Edition 11) 2021			
The Clean Air Plan for Wales: Healthy Air Healthy Wales 2021			



		Welsh Government Natural Resources Policy 2017	
		The Climate Change Strategy for Wales 2010	
		The State of Natural Resources Report 2020	
	<b>Regional / Local</b>	Local Wellbeing Plans (Various)	
		Area Statements	
		Air Quality Management Plans (various)	
		Local Planning Authority Local Plans (various)	
<b>Cultural Heritage</b>	<b>International</b>	UNESCO World Heritage Convention 1972	Sustainable development in relation to historic assets through conservation and enhancement.
		The Charter for the Conservation and Restoration of Monuments and Sites 1964	
		Convention on the Protection of Underwater Cultural Heritage 2001	
		Convention Concerning the Protection of the World Cultural and Natural Heritage 1972	
		The Charter for the Conservation of Historic Towns and Urban Areas 1987	
	<b>United Kingdom</b>	Ancient Monuments and Archaeological Areas Act 1979	
		Protection of Wrecks Act 1973	
		The Historic Buildings and Ancient Monuments Act 1953	
		Planning (Listed Buildings and Conservation Areas) Act 1990	
	<b>Wales</b>	Future Wales: the national plan 2040 (2021)	
		Historic Environment Strategy for Wales (2012)	
		Planning Policy Wales (Edition 11) 2021	
		TAN 24: The Historic Environment 2017	
		Historic Environment (Wales) Act 2016	
		Welsh Government Natural Resources Policy 2017	
		Historic Environment and Climate Change in Wales 2020	
		The State of Natural Resources Report 2020	
		TAN 24: The Historic Environment 2017	
	<b>Regional / Local</b>	Local Planning Authority Local Development Plans (various)	
		Register of Landscapes of Historic Interest 2001	

<b>Landscape &amp; Seascape</b>	International	European Landscape Convention (ELC) Council of Europe, ratified 2008	Legislation and policy to protect existing sensitive landscapes (such as National Parks and AONBs), and to promote the enhancement of natural beauty and amenity of inland and coastal waters.
		UNESCO - World Heritage Convention 1972	
	United Kingdom	National Parks and Access to the Countryside Act 1949	
		Countryside and Rights of Way Act 2000	
	Wales	Well-being of Future Generations Act (Wales) 2015	
		Future Wales: the national plan 2040 (2021)	
		Planning Policy Wales (Edition 11) 2021	
		Welsh Government Natural Resources Policy 2017	
		The State of Natural Resources Report 2020	
		Sustainable Farming Scheme co-design of future farming 2020	
		Valued and Resilient: Priorities for AONB and National Parks (Welsh Government 2018)	
		NRW - National Landscape Character Areas 2013	
		National Seascape Assessment for Wales 2015	
	Regional / Local	AONB Management Plans	
National Park Management Plans (various)			
Register of Landscapes of Historic Interest 2001			
The World Summit on Sustainable Development (WSSD), Johannesburg, September 2002 - Commitments arising from Johannesburg Summit (2002)			
<b>Material Assets (transport infrastructure, energy infrastructure, utilities)</b>	<b>International</b>	UK Sustainable Development Goals 2021	The need to minimise waste arisings and promote reuse, recovery and recycling. <ul style="list-style-type: none"> <li>• The need to minimise the impact of waste generation and management on Wales' natural resources.</li> <li>• The need to ensure the sustainable extraction of minerals including marine aggregates whilst avoiding adverse effects on Wales' other natural resource assets.</li> <li>• The need to maximise the use of</li> </ul>
	<b>United Kingdom</b>	Waste and Emissions Trading Act 2003	
		Well-being of Future Generations Act (Wales) 2015	
	<b>Wales</b>	Future Wales: the national plan 2040 (2021)	
		The Wales Transport Strategy 2021	
		Energy Generation in Wales 2019	
		The State of Natural Resources Report 2020	
		Welsh Government Natural Resources Policy 2017	
		Towards zero waste: our waste strategy 2019	
The Waste (England and Wales) Regulations 2012			

<b>infrastructure, waste management etc)</b>		Waste (Wales) Measure 2010	recycled aggregates and the efficient use of aggregate material. • The need to reduce the consumption of non-renewable sources of energy through measures such as improved energy efficiency and enhanced uptake of renewable energy.
		TAN 8: Renewable Energy (2005)	
		TAN 21: Waste (2014)	
		Planning Policy Wales (Edition 11) 2021	
		Local Planning Authority Local Development Plans (various)	
	<b>Regional / Local</b>	Kyoto Protocol 1997	
<b>Climatic Factors (Mitigation and Adaptation)</b>	<b>International</b>	Paris Agreement; Europe 2020	Long term aims for reduction of carbon dioxide emissions including binding targets, and wide-reaching policies across all sectors to deliver these reductions. Requirements to adapt to climate change and associated threats, the need for increased resilience to climate change.
		United Nations Climate Change Conferences (1995 – Present)	
		A Roadmap for Moving to a Competitive Low Carbon Economy in 2050	
		UK Climate Change Risk Assessment 2022	
	<b>United Kingdom</b>	The Energy Act 2008	
		Forestry Act 1967	
		Climate Change Act 2008	
		The Stern Report (2007)	
		The Environment (Wales) Act 2016	
	<b>Wales</b>	Well-being of Future Generations (Wales) Act 2015	
		Future Wales: the national plan 2040 (2021)	
		Prosperity for All: A Climate Conscious Wales (2019)	
		Planning Policy Wales (Edition 11) 2021	
		Future Trends: 2021	
		Welsh Government Natural Resources Policy 2017	
		Flood and Coastal Erosion Risk management Strategy for Wales (2020)	
		Evidence for the third UK Climate Change Risk Assessment (CCRA3): Summary for Wales	
		The State of Natural Resources Report 2020	
		DCWW Water Resources Management Plans (various)	

	<b>Regional / Local</b>	River Basin Management Plans (various)	
		Shoreline Management Plans (various)	
		Flood Risk Management Plans (various)	
		Local Planning Authority Local Development Plans (various)	
		Local Wellbeing Plans (Various)	
		Area Statements	

## Appendix B: Scoping Consultation Responses Summary

Organisation responding	Response to SEA scoping consultation for the Flood Risk Management Plan	Action taken
Natural Resources Wales	Additions suggested to the Review of Plans and Programmes (Section 1 of response)	Additional documents included in the review
	Comments on key policy messages extracted from review (Section 2 of response)	Additional comments included in the review
	Gaps or omissions from the baseline (Section 3 of response)	Baseline edited and reviewed in light of comments received
	SEA Criteria – Including consideration of IDD and coastal adaptation (Section 4)	Specific reference to IDD's will be considered in the FRMP. Coastal adaptation & sustainable land use has been included within the Objective and guide questions.
	SEA Criteria – ref NFM inc coastal measures in Objective 5, climatic factors (Section 4)	NFM is included in FRMP measures. The SEA criteria will recognise the benefits of this under numerous receptors eg Biodiversity, flora and fauna, climatic factors, water etc
	Population and Human Health – adding ref to blue & green infrastructure & outdoor recreation & sport (section 5)	We propose keeping existing wording as the additional text is all considered within the existing text.
	Biodiversity, flora and fauna – adding a criteria related to achievement of GES/P & protecting & restoring hydromorphological processes (Section 5)	The objective to achieve WFD GES/P is already included under the water receptor. The guide question has been edited to specifically refer to hydromorphological processes.
	Water resources and Quality – reference to mitigation measures (Section 5)	This has been edited & clarified
	Material Assets - Will the FRMP mitigate any impacts on existing FR assets and infrastructure?' (Section5)	This is a suggested measure in the FRMP itself (in line with RBMP measures) and will be reflected by the predicted effects on Biodiversity, Water etc.
	Material Assets: Add National Trails, Wales Coast Path and National Cycle Network as nationally significant recreation assets for well-being (Section 5)	Amended
	Landscape: Add placemaking to the guide question (Section 5)	Amended



<p>people and communities from main rivers, reservoirs and the sea.</p>	<p>This objective is compatible with all the SEA and NRW Well-being objectives. The key area of compatibility is with the SEA objective for population and human health; with the delivery of benefits in terms of health and well-being.</p> <p>In reducing this risk there is also compatibility with material assets as properties and infrastructure would also benefit. This objective is also compatible with the SEA objectives for biodiversity, landscape and seascape and cultural heritage, where sites and structures could benefit from a reduction in flood risk.</p>								
<p><b>Priority 1:</b> Lead NRW's FRM response to the climate emergency by seeking innovative practices, promoting adaptation and undertaking the planning work required to manage future change.</p>	+	+	+	+	+	+	+	+	<p>This priority is compatible with all the SEA and NRW Well-being objectives. The key area of compatibility is with the SEA objective on climatic factors as the priority seeks to prepare and adapt for climate change impacts.</p> <p>In focussing on adaptation, there is also compatibility with population and human health, material assets and the other objectives as it will promote adaptation and resilience in relation to future change.</p> <p><b><i>Suggestion for rewording: “....adaptation and preparing for future change”. The word “planning” could be confused with planning in the context of town and country planning.</i></b></p> <p><b><i>Action undertaken: Wording of the priority has been changed</i></b></p>
<p><b>Priority 2:</b> Increase resilience of flood defence infrastructure to current and future risk of flooding, to ensure they continue to provide sustained levels of protection to communities.</p>	+	0	0	+	+	+	+	0	<p>The key area of compatibility is with material assets. The maintenance and improvement of flood defence infrastructure will ensure they continue to reduce flood risk to people and properties from flood events. This priority is also compatible with the SEA objective for population and human health, cultural heritage assets and climatic factors as the infrastructure provides significant benefits by reducing flood risk to people and properties, accounting for future flood risk.</p>

	<p>This priority has negligible compatibility with the SEA objectives for biodiversity, land use, geology, soil and landscape and seascape. Assets do in certain situations, benefit these receptors, but the focus is on people and property.</p> <p><b>Suggestion for improvements: The priority could promote the use of infrastructure for multiple benefits such as recreational use and biodiversity (pollinator seed mixes on embankments)</b></p> <p><b>Action taken: Not included as it is covered under Priority 12</b></p>								
<p><b>Priority 3:</b> Improve effectiveness of and continue to increase resilience of our key services, to ensure systems including our ICT and web-based services provide improved services to the public.</p>	+	0	0	0	+	+	0	0	<p>The key areas of compatibility are with population and human health, climatic factors and material assets. Providing accessible information on flood risk will allow people and communities to take action to reduce and manage risk, promoting adaptation to climate change.</p> <p>This priority has negligible compatibility with the SEA objectives for biodiversity, land use, geology, soil, water, cultural heritage and landscape and seascape. However, information and evidence can also be of use in managing the natural and historic environment.</p> <p><b>Suggestion: clarify what “key services” are.</b></p> <p><b>Action undertaken: Wording of the priority has been changed</b></p>
<p><b>Priority 4:</b> Continuously improve understanding of current and future flood risk (including climate change) so that decisions are based upon the best</p>	+	+	+	+	+	+	+	+	<p>This priority is compatible with all the SEA and NRW Well-being objectives. Applying continuous improvement and best available evidence and information allows adaptive management of flood risk which would be compatible with all SEA objectives.</p> <p><b>Suggestion: This priority could be combined with Priority 1</b></p>



available evidence and information.	<b>Action taken: None – Priority 1 is aimed at resilience of structures (maintenance) and Priority 4 is aimed at understanding of risk (modelled evidence) therefore 2 key priority areas that should be kept separate.</b>							
<b>Priority 5:</b> Improve community awareness, resilience and response to current and future flood risk. Working to support communities to become more aware and take action to address their flood risk.	+	0	0	0	+	+	0	0
<b>Priority 6:</b> Provide an effective and sustained response to flood events, working in collaboration with Risk Management Authorities and Professional Partners.	+	0	0	0	0	+	0	0
<b>Priority 7:</b> Provide a flood warning service to enable people to take action in response to flooding.	+	0	0	0	+	+	+	0
<p>The key areas of compatibility are with population and human health, climatic factors and material assets. Improving awareness, resilience and response to flood risk now and in the future will allow people and communities to take action to reduce and manage risk, promoting adaptation to climate change.</p> <p>This priority has negligible compatibility with the SEA objectives for biodiversity, land use, geology, soil, water, cultural heritage and landscape and seascape.</p>								
<p>The key area of compatibility is with the SEA objectives for population and human health and material assets as they are the priority during a flood event; with the delivery of significant benefits in terms of health and well-being.</p> <p>This priority has negligible compatibility with the SEA objectives for biodiversity, land use, geology, soil, water, cultural heritage, climatic factors and landscape and seascape.</p>								
<p>The key areas of compatibility are with population and human health, climatic factors and material assets. Providing the flood warning service will allow people and communities to be prepared for flood events and to know what action to take when they occur.</p>								

	<p>This priority has negligible compatibility with the SEA objectives for biodiversity, land use, geology, soil, water and landscape and seascape.</p> <p><b>Suggestion: Could this be combined with Priority 3? Is it included as a “key service”?</b></p> <p><b>Action taken: None, given importance of Flood Warning Service it was felt it needs a specific priority.</b></p>																
<p><b>Priority 8:</b> Provide effective planning advice on flood risks and consequences to reduce inappropriate development in areas at risk of flooding.</p>	<table border="1" data-bbox="472 475 1991 563"> <tr> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> </tr> </table> <p>This priority seeks to avoid a future increase in flood risk. It is compatible with all the SEA objectives and NRW Well-being objectives. The key areas of compatibility are with the SEA objectives for population and human health and material assets; with the delivery of significant benefits in terms of preventing inappropriate development with benefits to people, properties and infrastructure, and associated benefits to health and well-being.</p> <p>This priority is also compatible with the other SEA objectives as all receptors will benefit from avoiding an increase in flood risk.</p>								+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+									
<p><b>Priority 9:</b> Prioritise our work on a risk basis in alignment with Welsh Government’s National FCERM Strategy and develop our evidence base to secure future investment in flood risk management.</p>	<table border="1" data-bbox="472 901 1991 989"> <tr> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #76b82a; color: white; text-align: center;">+</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> <td style="background-color: #ffff00; color: black; text-align: center;">0</td> </tr> </table> <p>The key areas of compatibility are with population and human health and material assets. Prioritising investment on a risk basis ensures FRM resources are focussed on the most at risk communities.</p> <p><b>Suggestion: Potential overlap with Priorities 1 and 4 in terms of development of evidence base.</b></p> <p><b>Action taken: None, this is a cross cutting priority to align with WG strategy objective of prioritising investment.</b></p>								+	0	0	0	0	+	0	0	0
+	0	0	0	0	+	0	0	0									

<p><b>Priority 10:</b> Promote, support and implement nature-based solutions where appropriate to reduce the risk and impacts of flooding.</p>	+	+	+	+	+	+	+	+
<p>This priority is compatible with all the SEA and NRW Well-being objectives. The reduction of the risk and impact of flooding is a key area of compatibility with the SEA objective for population and human health; with the delivery of significant benefits in terms of health and well-being.</p> <p>By implementing and promoting nature-based solutions, there is also compatibility with the other SEA objectives. Biodiversity, ecosystem resilience, water quality, soil quality and function, carbon sequestration are some of the multiple benefits that nature-based solutions can deliver.</p>								
<p><b>Priority 11:</b> Work with partners and stakeholders to develop and deliver catchment approaches to reduce flooding, contribute towards the objective of ecosystem resilience and support the sustainable management of natural resources.</p>	+	+	+	+	+	+	+	+
<p>Promotion of catchment and land management practices that reduce flooding are compatible with and have benefits across all SEA objectives and NRW well-being objectives and are central to the sustainable management of natural resources.</p> <p><b><i>Suggestion: This priority could include specific mention of influencing land management practice (agriculture &amp; forestry sectors). Catchment implies just water whereas promotion &amp; influence by FRM of good land management would have wider benefits.</i></b></p>								
<p><b>Priority 12:</b> Promote opportunities for enhancement through our flood risk management work and where adverse effects to the environment and the health and well-being of</p>	+	+	+	+	+	+	+	+
<p>This priority is compatible with all the SEA and NRW Well-being objectives. The reduction of the risk and impact of flooding is a key area of compatibility with the SEA objective for population and human health; with the delivery of significant benefits in terms of health and well-being.</p>								

<p>communities arise, to minimise the impacts of our work and to support NRW's response to the Nature Emergency</p>	<p>In undertaking FRM work, approaches are taken to avoid or reduce environmental impacts, to mitigate where necessary and seek opportunities to deliver enhancements. This approach is compatible across the other SEA objectives and aligns with the application of the SMNR principles.</p> <p><b><i>Suggest rewording the priority: Seek to avoid or reduce any adverse effects to the health and well-being of communities and the environment from FRM activities and promote opportunities for enhancement to support NRW's response to the Nature Emergency</i></b></p> <p><b><i>Action taken: Changes made to the wording of the priority</i></b></p>								
<p><b>Priority 13:</b> Undertake our strategic oversight role to understand all sources of flood risk on a national basis to inform investment and optimise how we plan work including with other partners.</p>	+	0	0	0	+	+	0	0	<p>The key areas of compatibility are with population and human health, climatic factors and material assets. Informing, optimising and prioritising investment on a risk basis ensures FRM resources are focussed on the most at risk communities and allows actions to be taken at the appropriate scale from national to local.</p> <p><b><i>Suggestion: Potential overlap with Priorities 1, 4 and 9 in terms of development of evidence base and working with partners.</i></b></p> <p><b><i>Action taken: none, given this is a specific role outlined by legislation, it is important to keep it separate.</i></b></p>
<p><b>Priority 14:</b> Ensure we have an FCERM workforce with the appropriate capabilities and skills required to meet our objectives and to respond to future challenges.</p>	+	+	+	+	+	+	+	+	<p>This priority seeks to ensure NRW's FRM workforce can deliver the priorities above. This priority is therefore compatible with all the SEA objectives and NRW well-being objectives, as outlined above.</p>

## Appendix D: Tables WA1-WA9: Assessment of significant environmental effects of the National and Local FRMP2 Measures

++	Significant positive effect – the proposed measure contributes significantly to the achievement of the SEA objective.
+	Minor positive effect - the proposed measures contribute to the achievement of the SEA objective.
0	Neutral effect - there is no clear relationship between the proposed measure and the achievement of the SEA objective (or it is uncertain and cannot be defined at this stage), or the relationship is negligible.
-	Minor negative effect - the proposed measures detract from the achievement of the SEA objective.
--	Significant negative effect - the proposed measures detract significantly from the achievement of the SEA objective.
+/-	Mixed effect - the proposed measures are likely to have both positive and negative effects

### **TABLE WA1: Measures Assessment – Management of Flood Risk Assets**

#### **National Measures**

WA1.1 Ensure our Flood Risk Management assets continue to provide sustained protection to communities at risk of flooding through delivery of our maintenance programmes

WA1.2 Investigate and deliver options to reduce the risk of flooding to communities through the Flood Risk Management Capital Programme

WA1.3 Ensure continued management and monitoring of flood risk asset information including the condition of assets via a programme of inspections, using industry standard techniques.

WA1.4 Ensure we have good data on our asset stock held and maintained in our corporate database.

WA1.5 Consider catchment and natural based solutions to addressing flood risk, where it is appropriate to do so, when delivering our activities.

WA1.6 Develop an Asset Management Strategy to sit with an Asset Management System in line with industry standards such as ISO 55001, to help guide our asset plan priorities.

WA1.7 Working in collaboration with other risk management authorities to manage flood risk and deliver improved ways of working, including the further development of the National Asset Database.

WA1.8 Implement an improved risk based approach to Routine Asset Maintenance allocations and implement new processes and procedures.

WA1.9 Develop and implement an Asset Data Management Plan to ensure we have confidence in the information we hold on our FRM assets.

WA1.10 Ensure our work on flood risk assets integrates the principles of SMNR (Sustainable Management of Natural Resources) as required by the Environment (Wales) Act 2016 to deliver sustainable projects which maintain and where possible improve ecological status or potential.

WA1.11 In waterbodies designated as heavily modified due to flood and coastal protection, review and deliver (on a prioritised basis) mitigation for NRW owned assets and activities.

WA1.12 Manage our drainage districts to reduce flood risk through the management of drainage channels, ordinary watercourses, pumping stations and control structures.

WA1.13 Regulate proposed works within drainage districts to ensure that the proposed works do not cause a risk of flooding or make an existing risk worse.

**Local Measures:**

Undertake initial assessment and feasibility work for reducing flood risk  
 Maintain existing defences and inspection regime  
 Assess, Design and construction of flood risk asset improvements / Flood Alleviation Scheme

Environmental Receptor and SEA Objective	Assessment criteria. Does the proposed measure.....	Description of Effect	Significance of Effect	Opportunities and mitigation
<p><b>Population and Health</b></p> <p>To support attractive, resilient and viable</p>	<p>-Improve and enhance the physical and mental health and well-being of communities?</p> <p>-Improve awareness of flood risk and impacts of climate change?</p>	<p>These measures deliver significant benefits in terms of protecting people, properties and whole communities, with associated benefits to health and well-being. The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13)</p>	<p style="text-align: center;">++</p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>Integration of project level Health Impact Assessment (HIA) will provide</p>

<p>communities, maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>ensures they continue to reduce flood risk to communities.</p> <p>WA1.2 considers options to reduce flood risk for the most vulnerable communities. This could lead to creation of new assets, improvement of existing assets, upstream storage, amongst other options. Such schemes can be disruptive to the determinants of health in local communities in the short term, during construction, but in the long term seek to reduce flood risk resulting in positive effects on health and well-being. A robust co-produced options appraisal and sensitive design of schemes (in line with WA1.5, 1.10, 1.11, 1.12) will ensure that they benefit local communities and encourage opportunities to engage in healthy and active behaviours to maximise health and well-being, where appropriate.</p> <p>Local measures ensure that the most at risk vulnerable communities are prioritised.</p>		<p>an opportunity to understand a whole community, the social vulnerabilities in order to prioritise and assess the potential direct and indirect impacts on population groups of a specific scheme, community and place.</p> <p>Actions to reduce and manage flood risk and minimise mental health related anxiety and depressions in vulnerable communities at risk should be linked in with the project level assessment(s), the relevant local Well-being Plan and drawing on local public health expertise, where appropriate.</p> <p>Enhancement and protection of the determinants of health e.g. through improved physical environment (built and natural environment) improvements and access to green corridors, urban greenspaces and recreational opportunities to benefit physical and mental well-being.</p>
<p><b>Biodiversity, Flora and Fauna</b> To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity,</li> </ul>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, .4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) have the potential for adverse effects depending on the nature, scale and location of the activities proposed, therefore uncertainty over significance of the effects.</p>	<p>+/-</p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>Opportunity to work with natural processes to manage flood risk and enhance biodiversity and ecosystem resilience through habitat creation,</p>

<p>are resilient and have the capacity to adapt to change. (1)</p>	<p>Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</p> <ul style="list-style-type: none"> <li>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>-Have any implications for Invasive Non-Native Species and plant health?</li> <li>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul>	<p>The FRMP promotes nature-based solutions but traditional FRM measures are still likely to be required in some locations. These might involve hard-engineered defences, which can result in reduction / fragmentation / reduction in quality of valuable habitat/ introduction of INNS along river corridors and in the coastal zone.</p> <p>The FRMP encourages interventions that utilise nature-based solutions (WA1.5)– including hybrid options, that help to build ecosystem resilience and result in beneficial effects on biodiversity.</p> <p>Delivery of WA1.12 will contribute to the objective by seeking to restore hydromorphological processes in waterbodies designated as heavily modified due to historic flood and coastal protection activities. WFD compliance assessment would be required on any future schemes or activities.</p> <p>The draft HRA of the FRMP concludes that with the implementation of project level HRA and its associated mitigation, implementation of the FRMP will not adversely affect the integrity of NSN sites.</p>		<p>green engineering and natural management techniques, in line with Section 6 - Biodiversity and resilience of ecosystems duty of the Environment Act.</p> <p>The Place Appendices have identified where there might be potential opportunities to work with the River Restoration Programme</p> <p>Section 6 - Biodiversity and resilience of ecosystems duty for NRW to deliver net biodiversity enhancements through our operations should mitigate the potential negative effect on biodiversity.</p> <p>The NHCP provides a cost-effective means of offsetting overall impacts of FCERM on coastal habitats, where it is not possible to fully mitigate effects locally.</p> <p>Potential opportunity to protect and conserve local ecosystem biodiversity through implementation of hybrid flood risk solutions.</p> <p>The Place appendices have identified potential communities where FRMP measures could contribute to improving ecological status of water bodies by identifying synergies</p>
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				<p>between FCERM solutions and WFD measures.</p> <p>An opportunity to work collaboratively with others (e.g. conservation bodies, wildlife trusts / organisations) when developing FCERM solutions, to continue to deliver sympathetic solutions with wider biodiversity benefits.</p>
<p><b>Land Use, Geology, Soil and Contaminated Land</b></p> <p>To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<ul style="list-style-type: none"> <li>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> <li>-Help to protect and avoid damage to Wales' geodiversity?</li> <li>-Influence land management practices to benefit FRM?</li> <li>-Support coastal adaptation?</li> <li>-Protect and conserve geology, geomorphology and geodiversity?</li> </ul>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) has the potential to effect land use and land management practices and it cannot be predicted at this scale whether this would be beneficial or adverse. It would be considered further at a project scale.</p> <p>WA1.2 would consider land use, geology, soil and contaminated land effects in the options appraisal and would seek to minimise, avoid or mitigate any negative effects. Coastal projects would adhere to SMP2 policy and consider coastal adaptation in the options appraisal.</p> <p>Measure WA1.5 promotes nature-based solutions which would result in land and soil protection, and a reduced</p>	<p>+/-</p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>Opportunity to move towards sustainable land and soil management practices to deliver flood risk management alternatives that improve water retention and soil structure resulting in increased water infiltration during extreme weather events.</p> <p>Potential to implement natural flood management techniques that deliver FCERM solutions with wider environmental benefits, such as reducing or slowing runoff that subsequently reduces both soil erosion and diffuse pollution.</p>

		<p>risk of diffuse pollution from the transport of contaminants mobilised into watercourses. Where such measures are implemented, this will result in a significant beneficial effect on soil and contaminated land.</p> <p>Effects are dependent on the type of investments prioritised, that will directly affect catchment processes. Implementing traditional solutions that rely on defences alone are likely to have more adverse effects with increased likelihood of inundation and associated soil function impacts on soil quality and pollution transport. However, the promotion of nature-based solutions could mitigate these effects.</p>		<p>Taking account of location of contaminated land during development of FCERM solutions and provide opportunities for key parties to work together to remediate contaminated land and bring land that has already been contaminated back into use.</p> <p>Linking land management solutions to other catchment management schemes such as agri-environment and woodland management, could engage land managers to adopt necessary measures delivering wider flood risk management benefits through improvements to soil functions and reductions in diffuse pollution.</p>
<p><b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)</p>	<p>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment? -Conserve water resources?  - Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</p>	<p>Measures to monitor, maintain, improve and develop new assets are likely to result in positive benefits on aquatic and coastal water quality status, by restricting contaminant transport into local watercourses and prevention of saline intrusion to freshwater areas.</p> <p>Dependent on the nature of proposed solutions, the natural hydromorphological functions could be impacted, resulting in negative effects. However, measure WA1.12 promotes restoration of hydromorphological processes.</p>	<p><b>+/-</b></p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>Opportunity for flood and coastal erosion risk management to embrace, facilitate and deliver WFD objectives to prevent water body deterioration and improve water quality status (chemical, biological and physical).</p> <p>Contribute to WFD objectives through the 3<sup>rd</sup> cycle RBMPs, to maximise both the qualitative and quantitative status of water bodies.</p>

		<p>Overall, considered to be a mixture of beneficial and adverse effects, the significance of which depends on the nature of solutions proposed.</p>		<p>Seek to maximise opportunity to work with natural catchment processes for hydrological improvements by implementation of innovative alternatives to traditional grey engineered defences.</p> <p>Seek to maximise opportunities in delivery by working with the LIFE programmes and River Restoration Programme.</p>
<p><b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<p>-Improve awareness of the significant flood risks now and the future in Wales? -Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change? -Contribute to Wales' ability to adapt to climate change?</p>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) will result in significant benefit to climate change adaptation and resilience in communities across Wales.</p> <p>WA1.5, 1.10, 1.11, 1.12 promote nature-based solutions and sustainability which will protect and enhance existing ecosystem - build natural resilience, and create new habitats, has the potential for significant beneficial climate mitigation effects eg creation of wetlands and carbon sequestration.</p> <p>Traditional hard engineering has the potential for negative effects with respect to mitigating climate change due to the carbon footprint.</p>	<p>++</p>	<p>Adopt solutions that work with natural processes such as wetland creation / woodland planting, can provide carbon sequestration, hence contributing to mitigating climate change whilst also benefit natural systems in adapting to effects of climate change.</p> <p>Apply an integrated sustainable approach to flood risk management with consideration to wider catchment consequences and benefits, such as upstream flood storage or natural flood management measures to deliver carbon sequestration whilst also managing flood and coastal erosion.</p> <p>Design of improvement and new FRM assets must consider carbon footprint in the options appraisal and design,</p>

				seeking innovative solutions to reduce carbon.
<p><b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<p>-Help identify social, economic and environmental assets at significant flood risks?</p> <p>-Provide data on areas benefiting from defences</p> <p>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</p> <p>-Increase the resilience of important material assets and infrastructure to climate change?</p>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) will reduce the flood risk to existing important material assets and infrastructure and has the potential to significantly benefit local communities and national interests.</p> <p>Coastal adaptation and coastal infrastructure projects could have positive or negative effects on coastal infrastructure, including highways, rail and the WCP or NCN. In order to adapt, rerouting might be required where managed realignment is necessary. Mitigation would be considered at a project level.</p>	++	<p>Future investment decisions should reflect the SD principle, including wider social costs and benefits as well as specific consideration of risk to life and environmental impacts.</p> <p>Future predicted pressures on land availability for development due to increased flood and coastal risk opens new opportunities for development of environmentally sustainable infrastructure that may deliver wider benefits such as new health and well-being opportunities and habitat improvements</p> <p>Opportunities to enhance assets to provide multiuser access.</p>
<p><b>Cultural Heritage</b> To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)</p>	<p>-Help identify historic and cultural assets at risk from flooding?</p> <p>-Protect, conserve and where possible enhance, heritage assets and the historic environment?</p> <p>-Identify opportunities to improve resilience and mitigate against impacts</p>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) will reduce the flood risk to heritage assets within communities.</p> <p>Potential negative effects where heritage assets are not in areas prioritised for investment. Areas of cultural importance may be at risk</p>	0	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>Prioritising FCERM actions should provide the benefit of helping to prioritise important heritage sites at risk from flooding and erosion for recording before they are lost.</p>

	<p>of flood risk and climate change?</p>	<p>dependent on the type and location of flood and coastal infrastructure proposed.</p> <p>Approaches that work with natural processes (WA1.5) may help to manage flood risk in a way that is less damaging to the historic environment.</p>		<p>Attention should be given to the design of FCERM measures that directly affect historic assets or their setting, most appropriately considered at the project level.</p> <p>Implementation of resilience measures can also potentially be applied to heritage assets.</p>
<p><b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<p>-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</p>	<p>The monitoring, maintenance and improvement of FRM assets (WA1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.13) and the development of new assets (WA1.2) have the potential for adverse effects, dependent upon the nature and design of solutions proposed, therefore uncertainty over significance of effects.</p> <p>Beneficial landscape effects are to be gained from prioritising investment into nature-based solutions that are sensitive to the environment, and that deliver wide-reaching landscape benefits on both a regional and national scale.</p>	<p><b>0</b></p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>The promotion of nature-based solutions by the FRMP, has the potential to deliver positive effects on the landscape and seascape of Wales.</p> <p>Promoting solutions that work with natural processes, minimising damage to the environment and seeking to provide environmental benefits are all consistent with minimising adverse effects on the landscape, for example, reverting floodplains back to their natural states, coastal processes will again naturally shape our coastline ecosystems.</p> <p>Where the use of hard engineering is unavoidable, innovative solutions and sympathetic design should be used to</p>

				deliver designs that are sensitive to landscape character.
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**TABLE WA2 & 3: Measures Assessment – Reservoir Management and Regulation & Flood Forecasting and issuing Warnings**

**National measures:**

**Reservoir management & regulation**

WA2.1 Ensure the safe and responsible management of structures to ensure their compliance with the Reservoirs Act.

WA2.2 Develop risk-based regulation in line with NRW's regulatory principles and the regulators code

WA2.3 Improve the regulatory process, including consideration of recommendations from reviews in this sector (for example, the review into the Toddbrook spillway failure)

WA2.4 Provide robust enforcement process and challenge to improve compliance levels.

**Flood forecasting and issuing warnings**

WA3.1 Maintain and operate an effective, efficient and resilient flood forecasting and warning service.

WA3.2 Deliver a new Flood Warning System and supporting multi-disciplined team so we continue to deliver a flood warning service which is resilient, meets user needs, is efficient to maintain and can be continually improved.

WA3.3 Improve the hydrometeorological service which NRW depends on for our flood forecasting service so it meets user needs, embraces improvements in meteorological forecasting, keeps pace with technological change and is efficient for duty officers to use.

WA3.4 Deliver the recommendations of the Flood Warning Service Review and February 2020 Floods Review to improve the capability and effectiveness of our flood forecasting and flood warning services.

WA3.5 Improve our Wales flood forecasting system (FEWS) & Forecast Web Service so they meet user needs and are efficient to maintain.

WA3.6 Deliver continuous improvements to the Floodline service for customers in Wales so the service meets customer needs.

**Local Measure:**

Improve existing flood warning service

Environmental Receptor and SEA Objective	Assessment criteria. Do the proposed measures.....	Description of Effect	Significance of Effect	Opportunities and mitigation
<p><b>Population and Health</b></p> <p>To support attractive, resilient and viable communities, maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Improve and enhance the physical and mental health and well-being of communities?</li> <li>-Improve awareness of flood risk and impacts of climate change?</li> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>Management and regulation of reservoirs will allow their safe operation and interaction for the benefit of health and well-being of surrounding communities.</p> <p>Improving and operating flood forecasting and warning service will benefit long term health and well-being by ensuring communities are aware and informed to support further exacerbating social vulnerabilities and ultimately their physical and mental health. Communities will be better equipped to prepare and respond to flood events.</p> <p>The service is available to all communities across Wales.</p>	<p><b>++</b></p>	<p>The consideration of socio-economic status/drivers of deprivation within communities</p>
<p><b>Biodiversity, Flora and Fauna</b></p> <p>To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>-Affect protected species or habitats of principle importance (Environment (Wales)</li> </ul>	<p>Management and regulation of reservoirs and the improvement of the flood forecasting and warning service will have no pathways for effects on this receptor</p>	<p><b>0</b></p>	

	<p>Act 2016 - Section 7 Priority Habitats and Species)?</p> <p>-Have any implications for Invasive Non-Native Species and plant health?</p> <p>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</p>			
<p><b>Land Use, Geology, Soil and Contaminated Land</b></p> <p>To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<p>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</p> <p>-Help to protect and avoid damage to Wales' geodiversity?</p> <p>-Influence land management practices to benefit FRM?</p> <p>-Support coastal adaptation?</p> <p>-Protect and conserve geology, geomorphology and geodiversity?</p>	<p>Management and regulation of reservoirs and the improvement of the flood forecasting and warning service will have no pathways for effects on this receptor</p>	0	
<p><b>Water Resources and Quality</b></p> <p>To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)</p>	<p>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</p> <p>-Conserve water resources?</p> <p>- Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</p>	<p>Management and regulation of reservoirs and the improvement of the flood forecasting and warning service will have no pathways for effects on this receptor</p>	0	



<p><b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<ul style="list-style-type: none"> <li>-Improve awareness of the significant flood risks now and the future in Wales?</li> <li>-Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</li> <li>-Contribute to Wales' ability to adapt to climate change?</li> </ul>	<p>Improving and operating flood forecasting and warning service will significantly contribute to the achievement of this objective by improving awareness of flood risk now and in the future and consequently encouraging adaptation.</p>	<p>++</p>	
<p><b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<ul style="list-style-type: none"> <li>-Help identify social, economic and environmental assets at significant flood risks?</li> <li>-Provide data on areas benefiting from defences</li> <li>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</li> <li>-Increase the resilience of important material assets and infrastructure to climate change?</li> </ul>	<p>Improving and operating flood forecasting and warning service will significantly contribute to the achievement of this objective by allowing operators and owners of material assets to prepare and respond to flood events, promoting resilience of material assets to climate change.</p>	<p>++</p>	
<p><b>Cultural Heritage</b> To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)</p>	<ul style="list-style-type: none"> <li>-Help identify historic and cultural assets at risk from flooding?</li> <li>-Protect, conserve and where possible enhance, heritage assets and the historic environment?</li> <li>-Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?</li> </ul>	<p>Improving and operating flood forecasting and warning service will contribute to the achievement of this objective by allowing operators and owners of historic and cultural assets to prepare and respond to flood events, promoting resilience to climate change.</p>	<p>+</p>	
<p><b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<ul style="list-style-type: none"> <li>-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</li> </ul>	<p>Management and regulation of reservoirs and the improvement of the flood forecasting and warning service will have no pathways for effects on this receptor</p>	<p>0</p>	

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**TABLE WA4: Measures Assessment - Hydrometry and Telemetry, Hydrology and Geomorphology,**

**National Measures:**

**Hydrometry and Telemetry, Hydrology and Geomorphology,**

**WA4.1** Maintain and operate an effective, efficient and resilient hydrometry, telemetry, hydrology and geomorphology service for all business sectors across NRW.

**WA4.2** Procure and implement a new Telemetry system, including a new mobile communications solution for our outstations and data transfer tool so our internal and external customers continue to receive near-real time data.

**WA4.3** Deliver strategic review of the Hydrometric Network to determine its future scope, requirements, governance, funding and service provision.

**WA4.4** Contribute to the delivery of the UK Flood Hydrology Roadmap, working in collaboration with partner agencies across the UK.

**WA4.5** Manage and deliver Hydrometry & Telemetry (H&T) capital programme to ensure our hydrometric monitoring assets are fit for purpose and that we have a medium-term investment plan for securing this.

**WA4.6** Manage and deliver a Hydrogeomorphological service to internal and external clients so that works in and next to rivers comply with environmental regulations.

**WA4.7** Improve our River Levels, Rainfall and Sea data online service so it meets user needs and is efficient to maintain.

**Local Measures:**

Update existing hydraulic model

Build hydraulic model

<b>Environmental Receptor and SEA Objective</b>	<b>Assessment criteria. Does the proposed measure.....</b>	<b>Description of Effect</b>	<b>Significance of Effect</b>	<b>Opportunities and mitigation</b>
<p><b>Population and Health</b></p> <p>To support attractive, resilient and viable communities, maximising</p>	<p>-Improve and enhance the physical and mental health and well-being of communities?</p> <p>-Improve awareness of flood risk and impacts of climate change?</p>	<p>These measures aim to maintain, operate and improve hydrometry, telemetry, hydrology and geomorphology to provide evidence internally and externally.</p>	<p><b>++</b></p>	

<p>peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>This provides fundamental evidence to inform FRM in particular from flood warning and forecasting through to capital project design. These measures are fundamental in targeting and delivering significant benefits in terms of protecting people and properties, therefore, whole communities from social, cultural and economic impact, with wide reaching benefits to health and well-being.</p>		
<p><b>Biodiversity, Flora and Fauna</b> To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>-Have any implications for Invasive Non-Native Species and plant health?</li> <li>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul>	<p>WA4.1, 4.2, 4.3, 4.4, 4.6 and 4.7 will have no pathways for effects on this receptor, however, the evidence gained through these activities is available across the business and is used to inform management of habitats and ecosystems.</p> <p>WA4.5 managing and delivering the H&amp;T capital programme results in design and construction of H&amp;T. Such projects can have pathways for effects on biodiversity, flora and fauna, however, the projects tend to be small scale and environmental risk is managed through application of OGN 86 and 87.</p>	<p><b>0</b></p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p>

<p><b>Land Use, Geology, Soil and Contaminated Land</b> To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<ul style="list-style-type: none"> <li>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> <li>-Help to protect and avoid damage to Wales' geodiversity?</li> <li>-Influence land management practices to benefit FRM?</li> <li>-Support coastal adaptation?</li> <li>-Protect and conserve geology, geomorphology and geodiversity?</li> </ul>	<p>WA4.1, 4.2, 4.3, 4.4, 4.6 and 4.7 will have no pathways for effects on this receptor, however, the evidence gained through these activities is available across the business and is used to inform geological, geomorphological, contaminated land work.</p> <p>WA4.5 managing and delivering the H&amp;T capital programme results in design and construction of H&amp;T. Such projects can have pathways for effects on geology, soil and contaminated land, however, the projects tend to be small scale and environmental risk is managed through application of OGN 86 and 87.</p>	<p><b>0</b></p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated</p>
<p><b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)</p>	<ul style="list-style-type: none"> <li>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</li> <li>-Conserve water resources?</li> <li>- Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</li> </ul>	<p>The evidence gained and shared through Measures WA4.1, 4.2, 4.3, 4.4, 4.6 and 4.7 is fundamental in water resource management as well as in FRM.</p> <p>WA4.5 managing and delivering the H&amp;T capital programme results in design and construction of H&amp;T. Such projects can have pathways for effects on rivers, including their ability to achieve GES/P, however, the projects tend to be small scale and environmental risk is managed</p>	<p><b>+</b></p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated</p>

		through application of OGN 86 and 87		
<p><b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<ul style="list-style-type: none"> <li>-Improve awareness of the significant flood risks now and the future in Wales?</li> <li>-Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</li> <li>-Contribute to Wales' ability to adapt to climate change?</li> </ul>	<p>These measures aim to maintain, operate and improve hydrometry, telemetry, hydrology and geomorphology to provide evidence internally and externally. This provides fundamental evidence to inform FRM in particular from flood warning and forecasting through to capital project design. These measures are fundamental in delivering significant benefits in terms of climate change resilience and adaptation.</p>	++	
<p><b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<ul style="list-style-type: none"> <li>-Help identify social, economic and environmental assets at significant flood risks?</li> <li>-Provide data on areas benefiting from defences</li> <li>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</li> <li>-Increase the resilience of important material assets and infrastructure to climate change?</li> </ul>	<p>These measures aim to maintain, operate and improve hydrometry, telemetry, hydrology and geomorphology to provide evidence internally and externally. This provides fundamental evidence to inform FRM in particular from flood warning and forecasting through to capital project design. These measures are fundamental in delivering significant benefits in terms of sustainable management and resilience of existing material assets and infrastructure.</p>	++	
<p><b>Cultural Heritage</b> To protect and sustainably manage the historic environment</p>	<ul style="list-style-type: none"> <li>-Help identify historic and cultural assets at risk from flooding?</li> </ul>	<p>WA4.1, 4.2, 4.3, 4.4, 4.6 and 4.7 will have no pathways for effects on cultural heritage.</p>	0	<p>Project level environmental assessment in line with OGN 87</p>

<p>including cultural heritage resources, historic buildings and archaeological features. (2)</p>	<p>-Protect, conserve and where possible enhance, heritage assets and the historic environment?</p> <p>-Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?</p>	<p>WA4.5 managing and delivering the H&amp;T capital programme results in design and construction of H&amp;T. Such projects can have pathways for effects on the historic environment, however, the projects tend to be small scale and environmental risk is managed through application of OGN 86 and 87.</p>		<p>will ensure any adverse impacts are avoided, reduced or mitigated</p>
<p><b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<p>-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</p>	<p>WA4.1, 4.2, 4.3, 4.4, 4.6 and 4.7 will have no pathways for effects on landscape and seascape.</p> <p>WA4.5 managing and delivering the H&amp;T capital programme results in design and construction of H&amp;T. Such projects can have pathways for effects on the landscape, however, the projects tend to be small scale and environmental risk is managed through application of OGN 86 and 87.</p>	0	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated</p>

**TABLE WA5 & 8: Measures Assessment - Community engagement and resilience & responding to flood incidents**

**Community engagement and resilience**

WA5.1 Provide advice via our website, printed media and customer care centre to communities on how to prepare, cope and recover from flooding, working with and signposting to other organisations where appropriate.

WA5.2 Support the network of community flood volunteers across Wales in preparing for, responding to and recovering from flooding.

WA5.3 Work in partnership with other organisations and income streams to support the delivery of external projects which increase community resilience to flooding across Wales.

WA5.4 Commence delivery of priority actions from Flood Community Engagement Review to improve delivery of our “enabling role” and to address evidence gaps.

WA5.5 Deliver recommendations of the February 2020 Floods Recovery and Review Implementation Programme, including implementation and embedding of improved tools, training courses for staff and new publications to support our incident response and recovery.

### Responding to flood incidents

WA8.1 Continue to deliver effective and resilient incident management and response arrangements, including planning, exercising and training work to ensure that we are able to provide a sustained and effective response to flood incidents (within our resource capacity limitations).

WA8.2 Undertake recovery work in response to flood events and take appropriate steps to learn from flood incidents.

WA8.3 Deliver the improvements identified in the February 2020 Floods Recovery and Review Implementation Programme in relation to our incident preparedness and response activities.

Environmental Receptor and SEA Objective	Assessment criteria. Does the proposed measure.....	Description of Effect	Significance of Effect	Opportunities and mitigation
<p><b>Population and Health</b></p> <p>To support attractive, resilient and viable communities, maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Improve and enhance the physical and mental health and well-being of communities?</li> <li>-Improve awareness of flood risk and impacts of climate change?</li> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> </ul>	<p>Engaging with and supporting community volunteers will improve awareness in communities of the social, cultural and economic impact of flood and potential mitigation measures, where appropriate. It will lead to greater outreach across communities, especially those more vulnerable.</p> <p>By engaging with communities to develop flood plans and priorities it will improve awareness of, mitigation towards and recovery</p>	<p>++</p>	<p>The consideration of socio-economic status/drivers of deprivation within communities</p>

	-Maintain and enhance recreation and access opportunities?	from flood risk and promote adaptation to climate change. These measures significantly contribute to the achievement of this SEA objective.		
<p><b>Biodiversity, Flora and Fauna</b></p> <p>To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>-Have any implications for Invasive Non-Native Species and plant health?</li> <li>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul>	Improvement to community engagement, resilience and NRW flood incident response will have no pathways for effects on this receptor	<b>0</b>	
<p><b>Land Use, Geology, Soil and Contaminated Land</b></p> <p>To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<ul style="list-style-type: none"> <li>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> <li>-Help to protect and avoid damage to Wales' geodiversity?</li> <li>-Influence land management practices to benefit FRM?</li> <li>-Support coastal adaptation?</li> </ul>	Improvement to community engagement, resilience and NRW flood incident response will have no pathways for effects on this receptor	<b>0</b>	



	-Protect and conserve geology, geomorphology and geodiversity?			
<b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)	-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?  -Conserve water resources?  - Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?	Improvement to community engagement, resilience and NRW flood incident response will have no pathways for effects on this receptor	<b>0</b>	
<b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)	-Improve awareness of the significant flood risks now and the future in Wales?  -Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?  -Contribute to Wales' ability to adapt to climate change?	Improvement to community engagement, resilience and NRW flood incident response will contribute to the achievement of this objective by improving awareness of flood risk now and in the future and consequently encouraging adaptation.	<b>++</b>	
<b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)	-Help identify social, economic and environmental assets at significant flood risks?  -Provide data on areas benefiting from defences  -Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?  -Increase the resilience of important material assets and infrastructure to climate change?	Improvement to community engagement, resilience and NRW flood incident response will contribute to the achievement of this objective by allowing operators and owners of material assets to prepare and respond to flood events, promoting resilience of material assets to climate change.	<b>+</b>	
<b>Cultural Heritage</b> To protect and sustainably manage the	-Help identify historic and cultural assets at risk from flooding?	Improvement to community engagement, resilience and NRW flood incident response will have	<b>0</b>	

historic environment including cultural heritage resources, historic buildings and archaeological features. (2)	-Protect, conserve and where possible enhance, heritage assets and the historic environment?  -Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?	no pathways for effects on this receptor		
<b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)	-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?	Improvement to community engagement, resilience and NRW flood incident response will have no pathways for effects on this receptor	0	

**TABLE WA6: Measures Assessment - Understanding and analysing flood risk**

WA6.1 Continued development of our understanding of flood risk across Wales through improvements to National and local flood models and maps.  
 WA6.2 Use our flood maps to raise awareness and understanding of flood risk with communities at risk of flooding  
 WA6.3 Deliver the maintenance tools, improvements and enhancements to the Flood Risk Analysis Wales Data Management Project  
 WA6.4 Deliver the enhancements and improvements to the Flood Risk Viewer on the external website project, including initial National Asset Database and Coastal erosion requirements, plus transposing to the new GIS portal.

<b>Environmental Receptor and SEA Objective</b>	<b>Assessment criteria. Does the proposed measure.....</b>	<b>Description of Effect</b>	<b>Significance of Effect</b>	<b>Opportunities and mitigation</b>
<b>Population and Health</b>  To support attractive, resilient and viable communities, maximising	-Improve and enhance the physical and mental health and well-being of communities?  -Improve awareness of flood risk and impacts of climate change?  -Enable communities to take actions to prepare for flooding and improve their	Engaging communities in understanding and analysing flood risk will improve impacts on the determinants of health, especially those in more vulnerable communities.	++	The consideration of socio-economic status/drivers of deprivation within communities

<p>peoples physical and mental well-being. (2)</p>	<p>resilience and/or adapt to increased flood risk from impacts of climate change</p> <ul style="list-style-type: none"> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>By engaging with communities to develop flood plans and priorities it will improve awareness of, preparation towards and recovery from flood risk and promote management of health and well-being.</p>		
<p><b>Biodiversity, Flora and Fauna</b> To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>-Have any implications for Invasive Non-Native Species and plant health? <ul style="list-style-type: none"> <li>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul> </li> </ul>	<p>Understanding, analysing and communicating flood risk will have no pathways for effects on this receptor</p>	<p><b>0</b></p>	
<p><b>Land Use, Geology, Soil and Contaminated Land</b> To maintain and enhance soil and geology as an important resource and support sustainable use</p>	<ul style="list-style-type: none"> <li>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> <li>-Help to protect and avoid damage to Wales' geodiversity?</li> </ul>	<p>Understanding, analysing and communicating flood risk will have no pathways for effects on this receptor</p>	<p><b>0</b></p>	

of land for multiple benefits. (1,2)	<ul style="list-style-type: none"> <li>-Influence land management practices to benefit FRM?</li> <li>-Support coastal adaptation?</li> <li>-Protect and conserve geology, geomorphology and geodiversity?</li> </ul>			
<b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)	<ul style="list-style-type: none"> <li>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</li> <li>-Conserve water resources?</li> <li>- Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</li> </ul>	Understanding, analysing and communicating flood risk will have no pathways for effects on this receptor	0	
<b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)	<ul style="list-style-type: none"> <li>-Improve awareness of the significant flood risks now and the future in Wales?</li> <li>-Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</li> <li>-Contribute to Wales' ability to adapt to climate change?</li> </ul>	Understanding, analysing and communicating flood risk will significantly contribute to this objective by improving awareness and encouraging adaptation.	++	
<b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)	<ul style="list-style-type: none"> <li>-Help identify social, economic and environmental assets at significant flood risks?</li> <li>-Provide data on areas benefiting from defences</li> <li>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</li> </ul>	Understanding, analysing and communicating flood risk will significantly contribute to this objective by improving awareness of assets and infrastructure at flood risk and encouraging adaptation and resilience.	++	

	-Increase the resilience of important material assets and infrastructure to climate change?			
<b>Cultural Heritage</b> To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)	-Help identify historic and cultural assets at risk from flooding?  -Protect, conserve and where possible enhance, heritage assets and the historic environment?  -Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?	Understanding, analysing and communicating flood risk will have no pathways for effects on this receptor	0	
<b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)	-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?	Understanding, analysing and communicating flood risk will have no pathways for effects on this receptor	0	

**TABLE WA7: Measures Assessment - Flood risk advice, permitting, compliance and enforcement**

WA7.1 Continued delivery of effective response and management of permitting, compliance, enforcement and planning advice in relation to development and flood risk  
WA7.2 Advise local planning authorities on their Local Development Plans to ensure flood risk is incorporated appropriately.  
WA7.3 Continue to develop and embed ways of working associated with the new Welsh Government guidance on development and flood risk (TAN15) & Flood Map for Planning.  
WA7.4 Deliver the FRM elements of the Strategic Review of Charging Project, to optimise fair and proportionate cost recovery where appropriate.

<b>Environmental Receptor and SEA Objective</b>	<b>Assessment criteria. Does the proposed measure.....</b>	<b>Description of Effect</b>	<b>Significance of Effect</b>	<b>Opportunities and mitigation</b>
<b>Population and Health</b>	-Improve and enhance the physical and mental health and well-being of communities?  -Improve awareness of flood risk and impacts of climate change?	Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice seek to prevent inappropriate	++	The consideration of socio-economic

<p>To support attractive, resilient and viable communities, maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>development and hence prevent an increase in flood risk. This will ensure that new housing and development is sustainable, adaptable and resilient, resulting in communities that will benefit health and well-being.</p>		<p>status/drivers of deprivation within communities</p>
<p><b>Biodiversity, Flora and Fauna</b> To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems that are resilient and have the capacity to adapt to change. (1)</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent, Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</li> <li>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</li> <li>-Have any implications for Invasive Non-Native Species and plant health?</li> <li>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</li> </ul>	<p>Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice will have no pathways for effects on this receptor</p>	<p><b>0</b></p>	
<p><b>Land Use, Geology, Soil and Contaminated Land</b></p>	<ul style="list-style-type: none"> <li>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</li> </ul>	<p>Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice</p>	<p><b>0</b></p>	

<p>To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<ul style="list-style-type: none"> <li>-Help to protect and avoid damage to Wales' geodiversity?</li> <li>-Influence land management practices to benefit FRM?</li> <li>-Support coastal adaptation?</li> <li>-Protect and conserve geology, geomorphology and geodiversity?</li> </ul>	<p>will have no pathways for effects on this receptor</p>		
<p><b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)</p>	<ul style="list-style-type: none"> <li>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</li> <li>-Conserve water resources?</li> <li>- Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</li> </ul>	<p>Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice will have no pathways for effects on this receptor</p>	<b>0</b>	
<p><b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<ul style="list-style-type: none"> <li>-Improve awareness of the significant flood risks now and the future in Wales?</li> <li>-Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</li> <li>-Contribute to Wales' ability to adapt to climate change?</li> </ul>	<p>Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice seek to prevent inappropriate development and hence prevent an increase in flood risk, taking into account climate change predictions. This will significantly contribute to the objective by encouraging adaptation to climate change.</p>	<b>++</b>	
<p><b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<ul style="list-style-type: none"> <li>-Help identify social, economic and environmental assets at significant flood risks?</li> <li>-Provide data on areas benefiting from defences</li> </ul>	<p>Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice seek to prevent inappropriate development and hence prevent an increase in flood risk. This will</p>	<b>++</b>	

	<p>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</p> <p>-Increase the resilience of important material assets and infrastructure to climate change?</p>	ensure that new housing, infrastructure and material assets are sustainable, adaptable and resilient now and in the future.		
<p><b>Cultural Heritage</b> To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and archaeological features. (2)</p>	<p>-Help identify historic and cultural assets at risk from flooding?</p> <p>-Protect, conserve and where possible enhance, heritage assets and the historic environment?</p> <p>-Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?</p>	Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice will have no pathways for effects on this receptor	0	
<p><b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<p>-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</p>	Measures WA7.1, 7.2, 7.3, 7.4 to deliver permitting, compliance, enforcement and planning advice will have no pathways for effects on this receptor	0	



**TABLE WA9: Measures Assessment– Strategic planning and oversight of investment**

**Strategic planning and oversight of investment**

WA9.1 Continue to manage and provide oversight of FRM investment programmes and lead efforts to influence and negotiate future budgets.

WA9.2 Continue to manage and provide oversight of NRW's contribution to the Joint Research and Development Programme.

WA9.3 Seek opportunities through Area Statements and Opportunity Catchments for working collaboratively with partners and key stakeholders to deliver joined up and integrated approaches to flood risk management and to support delivery of wider environmental and societal benefits.

WA9.4 Seek opportunities to work collaboratively with partners to find innovative approaches to managing flood risk.

WA9.5 Undertake strategic business planning and reporting activities and ensuring effective governance is in place to effectively manage the FRM Portfolio.

WA9.6 Provide FRM technical advice and support to Welsh Government and other Risk Management Authorities.

WA9.7 Support Wales to have a coastline that is sustainable and resilient to climate change. We will plan for coastal adaptation in line with Shoreline Management Plan policy for coastal defence management and enable the National Habitat Creation Programme to deliver compensatory intertidal habitat where required.

WA9.8 Develop adaptation plans to address the increased flood risks presented by Climate Change both in land and on the coast.

WA9.9 Improve access and understanding of Shoreline Management Plans by delivering improved guidance and tools.

WA9.10 Influence and develop mechanisms to further implement nature-based solutions in response to flood risk, including FRM's advice to the Sustainable Farming Scheme and improvements to UK Forestry Standards.

WA9.11 Develop improvements to skills development and capacity building including work on development frameworks, succession planning and working with partners to improve training opportunities.

WA9.12 Develop long term investment evidence for funding of flood risk management activity.

<b>Environmental Receptor and SEA Objective</b>	<b>Assessment criteria. Does the proposed measure.....</b>	<b>Description of Effect</b>	<b>Significance of Effect</b>	<b>Opportunities and mitigation</b>
<p><b>Population and Health</b></p> <p>To support attractive, resilient and viable communities,</p>	<p>-Improve and enhance the physical and mental health and well-being of communities?</p> <p>-Improve awareness of flood risk and impacts of climate change?</p>	<p>Measures to provide strategic advice and oversight promote collaboration, integration and innovation across FRM activities. This will ensure activities maximise delivery against this</p>	<p><b>++</b></p>	<p>Adaptation plans will be developed collaboratively with RMA's and local communities.</p>

<p>maximising peoples physical and mental well-being. (2)</p>	<ul style="list-style-type: none"> <li>-Enable communities to take actions to prepare for flooding and improve their resilience and/or adapt to increased flood risk from impacts of climate change</li> <li>-Reduce levels of social, cultural and economic deprivation?</li> <li>-Reduce inequalities across the life course?</li> <li>-Maintain and enhance recreation and access opportunities?</li> </ul>	<p>objective and NRW well-being objectives.</p> <p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This will benefit the health and well-being coastal communities. The promotion of nature-based solutions has potential beneficial effects on equitable access to green and blue environments to enhance opportunities to engage in positive physical and mental health behaviours.</p> <p>Measure 9.8 supports coastal and inland adaptation plans to address increased flood risk through climate change. Whilst these could result in short term adverse effects on population and human health where people might need to move away from the flood risk areas there would be long term benefit by reducing flood risk to people and properties.</p>		<p>Drawing upon the relevant evidence, local Well-being Plans and local public health expertise, where appropriate, to enhance and protect the determinants of health e.g. through improved physical environment (built and natural environment) improvements and access to green corridors, urban greenspaces and recreational opportunities to benefit physical and mental well-being.</p>
<p><b>Biodiversity, Flora and Fauna</b> To maintain and enhance a biodiverse natural environment with healthy, functioning ecosystems</p>	<ul style="list-style-type: none"> <li>-Maintain and enhance national or international protected sites (e.g., SAC, SPA, Ramsar, SSSI etc)?</li> <li>-Contribute to ecosystem resilience, taking into account Diversity, Extent,</li> </ul>	<p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects. Where coastal communities must be protected from flooding,</p>	<p>+/-</p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p>

<p>that are resilient and have the capacity to adapt to change. (1)</p>	<p>Condition, Connectivity and ecosystem resilience Aspects (DECCA Framework)?</p> <p>-Affect protected species or habitats of principle importance (Environment (Wales) Act 2016 - Section 7 Priority Habitats and Species)?</p> <p>-Have any implications for Invasive Non-Native Species and plant health?</p> <p>- Protect and restore natural riverine (hydromorphological) processes that create and sustain protected sites, physical habitat, and species they support</p>	<p>defences can result in coastal squeeze and the loss of intertidal habitats. However, the measure includes a commitment to enable NHCP to deliver compensatory habitat where required. The promotion of nature-based solutions has potential beneficial effects on biodiversity, flora and fauna.</p> <p>Measure 9.8 supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon the habitats and species that are present. Intertidal habitats and species might benefit but freshwater habitats and species might be lost through saline intrusion and changes in coastal processes.</p> <p>Measure 9.10 to influence SFS and UK forestry standards for the benefit of flood risk could have indirect benefits on biodiversity, flora and fauna, by encouraging management practice that reduces run-off and retains more water for the benefit of ecosystems.</p>		<p>Opportunity to work with natural processes to manage flood risk and enhance biodiversity and ecosystem resilience through habitat creation, green engineering and natural management techniques, in line with Section 6 - Biodiversity and resilience of ecosystems duty of the Environment Act.</p> <p>Section 6 - Biodiversity and resilience of ecosystems duty for NRW to deliver net biodiversity enhancements through our operations should mitigate the potential negative effect on biodiversity.</p> <p>The NHCP provides a cost-effective means of offsetting overall impacts of FCERM on coastal habitats, where it is not possible to fully mitigate effects locally.</p> <p>Potential to contribute to improving ecological status of water bodies by identifying synergies between FCERM solutions and WFD measures.</p>
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				An opportunity to work collaboratively with others (e.g. conservation bodies, wildlife trusts / organisations) when developing FCERM solutions, to continue to deliver sympathetic solutions with wider biodiversity benefits.
<p><b>Land Use, Geology, Soil and Contaminated Land</b></p> <p>To maintain and enhance soil and geology as an important resource and support sustainable use of land for multiple benefits. (1,2)</p>	<p>-Protect and conserve soil quality and function (including carbon sequestration) and increase resilience to degradation?</p> <p>-Help to protect and avoid damage to Wales' geodiversity?</p> <p>-Influence land management practices to benefit FRM?</p> <p>-Support coastal adaptation?</p> <p>-Protect and conserve geology, <del>geomperphology</del><u>geomorphology</u> and geodiversity?</p>	<p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects on this receptor. Whilst this measure supports coastal adaptation, it might result in change of land use and land management with resulting effects on soil and geomorphology. The measure includes a commitment to enable NHCP to deliver compensatory habitat where required. The promotion of nature-based solutions has potential beneficial effects on this receptor.</p> <p>Measure 9.8 supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon</p>	+/-	<p>Opportunity to move towards sustainable land and soil management practices to deliver flood risk management alternatives that improve water retention and soil structure resulting in increased water infiltration during extreme weather events.</p> <p>Potential to implement natural flood management techniques that deliver FCERM solutions with wider environmental benefits, such as reducing or slowing runoff that subsequently reduces both soil erosion and diffuse pollution.</p> <p>Taking account of location of contaminated land during</p>

		<p>the land use, geology, soil and contaminated land in the area.</p> <p>Measure 9.10 to influence SFS and UK forestry standards for the benefit of flood risk would have benefits on soil and land management. Measures to reduce run-off would protect soil from erosion and maintain moisture, preventing desiccation at hotter times of year.</p>		<p>development of FCERM solutions and provide opportunities for key parties to work together to remediate contaminated land and bring land that has already been contaminated back into use.</p>
<p><b>Water Resources and Quality</b> To maximise the sustainable management of water resources and help achieve the objectives of the WFD. (1,2,3)</p>	<p>-Contribute to the protection and improvement of the water quality, for the benefit of the human and/or natural environment?</p> <p>-Conserve water resources?</p> <p>- Promote opportunities to deliver WFD Regulations Heavily Modified Water Bodies (HMWB) specific measures, as identified by the RBMP3?</p>	<p>WA9.3 promotes collaborative working through Area Statements and opportunity Catchments. The latter being priority catchments improvements to benefit, amongst other things, the WFD status of 10 catchments across Wales. This measure will deliver benefits towards this objective.</p> <p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects. In places coastal defences protect freshwater habitat. But the presence of defences can affect the WFD status of coastal and estuarine waterbodies. This can be mitigated by the promotion of nature-based solutions.</p>	<p><b>+/-</b></p>	<p>Opportunity for flood and coastal erosion risk management to embrace, facilitate and deliver WFD objectives to prevent water body deterioration and improve water quality status (chemical, biological and physical).</p> <p>Contribute to WFD objectives through the 3<sup>rd</sup> cycle RBMPs, to maximise both the qualitative and quantitative status of water bodies.</p> <p>Seek to maximise opportunity to work with natural catchment processes for hydrological improvements by implementation of innovative</p>

		<p>Measure 9.8 supports coastal and inland adaptation plans to address increased flood risk through climate change. This could result in beneficial or adverse impacts depending upon the water resources present. Freshwater might be affected by saline intrusion.</p> <p>Measure 9.10 to influence SFS and UK forestry standards for the benefit of flood risk could have indirect benefits on water quality and resources, by encouraging management practice that reduces run-off and retains more water there will be a reduction in diffuse pollution.</p> <p>Overall likely to be a mixture of beneficial and adverse effects, the significance of which depends on the nature of coastal and inland adaptation solutions proposed.</p>		<p>alternatives to traditional grey engineered defences.</p>
<p><b>Climatic Factors</b> To limit the causes and effects of climate change and ensure resilience and adaptation to any consequences of climate change. (2)</p>	<p>-Improve awareness of the significant flood risks now and the future in Wales?</p> <p>-Promote a reduction directly or indirectly, in greenhouse gas emissions as a contribution to climate change?</p> <p>-Contribute to Wales' ability to adapt to climate change?</p>	<p>Measures to provide strategic advice and oversight promote collaboration, integration and innovation across FRM activities. This will ensure activities maximise delivery against this objective and NRW well-being objectives.</p> <p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature based solutions.</p>	<p>++</p>	<p>Adaptation plans will be developed collaboratively with RMA's and local communities.</p> <p>Coastal adaptation projects and NHCP should be designed to have net carbon benefit by developing habitat that sequesters carbon and minimising use</p>

		<p>This will allow climate change adaptation in line with SMP policies.</p> <p>Measure 9.8 supports coastal and inland adaptation plans to address increased flood risk through climate change.</p>		of materials that use carbon in their manufacture.
<p><b>Material Assets</b> To promote sustainable management and resilience of existing material assets and infrastructure. (2)</p>	<p>-Help identify social, economic and environmental assets at significant flood risks?</p> <p>-Provide data on areas benefiting from defences</p> <p>-Conserve and protect important material assets and infrastructure (highways, railway, utilities waste and emergency services, National Trails, Wales Coast Path and National Cycle Network)?</p> <p>-Increase the resilience of important material assets and infrastructure to climate change?</p>	<p>Measures to provide strategic advice and oversight promote collaboration, integration and innovation across FRM activities. This will ensure activities maximise delivery against this objective and NRW well-being objectives.</p> <p>Coastal and inland adaptation and infrastructure projects could have positive or negative effects on coastal and inland infrastructure, including highways, rail and the WCP or NCN. In order to adapt, rerouting might be required where managed realignment is necessary. Mitigation would be considered at a project level.</p>	++	Opportunities to enhance assets to provide multiuser access.
<p><b>Cultural Heritage</b> To protect and sustainably manage the historic environment including cultural heritage resources, historic buildings and</p>	<p>-Help identify historic and cultural assets at risk from flooding?</p> <p>-Protect, conserve and where possible enhance, heritage assets and the historic environment?</p>	<p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature based solutions. This will reduce the flood risk to heritage assets within communities.</p>	+/-	Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.

<p>archaeological features. (2)</p>	<p>-Identify opportunities to improve resilience and mitigate against impacts of flood risk and climate change?</p>	<p>Potential negative effects where heritage assets are not in areas prioritised for investment, or where coastal or inland adaptation is required.</p> <p>Approaches that work with natural processes (WA1.5) may help to manage flood risk in a way that is less damaging to the historic environment.</p>		<p>Prioritising FCERM actions should provide the benefit of helping to prioritise important heritage sites at risk from flooding and erosion for recording before they are lost.</p> <p>Attention should be given to the design of FCERM measures that directly affect historic assets or their setting, most appropriately considered at the project level.</p> <p>Implementation of resilience measures can also potentially be applied to heritage assets.</p>
<p><b>Landscape and Seascape</b> To maintain and enhance Wales' landscape and seascape character. (1,2)</p>	<p>-Ensure the landscape and seascape character of Wales is conserved and, where possible, enhanced by Placemaking where appropriate?</p>	<p>Measure 9.7 supports management of the coast in line with SMP policy and will support adaptation and, where appropriate nature-based solutions. This measure will result in mixed effects. Where coastal communities must be protected from flooding, defences can adversely effect landscape and seascape. However, the measure includes the promotion of nature-based solutions which can mitigate effects.</p> <p>Measure 9.8 supports coastal and inland adaptation plans to address</p>	<p>+/-</p>	<p>Project level environmental assessment in line with OGN 87 will ensure any adverse impacts are avoided, reduced or mitigated.</p> <p>The promotion of nature-based solutions by the FRMP, has the potential to deliver positive effects on the landscape and seascape of Wales.</p> <p>Promoting solutions that work with natural processes,</p>



		<p>increased flood risk through climate change. This could result in beneficial or adverse impacts on landscape and seascape, depending upon the options progressed.</p> <p>Measure 9.10 to influence SFS and UK forestry standards for the benefit of flood risk could have indirect benefits on landscape by promoting less intensive methods.</p>		<p>minimising damage to the environment and seeking to provide environmental benefits are all consistent with minimising adverse effects on the landscape, for example, reverting floodplains back to their natural states, coastal processes will again naturally shape our coastline ecosystems.</p> <p>Where the use of hard engineering is unavoidable, innovative solutions and sympathetic design should be used to deliver designs that are sensitive to landscape character.</p>
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## Appendix K: Natural Resources Wales Draft Well-being Objectives for 2023-2030

By 2030 in Wales:

1. nature is recovering
2. communities are resilient to climate change
3. harmful pollution is prevented

In focussing on these three well-being objectives together we also support the wider well-being of people and communities

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