

# Appendix F: North East Local Measures

## 1.0 Introduction

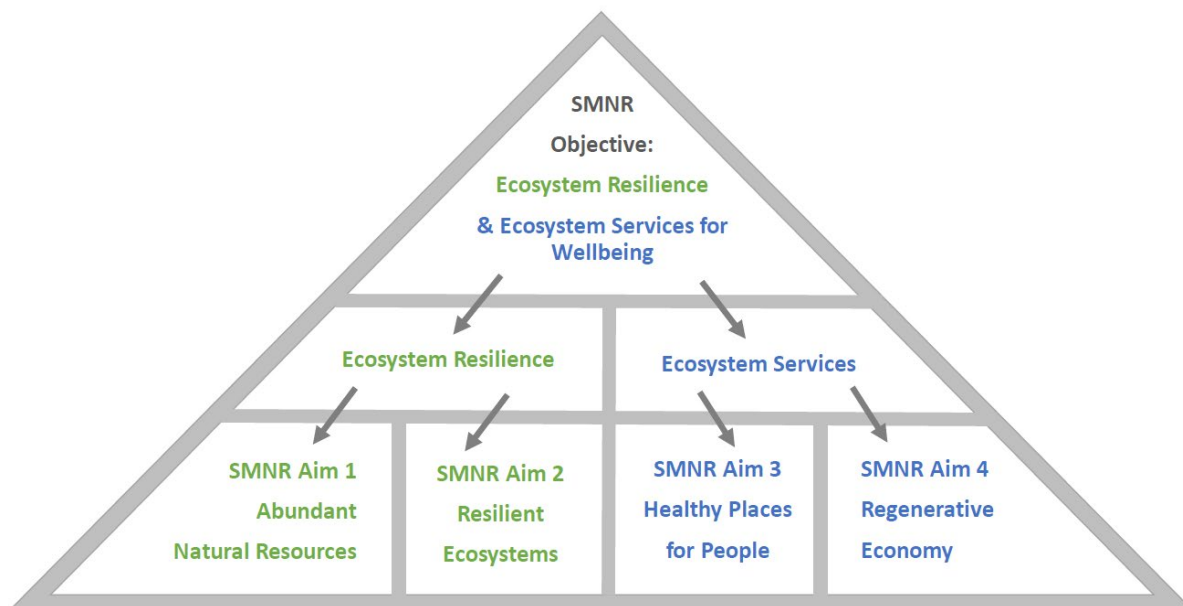
This document will consider the opportunities and constraints associated with the local measures for North East Wales. The aim of this is to:

- Consider beneficial and adverse impacts of the local measures to feed in to the main Environmental Report.
- Provide a stand-alone reference for local delivery that will identify constraints and opportunities for delivering multiple benefits, contributing to the Aims of SMNR and aligned with the Area Statement and Local Wellbeing Plan.

The Environment Act guidance set out 4 Aims for SMNR which contribute to meeting the SMNR objective set out in the Act. When Wales achieves the aims we will have achieved SMNR and met the objective set out in the Environment Act, and made the maximum contribution nature can make to the Wellbeing goals. The four aims are:

1. Stocks of natural resources are safeguarded and enhanced (Extent and condition of ecosystems)
2. Resilient ecosystems (Diversity, Connectivity, Adaptability of ecosystems)
3. Healthy places for people, protected from environmental risks
4. Contributing to a regenerative economy achieving sustainable levels of production and consumption.

Figure 1: Objective and Aims of SMNR



Local measures are proposed for the communities in North East Wales that are most at risk of flooding from rivers and sea and need action to be taken to reduce risk. Lead Local Flood Authorities manage other sources of flood risk which should be considered when measures are implemented. Figure 2 and Table 1 shows the communities across North East Wales Place where action is needed to manage and reduce the risk of flooding. For further details refer to the FRMP for Wales: North East Place.

Community name	Community name
Bangor-on-Dee	Mold
Bretton	Pen y Ffordd
Cefn-mawr - Acrefair	Pentre-Celyn
Connah's Quay and Shotton	Prestatyn
Dyserth	Queensferry-Sandycroft-Manor Lane
Garden City and Deeside Ind Est	Rhydymwyn
Glyndyfrdwy	Rhyl
Holt and Plas Devon	Rossett and Burton
Lache	Ruthin
Llandrillo	

**Table 1: Communities across North East Wales Place where action is needed to manage and reduce the risk of flooding**

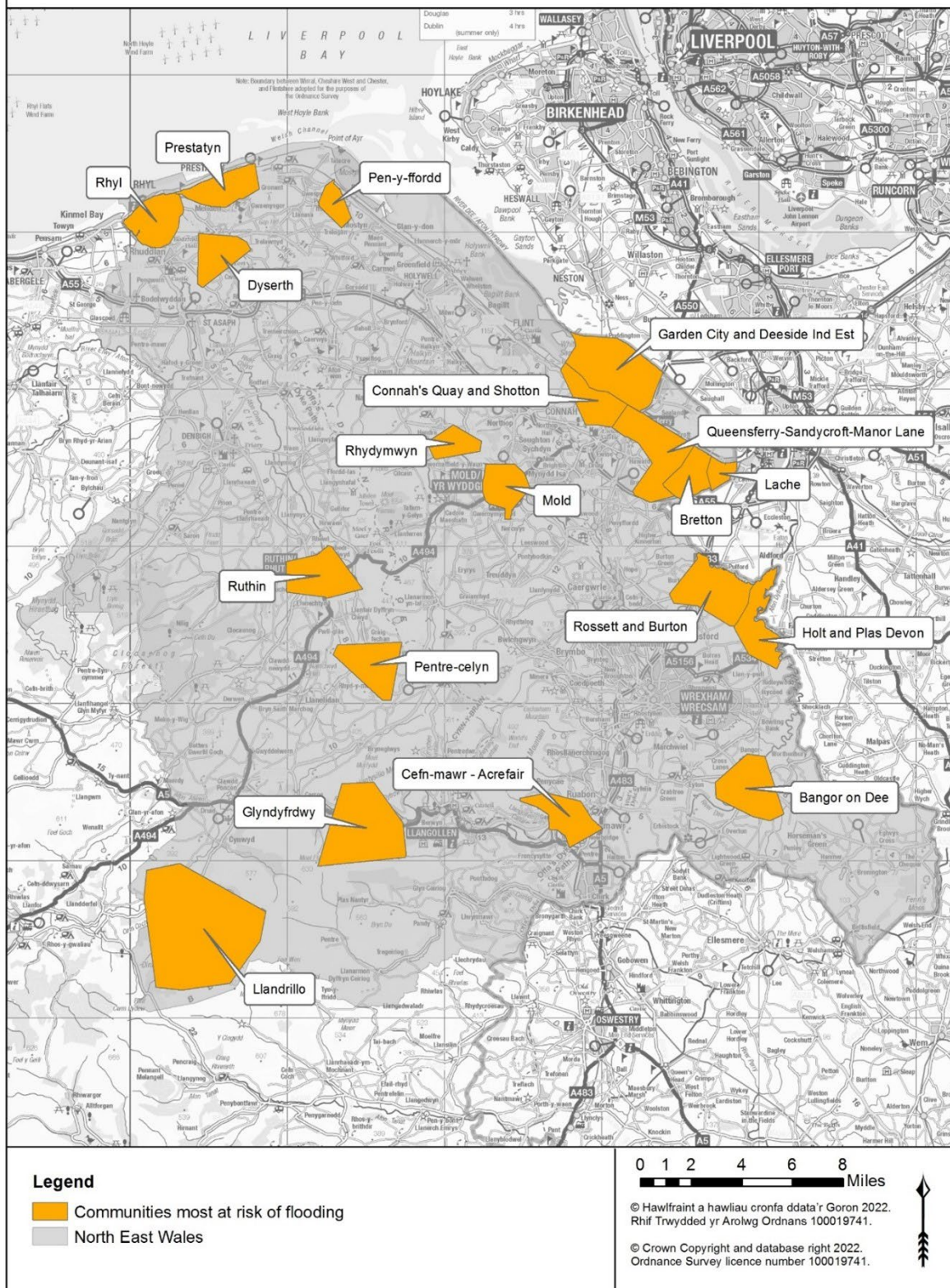


Figure 2 shows the communities across North East Wales Place where action is needed to manage and reduce the risk of flooding.

## 1.1 Approach

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 269 local measures across Wales. The local measures have been considered in the national scale assessment under the relevant activity (identified in Table 2). 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.

This appendix considers all the local measures in North East Wales Place and maps the local measures to the national assessment. Further consideration has been given to local measures where they propose to:

- Undertake initial assessment and feasibility work for reducing flood risk, or
- 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. These measures could result in physical interventions in these locations to manage flood risk and so they present an opportunity to integrate planning and delivery across different parts of NRW 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.

## 2.0 Scoping the Local Measures Assessment

Table 2 lists all the local measures that are proposed for the management of flood risk in North East Wales Place. We have identified how each measure links to and is considered in the national impact assessment and highlighted which measures we are considering further in this document to identify local constraints and opportunities that align with the Area Statement and Well Being Plan.

**Table 2: Local FRMP measures for North East Wales**

Ref.	Location	Source	Measure name	Measure type	Timescale	Scope in to the local assessment
NE1	Bangor on Dee	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Medium Term	No (project level environmental assessment underway)
NE2	Bangor on Dee	River	Develop scheme appraisal for flood alleviation scheme	Protection	Medium Term	No (project level environmental assessment underway)
NE3	Bretton	River	Update existing hydraulic model	Review	Medium Term	National (WA4)
NE4	Clwyd	River	Develop an integrated catchment approach to flood risk management	Prevention	Medium Term	Yes (WA1)
NE5	Clwyd	Sea	Development of the recommendations from the Clwyd strategy	Preparedness/ Protection	Medium Term	Yes (WA1)
NE6	Clywd	River/Sea	Maintain existing defences and inspection regime	Protection	Short Term	National (WA1)
NE7	Clwyd - Ffynnon y Ddol	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Short Term	Yes (WA1)

<b>Ref.</b>	<b>Location</b>	<b>Source</b>	<b>Measure name</b>	<b>Measure type</b>	<b>Timescale</b>	<b>Scope in to the local assessment</b>
NE8	Clwyd - Old Foryd Road	Sea	Design and construction of flood risk asset improvements	Protection	Long Term	Yes (WA1)
NE9	Clwyd	River/Sea	Maintain existing defences and inspection regime	Protection	Short Term	National (WA1)
NE10	Connah's Quay and Shotton	River/Sea	Maintain existing defences and inspection regime	Protection	Short Term	National (WA1)
NE11	Connah's Quay and Shotton	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Short Term	Yes (WA1)
NE12	Dee	Sea	Improve existing flood warning service	Preparedness	Short Term	National (WA3)
NE13	Dee	River	Improve existing flood warning service	Preparedness	Short Term	National (WA3)
NE14	Dee	River/Sea	Maintain existing defences and inspection regime	Protection	Short Term	National (WA1)
NE15	Dee	River	Develop an integrated catchment approach to flood risk management	Prevention	Medium Term	Yes (WA1)
NE16	Dee – Pumping Stations	River	Design and construction of flood risk asset improvements	Protection	Medium Term	Yes (WA1)
NE17	Dee – Tidal Outfalls	Sea	Design and construction of flood risk asset improvements	Protection	Medium Term	Yes (WA1)
NE18	Dyserth	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Medium Term	Yes (WA1)
NE19	Garden City and Deeside Ind Est	River	Carry out structural assessment on existing structures to ensure they are fit for purpose	Protection	Long Term	National (WA1)
NE20	Garden City and Deeside Ind Est	Sea	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Long Term	Yes (WA1)
NE21	Garden City and Deeside Ind Est	River/Sea	Update existing hydraulic model	Review	Long Term	National (WA4)

<b>Ref.</b>	<b>Location</b>	<b>Source</b>	<b>Measure name</b>	<b>Measure type</b>	<b>Timescale</b>	<b>Scope in to the local assessment</b>
NE22	Glyndyfrdwy	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Long Term	Yes (WA1)
NE23	Holt and Plas Devon	River	Design and construction of flood risk asset improvements	Protection	Long Term	Yes (WA1)
NE24	Holt and Plas Devon	River	Improve incident response activities and resilience	Preparedness	Medium Term	National (WA8)
NE25	Holt and Plas Devon	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Medium Term	Yes (WA1)
NE26	Lache	River	Maintain existing defences and inspection regime	Protection	Long Term	National (WA1)
NE27	Llandrillo	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Medium Term	Yes (WA1)
NE28	Llangwm	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Long Term	Yes (WA1)
NE29	Lower Dee	River	Improve existing flood warning service	Preparedness	Short Term	National (WA3)
NE30	Mold	River	Improve existing flood warning service	Preparedness	Short Term	National (WA3)
NE31	Mold	River	Update existing hydraulic Model	Review	Short Term	National (WA4)
NE32	North East Wales Place	River/Sea	Work with RMAs both within Wales and cross border where we have a joint interest, to plan and undertake activities that reduce the risk of flooding to communities	Prevention/ Protection/ Preparedness/ Review	Short Term	National (WA1)
NE33	North Wales Coast	Sea	Build hydraulic model	Review	Medium Term	National (WA4)
NE34	Pen y Ffordd	River	Maintain existing defences and inspection regime	Protection	Medium Term	Yes (WA1)
NE35	Pentre-Celyn – Afon Hesbin	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Long Term	Yes (WA1)

<b>Ref.</b>	<b>Location</b>	<b>Source</b>	<b>Measure name</b>	<b>Measure type</b>	<b>Timescale</b>	<b>Scope in to the local assessment</b>
NE36	Prestatyn	River	Maintain existing defences and inspection regimes	Protection	Short Term	National (WA4)
NE37	Queensferry-Sandycroft-Manor Lane	River	Update existing hydraulic Model	Review	Medium Term	National (WA4)
NE38	Queensferry-Sandycroft-Manor Lane	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Medium Term	Yes (WA1)
NE39	Queensferry-Sandycroft-Manor Lane	Sea	Design and construction of flood risk asset improvements	Protection	Medium Term	Yes (WA1)
NE40	Rhydymwyn	River	Improve existing flood warning service	Preparedness	Long Term	National (WA3)
NE41	Rhydymwyn	River	Update existing hydraulic Model	Review	Medium Term	National (WA4)
NE42	Rhyl	River	Maintain existing defences and inspection regime	Protection	Short Term	National (WA1)
NE43	Rhyl	River	Carry out structural assessment on existing structures to ensure they are fit for purpose	Protection	Medium Term	National (WA1)
NE44	Rhyl	Sea/River	Improve existing flood warning service	Preparedness	Long Term	National (WA3)
NE45	Rhyl	Sea	Carry out structural assessment on existing structures to ensure they are fit for purpose	Protection	Long Term	National (WA1)
NE46	Rossett and Burton	River	Design and construction of flood risk asset improvements	Protection	Medium Term	Yes (WA1)
NE47	Rossett and Burton	River	Improve existing flood warning service	Preparedness	Long Term	National (WA3)
NE48	Rossett and Burton	River	Improve incident response activities and resilience	Preparedness	Medium Term	National (WA8)



Ref.	Location	Source	Measure name	Measure type	Timescale	Scope in to the local assessment
NE49	Ruthin	River	Improve existing flood warning service	Preparedness	Medium Term	National (WA3)
NE50	Ruthin	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Short Term	Yes (WA1)
NE51	Shotwick Brook	River/Sea	Update existing hydraulic model	Review	Long Term	National (WA4)
NE52	Upper Dee	River	Improve existing flood warning service	Preparedness	Short Term	National (WA3)
NE53	Ystrad Communities	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	Short Term	Yes (WA1)

### 3.0 Key environmental constraints and opportunities

The FRMP Scoping Report provides a full overview of the environmental baseline at a national level, and the Environmental Report summarises the baseline and key issues relevant to the FRMP. This section will not repeat this information. A greater level of detail and background into North East Wales Place can be found in the following Area Statements:

[Natural Resources Wales / North East Wales Area Statement](#)

[Natural Resources Wales / Introduction to Wales' Marine Area Statement](#)

We have worked with North East Wales People and Places team to identify particular opportunities and constraints in each of the communities scoped in to this assessment. The aim is to inform and encourage cross functional planning of projects to maximise delivery against the Aims of SMNR and to inform project level environmental assessment. Where spatially specific information is available we have included it in Table 3 below, this supplements the fuller description of the environmental baseline as documented in the Scoping Report and Environmental Report. In undertaking this exercise other place based information that applies throughout North East Wales, that is of relevance for FRM activities was gathered and is set out under the four aims of SMNR. This information is not exhaustive and is meant as a prompt to encourage early and integrated planning.

**Table 3: Opportunities and constraints**

Ref.	Location	Resilient Ecosystems (Aim 2)	Coastal adaptation (Aim 2)	Healthy Places WFD Status / Heavily Modified Waterbody /Opportunity Catchments (Aim 2)	Health & wellbeing, recreation, access (Aim 3)
NE4	Clwyd – Develop an integrated catchment approach to FRM	Llwyn SAC/ SSSI Coed Nant Mawr SSSI Craig Adwy-wynt a Choed Eyarth House a Chîl-y-groeslwyd SSSI	SMP2 PU3.2 HTL/MR/MR PU3.3 HTL/MR/MR	WFD opportunity catchment work Clwyd	Access/recreation
NE5	Clwyd – Develop Tidal Clwyd Strategy	Liverpool Bay SPA	SMP2 PU3.2 HTL/MR/MR PU3.3 HTL/MR/MR	Link to WFD opportunity catchment work Clwyd	Access/recreation
NE7	Clwyd - Ffynnon y Ddol	Liverpool Bay SPA, Traeth Pensarn SSSI, Kinmel Bay Nature Reserve	SMP2 -Point of Ayr to Mostyn, South of Mostyn Dock (HTL/HTL/HTL)	WFD protected area - Kinmel Bay bathing waters - need to reduce risks to bathing water status from any work (eg sediment). Clwyd opportunity catchment.	Potential link to green space at Parc Hanes via WG Land Division portfolio - contact Molly Lovatt
NE8	Clwyd - Old Foryd Road	Dee Estuary SAC, SPA and Ramsar/SSSI	SMP2-Rhyl Gold Links to Barkby beach (Prestatyn) HTL/HTL/HTL)	WFD protected area Rhyl bathing waters - need to reduce risks to bathing water status from any work (eg sediment)	Coastal footpath/access

Ref.	Location	Resilient Ecosystems (Aim 2)	Coastal adaptation (Aim 2)	Healthy Places WFD Status / Heavily Modified Waterbody /Opportunity Catchments (Aim 2)	Health & wellbeing, recreation, access (Aim 3)
NE11	Connah's Quay and Shotton	Dee Estuary SAC, SPA and Ramsar /SSSI	SMP2 PU5.3 HTL/HTL/HTL		
NE15	Dee – Develop an integrated catchment approach to FRM	River Dee and Bala Lake SAC; Dee Estuary SAC, SPA and Ramsar and SSSI			
NE16	Dee – Pumping Station Review	Dee Estuary SAC, SPA and Ramsar/SSSI	SMP2 PU5.3 HTL/HTL/HTL		Access/public footpath
NE17	Dee – Tidal outfalls	River Dee and Bala Lake SAC & SSSI; Dee Estuary SAC, SPA and Ramsar & SSSI	SMP2 PU5.3 HTL/HTL/HTL		Access/public/Coastal path
NE18	Dyserth	Moel Hiraddug a Bryn Cop SSSI		Rhyl Bathing Water fencing schemes/DCWW groundwater safeguard zone work happening in Glanfyddion WB upstream of Dyserth. NFM link/opportunity? GB110066059990. Clwyd Opportunity catchment.	Public footpaths-access and Denbighshire LLFA existing modelling project/scheme

Ref.	Location	Resilient Ecosystems (Aim 2)	Coastal adaptation (Aim 2)	Healthy Places WFD Status / Heavily Modified Waterbody /Opportunity Catchments (Aim 2)	Health & wellbeing, recreation, access (Aim 3)
NE20	Garden City and Deeside Ind Est	River Dee and Bala Lake SAC; Dee Estuary SAC, SPA and Ramsar and SSSI, Deeside and Buckley Newt Sites SAC	SMP2 - Sealand Rifle Range to Burton Point (HTL/MR/MR)_	Might not be applicable to this location, but Garden City drain is a cross border water body reported by Environment Agency. Not sure where mitigation measures assessment is at, could be opportunities, info not on Water Watch Wales but on EA catchment data explorer - <a href="https://environment.data.gov.uk/catchment-planning/WaterBody/GB111067056960">https://environment.data.gov.uk/catchment-planning/WaterBody/GB111067056960</a> . Dee opportunity catchment?	Coastal footpath/Wirral Way/Rifle range
NE22	Glyndyfrdwy	River Dee and Bala Lake SAC and SSSI, Berwyn & South Clwyd Mountains SAC & SSSI, Berwyn SPA		Dee Ceiriog to Alwen - GB111067052060. Is a HMWB but at Good status. Dee opportunity catchment.	Public footpath/access
NE23, 25	Holt and Plas Devon	River Dee and Bala Lake SAC & SSSI		Alyn Hope to Dee GB111067052173. Dee opportunity catchment.	
NE27	Llandrillo	River Dee and Bala Lake SAC & SSSI, Berwyn and South Clwyd Mountains SAC, Berwyn SPA		Dee - Alwen to Llyn Tegid GB111067052240. HMWB. Driving element mitigation measures assessment. Dee opportunity catchment.	

Ref.	Location	Resilient Ecosystems (Aim 2)	Coastal adaptation (Aim 2)	Healthy Places WFD Status / Heavily Modified Waterbody /Opportunity Catchments (Aim 2)	Health & wellbeing, recreation, access (Aim 3)
NE28	Llangwm	Y Glyn-diffwys SSSI		Dee, Alwen. Medrad GB111067051650 Good status	
NE35	Pentre-Celyn Afon Hesbin	Coed Nant Mawr SSSI, Llwyn SAC/SSSI		GB110066054660 - Good, driving element fish / morph	Public footpath/access
NE38, 39	Queensferry-Sandycroft-Manor Lane	Dee and Bala Lake SAC, Dee Estuary SAC, SPA and Ramsar, Deeside and Buckley Newt Sites SAC		WFD HMWB Sandycroft drain GB111067052160 mitigation measures review nearing completion, need to link with this	Possible links to cycle lane improvements Sandycroft Flintshire rangers/PSB/ Coastal footpath
NE46	Rossett and Burton			GB111067052173 Alyn – Hope to Dee. Overall - Moderate	Public footpath/access
NE50	Ruthin			WFD HMWB work GB110066059960 Clwyd - tidal limit to Hesbin	Public footpath/access and maintenance from third parties

Ref.	Location	Resilient Ecosystems (Aim 2)	Coastal adaptation (Aim 2)	Healthy Places WFD Status / Heavily Modified Waterbody /Opportunity Catchments (Aim 2)	Health & wellbeing, recreation, access (Aim 3)
NE53	Ystrad Communities (Denbigh)			WFD GB110066054950 Overall Moderate Ystrad	Public footpath/access

## Aim 1: Stocks of natural resources are safeguarded and enhanced

*Tackling overexploitation to ensure that natural resources are safeguarded, and where possible enhanced, to meet the needs of current and future generations and to contribute to ecosystem resilience. Non-renewable natural resources (such as, aggregates, fossil fuels) are used in a sustainable manner and, where depletion is unavoidable, substitutes are put in place to meet future needs.*

The **National Peatland Action Programme** is a 5 year plan (2020-2025) of peatland restoration in Wales. Welsh peatlands need urgent action to reverse habitat loss and their poor condition. They support a variety of habitats and species, and have an important role in:

- capturing and storing carbon
- regulating greenhouse gases
- maintaining biodiversity
- regulating water

The programme will have direct and indirect benefit for FRM in terms of mitigating and adapting to climate change. Where local FRMP measures are delivered downstream of NPAP projects opportunities could be identified to work together to align delivery and maximise benefits.

The Wales Environmental Information Portal contains the new [peat map](#) showing the locations of all Peatlands in Wales. This is being developed further to detail what restoration has happened and where. The portal also includes a layer for [opportunities for bog restoration for FRM](#).

To determine any opportunities project managers should contact the NPAP team: [npap@naturalresourceswales.gov.uk](mailto:npap@naturalresourceswales.gov.uk).

## Aim 2: Ecosystems are resilient to expected and unforeseen change

*Building ecosystem resilience to safeguard and enhance supporting ecosystem services and tackling the impacts of habitat change, climate change, pollution, invasive alien species and other identified pressures resulting in Wales having resilient ecosystems*

There are numerous **nationally protected sites** across North East Wales. NSN Sites include the Dee and Bala Lake SAC and the Dee Estuary SAC. When local measures are implemented, project level environmental assessment and Habitats Regulations Assessment will consider implications for sites such as those listed in Table 3, as well as considering whether projects can restore or improve any features.

The third cycle **River Basin Management Plan** (RBMP) established ten **Opportunity Catchments** across Wales. Opportunity Catchments (OpC) have been agreed as the delivery mechanism for the third cycle River Basin Management Plans (RBMP) (2021-27). The focus of OpC is to maximise multiple benefits for waterbodies, health and well-being, delivered through partnership working. OpC are a delivery mechanism to integrate RBMP with other work streams and to deliver the Natural Resources Policy priorities, such as delivery through nature-based solutions. Area Statements provide an important local steer having identified the local challenges and opportunities for each area. The Dee and Clwyd are both OpC's in North East Place.

Table 3 identifies the Water Framework Directive (WFD) status of relevant waterbodies in North East Wales. Some of these are classified as **Heavily Modified Waterbodies** (HMWB). Some waterbodies might be classified as a HMWB as a result of their function as a flood risk asset. These might provide valuable social and economic benefits which it is vitally important to protect, so they have been designated as such under Article 4.3 of the WFD. There can still be opportunities to deliver mitigation measures in HMWB to help achieve Good Ecological Potential. Where FRMP measures are delivered in a HMWB, must seek opportunities to **deliver mitigation measures** identified for the HMWB.

Mitigation measures can include:

- Remove obsolete structure
- Removal of hard bank reinforcement / revetment, or replacement with soft engineering solution

- Preserve/restore habitats
- In-channel morphological diversity
- Re-opening existing culverts
- Alter culvert channel bed
- Flood bunds (earth banks, in place of floodwalls)
- Set bank embankments
- Floodplain connectivity
- Structures or other mechanisms in place and managed to enable fish to access waters upstream and downstream of the impounding works.
- Management of the risk of fish entrainment in intakes for hydropower turbines or water resource purposes (or pumping stations) where there is downstream fish migration.
- Preserve and where possible enhance ecological value of marginal aquatic habitat, banks and riparian zone
- Operational and structural changes to locks, sluices, weirs, beach control, etc
- Selective vegetation control regime
- Appropriate vegetation control technique
- Appropriate timing (vegetation control)
- Appropriate techniques (invasive species)
- Retain marginal aquatic and riparian habitats (channel alteration)
- Sediment management strategies
- Appropriate channel maintenance strategies and techniques - minimise disturbance to channel bed and margins
- Appropriate channel maintenance strategies and techniques - e.g. remove woody debris only upstream of, or within, areas of urban flood risk. Can also include the use of gravel traps and maintaining sediment within the river system
- Appropriate water level management strategies, including timing and volume of water moved
- Appropriate techniques to align and attenuate flow to limit detrimental effects of these features (drainage)
- Educate landowners on sensitive management practices (urbanisation)

Various species of fish are features of the River Dee SAC and they are also a factor in the ecological status of rivers under the WFD regulations. Opportunities have been identified in Table 3 where FRMP measures could integrate fisheries improvements, for example by **removing culverts, improving habitat or improving fish passage over in river structures**. When projects are progressed there should be early discussion with the People and Places team to identify possible mitigation measures specific to each site. Through early consideration in the options appraisal there may be opportunities to include within the project design and business case.



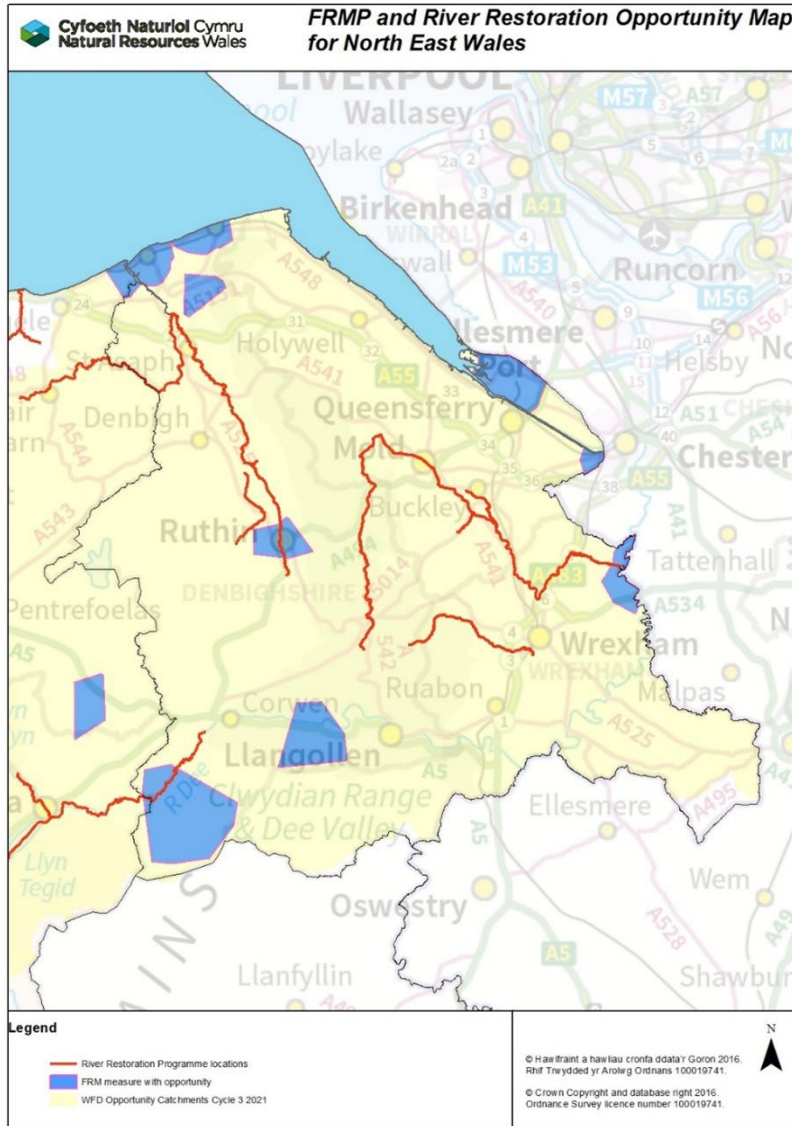
**All projects being undertaken in the fluvial, estuarine or coastal environment must undergo WFD compliance assessment under OGN 72.**

The **River Restoration Programme** (RRP) identifies options that look to address physical modifications by naturalising watercourses and improving the resilience of habitats and biodiversity, as well as potentially reducing the local risk of flooding and improving water quality. NRW will work with partners and these gains will contribute towards the watercourses achieving their objectives under the WFD Regulations 2017.

The priority catchments for river restoration are shown in Figure 3. The blue polygons show the communities where FRMP local measures propose to undertake initial assessment and feasibility work for reducing flood risk, or design and construction of flood risk asset improvement. In some communities there is correlation with the RRP priority catchments, showing opportunities for FRM projects to deliver multiple benefits by working with the RRP. Conversely, some RRP activities include measures to slow and store water, including riparian habitat management and creation of offline storage areas which can help reduce flooding, improve water quality and increase biodiversity, delivering multiple benefits.

The LIFE Dee River is a £6.8m project to restore the River Dee and its surroundings to their natural state. Included in the project are aims to remove constraints to fish migration and wider ecological connectivity and restore or improve natural riverine physical processes, features and habitats in at least 55km of river. Where FRM projects, overlap with planned river restoration work, opportunities to deliver the project in an integrated manner to deliver multiple benefits should be explored.

Figure 3: Opportunity catchments and priority catchments for river restoration in North East Wales



Some of the communities at risk in North East Place are coastal or estuarine. The Marine Area Statement acknowledges that there are many locations around Wales which we must continue to defend in the future. This gives us many opportunities to consider using nature-based solutions for our coastal defences. In the options appraisal and design of local measures there must be consideration of **coastal adaptation** in line with SMP policy and where we are investing in a coastal defence, nature-based solutions must be considered and implemented where appropriate. The Area Statement supports the implementation of SMP policies, for example where policies move from hold the line to managed realignment in 2025.

Where coastal defences must be maintained because of existing infrastructure and communities, nature based solutions must be considered. For instance, beach replenishment or saltmarsh development are natural coastal defences. Saltmarshes also offer the multiple benefit of being efficient carbon stores. Green-grey infrastructure solutions such as the use of ecological enhancement features can help to support improvements in biodiversity of coastal structures. [OGN 185 “Guidance to support the use of ecological enhancement features on coastal defence structures and assets”](#) should be considered for all coastal and estuarine projects.

### **Aim 3: Wales has healthy places for people, protected from environmental risks**

*Environmental regulation protects people from risks, such as air, water and noise pollution, flooding etc. Regulating and cultural ecosystem services are managed to increase wellbeing resulting in the provision of a healthy environment for all.*

Fundamentally, the FRMP local measures aim to manage flood risk in the communities considered at greatest risk. Many factors have an influence on our health and well-being, such as genetics, the environment, the society in which we live and work, income, behaviour patterns, and access to services. These significant and sustainable factors relate to what are known as the "Wider determinants of health", and should be considered as part of the commitment to the well-being of future generation and tackling inequalities. **The FRMP will contribute to Aim 3 by seeking to reduce the risk of flooding in these communities and consequently increasing well-being.**

Key to our understanding of populations and human health is the levels of deprivation experienced by local communities which can be explored through the Welsh Index of Multiple Deprivation: [WIMD - Home Page \(gov.wales\)](#)

Public Service Boards are responsible for producing **Well-being Assessments** and **Well-being Plans** that allow local organisations, including NRW, to work together to improve the well-being of people who live in their area. The plans prioritise what

the PSB will focus on. In 2022 PSB's undertook / are undertaking an assessment of local well-being. The new draft Local Wellbeing Plans are due for public consultation in summer 2022, with an aim of publishing in 2023. PSBs relevant for North East Wales are:

[Conwy and Denbighshire Public Service Board](#)

[Flintshire Wellbeing Plan](#)

[Wrexham PSB Well Being Plan](#)

There are opportunities for local FRMP measures to contribute to local well-being plan objectives. For example: the Wrexham Wellbeing Assessment recognises climate change as “the defining issue of our time” and identifies the communities most at risk of flooding from river, sea and surface water. Adapting to the impact of climate change and building resilience is the cornerstone of the area’s assessment on the climate emergency and cuts across the other themes in terms of aiming to deliver wider outcomes. The assessment makes the link between increasing woodland cover next to a community which not only enhances biodiversity, social health, and well-being, but also enables trees to act as ‘carbon sinks’, soaking up excess water and reducing the ‘urban heat island effect’, something that occurs when an urban area becomes significantly warmer than surrounding areas due to human activity.

Green infrastructure such as river corridors in urban areas provide connectivity of habitats, recreational opportunities of footpaths or cycle routes, “greening” urban areas, and trapping air pollution. There can be opportunities for FRM measures to consider these multiple benefits in their design. Each project level environmental assessment will consider the relevant Well-being Plan and identify opportunities to contribute.

The **[Active Travel Act Guidance](#)** has been produced by Welsh Government and is aimed at encouraging and facilitating walking and cycling. By encouraging such activities there can be direct benefits to health and well-being as well as providing alternatives to car travel. Achieving modal shift by displacing private car journeys with walking and cycling and public transport is at the heart of Llwybr Newydd, the Wales Transport Strategy. FRM projects should also seek to deliver opportunities such as designing in multi-user paths onto flood embankments.

Each Local Authority has an Active Travel Plan and the relevant ones for North East Wales can be found here:

[Denbighshire Active Travel Maps](#)

[Conwy Active Travel maps](#)

[Flintshire Active Travel maps](#)

## [Wrexham Active Travel maps](#)

At the early stages of a project we must check if there are plans for an active travel route in the area that could be accommodated or enabled by any flood risk engineering works.

There are numerous **designated landscapes** across North East Wales. Clwydian Range and Dee Valley is an **Area of Outstanding Natural Beauty** (AONB), a designated part of our landscape whose distinctive character, beauty, and cultural heritage are so precious that it is safeguarded in the national interest. Safeguarding is the protection and enhancement of the natural beauty, communities and businesses, and the unique architecture and archaeology of the area. The Clwydian Range and Dee Valley AONB is one of only 5 AONB's in Wales. It also forms part of the area that is a proposed new National Park.

The North East also contains numerous **Special Landscape Areas (SLA)**. This is a non-statutory designation applied by the local planning authority to define areas of high landscape importance within their administrative boundary. Areas of high landscape importance may be designated for their intrinsic physical, environmental, visual, cultural and historical value in the contemporary landscape. Landscapes designated as a SLA may be unique, exceptional or distinctive to the local authority area.

Any projects located within these areas must be designed sensitively with their surroundings and in discussion with the relevant authorities to ensure the landscape is safeguarded and enhanced where possible.

There are also [Registered Historic Landscapes](#) and a [World Heritage Site](#) in North East Wales: Pontcysyllte Aqueduct and Canal. There are multiple **Scheduled Ancient Monuments, Historic Parks and Gardens and listed buildings** in the communities at flood risk. There is also potential for **buried archaeology** which needs consideration in the delivery of projects. At initial assessment stage of projects it is standard practice to seek screening advice from the Clwyd Powys Archaeological Trust (CPAT), under the [Memorandum of Understanding](#) between NRW, Cadw and the Welsh Archaeological Trusts. CPAT 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.

## **Aim 4: Contributing to a regenerative economy, achieving sustainable levels of production and consumption**

*Reducing the environmental impact of production and consumption and our environmental footprint in Wales and beyond, meeting the Wellbeing Goals of delivering a prosperous and globally responsible country. Our aim is for Wales to use no more than its fair*

*share of global resources in order for our economy to operate within the regenerative capacity of the Earth's ecosystems and make a positive contribution to global wellbeing.*

Welsh Government has an aspiration to create 43,000 hectares of new woodland by 2030 (and 180,000ha by 2050) to help Wales meet its carbon emission reduction targets. Woodlands provide many benefits to society, including slowing the flow of water and consequently moderating flood events. On the other hand, forest management practices such as cultivation, drainage, road construction and harvesting can have the opposite effect if not appropriately managed. The UK Forestry Standard (UKFS) recognises the potential of forestry to affect downstream flooding and includes a set of requirements and guidelines to ensure that forests, forestry management and woodland creation make a positive contribution. A new UKFS Practice Guide on designing and managing woodlands and forests to reduce flood risk is due for publication in 2022/23. FRM capital projects, by their nature, often result in the removal of trees to make space for access and/or construction. The project environmental assessment will seek to minimise such loss and to mitigate, where necessary, by planting trees. There might also be opportunities to further enhance the environment and contribute to Welsh Government's ambition for **woodland creation** through capital project delivery, particularly if they are in locations that might reduce run-off. FRM projects, by their nature are often in urban environments and securing land for tree planting is often high risk and high cost. Delivering tree planting and woodland creation more strategically through NRW's **Woodland Creation Programme**, as well as **Welsh Government's National Forest programme** and the Sustainable Farming Scheme in due course, could provide benefits for both FRM and Wales as a whole. For further opportunities at a project level, contact NRW's woodland creation hub: [\*\*WoodlandCreation.Hub@cyfoethnaturiolcymru.gov.uk\*\*](mailto:WoodlandCreation.Hub@cyfoethnaturiolcymru.gov.uk)

**Forest Resource Plans (FRPs)** are 30year plans that set out the framework for management of the WGWE. They detail what work will be carried out and when. These programmes of work are developed to meet the forest objectives, which are created based on policy guidance and Area Statements. They are refined through coupe plans and detailed site plans for operational delivery. Following the 2020 floods NRW's Land Estate Management Review found that forests influence water in a mostly positive way, evidence suggests that they do not have a significant modifying effect during major flood events, regardless of management practice. However, in some smaller catchments where forestry is the dominant land use, woodland can have a positive effect during less extreme conditions. Work we can carry out on our land to hold and delay the release of water could contribute positively to flood management downstream, especially when combined with other catchment wide actions and when considering the future implications of climate change. The FRMP identifies those communities at greatest flood risk across Wales and linking with the relevant [Forest Resource Plan](#) at a strategic or local scale could encourage integrated planning and delivery of wider benefits, in line with the recommendations of the review.