

Flood Risk Management Plan for Wales:

North West Wales

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Introduction

Natural Resources Wales (NRW) is the largest Welsh Government Sponsored Body, and we have as our core purpose the sustainable management of natural resources in Wales.

We have a range of roles and responsibilities, ranging from regulator to advisor, landowner and operator and emergency responder. We have 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 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 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.

This Flood Risk Management Plan (FRMP) covers all of Wales and provides information on the scale of flood risk, as well as NRW's priorities for managing the risk of flooding, and measures that we propose to take, over the coming years. This FRMP covers flooding from rivers, reservoirs and the sea. It does not include flooding from surface water and smaller watercourses, for which Lead Local Flood Authorities (LLFAs) have powers and take the lead.

The FRMP is split into two sections. In the first section, you will find information, priorities and measures set at the National (Wales) level. This second section is split according to [NRW Operational areas](#), also known as NRW Places, where you will find more detailed information and measures at the local scale. It is intended that you may read the FRMP in its entirety so you are able to get the full understanding of what is planned across Wales, or you may wish to access the Place section relevant to where you live.

By being set out in this way, these plans intend to align with, and support the delivery of, the [Area Statements](#), which were developed in response to the [Natural Resources Policy](#). The North West Wales Area Statement identifies the Climate and Environment Emergency as a key theme. The information and proposed actions within this FRMP are directly relevant to this challenge and set out our flood risk management ambitions to help address it.

This North West Wales Place section provides information about the level of risk at a local scale and describes what we have planned for the communities that we are most concerned about. In line with [Welsh Government's National Flood and Coastal Erosion Risk Management Strategy](#) Objectives, we prioritise our work and direct our efforts on a prioritised flood risk basis to communities at greatest risk of flooding. We do this using our Communities at Risk Register (CaRR) that considers a number of factors to identify the locations (communities) at greatest risk of flooding across the North West Wales area. The CaRR is used to inform, plan and prioritise our investment programme to target investment in the most at risk communities. It is not an absolute ranking of risk, it is an indicator of relative significance of risk from location to location. We use this in combination with other factors to allocate our programmes of flood risk management work.

The CaRR was used to inform the identification of Flood Risk Areas in the 2018 [Preliminary Flood Risk Assessment reports](#). The aim of the FRMP is to describe what actions we are taking in these Flood Risk Areas, along with other communities that we feel require action, either in response to recent flooding that has been experienced or by targeting those at highest risk, using the CaRR. This FRMP is therefore fulfilling our requirements under

section 25 of the Flood Risk Regulations (2009) but will also take into account recent fluvial and coastal flooding events and subsequent work arising from them.

The measures included within this plan are correct at the time of writing. We will undertake an annual review of progress against the delivery of measures and will amend any measures as is necessary to ensure that we continue to take a risk based approach to the management of flood risk.

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North West Wales Place

The NRW North West Wales Place covers the Local Authorities of Conwy, Isle of Anglesey and Gwynedd. It is surrounded by the North East Wales Place to the East and the Mid Wales Place to the South.

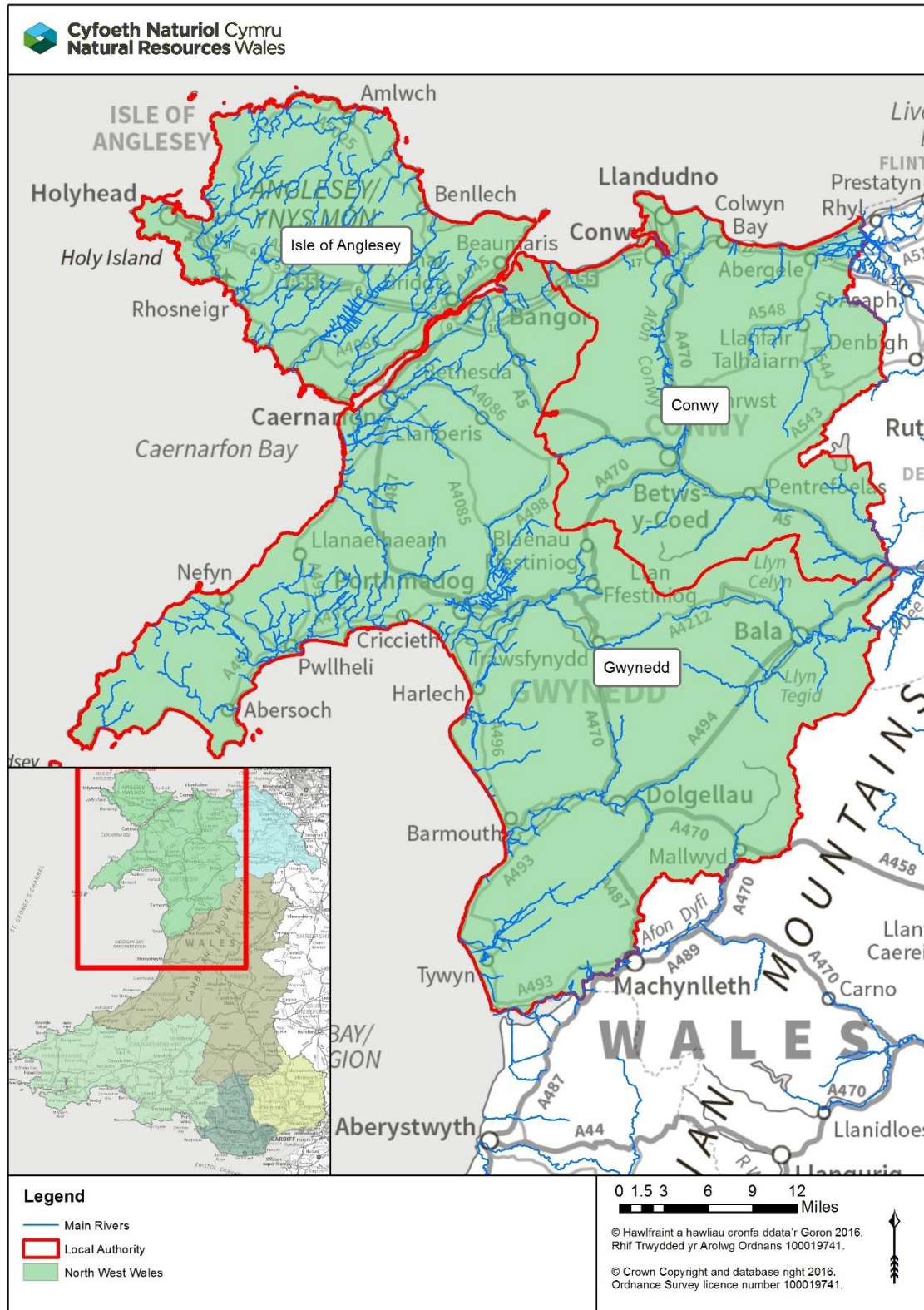


Figure 1: The spatial area covered by the North West Wales Place, along with its positioning in relation to the rest of Wales.

North West Wales Place is predominantly rural in nature and dominated by agriculture and forestry. It has a varied and diverse landscape that includes the steep mountains of the Snowdonia National Park and an extensive coastline including the Llyn Peninsula and the Isle of Anglesey.

There are many important designated sites for conservation and biodiversity across North West Wales Place which are important at attracting tourists to the area for leisure or recreation such as the Snowdonia National Park and Llyn Area of Outstanding Natural Beauty (AONB).

The steep upper catchments of Snowdonia can receive up to 4000mm of rainfall each year. The impermeable geology and soils coupled with steep slopes and high rainfall totals mean that those rivers that begin in the mountains tend to have very steep, fast river channels before levelling out near to the coast which makes them very responsive to rainfall.

Major settlements include Bangor, Caernarfon, Colwyn Bay, Llandudno and Porthmadog.

The North West Wales Place has a coastline that runs from Aberdovey in the South to Rhyl in the North. The rugged coastline and beaches of the Llyn Peninsula and Isle of Anglesey attract many visitors each year. The North West Wales Place coastline is mostly covered by the 'West of Wales' Shoreline Management Plan, with a small section of coastline covered by the 'North Wales and North West England Shoreline Management Plan.

The larger rivers that can be found in North West Wales Place are the Conwy, Glaslyn and the Mawddach.

The River Conwy is approximately 55km long from its source in Migneint Moor to where its estuary discharges into the Irish Sea at the town of Conwy. The river drops steeply in the upper catchment before flattening out near the coast where the lower reaches are affected by the tide. The river flows from South to North and the surrounding lands are predominantly rural with only a small number of urban areas. Key communities are Colwyn Bay, Conwy, Llandudno, Llanrwst and Trefriw.

The River Glaslyn is approximately 26km long from its source on the side of Snowdon to where it meets the sea at the town of Porthmadog. In the upper reaches, the steep channel has greatly influenced the surrounding landscape in creating Glaslyn Gorge. In the lower reaches the wide flat valley created by the estuary of the Glaslyn is now sealed off by Porthmadog cob and reclaimed as important farmland. Key communities are Beddgelert and Porthmadog.

The River Mawddach is approximately 45km long from its source near Dduallt in Snowdonia to where its estuary discharges into the sea at Barmouth. The River Mawddach has many tributaries, many of which are a similar size to the Mawddach itself including the River Wnion. Key communities are Barmouth, Dolgellau and Fairbourne.

Other notable rivers in North West Wales Place are the Adda, Cadnant, Carrog, Cefni, Dwyfach, Dysynni, Gwyrfai, Heulyn, Ogwen, Rhyd-hir, Seiont,

The headwaters of the River Dee, including Llyn Tegid are located within the North West Wales Place before flowing into the neighbouring North East Wales Place.

Historic flooding in North West Wales

This section provides a summary of the significant flood events that have happened over the last 20 years in the North West Wales Place. In most cases, we class a flood event to be significant if 20 or more properties (residential or commercial) have been flooded. Other extreme weather events that have caused localised flooding have also occurred, which may not be captured within the events focussed on here.

A summary of each of the significant flood events experienced across North West Wales Place is provided below:

- In January 2005, 44 properties were affected by flooding in Llanrwst, Trefriw and Betws-y Coed. Roads were flooded and the Conwy valley railway line was damaged and closed.
- In March 2010 large waves overtopped defences in Llanfairfechan and caused flooding to approximately 20 basement properties.
- In June 2012, an intense summer rainfall event led to flooding in several communities after rivers overtopped their banks. This mostly affected the Dyfi and Leri catchment but specifically for North West area both. The villages of Pennal and Brynchrug were impacted with properties flooded and transport routes affected.
- On 22 November 2012, fluvial and pluvial flooding occurred in Llanberis, Tal y Bont, Deiniolen and Llanfair Talhaiarn. In Llanberis, 70 properties were flooded; in Tal y Bont, 20 residential properties were flooded; in Deiniolen, 29 properties were flooded and in Llanfair Talhaiarn, 21 properties were flooded.
- In December 2013, a combination of high tides, strong winds and large waves caused flooding along the Conwy coastline. Communities such as Deganwy and Llanddulas experienced property flooding.
- In January 2014, a combination of high tides, strong winds and large waves caused widespread flooding around the Welsh coast with 15 properties affected in Barmouth, Caernarfon 9 properties and Fairbourne, Y Felinheli and Pwllheli 1-2 properties affected within each community.
- On 26 December 2015, flooding occurred across Conwy and Gwynedd with Tal y Bont Gwynedd (20 properties flooded) and the river Conwy (33 caravans) particularly affected. This also caused widespread flooding from both the Gwyrfai and Seiont catchments to communities in Betws Garmon (Gwyrfai Terrace), Bontnewydd and Caernarfon.
- On 22 November 2017, flooding was experienced on Anglesey in Llangefni, with 6 homes and 27 commercial properties flooded, and Dwyran, where 13 homes flooded.

- On 16 March 2019, Storm Gareth affected properties in Betws y Coed and Llanrwst where 40 properties were flooded
- On 27 April 2019, Storm Hannah brought heavy rain across the Welsh mountains. Capel Curig (Conwy) recorded a 2 day total for 26 to 27 April of 108.4mm, 71% of the April 1981-2010 long-term average, with most of this rain falling in a 22 hour period.
- Storm Ciara (8/9 February 2020) was the first of three named storms to affect Wales during February 2020, the wettest February now on record. North Wales was worst impacted by the storm with many river and rain gauges hitting record levels. 182 properties flooded across North West Wales Place with 172 flooded in Conwy and 10 in Gwynedd.
- In August 2020 Beddgelert, Snowdonia National Park, Gwynedd, was significantly affected by Storm Francis which was a deep Atlantic low pressure system which brought significant heavy rain and gusts of 70-70mph. The combination of extreme river levels and wind speeds led to fallen trees into the river and the Afon Colwyn inundating homes and business with 47 properties affected. Impacts were also experienced in Abergwyngregyn, Bethesda and Betws Garmon.
- Wet weather in late October 2021 resulted in high river levels and affected rural properties in Anglesey and Gwynedd. Properties reported flooding in City Dulas Betws Garmon, Pwllheli and Abererch.

Present day flood risk in North West Wales

Across the North West Wales Place, there are 13,873 properties at risk of flooding from the sea and 9,010 properties at risk of flooding from rivers. This equates to over 36,000 people at risk of flooding from the sea and nearly 23,000 people at risk of flooding from rivers.

Flood risk descriptions

River flooding happens when a river cannot cope with the amount of water draining into it from the surrounding land. Sea or tidal flooding happens when there are high tides and stormy conditions. We describe the amount of risk to each property as the 'chance' of flooding. There are three risk categories:

- If something is described as being at '**high**' risk of flooding, this means that each year, there is a chance of flooding of greater than 1 in 30 (3.3%).
- If something is described as being at '**medium**' risk of flooding, this means that each year, there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) for rivers or between 1 in 200 (0.5%) and 1 in 30 (3.3%) for flooding from the sea.
- If something is described as being at '**low**' risk of flooding, this means that each year, there is a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%) for rivers or between 1 in 1000 (0.1%) and 1 in 200 (0.5%) for flooding from the sea.

The following section provides the numbers that are at risk of flooding across the North West Wales Place. If you would prefer to view where is at risk of flooding in map form, we have a number of flood mapping products available on our website. These show visually where is at risk of flooding across Wales for each source. For the most up to date maps, please visit our website: [check your flood risk by postcode](#) and [check your flood risk on a map](#).

The numbers used throughout the following section have been split up into risk from rivers and from the sea. In reality, some properties can be susceptible to both flooding from rivers and the sea, but this can complicate explanations and data presentation, so river and sea flood risk are covered separately. Of course, some properties can be risk of surface water flooding too, this is not included in this NRW FRMP, as Local Authorities lead on this type of flooding.

The properties at risk figures provided throughout this FRMP reflect our understanding of flood risk without flood defences. This is to portray a true scale of flood risk in Wales and to reflect that any flood defence can be overwhelmed in conditions that exceed what it was designed to accommodate.

What is at risk in North West Wales Place today?

The following tables show the split of properties by level of risk and source across the North West Wales Place if there were no defences present. This data is correct as of December 2021.

Flood risk description	Residential properties at risk of flooding	Non-Residential properties at risk of flooding	Key Services at risk of flooding	Total at risk of flooding
Sea High	7,452	860	184	8,496
Sea Medium	3,351	731	131	4,213
Sea Low	940	199	25	1,164
Sea Total	11,743	1,790	340	13,873

Table 1: The numbers of residential properties, non-residential properties and services at risk of flooding from the sea in North West Wales Place.

Flood risk description	Residential properties at risk of flooding	Non-Residential properties at risk of flooding	Key Services at risk of flooding	Total at risk of flooding
Rivers High	1,467	318	79	1,864
Rivers Medium	1,953	154	39	2,146
Rivers Low	4,251	613	136	5,000
Rivers Total	7,671	1,085	254	9,010

Table 2: The numbers of residential properties, non-residential properties and services at risk from river flooding in North West Wales Place.

The network of sea flood defences across the North West Wales Place help to reduce the risk to nearly 8,000 properties (residential and non-residential) in the 1 in 30 year scenario (3.3% annual exceedance probability) and over 11,000 properties in the 1 in 200 year scenario (2% annual exceedance probability). Further to this, the network of river flood defences help to reduce the risk to over 400 properties (residential and non-residential) in the 1 in 30 year scenario (3.3% annual exceedance probability) and over 700 properties in the 1 in 100 year scenario (1% annual exceedance probability). These properties are not removed from risk entirely by flood defences because flood defences do not completely stop the chance of flooding as they can be overtopped or fail, but the risk is significantly reduced.

Transport infrastructure

Throughout the North West Wales Place, there is 62km of rail track and 433km of road (major and minor) at risk of flooding from the sea. This means that there is for over 33% of all rail track across Wales at risk of flooding from the sea in the North West Wales Place. In addition, there is 26km of rail track and 396km of road at risk of flooding from rivers.

Agricultural land

There is just under 400km² of agricultural land that is at risk of flooding from the sea across Wales. In North West Wales Place, there is 134km² at risk of flooding from the sea which is 34% of the overall Wales total.

In addition, Wales has over 800km² of agricultural land that is at risk of river flooding. 20% of the overall total of agricultural land that is at risk of flooding from rivers is in the North West Wales Place.

Environment

There are a number of protected sites at risk of flooding across the North West Wales Place. Table 3 below provides information on the scale of sites at risk in Wales, as well as the relevant the proportion of risk present in North West Wales.

Designation	Sea flooding – total area at risk in Wales (km²)	Sea flooding – total area at risk in NW (km²)	Sea flooding - % of Wales total at risk in NW	River flooding – total area at risk in Wales (km²)	River flooding – total area at risk in NW (km²)	River flooding - % of Wales total at risk in NW
RAMSAR	204	4	2	23	6	26
Special Areas of Conservation (SACs)	385	76	20	113	29	26
Special Protection Areas (SPAs)	240	38	16	21	5	24
Sites of Special Scientific Interest (SSSI)	513	121	24	180	59	33
Scheduled Ancient Monuments (SAMs)	1	0.6	50	1	0.2	16

Table 3: The numbers of National important designated sites that are at risk of flooding from rivers and the sea in North West Wales Place.

Communities at most risk in North West Wales

Through the Preliminary Flood Risk Assessment stage associated with this FRMP communities were identified as “Flood Risk Areas”. The assessment undertaken to identify Flood Risk Areas across Wales was done using the undefended status of communities to create a platform for comparison. For North West Wales, all of the communities identified as Flood Risk Areas are at risk of flooding from the sea. It is important that work is undertaken to sustain the existing protection that community’s benefit from, as well as continuing to try to identify options to reduce flood risk further in at risk areas.

The North West Wales Place Flood Risk Areas are:

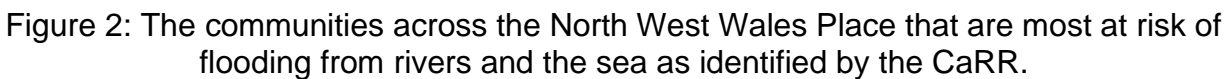
- Abergele – flood risk from the sea
- Fairbourne – flood risk from the sea
- Kinnel Bay – flood risk from the sea
- Porthmadog – flood risk from the sea
- Pwllheli – flood risk from the sea
- Towyn – flood risk from the sea

Further to this NRW has considered additional areas at risk of flooding from rivers and the sea. Figure 2 and accompanying Table 4 show the communities across North West Wales that are most at risk of flooding from rivers and the sea as identified by the CaRR.

Community name	Local Authority Area
Aberdaron	Gwynedd
Abererch	Gwynedd
Abergele	Conwy
Abergwyngregyn	Gwynedd
Amlwch	Isle of Anglesey
Bala	Gwynedd
Bangor	Gwynedd
Beddgelert	Gwynedd
Betws Garmon	Gwynedd
Bontnewydd	Gwynedd
Bryncrug	Gwynedd
Caernarfon	Gwynedd
Criccieth	Gwynedd
Dwygyfylchi	Conwy
Dwyran	Isle of Anglesey
Fairbourne	Gwynedd
Kinnel Bay	Conwy
Llanbedr	Gwynedd
Llandudno	Conwy
Llandudno Junction	Conwy
Llanfair talhaiarn	Conwy
Llanfairfechan	Conwy
Llanfihangel - y - Traethau	Gwynedd
Llangefni	Isle of Anglesey
Llangwm	Conwy

Llanrwst	Conwy
Llanuwchllyn	Gwynedd
Malltraeth	Isle of Anglesey
Mochdre	Conwy
Pennal	Gwynedd
Pontllyfni	Gwynedd
Porthmadog	Gwynedd
Pwllheli	Gwynedd
Talsarnau	Gwynedd
Towyn	Conwy
Trefriw	Conwy
Tywyn	Gwynedd
Valley/Dyffryn	Isle of Anglesey

Table 4: The name of each of the communities highlighted in figure 2. The Flood Risk Area communities for flooding from rivers and the sea are highlighted in bold.



Future flood risk in North West Wales

Across North West Wales, there are predicted to be over 18,000 properties at risk of flooding from the sea and over 11,000 properties at risk of flooding from rivers by 2120. This is an increase of over 4,500 properties at risk of flooding from the sea and an increase of over 2,000 properties at risk of flooding from rivers.

This equates to an estimate of over 47,000 people at risk of flooding from the sea and nearly 29,000 people at risk of flooding from rivers by 2120. This is an additional 11,000 people at risk from flooding from the sea and an additional 6,000 people at risk from flooding from rivers from 2020.

Climate projections indicate that we will see an increase in the frequency and intensity of extreme weather events, including storm events in the Summer and prolonged wet periods during the Winter period. This will increase peak flows in our rivers, which is expected to increase the risk of flash flooding events. Such flooding is very difficult to forecast and predict and can be very challenging to manage.

Climate projections also indicate that sea level rise will occur for all emission scenarios and at all locations around the UK. Coastal areas will be increasingly vulnerable to increased wave action and accelerated coastal erosion associated with climate change. These impacts will affect not only coastal communities who live and work in coastal areas, but some of Wales' most important natural habitats and heritage sites which are located along our coastline.

We have followed the Welsh Government [Adapting to Climate Change Guidance](#) to base our climate change modelling outputs that have enabled us to include our projections in this FRMP. We have used the central climate change estimate to produce the data outputs used in the following section.

What will be at risk of flooding in North West Wales Place by 2120?

The following tables show the level of risk and source across the North West Wales Place if there were no defences present for 2020 and 2120. This data is correct as of December 2021.

Flooding from the sea

People, economy or environment	Aspect	Units	2020 risk	2120 risk	Difference (Units)	Difference (%)
People	People	Count	36,152	47,448	+11,296	+31%
People	Residential properties	Count	11,743	15,328	+3,585	+31%
Economy	Non-residential properties	Count	1,790	2,584	+794	+44%
Economy	Key services	Count	340	547	+207	+61%
Economy	Railway	Km	62	91	+29	+47%
Economy	Road	Km	433	606	+173	+40%
Economy	Agriculture	Km ²	134	157	+23	+17%

People, economy or environment	Aspect	Units	2020 risk	2120 risk	Difference (Units)	Difference (%)
Environment	RAMSAR	Km ²	4	4	0	-
Environment	Special Areas of Conservation (SACs)	Km ²	76	80	+4	+5%
Environment	Special Protection Areas (SPAs)	Km ²	38	38	0	-
Environment	Sites of Special Scientific Interest (SSSI)	Km ²	121	126	+5	+4%
Environment	Scheduled Ancient Monuments (SAMs)	Km ²	0.6	0.7	+0.1	+17%

Table 5: The numbers at risk of flooding from the sea for 2020, 2120 and the projected difference in North West Wales Place.

Flooding from rivers

People, economy or environment	Aspect	Units	2020 risk	2120 risk	Difference (Units)	Difference (%)
People	People	Count	22,904	28,986	+6,082	+27%
People	Residential properties	Count	7,671	9,640	+1,969	+26%
Economy	Non-residential properties	Count	1,085	1,400	+315	+29%
Economy	Key services	Count	254	318	+64	+25%
Economy	Railway	Km	26	37	+11	+42%
Economy	Road	Km	396	485	+89	+22%
Economy	Agriculture	Km ²	163	179	+16	+10%
Environment	RAMSAR	Km ²	6	6	0	-
Environment	Special Areas of Conservation (SACs)	Km ²	29	32	+3	+10%
Environment	Special Protection Areas (SPAs)	Km ²	5	6	+1	+20%
Environment	Sites of Special Scientific Interest (SSSI)	Km ²	59	64	+5	+8%

People, economy or environment	Aspect	Units	2020 risk	2120 risk	Difference (Units)	Difference (%)
Environment	Scheduled Ancient Monuments (SAMs)	Km ²	0.2	0.3	+0.1	+50%

Table 6: The numbers at risk of flooding from rivers for 2020, 2120 and the projected difference in North West Wales Place.

Communities at most risk of future flooding in North West Wales

By 2120, the five communities in North West Wales Place that are estimated to be most at risk of flooding from the sea are:

- Abergele
- Conwy
- Kinmel Bay
- Llandudno
- Pwllheli

By 2120, the five communities in North West Wales Place that are estimated to be most at risk of flooding from rivers are:

- Abergele
- Dolgellau
- Fairbourne
- Kinmel Bay
- Towyn

The following map shows the communities across the North West Wales Place that are projected to experience the biggest change in danger (as defined within our Community at Risk Register) presented from the risk of flooding from rivers and the sea in 2120.

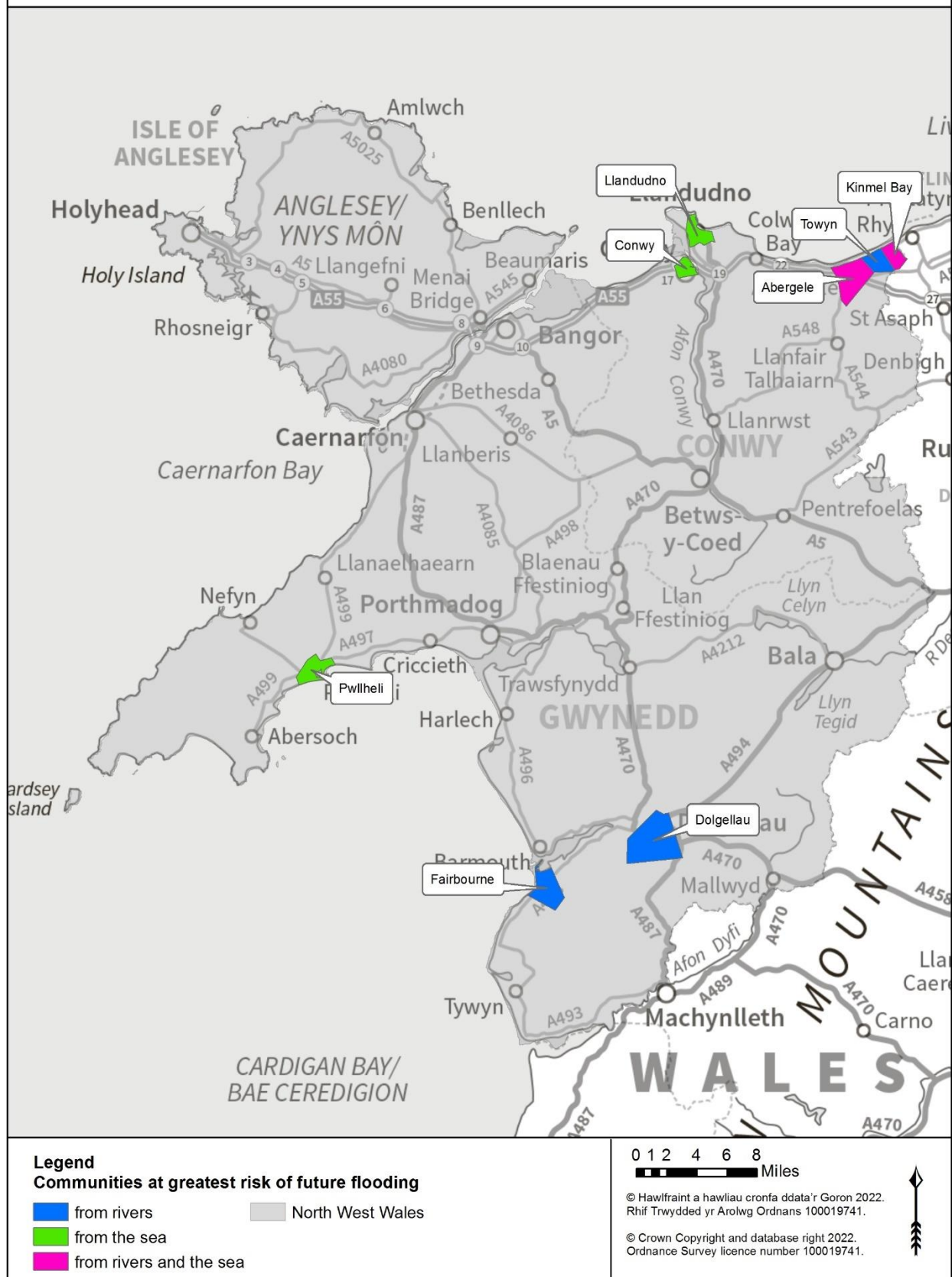


Figure 3: The communities across North West Wales Place where there is predicted to be the biggest change in danger by 2120. The map shows the top five communities for risk from river and the top five for risk from the sea.

Recent flood risk management activity

We published our first cycle Flood Risk Management Plans in early 2016. These plans contained a number of community scale measures for the following years that would help to manage and reduce the risk of flooding. We have undertaken a review of the measures for communities within the North West Wales Place. The below chart shows a summary of our delivery of these measures.

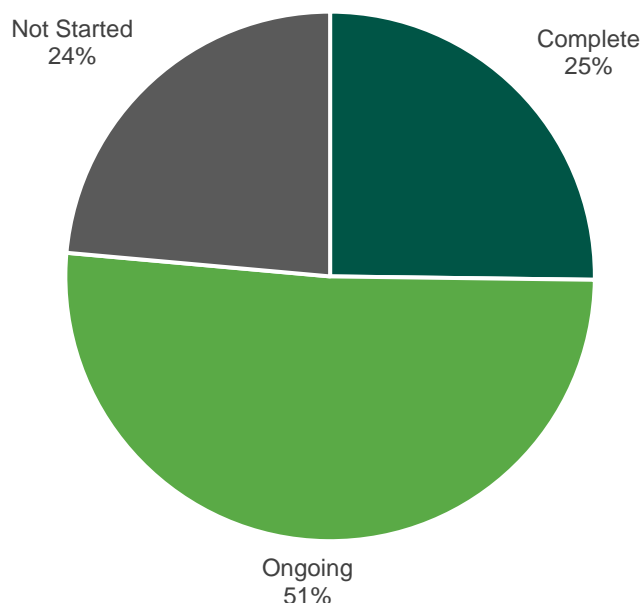


Figure 4: The progress made against the NRW measures set out in the first cycle FRMPs in North West Wales.

Key delivery highlights include:

- We have undertaken the first phase of flood risk management improvement work in Llanfair Talhaiarn to increase the protection from flooding to 29 houses and 4 businesses. We have also undertaken appraisal work for the delivery of a potential flood risk management scheme in Llangefni.
- We have commenced work to consider the long term strategy for managing flood risk in a number of coastal communities, including Fairbourne, Porthmadog and Pwllheli.
- We have delivered maintenance schemes such as at Abererch, Bontnewydd, Draenogau and Fairbourne, which have maintained our defences and provided a sustained level of protection to those properties that benefit.
- We have commenced work at Llyn Tegid to manage reservoir safety, flood risk and ensure continuity of service for water resources into the future.

It should be recognised that many of the actions identified in the first cycle FRMPs take considerable time and effort to deliver and whilst the relative number of completed measures is low, a significant numbers of the identified measures are in delivery. Also, our work plans and the capacity to deliver them are highly influenced by actual flood events occurring; the floods of February 2020 in Wales for example have had a significant impact on our ability to take forward planned work.

Flood risk management work we are planning in North West Wales

Introduction

There are a number of communities within the North West Wales place where we consider there is still more to be done to manage and reduce the risk of flooding. These communities and associated measures are detailed within this section. The National Section of this FRMP sets out how we prioritise our work on a risk basis so that those communities that are most at risk of flooding are addressed first.

We undertake flood risk management at a range of different scales dependant on what will achieve the desired result. This Flood Risk Management Plan provides information at two scales. At a Wales-wide, National scale through our National Measures (the activities we undertake across Wales, some of which makes our actions at the local scale possible), and at the local community scale. The National Measures can be found in the National section. The local community scale measures can be found in this section.

Measure type

There are four types of measures and local measures are categorised according to measure type.

Prevention of the damage caused by flooding, this includes attempts to make catchments more resilient, and efforts to prevent areas becoming more susceptible, to flood risk.

Protection against flooding in specific locations by provision of schemes and approaches to reduce the risk and likelihood against flooding.

Preparedness of communities and emergency responders to act in the event that flooding should occur, which can reduce the impacts of flooding and make communities more resilient.

Review to make improvements in our understanding of flood risk to better inform and consider potential future action.

All of the above types of measures seek to reduce the likelihood of flooding or the impacts it has on people and properties, it should be highlighted however that flood risk can only be managed to a certain extent. We cannot remove flood risk entirely and there will always be potential for flood events to exceed the limits of the risk management techniques being used. For example flood defences will be built within technical, economic and environmental constraints, therefore in extreme events flood water can exceed the capacity that they were designed to contain.

Measure implementation status

Not started: work has not yet begun.

Ongoing: work has begun.

Measure timescale

The timescales proposed are a factor of relative priority and the likely complexity of what might be required; they are also subject to funding and capacity.

Short Term: Planned to be delivered in the short term (years 1 - 2)

Medium Term: Planned to be delivered in the medium term (years 3 - 4)

Long Term: Planned to be delivered in the long term (years 5 +)

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Delivery Plan for North West Wales Place

The following delivery plan sets out on a community basis, the measures that we are in the process of undertaking or plan to undertake to help manage the risk of flooding to that community. This provides a list of measures we intend to undertake within the North West Wales Place over the coming years, subject to assessment and funding justification.

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW1	Aberdaron	River/Sea	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Not started
NW2	Aberdaron	River/Sea	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing
NW3	Abererch	Sea	Develop scheme appraisal for flood alleviation scheme	Protection	1	Short Term	Ongoing
NW4	Abererch	River	Develop scheme appraisal for flood alleviation scheme	Protection	1	Medium Term	Ongoing
NW5	Abererch	River/Sea	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing
NW6	Abergele	River	Design and construction of flood risk asset improvements	Protection	1	Long Term	Ongoing
NW7	Abergele	River	Design and construction of flood risk asset improvements	Protection	1	Medium Term	Not started
NW8	Abergwyngregyn	Sea	Consider future management options and undertake coastal adaptation planning	Review	1	Long Term	Not started
NW9	Abergwyngregyn	River	Build hydraulic model	Review	7	Short Term	Ongoing
NW10	Bala	River	Improve existing flood warning service	Preparedness	9	Medium Term	Ongoing
NW11	Bala	River	Update existing hydraulic model	Review	7	Short Term	Ongoing
NW12	Bala	River	Design and construction of flood risk asset improvements	Protection	1	Short Term	Not started

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW13	Bala	River	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing
NW14	Bangor	River	Update existing hydraulic model	Review	7	Short Term	Ongoing
NW15	Beddgelert	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Not started
NW16	Beddgelert	River	Improve existing flood warning service	Preparedness	9	Short Term	Not started
NW17	Betws Garmon - Gwyfrai Terrace	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Ongoing
NW18	Bontnewydd	River	Design and construction of flood risk asset improvements	Protection	1	Short Term	Ongoing
NW19	Bryncrug	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Medium Term	Not started
NW20	Bryncrug	River	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing
NW21	Caernarfon (Seiont Mill)	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Ongoing
NW22	Clwyd	Sea	Development of the recommendations from the Clwyd strategy	Preparedness/Protection/Review	1, 2	Medium Term	Ongoing
NW23	Clwyd	River/Sea	Maintain existing defences and inspection regime	Protection	5	Medium Term	Not started
NW24	Clwyd - Ffynnon y Ddol	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Not started
NW25	Clwyd - Old Foryd Road	Sea	Design and construction of flood risk asset improvements	Protection	1	Medium Term	Not started
NW26	Conwy	River	Work with other RMAs where we have a joint interest, to plan and undertake activities that reduce the risk of flooding to communities	Prevention/Protection/Preparedness/Review	1, 2, 13	Medium Term	Not started

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW27	Conwy	River/Sea	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing
NW28	Criccieth	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Not started
NW29	Dwygyfylchi	River	Build hydraulic model	Review	7	Long Term	Not started
NW30	Dwyran	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Ongoing
NW31	Dwyran - Braint	River	Improve existing flood warning service	Preparedness	9	Short Term	Not started
NW32	Dysynni	Sea	Consider future management options and undertake coastal adaptation planning	Review	1	Medium Term	Ongoing
NW33	Eryri Meirionnydd	River/Sea	Design and construction of flood risk asset improvements	Protection	1	Medium Term	Ongoing
NW34	Fairbourne	Sea	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Ongoing
NW35	Gwehelog - Mochras	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Not started
NW36	Harlech	Tidal/	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Not started
NW37	Kinmel Bay	Sea	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Short Term	Ongoing
NW38	Kinmel Bay	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Medium Term	Not started
NW39	Llanbedr	Tidal	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Medium Term	Not started
NW40	Llandudno	Sea	Update existing hydraulic model	Review	7	Medium Term	Ongoing

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW41	Llanfair Talhaiarn	River	Design and construction of flood risk asset improvements	Protection	1	Short Term	Ongoing
NW42	Llanfair Talhaiarn - Elwy	River	Design and construction of flood risk asset improvements	Protection	1	Short Term	Ongoing
NW43	Llanfair Talhaiarn - Nant Barrog	River	Design and construction of flood alleviation scheme	Protection	1	Short Term	Ongoing
NW44	Llanfair Talhaiarn - Nant Barrog	River	Consider and integrate nature-based solutions including natural flood management in NRW flood risk schemes and activities	Prevention	1, 2, 4, 12	Short Term	Ongoing
NW45	Llanfair Talhaiarn	River	Improve existing flood warning service	Preparedness	9	Short Term	Ongoing
NW46	Llanfairfechan	River	Update existing hydraulic model	Review	7	Medium Term	Not started
NW47	Llanfihangel - y - Traethau -Ty Gwyn Tidal Door	Sea	Design and construction of flood risk asset improvements	Protection	1	Medium Term	Not started
NW48	Llangefni	River	Develop scheme appraisal for flood alleviation scheme	Protection	1	Short Term	Ongoing
NW49	Llanuwchllyn	River	Improve existing flood warning service	Preparedness	9	Medium Term	Not started
NW50	Llanuwchllyn	River	Update existing hydraulic model	Review	7	Short Term	Not started
NW51	Llyn Tegid	River	Design and construction of flood alleviation scheme	Protection	1	Short Term	Ongoing
NW52	Malltraeth	Sea	Design and construction of flood risk asset improvements	Protection	1	Medium Term	Ongoing
NW53	Mochdre	River	Update existing hydraulic model	Review	7	Long Term	Not started
NW54	North Wales Coast - Pensarn to Red Wharf Bay	Sea	Build hydraulic model	Review	7	Medium Term	Not started
NW55	North Wales Coast - Ynys Mon	Sea	Build hydraulic model	Review	7	Long Term	Not started

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW56	Pennal	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Medium Term	Not started
NW57	Pontllyfni	Sea	Consider future management options and undertake coastal adaptation planning	Review	1	Long Term	Not started
NW58	Porthmadog	Sea/River	Improve existing flood warning service	Preparedness	9	Short Term	Not started
NW59	Porthmadog	Sea/River	Develop scheme appraisal for flood alleviation scheme	Protection	1	Short Term	Ongoing
NW60	Pwllheli	River/Sea	Update existing hydraulic model	Review	7	Short Term	Ongoing
NW61	Pwllheli	River/Sea	Develop scheme appraisal for flood alleviation scheme	Protection	1	Short Term	Ongoing
NW62	Talsarnau	Sea	Consider future management options and undertake coastal adaptation planning	Review	1	Long Term	Not started
NW63	Tan Lan	Sea	Consider future management options and undertake coastal adaptation planning	Review	1	Short Term	Ongoing
NW64	Towyn	Sea	Maintain existing defences and inspection regime	Protection	5	Long Term	Ongoing
NW65	Trefriw - B5106	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Ongoing
NW66	Trefriw - Crafnant Loop	River	Design and construction of flood risk asset improvements	Protection	1	Short Term	Ongoing
NW67	Trefriw - Princess Street	River/Sea	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Not started
NW68	Tywyn	River	Undertake initial assessment and feasibility work for reducing flood risk	Protection	1	Long Term	Ongoing
NW69	Tywyn	River	Improve existing flood warning service	Preparedness	9	Long Term	Not started
NW70	Valley/ Dyffryn	River/Sea	Update existing hydraulic model	Review	7	Long Term	Not started

Ref.	Location	Source	Measure name	Measure type	Link to FRMP Priority	Timescale	Status
NW71	Ynys Mon	River	Work with other RMAs where we have a joint interest, to plan and undertake activities that reduce the risk of flooding to communities	Prevention/Protection/Preparedness/Review	1, 2, 13	Medium Term	Not started
NW72	Ynys Mon	River/Sea	Maintain existing defences and inspection regime	Protection	5	Short Term	Ongoing

Table 7: The delivery plan of planned flood risk measures for North West Wales Place.

Further information

This North West Wales Place section is one of six sections that provide detailed local information as part of NRW's Flood Risk Management Plan for Wales. There is also a National overview section that provides information, priorities and measures set at the National (Wales) level.

If you would like to find out further information about how we manage flood risk across Wales, you can access any of the following:

Flood Risk Management Plan for Wales: National overview

Flood Risk Management Plan for Wales: South Central Wales Place

Flood Risk Management Plan for Wales: South East Wales Place

Flood Risk Management Plan for Wales: South West Wales Place

Flood Risk Management Plan for Wales: Mid Wales Place

Flood Risk Management Plan for Wales: North East Wales Place