Partners in UK offshore wind

MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 7, Annex 2.2: Surface watercourses and NRW Flood Zones

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F01

Image of an offshore wind farm

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Prepared by:	Prepared for:
RPS	**Mona Offshore Wind Ltd.**

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Glossary

Term	Meaning
Flood Zone 1	The extent of land having a less than 0.1% (1 in 1,000) chance of river, sea or flooding from surface water and small watercourses in any given year.
Flood Zone 2	The extent of land with a risk of flooding from rivers with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change. The extent of land with a risk of flooding from the sea with less than 0.5% (1 in 200) but greater than or equal to 0.1% (1 in 1,000) chance of flooding in any given year, including an allowance for climate change. The extent of land with a risk of flooding from surface water & small watercourses with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change.
Flood Zone 3	The extent of land with a risk of flooding from rivers with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change. The extent of land with a risk of flooding from the sea with a 0.5% (1 in 200) chance or greater of happening in any given year, including an allowance for climate change. The extent of land with a risk of flooding from surface water and small watercourses with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.

Acronyms

Acronym	Description
NRW	Natural Resources Wales
OS	Ordnance Survey

Units

Unit	Description
%	Percentage
km	Kilometres
m	Metres

1 Surface watercourses and NRW flood zones

1.1 Introduction

1.1.1.1 This technical report identifies surface watercourses and flood zones within the Mona hydrology and flood risk study area. This information has been used to inform the baseline and impact assessment on hydrological and flood risk receptors from the Mona Offshore Wind Project as reported in Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement.

1.2 Study area

1.2.1.1 The hydrology and flood risk study area focuses on areas landward of Mean High Water Springs and is described below and shown on Figure 1.1:

- The area of land to be temporarily or permanently occupied during the construction, operation and maintenance and decommissioning of the Mona Offshore Wind Project (hereafter referred to as the Mona Proposed Onshore Development Area)
- Surface water receptors and flood risk receptors located within 250 m of the Mona Proposed Onshore Development Area (excluding the Onshore Substation). The 250 m buffer is considered appropriate for data collection taking into account the likely zone of influence by hydrological receptors. The buffer has also been chosen to identify any existing receptors, assets or infrastructure that have the potential to be affected by temporary flood risk as a result of the Mona Offshore Wind Project
- Flood risk receptors located within 1 km of the Onshore Substation Area. The 1 km buffer was chosen primarily to identify any existing receptors, assets or infrastructure that have the potential to be affected by flood risk as a result of the Mona Offshore Wind Project.

1.3 Methodology

1.3.1.1 The information within this technical report has been identified through a desktop study using the following information:

- Ordnance Survey (OS) Open Rivers Mapping Data
- Natural Resources Wales (NRW) Flood Map for Planning.

1.3.1.2 Surface water catchments have been identified from the Western Wales River Basin Management Plan (NRW, 2022) (see Figure 1.2).

1.3.1.3 The NRW indicative Flood Zones show the probability of river and sea flooding and do not consider the presences of defences (see Figure 1.3 to Figure 1.5).

1.3.1.4 Flood zone definitions are presented below:

- Flood Zone 1 - The extent of land having a less than 0.1% (1 in 1,000) chance of river, sea or flooding from surface water and small watercourses in any given year
- Flood Zone 2 - The extent of land with a risk of flooding from rivers with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change

The extent of land with a risk of flooding from the sea with less than 0.5% (1 in 200) but greater than or equal to 0.1% (1 in 1,000) chance of flooding in any given year, including an allowance for climate change

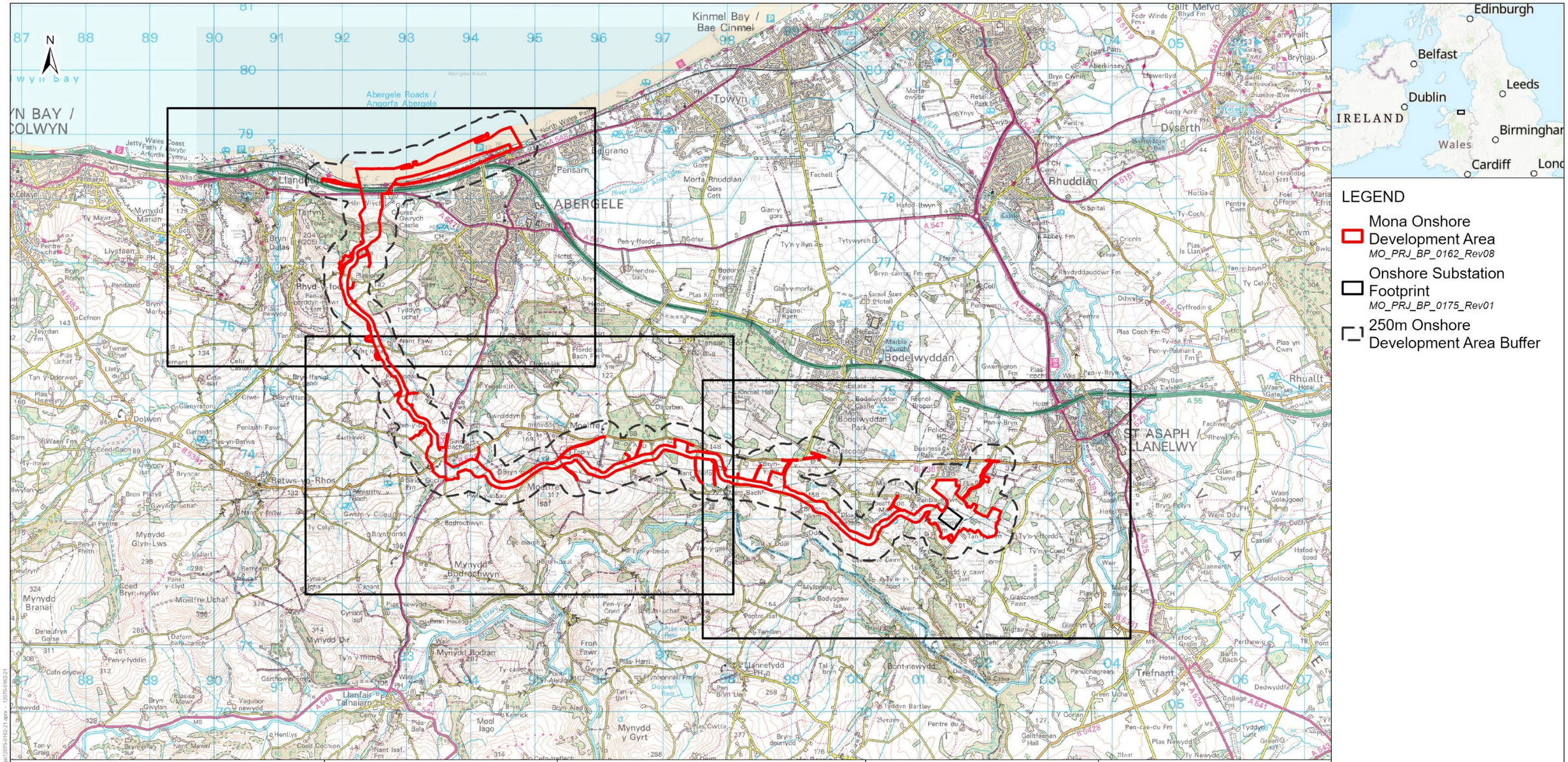
The extent of land with a risk of flooding from surface water & small watercourses with less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance of happening in any given year, including an allowance for climate change

- Flood Zone 3 - The extent of land with a risk of flooding from rivers with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change

  The extent of land with a risk of flooding from the sea with a 0.5% (1 in 200) chance or greater of happening in any given year, including an allowance for climate change

  The extent of land with a risk of flooding from surface water & small watercourses with a 1% (1 in 100) chance or greater of happening in any given year, including an allowance for climate change.

1.3.1.5 Product 5 and 6 data from the Point of Ayr to Pensarn 2017 coastal flood model was obtained from NRW. The model provides flood extents and depths as a result of coastal defence overtopping and breach. It also assesses how flood depths and extents will evolve with climate change and provides flood model outputs for the present-day and 2117 scenarios. Flood maps have been generated for the Mona landfall area (see Figure 1.6 to Figure 1.10).



Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, USGS

Data Sources: RPS / bp / EnBwW

Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm:1:65,000

0 0.25 0.5 1 nm
0 0.5 1 2 km

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Project Name:
MONA OFFSHORE WIND PROJECT

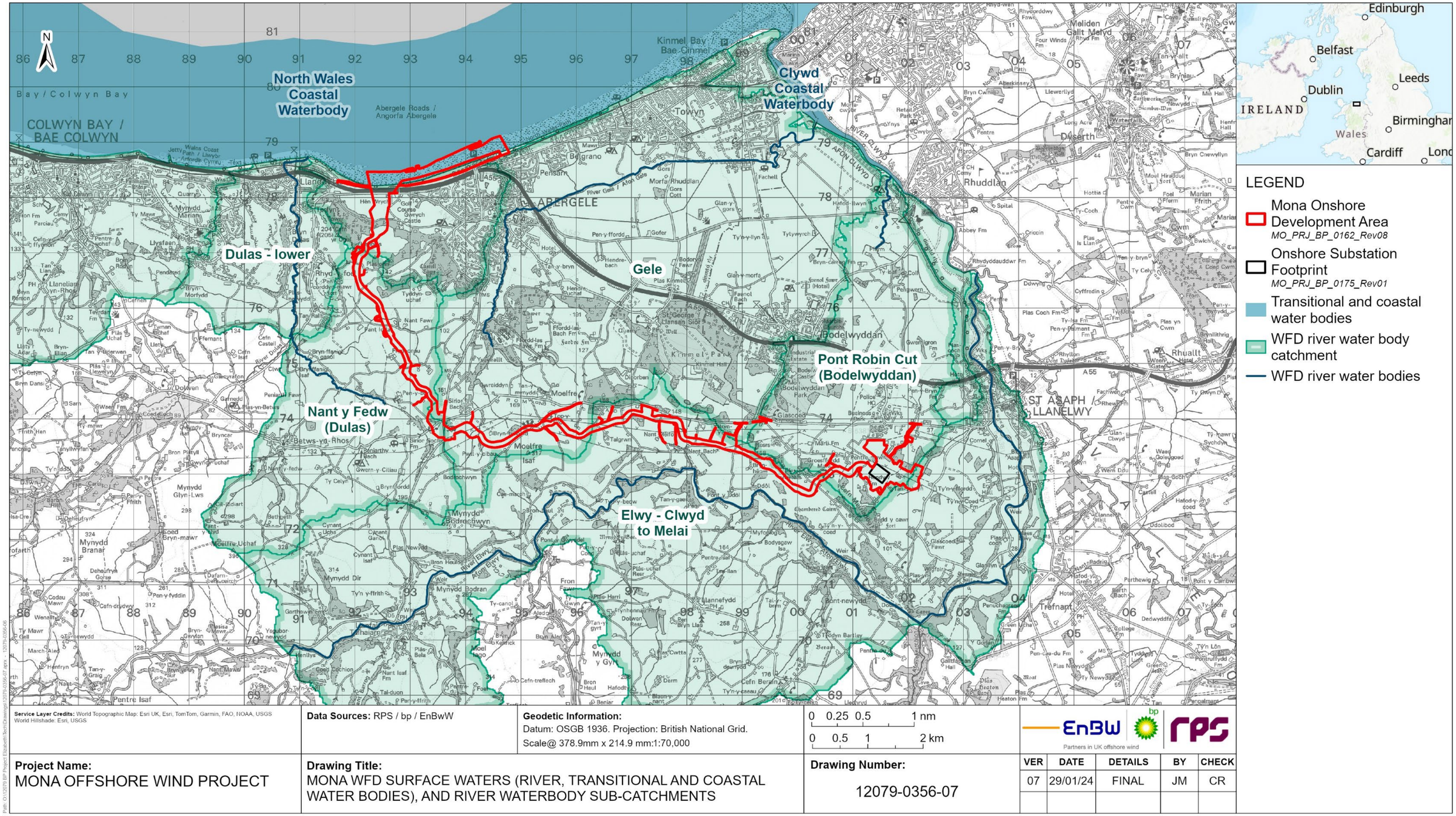
Drawing Title:
OVERVIEW OF SURFACE WATERCOURSES WITHIN THE MONA HYDROLOGY AND FLOOD RISK STUDY AREA

Drawing Number:
12079-0162-21

VER	DATE	DETAILS	BY	CHECK
21	03/01/24	FINAL	AC	CR

Path: O:\12079 BP Project Elizabeth\Tech\Drawings\12079-0162-21.aprx - 12079-0162-21

Figure 1.1: Overview of surface watercourses within the Mona hydrology and flood risk study area.



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Project Name:	**Drawing Title:**	**Drawing Number:**
MONA OFFSHORE WIND PROJECT	MONA WFD SURFACE WATERS (RIVER, TRANSITIONAL AND COASTAL WATER BODIES), AND RIVER WATERBODY SUB-CATCHMENTS	12079-0356-07

VER	DATE	DETAILS	BY	CHECK
07	29/01/24	FINAL	JM	CR

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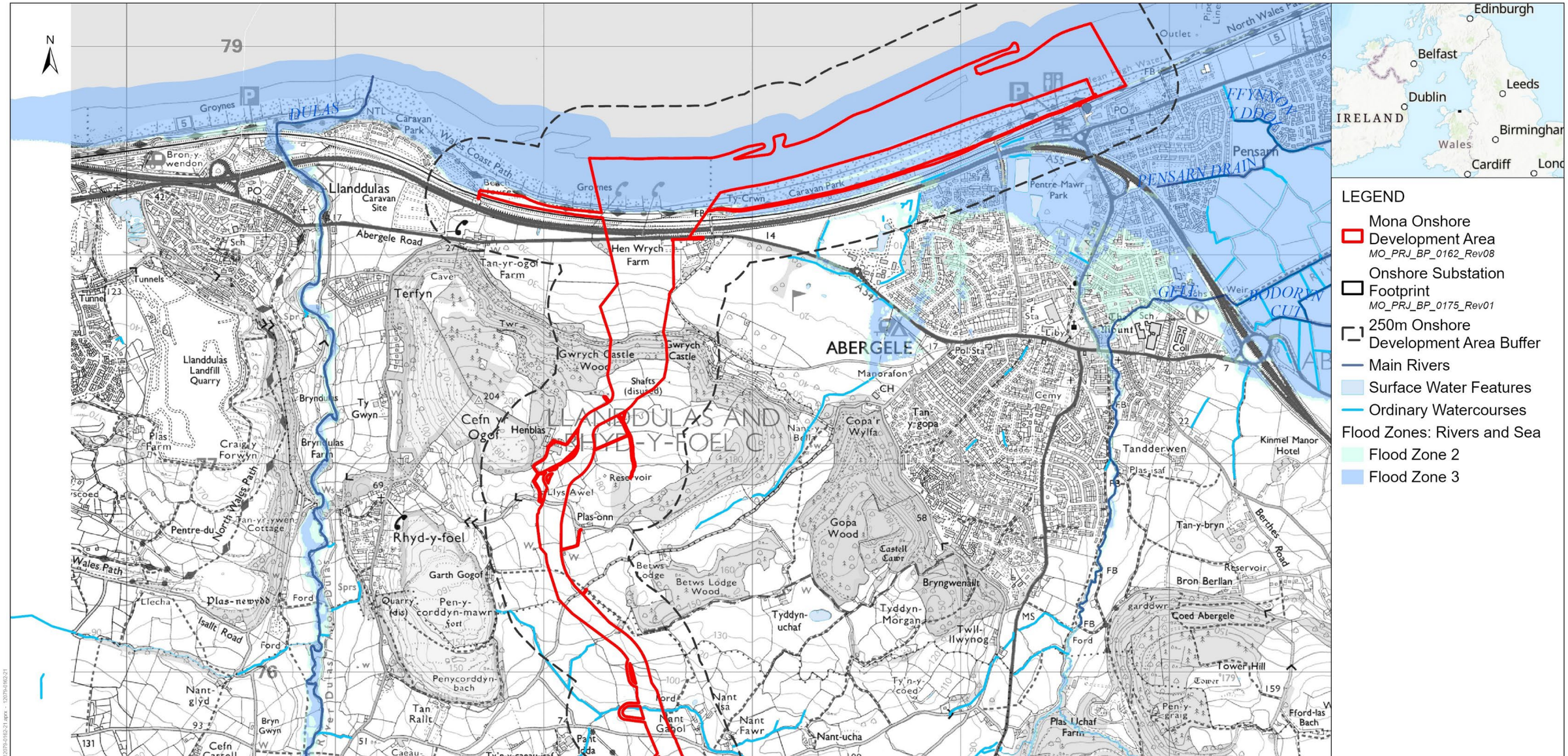
Figure 1.2: Surface water and transitional coastal water catchment plan.



Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, USGS

Data Sources: RPS / bp / EnBwW

Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm:1:20,000

0 0.1 0.2 0.4 nm
0 0.2 0.4 0.8 km

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Project Name:
MONA OFFSHORE WIND PROJECT

Drawing Title:
OVERVIEW OF SURFACE WATERCOURSES WITHIN THE MONA HYDROLOGY AND FLOOD RISK STUDY AREA

Drawing Number:
12079-0162-21

VER	DATE	DETAILS	BY	CHECK
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Figure 1.3: Surface watercourses and NRW flood zones within the Mona hydrology and flood risk study area (sheet 1).

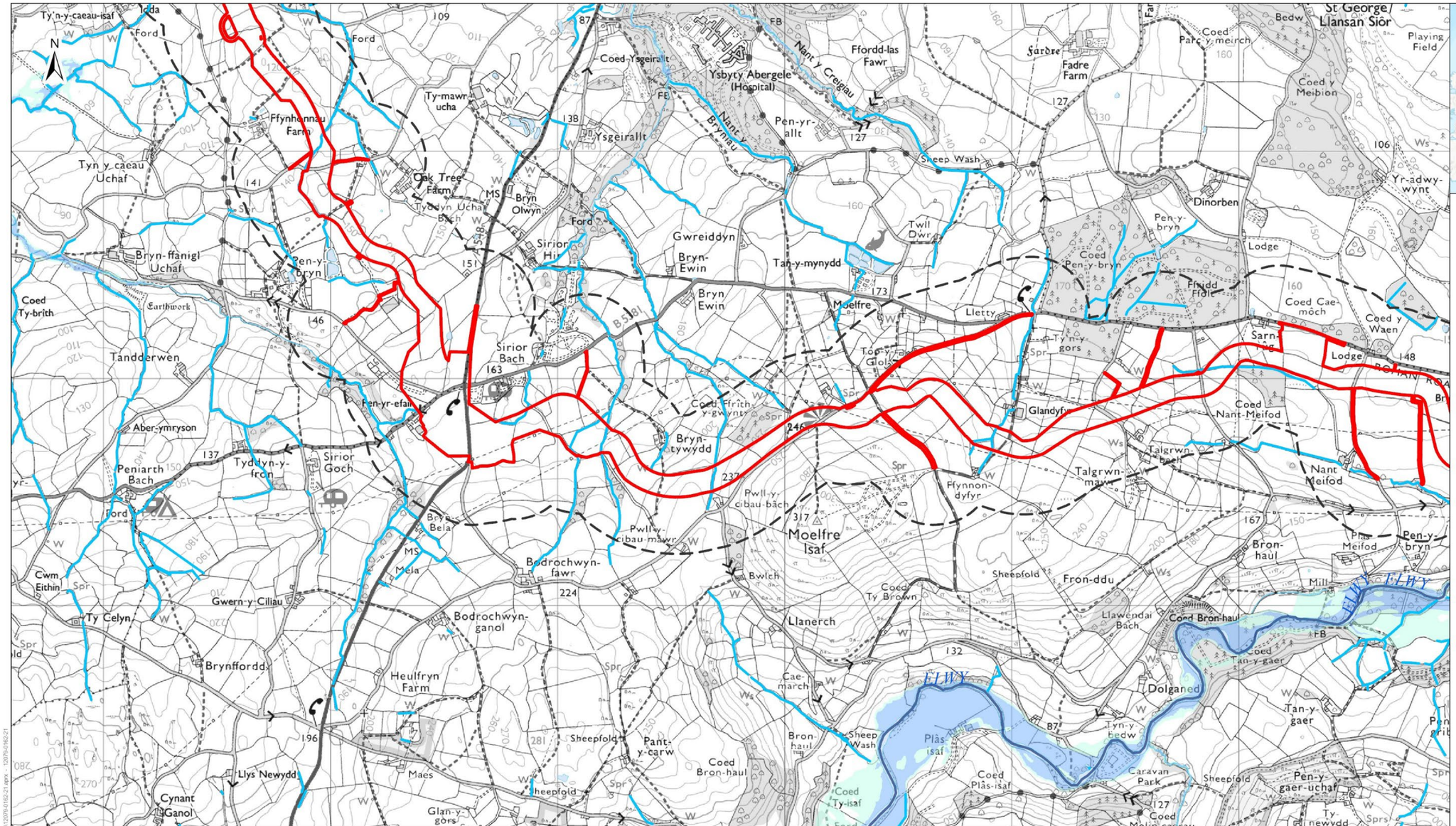


Figure 1.4: Surface watercourses and NRW flood zones within the Mona hydrology and flood risk study area (sheet 2).

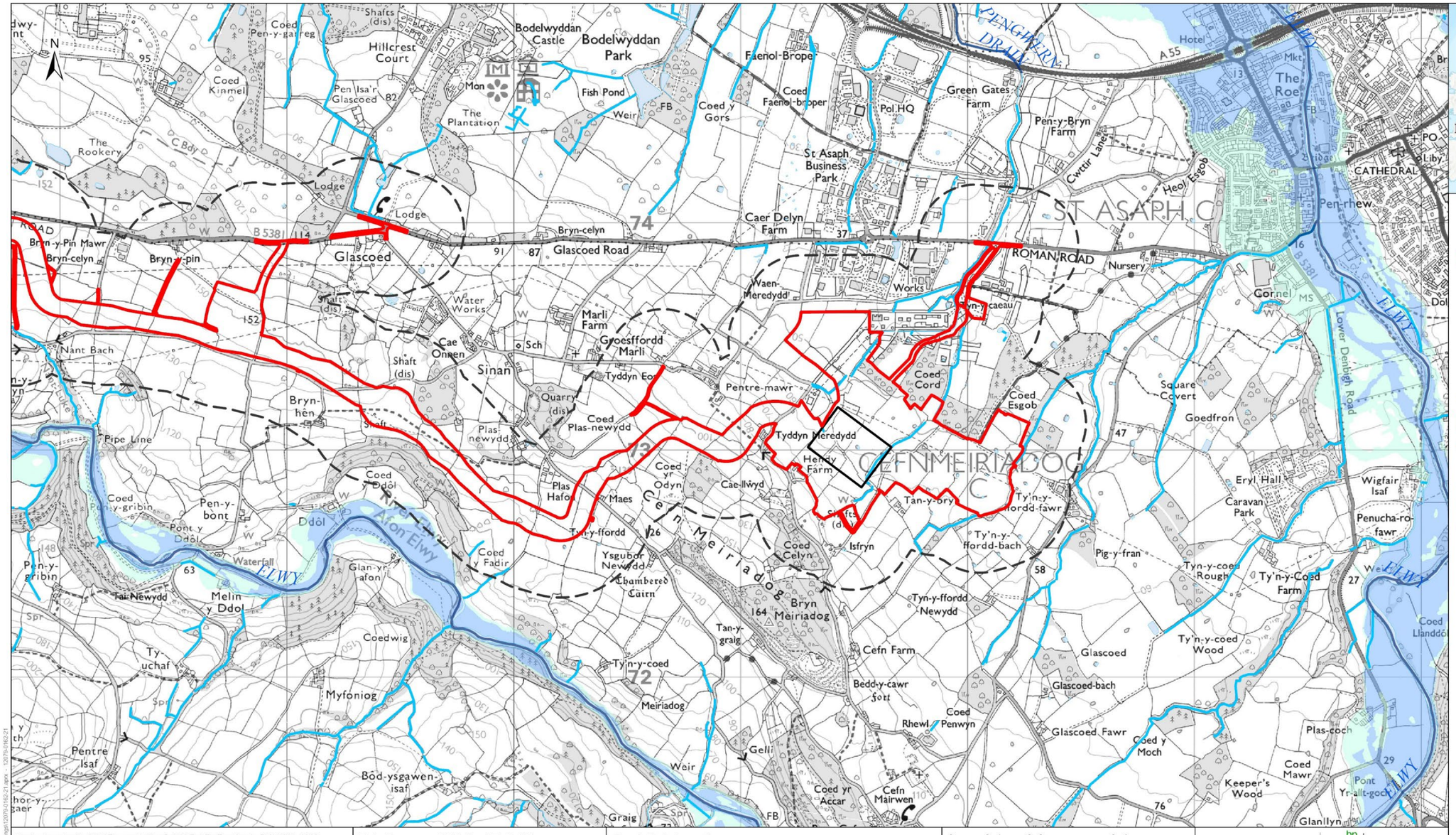
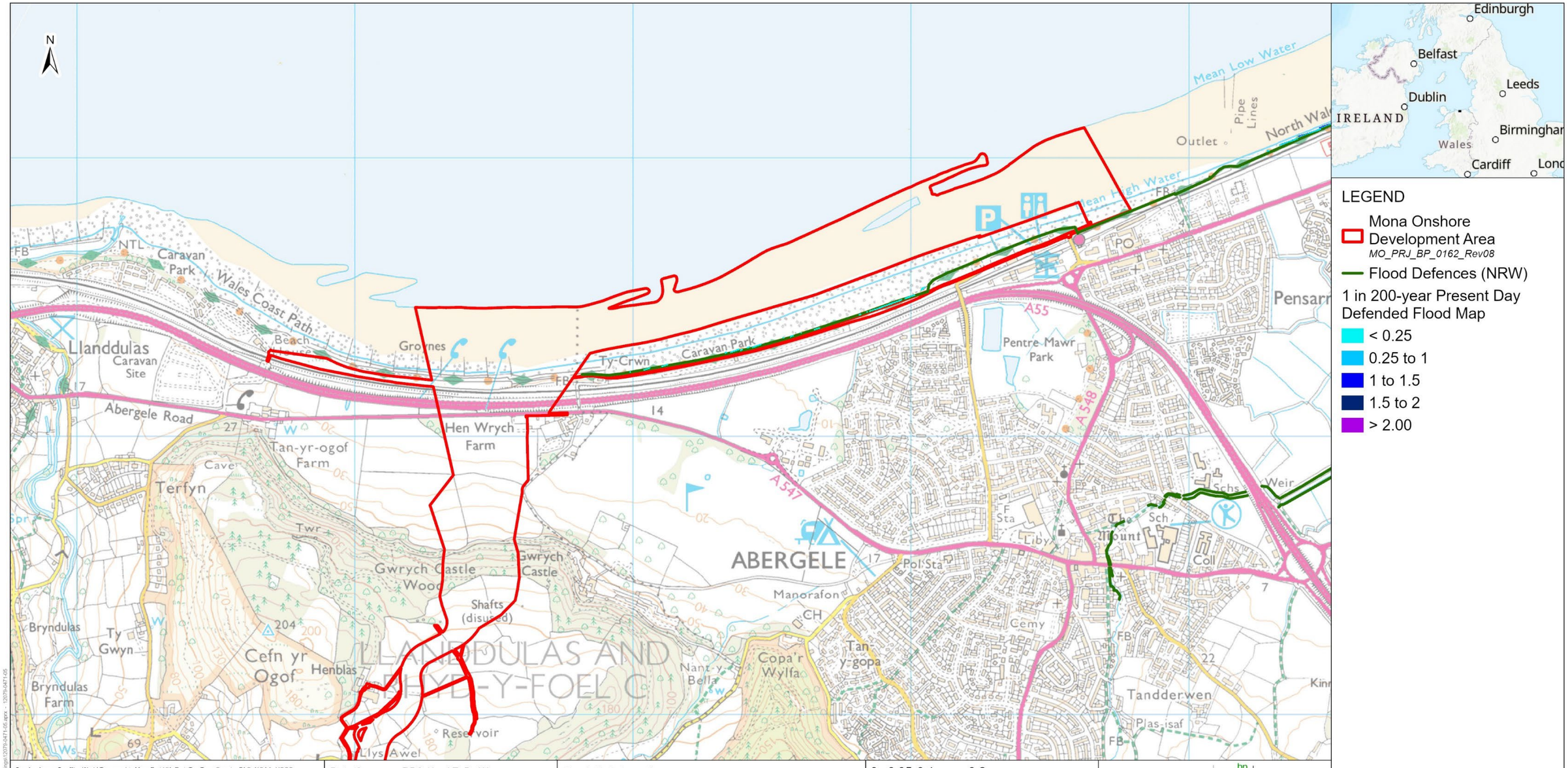


Figure 1.5: Surface watercourses and NRW flood zones within the Mona hydrology and flood risk study area (sheet 3).



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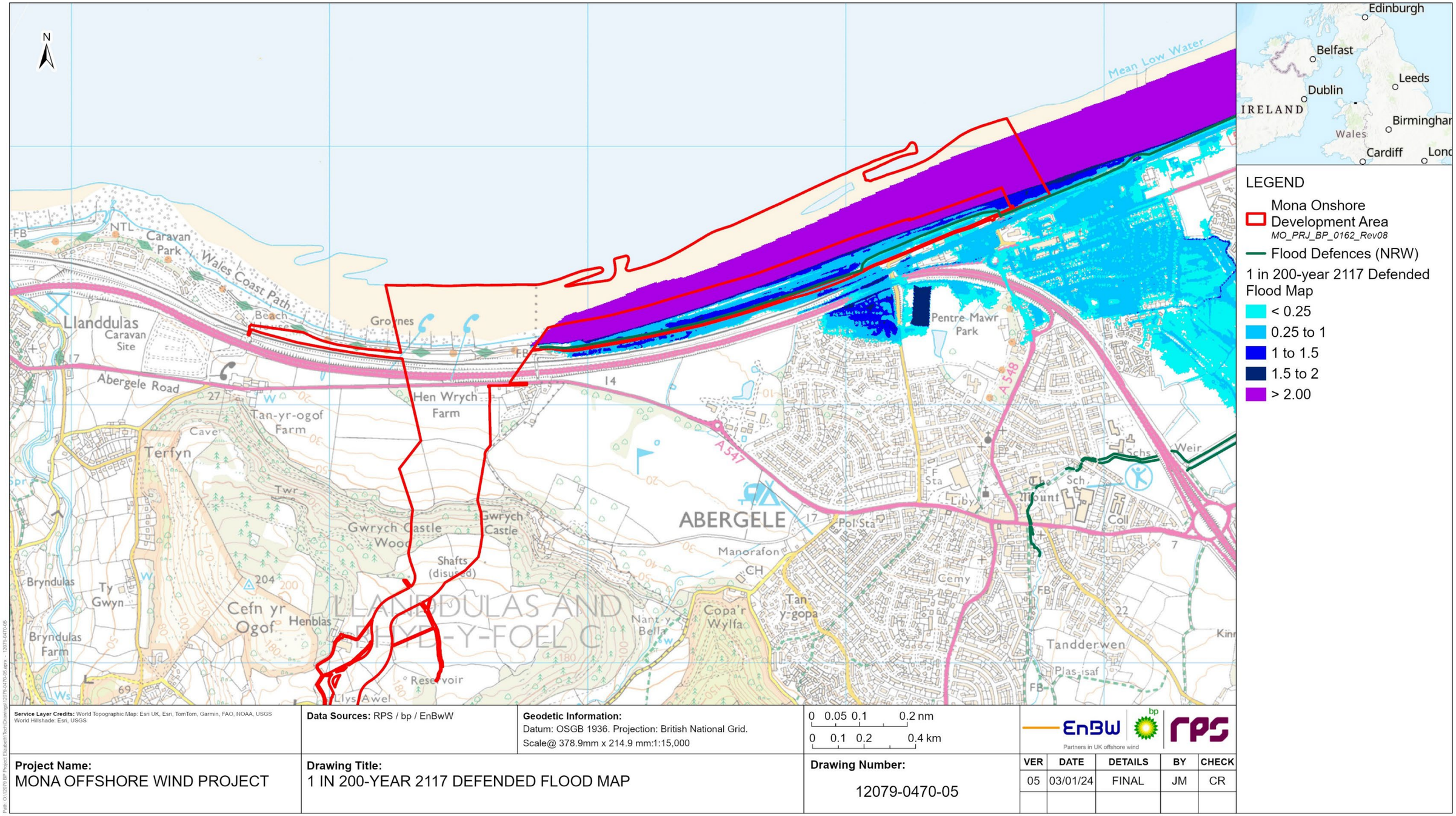
Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** 1 IN 200-YEAR PRESENT DAY DEFENDED FLOOD MAP	**Drawing Number:** 12079-0471-05		

VER	DATE	DETAILS	BY	CHECK
05	03/01/24	FINAL	JM	CR

Path: O:\12079 BP Project Elizabeth Bon\Drawings\12079-0471-05.aprx - 12079-0471-05

Figure 1.6: 1 in 200-year present day defended flood map.

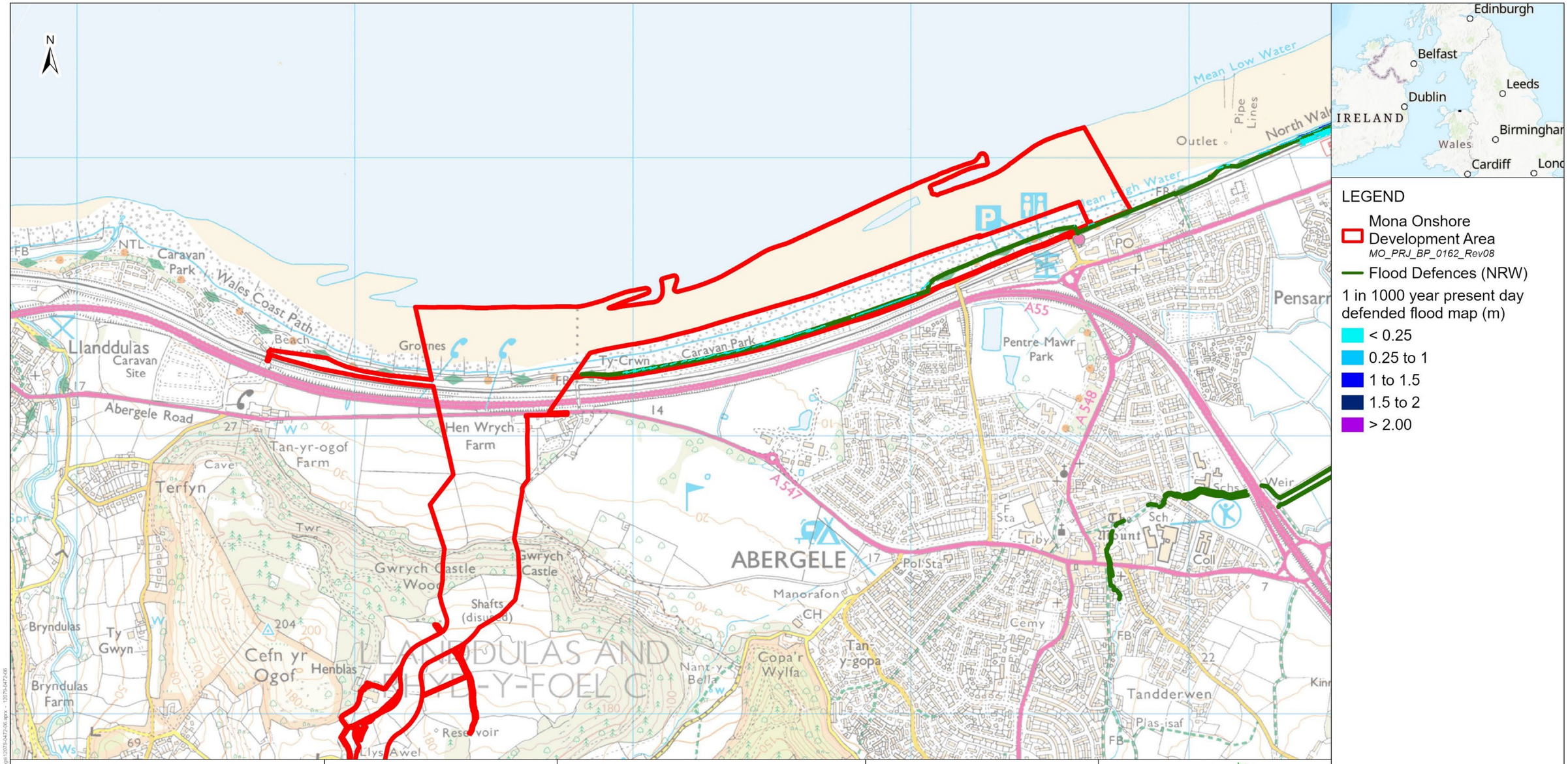


Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS World Hillshade: Esri, USGS	**Data Sources:** RPS / bp / EnBwW	**Geodetic Information:** Datum: OSGB 1936. Projection: British National Grid. Scale@ 378.9mm x 214.9 mm:1:15,000	0 0.05 0.1 0.2 nm 0 0.1 0.2 0.4 km	EnBW bp RPS Partners in UK offshore wind
Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** 1 IN 200-YEAR 2117 DEFENDED FLOOD MAP	**Drawing Number:** 12079-0470-05		

VER	DATE	DETAILS	BY	CHECK
05	03/01/24	FINAL	JM	CR

Path: O:\12079 BP Project Elizabeth Bon\Drawings\12079-0470-05.aprx - 12079-0470-05

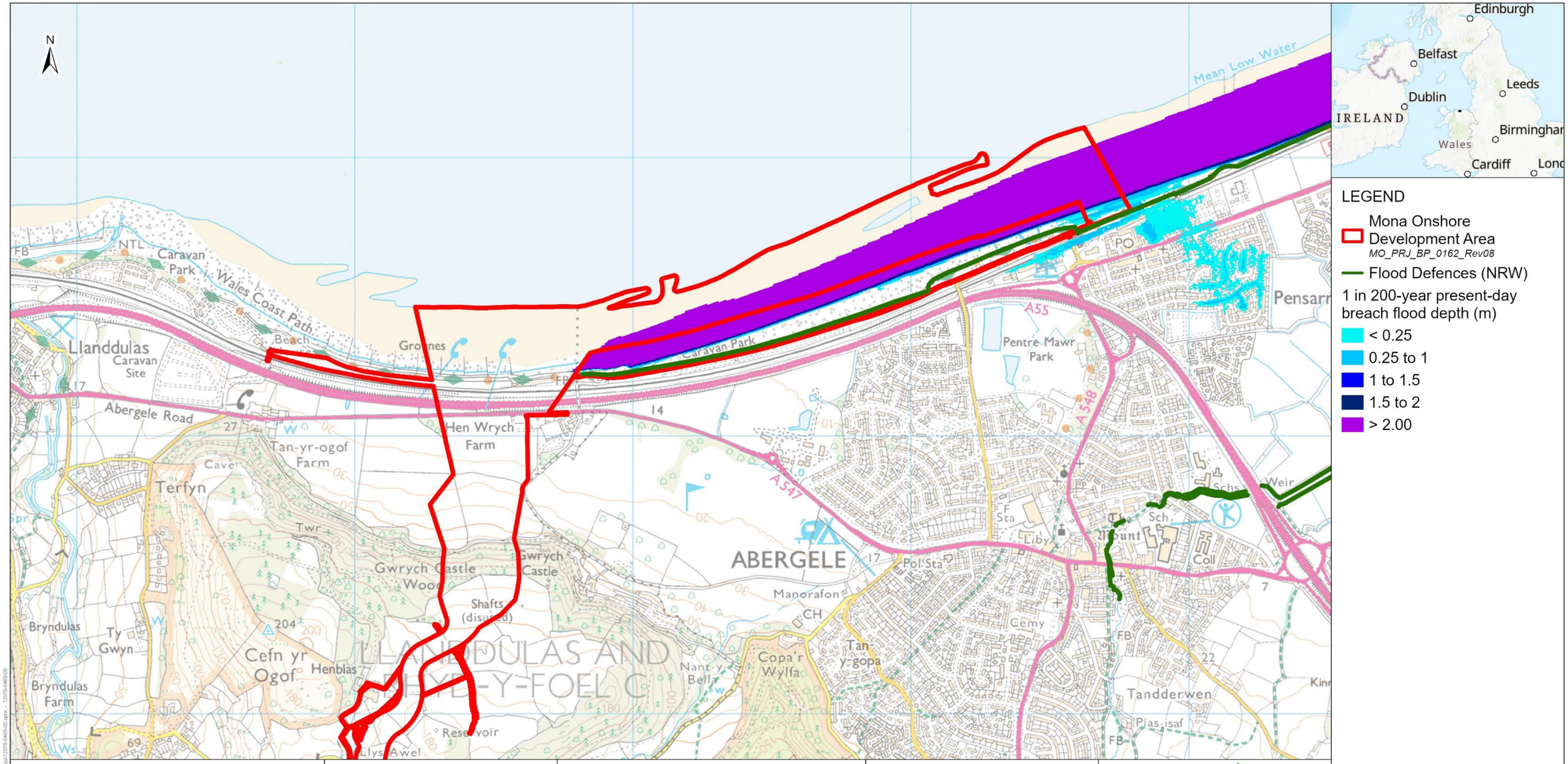
Figure 1.7: 1 in 200-year 2117 defended flood map.



Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS World Hillshade: Esri, USGS	**Data Sources:** RPS / bp / EnBwW	**Geodetic Information:** Datum: OSGB 1936. Projection: British National Grid. Scale@ 378.9mm x 214.9 mm:1:15,000	0 0.05 0.1 0.2 nm 0 0.1 0.2 0.4 km	EnBW bp RPS Partners in UK offshore wind				
Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** 1 IN 1000 IN YEAR DEFENDED FLOOD MAP	**Drawing Number:** 12079-0472-06	**VER**	**DATE**	**DETAILS**	**BY**	**CHECK**	
			06	03/01/24	FINAL	SHB	CR	

Path: O:\12079 BP Project Elizabeth Tech\Drawings\12079-0472-06.aprx - 12079-0472-06

Figure 1.8: 1 in 1,000 year present day defended flood map.



Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, USGS

Data Sources: RPS / bp / EnBwW

Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm:1:15,000

0 0.05 0.1 0.2 nm
0 0.1 0.2 0.4 km

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Project Name:
MONA OFFSHORE WIND PROJECT

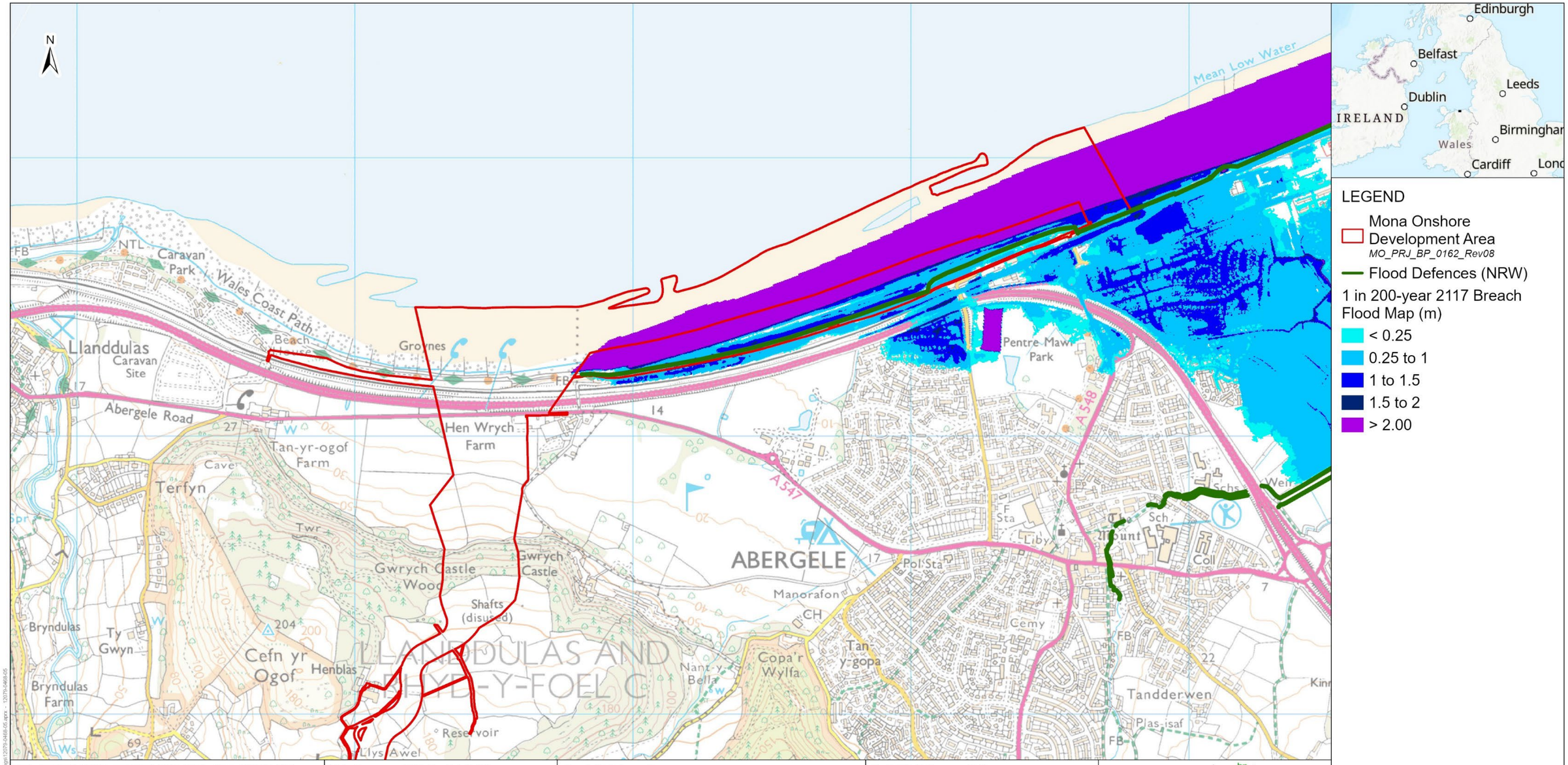
Drawing Title:
1 IN 200-YEAR PRESENT-DAY BREACH FLOOD DEPTH

Drawing Number:
12079-0469-05

VER	DATE	DETAILS	BY	CHECK
05	03/01/24	FINAL	SHB	CR

Path: O:\12079 BP Project Elizabeth Tech\Drawings\12079-0469-05.aprx - 12079-0469-05

Figure 1.9: 1 in 200-year present day tidal breach flood map.



Service Layer Credits: World Topographic Map: Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS World Hillshade: Esri, USGS	**Data Sources:** RPS / bp / EnBwW	**Geodetic Information:** Datum: OSGB 1936. Projection: British National Grid. Scale@ 378.9mm x 214.9 mm:1:15,000	0 0.05 0.1 0.2 nm 0 0.1 0.2 0.4 km	EnBW bp RPS Partners in UK offshore wind	
Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** 1 IN 200-YEAR 2117 TIDAL BREACH FLOOD MAP	**Drawing Number:** 12079-0468-05			

VER	DATE	DETAILS	BY	CHECK
05	09/01/24	FINAL	SHB	CR

Path: O:\12079 BP Project Elizabeth Rich\Drawings\12079-0468-05.aprx - 12079-0468-05

Figure 1.10: 1 in 200-year 2117 tidal breach flood map.

1.4 References

NRW (2017) Point of Ayr to Pensarn coastal flood model

NRW Flood Map for Planning. Available: https://flood-map-forplanning.naturalresources.wales/ Accessed: September 2023.

NRW (2022) Western Wales River Basin Management Plan 2021-2027 - Summary

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