

# MONA OFFSHORE WIND PROJECT

## Outline Flood Management Plan

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Image of an offshore wind farm

**MONA OFFSHORE WIND PROJECT**

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## MONA OFFSHORE WIND PROJECT

### Glossary

Term	Meaning
All clear status	Flood Alerts and Flood Warnings are no longer in force
designated responsible person	The Principal Contractor during the construction period and is responsible for dissemination and implementation of the Flood Evacuation Plan and ensuring all staff are adequately trained.
Floodline	NRW telephone service regarding flooding
Flood Alert	Flood warning level, announced by NRW that flooding is possible
Flood Warning	Flood warning level, announced by NRW that flooding is expected
Flood Zone 1	Low Probability Land having a less than 1 in 1,000 annual probability of river or sea flooding.
Flood Zone 2	Medium Probability Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Flood Zone 3	High Probability Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Met Office	The United Kingdom's national weather service
Outline Flood Management Plan	The Plan outlines areas at risk of flooding and additionally sets out management and evacuation procedures to be implemented during the construction phase in the event of a flood. In the case of this Outline Flood Management Plan, the areas at risk are associated with the monitoring activities on the beach.
Severe Flood Warning	Flood warning level, announced by NRW that severe flooding is expected

### Acronyms

Acronym	Description
CoCP	Code of Construction Practise
FMP	Flood Management Plan
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
NRW	Natural Resources Wales

# 1 OUTLINE FLOOD MANAGEMENT PLAN

## 1.1 Introduction

1.1.1.1 This Outline Flood Management Plan (FMP) is provided as an appendix to the Outline Code of Construction Practice (CoCP) (Document Reference J26). It sets out the management and evacuation procedures to be implemented during the construction phases of the Mona Offshore Wind Project in the event of an issue of a Flood Warning.

1.1.1.2 The outline Flood Management Plan should be read in conjunction with the Outline CoCP (Document reference J26) which considers the rest of the Onshore Cable Corridor, Onshore Substation, 400kV Grid Connection Cable Corridor and the temporary construction compounds and accesses within the Mona Onshore Development Area.

## 1.2 Scope of the Outline Flood Management Plan

1.2.1.1 The scope of this Outline Flood Management Plan applies to the onshore site preparation works and construction activities of the Mona Offshore Wind Project located landward of MLWS. The Plan does not apply to activities associated with offshore works, (i.e. seaward of MLWS).

1.2.1.2 Onshore site preparation works will be undertaken prior to the commencement of construction. These works will be undertaken in line with this certified Outline Flood Management Plan as certified through the DCO.

1.2.1.3 The final Flood Management Plan will be in general accordance with the principles established in the Outline Flood Management Plan and will be agreed with the relevant authority prior to commencing construction of the relevant stage of the onshore and intertidal works (above MLWS). For the purposes of this Plan, the term 'construction' includes all related engineering, construction and restoration activities as authorised by the DCO within the order limits.

1.2.1.4 The majority of Llanddulas beach located within the Mona Onshore Development Area is at risk from tidal flooding. As described in paragraphs 1.4.2.1 and 1.4.3.1 the majority of Llanddulas Beach located within the Mona Onshore Development Area is at risk from tidal flooding.

1.2.1.5 Whilst no construction activities are taking place upon the beach between Mean Low Water Springs (MLWS) and Mean High Water Spring (MHWS), monitoring activities are scheduled to take place during the construction phase of the Mona Offshore Wind Project. A beach vehicle laydown area is also present within the landfall to provide overnight parking for construction support vehicles.

1.2.1.6 As such, an outline FMP has been prepared to record the contingency measures to be adopted to provide maximum safety to the site workers during the construction phase of the Mona Offshore Wind Project in the event a Flood Warning is issued.

1.2.1.7 The FMP is not required for the remainder of the Mona Onshore Development Area (including the Onshore Substation) as they are located in Flood Zone 1.

## 1.3 Objectives

The objectives of the outline FMP are as follows:

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- To outline a mechanism for the site workers to remain informed of potential flood risk via registration to the Natural Resources Wales (NRW) Flood warnings and alerts website.
- To enable a safe and well organised evacuation of site workers and machinery within the temporary storage area during a major flood event
- To define the areas of responsibility for those participating in the outline FMP
- To establish procedures for implementing the outline FMP
- To establish a dry rendezvous point and route
- To reduce the risk to life
- To set security procedures during a flood event
- To reduce financial loss during a flood event.

### 1.4 Site setting

1.4.1.1 Llanddulas Beach forms the intertidal zone within the Mona Onshore Development Area. The beach is served by highway access via Sea Road to the south.

1.4.1.2 The intertidal zone is at risk from tidal flooding. Tidal flooding in this area predominantly occurs during storm events that can cause extreme wave heights overtop flood defences and high tides levels and storm surges that encroach up the beach profile. Flood Zones are discussed below within Section 1.4.2 and 1.4.3.

1.4.1.3 The NRW Flood Map for Planning shows a coastal flood defence wall is present along the onshore margin of the intertidal zone within the east extent of the Mona Onshore Development Area. The structure provides a 200-year standard of protection and is maintained by Conwy County Borough Council. It is noted land to the south of this flood defence have a residual risk of flooding from a breach in defences.

#### 1.4.2 Flood Map for Planning

1.4.2.1 The NRW Flood Map for Planning is presented within Figure 1.4 and shows Llanddulas Beach and its associated access/egress is partially located within Flood Zone 2 and 3. A small area of the Mona Onshore Development Area to the south of the coastal flood wall sea defence has a residual flood risk from a breach in flood defences and is located within Flood Zone 3 (see Figure 1.4).

1.4.2.2 The remainder of the Mona Onshore Development Area, including the Onshore Substation is located within Flood Zone 1 (as shown in Volume 7, Annex 2.2: Surface watercourses and NRW flood zones of the Environmental Statement).

#### 1.4.3 Development Advice Maps

1.4.3.1 The Development Advice Mapping is used to assess flood risk to and from new development broadly corresponds to the Flood Map for Planning and indicates land benefitting from the coastal wall flood defence within the east extent of the Mona Onshore Development Area is located within Zone C1. The remainder of the Llanddulas Beach corresponding with Flood Zone 2 and 3 is located within Zone C2.

1.4.3.2 The remainder of the Mona Onshore Development Area, including the Onshore Substation is located within DAM Zone A and B (as shown in Volume 7, Annex 2.2: Surface watercourses and NRW flood zones of the Environmental Statement).



## **1.4.4 Flood Alert and Flood Warning coverage**

1.4.4.1 Land within Zones C1 and C2 is partially located within the Abergele Sea Road Flood Warning area reference 101FWTWN415 and North Wales coast from the Dee estuary to the east coast of Anglesey Flood Alert area reference 101WATNE10. Flood Alert and Flood Warning areas are presented within Figure 1.4.

1.4.4.2 The Flood Alert and Flood Warning do not cover the entire extent of the beach that is shown to be at risk of flooding. Therefore, it is proposed that the outline FMP is applied to the entire beach located within the Mona Onshore Development Area.

## **1.5 Flood Warning Levels**

1.5.1.1 The Mona Onshore Development Area at Llanddulas beach is assessed to be at risk from tidal flooding and is covered by a Flood Warning and Flood Alert.

1.5.1.2 The NRW Flood warning and flood alert website provides a flood forecasting and warning service in areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

1.5.1.3 Flood Alerts and Flood Warnings can be reviewed on the NRW Flood warning and flood alert website. NRW also operate a 24-hour Floodline service via telephone and type talk service in which current Flood Alerts and Flood Warnings are communicated. Flooding can also be reported via this service.

1.5.1.4 To ensure the subscription of Flood Alerts and Flood Warnings, the site is to be registered with the NRW Flood warning and alert service. Registering will be the responsibility of the designated responsible person during the construction period.

1.5.1.5 If flooding is forecast, warnings are issued using a set of easily recognisable codes. A description of the codes and actions are described below.

### **1.5.2 Responsibility**


1.5.2.1 The 'designated responsible person' is defined as:

- The Principal Contractor during the construction period and is responsible for dissemination and implementation of the outline FMP and ensuring all staff are adequately trained.

### **1.5.3 Flood Alert**

1.5.3.1 NRW will issue a Flood Alert status when flooding is possible. This will be issued by NRW through their Flood warnings and alerts website based upon the weather, and tidal conditions. Figure 1.1 shows a Flood alert issued by NRW.

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	<b>Flood alert</b>	Flooding is possible. Be prepared (issued in 'waking hours')
	<b>When it's used:</b>	Two hours to two days in advance of flooding
	<b>What to do:</b>	<ul style="list-style-type: none"> <li>• Be prepared to act on Phase one of the outline FMP</li> <li>• Monitor local tide levels, the Met Office and NRW Flood warnings and alerts websites.</li> </ul>


**Figure 1.1: NRW flood alert.**

1.5.3.2 Flood Alert means – ‘Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out’.

1.5.3.3 When a flood alert is issued the designated responsible person should initiate Phase One of the outline FMP, discussed within Section 1.6.

**1.5.4 Flood Warning**

1.5.4.1 The Flood Warning will be issued when water levels are rising and further rain is expected – Due to the low lying nature of the beach, it is advised to safeguard the Plant and/or critical assets and evacuate the site in a timely manner, this is depicted in Figure 1.2.

	<b>Flood warning</b>	Flooding is expected. Immediate action required.
	<b>When it's used:</b>	Half an hour to one day in advance of flooding.
	<b>What to do:</b>	<ul style="list-style-type: none"> <li>• Safeguard plant and deploy individual asset protection measures, where appropriate.</li> <li>• Monitor local tide levels, the Met Office and NRW Flood warnings and alerts websites.</li> <li>• Evacuate the site.</li> </ul>

**Figure 1.2: NRW flood warning.**

1.5.4.2 NRW aim to provide at least two hours warning between the Flood Warning alert being issued and the commencement of flooding. NRW recommend that site workers should evacuate when a Flood Warning or Severe Flood Warning status is issued and flood levels continue to rise, site workers are advised to evacuate before a flood event occurs.


1.5.4.3 When a Flood Warning is issued the designated responsible person should initiate Phase Two of the outline FMP, discussed within Section 1.6.

**1.5.5 Severe Flood Warning**

1.5.5.1 Severe Flood Warning means that severe flooding is expected, as shown in Figure 1.3. There is extreme danger to life and property and people are advised to act immediately i.e., evacuate.



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	<p><b>Severe flood warning</b></p>	<p>Severe flooding. Danger to life.</p>
	<p><b>When it's used:</b></p>	<p>When flooding poses a significant threat to life.</p>
	<p><b>What to do:</b></p>	<ul style="list-style-type: none"> <li>• Close and evacuate the site if not already in progress</li> <li>• Co-operate with the emergency services.</li> <li>• Call 999 if you are in immediate danger.</li> </ul>

**Figure 1.3: NRW severe flood warning.**

1.5.5.2 It is expected that the outline FMP will have been triggered at the announcement of a Flood Warning and as such it is expected the site will be progression evacuation or completed evacuation prior to a Severe Flood Warning announcement.

**1.5.6 All clear status**

1.5.6.1 All clear means that Flood Alerts and Flood Warnings are no longer in force in this area. At this stage the designated responsible person and site workers should:

- Keep checking weather forecast from the Met Office website
- Use their discretion as to when to return to site
- Beware of sharp objects and pollution in flood water.

1.5.6.2 Site workers should be aware that if floodwaters have entered the site, items will need to be cleaned, disinfected, repaired, fully dried and checked by a suitably qualified professional prior to use. The designated responsible person and site workers must check that any structures are safe before entering, and if there are any doubts professional opinion should be sought.

1.5.6.3 If there is any doubt that equipment may be water damaged, it must be taken out of commission and checked by a competent person before switching on.

**1.6 Outline Flood Management Plan**

1.6.1.1 The outline FMP is split into two phases, a monitoring phase and evacuation phase.

1.6.1.2 Instructions in the outline FMP should be disregarded if conflicting information is given by the Emergency Services, or other authority co-ordinating an emergency response, in the event of flooding.

**1.6.2 Phase one: monitor the situation**

1.6.2.1 Upon receipt of a Flood Alert the designated responsible person will monitor the NRW Flood Warnings and alerts website and Met Office website periodically for general updates of the situation.

- The NRW Flood warnings and alerts website is <https://flood-warning.naturalresources.wales/>
- The NRW Floodline telephone number is 0345 988 1188 (telephone) and 0345 602 6340 (type talk)
- The Met Office website is <https://www.metoffice.gov.uk/>

1.6.2.2 The designated responsible person is to also undertake the following:

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- Check that all site workers, where appropriate, are aware of the Flood Alert and that Phase One of the outline FMP has been initiated
- Be aware of tide levels and whether the level is rising or falling
- Reconsider travel plans of site personnel
- Check that a flood kit has been prepared and is within its designated location.

1.6.2.3 Should NRW escalate the Flood Alert to a Flood Warning, the designated responsible person will warn site workers of the threat of flooding and Phase Two of the outline FMP will be actioned, outlined below.

### 1.6.3 Phase two: evacuation

1.6.3.1 If NRW issue a Flood Warning the designated responsible person will implement Phase Two of the outline FMP and undertaken the following actions:

1. The designated responsible person announces the site closure.
2. Deploy flood protection for temporary structures - this may include closing flood doors / flood gates. On leaving site workers must ensure that any temporary structure doors, including internal doors, are securely closed and locked. The beach vehicle compound within the landfall is to be made secure to provide protection against thefts.
3. The designated responsible person will explain to site workers that they must vacate the site in a timely manner, with priority given to disabled site workers.
4. The designated responsible person will instruct site workers to evacuate to the identified Rendezvous Point and should also initiate evacuate machinery within the beach vehicle laydown to the landfall compound located within Flood Zone 1. Personnel who evacuate machinery should then congregate at the Rendezvous Point.
5. The designated responsible person will then check that the site is clear before securing the site.
6. The designated responsible person then congregates with site workers at the Rendezvous Point at which point a rollcall of site workers is undertaken to ensure all are accounted for.
7. If any site worker(s) do not check in or recorded absent and are unable to be reached via telephone call or text, emergency services are to be informed.
8. All site workers to be sent home. The designated person responsible will inform site workers regarding site reopening.

1.6.3.2 The designated responsible person should check the NRW Flood warning and alerts website and the Met Office website periodically. If water levels begin to fall without reaching the site, the designated responsible person should continue to monitor the situation. The site should remain evacuated until NRW removes the Flood Warning.

### 1.6.4 Flood Kit

1.6.4.1 During the construction phase of works a flood kit will be strategically placed within the construction area (location to be set by the designated responsible person).

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1.6.4.2 The flood kit will contain items that are essential for evacuation and must be stored where it is easily accessible by all site workers and members of staff, as shown within Table 1.1.

**Table 1.1: Flood kit requirements**

Item	reason	
Torch	In case of loss of electrical power.	
Rechargeable radio	To listen to radio announcements in case of loss of electrical power.	
High visibility clothing	To ensure visibility during periods of low light.	
First Aid Kit	To be used in case of emergency by a relevantly trained person.	
Safe access route and Rendezvous Point map	To ensure that site users know the evacuation location.	
List of important numbers	National Resource Wales Floodline service	0345 988 1188 (telephone) 0345 602 6340 (type talk)
	Police	999 or 101
	Fire and Rescue	999 or 101
	Gas supplier and meter	HOLD
	Electricity supplier and meter number	HOLD
	Water supplier and meter number	HOLD
	Doctor's Surgery	HOLD
	Local radio station	HOLD

### 1.6.5 Safe access and Rendezvous Point

1.6.5.1 Given the nature of tidal flooding, it is expected Flood Warnings will be issued with a minimum 2-hour lead-in time before a flood event. It is expected this provides an adequate amount of time to implement the outline Flood Management Plan and evacuate the site.

1.6.5.2 The safe access route to the Rendezvous Point will be clearly communicated to staff at induction. A marked-up map should also be presented upon the site noticeboard and a copy stored within the Flood Kit. The safe access route is to be reiterated at the beginning of the evacuation procedure, and this route should be used for means of evacuation rather than attempting an alternative route, unless informed otherwise.

1.6.5.3 The landfall compound located to the south of the A547 is located within DAM Zone A / Flood Zone 1. It is recommended this area is to be used as the Rendezvous Point.

1.6.5.4 A safe access route for means of evacuation to the landfall compound is illustrated in Figure 1.4. The proposed safe access is via Sea Road, the A548 and A547.

### 1.6.6 Dissemination of outline FMP

1.6.6.1 The outline FMPs to be disseminated to the following agencies to ensure they are aware of the planned procedures:

- Conwy County Borough Council
- NRW

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- Local Police Force
- Fire and Rescue Service
- Local Ambulance Service

### 1.6.7 Annual review

1.6.7.1 The following actions must also be carried out annually by the designated responsible person:

- Refresher training of all staff regarding the Flood Management Plan to ensure that site workers are familiar with the required actions
- Review the NRW Flood Map for Planning and Development Advice Map to check that the flood risk to the beach has not changed.
- Review and maintain a Flood Kit and updating the associated contacts list within the Flood Kit.



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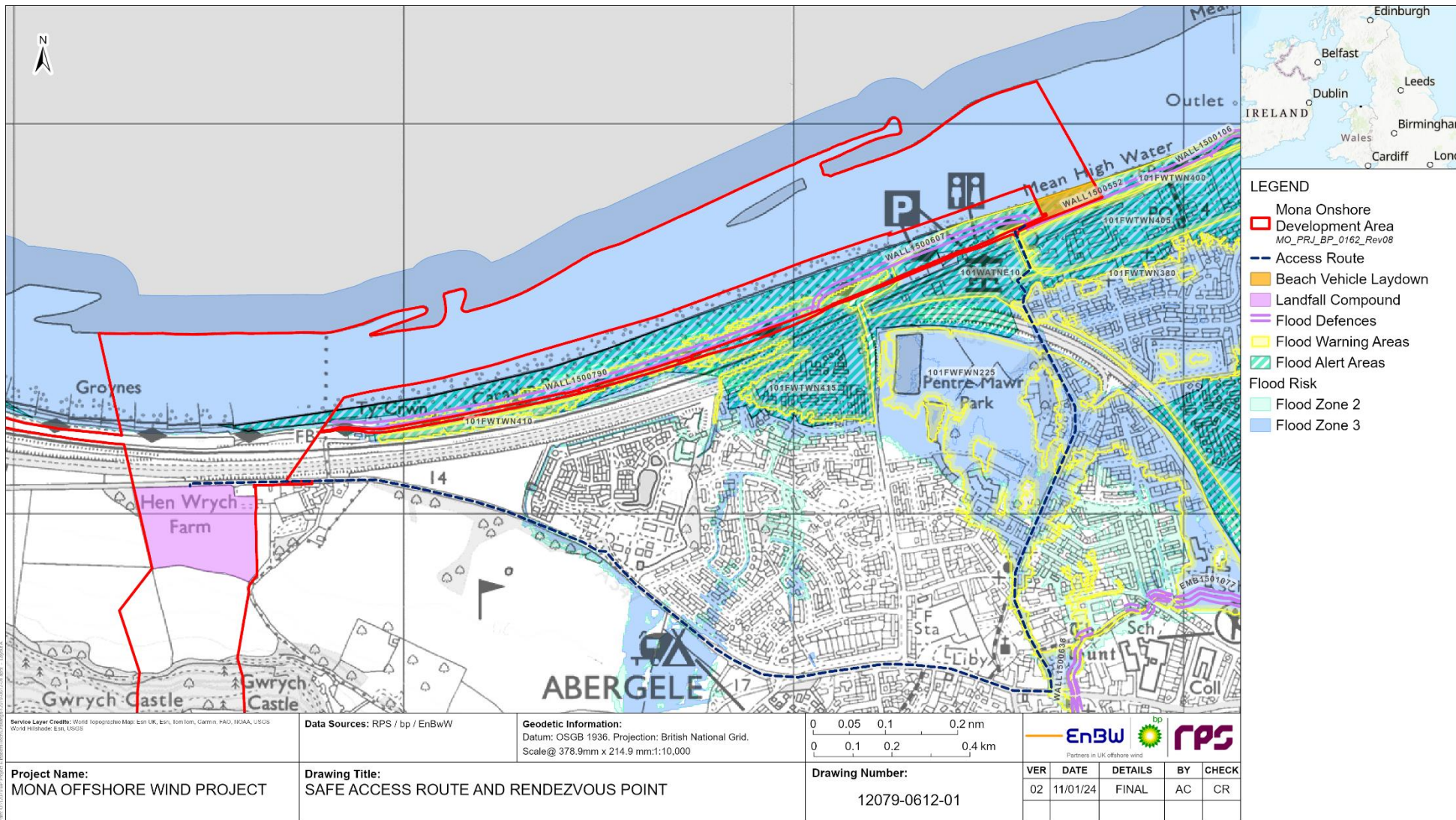


Figure 1.4: Safe Access Route and Rendezvous Point