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Marine Invasive Non-native Species Biosecurity Risk Assessment and Management Plan

A Marine Biosecurity Risk Assessment and Management Plan enables marine operators and contractors to understand and minimise the risk of introducing or spreading marine invasive non-native species (INNS). Management of marine INNS is extremely challenging once they are introduced to a new area. Effective biosecurity measures that minimise the risk of introduction or spread are therefore key to effective management.

Filling in this form:

To help you fill in this form, see accompanying document “Guidance for completing NRW’s Biosecurity Risk Assessment and Management Plan”. The accompanying document contains clarification of many key terms and also provides guidance on potential pathways of introduction for INNS (Table 1) and level of risk associated with each pathway (Table 2).

Structure of this form:

You will need to fill in Sections A and C. Fill in sections B1 to B5 when relevant to your activity. For further information on what is included in each section see the accompanying guidance document.

Section A: Activity overview

You should complete this section.

Section B: Risk Assessment

B.1 Assessing the pathway risks associated with vessels

If you are using a vessel (or vessels) as part of your licensed activity you should complete this section. Information on any equipment to be used which can be separated from the vessel should be provided in Section B.4.

B.2 Assessing the pathway risks associated with non-biological materials and water

If your activity involves the use or transfer of non-biological materials (e.g. water, sediment, construction material) you should complete this section.

B.3 Assessing the pathway risks associated with biological material

If your activity involves the use or transfer of biological material (including aquaculture) you should complete this section.

B.4 Assessing the pathway risks associated with equipment

If your activity involves use of equipment which can be separated from their vessel you should complete this section.

B.5 Assessing other pathway risks

This should be filled in if previous sections do not capture aspects of your activity.

Section C: Management Measures

You should complete this section.

Section D: Recommendations

You should consider this section.

Section A: Activity overview

Please fill out the activity details below:

Applicant name:	The Crown Estate
Short description of activity: *(please provide enough detail for NRW to understand the location and the different elements of the project. Links to other documents which describe the project can be provided)*	A reconnaissance level Geotechnical sampling campaign to corroborate the assumptions made from the interpretation of geophysical survey data, and to provide an overview of the ground conditions near surface and at depth across the site. A total of 80 locations are to be sampled/tested by: • Vibrocore: High-Performance Corer using a 6m (84.1mm internal diameter) sample tube with the intention to achieve full sample tube penetration with the target depth of 5 m below seafloor (x80) • Cone Penetrometer Testing (CPT): Deep-drive seabed Cone Penetrometer Testing (CPT) utilising a SEACALF Mk-V 20T thrust system with a 10 cm2 piezo-cone diameter and minimum thrust at refusal of 200kN with an average target depth of 30m below seafloor where ground conditions permit (x80). The unit drives the cone into the seabed at a standard rate of 2 cm/second. • Thermal conductivity testing to be conducted from the Vibrocore or Cone Penetrometer Testing instrument No sediment is removed through CPT. Vibrocore samples involve the extraction of sediment core samples from the seabed for analysis in a Laboratory.
Estimated timings of proposed licensed activities:	Approximately 8 weeks. Commence week commencing 1 July 2024 and finish week

	commencing 19 August 2024 with a hard stop date of 30 September 2024.

Section B: Risk Assessment

B.1 Assessing the pathway risks associated with vessels

B.1.1. Please list all ports within the UK or overseas that all vessel(s) to be used (both during construction and maintenance) have visited over the 12 months prior to this licensed activity, or since the last out of water period (whichever is most recent).

Please state **N/A** if vessels have not entered any port since the last out of water period.

If you do not yet have the information to complete this section, please state **Unknown.** NRW may ask for this section to be updated when these details are known. The risk should be set as High.

Vessel name	**Port / location visited over last 12 months** (listed chronologically with dates if known)	**Which marine invasive non-native species known to be present at this port(s) / location(s)?**	**Has the vessel had antifouling?** 12 months prior to activity for biocidal coatings, 24 months for biocide-free coatings
Normand Mermaid	Esbjerg (Denmark) 30/01/2024 11/01/2024 10/01/2024	Denmark Regional & Wadden Sea: Alitta succinea Codium fragile ssp. tomentosoides Crassostrea gigas Crepidula fornicata Dreissena polymorpha Ficopomatus enigmaticus Gracilaria vermiculophylla Mya arenaria Salmo salar Sargassum muticum Styela clava	Yes – Antifouling applied April 2022 and certified.

Normand Mermaid	Esbjerg (Denmark) 16/12/2023 12/12/2023 22/11/2023 13/11/2023 31/10/2023 26/10/2023	See Esbjerg (30/01/2024) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Karmoy (Norway) 21/10/2023	Norway Regional: Alexandrium minutum Ascidiella aspersa Bugula neritina Codium fragile ssp. tomentosoides Crassostrea gigas Crepidula fornicata Dreissena polymorpha Ficopomatus enigmaticus Gracilaria vermiculophylla Mya arenaria Mytilus galloprovincialis Ostrea edulis Polysiphonia brodiei Salmo salar Sargassum muticum Styela clava Urosalpinx cinerea	Yes – Antifouling applied April 2022 and certified.

Normand Mermaid	Husøy (Norway) 13/10/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Ågotnes (Norway) 10/10/2023 03/10/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Bergen (Norway) 20/09/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Stavanger (Norway) 10/09/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Kristiansund (Norway) 04/09/2023 03/09/2023 02/09/2023 01/09/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Stavanger (Norway) 29/08/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Swansea (United Kingdom) 22/08/2023	Amphibalanus improvises Austrominius modestus Bugula neritina Styela clava	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Holyhead (United Kingdom) 25/07/2023	Clavelina lepadiformis Undaria pinnatifida Didemnum vexillum Mytilus edulis	Yes – Antifouling applied April 2022 and certified.

		Steromphala cineraria Cladophora	
Normand Mermaid	Sunderland (United Kingdom) 06/07/2023 27/06/2023 20/06/2023	North Sea: Alexandrium minutum Crassostrea gigas Crepidula fornicate Gracilaria vermiculophylla Mya arenaria Rapana venosa Sargassum muticum Styela clava	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Delfzyl (Netherlands) 17/06/2023	Nertherlands Region & Wadden Sea: Alexandrium minutum Bugula neritina Codium fragile ssp. tomentosoides Crassostrea gigas Crepidula fornicata Dreissena polymorpha Ficopomatus enigmaticus Gracilaria vermiculophylla Mya arenaria Mytilus galloprovincialis Ostrea edulis Polysiphonia brodiei	Yes – Antifouling applied April 2022 and certified.

		Salmo salar Sargassum muticum Styela clava Urosalpinx cinerea	
Normand Mermaid	Den Helder (Netherlands) 14/06/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Ijmuiden (Netherlands) 30/05/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Den Helder (Netherlands) 17/05/2023 03/05/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Ijmuiden (Netherlands) 20/04/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Stavanger (Norway) 17/04/2023 04/04/2023 02/04/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Husøy (Norway) 31/03/2023	See Karmoy (21/10/2023) for Norway Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Den Helder (Netherlands) 29/03/2023 25/03/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.

Normand Mermaid	Ijmuiden (Netherlands) 10/03/2023 08/03/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Den Helder (Netherlands) 15/02/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Normand Mermaid	Ijmuiden (Netherlands) 07/02/2023	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2022 and certified.
Fugro Resolve	Unknown	Unknown	Unknown
Fugro Resolve	Las Palmas (Spain) January-May 2024	None present as per information available on NBN and GBIF	Yes – Antifouling applied April 2024 and certified
Fugro Resolve	Ijmuiden (Netherlands) 08/06/2024	See Delfzyl (17/06/2023) for Nertherlands Regional INNS	Yes – Antifouling applied April 2024 and certified
Fugro Resolve Normand Mermaid	Swansea (Expected Port of Operation)	Amphibalanus improvises Austrominius modestus Bugula neritina Styela clava	Yes – Antifouling applied April 2024 and certified Yes – Antifouling applied April 2022 and certified.
Fugro Resolve Normand Mermaid	Cardiff (Contingency Port of Operation)	Ficompoatus enigmaticus Crepidula Fornicata has been found at Cardiff in	Yes – Antifouling applied April 2024 and certified

		the eulittoral zone (but not in the port)	Yes – Antifouling applied April 2022 and certified.

Please add more rows if necessary

Please indicate the INNS risk level and justification of the risk below, separately for each vessel based on the locations visited in last 12 months. This should take into account the probability of biofouling and vessel antifouling regime. **Note:** Examples of risk levels are given in Table 2 of the accompanying guidance document and there is further information about this section in the accompanying guidance document.

Vessel name / type	Risk Level (High, Medium, Low)	Justification of risk level
Normand Mermaid	Low	The sampling equipment utilised during survey operations will be thoroughly washed and allowed to dry prior to mobilisation and upon completion of the project. The sampling equipment will also be thoroughly washed between sample locations once on the project and where time permits allowed to dry. Personal equipment/clothing/PPE will be thoroughly washed between sample locations once on the project and where time permits allowed to dry. Personal equipment/clothing/PPE will be thoroughly washed and allowed to dry prior to mobilisation and upon completion of the project. All deck areas will be washed prior to departure from the previous deployment location to remove any material or sampling residue. The deck will be washed between deployments once on the project and thoroughly cleaned upon completion of the works prior to departure for the next project location. The vessel's hull is antifouled and certified (April 2022), the vessel operates Ballast Water and Waste Management plans that are compliant with the relevant conventions and legislation applicable to the vessel. This is a condition of the vessels flag and class and will also be audited by an independent (CMID) inspector prior to works commencing. The vessel is not involved with

		the transportation or relocation of sediment, biological or non-biological material. All seabed samples recovered will be analysed in a laboratory ashore and dry stored in a secure shore based location for future reference and additional analysis.
Fugro Resolve	Low	The sampling equipment utilised during survey operations will be thoroughly washed and allowed to dry prior to mobilisation and upon completion of the project. The sampling equipment will also be thoroughly washed between sample locations once on the project and where time permits allowed to dry. Personal equipment/clothing/PPE will be thoroughly washed between sample locations once on the project and where time permits allowed to dry. Personal equipment/clothing/PPE will be thoroughly washed and allowed to dry prior to mobilisation and upon completion of the project. All deck areas will be washed prior to departure from the previous deployment location to remove any material or sampling residue. The deck will be washed between deployments once on the project and thoroughly cleaned upon completion of the works prior to departure for the next project location. The vessel's hull is antifouled and certified (April 2024), the vessel operates Ballast Water and Waste Management plans that are compliant with the relevant conventions and legislation applicable to the vessel. This is a condition of the vessels flag and class and will also be audited by an independent (CMID) inspector prior to works commencing. The vessel is not involved with the transportation or relocation of sediment, biological or non-biological material. All seabed samples recovered will be analysed in a laboratory ashore and dry stored in a secure shore based location for future reference and additional analysis.
Ports of operation	High	INNS are present within the proposed ports of operation as recorded in NBN. The first port

		of call will be Swansea, but due to draft restrictions in place, Cardiff port has been named as contingency port in this biosecurity plan. The movement of the vessels in and out of the ports represents a potential pathway for the introduction and spread of INNS.

B.1.2 Please provide details of the vessels (identified in Table B.1.1), which have not had antifouling (within the 12 months prior to the licensed activity for biocidal coatings, or 24 months for biocide-free coatings) and if there is an alternative antifouling management regime.

If there are not additional measures or an alternative biofouling management regime, then please put **None**, and the risk level would not change.

Vessel	**Alternative biofouling management regime** (e.g. different timeframes for antifouling treatment, vessel storage on land etc.)	**Risk Level (High, Medium, low)**

B.2 Assessing the pathway risks associated with non-biological materials and water

B.2.1: Please provide information about the source and receiving environments for non-biological materials and water transferred through the licensed activity from different pathways (for example hopper water, dredge material, construction material).

Pathway	**Location (including Coordinates, WGS84)**		**Relevant Environmental Conditions for INNS species** (e.g. salinity and depth differences between source and receiving environments)	**List of INNS known to be present**	**Risk Level (High, Medium or Low)**	**Justification of risk level**
	Source				Medium	
	Receiving					
	Source					
	Recieving					
	Source					
	Recieving					
	Source					
	Receiving					

	Source					
	Receiving					
	Source					
	Receiving					

Please add more rows if necessary

B.3 Assessing the pathway risks associated with biological material

B.3.1 Please provide information about the species that will be used or transferred through the licensed activity and the potential for INNS to be contained in the biological material.

No species will be transferred to the marine environment.

B.3.2: Please provide information about the source and receiving environments for biological material used or transferred through the licensed activity. Pathways include, for example, transfer of seeded ropes with seaweed or shellfish.

Pathway	**Location (coordinates, WGS84) and / or name of culture facility**		**Relevant environmental conditions for INNS species** (e.g. salinity and depth differences between source and receiving environments)	**List of INNS known to be present in the location or culture facility**	**Risk Level (High, Medium or Low)**	**Justification of risk level**
	Source					
	Receiving					
	Source					
	Receiving					

Please add more rows if necessary

B.3.3. If a relevant pathway is identified in Table B.3.2, please outline any relevant biosecurity measures or protocols in place to prevent contamination of material by marine INNS, and introduction or spread of marine INNS.

N/A

B.3.4. Does the transfer have the relevant documentation from the Fish Health Inspectorate at CEFAS (Aquaculture Production Business Registration), or follow other relevant codes of conduct for prevention of the introduction or spread of marine INNS? Please place an X in the relevant box.

Yes	No	Don't know	Not relevant
			X

B.4 Assessing the pathway risks associated with immersible equipment

B.4.1. Please list the immersible equipment expected to be used in this licensed activity in the box below.

Vibrocorer Cone Penetrometer Tester Termal Conductivity Tester

B.4.2. Will all the immersible equipment used in this licensed activity undergo washing, rinsing and / or drying as part of routine maintenance at the times described below? Please place an X in the relevant box.

	Yes	No
Immediately prior to departing the port of origin to undertake the licensed activity.	X	
Immediately prior to leaving the licensed	X	

activity area on completion of the licensed activity.		

B.4.3. Will all the immersible equipment used in this licensed activity undergo washing, rinsing and / or drying between different deployments within the activity area of this licensed activity (e.g. different specific locations of dredging or sampling covered under this marine licence)? Please place an X in the relevant box.

Yes	No (please provide reason)
X	

If you answer No to any of the questions in B.4.2 or B.4.3, then please complete B.4.4 below.

B.4.4. Please provide information on the previous location the equipment will have been used prior to the vessel being used for this licensed activity.

Equipment	Location (Coordinates, WGS84)	Risk Level (High, Medium or Low)	Justification of risk level

B.5 Assessing other pathway risks

B.5.1 Please provide any other information on the licensed activity that may produce a risk of the introduction or spread of marine INNS that is not covered in the sections above.

Pathway	Risk Level (High, Medium or Low)	Justification of risk level
Ballast Water – directly discharged to sea	Low	Vessels are compliant with the International Convention for the Control and Management of Ship's Bassla Water and Sediments and holds a class approved International Ballast Water Management Certificate and operates a ballast water treatment system and an approved ballast water management plan.

Sediment residues from sampling equipment – directly discharged to sea	Low	Sampling equipment, machinery and deck is cleaned and washed prior to sailing from the sampling location to Port or next sampling location/region. Photograph and report any flora or fauna recovered. Identify, record and report if Invassive Non-native Species are discovered.
Fresh (Potable) Water – discharged directly to sea	Low	Vessels are compliant with International Health Regulations and applies chlorine and monitoring regimes in accordance with the vessel operators management system producers for the handling and storage of Fresh Water.
Biofouling of Ships Hull – In water	Low	Use of certified anti-foul paint system (last applied April 2022 and April 2024), maintenance and reapplication programme aligned with the vessels classification requirements.
Biofouling of seawater intakes – discharged with waste or thrown overboard	Low	Vessels operate a management system for the maintenance of flushing systems to prevent the build up of bio-fouling. Any biofouling removed from filters is disposed of or destroyed.
Pests/Rodents carried in Food Stored – gangway, mooring ropes	Low	Included within the vessels Integrated Management System with weekly routine inspection of accommodation and food storage areas in line with ship sanitation requirements and certification.
Ports of operation	High	INNS are present within the proposed ports of operation as recorded in NBN. The movement of the vessels in and out of the ports represents a potential pathway for the introduction and spread of INNS.

Section C: Management Measures

C.1 Management Measures

Enter the management measures for the pathways identified in the sections above.

All **high and medium risk** pathways identified in the previous risk assessment (sections B.1 to B.5) should have some degree of additional control or mitigation measures. Low risk pathways may also need additional control or mitigation measures. You may want to consider keeping a logbook to help demonstrate compliance if this is requested.

Pathway (identified in sections above)	**Risk Level (High, Medium or Low)**	**Risk management measure/s**	**Risk level after management (High, Medium or Low)**
Ballast Water – directly discharged to sea	Low	Vessels are compliant with the International Convention for the Control and Management of Ship's Ballast Water and Sediments and holds a class approved International Ballast Water Management Certificate and operates a ballast water treatment system and an approved ballast water management plan.	Low
Sediment residues from sampling equipment – directly discharged to sea	Low	Sampling equipment, machinery, personal equipment/clothing/PPE and deck will be cleaned and	Low

		washed prior to sailing from the sampling location to Port or next sampling location/region. Any suspected INNS will be photographed, recorded and reported to NRW and iRecord	
Fresh (Potable) Water – discharged directly to sea	Low	Vessels are compliant with International Health Regulations and applies chlorine and monitoring regimes in accordance with the vessel operators management system producers for the handling and storage of Fresh Water.	Low
Biofouling of Ships Hull – In water	Low	Vessels have anti-foul paint (last applied April 2022 and 0224 respectively). This is maintained and reapplied in line with the vessels classification requirements.	Low
Biofouling of seawater intakes – discharged with waste or thrown overboard	Low	Vessels operate a management system for the maintenance of flushing systems to prevent the build up of bio-fouling. Any biofouling removed from filters is disposed of or destroyed.	Low

Pests/Rodents carried in Food Stored – gangway, mooring ropes	Low	Included within the vessels Integrated Management System with weekly routine inspection of accommodation and food storage areas in line with ship sanitation requirements and certification.	Low
Ports of operation	High	Clean, check and dry protocols will be implemented for all operating equipment, personnel equipment/PPE prior to entering and/or departing the ports. Any suspected INNS will be photographed, recorded and reported to NRW and iRecord No sampling will take place in the ports. Both operating vessels have had antifouling treatment in the last 12-24 months Vessels are compliant with the International Convention for the Control and Management of Ship's Ballast Water and Sediments Vessels will follow guidance as directed by the "Guidance for	Low

		the control and management of ships' biofouling to minimise the transfer of invasive aquatic species" Vessels will be operating in and out of the ports to carry out surveys and therefore won't be berthed for long periods of time at any one location in the ports. This reduces the risk of the hull becoming colonised by INNS	

Please add more rows if necessary

Section D. Recommendations

You may want to consider how compliance with the management measures will be recorded, for example in a log book or via photos.

We also recommend that;

- You identify an individual for monitoring and reporting on biosecurity management plan actions (a biosecurity manager)
- All staff involved in the licensed activity are made fully aware of the possibility that INNS may be encountered and understand what measures will be taken to ensure surveillance / monitoring of INNS during the activity
- All relevant staff are adequately trained in the identification and detection of INNS and to report any instances to the biosecurity manager