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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:	For the Love of the Sea Limited
Short description of activity: <i>(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)</i>	The activity involves the expansion of two trial sites at Carn ar Wig and Porthlysgi Bay, located south of the St Justinians site. The focus is on cultivating shellfish, including mussels ( <i>Mytilus edulis</i> ), native oysters ( <i>Ostrea edulis</i> ), and scallops ( <i>Pecten maximus</i> ). The infrastructure includes long-lines, lantern nets, and seabed cages. The project aims to enhance marine biodiversity and support sustainable shellfish production.
Estimated timings of proposed licensed activities:	The biosecurity plan is reviewed annually before the start of the growing season in September. Shellfish can be harvested year-round.

## 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
Câr-y-Môr	St Justinians and Porthclais	None	Yes

*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
Câr-y-Môr	Low	The vessel operates locally with minimal travel distance and thorough antifouling measures in place, reducing the risk 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.

<b>Vessel</b>	<b>Alternative biofouling management regime</b> (e.g. different timeframes for antifouling treatment, vessel storage on land etc.)	<b>Risk Level (High, Medium, low)</b>
<b>None</b>		

## 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
<i>Transfer of water during vessel operations</i>	Source	<p><b>St Justinian's Harbour,</b> Longitude: -5.3100, Latitude: 51.8840</p> <p><b>Carn a Wig;</b> Longitude: -5.3157825, Latitude: 51.86760525</p> <p><b>Porthlysgi Bay:</b> Longitude: -5.3047965, Latitude: 51.862547</p> <p><b>Porthclais Harbour</b></p>	Fully saline environment	None known from current data	Low	Short travel distances and thorough cleaning protocols minimise the risk of introducing INNS.

		Longitude: -5.267, Latitude: 51.872				
	Receiving	<b>St Justinian's Harbour,</b> Longitude: -5.3100, Latitude: 51.8840  <b>Carn a Wig;</b> Longitude: -5.3157825, Latitude: 51.86760525  <b>Porthlysgi Bay:</b> Longitude: -5.3047965, Latitude: 51.862547  <b>Porthclais Harbour</b> Longitude: -5.267, Latitude: 51.872	Fully saline environment	None known from current data	Low	Short travel distances and thorough cleaning protocols minimise the risk of introducing INNS.
<i>Infrastructure and equipment placement and usage</i>	Source	<b>St Justinian's Harbour,</b> Longitude: -5.3100, Latitude: 51.8840  <b>Porthclais Harbour</b> Longitude: -5.267, Latitude: 51.872	Saline environment	None reported	Medium	Regular monitoring and cleaning, no reported INNS to date, static equipment in saline environment.

	Receiving	<b>Carn a Wig;</b> Longitude: -5.3157825, Latitude: 51.86760525  <b>Porthlysgi Bay:</b> Longitude: -5.3047965, Latitude: 51.862547	Fully saline environment	None reported	Medium	Regular monitoring and cleaning, no reported INNS to date, static equipment in saline environment.
	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.

- **Mussels (*Mytilus edulis*):** Cultivated on rope lines with natural spat fall, mussels have a potential risk of biofouling organisms attaching during cultivation.
- **Native Oysters (*Ostrea edulis*):** Grown in anchored seabed cages, with a risk of INNS, such as predatory snails or biofouling organisms, being present.
- **Scallops (*Pecten maximus*):** Cultivated in lantern nets, with potential for biofouling organisms or predatory species to be present.

**Potential for INNS to be Contained in the Biological Material:**

Mussels, oysters, and scallops are susceptible to biofouling by organisms like barnacles, hydroids, and seaweeds. These could be transported along with the shellfish if not inspected and cleaned. Regular inspection and cleaning protocols will be followed to ensure all biological material and equipment are free from INNS before transfer. This minimises the risk of introducing or spreading INNS through the licensed activity.

**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
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<i>Transfer of shellfish</i>	Source	On-site at Porthlysgi Bay, Carn ar Wig, and St Justinians	Fully saline environment	None known	Low	Local seed stock and thorough inspection protocols minimise the risk
	Receiving	<p><b>St Justinian's Harbour,</b> Longitude: -5.3100, Latitude: 51.8840</p> <p><b>Porthclais Harbour</b> Longitude: -5.267, Latitude: 51.872</p> <p><b>Carn a Wig;</b> Longitude: -5.3157825, Latitude: 51.86760525</p> <p><b>Porthlysgi Bay:</b> Longitude: -5.3047965, Latitude: 51.862547</p>	Fully saline environment	None known	Low	Local seed stock and thorough inspection protocols minimise the risk
	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.

**1. Inspection Protocols:**

- All biological material, including mussels, native oysters, and scallops, are thoroughly inspected for signs of INNS before transfer. Any material showing signs of INNS is set aside for further inspection and cleaning.

**2. Cleaning Procedures:**

- Equipment such as lantern nets, oyster cages, and long-lines are cleaned and dried thoroughly before and after each use to prevent contamination. Freshwater is used for cleaning, and all equipment is air-dried to ensure no INNS are transferred.

**3. Monitoring:**

- Regular visual inspections of the farm site, equipment, and vessels are conducted to detect any INNS. If INNS are identified, immediate action is taken to remove and properly dispose of the organisms.

**4. Staff with Experience:**

- Many of the staff involved in the transfer and handling of biological material have experience in identifying and managing INNS. They are also educated on the importance of maintaining biosecurity protocols.

**5. Documentation:**

- Records of any incidents of INNS would be kept in logbooks. This documentation helps track compliance with biosecurity measures and provides information for any necessary reporting to authorities.

**6. Source Control:**

- The use of local on-site seed stock from Porthlysgi Bay, Carn ar Wig, St Justinians ensures that the biological material is less likely to be contaminated with INNS. This control reduces the risk of introducing non-native species into new areas.
- For individuals which may be sourced from outside the immediate area around the farms, these will be inspected thoroughly and cleaned on land before being taken out to the farms to ensure no INNS are introduced. Any INNS recorded will be disposed of and reported to NRW. All equipment used will be disinfected and cleaned with freshwater and left to air dry after cleaning to ensure no INNS is transferred elsewhere through the equipment. No Native Oyster individuals smaller than 20mm will be introduced onto the farm sites to ensure correct identification of *Ostrea edulis*. All native oysters will be held in lantern nets or in cages and routinely graded to allow identification and disposal of any INNS which may have been missed in the initial grading before deployment. Regular washing and grading of all oysters will occur at least twice in the first 9 months from receiving the spat to ensure effective mitigations against Pacific Oyster INNS, as discussed with NRW Advisory.

**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.

1. **Lantern Nets:** Used for cultivating scallops, mussels, and oysters. These nets are submerged and suspended in the water column, providing an optimal environment for shellfish growth while minimising predation.
2. **Oyster Cages:** Ground-anchored cages used for growing native oysters (*Ostrea edulis*). These cages rest on the seabed and provide a protected environment for the oysters.
3. **Long-Lines:** Used for the cultivation of mussels (*Mytilus edulis*). These long-lines are submerged in the water and allow mussels to grow by attaching themselves to the ropes.
4. **Buoys and Floats:** Various buoys and floats are used to mark and support the structure of the long-lines and nets in the water. These include A-floats and pencil floats.
5. **Harvesting Equipment:** This includes equipment such as onboard cranes, hoists, and net haulers used to lift the nets and cages out of the water for inspection, cleaning, and harvesting.
6. **Inspection Tools:** Any diving equipment and Underwater cameras used for 6 monthly inspections of the farm structures and equipment to detect any signs of biofouling or presence of INNS.

All this equipment will be subject to routine cleaning and maintenance protocols to help prevent the introduction and spread of INNS, ensuring compliance with biosecurity measures and safeguarding the marine environment.

**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 <u>port of origin</u> to undertake the licensed activity.	X	
Immediately prior to leaving the licensed activity area on completion of the licensed activity.	X	

**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

Equipment Storage and Transportation	Medium	Equipment used in the aquaculture activities may be stored and transported between uses. There is a potential risk that INNS could be transferred if the equipment is not properly cleaned and dried between storage and redeployment. This risk is managed by adhering to strict cleaning protocols.
Use of Shared Vessels for Multiple Locations	Medium	Vessels used for the licensed activities may also be used in other locations. This increases the risk of INNS being transferred between different sites. Implementing thorough cleaning and antifouling protocols before moving vessels between locations helps mitigate this risk.
Introduction of New Equipment or Materials	Low	New equipment or materials introduced to the site could potentially carry INNS. However, this risk is minimised by ensuring all new equipment and materials undergo inspection and cleaning before being deployed at the farm sites.

## 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)
Equipment Storage and Transportation	Medium	<p>Clean and disinfect equipment thoroughly before storage and transportation.</p> <p>Ensure equipment is stored in a way that prevents contamination by INNS.</p> <p>Conduct regular inspections of stored equipment.</p>	Low
Use of Shared Vessels for Multiple Locations	Medium	Implement thorough cleaning and antifouling protocols	Low

		before moving vessels between locations.  Ensure all shared vessels undergo regular inspections and maintenance.	

*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) - **this will be Beth Marshall (Marine Biologist)**
- 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