

|                                                                            |  |
|----------------------------------------------------------------------------|--|
| <i>Document version number: (to be completed by marine licensing team)</i> |  |
| <i>Approval date: (to be completed by marine licensing team)</i>           |  |

# 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:                                                                                                                                                                                                               | Wross Lawrence and Guy Macleod, Seazou Aquaculture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Short description of activity:<br><br><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> | <p>The creation of a 25-hectare, (500m x 500m), seaweed farm located off the coast of the Pennard Cliffs, east of Oxwhich Bay in the Bristol Channel south of the Gower Peninsular. The farm will be positioned approximately 800m beyond the low water mark of the shoreline south of the community of Pennard and Southgate.</p> <p>The farm will include 3 rows of 20 x 100m long submerged seaweed longline arrays suspended from weighted mooring anchors at either end.</p> <p>Please refer to the accompanying Seaweed Farm Overview document for a description of the activity.</p> |
| Estimated timings of proposed licensed activities:                                                                                                                                                                            | June 2024 – TBC. The duration of the activity will be dependent on the duration of the marine license.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 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<br>(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 |
|-------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| TBC         | Swansea Port                                                                                | No know INSS at Swansea Port, see Figure 1.                                                 | 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                                                                              |
|--------------------|--------------------------------|----------------------------------------------------------------------------------------------------------|
| TBC                | Low                            | The vessel operates solely out of Swansea Port and there are no know INSS at Swansea Port, see Figure 1. |

**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><br>(e.g. different timeframes for antifouling treatment, vessel storage on land etc.) | <b>Risk Level (High, Medium, low)</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                                                                                                                                                                                                                                     |
|------------------------------------------------------|-----------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Deposition of material – Seaweed farm infrastructure | Source                                  | TBC            | N/A                                                                                                                                | N/A                                  | Low                              | The seaweed farm permanent infrastructure installed, such as weighted anchors, vertical chains, vertical lines and marker bouys will be installed new. The risk of the new, 'off the shelf' elements introducing live INNS to the seaweed farm location is low. |
|                                                      | Receiving                               | SS 54622 86183 | Saline location, with a water depth of 10m.                                                                                        | No known INNS present, see Figure 1. |                                  |                                                                                                                                                                                                                                                                 |
| Deposition of material –                             | Source                                  | SS 66374 92635 | Saline location, Swansea Marina                                                                                                    | No known INNS present, see Figure 1. | Low                              | Long lines wrapped in seeded twine will be laid at                                                                                                                                                                                                              |

Seazou Aquaculture Ltd Seaweed Farm – Biosecurity Plan

|                             |           |                   |                                             |                                      |  |                                                                                                                                                                                                                                                                        |
|-----------------------------|-----------|-------------------|---------------------------------------------|--------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Seaweed farm infrastructure | Receiving | SS 54622<br>86183 | Saline location, with a water depth of 10m. | No known INNS present, see Figure 1. |  | the seaweed farm every Septemeber / November. The biosecurity of the seeded twine is covered B.3.2. The long line ropes will be stores at Swansea Port and cleaned and dried prior to being laid to minimise th risk of introducing INNS to the seaweed farm location. |
|-----------------------------|-----------|-------------------|---------------------------------------------|--------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Please add more rows if necessary

[Type here]

### **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.

**Palmaria Palmata**

**Laminaria Digitata**

**Saccharina Latissimi (possible – pending discovery of local fertile samples)**

**All three species of seaweed are native to the location of the seaweed farm.**

**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.

## Seazou Aquaculture Ltd Seaweed Farm – Biosecurity Plan

| 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                                        |
|------------------------------------|-----------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------|
| Aquaculture material<br>(Source 1) | Source                                                          | 56.451259,-5.440553  | SAMS seaweed nursery                                                                                                               | No known INSS present within the biosecure SAMS seaweed nursery      | Medium                           | The SAMS seaweed nursery biosecurity plan, see section B.3.3.      |
|                                    | Receiving                                                       | SS 54622 86183       | Saline location, with a water depth of 10m.                                                                                        | No known INNS present, see Figure 1.                                 |                                  |                                                                    |
| Aquaculture material<br>(Source 2) | Source                                                          | 56.335201,-2.781775  | Marivate seaweed nursery                                                                                                           | No known INSS present within the biosecure Marivate seaweed nursery  | Medium                           | The Marivate seaweed nursery biosecurity plan, see section B.3.3.  |
|                                    | Receiving                                                       | SS 54622 86183       | Saline location, with a water depth of 10m.                                                                                        | No known INNS present, see Figure 1.                                 |                                  |                                                                    |
| Aquaculture material<br>(Source 3) | Source                                                          | 52.698507, 4.8417413 | Hortimare seaweed nursery                                                                                                          | No known INSS present within the biosecure Hortimare seaweed nursery | Medium                           | The Hortimare seaweed nursery biosecurity plan, see section B.3.3. |
|                                    | Receiving                                                       | SS 54622 86183       | Saline location, with a water depth of 10m.                                                                                        | No known INNS present, see Figure 1.                                 |                                  |                                                                    |

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.

The SAMS biosecurity policy:

<https://www.sams.ac.uk/facilities/seaweed-nursery/>

SAMS is committed to minimising the effects of its activities on the environment, and the use of locally sourced seed material for seaweed cultivation plays an important part in that. SAMS' seaweed nursery, and the seed cultures contained within, are managed under an accredited quality management system with stringent biosecurity protocols. These protocols ensure that only local strains are propagated and outplanted specific to each farm site, and that non-target species are identified and controlled accordingly. A biosecurity statement, ensuring the safe handling and provenance of seeded line, will subsequently be delivered with every order from the seaweed nursery.

Seeded twine will be transported to the site using a freshly washed vehicle allowed to dry between transfers

The Marivate biosecurity policy:

<https://www.marivate-seaweed.com/marivate-hatcheries>

Marivate's hatchery operations are strongly committed to biosecurity at every step of the process, including sampling, induction, flask spore cultivation, and tank cultivation. Working with the SASA (Science & Advice for Scottish Agriculture) Marivate has gone above and beyond biosecurity regulations and requirements in order to operate and issue plant passports. Marivate is committed to continuing to be a biosecurity leader in the seaweed sector. The Marivate biosecurity policy covers:

- Bio-Exclusion Security: The first step in maintaining biosecurity is limiting the ingress of potentially harmful organisms. Thus keeping possible contaminations from ever entering the facility is always the best possible outcome.
- Bio-Management Security: When things do penetrate bio-exclusion it is key to maintain procedures to limit damage to cultures and stocks. Strong bio-management security is key to continue operating and, if managed properly, will mean reduced or no unplanned downtime.
- Bio Containment: In the event of contamination of a sample, tank, flask, or any other part of the facility, immediate action is paramount (see relevant SOPs for specific procedures). Immediate isolation of the possible contamination from the rest of the facility should be performed immediately and the biosecurity manager should be contacted at first instance. If it is a contamination, then the biosecurity manager, in consultation with the facility manager, will decide if the contaminated culture/tank/sample will be immediately disposed of or whether there will be an attempt to salvage it.

- Reporting and Tracking
- Meeting Regulatory Standards

The Hortimare biosecurity policy:

<https://www.hortimare.com/our-services/>

Hortimare only delivers cultures to seaweed farms that have been derived from mother plants originating locally. Hortimare will never deliver species into an area where they would not occur endemically and will not introduce invasive species into any area.

Spores are extracted from locally sourced fertile seaweed plants in sterile circumstances with use of a flow cabinet and released in seawater which is kept in containers in the nursery. This constitutes a closed system. After a couple of weeks the spores will transform in gametophytes. In this stage they will be kept, propagated and nurtured still in a closed system without other cultures from other locations getting in touch with them. All seawater that Hortimare uses has been filtered and pasteurized. For seeded twine, the gametophytes or sporophytes will be brushed onto coils covered with twine and the coils will be placed into a frame in a tank filled with seawater separated by location.

Hortimare's facilities are land-based and 30 kilometers away from the closest sea-shore so also from that angle no risks are present on escaping of non-endemic macro-algae.

Seeded twine will be transported to the site using a freshly washed vehicle allowed to dry between transfers

**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.

|                                                                                                       |
|-------------------------------------------------------------------------------------------------------|
| Harvesting equipment including hooks and shears. Maintenance and cleaning equipment, such as brushes. |
|-------------------------------------------------------------------------------------------------------|

**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<br>(High, Medium or Low) | Justification of risk level |
|---------|-------------------------------------|-----------------------------|
|         |                                     |                             |
|         |                                     |                             |
|         |                                     |                             |
|         |                                     |                             |
|         |                                     |                             |

[Type here]

## 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) |
|---------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Vessels                                                             | Low                              | The vessel used for the activity comes from a location with no known INNS and will have an annual biofouling regime. | Low                                               |
| Deposition of material – Seaweed farm infrastructure (permanent)    | Low                              | New, 'off the shelf' elements will be used for the construction of the seaweed farm.                                 | Low                                               |
| Deposition of material – Seaweed farm infrastructure (seeded lines) | Low                              | Long lines wrapped in seeded twine will be laid at the seaweed farm every                                            | Low                                               |

|                                  |        |                                                                                                                                                                                                                                                 |        |
|----------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
|                                  |        | Septemeber / November. The biosecurity of the seeded twine is covered B.3.2. The long line ropes will be stores at Swansea Port and cleaned and dried prior to being laid to minimise th risk of introducing INNS to the seaweed farm location. |        |
| Aquaculture material (SAMS)      | Medium | The SAMS seaweed nursery biosecurity plan, see section B.3.2.                                                                                                                                                                                   | Medium |
| Aquaculture material (Hortimare) | Medium | The Horimare seaweed nursery biosecurity plan, see section B.3.2.                                                                                                                                                                               | Medium |
| Immersible equipment             | Low    | All emersible equipment used for harvesting and maintenance will be washed and dried before and after deployment at the seaweed farm.                                                                                                           | Low    |

*Please add more rows if necessary*

[Type here]

## 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

## Figures

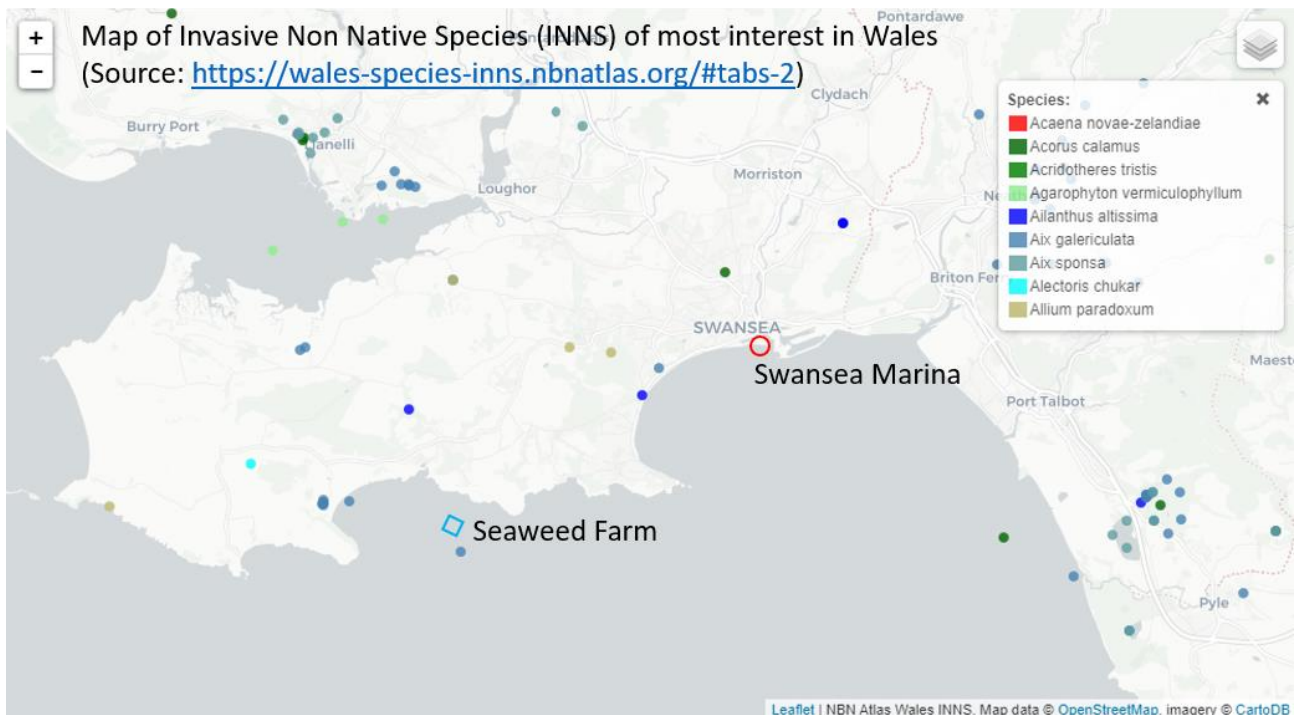


Figure 1: Map of Invasive Non Native Species (INNS) in the vicinity of the seaweed farm

As per the map in Figure 1 there are no known Invasive Non Native Species (INNS) in the vicinity of the seaweed farm and in the vicinity of Swansea Marina. The map shows that there has been a recording of *Aix Galericulata* (Mandarin Duck) near to the seaweed farm, however this is not deemed to be a species that will be greatly impacted by the presence of the seaweed farm.