



What is Biosecurity Planning?

Biosecurity planning is a way of managing and lowering the risk associated with Invasive Non-Native Species (INNS). There are almost always sensible steps we can take to reduce the risk of moving species from one place to another and to reduce the likelihood of the species becoming established and therefore invasive. The GB Invasive Non-Native Species Framework Strategy has a three-tier approach:

- **Prevention** – most effective and least environmentally damaging
- **Rapid Response** – early detection and surveillance, potential eradication
- **Control & Containment** – where the INNS is widespread and eradication is not feasible, control of the population and mitigation against negative impacts

Given the high costs for the mitigation, control and eradication of INNS once they are established prevention is the obvious first choice and biosecurity planning is an excellent way to achieve this.

Biosecurity planning for larger sites and activities can be complex, but when taken in steps and prioritised by risk assessment, it can be manageable and effective. Plenty of guidance exists to assist you as you develop your plan.

You can also develop your plan in the context of the national issues identified by the GB [Non-Native Species Secretariat](#).

Management Support

It is crucial to the success of the plan that as many people buy into its development as possible. Changes to working practices brought about by the biosecurity plan will mean that port authorities, and larger marina developments will need to influence the behaviour of customers including shipping, transport and construction sectors as well as tenants and other users on their sites. Gaining support from management and staff is therefore an important first step.

Writing your plan

Sections in your biosecurity plan are likely to cover the following topic areas:

1) Introduction and Scene Setting

- Site name including area covered and a site map
- Biosecurity Manager/Officer or responsible person or organisation/group
- Plan duration and review date
- Plan review process
- Location of biosecurity logbook

2) *Environmental Information*

- **Site description** – Key features of the site that will affect biosecurity: what sort of area is it, volume of fresh water feeding in and out, types of sediment, types of harbour structures etc
- **Chemical and physical information.** This could include tidal, salinity and stratification information as well as information about the physical structures and habitats on your site. This information will help to inform the risk assessment about which species may settle or how they may proliferate. Some of the basic information may be found online or have been collected by your organisation already.
- **Sensitive habitats and protected features/areas** – list any protected areas within or near the location and include information about why the areas are designated and any concerns noted about the potential impact of INNS.
- **Known environmental management measures** – all protected areas will have some management measures in place and/or targets for maintenance of status; use these to inform the development of your plan.
- **Condition assessment (if available)** – many, but not all protected areas/sites will have a condition assessment done. These documents give useful biological background information and, where they exist, they are very useful.
- **INNS known to be present** – Search by area or by species on the National Biodiversity Network/Atlas site. Lists are available on known and potential INNS on the [GB NNS website](#).
- **INNS likely to be of concern to your site (horizon scanning)** – compile your own list of species you think may be high impact. If necessary, work with a professional biologist for extra support.

3) *Pathways and Risk Assessment*

List the [main ways INNS](#) can arrive in the area (pathways) and be spread around – for example list the different types of vessel movements. Describe the activities in a way which helps to identify the risks associated with them for example the frequency of the vessel arrivals and their point of origin of last port of call, the length of their stay at your facility and what activities they will be undertaking whilst in port. You should also take into account the likelihood of ballast water transfer and the amount of hull fouling on any vessel.

Risk assessment

Risk assessments require the use of judgement and will include an element of uncertainty. However, it is a useful way of looking at pathways objectively and identifying sensible and proportionate control measures to minimise the risk of spreading invasive INNS. One approach to assessing risk and the effectiveness of mitigating actions is by using the following methodology.



Vector/pathway association with INNS	Description
High	INNS have been identified in association with the vector/pathway
Medium	NNS have been identified in association with vector/pathway
Low	It can be determined with sufficient confidence that INNS are not in association with the vector/pathway

Pathway/Vector effectiveness	Description
High	Viable biological material is <i>likely to be transported AND actively dispersed</i> by the vector/pathway in large quantities and/or frequently.
Medium	Viable biological material is <i>likely to be transported</i> by the vector/pathway, but in small volumes/less frequently
Low	Control measure exists to identify and manage situations where viable biological material is being transported

Likelihood of establishment and spread	Description
High	Environmental conditions within the recipient environment are suitable for growth AND reproduction
Medium	Environmental conditions within the recipient environment are suitable for growth, but not reproduction under present climatic conditions
Low	Environmental conditions within the recipient environment are outside those necessary for growth and reproduction

Final Risk Assessment Score

Pathway/Vector effectiveness	Vector/pathway association with INNS		
	High	Medium	Low
High	High	Medium/High	Low
Medium	Medium/High	Medium	Low
Low	Low	Low	Negligible

3.2 Example marine pathways

Ballast water

Ballast water exchange is considered a high-risk activity as it has the potential to contain specimens of viable INNS either as whole plants and animals or as fragments and larvae.

Following entry into force of the [Ballast Water Convention](#) on 8th Sept 2017, ballast water management guidance from the IMO is now [comprehensive](#) and potentially complex. Port Authorities should take specialist advice to ensure they are meeting the requirements of the Convention.

SUGGESTED ACTION – Follow IMO guidelines. Request that vessels follow best practice and undertake ballast water exchange at least 200nm from land and in water 200m deep.

Hull Fouling

Significant build-up of biofouling seriously increases the risk of transporting INNS. The IMO have published guidance on [management of hull fouling](#) and you can use the following scoring matrix to help estimate amount of fouling and along with the table you can begin to assess the risk associated with a particular vessel.

Rank	Description	Visual estimate of biofouling cover
0	No visible fouling. Hull entirely clean, no biofilm ^a on visible submerged parts of the hull.	Nil
1	Slime fouling only. Submerged hull areas partially or entirely covered in biofilm, but absence of any plants or animals.	Nil
2	Light fouling. Hull covered in biofilm and 1–2 very small patches of one type of plant or animal.	1–5 % of visible submerged surfaces
3	Considerable fouling. Presence of biofilm, and fouling still patchy, but clearly visible and comprised of either one or more types of plant and/or animal.	6–15 % of visible submerged surfaces
4	Extensive fouling. Presence of biofilm and abundant fouling assemblages consisting of more than one type of plant or animal.	16–40 % of visible submerged surfaces
5	Very heavy fouling. Many different types of plant and/or animal covering most of visible hull surfaces.	41–100 % of visible submerged surfaces

^aBiofilm: Thin layer of bacteria, microalgae, detritus and other particulates.

	Yes = HIGH	Yes = MED	Yes = LOW
1. Has the vessel/ equipment just arrived from the local area?			
2. Has the vessel/ equipment had an anti-fouling coating applied to submerged structures within the last 12 months (or time recommended by manufacturer)?			
3. Are all the visible submerged surfaces free of bio-fouling (a green 'slime' is OK)?			
4. Do the visible submerged surfaces have more than a green 'slime' coating?			
5. Does the vessel/ equipment have noticeable clumps of algae and/ or animals clinging to the visible parts?			
6. Has the vessel/ equipment just arrived from another country or region with similar environmental conditions (e.g., seawater temperature)?			
7. Has the vessel/ equipment just arrived from a water body known to have INNS present?			
8. Does the vessel/ equipment spend long periods of time stationary at sites in between anti-fouling treatments?			
9. Is the vessel 'slow moving', such as a construction barge or drilling rig?			

One off events

Events have the potential to bring in new INNS. In your plan list possible types of events and identify opportunities to reduce their biosecurity risk. For example, there may be an international boat race using the port, plans to construct a new terminus for cruise ships, kayaking competitions, or triathalons. Establishing contact with the relevant people, such as the contractors or event organisers, at an early stage and creating an appropriate biosecurity plan will be more effective than any retrofitting of actions.

4. Contingency Plan / Rapid Response Plan

Even with good biosecurity procedures in place there is potential for new INNS to arrive in the area. It is important that the response to such an event is rapid and proportionate to the threat posed.

In this section you should lay out guidance for stakeholders about what to do if a new INNS is found in the area. Typical actions which could be included in such plans are laid out below.

Event	Action
Unusual/unknown species found	Photograph specimen. Record location and approximate size of area affected. Contact taxonomic expert, such as a marine biologist, from contact list. Once identified: If INNS known from area then simply record sighting in Biosecurity Log book and report via www.brc.ac.uk/irecord/enter-non-native-records If low/medium risk UK INNS not previously known from area record sighting, inform others through email alert group and record as above. If high risk INNS not found locally or not known from UK see box below.
High risk INNS found; not previously found locally but present elsewhere in UK	Alert the relevant authority immediately who will, if necessary, contact a taxonomic expert, such as a marine biologist, to confirm identification
OR	Photograph specimen, record location and approximate size of area affected.
High risk INNS found; not currently present in UK e.g. North Pacific seastar	If practicable, carefully remove specimen(s) from water e.g. if on rope or fender. If feasible, keep specimen in a pot/bucket of seawater for expert to examine. Make sure this is kept securely and disposed of appropriately and cannot contaminate other waterbodies. If practicable, carefully remove specimen(s) from water e.g. if on rope or fender.

Contact taxonomic expert, such as a marine biologist, from contact list.
Inform other local stakeholders through email alert group.

For some new high-risk species, particularly those that are not yet present or established in the UK, a rapid response by Government could be triggered by new records. This response would be coordinated nationally by the responsible authority. Generally a visual survey of the site containing INNS, including vessels and infrastructure would be conducted to:

- Determine the size and distribution of the INNS population at the site.
- Assess the risk posed by the INNS.
- Assess possibility of treatment and removal of INNS.

Additionally other marine users e.g. marinas, fishermen, local recreational boaters should be informed of the detection and advised that extra caution should be taken to avoid further spread.

5. Biosecurity Log

Your biosecurity plan should include a 'Biosecurity Log' section where the following information can be regularly updated:

- Monitoring regime and record of compliance
- INNS sightings and record of actions taken
- Treatments and results
- Contact Lists
- Gather together useful contacts into one spreadsheet and keep it up to date. This should include the following groups:
 - Expert taxonomist, such as a marine biologist.
 - Estuary wide organisations e.g. Consultative Forums or Environmental Forums
 - Agency contacts e.g. Natural England, Scottish Environment Protection Agency or Scottish National Heritage, Natural Resource Wales, Irish Department of the Environment staff with a INNS interest/remit
 - Local clubs e.g. yacht, kayak and dive clubs
 - Nearby Ports, marinas and harbours
 - Shipping agents, cruise companies
 - Defence organisations including contractors
 - Education contacts e.g. those interested in studying INNS and those who could provide training and support

Monitoring

There may be monitoring activities already happening in your area. This could include formal monitoring of protected areas and water bodies for the Marine Strategy Framework Directive, the Water Framework Directive classification, or less formal citizen science projects including 'Bio-Blitz' style events which may happen close to your site and give relevant information for biosecurity planning purposes.

Formal monitoring can be carried out by the following organisations in England:

- Defra
- Natural England
- Environment Agency
- CEFAS

Opportunities to work with universities and other academic institutes should also be taken in account. Research undertaken by universities, including PhD and MSc students, as well as people on short courses could all be useful to help with site monitoring.

Marine monitoring

For marine environments, a monitoring regime for INNS should also be established by the local Port Authority. This would most likely tie in with the regular monitoring of the infrastructure and focus on high risk and easy to access areas around the site, for example: wave screens or harbour defence walls. Other areas which should be considered include:

- Scrubbing piles or wash down areas for boats
- Navigation buoys and moorings which are subject to regular maintenance (making them easier to access).
- New facilities – for example a new pontoon or facility just installed will be a blank canvas for all species and monitoring how it becomes colonised will be informative for your biosecurity planning.
- Slipways and boat launch sites.
- Pontoons and associated infrastructure.
- Strategically and deliberately placed ropes or panels could also serve as convenient sample spots for observation.

Evaluation and Review

It is important to have some way to measure the success of your Plan. In this section identify aspects of the Plan which can be monitored and assessed for effectiveness. Set a target for implementation and a date for review.

Evaluation can also be done by assessment of the changes to the occurrence and distribution of INNS within the Port area, the amount and efficacy of surveillance and

the ability to close or restrict established pathways of transmission. Evaluation should also include established rapid responses, control and eradication programmes undertaken.

Useful documents

Non-native invasive species and the oil and gas industry - [Guidance for prevention and management](#)

Marine Biosecurity Planning - [Identification of Best Practice](#): A Review

Marine Biosecurity Planning Guidance - [Training pack](#)

Marine Biosecurity Planning Guidance - [Sample marina biosecurity plan](#)

Risk Reduction (Biosecurity) Guidance - [Lessons Learned](#) (Natural England, 2014)

Examples of Marine Biosecurity Plans

Example Biosecurity Plan - [Dean and Reddyhoff Haslar Marina](#)

Example Biosecurity Plan - [Quay Marinas Conway](#)

Commonwealth Games Flotilla [Biosecurity Plan](#) 2014

[Bangor Mussel Producers Association](#) Code of Good Practice for mussel seed movements

Biosecurity Plan 2014 – 2019 - [North Western IFCA](#)

Biosecurity Plan for the [Shetland Islands](#)

[Outer Hebrides Biosecurity Plan](#)

[Salcombe Harbour & Kingsbridge Estuary](#) Marine Biosecurity Plan 2017- 2020

Biosecurity Plan for the [Solway Firth](#)

[Tweed Catchment](#) Biosecurity Plan 2011 – 2016