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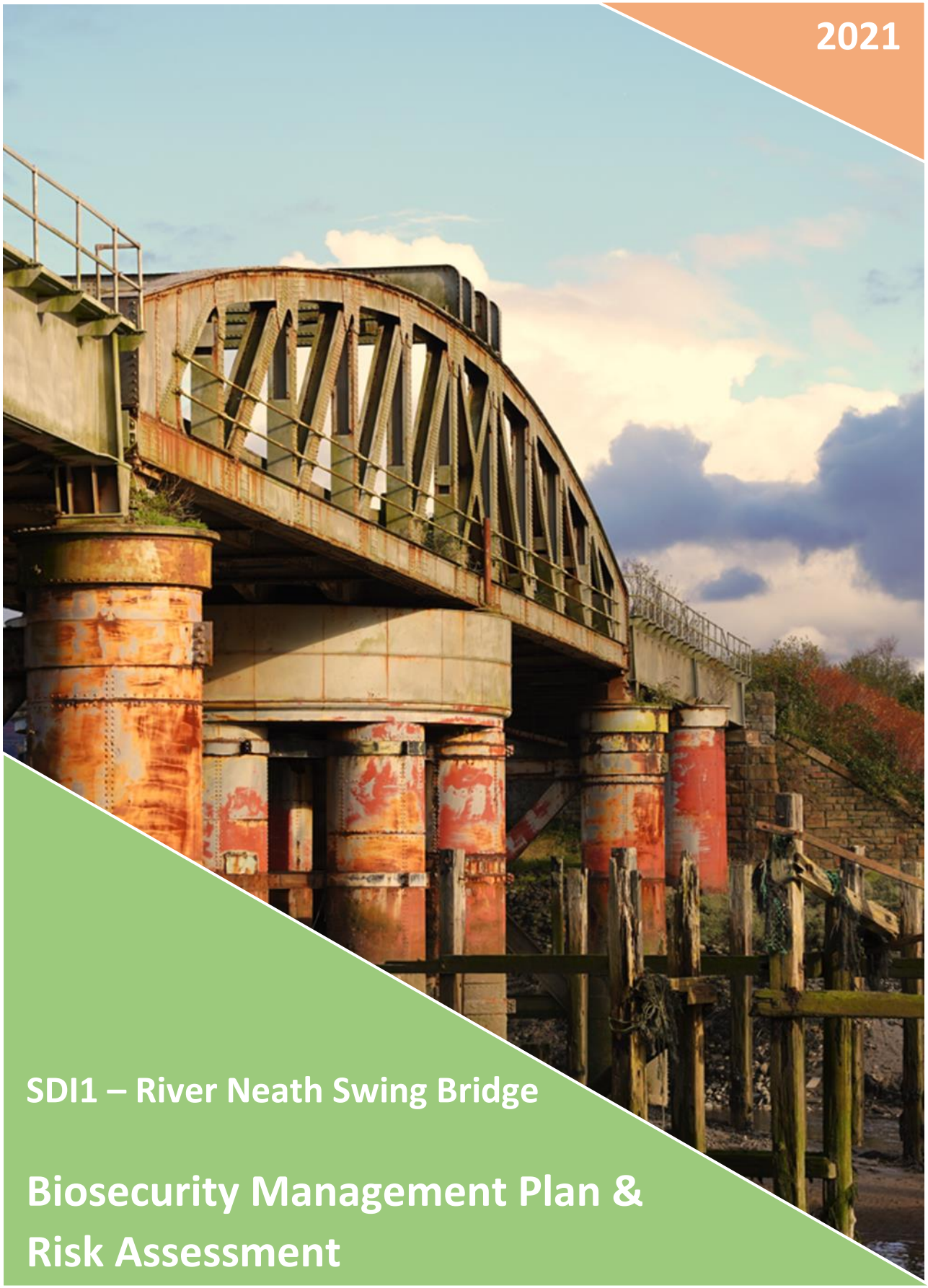

SDI1 – River Neath Swing Bridge

Biosecurity Management Plan & Risk Assessment

EcoVigour Integrated Environmental Management

NetworkRail

centregreat rail

DOCUMENT INFORMATION			
Project	SDI1 - River Neath Swing Bridge		
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1. INTRODUCTION

1.1 OVERVIEW

1.1.1 This Biosecurity Management Plan & Risk Assessment identifies the biosecurity risks associated with the Pant Eidal Bridge Replacement works. It identifies potential biosecurity sources, pathways and receptors.

1.1.2 Key risks are:

- Release of Invasive non-native plant species (Terrestrial and Marine);
- And release or propagation waterborne diseases and fungus;

1.1.3 This document supports the Habitat Regulations Assessment (HRA), Water Framework Directive (WFD) and Construction Phase Plan (CPP). These documents have been submitted to Natural Resources Wales as part of the necessary Marine License Application to sanction works with the protected designated sites and estuary environment.

1.1.4 **Note**: This is a live document and will be updated ahead of the start of the project once contractors and vessel identification has been confirmed.

1.2 PROJECT BACKGROUND

1.2.1 Originally constructed as a centrally pivoted swing bridge in 1892. It is a Grade II listed six-deck underbridge carrying the two non-electrified lines of the Swansea District Line (SDI1) railway over River Neath. The swing span is centrally supported on a circular cluster of nine wrought iron caissons / piers with concrete infill, masonry abutments and wingwalls. After declining use of the swing facility, the central span was permanently welded shut in 1985.

1.2.2 Currently, the structure is in generally fair to poor condition, mainly due to significant corrosion to structural elements. The overhead elements and the underslung gangway are severely corroded

1.2.3 Consequently, remedial measures are required to improve the structures longevity and ensure it's continued service life for the SDI1 rail network.

Figure 1: Neath Swing Bridge (taken from western shore).

1.3 SITE CONTEXT

1.3.1 The project footprint and it relation to the wider area is illustrated in Figure 2 below. Rail Milage: SDI1 207m63c, Grid Ref: SS 73039 96367S, Nearest Post Code: A10 6EX

1.3.2 Access to the bridge will be achieved via the Derwen Waste Management Centre for the scaffolding portion of the works and the river neath for the timber removal works below/adjacent to the structure.

1.3.3 The structure spans the River Neath West to East and is still within the tidal reach. The western shore and beyond is largely dominated by the Waste Management Facility and other industrial sites with narrow woodland corridor/boundaries present between the industrial sites. The proposed access route from the main compound crosses a portion of the Tennant Canal.

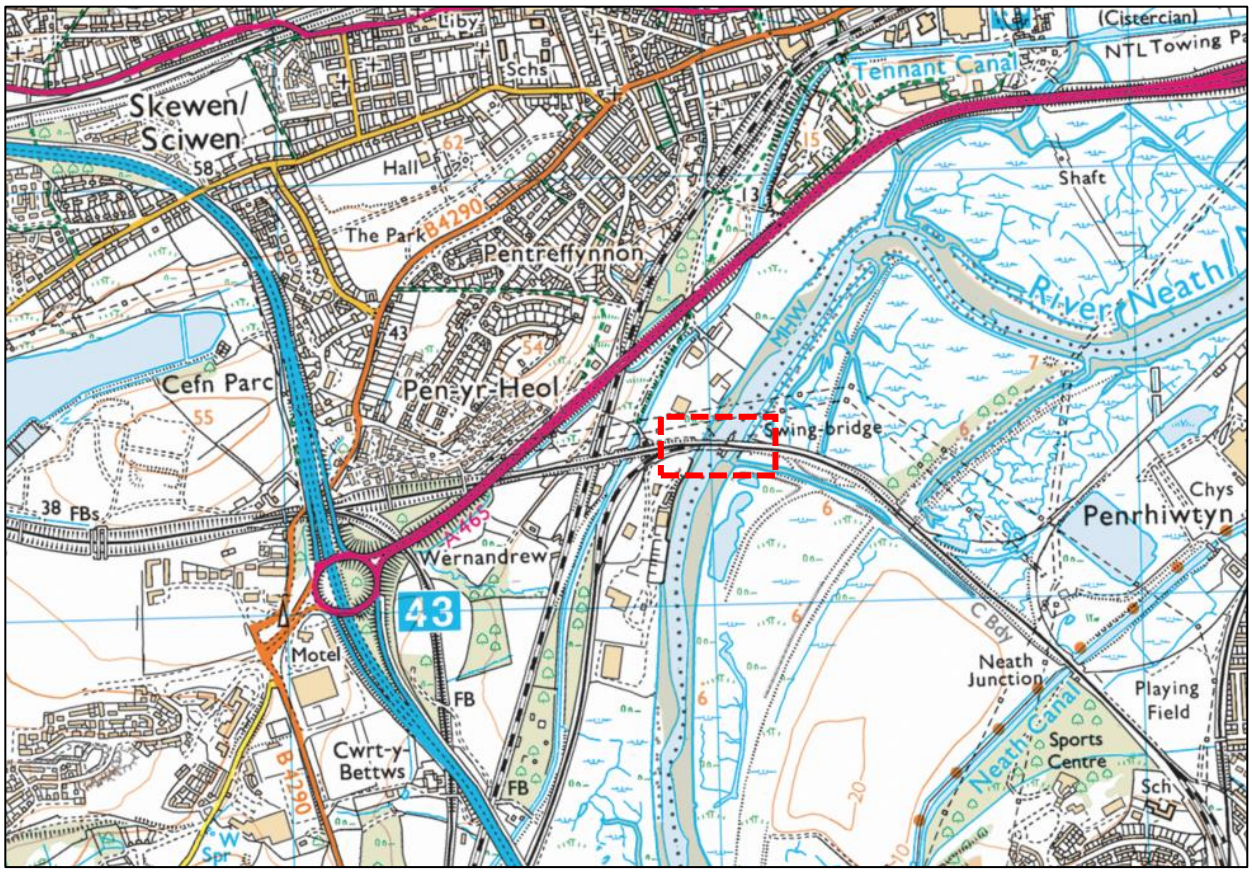

Figure 2: Site Context

1.4 VESSELS TO BE USED DURING THE PROJECT

1.4.1 The vessel contractor for the removal of the disused timber section of the structure has not yet been confirmed. Once the vessel supplier has been confirmed, the vessels which the company intend to deploy for the project will be confirmed.

1.4.2 Below are the examples of the type of vessels to may utilised to support the works.

Table 1: List of Vessels to be used. (Images are examples of the model to be used).

Vessel Name & Type	Vessel Role	Photo reference
Pioneer Multi or equivalent	Lead Vessel	
A Jeaneax – Rigiflex or equivalent	Support Vessel	

1.5 VESSELS LAUNCHIN LOCATION

1.5.1 The most likely launch area for a small vessel contractor would be Monkstone Marina, Post Code: SA10 6NG.

Figure 3: Monkstone Marina.

1.6 INVASIVE SPECIES – SUMMARY

1.6.1 Invasive, non-native, alien or exotic species (INNS), are species that have been released into an environment outside of their native bio-geographic range or habitat either by accident or intentionally.

1.6.2 Consequently, some species are more resilient or aggressive in the new environment to their native counterparts, out-competing and ultimately having a detrimental impact on native habitats as a whole.

1.6.3 Within the marine environment, INNS can be spread via a number of natural and anthropogenic pathways including ocean currents, aquatic debris, aquaculture, biofouling of marine vessels, exchange of ballast water and or even intentional introductions.

1.6.4 The general stages describing the encroachment of a new INNS is summarised below:

- **Introduction** – this is most frequently due to human activity e.g. shipping, aquaculture, poor biosecurity controls.
- **Establishment** – having arrived in the new habitat, a species will begin to compete with a niche.
- **Expansion** – once established, the species will expand and occupy as much space as possible, reducing available resources or directly attacking native species.
- **Persistence** – successful expansion can lead to long term establishment of that species in an area, with an increasing difficulty to control the spread. Additionally, the further the expansion the higher the likelihood of a species being introduced in other areas, continuing a vicious cycle.

1.7 PRIORITY MONITORING AND SURVEILLANCE LIST FOR WALES

1.7.1 NRW have produced a list of invasive species identified as High, Medium and Low Risk for Wales vin the Marine environment. This is referenced to in Appendix A - Marine Invasive Non-native Species Priority Monitoring and Surveillance List for Wales.

1.7.2 The table below will highlights those species from this list that have been recorded at the harbour/port of origin for the vessels to be used and those currently known in proximity to Neath Swing Bridge/Monkstone Marine and the wider estuary.

Table 2: Marine INNS recorded proximity to Port of Origin and Adjacent to Project.

	Port of Origin	**Launching Location**
	TBC	**TBC - (Example: Monkstone Marina)**
Marine Non-native species known to be present	Example: American slipper limpet (Crepidula fornicata) (High Risk Status) Example: Austrominius modestus (Low Risk Status)	Example: Austrominius modestus (Low Risk Status)

1.8 CHARACTERISTICS OF KNOWN INNS

1.8.1 The table below are extracts from Appendix A - Marine Invasive Non-native Species Priority Monitoring and Surveillance List for Wales. This illustrates the level of risks posed by the species, likely pathway, impact and current management actions.

Table 3: Summary of Marine INNS characteristics.

Species and Group	Risk Assessment Score	Justification	Primary Introduction Pathway	Impact Summary	Management Action
American slipper limpet (*Crepidula fornicata*) Mollusc	High	MSFD monitoring list/WFD High impact/ Schedule 9 of WCA 1981	Aquaculture (accidental contamination)	Smothering, trophic competition and larval predation. Economic impact on shellfisheries. Change to sediment movement.	Requirement to collate records from current monitoring as part of MSFD at a UK level. Report sightings outside current range (action for all parties).
Devil's tongue weed (*Grateloupia turuturu*) *(includes G. doryphora. All records in the NE Atlantic have been assigned to G. turuturu, see Gavio & Frederic, 2002)* Red alga	Very High (CEFAS Rapid Risk Assessment) *	MSFD monitoring list	Aquaculture (accidental contamination)	Large, fast-growing, may have the potential to displace native species and its large, broad blades may shade neighbouring species, however no ecosystem impacts documented in UK. Economic impacts relate to fouling. Fouling of boat hulls reduces the speed and efficiency of boats. Fouling of aquaculture equipment and shellfish can increase harvesting costs and reduce shellfish growth.	Requirement to collate records from current monitoring as part of MSFD at a UK level. Report any sightings outside current range (action for all parties).
Red algae *(Gracilaria vermiculophylla)* Alga	Main Pathway of introduction is via oyster movements Present in Northern Ireland	MFSD surveillance list/UK Horizon Scanning Top 30 highest–risk future alien invasive species (Roy et al. 2014, score 100)/EU Horizon scanning 500/WFD list (unknown)	Potential negative effect on native algae and seagrass (Global Invasive Species Database)	**This species is subject to the marine INNS contingency plan.** Report sighting.	Red algae *(Gracilaria vermiculophylla)* Alga
Bonnemaison's hook weed (*Bonnemaisonia hamifera*) Red alga	Moderate (CEFAS Rapid Risk Assessment) *	MSFD monitoring list/ WFD	Ballast water and fouling	Very few records exist of *B. hamifera* causing specific detrimental ecosystem, social, or economic effects found within the literature. Analogous species have been classified as invasive, and been shown to cause	Requirement to monitor this species as part of MSFD at a UK level.

Species and Group	Risk Assessment Score	Justification	Primary Introduction Pathway	Impact Summary	Management Action
				significant impact, but despite long-term establishment in some regions *B. hamifera* has not been classified in the same way.	
Japanese wireweed (*Sargassum muticum*) Brown alga	Medium	MSFD monitoring list/ Schedule 9 of WCA 1981/WFD low impact	Fouling and natural dispersal	Unproven impact on biodiversity but will change community structure and dominance, having a visual impact where it forms dense beds. It is potentially a nuisance species.	Requirement to monitor this species as part of MSFD at a UK level. Illegal to release or allow to escape into the wild under WCA 1981. Possible local control, dependent on land ownership/management.
Pacific oyster (*Crassostrea gigas*) Portugese oyster *(Crassostrea angulata)*	Medium	MSFD monitoring list/ WFD Moderate impact	Aquaculture (intentional) and unintentional escapes	Primary economic loss may be though loss of mussel bed fisheries and loss of habitat for other intertidal bivalve species. Economic and social impacts may also be associated with loss of visitors to sites as oysters create a hazardous substrate. Environmental impacts are largely associated with loss of intertidal habitats, including mudflats and bivalve beds. Such impacts may affect habitats of high conservation value, including mudflats, estuaries, eelgrass beds and biogenic reefs.	Requirement to monitor this species as part of MSFD where it is found outside of licenced aquaculture sites. Consider local control, dependant on land ownership.
Potamopyrgus antipodarum Mud snail	Low / unknown risk Risk assessment not available	NA	Recorded in Wales	More data required.	Record sightings
Austrominius modestus Crustacean	Low / unknown risk Risk assessment not available	NA	Recorded in Wales	More data required	Record sightings

1.9 KNOWN TERRESTRIAL INNS

1.9.1 Japanese Knotweed is confirmed to be present within the northern corner of the access route to the structure. This small stand will be marked up and avoided during access and egress during scaffolding use.

Figure 4: Location of Knotweed stand.

1.9.2 The following aspect register formulates the assessed risk by multiplying the likelihood of an event or encountering a species (L), by the severity implicated by that event/encounter (S). This quantified the assessed risk of the impact (R).

1.9.3 (L) & (S) are measured between Negligible (1), moderate (2) & high (3) to create the final value.

Activity	**Pathway/Vector**	**Risk Assessment**			**Preventative Measures**	**Risk of spread following mitigation**		
		L	**S**	**R**		**L**	**S**	**R**
Use of small powered vessel to manoeuvre unpowered plastic modular pontoon.	Transfer of INNS via biofouling	1	3	4	It's likely all vessels and the pontoon are to be transported via road to launching point from the port of origin. Prior to departure, recorded pre checks and cleaning will be undertaken before loading for transport. Vessels will be allowed to dry for a minimum period of 48hrs or will be treated with a marine disinfectant such as Virkon S prior to being put to water. All vessels to adhere to the Ballast Water Management Convention and Merchant Shipping (Anti-Fouling Systems) Regulations 2009. Minimise the movement of vessels into/out of the development area. Regular inspection of vessels, equipment, and artificial structures for biofouling in accordance with IMO Biofouling Guidance Wash off the anchor and chain before stowing when leaving anchorage.	1	1	2
Import/removal/disposal of materials	Transfer of INNS on materials	1	1	2	All artificial material to be used will be new and so free from Biofouling. Reuse of existing reno mattress stone material reduces need for importation of new stone. Stone for the infill of gabions will be locally quarried limestone. Scaffolding equipment will be stored dry for a minimum period of 48hrs prior to use or will be sprayed with an aquatic disinfectant such as Virkon S. Scaffold will be jet washed if required to remove site material from previous usage.	1	1	2

Activity	Pathway/Vector	Risk Assessment			Preventative Measures	Risk of spread following mitigation		
		L	S	R		L	S	R
					Material from breaking out of existing concrete shrouds will be thoroughly collected and removed from the marine environment. Excavated sand / sediment will be removed from the estuary to the site compound at the end of each shift.			
Introduction of manmade structures	Increased availability of artificial hard surfaces available for colonisation by INNS	1	1	2	No new manmade structure independent of the refurbishment works will be introduced to the estuary.	1	1	2
Disturbance of INNS present	Dispersal of INNS released into the water during construction activities	2	2	4	TBC	1	1	2
Use of plant machines and support vehicles.	Transfer of INNS from previous sites				All site personnel and site visitors will be informed if any INNS are known to be present on site and that they are jointly responsible for preventing their spread/impacts. They will be made aware of what these species look like so they can avoid it where possible and take appropriate actions. All site personnel and visitors will be inducted in good biosecurity practices. This will include adoption of the CHECK-CLEAN-DRY campaign (NNSS, 2015). The CHECK-CLEAN-DRY poster will be displayed in the site office as a reminder of good biosecurity practices: - http://www.nonnativespecies.org/checkcleandry/			

Activity	Pathway/Vector	Risk Assessment			Preventative Measures	Risk of spread following mitigation		
		L	S	R		L	S	R
					The spread of waterborne diseases will be limited through the adoption of the CHECK-CLEAN-DRY campaign. This would entail the use of a suitable disinfectant e.g. Virkon® S Aquatic to decontaminate all machinery and PPE prior to it entering site for the first and upon leaving site, either at the end of the phase or if being sent to a different project/off hired. Following application of a suitable disinfectant, machinery and PPE will be allowed to fully dry for at least 72 hours before being used on another aquatic site. All plant machines for the metallic works are situated within the compounds or within the rail corridor itself. All works associated with the metallic structure are based from vessels or specialised rail vehicles or cranes based on temporary standings outside of the marine environment.			
Setup and use of Northern Compound	Transfer of terrestrial INNS	1	3	4	The Japanese Knotweed is located within a vegetated area between the proposed northern compound location and the rail corridor. The knotweed stands will be clearly marked, and a buffer zone implemented. No personnel or equipment will be permitted to come in close proximity with these stands. The knotweed will remain in situ and will no be chemically or mechanically removed.	1	1	2
Personnel transferring between roles and different sites.	Transfer of terrestrial INNS	1	3	4	Personal and Company vehicles will likely visit other sites as part of the normal role of a given employee. A disinfection station will be set up at the entrance to the compounds to disinfect wheels and boots/wellies, using an aquatic disinfectant such as Virkon S. All equipment, tools, vehicles and personal protective equipment (PPE) used on site will be checked for seeds originating from any identified INNS before leaving the area. If seeds from identified invasive species are identified, the items will be cleaned and removed seeds will be destroyed.	1	1	2

2. MONITORING AND CORRECTIVE ACTION

2.1 INNS MONITORING

2.1.1 Monitoring for non-native species will continue during the refurbishment process.

2.1.2 Implementation of a monitoring programme for non-native species would include toolbox talks with site personnel on INNS identification.

2.1.3 The ongoing requirement for vigilance and reporting of instances of INNS identification.

2.1.4 As recommended in the IMO Biofouling Guidelines vessels should implement biofouling practices to include inspections and cleaning of hulls, and removal of biofouling.

2.1.5 Inspections and cleaning should be undertaken periodically as a means of routine surveillance but may be specifically appropriate before and after any planned period of vessel inactivity.

2.1.6 It is understood that new data acquired by NRW is being developed and can be incorporated into this document when this information becomes available (e.g. updated locations of Gracilaria vermiculophylla).

2.1.7 In addition, any sightings of Slipper Limpets will be shared to improve regional understanding of this marine INNS.

2.2 CORRECTIVE MEASURES FOR VESSELS SHOULD NON-COMPLIENCE OCCUR

2.2.1 Corrective measures will be implemented in the event of a vessel, machine or individual found breaching biosecurity protocol, for example a vessel being allowed to arrive at the structure but on arrival found to have significant biofouling or a vehicle coming into contact with terrestrial INNS and entering the vicinity of the estuary without prior biosecurity measures being implemented.

2.2.2 Corrective actions could include:

- Inform relevant authorities where appropriate i.e. for non-compliant vessels or machines.
- Remove offending vessel or machine back to local dock or nearest compound.
- Undertake appropriate measures to clean the vessel while minimising any further risks e.g. dry docking for cleaning at local dock or cleaning and remaining in situ within compound.
- Investigate the cause of the incident and implement measures to avoid such events from occurring again.

3. CONCLUSION

3.1.1 The assessment has considered the individual project activities and specific known marine and terrestrial non-native species present within the works footprint and access routes.

3.1.2 Consequently, implementation of the management measures will ensure the risk of INNS spreading in this section of the Afon Mawddach as a result of the refurbishment metallic project will remain low. This document will be reviewed in 6 months to ensure any new data is added to assessment to ensure it is always robust and reflects all available data.