

**SYSAC MARINA WID DREDGING 2022-2024
BIOSECURITY RISK ASSESSMENT**

BIOSECURITY PLAN & RISK ASSESSMENT

This Biosecurity Plan Template is intended to be used by marine maintenance dredging operators and contractors in order to minimise the risks posed by marine invasive non-native species (INNS), particularly related to minimising spread to new areas. It is difficult to directly manage INNS in the marine environment once they are present, therefore, prevention is key which is recognised in the GB Invasive Non-native Species Strategy (2015)

“Where direct management is not feasible, as is often the case in the marine environment, we will seek to reduce the spread of species by improved and targeted biosecurity”.

There are a number of legislative drivers for this work including the Marine Strategy Framework directive (MSFD); EU IAS (Invasive Alien Species) Regulation and the Wildlife and Countryside Act (W&CA) 1981, Schedule 9. Section 14 of the W&CA states that it is an offence to ‘*release or allow to escape into the wild any animal which is not ordinarily resident in Great Britain or any species listed in Schedule 9 of the Act*’. Schedule 9 of the act lists a number of marine INNS particularly relevant to marine dredging activities, these include the Chinese mitten crab (*Eriocheir sinensis*), American Oyster Drill (*Urosalpinx cinerea*) and the American Slipper Limpet (*Crepidula fornicata*), Australian tubeworm *Ficopomatus enigmaticus*.

With respect to maintenance dredging activities in the UK and in order for the potential risks posed by these species to be managed in the most effective way it is important that Authorities obtain as much information as possible.

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1 Introduction

The objective of the works is to remove accumulated silts and fine sands from the SYSAC Marina situated on the River Tawe in Swansea, South Wales using the method of Water Injection Dredging. This system is designed to remove silty material from the seabed, by injecting a large volume of water at low pressure into the sediment layer. This lowers the density of the soil, until it become fluidized and can be transported, in the lower part of the water column away from the dredge area. This natural horizontal transport is driven by the hydrostatic pressure differences, the gradient of the seabed and the current. Dredging works are undertaken using a seagoing water injection dredger.

1.1 Contractor:

Van oord UK Ltd

1.2 Marine Licence reference number:

DML2042v2

2 Description of Operation:

Maintenance dredging of the SYSAC marina area, which may also include the Fisherman's Pontoons and the Swansea Marina lock barrel. The dredging will be carried out using water injection dredging methods (WID). The fluidised bed material will be trained towards the Tawe Lock gate penstock sluices for onward passage into the downstream estuary.

The area where the dredging work will be carried out has a very variable salinity which is dependent on the volume of fresh water flow and the tidal exchange on a day by day basis

2.1 Dredge and disposal Site Location(s):

The dredge site is located just upstream of the half tide barrage situated on the mouth of the River Tawe in Swansea South Wales. The dredging activity will be carried out in the vicinity of the marina pontoons and the associated approaches to the facility and the Tawe lock gates.

The dredging is being carried out using water injection techniques so there will be no physical disposal activity associated with the dredging. However, the fluidised material will be encouraged to exit the area into the lower estuary/sea via the lock penstocks during the ebb tide period.

2.2 Activity period:

The dredging activity is anticipated to take place during the winter months January-March in 2022 and 2024

3 Biosecurity Manager/Officer:

Samantha Naylor, Pollution Control Officer, Pollution Control & Private Sector Housing, Housing and Public Health, City and County of Swansea.

Or the applicable person/persons of the dredging contractor once appointed

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4 Information related to the Environmental conditions affecting biosecurity

	Source environment/location	Receiving environment/location
Marine Non-native species known to be present	<i>It is known that there are slipper limpets in the wider Swansea Bay marine environment but these have not been identified in the brackish conditions upstream of the Barrage</i>	<i>The area upstream of the barrage is at the interface between the saline marine environment and the fresh water river environment as such the salinity conditions can vary widely.</i>
	<i>It is reported that Australian tubeworm <i>Ficopomatus enigmaticus</i> are present in abundance in Swansea Marina, which is adjacent to the SYSAC site</i>	<i>It is not known if this tube worm is present in the dredge area of the SYSAC Marina, however its reported existence in the nearby Swansea Marina would suggest that the probability is quite high that it may also be present in the intended dredge area. However the highly variable salinity levels within the area upstream of the barrage may not be optimal for successful colonisation of this species within the dredge area.</i>

5 Vessels & equipment involved in the operation¹

(please list all vessels, barges and equipment to be used as part of the maintenance dredging operation – insert additional rows as necessary)

Vessel name	Photo reference (Please insert images in the appendix)	Vessel type	Details, Risk factors & Justification e.g. Pathway, vessel speed, biofouling control, Inspection history, Internal treatment history etc..	Risk: (High/Medium/Low)
<i>Insert vessel name here</i>	<i>Insert image reference numbers</i>	<i>e.g. Suction dredge</i>	<i>See IMO Biofouling Guidance</i>	<i>e.g. Medium</i>
<i>Borr</i>	<i>Borr.png</i>	<i>Water Injection Dredger</i>	<i>Antifouling paint and anodes on hull. Ballast tanks cleaned with fresh water</i>	<i>Low</i>

¹

The licence holder should update and submit a revised plan as a result of any amendments to the list of vessels and/or equipment to be utilised as part of current licence.

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6 Vessel & Disposal site Proposed activity log

In relation to maintenance dredging activities, marine invasive non-native species typically have three main vectors by which spread can potentially occur from one location to another. These are hull fouling, transfer in vessel ballast water and transfer within marine sediments. In order to better understand the potential risks associated to the planned operation it is important to outline a brief history of vessel/equipment movements. This includes information such as vessel/equipment recent activity history (including any periods of inactivity) as well as information on ports visited and dredge/disposal site locations associated to the current licensable activity.

(Please note: a separate row should be inserted for changes in vessel and/or disposal site)

Vessel name	Brief description of vessel activity over the last 12 months	Transit ports (list all ports to be visited on route to the current dredge activity if applicable)	Transit ports arrival and departures		Disposal site name & reference
			Arrival date	Departure date	
Borr	Insert name of all ports and dredge/disposal sites visited in the last 12 months	Liverpool, UK	Date	Date	Not applicable
		Bridgwater, UK	16/11/2020	07/01/2021	
		Lisbon, PT	07/01/2021	31/01/2021	
		Huelva, ES	31/01/2021	22/02/2021	
		Harwich, UK	22/02/2021	17/03/2021	
		Tilbury, UK	17/03/2021	29/03/2021	
		Liverpool, UK	29/03/2021	12/04/2021	
		Calais, FR	12/04/2021	01/06/2021	
		Moerdijk, NL (repairs)	01/06/2021	18/06/2021	
		Medway, UK	18/06/2021	21/06/2021	
		Liverpool, UK	21/06/2021	10/08/2021	
		Tilbury, UK	10/08/2021	30/08/2021	
		Medway, UK	30/08/2021	10/09/2021	
		Grimsby, UK (idle)	10/09/2021	25/09/2021	
		Grimsby, UK	25/09/2021	17/10/2021	
		Liverpool, UK	17/10/2021	23/11/2021	
		Melorf, D	23/11/2021	18/12/2021	
		Tilbury, UK (idle)	18/12/2021	04/01/2021	
		Medway, UK	04/01/2021	02/02/2022	
		Liverpool, UK	02/02/2022		

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7 Activities which have a significant risk of introducing or spreading marine invasive non-native species

(Please provide as much detail as possible of how each of the activities have the potential to increase the risk of introduction or onward spread of marine invasive non-native species – insert additional rows as necessary)

Activity and brief description	Details of how this could potentially increase the risk of introducing and/or spreading MINNS	Mitigation and Biosecurity measures to be implemented
<i>Movement of a vessel from one port to another in relation to maintenance dredging activities.</i>	- <i>Inadequate anti-fouling of vessel may cause transfer of certain MINNS from one port to another</i> - <i>Inadequate biosecurity measures related to the cleaning/flushing of equipment and screens before moving to the next location². Measures would include flushing suction equipment and re-depositing any screen material before leaving the site.</i> - <i>Transfer of ballast water between ports and/or between dredge and disposal sites.</i>	- <i>Regular antifouling paint and anodes on hull of vessel.</i> - <i>Vessel has no ballast tanks</i> - <i>WID operations, so no dredge material is transferred through vessel during dredging operations.</i> - <i>Dredger is removed from the water and thoroughly cleaned between dredge campaigns</i> - <i>Dredger pump/pipe drained of water.</i>
<i>Movement of sediment as a result of the dredging process</i>	<i>The material being dredged from the SYSAC marina is ejected from the area upstream of the Tawe barrage to the area</i>	<i>The area where the dredging is taking place is an intertidal area with the tide overtopping the barrage twice per day when high tide</i>

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There may be instances where such mitigation measures may not be needed due to movement within the same biogeographic region, however, this will be reviewed as part of the assessment.

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	<i>downstream of the Tawe Barrage via the penstock sluices of the Tawe Lock. This will increase the potential for any INNS species located in the dredge area to be relocated at the same time</i>	<i>levels are sufficiently high. This provides a route for species to both enter and egress the SYSAC Marina area via normal tidal transport methods. The dredging process removes natural material that has accumulated in the proceeding 2-3 years since the last dredging campaign. The continued disturbance, by dredging operations is not thought to be the preferred habitat for this organism but this cannot be guaranteed</i>
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8 Mitigation & Biosecurity Control Measures – Instructions for staff/contractors/site users

(insert additional rows as necessary)

Who	What	Where	When
<i>Example: Vessel owner and/or Skipper</i>	<i>Ensure vessel logbook is up to date and vessel has conformed to best practice under ballast water and hull fouling guidance.</i>	<i>Vessel logbook</i>	<i>To be kept up to date during normal operations</i>
<i>Project Manager</i>	<i>Dredge Licence required prior to start of works for WID operations, to ensure that the material being dredged is suitable for dispersion into the surrounding environment.</i>	<i>Dredge Licence</i>	<i>Prior to start of works.</i>
<i>Project Manager</i>	<i>Minimised the length of time the vessels remains idle in the water allowing biofouling.</i>	<i>Planning</i>	<i>Ongoing</i>
<i>Master</i>	<i>All ballast water tanks to be emptied before voyage, and therefore preventing transfer of ballast water between ports.</i>	<i>At Dredge location</i>	<i>Each site</i>
<i>Owners Ship Management Department</i>	<i>Annual maintenance and through cleaning of vessel hull to remove any marine growth. Check of anodes on the vessel assist in preventing marine growth.</i>	<i>Owners facility</i>	<i>During Maintenance periods.</i>
<i>Pontoon owners</i>	<i>Visual inspection of pontoons to see if there areas where Australian tubeworm <i>Ficopomatus enigmaticus</i> has established on the structures. If this is to be recorded on a location plan and the dredger will be directed not to make contact with the pontoons in those areas, hence preventing release into the sediment to be dredged</i>	<i>Dredge Area</i>	<i>Before dredging commences</i>

9 Operational surveillance and reporting procedure

The vessel will be delivered to site on a low loader. A full inspection will be carried out of the hull and machinery prior to the vessel being lifted into the water. Cleaning will be carried out by an appropriate method if required.

Should the vessel be arriving from a location that is within the same localised biogeographic area then cleaning may not be required

*Visual inspection of hard structures before dredging to establish if there are any colonies of Australian tubeworm *Ficopomatus enigmaticus*.*

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10 Contingency Plan

(i.e. when changes to the plan necessary and have been identified - insert additional rows as necessary)

Action	Responsibility	Location of Equipment
<i>Example: Use of alternative equipment, vessels or methodologies</i>	<i>Who will oversee this action?</i>	<i>Where is this equipment coming from and to? Does the vessel and/or equipment need to be made bio-secure before use in the current operation?</i>
<i>Alternative Dredger</i>	<i>Contractor's Project Manager</i>	<i>UK</i>
<i>Avoid specific area of any colonisation of by INNS in the dredge area</i>	<i>All parties</i>	

11 Location of biosecurity logbook

On board the vessel

12 Annual Review Date

This document will be reviewed and updated prior to any dredging activity taking place

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13 Useful reference documents

IMO Guidelines for the control and management of ships biofouling to minimize the transfer of invasive aquatic species

http://www.imo.org/blast/blastDataHelper.asp?data_id=30766

Marine Biosecurity Planning Guidance (England & Wales November 2015 – adapted from SNH, Payne, Cook Macleod February 2014)

<https://secure.fera.defra.gov.uk/nonnativespecies/downloadDocument.cfm?id=1401>

GB non-natives species secretariat

[Marine biosecurity - key guidance documents and websites](#)

Non - native species records can be accessed via the local record centres

<http://www.lrcwales.org.uk/?AspxAutoDetectCookieSupport=1>

or the National Biodiversity Network

<http://www.nbn.org.uk/>

or the marine biological Association

<http://www.mba.ac.uk/>

NRW marine experts can also give advice on Non-native species records.

Appendix

Additional supporting material to be added here e.g. vessel/equipment photographs



Figure 1. Van Oord UK – WID vessel 'BORR'