



2021

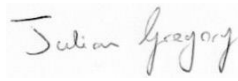


SDI1 – River Neath Swing Bridge

Water Framework Directive Assessment





DOCUMENT INFORMATION			
Project	SDI1 - River Neath Swing Bridge		
Location	River Neath, ELR: SDI1, Mileage: 207mile 63chain, Central Grid Ref: SS 73039 96367		
Title	Water Framework Directive Assessment		
Document Ref	EV000702.05/WFD-000	Issue / Revision	0.0
File reference	EV000702.05/WFD		
Start Date	23/11/2021		
	Name	Signature	Date
Assessment Undertaken by	Julian Gregory		23/11/2021
Document prepared by	Julian Gregory		23/11/2021
Checked by	Owain Waters		06/12/2021
Authorised by	Julian Gregory		07/12/2021

DOCUMENT CONTROL		
Rev.	Date	Description
00		

Disclaimer

No part of this document may be copied or reproduced by any means without prior written permission from EcoVigour. If you have received this report in error, please destroy all copies in your possession or control.

This document has been prepared for the exclusive use of the commissioning party/parties and unless otherwise agreed in writing by EcoVigour, no other party may use, make use of, or rely on the contents of the report.

No liability is accepted by EcoVigour for any use of this document, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the document are on the basis of EcoVigour using due skill, care and diligence in the preparation of the same and no explicit warranty is provided as to their accuracy.



CONTENTS

1.	Introduction	4
1.2	Project Background	4
2.	Introduction to the water framework directive.....	4
2.1	The Water Framework Directive	4
2.2	Scope of this assessment.....	5
2.3	Determination of Good Status	5
3.	Assessment Methodology	6
3.1	Methodology	6
4.	Site Context and Description of The Proposed Activities.....	6
5.	Proposed Works	9
5.1	Site Establishment	9
5.2	Steelwork Strengthening & Overplating Works	11
5.3	Steelwork Repairs to the Cylindrical Piers	11
5.4	Surface Preparation and Painting.....	12
5.5	Swing Span Overhead Bracing Repairs	12
5.6	Swing Span Bearing Repairs	13
5.7	Caisson Repairs.....	13
5.8	Track & Ballast Removal & Waterproof Swing Span	13
5.9	Masonry, Paths, Fences & Walls.....	13
5.10	Remove redundant fenders.....	14
6.	Baseline conditions.....	14
6.1	WDF Status of Waterbodies	14
7.	Water Framework Directive assessment: scoping for activities in estuarine and coastal waters .	18
7.1	Section 1: Hydromorphology.....	18
7.2	Section 2: Biology, Habitat & Fish.....	19
7.3	Designated Sites within the influence of the River Neath Estuary	25
7.4	Section 3: Water quality	29
7.5	Section 4: WFD protected areas.....	33
7.6	Section 5: Invasive non-native species (INNS)	34
7.7	Summary of WFD Pre-Assessment findings	35
8.	Proposed Project Mitigation.....	38
8.1	Construction Phase Mitigation	38
8.2	Operation Phase Mitigation	42
9.	WFD Conclusion.....	42
9.1		42
	Appendix A - Biosecurity Management Plan & Risk Assessment.....	43
	Appendix B – Grit Blasting Data Sheets.....	44



Appendix C – Jotum Marathon 550 – Safety Data Sheet	45
Appendix D – Construction Programme	46
Figure 1: Project survey areas (red boundaries).	7
Figure 2: River Neath Swing Bridge from Western Shore (Facing East).	7
Figure 3: Timber Pontoon to be removed as part of the works, as this is redundant and in danger of collapse.	8
Figure 4: Exposed riverbed during low tide (facing north / upstream).	8
Figure 5: Exposed riverbed (facing south / downstream).	9
Figure 6: Indicative Compound Locations (Pending land acquisition)	10
Figure 7: Indicative Access Arrangements	10
Figure 8: Scaffolding erection sequence	11
Figure 9: Example of Steelwork Strengthening works.	11
Figure 10: Replacement of Damaged Trestle Strapping.	12
Figure 11: Replacement of Overhead Bracing	13
Figure 12: Neath Estuary WFD Habitat Higher Sensitivity (www.magic.gov.uk)	22
Figure 13: Neath Estuary WFD Habitat Lower Sensitivity (www.magic.gov.uk)	23
Figure 14: Swansea Bay WFD Habitat Higher Sensitivity (www.magic.gov.uk)	24
Figure 15: Designated Site Map in relation to Swing Bridge (Red Dot).	25
Figure 16: SINC's in relation to Swing Bridge (coloured brown).	26
Figure 17: Swansea Mytilus ssp Bed.	27
Table 1: Summary of the WFD status of the water bodies with potential to be influenced by the proposed works	15
Table 2: Summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use	18
Table 3: Water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.	19
Table 4: Biology.	21
Table 5: Statutory Site Description	25
Table 6: Non-Statutory Site Description.	26
Table 7: Potential fish species at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.	28
Table 8: Water body summary table to find information on phytoplankton status and harmful algae.	29
Table 9: Assessing whether water quality is at risk from your activity through the use, release or disturbance of chemicals.	32
Table 10: Assessing whether project falls within mixing zone.	33
Table 11: Location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.	33
Table 12: Risk from INNS.	34
Table 13: Summary of Pre-Assessment Stage Findings.	35
Table 14: Water Framework Directive (WFD) Assessment for the Swansea Carboniferous Coal Measures groundwater waterbody	36
Table 15: Proposed Mitigation Matrix	38



1. INTRODUCTION

- 1.1.1 EcoVigour was instructed by Centregreat – Rail Division to undertake a Water Framework Directive Assessment (WFD) for proposed maintenance works to the River Neath Rail Swing Bridge.
- 1.1.2 The purpose of this assessment is to assess the potential impacts of the works associated with the Proposed Scheme and whether these could prevent the River Neath Estuary, Swansea Bay, the Bristol Channel Outer North and associated surface and groundwater bodies, achieving their WFD Targets. This assessment includes a summary of the current local conditions and, where appropriate, identifies mitigation measures for any likely significant effects (LSE) that may arise as part of the construction and operation of the Proposed Scheme.
- 1.1.3 This WFD Assessment is required to demonstrate that the proposed works will not result in deterioration in the water body status of the River Neath Estuary and adjoining water bodies or prevent them from meeting their Water Framework Directive objective.
- 1.1.4 The River Neath Estuary discharges into Swansea Bay, which becomes part of the Bristol Channel Outer North and associated Bathing Waters.

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 the 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 its continued service life for the SDI1 rail network.

2. INTRODUCTION TO THE WATER FRAMEWORK DIRECTIVE

2.1 THE WATER FRAMEWORK DIRECTIVE

- 2.1.1 The Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000) is a European Union Directive which committed member states to achieve good qualitative and quantitative status of all water bodies by 2015. Under the Directive water bodies are defined as all ground and surface waters, including rivers, lakes, transitional waters and coastal waters (up to one nautical mile from shore).
- 2.1.2 It was not possible to achieve good status of all water bodies by 2015; therefore, outstanding water bodies had objectives set for 2021 or 2027. Interim assessments were undertaken in 2018.



- 2.1.3 The WFD is transposed into law in England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the 2017 Regulations). These revoke and replace The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (subject to transitional provisions in article 38 of the 2017 Regulations).

2.2 SCOPE OF THIS ASSESSMENT

- 2.2.1 All new activities in the water environment need to take account of the requirements of the WFD. For a project or activity to be compliant with the WFD, it should demonstrate that:
- There is no risk of it causing a deterioration of the status of any element, in addition, for groundwater, it will limit or prevent the input of pollutants;
 - There is no risk of it preventing WFD protected areas from achieving their objectives;
 - It will not jeopardise any waterbody from achieving good status/potential; and
 - It will contribute to the protection, enhancement and restoration of waterbodies.
- 2.2.2 This WFD Assessment considers all activities that will take place as part of the proposed scheme, during both construction and operation, and identifies the potential risks associated with these activities and the WFD receptors that are at risk.
- 2.2.3 The NRW guidance includes detailed screening criteria that can be used to determine whether a proposed activity is not likely to cause a deterioration in the status of a waterbody. This includes a list of activities that in general will not cause a deterioration, such as 'temporary' works that do not normally last more than six months and are not likely to have a residual impact on a waterbody. The guidance also lists other physical works and defines screening thresholds for each; these thresholds help to determine whether any activity presents a risk to a waterbody and any requirements for further assessment. However, these thresholds are for guidance only and expert judgement is required to determine if a proposed activity may have an impact on a waterbody.
- 2.2.4 Published guidance also states that the assessment must consider the potential for impacts on the following:
- Protected Areas – these are defined under Article 6 of the Directive.
 - Priority Habitats – these are 'habitats of principal importance for conservation and biodiversity', which are defined under Section 41 of a Natural Environment and Rural Communities (NERC) Act 2006 in England and Section 7 of the Environment (Wales) Act 2016 in Wales.
 - Invasive non-native species (INNS) – assessment of INNS is required if a development could cause the introduction or spread of INNS to a waterbody.
- 2.2.5 A detailed Compliance Assessment would be required if it cannot be concluded that the scheme would not cause deterioration or inhibit the objective status of a waterbody. Further to this and in line with WFD requirements, there would be a need to apply the Article 4.7 test to seek approval for progression of the scheme if after the full WFD

2.3 DETERMINATION OF GOOD STATUS

- 2.3.1 Good status is determined from the ecological and chemical status of surface waters. These statuses are assessed according to the following criteria:
- Biological quality (fish, benthic invertebrates, aquatic flora);
 - Hydromorphological quality (e.g. riverbank structure, river continuity and substrate of the riverbed); and
 - Physical-chemical quality (e.g. temperature, oxygenation and nutrient conditions).



- 2.3.2 The chemical quality refers to environmental quality standards for river basin specific pollutants. These standards specify maximum concentrations for specific water pollutants. The WFD works on a 'one out, all out' basis, so if one such concentration is exceeded, then the water body will not be classed as having a good status. The chemical status of surface waters is therefore classified as good or fail.
- 2.3.3 The ecological status of surface waters is classified as being high, good, moderate, poor or bad, whilst water bodies that have been modified (e.g. canals or contain significant flood defences) are classed as 'Heavily Modified Water bodies' (HMWB) and have to reach at least good potential by their objective year.

3. ASSESSMENT METHODOLOGY

3.1 METHODOLOGY

- 3.1.1 This WFD Assessment was completed using the following methodology:
- The collection of baseline data to identify the current status, as well as future baseline and ability of the water bodies within and in close proximity to the proposed works to meet the WFD objectives;
 - A consultation with relevant authorities;
 - The review of the proposed works and the potential impacts to the identified surface and groundwater bodies; this involves identifying the impacts that could reduce the WFD status and affect the ability of the water bodies to meet the objectives of the WFD;
 - The consideration of mitigation that can be included in the design, and
 - The provision of an assessment of residual risks.

4. SITE CONTEXT AND DESCRIPTION OF THE PROPOSED ACTIVITIES

- 3.1.2 The works footprint and survey area is situated at the location below;

Survey Location: SDI1 207m63c River Neath Swing Bridge SS 730 963 SA10 6EX

- 3.1.3 Access to the bridge for this assessment was achieved via the Derwen Waste Management Centre on the western side of the structure.
- 3.1.4 The structure spans the River Neath West to East and is 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.
- 3.1.5 To the east appears to be a relatively large wetland habitat north of the rail corridor and a larger semi-reclaimed site, which was the Giants Grave Landfill. The approximate survey / assessment areas are illustrated below (Figure 1).



Figure 1: Project survey areas (red boundaries).

3.1.6 Centregreat Rail have been instructed to undertake the Project Scope Below.

- ◆ Steelwork strengthening and repairs to achieve the specified rating of RA8 (at 20 mph) and heavy axle rating RA10 (at 20mph)
- ◆ Swing span bearing repairs
- ◆ Re-painting of the steel superstructure steelwork to provide a surface protection system with a minimum 15-year design life for trackside areas and 25 years for the remaining superstructure.
- ◆ Steelwork repairs to the cylindrical piers
- ◆ Waterproofing of the swing span
- ◆ Masonry repairs to both abutments
- ◆ Removal of redundant fenders to swing span
- ◆ Replacement of corroded gutters and downpipes
- ◆ Vegetation clearance within 3m of the structure.



Figure 2: River Neath Swing Bridge from Western Shore (Facing East).



Figure 3: Timber Pontoon to be removed as part of the works, as this is redundant and in danger of collapse.



Figure 4: Exposed riverbed during low tide (facing north / upstream).



Figure 5: Exposed riverbed (facing south / downstream).

5. PROPOSED WORKS

The following works will be undertaken as part of the contract:

5.1 SITE ESTABLISHMENT

- ◆ Site establishment of welfare / offices and plant storage areas – Main compound will be on the western side of the structure within the existing industrial area – Location to be confirmed following the conclusion of land acquisition.
- ◆ Installation of works footpath accesses to the viaduct.
- ◆ Vegetation clearance works – along access routes.
- ◆ Installation of track monitoring equipment during possessions.
- ◆ Targeted repairs to steelwork to allow phased scaffold erection – Anchor points for scaffolding will be vacuum blasted and painted and checked for structural integrity prior to the erection of scaffolding.
- ◆ Installation of scaffold walkways and laydown areas.
- ◆ Installation of scaffolding walkways and working platforms on the viaduct.
- ◆ Full encapsulation works to scaffolding, including sealed crash decks and Monoflex enclosure.



Figure 6: Indicative Compound Locations (Pending land acquisition)



Figure 7: Indicative Access Arrangements

- 5.1.1 Scaffolding with full encapsulation will be erected across the entire deck section of the structure, including the pier tops and bearing sections. This will be erected in sections, please refer to Figure 8: Scaffolding erection sequence. There will be a short period when the entire structure will be scaffolded.

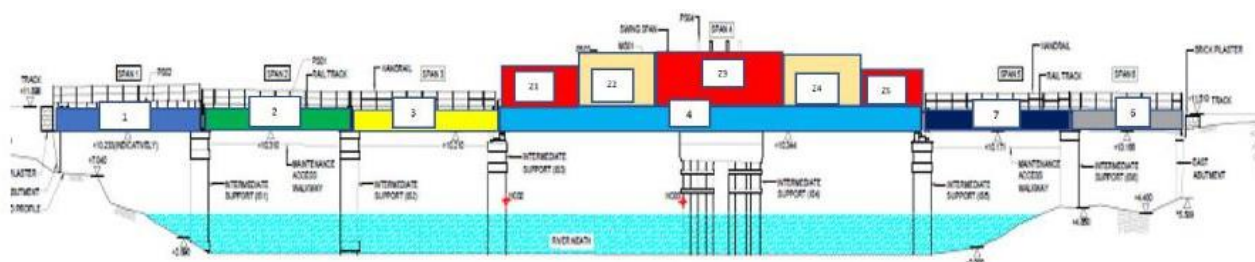


Figure 8: Scaffolding erection sequence

5.1.2 A rescue boat will be used within the estuary during scaffold erection.

5.2 STEELWORK STRENGTHENING & OVERPLATING WORKS

Steelwork strengthening and repairs to achieve the specified rating of RA8 (at 20 mph) and heavy axle rating RA10 (at 20mph).

Strengthening works, include the installation of new fillet sections to I Beams and flange strengthening and binding works. This will require extensive rivet replacement. Rivets will be removed using a rivet buster and replaced with locking nuts and bolts.

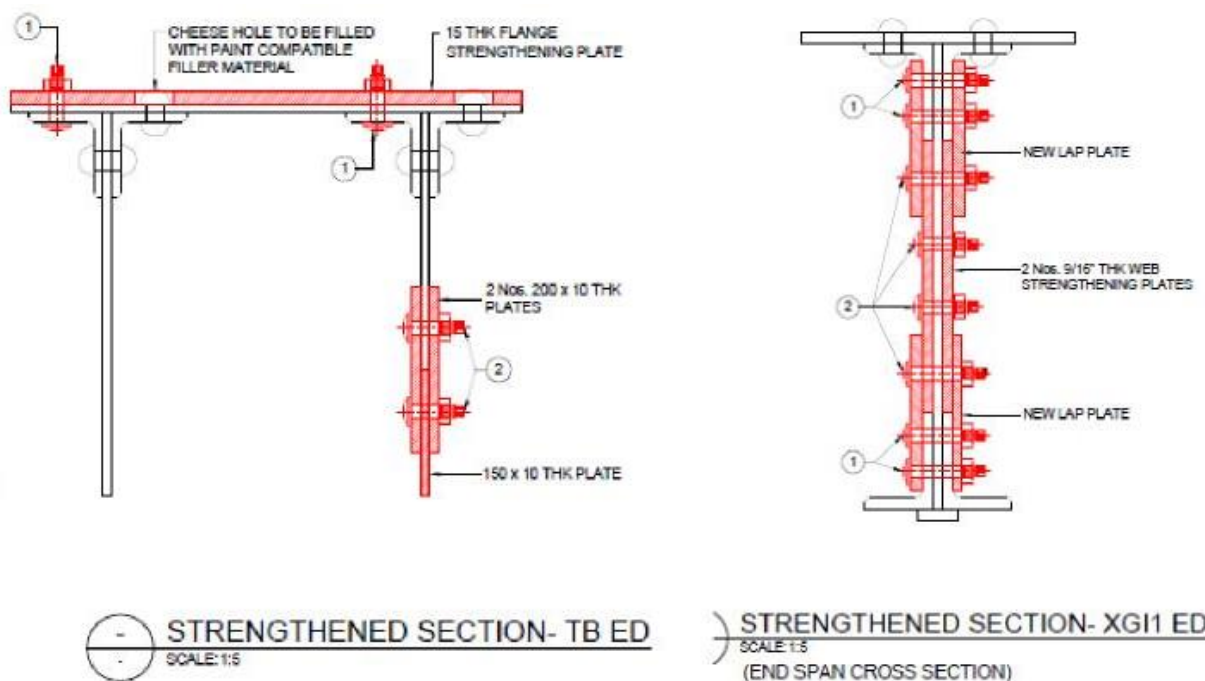


Figure 9: Example of Steelwork Strengthening works.

5.3 STEELWORK REPAIRS TO THE CYLINDRICAL PIERS

Repairs to Cylindrical Piers will include the following:

- ◆ Surface preparation & prime – 1m above / below HW level
- ◆ Paint – 1m above / below HW Level
- ◆ Replace of trestle banding / strapping with like for like as required
- ◆ Installation of new strapping / banding as required.

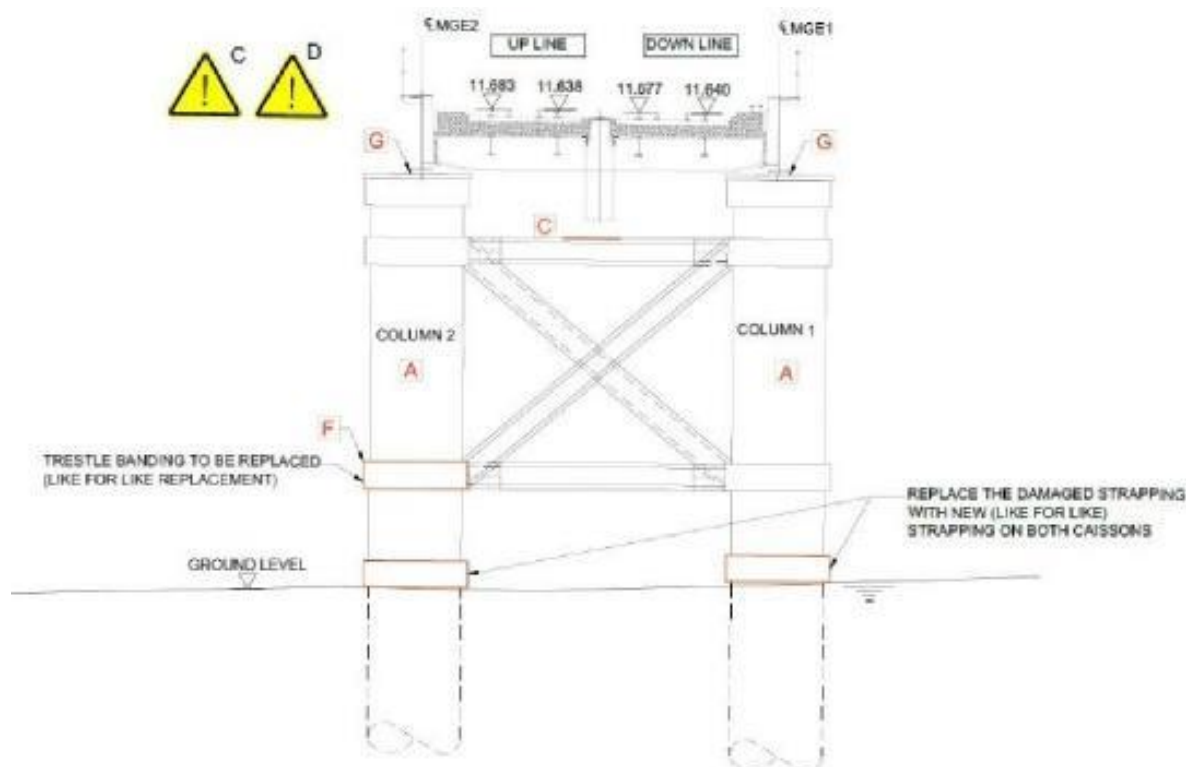


Figure 10: Replacement of Damaged Trestle Strapping.

5.4 SURFACE PREPARATION AND PAINTING

Surface preparation will be undertaken using a combination of mechanical abrasion (wire brushes and scrapers) to remove loose paint and rust, followed by vacuum blasting and grit blasting of areas which cannot be reached by vacuum blasting i.e. fillets and the internal faces of girders.

Vacuum blasting uses a gun which has a blasting nozzle and a vacuum nozzle. As grit is blasted onto the surface, spent grit and removed material are sucked up by the second nozzle. Standard grit blasting will be used in locations where mechanical abrasion or vacuum blasting cannot be used i.e. limited access areas. Where grit blasting is used, industrial vacuum cleaners will be used to capture and clean up spent grit and removed materials from the enclosed crash deck.

The structure will be painted using a marine grade epoxy-based paint such as Jotum Marathon 550. This can be spray or brush applied. The curing time for this is dependent on the ambient temperature. As the project will be undertaken over an approximate 12 month period, this will vary. Painting of the lower sections of the structure will be undertaken during the summer when river levels are low and curing periods will be short.

5.5 SWING SPAN OVERHEAD BRACING REPAIRS

5.5.1 Overhead bracing to the bowstring arches will be removed and replaced as part of the works. This will require the use of a rail mounted crane to lift the new sections.

5.5.2 New sections will be bolted into position.

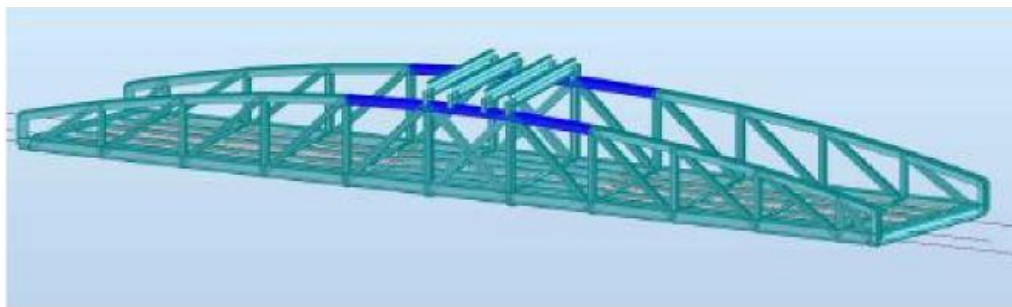


Figure 11: Replacement of Overhead Bracing

5.6 SWING SPAN BEARING REPAIRS

5.6.1 To remove the “free floating” aspect to the bearing assemblies.

- ◆ Remove old levers & brackets
- ◆ Install restraint to sliding bearing.
- ◆ New cylindrical block with welded top plate to have slotted holes to allow for thermal movements to replace screw jack & bevel gear wheel.
- ◆ Pack plate on top of bearing block for cross girder.

5.7 CAISSON REPAIRS

- ◆ Mechanically prepare all caissons up to and including 1m above high water level.
- ◆ Grit blast all caissons above the mechanically prepared area.
- ◆ Apply quick-drying protective system to all caissons.
- ◆ Undertake repairs / replacement to straps / banding and caissons as required.

5.8 TRACK & BALLAST REMOVAL & WATERPROOF SWING SPAN

- ◆ This will be completed during the 2 No. abnormal possessions on weeks 49 and 50.
- ◆ Remove track, sleepers and excavate ballast.
- ◆ Remove existing waterproofing and prepare the deck mechanically prep steelwork and apply paint system to ballast plates.
- ◆ Install new waterproofing and spigots.
- ◆ Re-establish track formation.
- ◆ Install rail and sleepers.
- ◆ Undertake tamping operations.

5.9 MASONRY, PATHS, FENCES & WALLS

- ◆ Undertake vegetation clearance around abutments and masonry repairs to abutments.
- ◆ Install King Post wall
- ◆ Install steps & paths to low mileage (western end) of bridge to provide future maintenance access.
- ◆ Install path to high mileage (eastern end) of bridge to provide future maintenance access.



5.10 REMOVE REDUNDANT FENDERS

- 5.10.1 There are wooden fenders within the centre of the swing span section. These were installed to prevent vessels colliding with the open section of the bridge. The bridge is now welded shut and these are no longer required and have fallen into disrepair. As part of the works, these fenders will be removed. It is proposed to cut the fenders down in sections which can be lifted by hand into a support boat. These works will be done on the rising and falling tide to enable to boat to access the structure. If required a diver will be used to make the final cuts to river bed level.
- 5.10.2 Cutting of fenders will be undertaken using petrol powered chainsaws for the above water cuts and a marine grade, pneumatic reciprocating saw for the below water cuts. Sawdust from the operation, will be allowed to fall into the estuary.

6. BASELINE CONDITIONS

6.1 WDF STATUS OF WATERBODIES

- 6.1.1 Data on the location and status of WFD waterbodies and WFD Protected Areas has been obtained from the Water Watch Wales website (Waterwatchwales.naturalresourceswales.gov.uk) and the Multi-Agency Geographic Information for the Countryside (MAGIC) website (magic.defra.gov.uk/MagicMap.aspx)
- 6.1.2 The following WFD surface waterbodies are in proximity of the proposed scheme: River Neath Estuary (GB541005800700), Swansea Bay (GB641008260000), Bristol Channel Outer North (GB 611008590001).
- 6.1.3 Table 1 (below) presents summary information on the current WFD status of each of the constituent quality elements of the waterbodies downstream of the works. This information has been obtained from the Water Watch Wales website. Each of the quality elements will be assessed to determine whether the proposed scheme has the potential to adversely affect their status.
- 6.1.4 Only one groundwater waterbody, the Swansea Carboniferous Coal Measures (GB41002G201000), is located within the project area. It has a Quantitative Status of Good and a chemical status of Poor, giving it an overall status of Poor. The potential for the proposed scheme to impact groundwater is considered in Section 0.

Queens Dock Swansea (SWPA) – Pollution and Water – Water Pollution diffuse sources – Investigation underway.



Table 1: Summary of the WFD status of the water bodies with potential to be influenced by the proposed works

Waterbody name, ID, Type, Management Catchment, River Basin District.	Hydro-morphological designation	Current overall status & objectives	Biological elements	Physico-chemical elements	Water body Protected Area Links
River Neath Estuary (GB541005800700) Type: Transitional (Estuary) Man Catchment: Western Wales TraC Area Name: South West Wales.	Designated as heavily modified Morphology = Not High Hydrological Regime = Not High Mit Assessment = Moderate	Current overall status = Moderate; Objective = Good by 2021 Current ecological status = Good; Objective = Good by 2021 Current chemical status = Good; Objective = Good by 2021	DriveEcoQE – Mitigation Measures Assessment = Moderate. Fish = Not assessed Macroalgae = High Phytoplankton = Not assessed Opportunistic Macroalgae = High Invertebrates = Good Infaunal Quality Index (IQI) = Good. Angiosperm = High. Salt Marsh = High. Sea Grass = Not assessed.	Dissolved oxygen = High Dissolved Inorganic Nitrogen = Good Annex 8 Chemicals = High Arsenic = High Copper = High Iron = High Zinc = High Cadmium = High 1,2-dichloroethane = High. Brominated diphenylether (BDPE) Calc = Moderate Benzopyrene = Not recorded. Hexachlorobutadiene = Not recorded. Hexachlorobenzene = Not recorded. Mercury = Not recorded. Nonylphenol = Not recorded. Fluoranthene = Not recorded. Lead = High Nickel = High Trichlorobenzenes = Not recorded. Trichloroethylene = High. Hydrological Regime = Not High	Protected Area = No Bathing Waters = No Special Protection Area = No Drinking Water Protected Area = No Special Area of Conservation = No Nitrate Vulnerable Zone = No Shellfish Water = No
Swansea Bay (GB641008260000) Type: Transitional Man Catchment: Western Wales TraC Area Name: South West Wales	Designated as heavily modified Morphology = Not High	Current overall status = Moderate; Objective = Good by 2021 Current ecological status = Moderate; Objective = Good by 2021 Current chemical status = Fail; Objective = Good by 2021	DriveEcoQE = DIN, Mitigation Measures Assessment = Moderate. Fish = Not assessed Inverts = Good. Macroalgae = High. Phytoplankton = Good.	Dissolved oxygen = High Dissolved Inorganic Nitrogen – Moderate Annex 8 Chemicals = High Arsenic = High Copper = High Iron = High Zinc = High Cadmium = High. 1,2-dichloroethane = High.	Protected Area = No Bathing Waters = Yes Special Protection Area = No Drinking Water Protected Area = No Special Area of Conservation = No



Waterbody name, ID, Type, Management Catchment, River Basin District.	Hydro-morphological designation	Current overall status & objectives	Biological elements	Physico-chemical elements	Water body Protected Area Links
	Hydrological Regime = Not High Mit Assessment = Moderate		Opportunistic Macroalgae = High Invertebrates = Good. Infaunal Quality Index (IQI) = Good. Imposex = High. Angiosperm = Moderate. Salt Marsh = Not assessed. Sea Grass = Not assessed.	Brominated diphenylether (BDPE) Calc = Moderate. Benzene = High. Dichloromethane = High. Benzopyrene = Not recorded. Hexachlorobutadiene = Not recorded. Hexachlorobenzene = Not recorded. Mercury = Moderate. Nonylphenol = High. Fluoranthene = Not recorded. Lead = High Nickel = High Trichlorobenzenes = Not recorded. Trichloroethylene = High. Carbon Tetrachloride = High. DDT = High. Para – para DDT = High. Hydrological Regime = Not High	Nitrate Vulnerable Zone = No Shellfish Water = Yes
Bristol Channel Outer North (GB 611008590001). Type: Coastal Man Catchment: Western Wales TraC RBD: 10.00 – Western Wales Area Name: WA North	Not designated as heavily modified. Morphology = Not High Hydrological Regime = Not High	Current overall status = Moderate; Objective = Good by 2021 Current ecological status = Good; Objective = Good by 2021 Current chemical status = Good; Objective = Good by 2021	DriveEcoQE - Dissolved Inorganic Nitrogen. Fish = Not assessed Macroalgae = Not assessed. Phytoplankton = High Opportunistic Macroalgae = Not assessed Invertebrates = Not assessed Infaunal Quality Index (IQI) = Not assessed Imposex = Not assessed	Dissolved oxygen = High Dissolved Inorganic Nitrogen – Moderate Annex 8 Chemicals = High Arsenic = Not recorded Copper = High Iron = Not recorded. Zinc = High Cadmium = High Brominated diphenylether (BDPE) Calc = Moderate Benzopyrene = Not recorded. Hexachlorobutadiene = Not recorded. Hexachlorobenzene = High Mercury = Not recorded.	Protected Area = Yes Bathing Waters = Yes Special Protection Area = Yes Drinking Water Protected Area = No Special Area of Conservation = Yes Nitrate Vulnerable Zone = No Shellfish Water = Yes



Waterbody name, ID, Type, Management Catchment, River Basin District.	Hydro-morphological designation	Current overall status & objectives	Biological elements	Physico-chemical elements	Water body Protected Area Links
				Nonylphenol = Not recorded. Fluoranthene = Not recorded. Lead = High Nickel = High Trichlorobenzenes = Not recorded. Trichloroethylene = High. Hydrological Regime = Not High Aldrin, Dieldrin, Endrin & Isodrin = High DDT = High. Para – para DDT = High. Hydrological Regime = Not High	
Swansea Carboniferous Coal Measures (GB41002G201000), Type: Groundwater Region: EA Wales RBD: 9.00 - Severn Area Name: WA South East		Current overall status = Good; Current Quantitative status = Good Current chemical status = Poor. Drinking Water Protected Area Pressure = Good.			Protected Area = Yes Special Protection Area = No Drinking Water Protected Area = Special Area of Conservation = No Nitrate Vulnerable Zone = No



7. WATER FRAMEWORK DIRECTIVE ASSESSMENT: SCOPING FOR ACTIVITIES IN ESTUARINE AND COASTAL WATERS

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

7.1 SECTION 1: HYDROMORPHOLOGY

7.1.1 The first stage is to consider if there is hydromorphology at risk from your activity.

Table 2: Summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	The River Neath Estuary does not have high hydromorphological status. The river is classed as being heavily modified, the section in which the works are being undertaken is naturalised along the eastern bank, with a wetland area and the semi-reclaimed former Giants Grave Landfill and semi naturalised along the western bank, with significant industrial development. The structure used to be an opening swing bridge, which swung from the centre of the channel and when open was protected from collision with vessels by a wooden structure running at a tangent to the bridge along the centre of the channel. The bridge has been fixed in position since 1985. This wooden structure is now redundant and needs significant repair to prevent it collapsing into the river. It has therefore been decided that damaged elements of this structure will be removed, during these works. This will have the effect of improving the hydromorphology of the river channel. There will be no changes to the below MHW sections of the structure, beyond surface preparation and painting and the replacement of the corroded banding holding the trestles to the caisson piers. This impact has been assessed as negligible / slight beneficial.
Could significantly impact the hydromorphology of any water body	Please see above - No impacts on any other water bodies.



Is in a water body that is heavily modified for the same use as your activity	The estuary is considered to be heavily modified due to the presence of several bridges crossing the river carrying railways and highways, there is current industrial usage of areas surrounding the estuary and a long history of industrial, port and shipping use of the estuary. The former Giants Grave Landfill, which has been closed and semi-reclaimed, lies to the east of the bridge. Land adjoining the river, upstream of the works, has been heavily developed with residential settlements and commercial areas dotted along the course of the river. Downstream, the estuary is bounded by Baglan Energy Park to the east and A483, main eastern link into Swansea, along the western shore.
---	--

7.2 SECTION 2: BIOLOGY, HABITAT & FISH

7.2.1 The second stage is to consider if habitats, Biology and Fish Species are at risk from your activity.

Table 3: Water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef – No identified impact	Cobbles, gravel and shingle – Areas identified within the centre of Swansea Bay, but no direct impacts on these. Potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.
Clam, cockle and oyster beds – No identified impacts	Intertidal soft sediments like sand and mud – Areas identified around the bridge and throughout the extents of the estuary and Swansea Bay. No direct impacts as no works proposed within the estuary but potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.
Intertidal seagrass – No identified impact	Rocky shore – Areas identified around the bridge and throughout the extents of the estuary and Swansea Bay. No direct impacts as no works proposed within the estuary but potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.



Higher sensitivity habitats ²	Lower sensitivity habitats ³
Maerl – No identified impacts.	Subtidal boulder fields – Non identified within the study area.
Mussel beds, including blue and horse mussel – Swansea Bay Mytilus spp beds adjacent to Swansea Docks approximately 3km from the mouth of the estuary – CEFAS Class B. Further mussel beds identified across Swansea Bay (not farmed) No direct impacts. Indirect impacts could be the release of deleterious materials / substances from the works. Please refer Table 15: Proposed Mitigation Matrix for impact assessment and proposed mitigation.	subtidal rocky reef – Identified within Swansea Bay, particularly around Mumbles Head. No direct impacts on these. Potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.
Polychaete reef – Area identified around the mouth of the Tawe south of the docks. Potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.	Subtidal soft sediments like sand and mud – Areas identified within the centre of Swansea Bay, but no direct impacts on these. Potential for indirect impacts due to chemical and hydrocarbon emissions from the works, if sufficient controls are not put in place.
Saltmarsh – The Neath Estuary is designated as a SINCR due to saltmarsh, with areas of saltmarsh along the estuary, particularly along the eastern bank of the estuary and within reens and gullies into the wetland area, north and south east of the bridge. There is a large area of saltmarsh adjacent to the A483 at the mouth of the estuary. The presence of saltmarsh will be considered during the planning of access from the east. Currently, all access is from the western bank with access from the east being along the rail corridor. Pedestrian access will be required to the eastern abutment to complete masonry repairs.	
Subtidal kelp beds – No identified impact.	
subtidal seagrass – No identified impact.	



² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

7.2.2 Please also refer to Figure 12: Neath Estuary WFD Habitat Higher Sensitivity (www.magic.gov.uk)

7.2.3 Habitats with potential to be impacted by the scheme are discussed in detail within the SDI1 – River Neath Swing Bridge – Preliminary Ecological Appraisal (PEA) - EV000702/1/PEA-00.

Table 4: Biology.

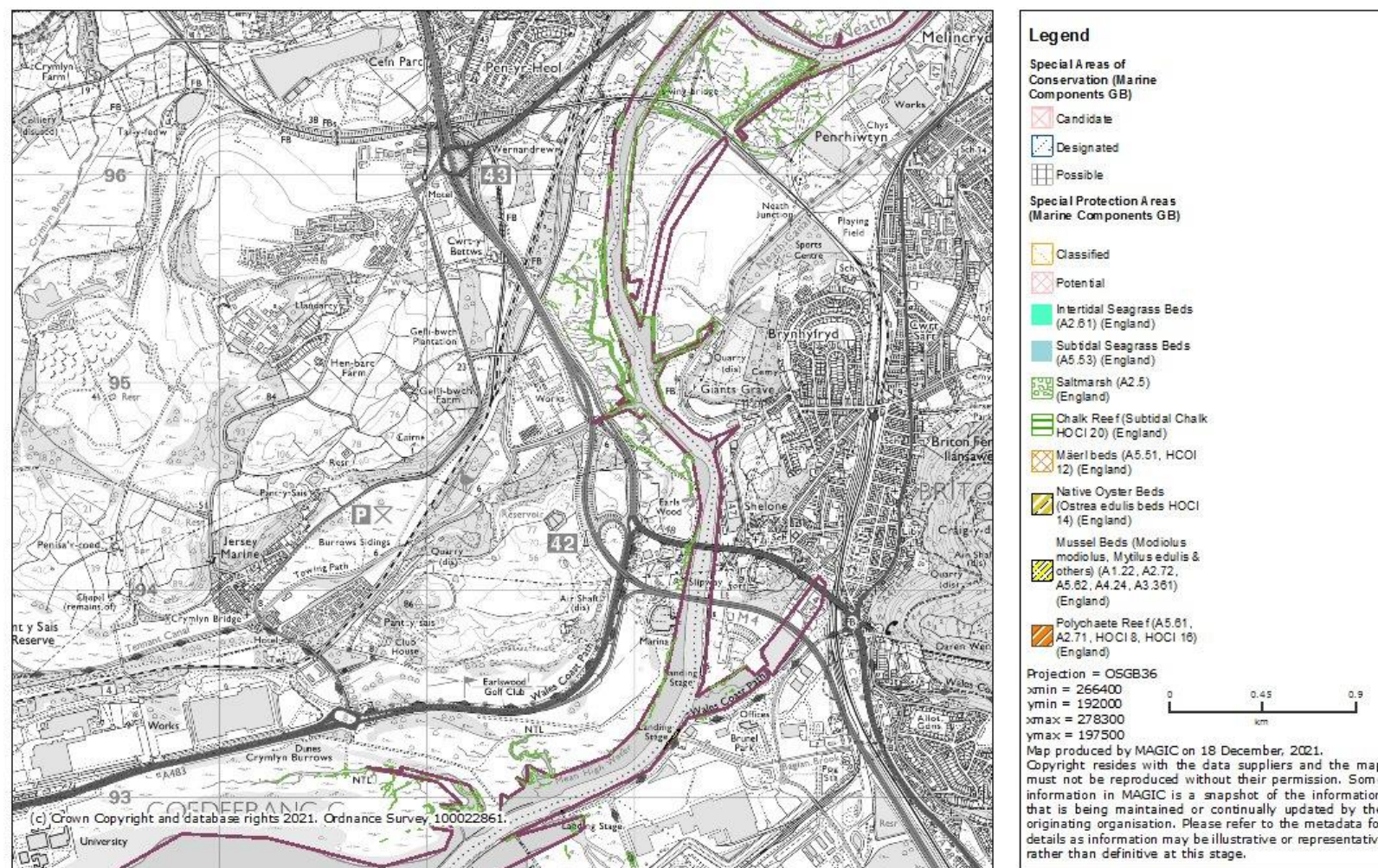
Consider if the footprint ⁴ of your activity is:	Biology habitats risk issue(s)
0.5km ² or larger	The structure including the wooden deck rotation fenders covers an area of approximately 2,000m ²
1% or more of the water body's area	The estuary covers an area of approximately 220ha. The footprint of the works is therefore less than 1% of the estuaries area.
Within 500m of any higher sensitivity habitat	Works will be undertaken within 500m of the following designated sites: The bridges lies within the Neath Estuary – SINC – Designated for Coastal Saltmarsh. The Tennant Canal – SINC – Lies approximately 120m west of the western abutment of the bridge. This is designated for fen and small areas of wet woodland. Please refer to Section 7.3 Designated Site within Influence of the River Neath Estuary. Carmarthen Bay and Estuaries Special Area of Conservation (SAC) is approximately 23km west of the mouth of the estuary. Impacts on this are unlikely.
1% or more of any lower sensitivity habitat	The works footprint, including temporary works areas is substantially less than 1% of lower sensitivity habitats.

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.



MAGiC

WFD Habitats Higher Sensitivity

Figure 12: Neath Estuary WFD Habitat Higher Sensitivity (www.magic.gov.uk)


MAGiC

WFD Habitats Lower Sensitivity

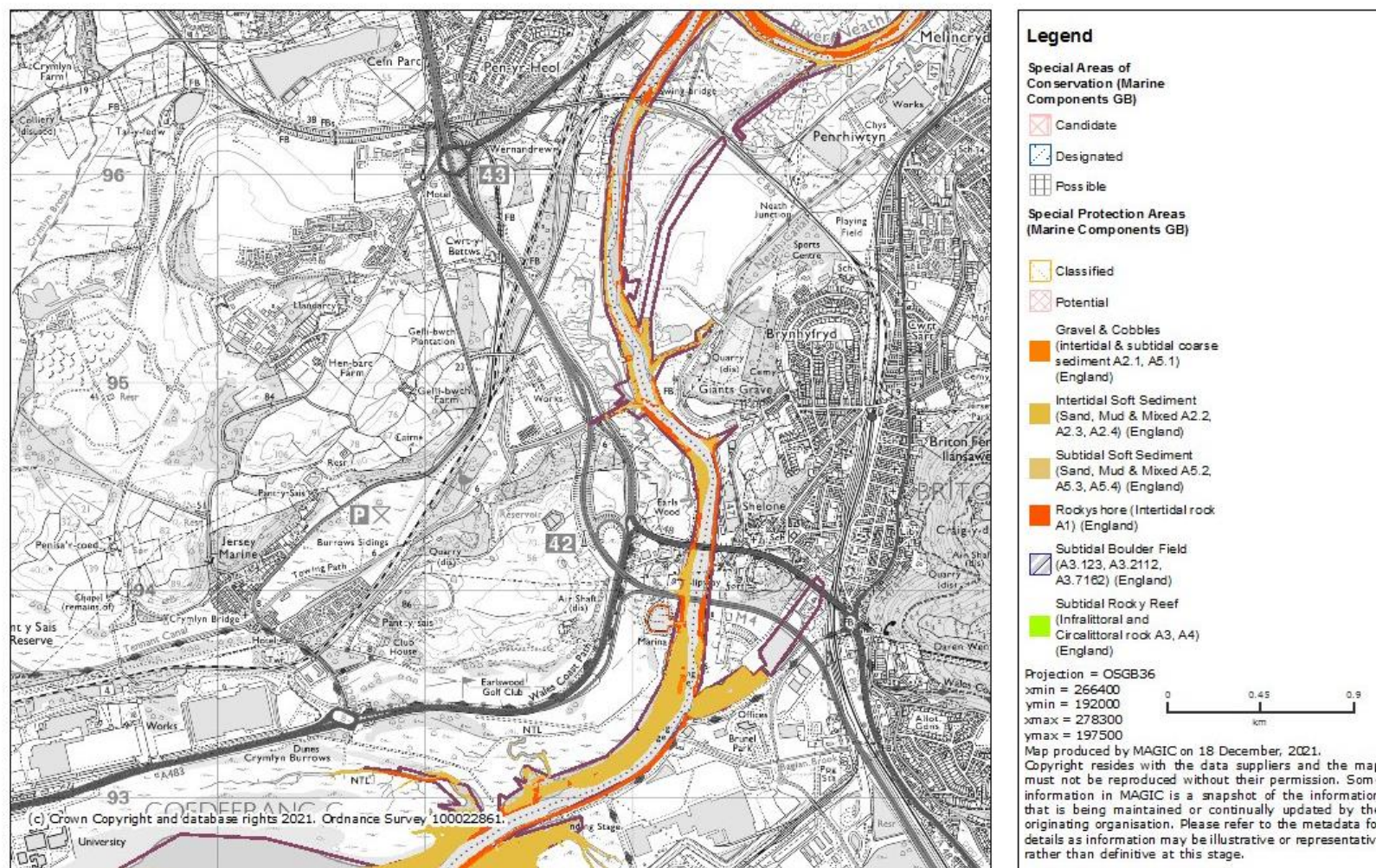
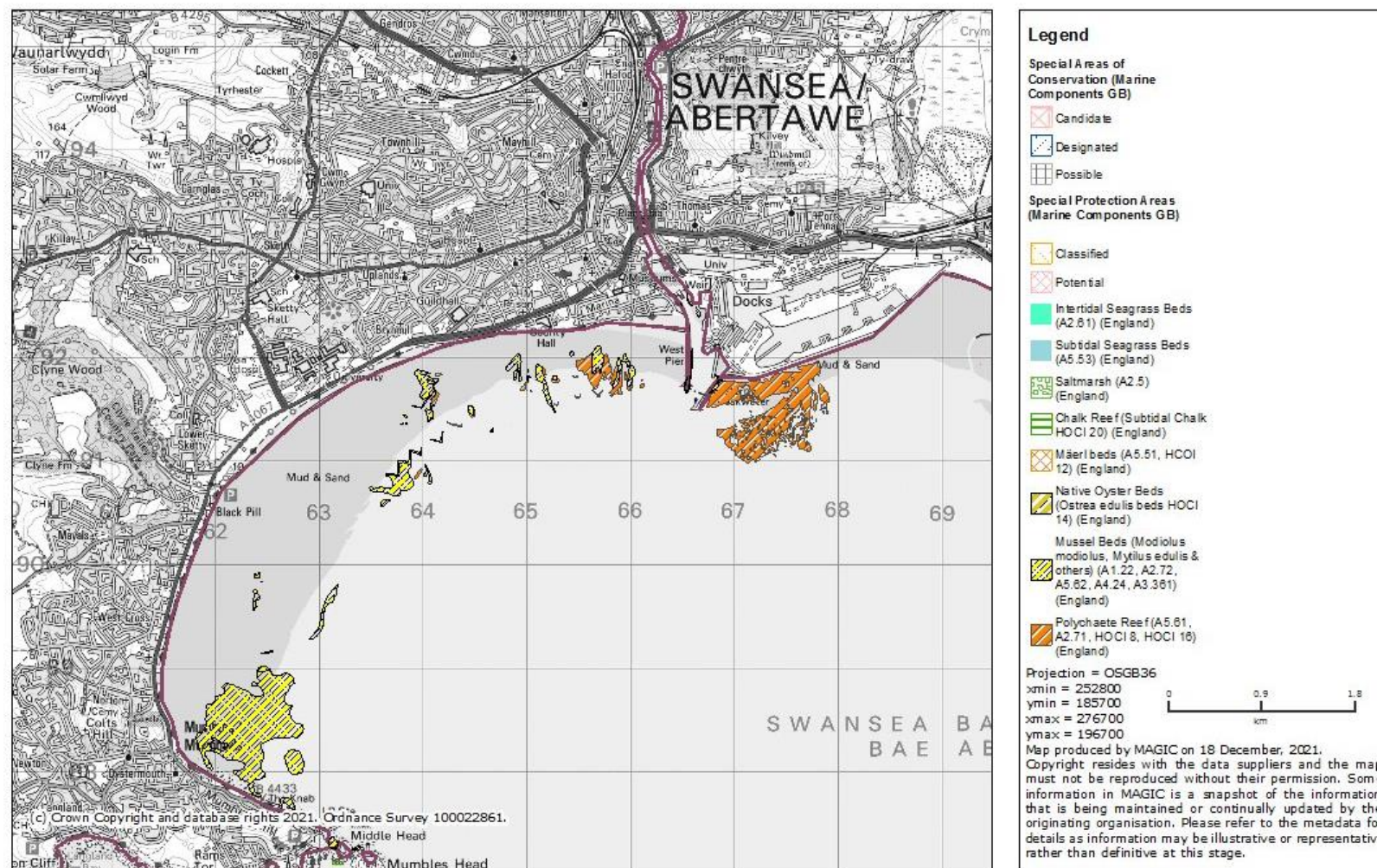


Figure 13: Neath Estuary WFD Habitat Lower Sensitivity (www.magic.gov.uk)



MAGiC

WFD Habitats Higher Sensitivity

Figure 14: Swansea Bay WFD Habitat Higher Sensitivity (www.magic.gov.uk)



7.3 DESIGNATED SITES WITHIN THE INFLUENCE OF THE RIVER NEATH ESTUARY

7.3.1 There are 2 statutory designated sites within 3km of the project boundary.

Table 5: Statutory Site Description

Site Name	Site Designation	Description
Crymlyn Bog	SAC, RAMSAR, SSSI	Within the NRW Core Management Plan, Crymlyn Bog is described as a large lowland fen situated in a glacial depression on the eastern edge of Swansea. In addition to Crymlyn Bog itself, the SAC also includes Pant-y-Sais fen, a smaller (approximately 20ha) wetland located about 1km east of the main site. The site is also a RAMSAR which is specifically designated for its importance to wading bird species.
Earlswood Road Cutting and Ferryboat Inn Quarries	SSSI - Geological	Described as this site is of special scientific interest for its exposures of late Carboniferous rocks which afford the best available sections through the Carboniferous Rhondda Beds, in deltaic facies.

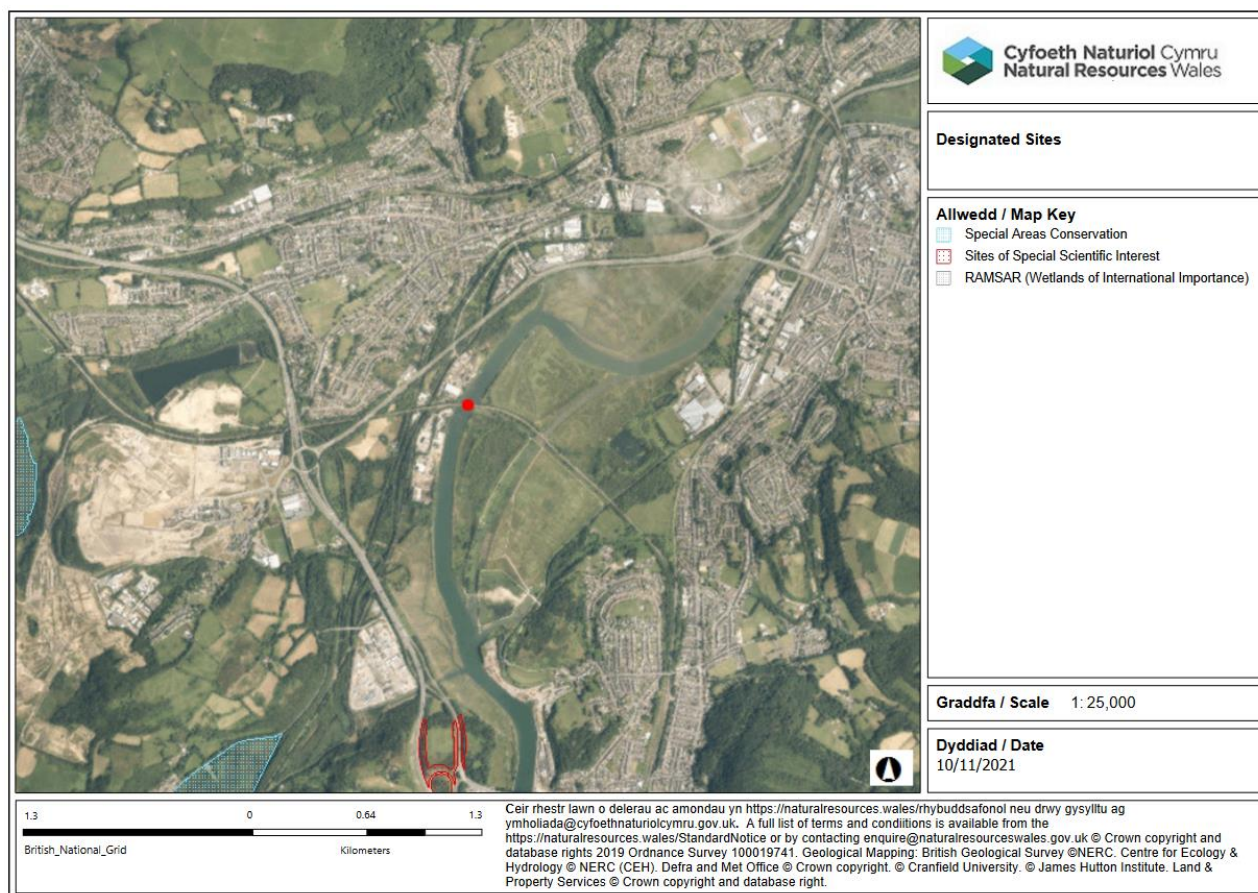


Figure 15: Designated Site Map in relation to Swing Bridge (Red Dot).

Due to their distance from the site, direct impacts are unlikely.



7.3.2 There are 5 non-statutory designated sites within 2km of the site boundary.

Table 6: Non-Statutory Site Description.

Site Name	Site Designation	Description
Tennant Canal	SINC	Tennant Canal is of importance for nature conservation. Aside from the water of the canal itself, additional wetland habitats include a fen and a small area of wet woodland. The site is known to be used by otter and is of importance to a variety of bird species such as kingfisher, sedge warbler, peregrine and kestrel.
Neath Canal	SINC	Limited Information – Known Key Feature: Standing open water
Neath Estuary	SINC	Known Key Feature: Coastal Saltmarsh. Note: The structure is situated within this site.
Square Pond	SINC	Known Key Feature: Broadleaf Woodlands.
Pentrefynnon	SINC	Known Key Feature: Broadleaf Woodlands & Lowland Meadows.

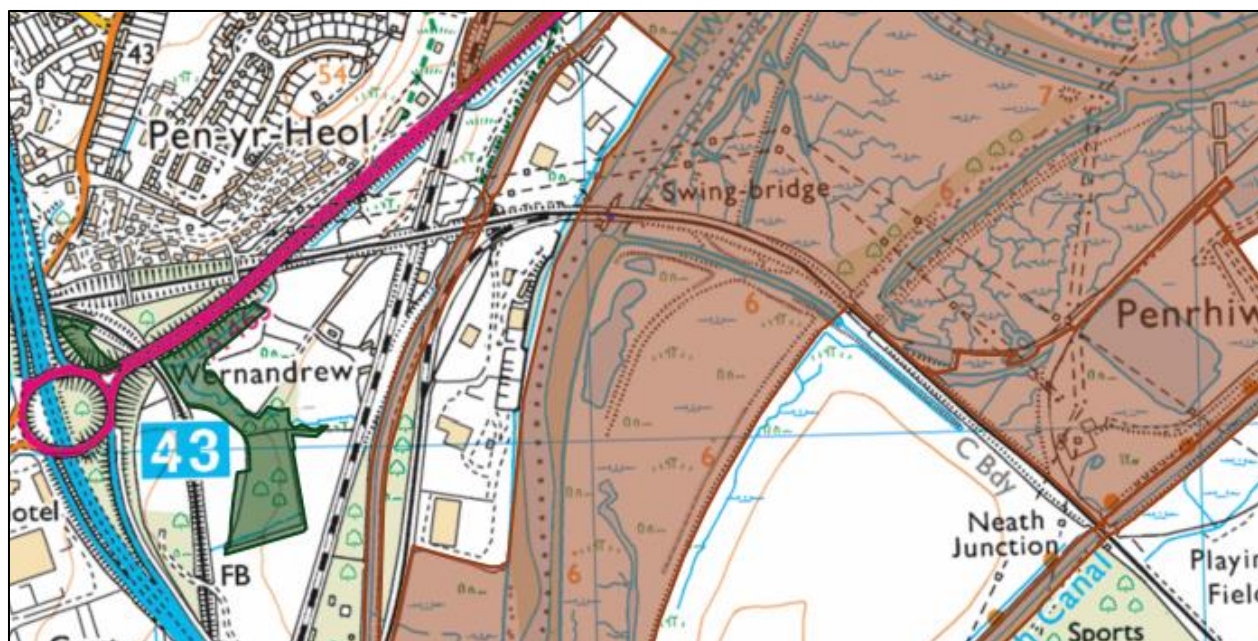
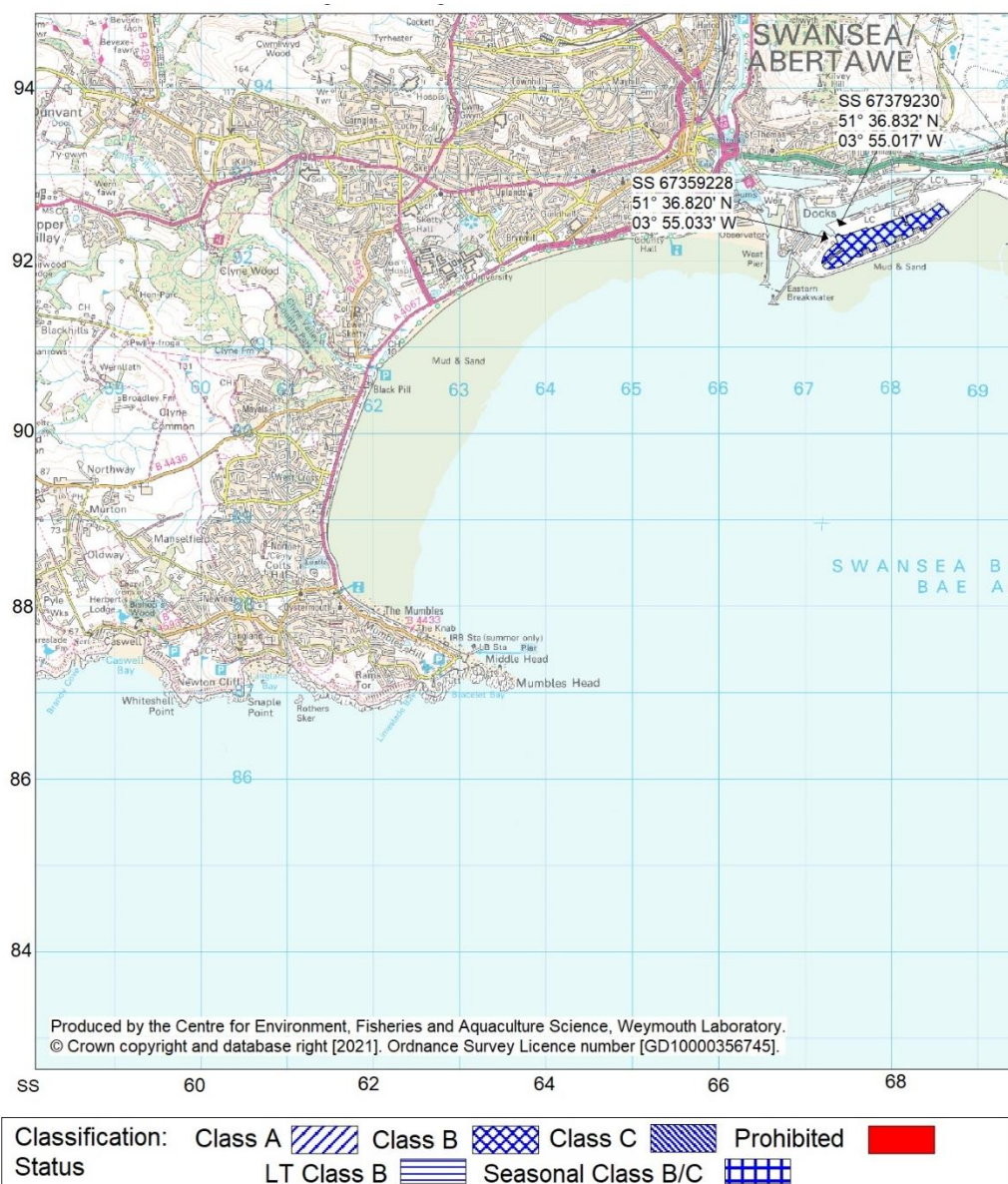


Figure 16: SINC's in relation to Swing Bridge (coloured brown).

- 7.3.3 Carmarthenshire Bay and Estuaries Special Area of Conservation (SAC) - is approximately 23km west of the mouth of the estuary. Impacts on this are unlikely.
- 7.3.4 Swansea Bay Mussel Beds – There is a CEFAS classified Class B *Mytilus* spp bed adjacent to Swansea Docks, approximately 3km from the mouth of the estuary.



Classification of Bivalve Mollusc Production Areas: Effective from 1 September 2021

The areas delineated above are those classified as bivalve mollusc production areas under Regulation (EU) 2019/627.

Further details on the classified species and the areas may be obtained from the responsible Food Authority. Enquiries regarding the maps should be directed to: Shellfish Microbiology, CEFAS Weymouth Laboratory, Barrack Road, The Nothe, Weymouth, Dorset DT4 8UB. (Tel: 01305 206600 Fax: 01305 206601)

N.B. Lat/Longs quoted are WGS84

Unless otherwise stated, non-straight line boundaries between co-ordinates follow the OS 1:25,000 mean high water line.

Separate map available for *O. edulis* at Swansea Bay

Food Authorities: Swansea City & County Council

Swansea Bay Port Health Authority

Figure 17: Swansea *Mytilus* ssp Bed.



Table 7: Potential fish species at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Works will be restricted to the structure, with no physical impediment to fish passage along the estuary. The bridge is regularly used by trains, but the works will result in increased human activity, noise and vibration within the estuary. It will also be required to utilise boats and pontoons as part of the works, predominantly for the removal of the wooden fenders. Key noise producing activities will be: - Use of disc cutters; - Use of rivet busters; - Use of pneumatic ratchet guns to tighten bolts for new steelwork; - Vacuum blasting. Due to the nature of these works i.e. Hand Arm Vibration (HAVs) restrictions, works times are limited and frequent breaks need to be taken. These works will be undertaken across the bridges superstructure, which is a minimum of 4m above high water level during spring tides. The bridge superstructure is isolated from the substructure by the bridge bearings. This will reduce vibration from the superstructure into the water column. Works to the structure are programmed to commence mid-March 2022, with the erection of scaffolding and will be completed in February 2023, so will therefore run through a complete season. Vessels will also be operating within the estuary during periods of the project i.e. a Safety Boat will be required during the erection of scaffolding and a support boat will be used when the redundant wooden fenders are being removed. These works will be undertaken during high to mid tide conditions, with the fenders being cut down in sections as the tide recedes and the final sections being cut by divers. Cut sections will be loaded on the vessel and removed from site.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)	Please refer to information above. There are no proposed works which will disturb sediment from the base of the estuary.
Could cause entrainment or impingement of fish	No identified impact



7.4 SECTION 3: WATER QUALITY

7.4.1 Stage 3 - Consider if water quality is at risk from your activity.

Table 8: Water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	The works will include grit blasting of the upper section of the structure which can be fully encapsulated. Lower sections where there will just be a sealed crash deck will be scrapped and cleaned using powered wire brushes and vacuum blasted, where spent grit and removed material is collected. Use of Hydrocarbons: All plant machinery movement will occur within the confines of the rail corridor. No movement of plant machines along the estuary bed is required to support the works. Pedestrian access may be required during the erection of scaffolding, but this will be limited to short duration, during low tide. No refuelling of plant machinery or equipment will occur within the estuary. All items of static plant will be placed within a plant nappy when not in use. Fuelled equipment will be checked for defects and leaks prior to the start of each shift. Within the compound, a refuelling procedure will be implemented, whereby plant nappies will be placed beneath fuelling apertures during fuelling and refuelling will only be undertaken by designated, trained individuals using equipment specifically designed for that purpose. Network Rail have a spillage plan and specialised contractor in place to respond to and clean up spills. Grit Blasting: Grit vacuum blasting and conventional grit blasting will be undertaken using a blend of stone grit and iron silicate grit. This method of blasting contains all blast materials within the nozzle of the blasting gun. Conventional grit blasting may need to be used to reach into corners and sections of profile steel where the vacuum blasting gun cannot reach. The scaffolding around the structure will be fully encapsulated, with a containment deck on working levels. This will be sealed using heavy duty plastic sheeting and the overall scaffold encapsulated using Monoflex



Consider if your activity:	Water quality risk issue(s)																														
	sheeting or similar. Grit blasting will result in the release of old paint and rust from the structure. This will be retained within the encapsulation system and removed using industrial vacuum cleaners. Application of Paint Systems: The paint system used will be Jotun Marathon 550 or similar approved and will be applied using predominantly spray painting but also brush painting – Please refer to Appendix B for Jotun Technical information. The paint system if released into the environment by accident is noted for its potential to be "Very toxic to aquatic life with long lasting effects." Consequently, control on how the system is applied is essential. <table><tr><th>Substrate temperature</th><th>5 °C</th><th>10 °C</th><th>15 °C</th><th>23 °C</th><th>40 °C</th></tr><tr><td>Surface (touch) dry</td><td>15 h</td><td>11 h</td><td>9 h</td><td>4 h</td><td>1.5 h</td></tr><tr><td>Walk-on-dry</td><td>26 h</td><td>18 h</td><td>14 h</td><td>8 h</td><td>3 h</td></tr><tr><td>Dry to over coat, minimum</td><td>26 h</td><td>18 h</td><td>14 h</td><td>8 h</td><td>3 h</td></tr><tr><td>Dried/cured for service</td><td>14 d</td><td>10 d</td><td>10 d</td><td>7 d</td><td>3 d</td></tr></table> Within the technical sheet extract above, the curing rate, will require the paint system to be applied at earliest opportunity as the tide recedes, allowing for the recommended curing times to be achieved. As the works are occurring during the spring/early summer, is it highly likely that the paint will have cured to a level that would be unlikely to leach its toxic properties readily into the environment (e.g., dry to the touch). Additionally, painting won't occur during high winds as to avoid drift and unnecessary loss of paint into the environment. Furthermore, visual inspection of the paint system as the tide gradually covers the recently painted areas will be required, with photographic evidence taken and reported to the project environmental clerk of works. This process will also be required to support the quality management system for the project and demonstrate correct application of the paint system. Impact Assessment – To assess the potential impacts of these activities, the following should be considered: Construction plant will be used on the viaduct within the estuary and hence there is a heightened risk of hydrocarbon release due to leaks of fuels and oils. Mitigation has been put in place for the use of this equipment within the project Environmental, Social Management Plan (ESMP). This document has been developed using guidance from GPP 2: Above ground oil storage tanks, GPP 5: Works and maintenance in or near water and PPG 6: Working at construction and demolition sites, GPP 7: Safe storage – The safe operation of refuelling facilities, GPP 21: Pollution incident response planning, GPP 22: Dealing with spills, GPP26: Safe	Substrate temperature	5 °C	10 °C	15 °C	23 °C	40 °C	Surface (touch) dry	15 h	11 h	9 h	4 h	1.5 h	Walk-on-dry	26 h	18 h	14 h	8 h	3 h	Dry to over coat, minimum	26 h	18 h	14 h	8 h	3 h	Dried/cured for service	14 d	10 d	10 d	7 d	3 d
Substrate temperature	5 °C	10 °C	15 °C	23 °C	40 °C																										
Surface (touch) dry	15 h	11 h	9 h	4 h	1.5 h																										
Walk-on-dry	26 h	18 h	14 h	8 h	3 h																										
Dry to over coat, minimum	26 h	18 h	14 h	8 h	3 h																										
Dried/cured for service	14 d	10 d	10 d	7 d	3 d																										



Consider if your activity:	Water quality risk issue(s)
	storage – drums and intermediate bulk containers. This includes controls for the operation of plant using biodegradable hydraulic oil (where this is within the manufacturers permitted specification), the re-fuelling of plant and equipment, inspection and maintenance routines for plant to identify defects which could result in the release of liquids, biosecurity protocols, silt mitigation procedures, waste management procedures. The ESMP also includes details on incident response and reporting, including hydrocarbon spills, remediation and reporting to NRW. Use of vacuum blasting across the majority of the structure will minimise the release of grit and paint into the scaffolding enclosure. Where this is not possible, grit and paint will be captured within the enclosure system and will be vacuumed up and removed, prior to the scaffold being dismantled. Paint will be used within the manufacturers guidelines to minimise the exposure to the environment of liquid and sem-cured paint. Conclusion: Provided detailed mitigation plans are developed as part of the Task Specific Method Statements, in line with the broad guidance above, risks to water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns have therefore been assessed as low.
Is in a water body with a phytoplankton status of moderate, poor or bad	Phytoplankton has not been assessed for the Neath but has been assessed as Good for Swansea Bay and High for the Bristol Channel Outer North.
Is in a water body with a history of harmful algae	No.



Table 9: Assessing whether water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Impact Assessment: Chemicals which will be taken into the estuary as part of the works will be: - Hydrocarbons and coolants within plant and machinery. - Unknown chemicals within historic paint removed from the structure - Grit vacuum blasting and conventional grit blasting will be undertaken using a blend of stone grit and iron silicate grit. This method of blasting contains all blast materials within the nozzle of the blasting gun. Conventional grit blasting may need to be used to reach into corners and sections of profile steel where the vacuum blasting gun cannot reach. The scaffolding around the structure will be fully encapsulated, with a containment deck on working levels. This will be sealed using heavy duty plastic sheeting and the overall scaffold encapsulated using Monoflex sheeting or similar. Grit blasting will result in the release of old paint and rust from the structure. This will be retained within the encapsulation system. - A paint system, which is likely to be Jotun Marathon 500, this contains benzene at a concentration of <0.1%. Benzene is on the list of Freshwater and Estuaries and Coastal Waters, Priority substances, priority substances and other pollutants, Environmental Quality Standards (EQS) and xylene at a concentration of ≤10%. Xylene appears on the list of Freshwater and Estuaries and Coastal Waters, Specific Pollutants and Operational Environmental Quality Standards (EQS). A Material Safety Data Sheet for Jotun Marathon 500 is provided in Appendix B Conclusion: Provided the project complies with the measures set out within the ESMP, which in turn contains guidance from the relevant GPPs, the risk of release of hydrocarbons and cementitious materials is low. Use of vacuum blasting and containment and shrouding systems as part of the scaffolding, the release of historic paint from the viaduct is low. Due to the way the paint reacts and cures, provided this paint is not released into the environment in its liquid form, the environmental availability of these substances is negligible.
It disturbs sediment with contaminants above Cefas Action Level 1	No sediments will be disturbed as part of the works.



Table 10: Assessing whether project falls within mixing zone.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Water quality risk issue(s) /Assessment of Risk / Mitigation Proposals.
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	No discharge pipeline or outfall is proposed as part of the works.

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

7.5 SECTION 4: WFD PROTECTED AREAS

7.5.1 Stage 4 is to consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Table 11: Location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is: Within 2km of any WFD protected area ⁶	Protected areas risk issue(s)
Carmarthen Bay and Estuaries Special Area of Conservation (SAC)	Carmarthen Bay and Estuaries Special Area of Conservation (SAC) is approximately 23km west of the mouth of the estuary. Impacts on this are unlikely.
Swansea Bay / Bristol Channel Outer Bathing Waters	Impacts are unlikely due to the scale and relatively low impact of the proposed works. Mitigation will be implemented as described above.

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.



7.6 SECTION 5: INVASIVE NON-NATIVE SPECIES (INNS)

7.6.1 Stage 5 is to consider if there is a risk your activity could introduce or spread INNS.

7.6.2 Risks of introducing or spreading INNS include:

- Materials or equipment that have come from, had use in or travelled through other water bodies.
- Activities that help spread existing INNS, either within the immediate water body or other water bodies.

Table 12: Risk from INNS.

Consider if your activity could:	INNS risk issue(s)
Introduce or spread INNS	Japanese Knotweed is present to the northwest; however, these stands will not come within the working footprint. The risk of introducing INNS into the estuary environment will be controlled through Biosecurity Best Practice - Plant and equipment to be used within and adjacent to the estuary will be subject to the Check, Clean, Dry process and will be treated with an aquatic safe disinfectant such as Virkon S. There is potential to disturb marine invasive species, which may be present on the structure such as those listed in Marine Plan Policy for INNS (ENV-03) All materials removed from the structure will be removed from site as part of the works. The wooden fenders which are to be cut down, will be removed from the estuary with any fouling, in place. There will not be a situation during the works, when fouling will be removed and allowed to fall into the estuary. A Biosecurity Management Plan has been prepared for the project, which assesses the risk from INNS and proposes mitigation for this. Please refer to Appendix A.



7.7 SUMMARY OF WFD PRE-ASSESSMENT FINDINGS

Table 13: Summary of Pre-Assessment Stage Findings.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	The River Neath Estuary does not have high hydromorphological status. The river is classed as being heavily modified, the section in which the works are being undertaken is naturalised along the eastern bank and semi naturalised along the western bank, with significant industrial development. The structure used to be an opening swing bridge, which swung from the centre of the channel and when open was supported on a wooden structure running at a tangent to the bridge along the centre of the channel. The bridge has been fixed in position since 1985. This wooden structure is now redundant and needs significant repair to prevent it collapsing into the river. It has therefore been decided that this structure will be removed, during these works. This will have the effect of improving the hydromorphology of the river channel. This impact has been assessed as negligible / slight beneficial.	Mitigation to be out in place to minimise impacts – Please refer to Table 15 for proposed mitigation.
Biology: habitats	No identified impacts on habitats, provided adequate pollution control measures are put in place i.e. sealed crash deck beneath the structure, controls on the storage and use of hydrocarbons and chemicals, controls on grit blasting and the use of epoxy paint system.	Mitigation to be specified within the Social and Environmental Management Plan (ESMP) and task specific Method Statements.
Biology: fish	No identified impact. There will be no physical blocks to fish migrating through the estuary/river. Key impacts on fish will therefore be noise and vibration from works and the increased use of vessels within the channel. Activities will be undertaken within the encapsulated scaffold and hence their impact will be diminished. Noise and vibration will not be transmitted directly into the water column. Frequent breaks will be taken to allow any fish holding up or downstream due to noise or vibration, to pass through the works. The works footprint is small in comparison to the overall reach of the river.	As above + Noise and vibration will be minimised, with regular breaks taken through the working shift.



Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
	For mitigation on impacts on water quality / chemistry, please refer to Table 9: Assessing whether water quality is at risk from your activity through the use, release or disturbance of chemicals.	
Water quality	Potential impacts to water quality have been assessed in Table 9: Assessing whether water quality is at risk from your activity through the use, release or disturbance of chemicals. Error! Reference source not found.	Mitigation for these potential impacts is described within Table 15: Proposed Mitigation Matri.
Protected areas	Works will be within the Neath Estuary SINC, which is designated for saltmarsh. There are no identified impacts to this.	
Invasive non-native species	A Biosecurity Management Plan has been developed for the project, which includes INNS. Please refer to Appendix A.	Please refer to Biosecurity Risk Assessment

7.7.1 The WFD guidance stipulates if a pre-assessment has not identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

7.7.2 However, if the pre-assessment identifies one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Table 14: Water Framework Directive (WFD) Assessment for the **Swansea Carboniferous Coal Measures** groundwater waterbody

WFD elements	Assessment
Chemical status	<u>Temporary impacts during construction</u> No identified impacts <u>Permanent effects during operation</u> No predicted impacts. No features of the structure will be changed a river bed level. <u>Assessment outcome</u> No adverse effects on the chemical status of the groundwater body have been identified and therefore this is scoped out of further assessment.
Quantitative status	<u>Temporary impacts during construction</u>



WFD elements	Assessment
	No anticipated interaction with groundwater during maintenance works. <u>Permanent effects during operation</u> No predicted impacts from the operation of the rail structure. <u>Assessment outcome</u> Effects to the quantitative status of the groundwater body have been scoped out of further assessment.



8. PROPOSED PROJECT MITIGATION

8.1 CONSTRUCTION PHASE MITIGATION

8.1.1 In Table 14 below, measures have been set out detailing mitigation to be implemented to minimise the potential project impacts.

Table 15: Proposed Mitigation Matrix

Potential Hazard	Mitigating Circumstances / Mitigation Measures	Likelihood of Impact with Mitigation
Estuarine habitat - Loss of habitat from project activities.	During the project, all welfare, storage, parking and general works will occur within hard standings being created a significant distance away from the designated environment. Only minor vegetation clearance will be required on either side of the rail abutments for access and to undertake masonry repairs to the abutments A pre-works check will be undertaken prior to vegetation clearance around the abutments and along access routes. Vegetation clearance will be a two-stage methodology, with the first stage cut been undertaken during winter 2022 (Jan/Feb) to reduce the potential impact to nesting birds during the coming breeding season.	Negligible Likelihood of significant for Impacts.
Salt marshes (also part of estuarine habitat)	The Neath Estuary is designated as a SNC due to its saltmarsh. There is not saltmarsh present within the works area, with the only area identified on Magic.gov, being the section adjacent to the A486 near the mouth of the estuary.	Negligible likelihood of impacts.
Mudflats and sandflats not covered by seawater at low tide – muddy gullies in the Estuary - Loss of habitat from project activities.	No works are proposed within the bed of the estuary	Negligible likelihood of impacts.
Release of contaminative chemicals from sediments within the estuary	There will be no excavation within the estuary. There are not activities as part of the works, which will disturb sediment within the estuary.	Negligible likelihood of impacts with mitigation in place.
Contamination of the estuary from spillage of hydrocarbons during refuelling of plant and equipment or due to equipment failure.	No plant/Machinery will work within the estuary with all works confined to the rail corridor or site compound. No refuelling of plant machinery or equipment will occur within the estuary habitat. All items of static plant will be paced within a plant nappy when in use or being stored. Plant will be checked for defects and leaks prior to the start of each shift. Bulk fuels will be stored in a bowser with secondary containment. This will be located in the site compound. Within the compound, a refuelling procedure will be implemented, whereby plant nappies will be placed beneath fuelling apertures during fuelling and refuelling will only be undertaken by designated, trained individuals using equipment specifically designed for that purpose.	Negligible likelihood of impacts with mitigation in place.



Potential Hazard	Mitigating Circumstances / Mitigation Measures	Likelihood of Impact with Mitigation																														
	Network Rail have a spillage plan and specialised contractor in place to respond to and clean up spills. The Contractor will develop and implement an Emergency Awareness and Response Plan. This will describe how spills will be contained and cleaned up. The emergency plan will appoint an Incident Coordinator, define roles and responsibilities during an incident, detail response procedures and contain an inventory of response equipment to be maintained on site. Plant will also be available to remove contaminated ballast from site if required. All machinery on site will undergo regular checks. If oil leaks or damage to hydraulic hoses is noted, plant and machinery will be removed from the site and isolated within the site compound with containment measures beneath the leak, until it has been repaired and signed off by a competent fitter. The contractor will develop an emergency response plan in the event a machine becomes stranded in the estuary from mechanical failure and cannot be removed ahead of the rising tide. Equipment will be available to syphon the fuel from the disabled machine in order to reduce the potential release of hydrocarbons into the estuary.																															
Contamination of the estuary from release of chemicals.	Unknown chemicals within historic paint removed from the structure - Grit vacuum blasting and conventional grit blasting will be undertaken using a blend of stone grit and iron silicate grit. This method of blasting contains all blast materials within the nozzle of the blasting gun. Conventional grit blasting may need to be used to reach into corners and sections of profile steel where the vacuum blasting gun cannot reach. The scaffolding around the structure will be fully encapsulated, with a containment deck on working levels. This will be sealed using heavy duty plastic sheeting and the overall scaffold encapsulated using Monoflex sheeting or similar. Grit blasting will result in the release of old paint and rust from the structure. This will be retained within the encapsulation system. Painting of the Structure - The paint system used will be Jotun Marathon 550 or similar approved and will be applied using predominantly spray painting but also brush painting – Please refer to Appendix B for Jotun Technical information. The paint system if released into the environment by accident is noted for its potential to be "Very toxic to aquatic life with long lasting effects." Consequently, control on how the system is applied is essential. <table><tr><th>Substrate temperature</th><th>5 °C</th><th>10 °C</th><th>15 °C</th><th>23 °C</th><th>40 °C</th></tr><tr><td>Surface (touch) dry</td><td>15 h</td><td>11 h</td><td>9 h</td><td>4 h</td><td>1.5 h</td></tr><tr><td>Walk-on-dry</td><td>26 h</td><td>18 h</td><td>14 h</td><td>8 h</td><td>3 h</td></tr><tr><td>Dry to over coat, minimum</td><td>26 h</td><td>18 h</td><td>14 h</td><td>8 h</td><td>3 h</td></tr><tr><td>Dried/cured for service</td><td>14 d</td><td>10 d</td><td>10 d</td><td>7 d</td><td>3 d</td></tr></table> Within the technical sheet extract above, the curing rate, will require the paint system to be applied at earliest opportunity as the tide recedes, allowing for the recommended curing times to be achieved. As the works are occurring during the spring/early summer, is it highly likely that the paint will have cured to a level that would be unlikely to leach its toxic properties readily into the environment (e.g., dry to the touch).	Substrate temperature	5 °C	10 °C	15 °C	23 °C	40 °C	Surface (touch) dry	15 h	11 h	9 h	4 h	1.5 h	Walk-on-dry	26 h	18 h	14 h	8 h	3 h	Dry to over coat, minimum	26 h	18 h	14 h	8 h	3 h	Dried/cured for service	14 d	10 d	10 d	7 d	3 d	Negligible likelihood of impacts with mitigation in place.
Substrate temperature	5 °C	10 °C	15 °C	23 °C	40 °C																											
Surface (touch) dry	15 h	11 h	9 h	4 h	1.5 h																											
Walk-on-dry	26 h	18 h	14 h	8 h	3 h																											
Dry to over coat, minimum	26 h	18 h	14 h	8 h	3 h																											
Dried/cured for service	14 d	10 d	10 d	7 d	3 d																											



Potential Hazard	Mitigating Circumstances / Mitigation Measures	Likelihood of Impact with Mitigation
	Additionally, painting won't occur during high winds as to avoid drift and unnecessary loss of paint into the environment. Furthermore, visual inspection of the paint system as the tide gradually covers the recently painted areas will be required, with photographic evidence taken and reported to the project environmental clerk of works. This process will also be required to support the quality management system for the project and demonstrate correct application of the paint system.	
Aggregations of non-breeding birds such as Red Shank & Snipe Noise disturbance / Visual Disturbance / Habitat Destruction.	Project activities will create a source of light and noise over 6-10 hours during the day. Times will vary due to the variation in the tide. As working hours are not continuous there will be periods where birds are not disturbed by site activities. However, it is likely that local bird populations are habituated to a level of disturbance from human activities, due to large numbers of pedestrians walking across the viaduct and trains crossing the viaduct. The Saltmarsh habitat adjacent to the access route/compound is heavily grazed and thus does not provide an abundance of nesting locations. Consequently, the project is unlikely to impact these species nesting sites.	Negligible likelihood of impacts with mitigation in place.
Individual wintering birds - Noise disturbance / Visual Disturbance / Habitat Destruction.	Works within the estuary are programmed to be undertaken between April and December 2022, with the main blockade where large sections of the viaduct superstructure are replaced from August to November 2022. It is anticipated that the majority of the works will be completed within the early stage of the blockade but works will be undertaken during the early winter. Wintering birds within the estuary will be habituated to levels of noise and human presence due to the operation of the viaduct but construction noise and human presence is likely to exceed this. Works are not programmed around the clock and therefore there will be periods when there are no works within the estuary.	Impact on Wintering Birds has been assessed as low.
Otter - Noise disturbance / Visual Disturbance / Habitat Destruction.	Toolbox Talks will inform site personnel on identifying the Annex II Species. No otter holts, resting up area or evidence (e.g. spraint) have been identified within proximity to the structure to date. The project will not represent a hard boundary preventing access to the wider estuary by this species. Otter would be able to move along the river channel and along the tops of the banks at all times during the works. Habitat impact is limited, however there may be a temporary impact to prey species disturbed by ongoing works. It is not anticipated that these works will have an impact on the population. Salmon, which are a prey of Otter will not be prevented from travelling up the estuary during the project. Although there will be an elevated human presence around the structure, it is unlikely that this will present an impassable barrier to salmon migrating to spawn. If task lighting is required, it will be designed to illuminate the works area but limit light spill into the estuary. This will be achieved through the use of LED flat glass luminaires set at a low level to the viaduct. Should an Otter be encountered during works, personnel will temporarily stand down until the animal has vacated the immediate area under its own volition. Although no activity or evidence has been confirmed within this locality to date, presence will be assumed and the principle contractor will remain vigilant.	Impact Not Likely to be Significant, with appropriate mitigation



Potential Hazard	Mitigating Circumstances / Mitigation Measures	Likelihood of Impact with Mitigation
Fish Assemblage – Pollution and water quality impacts.	Pollution control and Biosecurity measures implemented as described in above will minimise water quality impacts on fish species.	Impact Not Likely to be Significant, with appropriate mitigation
13. Fish Assemblage - Noise disturbance / Visual Disturbance / Habitat Destruction.	There will be no physical blocks to fish migrating through the estuary. There will be no physical blocks to fish migrating through the estuary. The scaffold system will extend below water level at high tide but this will be limited to around the abutments and piers, leaving clear passage through the bridge. During high tide the entire width of the estuary will be available for use by migrating / foraging fish. Pontoons will be used around the piers, which will rise and fall with the tide. A barge will be used to transport materials for a portion of the works but this will be located either alongside or between the piers of the viaduct. These will allow free passage for fish beneath the pontoons. Key impacts on fish will therefore be noise and vibration from works on the upper sections of the structure. The structure is currently in use by rail vehicles and pedestrians, with trains and persons walking along the structure in a semi regular fashion. The viaduct is currently used by trains and a significant number of pedestrians. This implies that fish within the estuary are habituated to noise and vibration from the structure. Noise and vibration during the works will be of a greater magnitude and longer duration, particularly during the 2022 late summer / autumn blockade (August to November 2022). Complete mitigation of these impacts will be difficult but best practice will be used in terms of the construction methodology to limit this i.e. no site radios, modern well silenced plant, use of the Maybey Bridge Temporary Works System to lift sections of the bridge intact to reduce the need for disassembly of elements of the structure and minimise the duration of the works, use of hydraulic cutters as opposed to disc cutters. During works which have potential to produce elevated levels of noise and vibration such as the cutting of steelwork the movement of rail vehicles along the viaduct, the craning out of sections of the viaduct using the jig system, breaks of 30 minutes will be taken in each 2 hour period of work to allow fish to pass (this will not be possible during some operations i.e. crane lifts and the work period may need to be extended but a suitable break will be taken at the end of the work period) Night works are likely during rail blockade and as part of Saturday Night possessions. Task lighting will be designed to illuminate the works area but limit light spill into the estuary. This will be achieved through the use of LED flat glass luminaires set at a low level to the viaduct..	Works have potential to cause a Minor Significant impact.
14. Fish Assemblage - Contamination of the estuary from spillage	See comments under estuarine habitat	Impact Not Likely to be Significant



Potential Hazard	Mitigating Circumstances / Mitigation Measures	Likelihood of Impact with Mitigation
15. Biosecurity	A detailed Biosecurity Plan has been prepared for the project. This includes the following: - Areas of Japanese knotweed along and adjacent to the southern access track will be mapped and demarcated using netlon fencing and signs. Areas of Himalayan balsam will be mapped and demarcated. - 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/ - 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. - 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 and upon leaving site. 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. The Biodiversity Management Plan can be found in Appendix A.	Impact Not Likely to be Significant

8.2 OPERATION PHASE MITIGATION

- 8.2.1 The replacement of sections of the structure will be undertaken on a like for like basis. The paint system specified offers and improvement in potential for the leaching of damaging chemicals over the current system.
- 8.2.2 No Operational Phase Mitigation is proposed, beyond controls currently in place by Network Rail to deal with potential pollution events due to accidental release of fluids from trains and emergency situations.

9. WFD CONCLUSION

- 9.1.1 Due to the nature and scale of the works to be undertaken during the River Neath Swing Bridge project, providing the mitigation outlined within this document and within the project Environmental and Social Management Plan is implemented, this project will not prevent any of the water bodies associated with the project from meeting their Water Framework Directive objectives.



APPENDIX A - BIOSECURITY MANAGEMENT PLAN & RISK ASSESSMENT

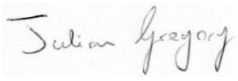


2021

SDI1 – River Neath Swing Bridge

Biosecurity Management Plan & Risk Assessment



DOCUMENT INFORMATION			
Project	SDI1 - River Neath Swing Bridge		
Location	River Neath, ELR: SDI1, Mileage: 207mile 63chain, Central Grid Ref: SS 73039 96367		
Title	Biosecurity Management Plan & Risk Assessment		
Document Ref	EV000702/BSMP-000	Issue / Revision	0.0
File reference	EV000702.6/BSMP-000		
Start Date	28/11/2021		
	Name	Signature	Date
Assessment Undertaken by	Owain Waters		28/11/2021
Document prepared by	Owain Waters		28/11/2021
Checked by	Julian Gregory		09/12/2021
Authorised by	Julian Gregory		09/12/2021

DOCUMENT CONTROL		
Rev.	Date	Description
00	12/21	Issued.

Disclaimer

No part of this document may be copied or reproduced by any means without prior written permission from EcoVigour. If you have received this report in error, please destroy all copies in your possession or control.

This document has been prepared for the exclusive use of the commissioning party/parties and unless otherwise agreed in writing by EcoVigour, no other party may use, make use of, or rely on the contents of the report.

No liability is accepted by EcoVigour for any use of this document, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the document are on the basis of EcoVigour using due skill, care and diligence in the preparation of the same and no explicit warranty is provided as to their accuracy.



CONTENTS

1. Introduction	3
1.1 Overview.....	3
1.2 Project Background	3
1.3 Site Context	4
1.4 Vessels to be used during the project	5
1.5 Vessels Launchin Location	6
1.6 Invasive Species – Summary	6
1.7 Priority Monitoring and Surveillance List for Wales	7
1.8 Characteristics of Known INNS	8
1.9 Known Terrestrial INNS	10
2. Monitoring and corrective action.....	14
2.1 INNS monitoring	14
2.2 Corrective measures for vessels should non-compliance occur	14
3. Conclusion	14

FIGURES

Figure 1: Neath Swing Bridge (taken from western shore).....	3
Figure 2: Site Context.....	4
Figure 3: Monkstone Marina.	6
Figure 5: Location of Knotweed stand.	10

TABLES

Table 1: List of Vessels to be used. (Images are examples of the model to be used).....	5
Table 2: Marine INNS recorded proximity to Port of Origin and Adjacent to Project.	7
Table 3: Summary of Marine INNS characteristics.....	8



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 its relation to the wider area is illustrated in Figure 2 below. Rail Mileage: 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.

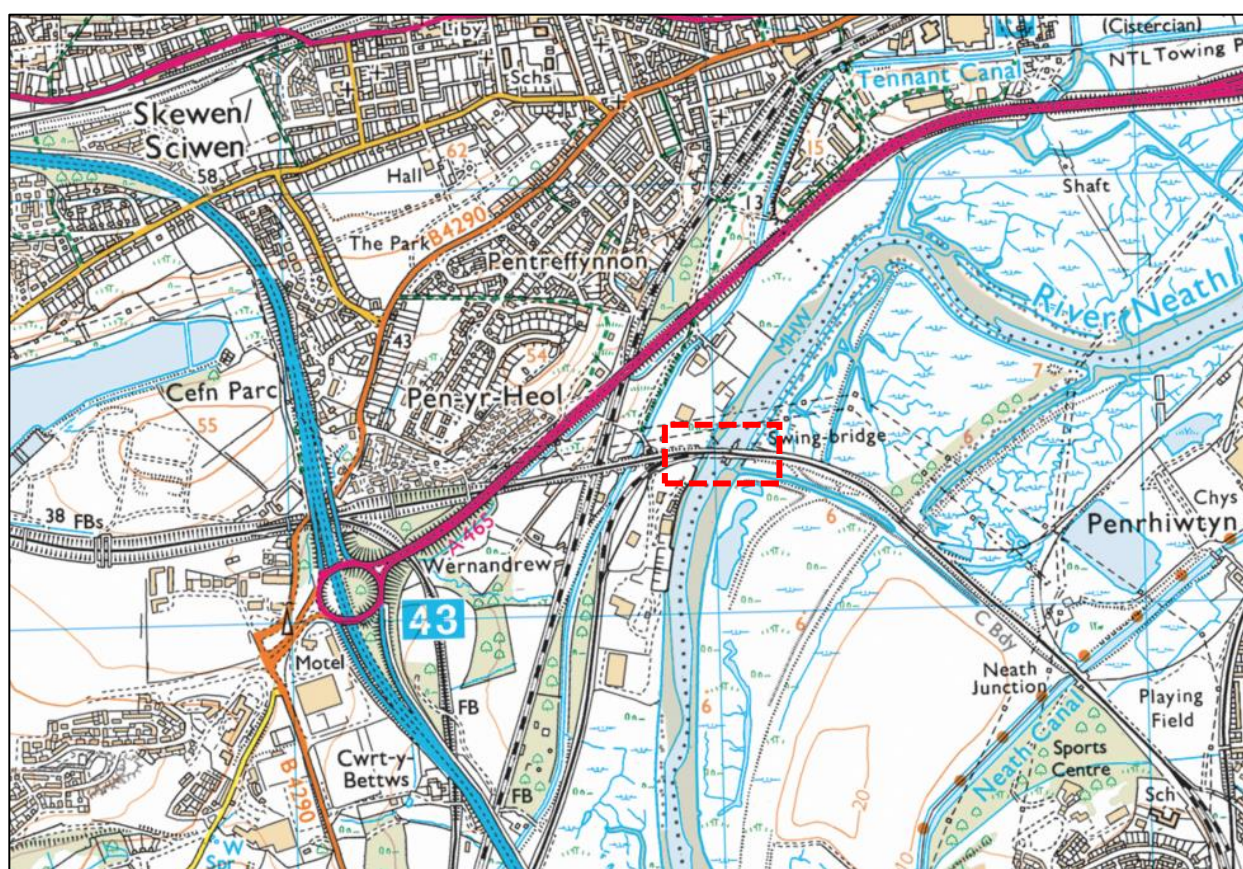


Figure 2: Site Context



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 via 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 highlight 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 Marina 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 (<i>Crepidula fornicata</i>) (High Risk Status) Example: <i>Austrominius modestus</i> (Low Risk Status)	Example: <i>Austrominius modestus</i> (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 (<i>Crepidula fornicata</i>) 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 (<i>Grateloupia turuturu</i>) (includes <i>G. doryphora</i> . All records in the NE Atlantic have been assigned to <i>G. turuturu</i> , 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 (<i>Gracilaria vermiculophylla</i>) Alga	Main Pathway of introduction is via oyster movements Present in Northern Ireland	MSFD 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 (<i>Gracilaria vermiculophylla</i>) Alga
Bonnemaisonia's hook weed (<i>Bonnemaisonia hamifera</i>) Red alga	Moderate (CEFAS Rapid Risk Assessment) *	MSFD monitoring list/ WFD	Ballast water and fouling	Very few records exist of <i>B. hamifera</i> 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 <i>B. hamifera</i> has not been classified in the same way.	
Japanese wireweed (<i>Sargassum muticum</i>) 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, dependant on land ownership/management.
Pacific oyster (<i>Crassostrea gigas</i>) Portugese oyster (<i>Crassostrea angulata</i>)	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 not 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-COMPLIANCE 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.



APPENDIX B – GRIT BLASTING DATA SHEETS





TECHNICAL & MATERIAL

SAFETY DATA SHEET

J BLAST SUPA (IRON SILICATE)

Air cooled iron silicate is a byproduct of copper refining operations, it is cast into a furnace pot and then left to cool. Selected material is processed, graded then marketed as an abrasive grit mainly for use in conjunction with open nozzle blast cleaning equipment.

TECHNICAL DATA

GRADE	Grain Size mm	Average Max. profile on Mild Steel # R max microns	Cleanliness Standard Attainable **	Typical Applications
STANDARD	2.5 – 1.5	100 – 150 Coarse **	Sa – 2 ½ (near white metal)	Heavily corroded steel, barnacles, thick coatings, cement build up
SUPA	1.5 – 0.2	75 – 100 Medium **	Sa – 3 (white metal)	Ship Hulls, pipe joints, tank internals, general steel fabrications.
SUPA FINE	0.7 – 0.2	25 – 50 Fine **	Sa – 3	Selective coating removal, wet blasting, motor body repairs, etc
SPECIAL	0.2 – 0.15	N/A	Sa – 3	De-carbonising, fan blades cleaning, furniture restoration.

** On Mild Steel

The Surface Finishing Equipment Group Ltd



Surface Finishing
Equipment Group

COMPOSITION INFORMATION

Hazardous Components in Product under EC – no hazardous components.

The material is a synthetic mineral with a strongly bonded matrix structure of different elements produced by quenching molten slag into cold water.

Component	Symbol	Concentration %
Iron Oxide	FeO	40 - 50
Silica Oxide	SiO ²	27 –30
Calcium Oxide	CaO	0 -2.5
Aluminium Oxide	Al ² O ³	0 – 4.5
Magnesium Oxide	MgO	0.2 – 1.5
Zinc Oxide	ZnO	0.5 –1.5
Copper Oxide	CuO	0 - 1.0
Sulphur	S	0.2 - 0.7
Nickel Oxide	NiO	20 – 250 g/t
Lead Oxide	PbO	0.1 – 0.3

All other elements are trace elements.

There is analytically no free silica in this product.

Physical Properties

Non inflammable, non hygroscopic angular, black in colour.

Aggregate Abrasion Value :

Polished Stone Value	38
Aggregate Crushing Value	19%
Aggregate Impact Value	9%
finer value kN	210
Hardness (mohs)	6-7



HEALTH AND SAFETY DATA SHEET

J BLAST SUPA (IRON SILICATE)

Product and Reference: JBlast Supa, Supafine, Standard, and Special
Iron Silicate Synthetic Mineral

Date of Issue: 08/08/2013

1. IDENTIFICATION OF THE PREPARATION AND COMPANY

Company: The Surface Finishing Equipment Group Ltd

Product Code: J Blast Supa, Supafine, Standard, and Special

Intended Use: Abrasive, flooring additive and decorative aggregate.

Name and full address: The Surface Finishing Equipment Group Ltd
Comprising :
Hogg Blasting & Finishing Equipment Ltd
Unit 10 Armstrong Road, Armstrong Industrial Estate, Washington,
Tyne & Wear, United Kingdom, NE37 1PR.
Tel. (0191) 415 3030 Fax (0191) 415 5345
AND
Abraclean Ltd
4 Kelbrook Road, MANCHESTER. M11 2QA
Tel: (0161) 480 8087 Fax: (0161) 480 4424

The Surface Finishing Equipment Group Ltd



Surface Finishing
Equipment Group

2. HAZARD IDENTIFICATION

Main Hazards	Dust from handling operations
Health Effects - Eyes	Dust may cause slight transient irritation.
Health Effects – Skin	Repeated or prolonged contact may produce irritation.
Health Effects - Ingestion	None known
Health Effects - Inhalation	Exposure to dust may have the following effects:- irritation of nose, throat and respiratory tract,

3. FIRST AID MEASURES

General:

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation:

Remove to fresh air, keep the patient warm and at rest. If breathing is irregular or stopped, administer artificial respiration. Give nothing by mouth. If unconscious, place in the recovery position and seek medical advice.

Skin Contact:

Remove contaminated clothing. Wash skin thoroughly with soap and water or use a proprietary skin cleaner.

Ingestion:

Mouth rinse and give water to drink.

Eye:

Eye wash with plenty of water.

4. FIRE FIGHTING MEASURES

Extinguishing media: Water

6. ACCIDENTAL RELEASE MEASURES

Recovery measures:

Product can be swept up dry or wet. Personnel should use appropriate personal protective equipment particularly if material is in powder form and dry.

7. HANDLING AND STORAGE

Handling: Avoid breathing dust and spillage whilst handling.

The Manual Handling Operations Regulations may apply to the handling of bags when carrying out assessments.

Storage: The storage and use of this product is not subject to any requirements but it should be kept dry where this is important for further process use.

The Surface Finishing Equipment Group Ltd



Surface Finishing
Equipment Group

8. EXPOSURE CONTROLS /PERSONAL PROTECTION

General:

- Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should only be employed in processes in which this product is used under supervision.
- Persons with a history of skin sensitisation problems should only be employed in processes in which this product is used under appropriate medical supervision.

Engineering Measures:

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction during process use.

Occupational Exposure Standards:

- | | |
|--------------------|--|
| 1. Total dust | Less than 10 mg per cubic metre 8h TWA |
| 2. Respirable dust | Less than 4 mg per cubic metre 8h TWA |

Personal Protection:

All Personal Protective Equipment, include Respiratory Protective Equipment, used to control exposure to hazardous substances must be selected to meet the requirements of the COSHH Regulations.

Respiratory Protection:

None except where used in applications that would cause dust, and then appropriate respiratory protection should be used depending on the application.

Hand Protection:

When skin exposure may occur, advice should be sought from glove suppliers on appropriate types. Barrier creams may help to protect exposed areas of the skin but are not substitutes for full physical protection.

Eye Protection:

Eye protection designed to protect against exposure which should be an EC approved helmet in blasting operations.

Skin Protection:

Cotton or cotton/synthetic overalls or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water or a proprietary skin cleaner.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid, angular black granules
Odour	None
Explosion Limits (%)	None
Flash point:	None
Solubility in water (kg/m3)	Insoluble
Density (kg/m3)	1800
Hardness	7 - 8 mohs
Specific gravity	3.7
Chloride content	Less than 10 ppm

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions
-----------	--------------------------------

The Surface Finishing Equipment Group Ltd



Surface Finishing
Equipment Group

11. TOXICOLOGICAL INFORMATION

Acute Toxicity	No relevant studies identified
Irritancy - Eyes	Splashes in the eye may cause irritation and irreversible local damage
Irritancy - Skin	Repeated or prolonged contact with the product may lead to skin irritation
Sub-acute/Subchronic Toxicity	No relevant studies identified.
Chronic Toxicity/Carcinogenicity	Appropriate protective measures and good hygiene practices should be followed in order to minimise potential exposure.
Genotoxicity	No relevant studies identified.
Reproductive/Developmental	
Toxicity	No relevant studies identified
Human Data	Inhalation over long periods of time may constitute a health hazard
Additional Data	None

12. ECOLOGICAL INFORMATION

There is no data available on the product itself. The Air Pollution Control requirements of regulations made under the Environmental Protection Act may apply to the use of this product.

13. DISPOSAL CONSIDERATIONS

The material in its supplied form is non hazardous inert solid waste and is classified as such under Appendix A section 10 06 01 of the Consolidated European Waste Catalogue EC Landfill Directive (16 th July 2004),

The disposal of material after it has been used may cause the product to fall into a different category.

The Surface Finishing Equipment Group Ltd



Surface Finishing
Equipment Group

14. TRANSPORT INFORMATION

UN Number	Not regulated
ADR/RID substance ID number	Not regulated
IMDG	Not regulated
Tremcard No. TEC ®	Not regulated

15. REGULATORY INFORMATION

The information contained in this safety data sheet does not constitute the suppliers own assessment of workplace risks as required by other Health and Safety legislation. The provisions of the Health and Safety at Work etc. Act and the Control of Substances Hazardous to Health Regulations apply to the use of this product at work.

16. OTHER INFORMATION

The information contained in this safety data sheet is based on the present state of knowledge and current national legislation. It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications, and we do not accept any liability for any loss or damage , however arising, which may result directly or indirectly from the use of this information.

Further information and relevant advice can be found in: The Control of Substances Hazardous to Health Regulations 1988 (SI 1988. 1657).

The Manual Handling Operations Regulations 1992 (SI 1992:2793)

The Environmental Protection (Duty of Care) Regulations 1992 (SI 1992-2839).

Technical Data Sheet JBlast, Stonegrit, SC

Trade Names: JBlast, Stonegrit, SC
Original Issue Date: September 2003
This Issue: February 2016

SECTION 1 Chemical Analysis

JBlast, Stonegrit and SC are produced from mineral slags which are the by-product for furnace operations. Selected material is processed, graded then marketed as an abrasive grit mainly for use in conjunction with open nozzle blast cleaning equipment. The metals and oxides in JBlast form complex silicates, aluminates and oxides which as such do not constitute a hazard to health and safety.

Chemical Analysis	Iron Silicate	Aluminium Silicate	Calcium Silicate	Calcium Silicate
	Standard Supa Supafine Special	Standard Supa Supafine	Stonegrit Coarse	S.C.
	% Range	% Range	% Range	% Range
Iron Oxide (FeO)	25 - 55	8 -12	1 -5	0 -10
Silica (SiO ₂)	20 - 32	45 -52	45 -55	35 -45
Aluminium Oxide (Al ₂ O ₃)	8 - 12	22 -31	10 -20	10 -15
Calcium Oxide (CaO)	4 - 15	3 -5	25 -40	35 -45
Zinc Oxide (ZnO)	0 -12	0 -0.2	0 -0.15	0 -0.15
Copper Oxide (CuO)	0 - 1.5	0 -0.2	0 -0.15	0 -0.15
Tin Oxide (SnO)	0 - 0.8	0 -0.2	0 -0.15	0 -0.15
Nickel Oxide (NiO)	0 -0.6	0 -0.1	0 -0.15	0 -0.15
Lead Oxide (PbO)	0 - 0.7	0 -0.2	0 -0.15	0 -0.15
Magnesium Oxide (MgO)	0 - 3.0	1 -3.0	2 -4	6 -10
Manganese Oxide (MnO)	0 -1.0	0 -0.1	0 -1	0 -10
Free Silica	< 0.1	< 0.1	< 0.1	< 0.1
Properties				
Typical Conductivity (ms/m)	12	6	15	10
Chloride Content (ppm)	< 7	< 7	< 7	< 7
Hardness (mohs)	7 - 8	6 - 7	6 - 7	5 - 6
Bulk Density (Kg/dm ³)	1.75	1.30	1.45	1.35
Specific Gravity (Kg/dm ³)	3.7	2.5	3.1	2.8

SECTION 2

Current Legislation

The use of materials likely to cause silicosis, such as natural silica sand and ground quartz type rocks, is restricted or completely banned in most industrial countries. The risk of contracting silicosis by inhaling the respirable dust produced from these materials in blast cleaning is high and silica sand is prohibited in:

U.K. -The Control of Substances Hazardous to Health Regulations 1999. Statutory Instrument Number 437.

Belgium -Royal Decree, 22.10.64

Netherlands - Zandstraal besluit, Stb 434

France - Decree 558, 6.6.69

Germany - Order on Hazardous Working Materials (T.RgS503).

SECTION 3

Physical Properties

–Non-flammable, non-hydroscopic angular grit. For more detailed information, see safety data sheets SDS31 for JBlast Iron Silicate, SDS 32 for JBlast Aluminium Silicate, SDS 33 for Stonegrit, SDS 34 for SC.

SECTION 4

Special Precautions

Special Precautions -In use, protection is required to meet threshold limit values for general dusts of 10 mg/m³ (for total inhalable dust) and 5 mg/m³ (respirable dust). Please also note the OELs for amorphous silicon dioxide dust of 6mg (inhalable) and 2.4 mg/m³ (respirable). The user must establish any hazards present in the surface coatings being removed, which may reduce the occupational exposure limit (O.E.L.). The Petroleum section of the National Safety Council carried out research and concluded that the sparks generated when grit blasting are not capable of igniting inflammable atmospheres providing special precautions are taken. These results were later confirmed by a leading U.K. Oil Company. Refer to our Technical Dept. for copies of reports.

SECTION 5

Disposal

The abrasive must be disposed of in accordance with national legislation (See Section 16) and local regulations. The material as supplied is classed as a non-hazardous inert solid waste. Spent abrasive used as a blasting medium must be disposed of under classification 12 01 16 (waste blasting material containing dangerous substances) or 12 01 17 (waste blasting material other than those mentioned in 12 01 16). The waste producer must determine if hazardous substances in the coating being removed are likely to cause the waste to be hazardous.

SECTION 6

Handling and Storage

Load per pallet should not exceed 2 tonnes and the pallets should not be stacked more than two high. Material should be kept dry.

SECTION 7: Grading and typical profiles

Grade	Grain Size mm	Avg max profile on mild steel # Rmax in microns	Cleanliness standard attainable on mild steel*	Typical applications
STANDARD	2.5 - 1.4	100 - 150 Coarse #	Sa - 2 ½ (near white metal)	Penetration and removal of high build coatings on steel
SUPA	1.5 - 0.2	75 - 100 Medium #	Sa - 3 (white metal)	General steel fabrications, steel bridges, ship storage tanks and plant refurbishment. Provides ideal profile for most coatings
SUPAFINE	0.7 - 0.2	25 - 50 Fine #	Sa - 3	Removal of low film thickness coatings / light corrosion where a low surface profile is specified.
SPECIAL	0.2 - 0.15	N/A	Sa - 3	Surface preparation resulting in a minimal surface etch, e.g. cleaning turbine blades
STONEGRIT COARSE	2.5 - 1.4	100 - 150	Sa - 2 ½	As Standard grade on steel Removal of heavy coatings on stone facings. Aggregate exposure in concrete
STONEGRIT FINE	1.5 - 0.2	50 - 75	Sa - 3	As Supa grade on steel General cleaning of stone, preparation of stainless steel prior to coating.
STONEGRIT EXTRAFINE	0.7 - 0.2	25 - 50	Sa - 3	As Supafine grade on steel Cleaning of soft stonework and brick, provides uniform finish to uncoated aluminium and stainless steel. Removal of gel coat and paint surfaces from G.R.P. boats
S.C.	0.6 - 0.1	N/A	N/A	Cleaning of ornate buildings, preserving detailed features. Also suitable for cleaning wood, minimising grain damage.

Equivalent to International Standard ISO 8503-1 (1988) and BS 7079 Part C1 (1989) Surface Roughness category as determined by the comparator gauge

* Indications of average maximum profile, R max, and cleanliness are based on test results obtained under controlled conditions on new mild steel plate with intact mill scale. Because of the large number of variables encountered in site conditions the user must satisfy himself as to the suitability of the abrasive for his particular purpose.

Standards - All our abrasives conform to the relevant part (i.e. non-metallic type) of International Standards Organisation specifications ISO 11126 and British Standard specification BS 7079 part F excepting that our particle size ranges for some grades differ from the ranges quoted in the standard.

Further Technical Advice -Operator Training - Technical Information - Site Assistance - Site Demonstrations - Equipment selection – Contact Hodge Clemco Ltd on 0114 254 8811 or visit our web site www.hodgeclemco.co.uk



APPENDIX C – JOTUM MARATHON 550 – SAFETY DATA SHEET





JOTUN

Marathon | 550

**THE TOUGHEST
UNIVERSAL HIGH BUILD
EPOXY PRIMER FOR ALL
AREAS DOWN TO ST2.
ENGINEERED FOR
FASTER PRODUCTION.**

Product

Marathon 550 is surface tolerant for early immersion, and can be applied on damp surfaces. It is high build and abrasion resistant, low VOC and made for efficient application.

TYPICAL USE

Suitable for structural steel and piping to be exposed to corrosive environments up to very high and immersed. Recommended for offshore environments, refineries, power plants, bridges, buildings, mining equipment and general structural steel. Especially suited in areas where high mechanical strength is required, such as splash zones. Compatible with cathodic protection systems.

TECHNICAL INFO

- High solids, high build abrasion resistant epoxy coating
- Tolerance for damp surfaces during application – ideal for application on hydro blasted surfaces
- Excellent compatibility with sacrificial and impressed current cathodic protection systems
- Compliant and tested to NORSOK M501 for splash zones and submerged areas (system 7) and decks (system 4)
- Available in a wide range of colours according to Jotun Multicolour System (MCI)
- Wide DFT range 200–550 microns

SAFETY DATA SHEET



Marathon 550 Comp A

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : Marathon 550 Comp A
Product code : 33343
Product description : Paint.
Product type : Liquid.
Other means of identification : Not available.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use in coatings - Industrial use
 Use in coatings - Professional use

1.3 Details of the supplier of the safety data sheet

Jotun Paints (Europe) Ltd.
 Stather Road
 Flixborough, Scunthorpe
 North Lincolnshire
 DN15 8RR
 England

Tel: +44 17 24 40 00 00
 Fax: +44 17 24 40 01 00
 SDSJotun@jotun.com

1.4 Emergency telephone number

Contact NHS Direct; phone 0845 4647 or 111. Open 24/7.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
 Skin Irrit. 2, H315
 Eye Dam. 1, H318
 Skin Sens. 1, H317
 Aquatic Chronic 2, H411

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.
 See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Marathon 550 Comp A**SECTION 2: Hazards identification**

Signal word	: Danger.
Hazard statements	: H226 - Flammable liquid and vapour. H318 - Causes serious eye damage. H315 - Causes skin irritation. H317 - May cause an allergic skin reaction. H411 - Toxic to aquatic life with long lasting effects.
<u>Precautionary statements</u>	
General	: Not applicable.
Prevention	: P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P273 - Avoid release to the environment.
Response	: P391 - Collect spillage. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: P403 - Store in a well-ventilated place. P235 - Keep cool.
Disposal	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	: epoxy resin (MW ≤ 700) silane, trimethoxy[3-(oxiranyl-methoxy)propyl]- butan-1-ol
Supplemental label elements	: Contains epoxy constituents. May produce an allergic reaction.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: Not applicable.
<u>Special packaging requirements</u>	
Containers to be fitted with child-resistant fastenings	: Not applicable.
Tactile warning of danger	: Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	: None known.
--	---------------

The mixture may be a skin sensitiser. It may also be a skin irritant and repeated contact may increase this effect.

SECTION 3: Composition/information on ingredients**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	Weight %	Regulation (EC) No. 1272/2008 [CLP]	Type
epoxy resin (MW ≤ 700)	REACH #: 01-2119456619-26 EC: 216-823-5 CAS: 1675-54-3 Index: 603-073-00-2	≥25 - ≤50	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1B, H317 Aquatic Chronic 2, H411	[1]
silane, trimethoxy[3-(oxiranyl-methoxy)propyl]-	EC: 219-784-2 CAS: 2530-83-8	≤5	Eye Dam. 1, H318	[1]
butan-1-ol	REACH #:	≤5	Flam. Liq. 3, H226	[1] [2]

Marathon 550 Comp A**SECTION 3: Composition/information on ingredients**

xylene	01-2119484630-38 EC: 200-751-6 CAS: 71-36-3 Index: 603-004-00-6		Acute Tox. 4, H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 STOT SE 3, H336 Flam. Liq. 3, H226	[1] [2]
12-hydroxyoctadecanoic acid, reaction products with 1, 3-benzenedimethanamine and hexamethylenediamine	REACH #: 01-2119488216-32 EC: 215-535-7 CAS: 1330-20-7 Index: 601-022-00-9	≤3	Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Asp. Tox. 1, H304	[1]
benzyl alcohol	REACH #: 01-0000017900-73 EC: 432-840-2 CAS: 220926-97-6 Index: 616-201-00-7	≤3	Acute Tox. 4, H332 STOT RE 2, H373 Aquatic Chronic 4, H413	[1]
	REACH #: 01-2119492630-38 EC: 202-859-9 CAS: 100-51-6	≤3	Acute Tox. 4, H302 Acute Tox. 4, H332 Eye Irrit. 2, H319	[1]
See Section 16 for the full text of the H statements declared above.				

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

[6] Additional disclosure due to company policy

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures**4.1 Description of first aid measures**

- General** : In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and seek medical advice.
- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek immediate medical attention.
- Inhalation** : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
- Skin contact** : Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognised skin cleanser. Do NOT use solvents or thinners.
- Ingestion** : If swallowed, seek medical advice immediately and show the container or label. Keep person warm and at rest. Do NOT induce vomiting.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Marathon 550 Comp A

SECTION 4: First aid measures

There are no data available on the mixture itself. The mixture has been assessed following the conventional method of the CLP Regulation (EC) No 1272/2008 and is classified for toxicological properties accordingly. See Sections 2 and 3 for details.

Exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Solvents may cause some of the above effects by absorption through the skin. Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin. Ingestion may cause nausea, diarrhea and vomiting.

Over-exposure signs/symptoms

- | | |
|---------------------|--|
| Eye contact | : Adverse symptoms may include the following:
pain
watering
redness |
| Inhalation | : No specific data. |
| Skin contact | : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur |
| Ingestion | : Adverse symptoms may include the following:
stomach pains |

4.3 Indication of any immediate medical attention and special treatment needed

- | | |
|----------------------------|---|
| Notes to physician | : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| Specific treatments | : No specific treatment. |

See toxicological information (Section 11)

SECTION 5: Firefighting measures

5.1 Extinguishing media

- | | |
|---------------------------------------|--|
| Suitable extinguishing media | : Recommended: alcohol-resistant foam, CO ₂ , powders, water spray. |
| Unsuitable extinguishing media | : Do not use water jet. |

5.2 Special hazards arising from the substance or mixture

- | | |
|--|---|
| Hazards from the substance or mixture | : Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. |
| Hazardous combustion products | : Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen. |

5.3 Advice for firefighters

- | | |
|---|---|
| Special protective actions for fire-fighters | : Cool closed containers exposed to fire with water. Do not release runoff from fire to drains or watercourses. |
| Special protective equipment for fire-fighters | : Appropriate breathing apparatus may be required. |

Marathon 550 Comp A

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Exclude sources of ignition and ventilate the area. Avoid breathing vapour or mist. Refer to protective measures listed in sections 7 and 8.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- 6.2 Environmental precautions** : Do not allow to enter drains or watercourses. If the product contaminates lakes, rivers, or sewers, inform the appropriate authorities in accordance with local regulations.

- 6.3 Methods and material for containment and cleaning up** : Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Preferably clean with a detergent. Avoid using solvents.

- 6.4 Reference to other sections** : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Prevent the creation of flammable or explosive concentrations of vapours in air and avoid vapour concentrations higher than the occupational exposure limits.

In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard.

Mixture may charge electrostatically: always use earthing leads when transferring from one container to another. Operators should wear antistatic footwear and clothing and floors should be of the conducting type.

Keep away from heat, sparks and flame. No sparking tools should be used.

Avoid contact with skin and eyes. Avoid the inhalation of dust, particulates, spray or mist arising from the application of this mixture. Avoid inhalation of dust from sanding.

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Put on appropriate personal protective equipment (see Section 8).

Never use pressure to empty. Container is not a pressure vessel.

Always keep in containers made from the same material as the original one.

Comply with the health and safety at work laws.

Do not allow to enter drains or watercourses.

Information on fire and explosion protection

Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air.

When operators, whether spraying or not, have to work inside the spray booth, ventilation is unlikely to be sufficient to control particulates and solvent vapour in all cases. In such circumstances they should wear a compressed air-fed respirator during the spraying process and until such time as the particulates and solvent vapour concentration has fallen below the exposure limits.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations.

Notes on joint storage

Keep away from: oxidising agents, strong alkalis, strong acids.

Additional information on storage conditions

Observe label precautions. Store in a dry, cool and well-ventilated area. Keep away from heat and direct sunlight. Keep away from sources of ignition. No smoking. Prevent unauthorised access. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

Marathon 550 Comp A**SECTION 7: Handling and storage****Recommendations** : Not available.**Industrial sector specific solutions** : Not available.**SECTION 8: Exposure controls/personal protection**

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

8.1 Control parameters**Occupational exposure limits**

Product/ingredient name	Exposure limit values
butan-1-ol	EH40/2005 WELs (United Kingdom (UK), 8/2018). Absorbed through skin. STEL: 154 mg/m ³ 15 minutes. STEL: 50 ppm 15 minutes.
xylene	EH40/2005 WELs (United Kingdom (UK), 8/2018). Absorbed through skin. STEL: 441 mg/m ³ 15 minutes. STEL: 100 ppm 15 minutes. TWA: 220 mg/m ³ 8 hours. TWA: 50 ppm 8 hours.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Exposure	Value	Population	Effects
epoxy resin (MW ≤ 700)	Short term Dermal	8.33 mg/kg bw/day	Workers	Systemic
	Short term Inhalation	12.25 mg/m ³	Workers	Systemic
	Long term Dermal	8.33 mg/kg bw/day	Workers	Systemic
	Long term Inhalation	12.25 mg/m ³	Workers	Systemic
	Short term Dermal	3.571 mg/kg bw/day	Consumers	Systemic
	Short term Oral	0.75 mg/kg bw/day	Consumers	Systemic
	Long term Dermal	3.571 mg/kg bw/day	Consumers	Systemic
	Long term Oral	0.75 mg/kg bw/day	Consumers	Systemic
butan-1-ol	Long term Inhalation	310 mg/m ³	Workers	Local
	Long term Oral	3.125 mg/kg bw/day	Consumers	Systemic
	Long term Inhalation	55 mg/m ³	Consumers	Local

Marathon 550 Comp A**SECTION 8: Exposure controls/personal protection**

xylene	Short term Inhalation	289 mg/m ³	Workers	Systemic
	Short term Inhalation	289 mg/m ³	Workers	Local
	Long term Dermal	180 mg/kg bw/day	Workers	Systemic
	Long term Inhalation	77 mg/m ³	Workers	Systemic
	Long term Dermal	108 mg/kg bw/day	Consumers	Systemic
	Long term Inhalation	14.8 mg/m ³	Consumers	Systemic
	Long term Oral	1.6 mg/kg bw/day	Consumers	Systemic
	Short term Inhalation	450 mg/m ³	Workers	Systemic
	Long term Inhalation	90 mg/m ³	Workers	Systemic
	Short term Dermal	47 mg/kg bw/day	Workers	Systemic
benzyl alcohol	Long term Dermal	9.5 mg/kg bw/day	Workers	Systemic
	Short term Dermal	28.5 mg/kg bw/day	Consumers	Systemic
	Short term Oral	25 mg/kg bw/day	Consumers	Systemic
	Long term Dermal	5.7 mg/kg bw/day	Consumers	Systemic
	Long term Oral	5 mg/kg bw/day	Consumers	Systemic
	Long term Inhalation	8.11 mg/m ³	Consumers	Systemic
	Short term Inhalation	40.55 mg/m ³	Consumers	Systemic

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
epoxy resin (MW ≤ 700)	Fresh water	0.006 mg/l	-
	Marine	0.0006 mg/l	-
	Sewage Treatment Plant	10 mg/l	-
	Fresh water sediment	0.996 mg/l	-
	Marine water sediment	0.0996 mg/l	-
	Soil	0.196 mg/l	-
butan-1-ol	Fresh water	0.082 mg/l	-
	Marine	0.0082 mg/l	-
	Sewage Treatment Plant	2476 mg/l	-
	Fresh water sediment	0.178 mg/kg dwt	-
	Marine water sediment	0.0178 mg/kg dwt	-
	Soil	0.015 mg/kg dwt	-
xylene	Fresh water	0.327 mg/l	-
	Marine	0.327 mg/l	-
	Sewage Treatment Plant	6.58 mg/l	-
	Fresh water sediment	12.46 mg/kg dwt	-
	Marine water sediment	12.46 mg/kg dwt	-
	Soil	2.31 mg/kg dwt	-
benzyl alcohol	Fresh water	1 mg/l	-
	Marine	0.1 mg/l	-
	Sewage Treatment Plant	39 mg/l	-

Marathon 550 Comp A

SECTION 8: Exposure controls/personal protection

	Fresh water sediment	5.27 mg/kg dwt	-
	Marine water sediment	0.527 mg/kg dwt	-
	Soil	0.456 mg/kg dwt	-

8.2 Exposure controls

Appropriate engineering controls : Provide adequate ventilation. Where reasonably practicable, this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapours below the OEL, suitable respiratory protection must be worn.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying to EN 166 should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Gloves : There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals. The breakthrough time must be greater than the end use time of the product. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed. Gloves should be replaced regularly and if there is any sign of damage to the glove material. Always ensure that gloves are free from defects and that they are stored and used correctly. The performance or effectiveness of the glove may be reduced by physical/chemical damage and poor maintenance. Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred. Wear suitable gloves tested to EN374. Not recommended, gloves(breakthrough time) < 1 hour: PE Recommended, gloves(breakthrough time) > 8 hours: Viton®, 4H, Teflon May be used, gloves(breakthrough time) 4 - 8 hours: Barricade, CPF 3, Responder, polyvinyl alcohol (PVA), nitrile rubber, neoprene, butyl rubber, PVC

For right choice of glove materials, with focus on chemical resistance and time of penetration, seek advice by the supplier of chemical resistant gloves.

The user must check that the final choice of type of glove selected for handling this product is the most appropriate and takes into account the particular conditions of use, as included in the user's risk assessment.

Body protection : Personnel should wear antistatic clothing made of natural fibres or of high-temperature-resistant synthetic fibres.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : If workers are exposed to concentrations above the exposure limit, they must use a respirator according to EN 140. Use respiratory mask with charcoal and dust filter when spraying this product, according to EN 14387(as filter combination A2-P2). In confined spaces, use compressed-air or fresh-air respiratory equipment. When use of roller or brush, consider use of charcoalfilter.

Marathon 550 Comp A

SECTION 8: Exposure controls/personal protection

Environmental exposure controls : Do not allow to enter drains or watercourses.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: Liquid.
Colour	: Various
Odour	: Characteristic.
Odour threshold	: Not applicable.
pH	: Not applicable.
Melting point/freezing point	: Not applicable.
Initial boiling point and boiling range	: Lowest known value: 119°C (246.2°F) (butan-1-ol). Weighted average: 255.21°C (491.4°F)
Flash point	: Closed cup: 38°C
Evaporation rate	: Highest known value: 0.77 (xylene) Weighted average: 0.51 compared with butyl acetate
Flammability (solid, gas)	: Not applicable.
Upper/lower flammability or explosive limits	: 0.43 - 13%
Vapour pressure	: Highest known value: <1 kPa (<7.5 mm Hg) (at 20°C) (butan-1-ol). Weighted average: 0.14 kPa (1.05 mm Hg) (at 20°C)
Vapour density	: Highest known value: 11.7 (Air = 1) (epoxy resin (MW ≤ 700)). Weighted average: 9.94 (Air = 1)
Density	: 1.644 to 1.759 g/cm ³
Solubility(ies)	: Insoluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Lowest known value: 355°C (671°F) (butan-1-ol).
Decomposition temperature	: Not available.
Viscosity	: Kinematic (40°C): >0.205 cm ² /s (>20.5 mm ² /s)
Explosive properties	: Not available.
Oxidising properties	: Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: Stable under recommended storage and handling conditions (see Section 7).
10.3 Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: When exposed to high temperatures may produce hazardous decomposition products.
10.5 Incompatible materials	: Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids.
10.6 Hazardous decomposition products	: Decomposition products may include the following materials: carbon monoxide, carbon dioxide, smoke, oxides of nitrogen.

Marathon 550 Comp A**SECTION 11: Toxicological information****11.1 Information on toxicological effects**

There are no data available on the mixture itself. The mixture has been assessed following the conventional method of the CLP Regulation (EC) No 1272/2008 and is classified for toxicological properties accordingly. See Sections 2 and 3 for details.

Exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Solvents may cause some of the above effects by absorption through the skin. Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin. Ingestion may cause nausea, diarrhea and vomiting.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
epoxy resin (MW ≤ 700)	LD50 Dermal	Rabbit	20 g/kg	-
	LD50 Oral	Mouse	15600 mg/kg	-
butan-1-ol	LD50 Oral	Rat	790 mg/kg	-
xylene	LC50 Inhalation Vapour	Rat	20 mg/l	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
	TDLo Dermal	Rabbit	4300 mg/kg	-
benzyl alcohol	LD50 Oral	Rat	1230 mg/kg	-

Acute toxicity estimates

Route	ATE value
Oral	12479.7 mg/kg
Dermal	37130.8 mg/kg
Inhalation (vapours)	418.4 mg/l
Inhalation (dusts and mists)	131.6 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
epoxy resin (MW ≤ 700)	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
silane, trimethoxy[3-(oxiranyl-methoxy)propyl]-	Eyes - Irritant	Mammal - species unspecified	-	-	-
xylene	Eyes - Mild irritant	Rabbit	-	87 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
benzyl alcohol	Eyes - Mild irritant	Mammal - species unspecified	-	-	-

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
epoxy resin (MW ≤ 700)	skin	Mammal - species unspecified	Sensitising

Mutagenicity

No known significant effects or critical hazards.

Carcinogenicity

No known significant effects or critical hazards.

Reproductive toxicity

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Marathon 550 Comp A**SECTION 11: Toxicological information**

Product/ingredient name	Category	Route of exposure	Target organs
butan-1-ol	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
xylene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
12-hydroxyoctadecanoic acid, reaction products with 1, 3-benzenedimethanamine and hexamethylenediamine	Category 2	Not determined	Not determined

Aspiration hazard

Product/ingredient name	Result
xylene	ASPIRATION HAZARD - Category 1

Other information : None identified.**SECTION 12: Ecological information****12.1 Toxicity**

There are no data available on the mixture itself.
Do not allow to enter drains or watercourses.

The mixture has been assessed following the summation method of the CLP Regulation (EC) No 1272/2008 and is classified for eco-toxicological properties accordingly. See Sections 2 and 3 for details.

Product/ingredient name	Result	Species	Exposure
epoxy resin (MW ≤ 700)	Acute EC50 1.4 mg/l Acute LC50 3.1 mg/l Chronic NOEC 0.3 mg/l	Daphnia Fish - pimephales promelas Fish	48 hours 96 hours 21 days

This material is toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
epoxy resin (MW ≤ 700)	-	-	Not readily
silane, trimethoxy[3-(oxiranyl-methoxy)propyl]-	-	-	Not readily
xylene	-	-	Readily
benzyl alcohol	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
epoxy resin (MW ≤ 700)	2.64 to 3.78	31	low
butan-1-ol	1	-	low
xylene	3.12	8.1 to 25.9	low
benzyl alcohol	0.87	<100	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

Marathon 550 Comp A

SECTION 12: Ecological information

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.
vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Yes.

Disposal considerations : Do not allow to enter drains or watercourses. Dispose of according to all federal, state and local applicable regulations. If this product is mixed with other wastes, the original waste product code may no longer apply and the appropriate code should be assigned. For further information, contact your local waste authority.

European waste catalogue (EWC) : 08 01 11* Waste paint and varnish containing organic solvents or other dangerous substances

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Disposal considerations : Using information provided in this safety data sheet, advice should be obtained from the relevant waste authority on the classification of empty containers. Empty containers must be scrapped or reconditioned. Dispose of containers contaminated by the product in accordance with local or national legal provisions.

Type of packaging	European waste catalogue (EWC)
CEPE Paint Guidelines	15 01 10* packaging containing residues of or contaminated by hazardous substances

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

Marathon 550 Comp A

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1263	UN1263	UN1263	UN1263
14.2 UN proper shipping name	Paint	Paint	Paint. Marine pollutant (epoxy resin (MW ≤ 700))	Paint
14.3 Transport hazard class(es)	3  	3  	3  	3 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

ADR/RID

: The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Hazard identification number 30

Tunnel code (D/E)

ADN

: The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IMDG

: The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Emergency schedules F-E, S-E

-

IATA

: The environmentally hazardous substance mark may appear if required by other transportation regulations.

14.6 Special precautions for user

: **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

: Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Marathon 550 Comp A

SECTION 15: Regulatory information

Other EU regulations

VOC : The provisions of Directive 2004/42/EC on VOC apply to this product. Refer to the product label and/or technical data sheet for further information.

VOC for Ready-for-Use Mixture : Not available.

Europe inventory : Not determined.

Ozone depleting substances (1005/2009/EU)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product may add to the calculation for determining whether a site is within the scope of the Seveso Directive on major accident hazards.

National regulations

Industrial use : The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation. The provisions of the national health and safety at work regulations apply to the use of this product at work.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

15.2 Chemical safety assessment : No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

🔍 Indicates information that has changed from previously issued version.

Abbreviations and acronyms

: ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DMEL = Derived Minimal Effect Level
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 PBT = Persistent, Bioaccumulative and Toxic
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number
 vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Marathon 550 Comp A

SECTION 16: Other information

Classification	Justification
Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 2, H411	On basis of test data Calculation method Calculation method Calculation method Calculation method

Full text of abbreviated H statements

H226 H302 H304 H312 H315 H317 H318 H319 H332 H335 H336 H373 H411 H413	Flammable liquid and vapour. Harmful if swallowed. May be fatal if swallowed and enters airways. Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Causes serious eye irritation. Harmful if inhaled. May cause respiratory irritation. May cause drowsiness or dizziness. May cause damage to organs through prolonged or repeated exposure. Toxic to aquatic life with long lasting effects. May cause long lasting harmful effects to aquatic life.
--	---

Full text of classifications [CLP/GHS]

Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Aquatic Chronic 2, H411 Aquatic Chronic 4, H413 Asp. Tox. 1, H304 Eye Dam. 1, H318 Eye Irrit. 2, H319 Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Skin Sens. 1B, H317 STOT RE 2, H373 STOT SE 3, H335 STOT SE 3, H336	ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 4 ASPIRATION HAZARD - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2 FLAMMABLE LIQUIDS - Category 3 SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITISATION - Category 1 SKIN SENSITISATION - Category 1B SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3
--	--

Date of printing : 14.04.2020

Date of issue/ Date of revision : 14.04.2020

Date of previous issue : 09.05.2019

Version : 3

Notice to reader

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United

Marathon 550 Comp A

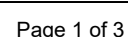
SECTION 16: Other information

Kingdom) version will prevail.



APPENDIX D – CONSTRUCTION PROGRAMME





Page 2 of 3

Actual Level of Effort Project Baseline Actual Work Remaining Work Critical Remaining Work Milestone summary	Page 3 of 3	
---	-------------	--