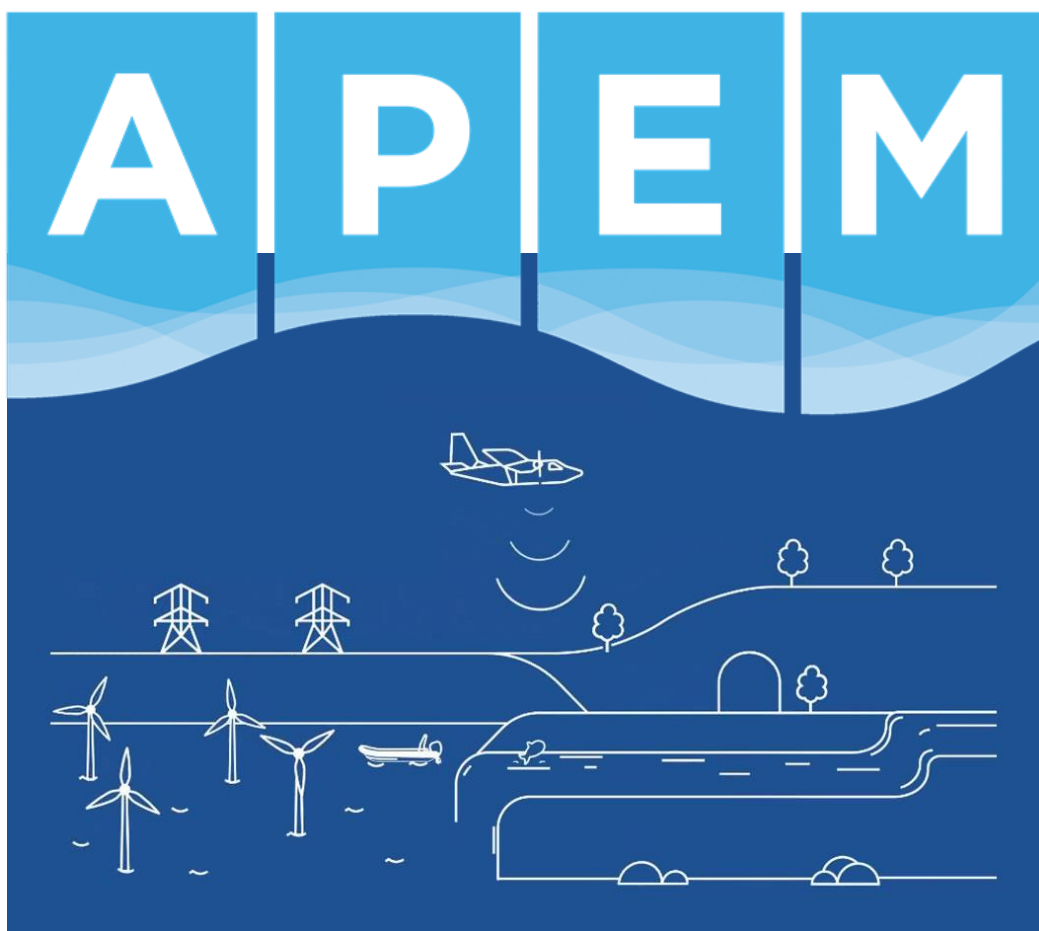




Dolgarrog Pipe Bridge Refurbishment Works WFD Assessment

Burroughs / Welsh Water

APEM Ref: P00008334

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Executive Summary

Dolgarrog Pipe Bridge, Conwy, is owned by Dwr Cymru / Welsh Water (DCWW) and crosses the River Conwy. The bridge is a permissible Public Right of Way (PROW) and also supports two high-pressure DCWW-owned potable pipelines across the Conwy River. The bridge requires refurbishment including replacing the existing decking, installing a new pedestrian deck and upgrading the structures that support the pipelines.

The works are within the Conwy Water Framework Directive (WFD) transitional water body (ID: GB541006614800).

A Band 2 marine licence is required to undertake the refurbishment works. This WFD Screening Assessment report is required to determine if the refurbishment works pose a risk to the water body in terms of the current status/potential (or future status/potential) of relevant WFD supporting elements.

The assessment considered the project activities, which are all over water or adjacent to the water body and do not involve any works below mean high water spring (MHWS). The assessment also considered the embedded mitigation measures that will be implemented during the works and determined if the project activities required screening into further assessment of potential effects on WFD supporting elements.

The assessment of the potential for effects on WFD receptors, taking into account project activities and embedded mitigation measures, resulted in all the project activities being screened out of further assessment. It is not expected that the Project will cause any WFD deterioration or change in water body status or prevent attainment, or potential to achieve, future good status.

2. Background Information for the Proposed Works

2.1 Introduction to WFD Assessment

Dolgarrog Pipe Bridge, Conwy, is owned by Dwr Cymru / Welsh Water (DCWW) and crosses the River Conwy where it is used as a walking route in the local area. The bridge is a permissible Public Right of Way (PROW) and also supports two high-pressure DCWW owned potable pipelines across the Conwy River. However, the bridge is currently closed to the public due to defects observed on both the bridge structure and the potable water pipelines. The proposed works are to refurbish the bridge to allow it to reopen and to improve the resilience of the two potable water pipelines crossing the bridge.

The bridge comprises three spans, supported by the east and west abutments and two piers. The overall length of the structure between the east and west abutments is 102 m with a central span of 46 m, and the overall width of the bridge is approximately 5 m. The primary truss structure reaches a maximum height of 5.2 m above the timber bridge deck.

The purpose of this Water Framework Directive (WFD) screening assessment is to support a Band 2 Marine Licence application which is required for some elements of the works. It was agreed with Natural Resources Wales (NRW) that certain enabling activities would be included under a separate Band 1 marine licence application, which has subsequently been submitted and the licence granted by NRW (licence no. CML2224). Those works that fall under the Band 1 marine licence include:

- Erecting scaffolding above the pipelines spanning approx. 110 m;
- Installation of steel plates to failing truss members on bridge structure;
- Removal of scaffolding above the pipelines; and
- Erecting hanging scaffold below the bridge to enable replacement of existing timber decking.

The refurbishment activities that are to be included in the Band 2 marine licence application and which are subject to this WFD screening assessment are detailed in Section 1.4.

2.2 Location and WFD water body context

The pipe bridge spans the River Conwy, crossing both banks. It is located within the southern part of the Conwy water body (WFD ID: GB541006614800) at grid reference: SH78056682 (Figure 1).

The Conwy water body (Figure 1) is located on the northern coast of Wales and stretches from Conwy Sands, west of Llandudno, south along the River Conwy and ends near Llanrwst. The total area of the waterbody is approximately 1557.4 ha.

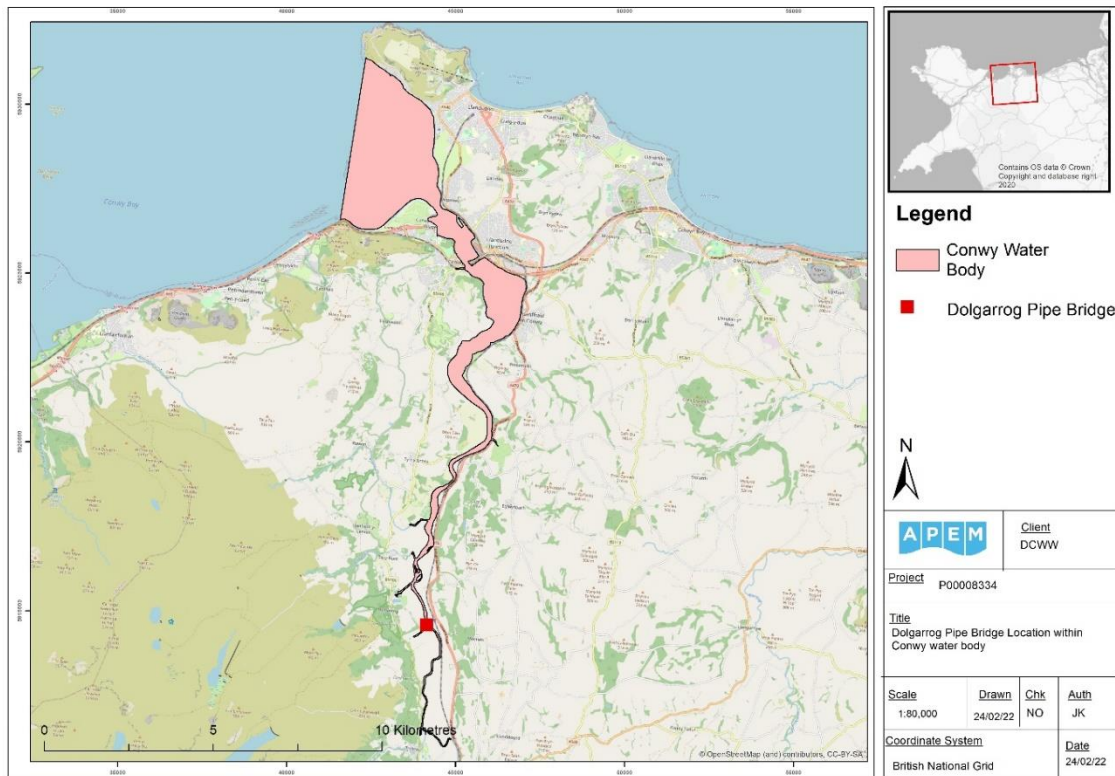


Figure 1. Dolgarrog pipe bridge location in relation to the Conwy water body

2.3 WFD screening assessment objectives

The objective of this screening assessment is to consider the available data for WFD supporting elements in the Conwy water body in accordance with the Environment Agency's (EA) 'Clearing the Waters for All' guidance (EA 2017). Consequently, the potential effects of the proposed works on the potential/status of the following WFD parameters were considered:

- Ecological potential
 - Biological supporting elements
 - Physicochemical supporting elements (and Specific Pollutants¹)
 - Hydromorphological considerations
- Chemical status
 - Priority Substances¹
 - Other Pollutants¹
 - Priority hazardous substances¹

¹ Limited to chemicals on Environmental Quality Standards Directive (EQSD) list for WFD (as provided in EA 2017). Environmental thresholds are summarised in Defra (2015).

The screening assessment considers the project activities and aims to identify those activities that can be screened out of further assessment due to the low risk of having an impact on WFD quality elements. Where activities cannot reasonably be screened out, they are then considered in further detail at the scoping and impact assessment stages.

2.4 Summary of project activities

All works required for the refurbishment of the bridge will be undertaken above mean high water springs (MHWS). There will be no requirement for in-water works and all activities will be undertaken either on the bridge, at the site compound established at Surf Snowdonia approximately 0.5 miles from the bridge, or along the access tracks to the bridge. Access to the riverbank will not be required and no works are planned in this area.

Project activities for the refurbishment of the bridge that are of relevance to the WFD assessment include the following:

- Establishment of a site compound;
- Removal of existing defective timber decking boards (approximately 300 boards);
- Replacement of existing decking boards with composite Glass Reinforced Polyester (GRP) decking planks;
- Removal of wooden block supports from under the pipelines and replacement with new steel supports. Pipes to be supported with a jack and wooden chock during removal of existing supports.
- Installation of a new pedestrian deck above the pipeline deck involving the installation of new supporting steelwork, including handrails and mesh panels, and composite GRP decking planks; and
- Construction of earth ramps for public and cycle access.

The works are due to begin in November 2022 with a duration of approximately 6 months.

3. Water Framework Directive requirements

3.1 Water Framework Directive

3.1.1 Overview

The WFD establishes a framework for the management and protection of Europe's water resources. It is implemented in England and Wales through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (the Water Framework Regulations)².

² At this stage following Brexit, existing EU environmental legislation will continue to operate under the policy of "roll-over", however, decisions made by the Union will no longer be binding for courts in the UK.

Proposed developments or activities that have the potential to affect the water environment require a WFD Assessment, and the environmental objectives of the WFD and its associated directives include the following:

- to prevent deterioration of aquatic ecosystems;
- to protect, enhance and restore water bodies to 'good' status; based on ecology (with its supporting hydromorphological and physico-chemical factors) and chemical factors for surface waters; and
- to progressively reduce pollution from priority substances and cease or phase out discharges of priority hazardous substances.

For surface waters including transitional water bodies, ecological status/potential is an expression of the quality of the structure and functioning of surface water ecosystems as indicated by the condition of a number of 'quality elements'. These include biological (e.g. fish, benthic invertebrates, phytoplankton, angiosperms and macroalgae), physico-chemical (e.g. dissolved oxygen and dissolved inorganic nitrogen) and hydromorphological (e.g. hydrological regime, depth, width, flow, and 'structure') elements, as well as several specific pollutants (e.g. copper and zinc), (Figure 2).

The Priority Substances Directive sets out Environmental Quality Standards (EQSs; 2008/105/EC) for priority substances which is known as the EQS Directive and there have been subsequent amendments (2013/39/EU; Defra, 2015 and EA, 2015). Concentrations of Priority Substances are considered for the WFD to determine chemical status of surface waters (Figure 2).

The default objective of the WFD is for all rivers, lakes, estuaries, groundwater and coastal water bodies to achieve 'good' status by 2027 at the latest. Where it is not possible to achieve this, alternative objectives can be set.

The development and implementation of strategic long-term River Basin Management Plans (RBMPs) is a key requirement of the WFD. RBMPs include a programme of measures outlining the on-going monitoring and management actions required for water bodies to achieve future objectives. The RBMPs are published by the EA every six years (UK Government 2019). The first RBMPs were published in 2009 and the current Cycle 2 RBMPs were published in 2019.

The existing status and measures required to achieve the 2027 status objective are set out for each water body in the relevant RBMPs. The plans set out the current baseline condition of the water environment at the time of publication and provide details on the measures needed and timescales required to attain their target status.

A flow chart illustrating how elements are combined to provide an overall water body status/potential is provided in Figure 2 (noting that this dates from Cycle 1). The classification hierarchy for surface waters (for Cycle 2) is illustrated in Figure 3. Only biological supporting elements have classification boundaries defined for 'high' through to 'bad' (see Figure 2).

Chemicals supporting 'chemical status' that do not meet EQS concentrations are classified as 'fail' (Figure 2).

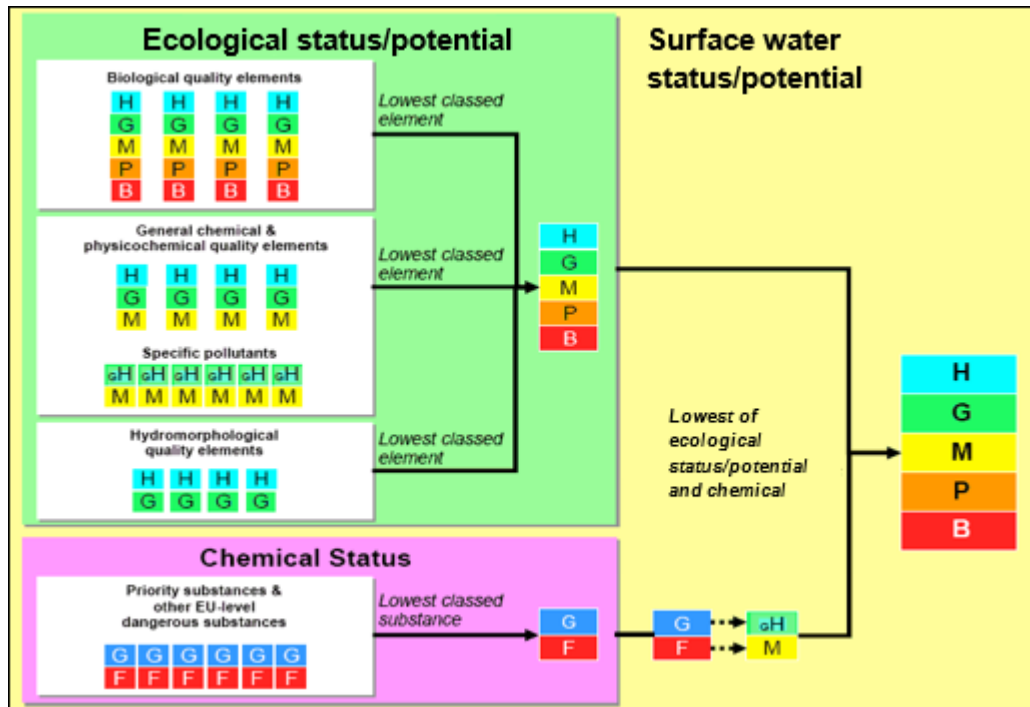


Figure 2 WFD classification elements – Bringing all of the strands of evidence together (Environment Agency 2015). H = High, G = Good, M = Moderate, P = Poor, B = Bad, F = Fail

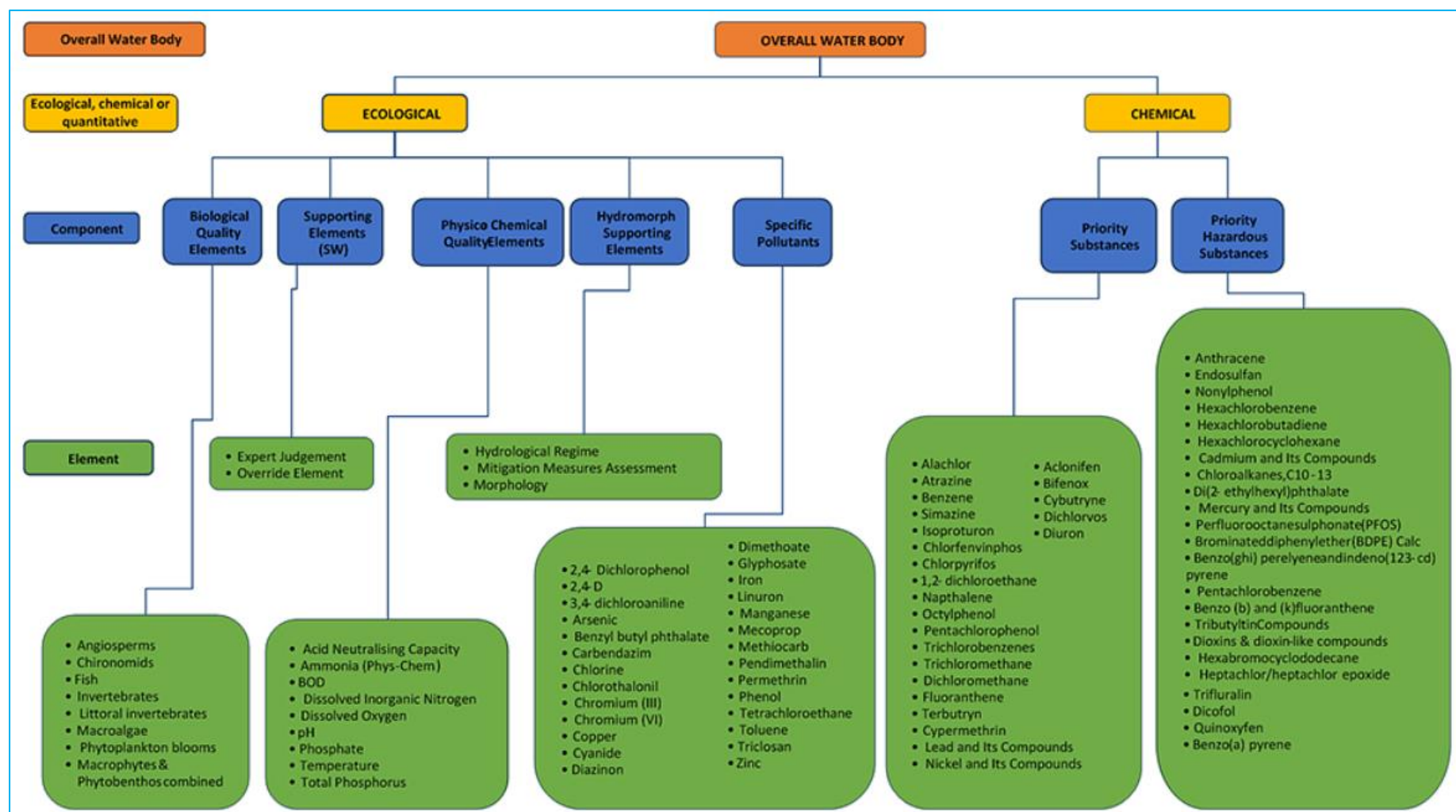


Figure 3. Classification hierarchy for surface waters (source: EA, 2018)

3.1.2 *Transitional Water Bodies*

Transitional water bodies include bodies of surface water in the vicinity of river mouths that typically correspond (in the UK) to estuaries. Therefore, they are influenced by tides and are characterised both by saline water due to their proximity to coastal waters and by freshwater due to inputs of river flows. Given that the proposed works are situated along the tidal reach of the River Conwy, it is located within the Conwy transitional WFD water body.

The WFD classification elements for transitional WFD water bodies such as the Conwy are as follows:

- Hydromorphological:
 - tidal regime:
 - freshwater flow; and
 - wave exposure.
 - morphological conditions:
 - depth variation;
 - quantity, structure and substrate of the bed; and
 - structure of the intertidal zone.
- Biological:
 - phytoplankton;
 - other aquatic flora;
 - benthic invertebrates; and
 - fish.
- Physico-chemical and chemical:
 - transparency;
 - thermal conditions;
 - dissolved oxygen;
 - nutrients;
 - salinity; and
 - pollution by substances being discharged (e.g. chemicals, metals, pesticides).

A summary of the 2018 Cycle 2 and 2021 Cycle 3 assessments for the Conwy water body is provided in Table 1 (NRW 2020).

3.1.3 Heavily Modified Water Body designation

Where a water body is defined as a Heavily Modified Water Body (HMWB), the term 'ecological status' (combination of multiple biological, physical and some chemical supporting elements) is replaced by 'ecological potential'. The term 'chemical status' (combination of other chemical supporting elements), however, remains unchanged when considering HMWBs. The Conwy WFD water body is designated as a HMWB.

Table 1. Classifications for 2021 (Cycle 3) and 2018 (Cycle 2) for the Conwy water body. Information collected from Water Watch Wales (NRW)

Parameter		Year	
		2021	2018
Water Body ID		GB541006614800	
Water Body Area		1557.4 ha	
Water Body Type		Transitional Water	
Hydromorphological designation		Heavily Modified	
Overall Potential		Moderate	Moderate
Ecological Potential		Moderate	Moderate
Chemical Potential		Moderate	Fail
Ecological			
Biological Elements	Angiosperms	Moderate	Moderate
	Fish	Good	Good
	Invertebrates	Good	Moderate
	Macroalgae	High	High
	Phytoplankton	Good	Good
Physico-chemical Quality Elements	Dissolved Inorganic Nitrogen	High	High
	Dissolved Oxygen	High	High
Supporting Elements (Surface Water)		Moderate	Moderate
Specific Pollutants		Moderate	Moderate
Chemical			
Priority substances		High	Fail
Other pollutants		High	High
Priority hazardous substances		Moderate	Fail

4. Assessment Methodology

The assessment followed the EA's 'Clearing the Waters for All' guidance (EA 2017), which was developed specifically to assess the effects of activities in transitional and coastal waters in relation to WFD targets. This approach is based on three stages:

- Screening;
- Scoping; and
- Impact assessment.

Under the 'Clearing the Waters for All' guidance (EA 2017), works that are “*over water*” may be classed as low risk activities and only require a WFD Screening Assessment, therefore the Scoping and Assessment stages will not be discussed here. This does not prejudice the assessment process in that, if the screening assessment identified activities that could not be screened out of further assessment, then these would be taken forward to the next stages of assessment.

4.1 Screening

The screening stage is used to determine if the activities of the proposed works (referred to herein as 'proposed activities') are classed as low risk activities. The EA guidance (EA 2017) identifies the following activities to qualify as low risk activities:

- A self-service marine licence activity or an accelerated marine licence activity that meets specific conditions;
- Maintaining pumps at pumping stations;
- Removing blockages or obstacles like litter or debris within 10 m of an existing structure to maintain flow;
- Replacing or removing existing pipes, cables or services crossing over a water body – but not including any new structure or supports, or new bed or bank reinforcement; and
- 'Over water' replacement or repairs to, for example, bridge, pier and jetty surfaces, if you minimise bank or bed disturbance.

Where the activities do not fulfil criteria for a low-risk activity, the assessment continues to the scoping stage. As the activities associated with the project are 'over water' repairs to the bridge, and as such may be classed as low risk activities as detailed above, only the WFD screening assessment is presented in this report.

The WFD screening assessment is presented in Section 4. The assessment considers the project activities, the embedded mitigation that will be implemented and establishes if the activities can be screened out of further assessment. The assessment is made with reference to various project documents including the method statements for removal of existing decking (Lewis Civil Engineering 2022a), installation of new decking and supporting structures (JBF Group 2022), construction of earth ramps (Lewis Civil Engineering 2022b) and the project Construction and Environmental management Plan (CEMP) (Lewis Civil Engineering 2022c). These documents detail various embedded mitigation measures to be implemented, which are identified in the assessment.

5. WFD Assessment

5.1 Screening

The main activities associated with the Project Works (detailed in Section 1.4), potential risks associated with these activities, embedded mitigation measures and screening outcome are indicated in Table 2.

Table 2. Project activities, embedded mitigation measures and screening of effects

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
Establish site compound at Surf Snowdonia	None	The main site compound is approximately 0.5 miles from the water body so has no potential to affect WFD supporting elements.	Screened out
Removal of existing defective timber decking boards.			
Removal of existing decking – potential for debris to fall into the watercourse.	The removal of the existing deck will be undertaken from a scaffold platform suspended under the bridge. The platform will include toe boards and will be covered with a visqueen layer to prevent anything from falling between the scaffold planks. In addition, security netting will also be installed under the working platform to prevent any debris falling into the water body.	Hydromorphological – the activity has no potential to influence or change the tidal regime or morphological conditions of the water body. Biological – the loss of timber or metal ties during the works would be unlikely to have an effect on the biological quality elements of the water body. With the mitigation in place to prevent debris entering the water body it is considered that there is no potential for effects on biological quality elements from this activity. Physico-chemical & chemical – Metal ties and timber planks falling into the river would be unlikely to have any significant effect on the physico-chemical and chemical elements of the water body. With the measures in place to prevent debris entering the water body there is no potential for effects on chemical quality elements from this activity.	Screened out

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
Replacement of existing decking boards with composite decking planks; removal of wooden block supports and replacement with steel supports; installation of new deck with supporting steelwork.			
Cutting, grinding and drilling • Cutting of GRP composite panels • Metal waste offcuts • Grinding of paint from existing steelwork Potential for debris to fall into the watercourse.	The installation of the new deck will be undertaken from a scaffold platform suspended under the bridge. The platform will include toe boards and will be covered with a visqueen layer to prevent anything from falling between the scaffold planks. In addition, security netting will also be installed under the working platform to prevent any debris falling into the water body.	Hydromorphological – the activity has no potential to influence or change the tidal regime or morphological conditions of the water body. Biological – the loss of debris during the works would be unlikely to have an effect on the biological quality elements of the water body. With the mitigation in place to prevent debris entering the water body it is considered that there is no potential for effects on biological quality elements from this activity. Physico-chemical & chemical – Metal and composite plank offcuts falling into the river would be unlikely to have any significant effect on the physico-chemical and chemical elements of the water body. Grinding of paint will be limited to small preparation areas where drilling is required and if needed. The visqueen layer on the platform will prevent any flaked paint from falling between the boards of the platform, however, small amounts of flaking paint and / or paint dust may be blown into the water body. This is unlikely to affect the physico-chemical and chemical elements of the water body either locally or at water body level. With the measures in place to prevent debris entering the water body there is no	Screened out

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
		potential for effects on chemical quality elements from this activity.	
Working at Height – operatives will work off the underhanging scaffold platform during installation of the replacement deck. There is potential for tools and materials to fall into the water body during installation of the new deck.	The installation of the new deck will be undertaken from a scaffold platform suspended under the bridge. The platform will include toe boards and will be covered with a visqueen layer to prevent anything from falling between the scaffold planks. In addition, security netting will also be installed under the working platform to prevent any tools and materials falling into the water body. Hand tools will be tethered while working on the scaffold platform as an extra measure to prevent them being dropped into the water body.	Hydromorphological – the activity has no potential to influence or change the tidal regime or morphological conditions of the water body. Biological, Physico-chemical & chemical elements – The loss of tools or materials to the water body would be highly unlikely to have an effect on the WFD elements either locally or at water body level. With the mitigation measures in place to prevent the loss of tools and materials, there is no potential for effects on biological, physico-chemical or chemical quality elements from this activity.	Screened out
Use of plant • Mechanical hoist • Generator Potential for accidental fuel spills into the water body	Pollution prevention and incident management procedures are detailed in the project CEMP and the main contractor's Environmental Protection Handbook. Specific measures for working above or near the water body include:	Hydromorphological – the activity has no potential to influence or change the tidal regime or morphological conditions of the water body. Biological, Physico-chemical & chemical elements – With appropriate mitigation measures and pollution prevention controls in place, there is no potential for accidental fuel spills to have an effect on biological, physico-	Screened out.

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
	• Daily checks to be made on all plant to ensure they are in good working condition with no leaks. • All refuelling to be undertaken at the designated refuelling area at the site compound away from the water body. • Spill kits will be available with all plant. • The generator will be placed on a plant nappy at all times. • The visqueen layer and toe boards of the working platform will also help contain any spills and prevent leakage into the water body.	chemical or chemical quality elements of the water body.	
Painting of steelwork after installation – use of FOSROC Galvafrond paint	Pollution prevention and incident management procedures are detailed in the project CEMP and the main contractor's Environmental Protection Handbook. • The visqueen layer and toe boards of the working platform will contain any paint spills and prevent leakage into the water body.	Hydromorphological – the activity has no potential to influence or change the tidal regime or morphological conditions of the water body. Biological, Physico-chemical & chemical elements – With appropriate mitigation measures and pollution prevention controls in place, there is no potential for accidental paint spills to have an effect on biological, physico-	Screened out

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
	Spill kits will also be available should spillages occur on the working platform. Hazardous waste to be contained on site in specific containers ready for disposal. Disposal will be to a licensed waste disposal site in accordance with the local Waste Disposal Authority. A COSHH Assessment for use of Galvafruid Paint is included in the CEMP.	chemical or chemical quality elements of the water body.	
Construction of earth ramps for pedestrian and cycle access			
Storage of material for construction of earth ramps - Potential for silt runoff.	None	Storage areas for construction material will be located at the main site compound at Surf Snowdonia, approximately 0.5 miles away, and transported to site via a 9t dumper truck. Therefore, there is no potential for runoff from these storage areas to the water body.	Screened out
Construction of earth ramps – potential for silt runoff	Measures such as silt traps, silt fences and cut-off drains will be used where appropriate, and in line with relevant guidance, to prevent silty water entering the water body.	All ramp construction works will be above Mean High Water Springs and approximately 30 m from the riverbank so there is little potential for runoff to enter the water body. The implementation of appropriate mitigation measures will further reduce this possibility. As such, there is no potential for runoff associated with the	Screened out

Activity / risk factor	Embedded mitigation measures	Screening of potential effects on WFD supporting elements	Screened in / out
		construction of the earth ramps to have an effect on biological, physico-chemical or chemical quality elements of the water body.	
Construction of earth ramps - potential for accidental fuel spills into the water body from the following plant: • Excavator • Dumper truck • Roller	The construction of the earth ramps will be undertaken approximately 30 m away from the water body. However, pollution prevention and incident management procedures are detailed in the project CEMP and the main contractor's Environmental Protection Handbook. Specific measures include: • Daily checks to be made on all plant to ensure they are in good working condition with no leaks. • All refuelling to be undertaken at the designated refuelling area at the site compound away from the water body. • Spill kits will be available with all plant.	With the ramp construction works to be undertaken approximately 30 m away from the water body there would be no requirement for plant to be near to the water body and with the pollution prevention measures in place there is no potential for accidental spills to have an effect on biological, physico-chemical or chemical quality elements of the water body.	Screened out

6. Summary

This WFD screening assessment identifies the primary project activities associated with the Proposed Works. These activities are all over-water, above MHWS and do not involve works on the riverbank. As such, under the Clearing the Waters Guidance (EA 2017), the project activities may be considered low risk activities and screened out of further assessment. However, as requested by NRW in communications with the project engineers, Burroughs, the assessment has also considered the embedded mitigation measures that will be implemented during the works to mitigate any risks to the WFD receptors in the Conwy water body.

The assessment of project activities, embedded mitigation measures and the potential for effects on WFD receptors resulted in all the project activities being screened out of further assessment. It is unlikely that the Project will cause any WFD deterioration or change in water body status or prevent attainment, or potential to achieve, future good status.

As such, no further WFD assessment is recommended given that no significant deterioration or change in water body status is predicted.

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