

TECHNICAL NOTE

Pier 7 Neath River Bridge - WFD

SUBJECT	PROJECT NO.	DATE
Water Framework Assessment		November 2025
AUTHOR	DISTRIBUTION	REPRESENTING
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DOCUMENT REFERENCE	ICEPAC NO.	ATKINSRÉALIS NO.
WFD Neath Bridge		

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Support NRW marine licence application	JC	AJ	FS	BP	13/11/2025

Client signoff

Client	SWTRA				
Project	Pier 7 Neath River Bridge - WFD			Project No.	100109785
Client signature / date					

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1. Introduction

1.1 Overview

This document presents a Water Framework Directive (WFD) compliance assessment for scour repairs and protection works consisting of sheet piling located on Neath River Bridge Pier 7 (Figure 1-1). The proposed works requires a marine license from Natural Resources Wales (NRW) which, in turn, is required to demonstrate compliance with the WFD. The aims of the document are to provide:

- Background information on the Proposed Scheme and the WFD legislation.
- Screening of the activities that could impact the status of the overlapping and adjacent WFD water bodies.
- Scoping of any potential risks to these WFD water bodies.
- A compliance assessment to determine whether the scheme will have a non-temporary effect on the status of one or more WFD 'quality elements' at the water body scale.

A compliance assessment is a statutory requirement for all new developments and schemes that have potential to affect the water environment. The assessment must demonstrate that the Scheme will not cause deterioration to (or prevent achievement of Good status in) the water bodies it affects. Further details on the Directive, and its implementation into UK legislation, can be found in Section 2 below.



Figure 1-1 - Location of Neath River Bridge

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1.2 Proposed Work Background

1.2.1 Scheme Location

The proposed scheme is in relation to a new scour protection scheme at Neath River Bridge (SS733941). This location is within the coastal and transitional Neath Estuary water body in Neath Port Talbot County Borough, Wales, United Kingdom (Figure 1-2). The location is approximately 5.3km downstream of Neath, South Wales and is 2.5km upstream of the coastal waterbody of Swansea Bay.

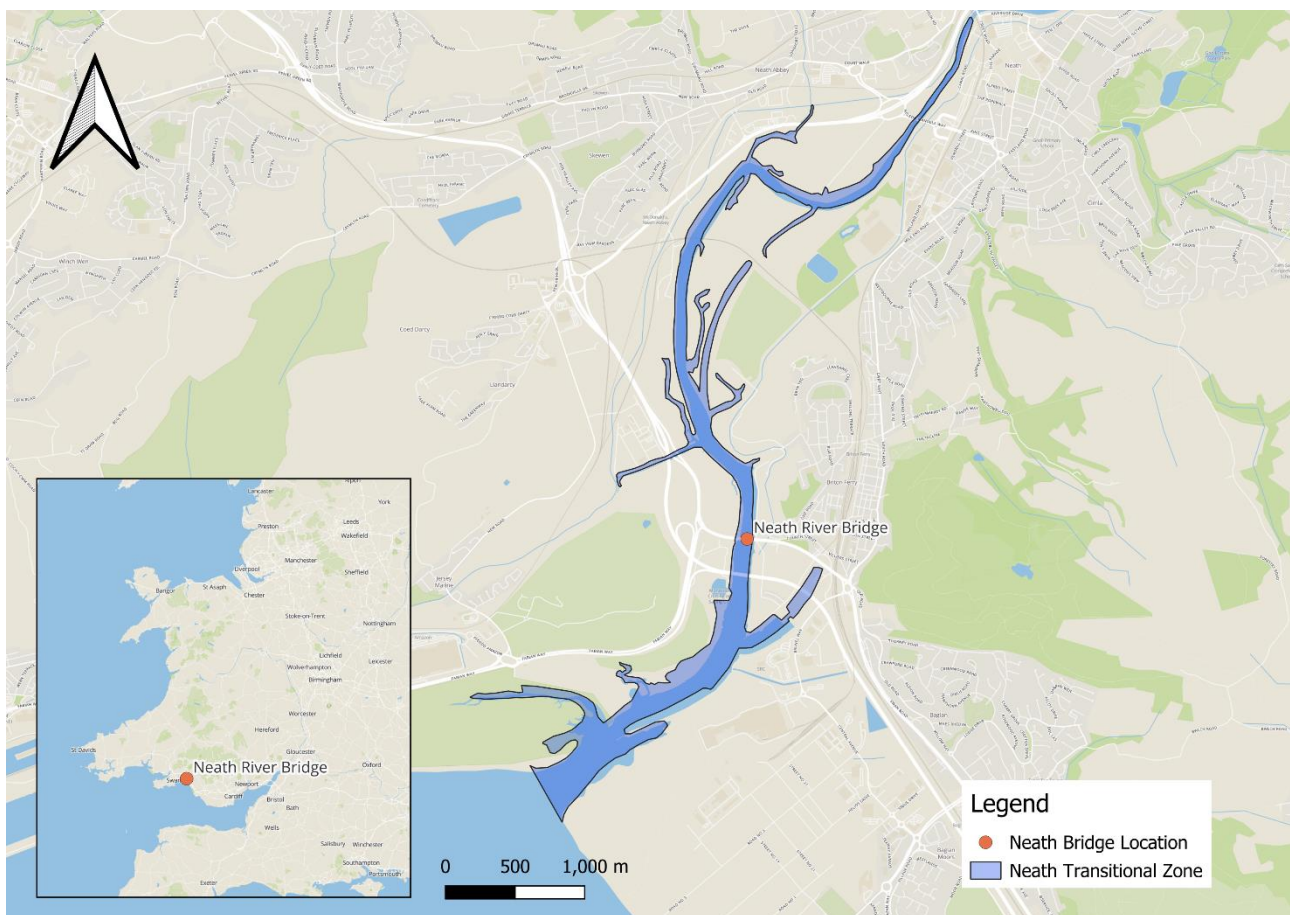


Figure 1-2 - Map of site location at Neath Bridge and WFD waterbodies

1.2.2 Scheme Details

Pier 7 of Neath River Bridge (NRB) is situated on the eastern bank of the River Neath and has exhibited scour defects in recent years from tidal action of the River Neath (and washout of the material beneath the pilecap and around the piles of the existing structure). Therefore, a scour protection scheme has been developed. The works include installing a sheet piled wall approximately 1 metre in front of the existing pile-cap to prevent further scour of the surrounding material and protect the long-term structural integrity of the bridge. The area between the sheet piled wall and the existing pile-cap is to be backfilled with marine grade cementitious grout.

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The volume of grout expected is to be approximately 50m³. Preliminary designs have been undertaken based upon desktop information available and assumptions (Figure 1-3). The ground investigation data will confirm the preliminary design information which have been undertaken in October 2025.

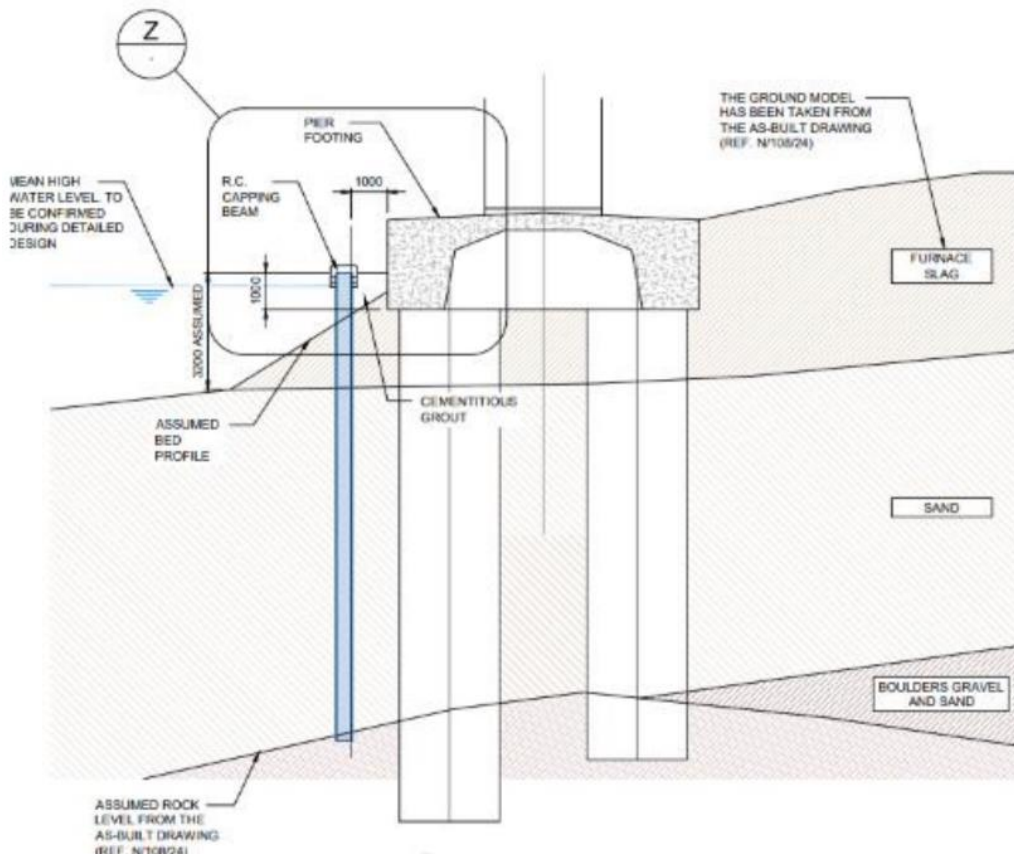


Figure 1-3 - Diagram of planned sheet piling works and ground composition

1.2.3 Methods of construction

1.2.3.1 Sheet Pile Installation

The sheet piling involves piling into the riverbank at a small offset of 1m from the pile cap of the pier, over its full riverside face. It is assumed that a sheet pile length will be a maximum of 11.5m, however, this length is subject to change following the results of the GI (and subsequently, detailed design). The sheet piles will be installed using a silent hydraulic press in rig. All works will be carried out from the existing road/pile cap with no plant entering the watercourse. Prior to utilising the Silent Piling Rig the first few piles will be installed using a guide frame and vibro-pile hammer fixed to an excavator. Once sufficient piles have been installed for the rig to sit on top of the installed piles the following sequence will be followed:

- 1) **Pile Pitching:** The first sheet pile is lifted and positioned using a service crane and guide frame. The pile is engaged with either the reaction frame or pre-installed reaction piles. Vertical alignment and positioning are verified before pressing begins.

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- 2) **Pile Pressing:** The Silent Piling Rig is mounted atop the previously installed or reaction piles. Hydraulic pressure is applied to press the pile into the ground using a static load, eliminating vibration. Press-in pressure and penetration rate are monitored continuously.
- 3) **Installation of Subsequent Piles:** Each new pile is inserted into the interlock of the preceding pile. Alignment and verticality are ensured using the guide frame and the rig's integrated sensors. Piles are pressed sequentially along the designated alignment.
- 4) **Monitoring and Quality Control:** Press-in pressure, penetration depth, and verticality are recorded for each pile. If excessive resistance is encountered, pre-auguring or water jetting may be employed with prior engineering approval. The top level of each pile is verified post-installation.

This process will be repeated until all sheet piles are installed in accordance with the proposed alignment.

1.2.3.2 Capping Beam Construction

Once the piles have been installed a proprietary access platform will be installed affixed to the sheet piles. An access platform will be constructed to facilitate the installation of formwork and reinforcement required for the concrete capping beam. Once the reinforcement is securely fixed, the formwork will be inspected, and all interfaces with the sheet piles will be sealed to prevent grout loss during the concrete pour.

Prior to concrete placement, water and silt management measures will be implemented. These will include, but are not limited to, the use of silt mats or curtains, securely anchored silt booms around the work area, and readily available spill kits. An emergency spill response plan will be developed and strictly enforced before works commence.

Concrete will be placed using a pump positioned on the existing roadway. After sufficient curing time, the formwork and access platform will be dismantled and removed from site.

1.2.3.3 Cementitious Grout Infill

Following completion of the capping beam, the void between the sheet piles and the pile cap will be filled with a maximum of 50m³ of cementitious grout. Prior to grout placement, the external faces of the sheet piles will be thoroughly inspected to identify any visible gaps that could result in grout leakage. Any identified gaps will be sealed by welding to ensure containment.

Grout will be placed using a pump positioned on the existing roadway, with pollution control measures consistent with those used during the concrete works. Grouting operations will be scheduled during low tide to allow for effective visual inspection and immediate response to any leaks, thereby preventing grout from entering the watercourse.

1.2.3.4 Construction related operations

Re-fuelling of any machinery will take place on areas of hardstanding wherever possible. Re-fuelling will be undertaken from 20l diesel containers. Spill trays and absorbent plant 'nappies' will be used at all times when re-fuelling. Any contaminated spill kit materials will be double bagged securely sealed and labelled and disposed of at a licensed waste receiving facility by SQL. All methods of construction will follow GPP5 Guidance for Pollution Prevention Works and Maintenance in or near water.

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1.3 Water Framework Directive Background

The Water Framework Directive (WFD), originally a European initiative, was transposed into UK law through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017¹. Despite the UK's departure from the European Union in 2020, the WFD remains a statutory requirement in England and Wales. Its primary aim is to establish a framework for the protection and enhancement of inland surface waters, estuaries, coastal waters, and groundwater. The WFD sets objectives for water bodies to achieve:

- Surface Waters: Good Ecological Status (GES) and Good Chemical Status (GCS)
- Groundwater: Good Quantitative Status (GQS) and Good Chemical Status (GCS)

For Artificial and Heavily Modified Water Bodies (AHMWBs), which may not be able to reach GES due to essential human uses (e.g., flood defence, navigation), the target is Good Ecological Potential (GEP), supported by mitigation measures.

New activities or developments that affect the water environment must be assessed for potential impacts on biological, hydromorphological, physicochemical, and chemical quality elements. These impacts could lead to deterioration in water body status or hinder the effectiveness of planned improvements, thereby preventing achievement of WFD objectives. Under the WFD, such activities must not cause deterioration or obstruct progress toward GES or GEP.

The WFD also mandates the designation of 'Protected Areas' within each water body district. These include:

- Sites with water-dependent habitats protected under the Birds and Habitats Directives, and by UK policy under the Ramsar Convention
- Drinking Water Protected Areas
- Shellfish Waters
- Bathing Waters
- Nutrient Sensitive Areas

Any potential impacts of new schemes on these Protected Areas must be carefully considered to ensure full compliance with WFD requirements.

¹ [The Water Environment \(Water Framework Directive\) \(England and Wales\) Regulations 2017](#)

WFD Objectives

The WFD is a European Directive which sets out a strategic planning process for the purposes of managing, protecting and improving the water environment. The main objectives of the WFD are to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least 'Good Status' for all waters by 2015 (2021 or 2027) where fully justified within an extended deadline under Article 4.4;
- Promote sustainable use of water;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and
- Help reduce the effects of floods and droughts.

The Environment Agency is responsible for implementing the WFD in England and monitors, advises and manages many aspects of the water environment through regulating discharges, abstractions and processing environmental permits and licences. The Environment Agency is committed to implement environmental improvements by reducing the physical impacts of flood risk management activities within artificial or heavily modified water bodies.

WFD Classification

The WFD classification for a defined water body is produced by the assessment of a wide variety of different 'elements' which includes:

- '*biological elements*' such as fish, invertebrates, Phytobenthos (which includes plants, macro-algae, phytoplankton);
- '*supporting elements*' that include chemical measurements such as ammonia, dissolved oxygen, pH, phosphate, copper, zinc and temperature; and
- '*supporting conditions*' (sometimes referred to as hydromorphology) that assess the physical attributes of the water body such as 'quantity and dynamics of flow' and 'morphology'.

The assessment given for each element is also accompanied by a measure of certainty in the result. The status classification is published in the RBMP and provides a baseline condition against which compliance and future improvements can be measured.

WFD Compliance

There are three key objectives against which the impacts of proposed works on a water body need to be assessed to determine compliance with the overarching objectives of the WFD:

Objective 1: The Scheme will not cause a deterioration in any element of water body classification.

Objective 2: The Scheme will not prevent the WFD status objectives from being reached within the water body or other downstream water bodies.

Objective 3: The Scheme will contribute to the delivery of the relevant WFD objectives. In this case, it will be what contribution the scheme can make towards the water body reaching its objective GEP through planned RBMP mitigation measures.

Objective 1 and Objective 2 must be met to avoid infringement of the WFD. The delivery of the third objective is central to the Environment Agency's implementation of the WFD, where it can be supported through its operational activities. If it is considered that the Scheme is likely to cause deterioration in water body status or prevent a water body from meeting its ecological objectives, then an assessment would be made against the conditions listed in Article 4.7 of the WFD. Article 4.7 can be invoked if; 'new modifications' are of overriding public interest and/or the environmental and social benefits of achieving the WFD objectives are outweighed by the benefits of the new modifications to human health, safety and sustainable development; there are no significantly better environmental options that are technically feasible or not disproportionately costly; and all practicable steps for mitigation have been taken.

Figure 1-4 Background to WFD Assessments

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2. WFD Methodology

A WFD compliance assessment is required for new developments and schemes to demonstrate that proposals will not result in a deterioration in status (or potential) of any water body or prevent the water body from meeting Good status (or potential) in the future. If the above cannot be satisfied, specific situations and conditions whereby derogations are permitted need to be met (referred to as a Regulation 19 test in the WFD).

The WFD assessment follows the 'Clearing the Waters for All' guidance which is specifically for estuarine and coastal waters². The guidance suggests that a WFD assessment be comprised of three key components:

- Screening assessment – to identify the receptors which could be impacted by the Scheme;
- Scoping assessment – to identify risks of the proposed Scheme activities to receptors based on relevant water bodies and their quality elements. A summary of survey information from October 2021 outlines the character of receptors; and,
- Impact assessment – a detailed impact assessment of the water bodies and their quality elements that are considered to be likely affected by the Scheme. Any potential issue for non-compliance would be highlighted at this stage along with consideration of alternatives, enhancements and/or mitigation measures (as required) that would contribute to WFD objectives and therefore result in a WFD-compliant scheme. Where this is not possible, and no suitable alternatives can be identified, the provisions of Regulation 19 of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (formerly Article 4.7 of the WFD) would need to be invoked in order to demonstrate that the Project is not in breach of the objectives of the WFD.

2.1.1 Data sources used

Some monitoring information about relevant WFD waterbodies and recent fish monitoring reports for the Neath Estuary have been extracted from online sources. The key data sources that have informed this assessment are:

- Water Watch Wales³
- Magic Map⁴
- BGS GeoIndex⁵
- EA Ecology and Fish Data Explorer⁶

² Water Framework Directive assessment: estuarine and coastal waters. Available at: [Water Framework Directive assessment: estuarine and coastal waters - GOV.UK](#)

³ waterwatchwales.naturalresourceswales.gov.uk

⁴ <https://magic.defra.gov.uk/>

⁵ <https://mapapps2.bgs.ac.uk/geoindex/home.html>

⁶ <https://environment.data.gov.uk/ecology/explorer/>

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3. WFD Screening

3.1.1 Activity screening

The construction (installation) of the sheet piling scheme has the potential to impact the water environment of the Neath Estuary and therefore have been screened in. Construction activities include sheet piling construction and marine grade cementitious grout filling.

3.1.2 Water body screening

3.1.2.1 River and transitional water bodies

The scheme is located within the Neath Estuary water body GB541005800700 (Figure 3-1), and therefore is **screened in**. The water body is designated as heavily modified, as such must meet the environmental objective to meet 'good potential' rather than good status. The estuary connects to the coast at Swansea Bay GB641008260000, approximately 4km downstream to the mouth of the bay, outside the 2km recommended survey zone, and **therefore screened out**. The confluence of Baglan Brook is approximately 1.5km downstream of the scheme site location along the Neath estuary. Due to river flows, it is unlikely water quality would be affected at this water body and **therefore screened out**.

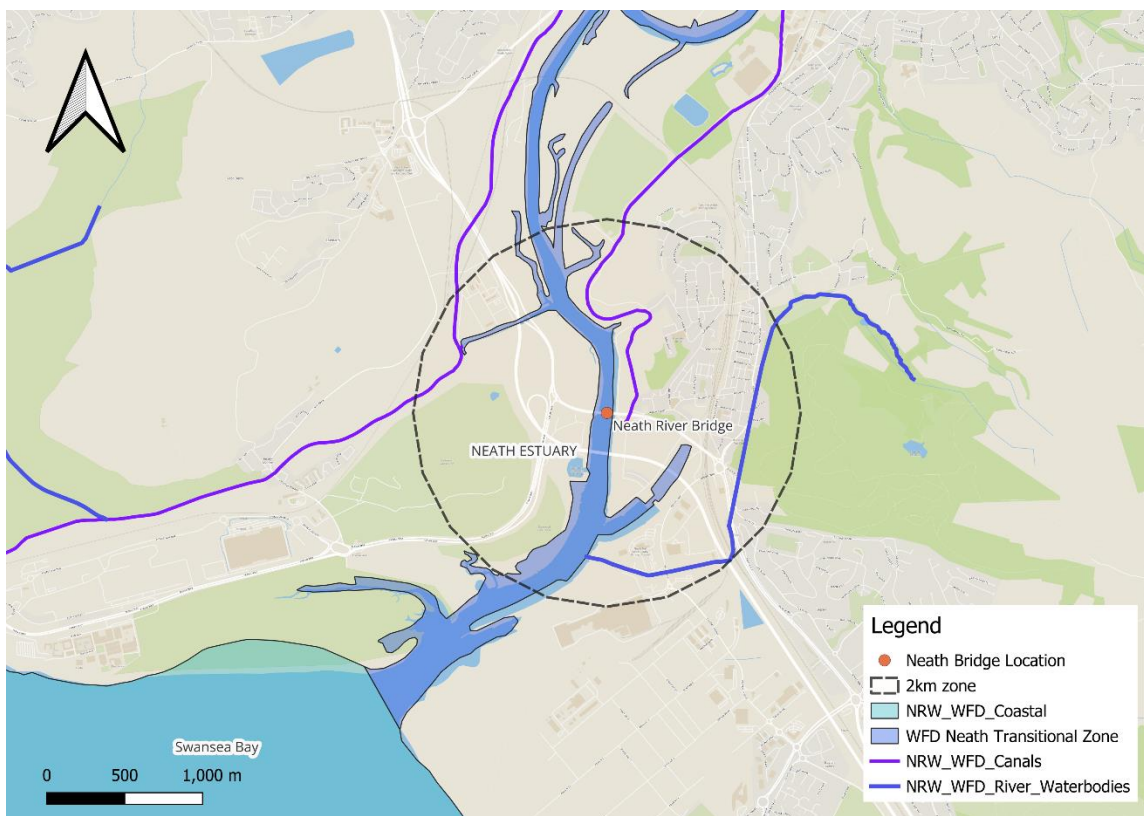


Figure 3-1 – Map of WFD waterbodies within the area of Neath Bridge and 2km study area.

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3.1.2.2 Lake water bodies

There are no WFD Lake water bodies within the area. Therefore, lake water bodies have been **screened out** of further assessment.

3.1.2.3 Groundwater bodies

Planned works do not penetrate groundwater and therefore have been **screened out** for further assessment.

3.1.2.4 Canal water bodies

The Neath and Tennant Canals flow along the north of the Neath valley, along both sides of the River Neath. Although it has not been confirmed, it is assumed that the canal and the River Neath are hydrologically connected. As the Scheme has a localised footprint and involves localised works to the River Neath, impacts to the Canal are not anticipated. Therefore, impacts to WFD canal water bodies are **screened out** of further assessment.

3.1.3 Screening assessment summary

The Scheme has the potential to impact one WFD water body (Table 3-1); The Neath Estuary, which has been screened for further assessment (Figure 3-1).

Table 3-1 - Summary of WFD water body screening

Water Body Name	Screen in or out	Reason for Screening outcome
Neath Estuary GB541005800700	In	The planned works are within the Neath Estuary waterbody, therefore has been included in the scoping assessment .
Neath and Tennant Canal GB71010012	Out	As the Scheme has a localised footprint and involves localised works to the River Neath, impacts to the Canal are not anticipated. Therefore, impacts to WFD canal water bodies are screened out of further assessment .
Baglan Brook - headwaters to conf with River Neath GB110058026350	Out	The confluence of Baglan Brook is approximately 1.5km downstream of the Scheme site location along the Neath estuary. Due to river flows, it is unlikely water quality would be affected at this water body, therefore have been screened out of the assessment .
Swansea Bay GB641008260000	Out	Although the estuary flows directly into Swansea Bay, it is outside the 2km guideline for screening and therefore excluded in the scoping assessment .

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Swansea Carboniferous Coal Measures GB41002G201000	Out	Planned construction of the sheet piling does not penetrate ground water and therefore has been screened out.
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4. WFD scoping assessment

A scoping assessment was undertaken to identify the potential risks that the activity may pose to the WFD receptors within the Neath Estuary WFD transitional water body. The scoping exercise is facilitated by a number of questions that are required to be answered in order to determine if the activity is compliant or whether an impact assessment is required. This is undertaken for each of the WFD receptors for the water body. These WFD receptors are defined in the guidance as the following:

- Hydromorphology
- Biology – habitats
- Biology – fish
- Water quality
- Protected areas

Besides these receptors, which are based on the water body's quality elements, and in line with the Government guidance, the scoping assessment also considered the potential risk of introducing and / or spreading Invasive non-native species (INNS).

4.1 Baseline Data

4.1.1 Geomorphology and hydrodynamics

The Neath Estuary has semi-diurnal tides, meaning two high water and two low water per lunar day. The estuary consists of intertidal substrates such as sand and mud. The area near the site of works is predominantly mud with the base of geological characteristics dominated by sandstone.

4.1.2 Aquatic Ecology

4.1.2.1 Biology- Fish

The nearest fish data available on DataMapWales was at the sampling point Dulais, headwaters to confluence with River Neath (GB110058032360), 13.8km upstream of the survey site (NRW freshwater fish surveys). Fish species present include: Lampreys (*Petromyzontidae*), Stone Loach (*Barbatula barbatula*), European bullhead (*Cottus gobio*), Eurasian minnow (*Phoxinus Phoxinus*), anadromous species (marine to freshwater): European eel (*Anguilla Anguilla*), Salmon (*Salmo salar*) and brown trout (*Salmo trutta*).

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4.1.2.2 Biology- Habitat

Intertidal habitat substrate (Sand to Mud) extends from Swansea Bay up to the edge of the scheme site location as presented in Figure 4-1.

Using the Clearing water for all classifications (Figure 4-2), there are multiple WFD lower sensitivity marine habitats present within the Neath estuary; Gravel & Cobbles, Intertidal soft sediment, Subtidal Soft sediment and Rocky shore. There is also saltmarsh, a WFD higher sensitivity habitat present on the west side of the estuary bank.

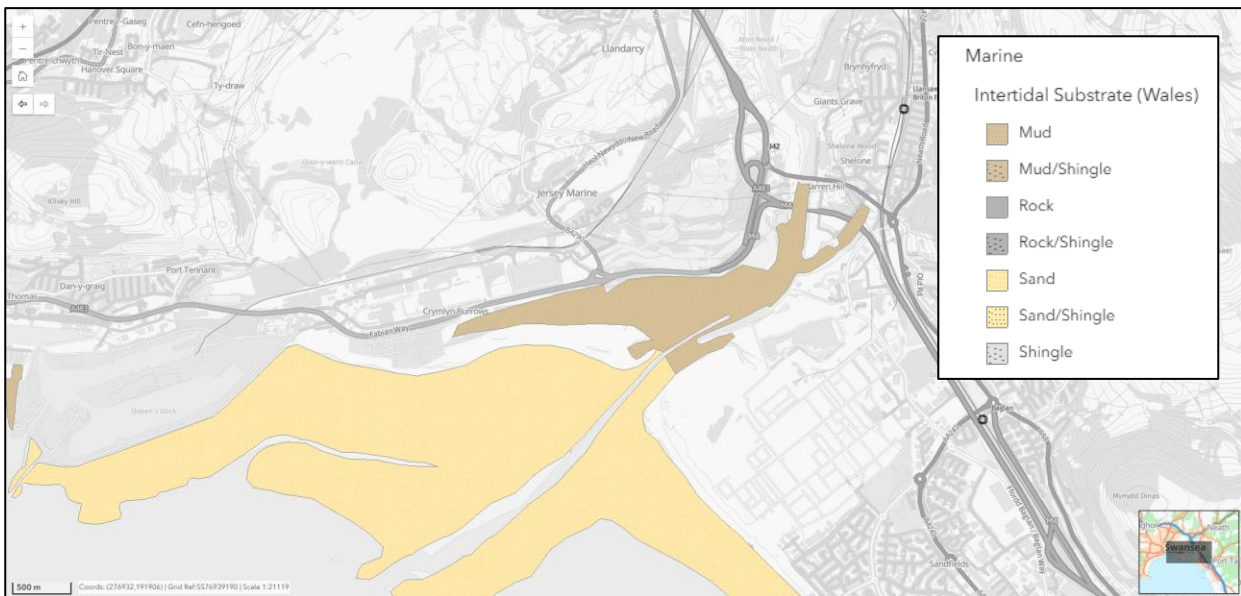


Figure 4-1 - Intertidal Substrate (Wales) map from MAGiC map.

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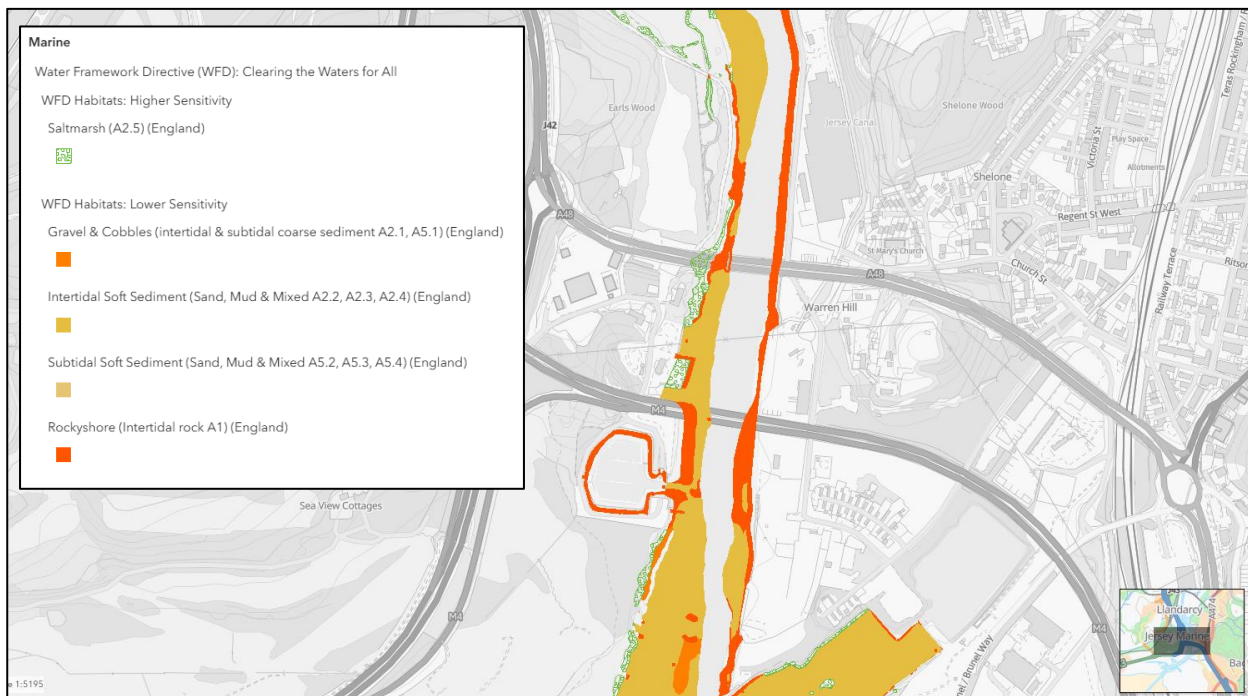


Figure 4-2 – ‘Clearing the waters for all’ WFD habitats, higher and lower sensitivity habitats.

4.1.3 Geology

According to the British Geological Survey (BGS) GeoIndex Onshore, the bedrock geology of Neath Estuary is underlain by Green-grey, lithic arenites ('Pennant sandstones') with thin mudstone/siltstone and seatearth interbeds and mainly thin coals. The bedrock geology has also been classified as medium and high vulnerability as a secondary aquifer under the BGS Groundwater Vulnerability Wales assessment.

4.1.4 Environmental designations

There are two SSSIs nearby the project site; Earlswood Road Cutting and Ferryboat Inn Quarries SSSI which is 260m to the nearest point, or 375m directly along the connecting road, and Crymlyn Burrows which is approximately 1.9km downstream. Nearby terrestrial Crymlyn Bog/ Cors Crymlyn SAC is also approximately 1.4km away from project site. Swansea bay is also a shellfish waters protected area (2.9km) away.

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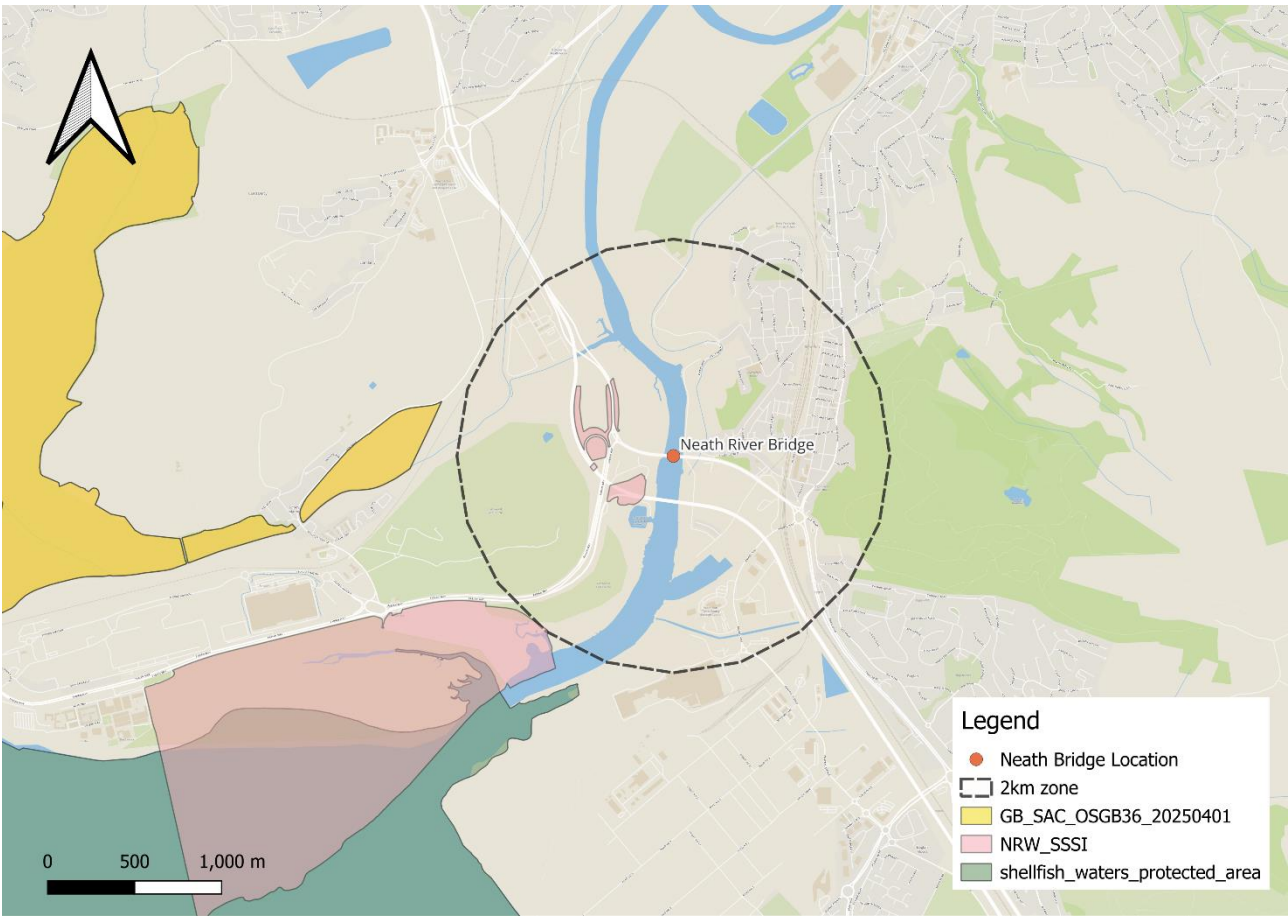


Figure 4-3: WFD designated habitats within the area of the project.

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4.1.5 River Neath WFD baseline

Table 4-1 provides information from the 2021 Cycle 3 WFD assessment of the Neath Estuary transitional water body. The water body is designated as a Natural Water body, although heavily modified, and is therefore expected to reach GES. The water body is currently classified as Moderate status with the Ecological status achieving Moderate and the Chemical status achieving High.

Table 4-1 - Baseline Neath Estuary WFD data

Water body name	NEATH ESTUARY	
Water body ID	GB541005800700	
River Basin District	Western Wales	
Management Catchment	Western Wales TraC	
Operational Catchment	Neath Estuary	
Classification	2021 Cycle 3	Confidence
Overall water body	Moderate	
Chemical	High	
Copper	High	Very Certain
Zinc	High	Uncertain
Arsenic	High	Very Certain
Iron	High	Very Certain
Dissolved Inorganic Nitrogen (DIN)	Good	Uncertain
Dissolved Oxygen	High	Very Certain
Ecological	Moderate	
Biological quality elements	High	
Angiosperms	High	Quite Certain
Invertebrates	High	Uncertain
Macroalgae	High	Very Certain
Opportunistic macroalgae	High	Very Certain
Infaunal Quality Index (IQI)	High	Uncertain
Saltmarsh	High	Quite Certain
Hydro morphology	Not High	No Information
Artificial or HMWB	Heavily Modified	
Mitigation	Moderate	

4.1.6 Summary of scoping assessment

There are potential impacts to the River Neath from construction activities including sheet piling installation and grout infilling. Disturbance in sediment may reduce water clarity as well as any potential contaminants disturbed and resuspended into the water column. Results are summarised by receptor in Table 4-2.

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Table 4-2 - Issues for impact assessment Neath Estuary

WFD receptors	Potential risk to receptor	Issues for impact assessment Neath Estuary
Hydromorphology	Yes	Localised changes in flow due to new walled construction. The HMWB designation is Highly modified, and therefore scoped in.
Biology: habitats	No	The works are within 500m of a land based higher sensitivity habitat on the opposite side of the estuary, and therefore unlikely to be impacted. The works are also within lower sensitivity habitats: intertidal and subtidal sands and muds and rockys shore, but not more than 1% of total water body's area or larger than 0.5km ² . As a result, the impact to the habitat is negligible and the activity is therefore not expected to result in permanent deterioration at the water body scale.
Biology: fish	Yes	Water quality and noise impacts on fish passage and behaviour
Water quality	Yes	Construction run off and spills leading to reduced water quality. Disturbance of sediment with contaminants above Cefas Action Level 1 is not known, so scoped in as a precautionary measure.
Protected areas	Yes	Potential extra traffic and construction within 500m of SSSI. Upstream of shellfish protected waters (<2km away from site, so likelihood of impact is reduced)
Invasive non-native species	Yes	Equipment used in other 'in water' schemes, therefore potential transfer of species.

4.1.7 Programme of Measures/ Assessment of proposals against WFD Quality elements

There has been focus on implementing localised and coordinated actions to enhance the environment in WFD water bodies and protected areas, including those designated for water habitats and species.⁷ Some measures to encourage water body enhancement based on Reasons for Not Achieving Good status (RNAGs), and protected area requirements include:

- Sustainable access and recreation management.
- Specific habitat and feature works.
- Manage invasive non-native species.
- Dredging and silt management.

⁷ [Western Wales River Basin Management Plan 2015-2021](#)

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- Reduce impacts of other physical modifications.

The Tawe to Cadoxton Management Catchment Summary⁸ outlines more measures and partnership opportunities that could support meeting the WFD goals.

Assessment considers the effects of the proposals during both the construction and operational phases on the WFD quality elements for each of the water bodies. Where necessary, control measures are proposed to address potential identified effects on WFD quality elements.

Table 4-3 – Project Mitigation measures assessment for the HMWB.

Mitigation measure	Description
Quality check of work that interfaces of sheet piles are sealed.	Quality checks and monitoring of work to uphold structural integrity and ensure interfaces are fully sealed to prevent leakage of cement and grout into the watercourse.
Silt management protection	This will consist of but not limited to: silt mats/ curtains, silt booms securely fixed around the works area and spill kits. This will help prevent silt entering the watercourse, reducing the impact of water quality
Emergency spill plan	This will reduce the impact of any accidental spills.
Pile machinery work from existing road/pile cap – no plant entering the water	By basing equipment out of the water, this reduces the risk if accidental spillages directly into the watercourses as well as reducing impact of invasive species transfer.
GPP5 best practice measures	Guidance for Pollution Prevention (GPP) documents are based on relevant legislation and reflect current good practice.
Grout infill: Works conducted at low tide to ensure any leaks are identified and dealt with prior to any grout entering watercourse	Working at low tide reduces spillage access directly into the water course and allows scope to identify and rectify and leaks.

⁸ [Tawe to Cadoxton Management Catchment Summary](#)

5. WFD impact assessment

The WFD impact assessment has been set out in two stages. The first section assesses the potential impacts the Scheme may have on the existing WFD classifications aligning to understand if there is likely to be any deterioration. The second section assesses if the scheme has the potential to prevent the water body from achieving its objectives by determining if the Scheme is likely to impact any future programme of measures.

5.1.1 Assessment of impact on WFD classifications

The likely construction and operational effects of the Scheme on the Neath Estuary water body are summarised in Table 5-1.

Table 5-1 - Level of impact on the WFD receptors for the Neath Estuary

WFD Receptor	Level of Impact Neath Estuary
Overall water body	Minor, localised and temporary adverse effect (negligible at water body scale)
Hydro morphology	The hydromorphology of the waterbody is not classified as high. The installation of new scour protection in front of the existing pier of the A48 bridge can alter the natural river processes, such as sediment transport and flow characteristics of the river. However, these impacts are expected to be localised and short term and cause no significant changes to the hydromorphology of the estuary. The water body is heavily modified for human activities that have altered its natural flow and physical features. However, these works will not exhibit sensitive morphology or habitats are to prevent further erosion to pier. As a result of the above, the impact to hydromorphology is minor and therefore not expected to result in no permanent deterioration at the water body scale.
Biology: Fish	During construction, the production of noise and vibrations during installation of the sheet piling may impact fish movement through the estuary. However, the activities are to be carried out at low tide and expected to be short-term (2-3 weeks for piling) and confined to a single back in the watercourse, allowing continued passage for fish. As a result of this, the impact to fish is minor and therefore not expected to result in no permanent deterioration at the water body scale.
Water quality	During construction, water quality may be reduced due to sediment disturbance, reducing clarity and potential resuspension of contaminant/pollutants into the watercourse. This will be greatly mitigated by silt curtains which will contain the vast majority of re-suspended sediments within the immediate area of works, and this reducing the risk of potential contaminant spread along the water course. There are best practice measures (GPP5) in place to reduce risk spills entering waterways, however if any were to spill/run off, water quality would

	temporarily be effected. Silt management plans are also integrated into construction methodology plans (e.g. silt curtains). The use of marine grade cementitious grout may also produce particles that can be washed off into the watercourses, thus reducing water quality temporarily, but can be mitigated through GPP5, silt management emergency spill protocols. Equipment and vehicles will need refuelling. Mitigation against potential spillage includes refuelling on land only to reduce risk of spillages. During operation, there is predicted to be minimal impact on water quality, such as leeching from construction materials, which will be low.
Protected areas	The site is within 500m of a land based SSSI, which could be impacted by increased construction traffic, although this is likely to be low due to its land-based location and on the other side of the estuary. The increase in traffic is also predicted to be low. Other designations such as Crymlyn burrows and shellfish waters are further than 500m from the site. Combined with mitigation methods, embedded in the method plans such as spill kits, silt curtains and GPP5, any impact is deemed to be negligible.
Invasive non-native species	Best practice mitigation measures will be implemented to prevent the spread of invasive non-native species. For example, all equipment and tools of the crew will be washed before entering the estuary and a check-clean-dry policy will be implemented following each working day. As a result, the impact to the spread of INNS is negligible and fully controlled through the implementation of this mitigation.

5.1.2 Temporary Impacts

Specific actions are presented below that will have a mitigating effect on any potential temporary impact during installation:

- Access to the site will avoid nearby SSSI sites.
- The risk of pollution incidents will be managed and reduced through good practice measures including adherence to emergency response protocols (e.g. stop leak, notify authorities, etc.).
- All materials introduced to the estuarine environment are from licensed sources, and the equipment will be operated in accordance with good practice.
- The short period of installation.
- Installation to be conducted at low tide. This will minimise the resuspension of sediment, an thus risk of reducing water quality.

5.1.3 Cumulative impacts

There are no other works, to the best of our knowledge, that would result in a cumulative impact on the Neath Estuary water body.

5.1.4 Assessment of impacts on WFD programme of measures

The programme of measures as outlined in the natural resources for Wales RBMP⁹, aims to achieve environmental outcomes through a number of existing programmes and mechanism. The programmes identified include:

- Welsh Governments Water Strategy for Wales
- NRW's WFD Regulations 2017 driven programme
- Catchment scale improvements, River Restoration and Sustainable Fisheries opportunities
- Protected Areas including the SAC Rivers Project
- Flood and coastal risk management
- Water Industry Investment Programme including the storm overflow roadmap
- Water resources sustainability measures
- Sustainable land management – agriculture
- Sustainable land management - woodland and forestry
- Welsh Governments Capital fund • Opportunity Catchment

Although the works will include a temporary disturbance to fish communities passing through the estuary, the works will take place outside of the migration period (September – November). The impacts of construction works will not prevent the improvement of habitats and migration within the water body. During operation, there are not expected to be any impacts on the habitats or migration of fish within the water body due to the repair works having similar properties to the existing structures. There will be a permanent but relatively small encroachment of at least 1m from the Pier into the channel and negligible to no impact on flow or sediment dynamics.

5.1.5 Impact assessment summary

The Scheme has been assessed as WFD-compliant as all impacts are expected to be, at worst, minor, localised and temporary as outlined below:

- **Minor** - significance of impact which is insufficient to cause a change to the elements status at the water body scale;
- **Localised** - limited to the direct vicinity of the proposed works;
- **Temporary** – short lived and reversible. The works are not expected to cause any deterioration in quality; elements or prevent the water body from achieving objectives.

6. Conclusion

The proposed development is in relation to a new scour protection scheme at Pier 7 of Neath River Bridge (NRB), which is situated on the eastern bank of the River Neath (SS733941). Pier 7 of Neath River Bridge (NRB) has exhibited scour defects in recent years from tidal action of the River Neath (and washout of the material beneath the pilecap and around the piles of the existing structure). Therefore, a scour protection scheme has been developed. The works include installing a sheet piled wall approximately 1 metre in front of the existing pile-cap to prevent further scour of the surrounding material and protect the long-term structural integrity of the bridge. The area between the sheet piled wall and the existing pile-cap is to be backfilled with marine grade cementitious grout. This work is scheduled to commence

⁹ [Western Wales RBMP 2021_2027 Summary](#)

TECHNICAL NOTE

in April-May 2026, with final designs pending ground investigations (GI) being undertaken by Centregreat and AtkinsRealis in October 2025.

The screening assessment identified one surface water body which has the potential to be impacted by the development: The Neath estuary (GB541005800700).

The Scoping assessment identified construction activities which had the potential to impact on the WFD quality elements and the programme of measures for the water body. These activities included:

- Sheet piling construction
- Capping beam construction
- Cementitious grout infill
- Spread of INNS

The impact assessment for the Neath estuary determined that, during construction, with integrated mitigation plans, the worst-case negative impacts are expected to be minor, localised and temporary. During operation, impacts are expected to be negligible as a result of increasing the footprint of the existing structure. It is unlikely that there will be deterioration in any WFD quality elements, and the project will not prevent the water body achieving its objectives.

This assessment concludes that the Proposed Scheme is WFD compliant.

7. Appendix

7.1 Stage 1: Screening

7.1.1 Stage 1 step 1: proposal details.

Project reference number	
Proposal	Marine license application is to be completed for the works at Neath River bridge Pier 7. The current proposal is to install a sheet piled wall approximately 1 metre in front of the existing pile-cap to prevent further scour of the surrounding material and protect the long-term structural integrity of the bridge. The estimated timescale of the construction phase is 12 weeks (draft programme above). The design life of the sheet piled wall is expected to be 120 years. The area between the sheet piled wall and the pile-cap is to be backfilled with marine grade cementitious grout to support the sheet piling. This volume of grout is expected to be approximately 25m3 (to be confirmed at detailed design).
List all permissions that may be required where known	Marine licence

TECHNICAL NOTE

Location (include map where appropriate)	
Timing of works	Licence start and end date: 20/04/26 to 10/07/26. The estimated timescale of the construction phase is 12 weeks.
Name of the person completing the assessment	AtkinsRealis

7.1.2 Stage 1, step 2 : Collate baseline information on all water bodies at risk from the proposal.

Date of classification information: **Cycle 3 2021 classification**

Water body name and ID	Water body type	HMWB	Overall water body status	Relevance to the proposal
Neath Estuary GB541005800700	<i>Estuary/ transitional</i>	Yes	<i>Moderate</i>	<i>Project site within. – direct risk</i>

TECHNICAL NOTE

Water body name and ID	Water body type	HMWB	Overall water body status	Relevance to the proposal
Swansea Carboniferous Coal Measures GB41002G201000	Groundwater	No	Poor	Project site within – direct risk

*where there is no information, or a null value then assume it is at good status for morphology (or hydromorphology for TraC water bodies) or, if the water body is designated HMWB the morphological status is **not applicable (please be aware that these water bodies are still sensitive to physical modifications)**.

The potential for the proposal to affect the following water bodies was also initially considered, but can be ruled out without further consideration:

- Baglan Brook - headwaters to conf with River Neath - GB110058026350 – 1.5km downstream hydrologically linked but not at risk
- Neath and Tennat Canal - GB71010012 – upstream hydrologically linked but not at risk
- Swansea Bay - GB641008260000 – 4km downstream, outside of the 2km screening guidelines.

Stage 1, Step 3: Risk Screening

complete a risk screening table for each water body listed above that has **potential risk of impact from the proposal**

Water body name: Neath Estuary			
Water body ID: GB541005800700			
Question number	Risk screening questions	Name of activity	Screening decision – delete as appropriate
Q1.1	Is the proposal in a water body at high status or high status for morphology or hydromorphology?	N/A	No – go to Q1.2
Q1.2	Is the proposed activity listed a low risk activity? Complete new row for each activity	Sheet piling construction	No – complete Stage 2 scoping assessment for each water body
		Capping Beam construction	No – complete Stage 2

TECHNICAL NOTE

Water body name: Neath Estuary			
Water body ID: GB541005800700			
Question number	Risk screening questions	Name of activity	Screening decision – delete as appropriate
			scoping assessment for each water body
		<i>Cementitious Grout Infill</i>	No – complete Stage 2 scoping assessment for each water body
Q1.3	Are there any potential cumulative/in combination impacts?		Yes – complete Stage 2 scoping assessment for each water body

TECHNICAL NOTE

7.2 Stage 2: Scoping

Stage 2, step 1 – Relate activity to receptors

Scoping table for transitional and coastal water bodies			
Water body name: Neath Estuary			
Water body ID: GB541005800700			
Elements	Applicable	Potential Impact (include direct and indirect potential impacts)	Avoidance measures included in the proposal
Transitional and Coastal water bodies	Choose one of the following: Direct – risk of direct impact Indirect – risk of indirect impact N/A – no impact pathway N/A – other – include additional text to explain	Further detail on potential impacts. Where N/A is included then provide detail to explain.	Briefly describe any measure included within the proposal at this point that will ensure the potential effects are avoided. Where impacts can be avoided through measures already included in the scheme then add Scoped Out. Or where further assessment is required add Scoped In
Hydromorphology – hydromorphology constitutes both 'hydrology' and 'geomorphology' and describes the physical characteristics and processes of a water body. Could the proposal lead to changes in:			
- morphological conditions, for example depth variation, the seabed and intertidal zone structure - tidal patterns, for example, dominant currents - freshwater flow - wave exposure	Direct – risk of direct impact	Could impact on the hydromorphology due to new wall feature changing water flows.	Is in a water body that is heavily modified for the same use as the activity.
Is the proposal in a HMWB?	Yes		If yes then scope in for detailed assessment
Water quality An activity can modify the flow of water, introduce artificial materials or remove sediment and/or vegetation. These can all affect the water quality – particularly physico-chemical aspects of water quality - such as levels of dissolved oxygen, nutrients and ammonia. Include water quality in the detailed assessment if the activity could affect:			

TECHNICAL NOTE

• water clarity (turbidity or suspended particulate matter concentration) • thermal conditions (including shading) • oxygen levels – dissolved oxygen conditions • nutrients - dissolved inorganic nitrogen • microbial patterns • salinity/conductivity • is in a water body with a phytoplankton or opportunistic macroalgae status of moderate, poor or bad • is in a water body with a history of harmful algae (where there is an existing designation for the area, information should be available; however, local water quality officers will be able to help).	Direct – risk of direct impact	Construction can lead to changes in water clarity through sediment disturbance or construction runoff (cement, grout, machinery contaminants, fuel).	Silt management protections plans to consist of but not be limited to silt mats/ curtains, silt booms securely fixed around the works area and spill kits. Works conducted at low tide to ensure any leaks are identified and dealt with prior to any grout entering watercourse
Chemicals - A detailed assessment will also be required if the activity uses or releases chemicals, for example, through sediment disturbance or building works. This is necessary when either the:			
• chemicals are on the Environmental Quality Standards Directive (EQSD) list • activity disturbs sediment with contaminants (for estuarine and coastal above Cefas Action Level 1). or, if the activity releases chemicals on the EQSD list and has a mixing zone, like a discharge pipeline or outfall, follow the Environment Agency's surface water pollution risk assessment guidance. This is part of the Environmental Permitting Regulations guidance.	Indirect – risk of indirect impact	Disturbance of sediment with contaminants above Cefas Action Level 1/ - Not known, so scoped in as a precautionary measure. Concrete/grout construction wash off	Works conducted at low tide to ensure any leaks are identified and dealt with prior to any grout entering watercourse. Working at low tide also reduces disturbance of sediments which would otherwise be resuspended into the water column during construction
Biology			

TECHNICAL NOTE

Identify if the activity or project could impact on the abundance or composition of the biological elements listed below:

Biological elements for transitional (T) and coastal (C) waters under the directive are:

- Benthic invertebrates (T, C)
- Fish (T)
- Phytoplankton (T, C)
- Macroalgae (T, C)
- Angiosperms (T, C)

Could the proposal lead to:

☐ changes to the composition and abundance of aquatic flora	Direct – risk of direct impact	intertidal and subtidal soft sediments like sand and mud	Project footprint localised. Area of disturbance less than 0.5km ² and less than 1% of water body area.
☐ changes to the composition and abundance of benthic invertebrate fauna			

For TraC water bodies - scope in if the footprint (where footprint can be direct or a plume i.e. chemical or thermal; for dredging multiply the area by 1.5x) of your activity is:

☐ 0.5km ² or larger ☐ 1% or more of the water body's area ☐ Within 500m of any higher sensitivity habitat (see table below) ☐ 1% or more of any lower sensitivity habitat (see table below)	No	No to all criteria/questions	
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Fish fauna (Transitional water bodies only): could the proposal lead to:

☐ changes to the composition, abundance and age structure of fish fauna ☐ an 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)	Direct – risk of direct impact	The Estuary is a fish passage to freshwater habitats. Noise could affect fish behaviour during construction or chemical discharge during construction/road run off etc. salmon, sea trout and European eel confirmed at freshwater	Works conducted at low tide.
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TECHNICAL NOTE

☐ entrainment or impingement of fish ☐ refuge/predation areas Or: is the proposal in an estuary and could affect fish in the estuary; is outside the estuary but could delay or prevent fish entering it; or, could affect fish migrating through the estuary		site up the neath river (14km)	
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Info for TraC water bodies

Extract from EA Clearing the water for All

Higher and lower sensitivity habitats for TraC water bodies

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

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

Section 4: WFD protected areas

TECHNICAL NOTE

Consider if WFD protected areas are at risk from your activity. These include:

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

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is	Yes	No	Protected areas risk issue
Within 2km of any WFD protected area ⁶	Requires impact assessment	Impact assessment not required	Yes, 1 SSSI within 2km boundary of site – low risk as inland

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

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS. 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

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	Yes – use of equipment used in other locations

TECHNICAL NOTE

Summary

Summarise the results of scoping here.

Issues for impact assessment Neath Estuary

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	Localised changes in flow due to new walled construction. Heavily modified water body (HMWB)
Biology: habitats	No	The works are not within 500m of a higher sensitivity habitat. But is directly within lower sensitivity habitats: intertidal and subtidal sands and muds, but not more than 1% of total water body's area or larger than 0.5km ² . As a result, the impact to the habitat is negligible and the activity is therefore not expected to result in permanent deterioration at the water body scale.
Biology: fish	Yes	Water quality and noise impacts on fish passage and behaviour
Water quality	Yes	Construction run off and spills leading to reduced water quality. Disturbance of sediment with contaminants above Cefas Action Level 1 is not known, so scoped in as a precautionary measure.
Protected areas	Yes	Potential extra traffic and construction within 500m of SSSI. Upstream of shellfish protected waters (<2km away

TECHNICAL NOTE

		from site, so likelihood of impact is reduced)
Invasive non-native species	Yes	Equipment used in other 'in water' schemes, therefore potential transfer of species.

7.2.1 Summary of step 1 scoping

Q2.1 Is there a risk that a component of the proposal may cause deterioration of any element that makes up water body status?

Disturbance of sediments and pollutants, as well as introduction of construction material such as cement, grout and fuel into the watercourse would reduce water quality.

There are multiple mitigation measures put in place as part of the proposal including but not limited to:

- Quality check of work that interfaces of sheet piles are sealed.
- Silt management protection
- Emergency spill plan
- Pile machinery work from existing road/pile cap – no plant entering the water
- Grout infill: Works conducted at low tide to ensure any leaks are identified and dealt with prior to any grout entering watercourse

Yes – [detailed assessment required](#)

7.2.2 Stage 2, step 2: Summary of scoping decision of the project 'alone'

Q2.2 Is there a risk that a component of the proposal may prevent the water body or Protected Area from achieving its objectives in the future?

Impacts will be localised and temporary

NO – [go to next section](#)

7.2.3 Stage 2, step 3: Assessing potential in combination and/or cumulative impacts

Q2.3 Can the risk of deterioration or prevention of achieving water body objectives from in combination and or cumulative effects be ruled out?

Avoidance measures already included in the project

TECHNICAL NOTE

Mitigation measure	Impact of Project proposals on contribution to, or ability to implement mitigation measure
Quality check of work that interfaces of sheet piles are sealed.	Quality checks and monitoring of work to uphold structural integrity and ensure interfaces are fully sealed to prevent leakage of cement and grout into the watercourse.
Silt management protection	This will consist of but not limited to: silt mats/ curtains, silt booms securely fixed around the works area and spill kits. This will help prevent silt entering the watercourse, reducing the impact of water quality
Emergency spill plan	This will reduce the impact of any accidental spills.
Pile machinery work from existing road/pile cap – no plant entering the water	By basing equipment out of the water, this reduces the risk if accidental spillages directly into the watercourses as well as reducing impact of invasive species transfer.
Grout infill: Works conducted at low tide to ensure any leaks are identified and dealt with prior to any grout entering watercourse	Working at low tide reduces spillage access directly into the water course and allows scope to identify and rectify and leaks.

There are no other works, to the best of our knowledge, that would result in a cumulative impact on the Neath Estuary water body

7.2.4 Stage 2, Step 4: Overall scoping summary

Summarise if there a potential risk that your proposal may cause deterioration or prevent a water body from meeting its objectives either alone or in combination.

There are potential impacts to the River Neath from construction activities including sheet piling installation and grout infilling. Disturbance in sediment may reduce water clarity as well as any potential contaminants disturbed and resuspended into the water column.

7.3 Stage 3: Detailed Assessment

Stage 3 summary table.

Water body name & ID	WFD element/s scoped in	Description of impacts; include a list of all evidence documents to inform the detailed assessment
Neath Estuary	Overall water body	Minor, localised and temporary adverse effect (negligible at water body scale)
	Hydro morphology	The works is building upon an existing structure with the heavily modified water body of the Neath estuary. It is expected that there will be no significant changes to the hydro morphology of the estuary, and any impacts will be localised to the pier.
	Biology: Fish	During construction, the production of noise and vibrations during installation of the sheet piling may deter feeding and migrating fish travelling through the estuary. During operation, due to the localised footprint extending on the existing structure, impacts are anticipated to be minor and localised.
	Water quality	During construction, water quality may be reduced due to sediment disturbance, reducing clarity and potential resuspension of contaminant/pollutants. There are protocols in place to reduce risk spills entering waterways, however if any were to spill/run off, water quality would temporarily be effected. Silt management plans are also integrated into construction plans. The use of marine grade cementitious grout may also produce particles that can be washed off into the watercourses, thus reducing water quality temporarily. Equipment and vehicles will need refuelling. Mitigation against potential spillage includes refuelling on land only to reduce risk of spillages. During operation, there is predicted to be minimal impact on water quality.

TECHNICAL NOTE

Water body name & ID	WFD element/s scoped in	Description of impacts; include a list of all evidence documents to inform the detailed assessment
	Protected areas	The site is within 500m of a land based SSSI, which could be impacted by increased construction traffic, although this is likely low. Other designations are further than 500m and deemed lower risk.
	Invasive non-native species	As the equipment being used will have been utilised in similar projects elsewhere, there is potential risk of species transfer if equipment has been used in water. Equipment is planned to be used out of the water, thus reducing this risk. If equipment is to be used in the water, correct protocol (wash, dry, check) will help reduce this risk.

Assessing for deterioration

Is there a risk the proposal may cause deterioration?

Construction: biggest impacts will be sediment disturbance, sound and vibration which may effect fish behavior, resuspend sediments and contaminants into the water column, and thus reducing water quality.

Operation: minor localized water flows may be impacted, but this is deemed negligible in the scope of the water body.

Preventing the achievement of good status/potential

Could your proposal compromise the water body or Protected Area from achieving good status (or potential) now or in the future?

The proposal is not seen to compromise the waterbody from achieving good status now or in the future. The proposal does not change the HMWB designated use as it is to repair and maintain the existing structures.

TECHNICAL NOTE

Mitigating for potential impacts

List avoidance measures	How will the measure be applied	Who will be responsible for applying them?	Will this remove the risk of deterioration or prevent the achievement of water body objectives.
Quality check of work that interfaces of sheet piles are sealed.	Quality checks and monitoring of work to uphold structural integrity and ensure interfaces are fully sealed to prevent leakage of cement and grout into the watercourse.	Construction company	Yes
Silt management protection	This will consist of but not limited to: silt mats/ curtains, silt booms securely fixed around the works area and spill kits. This will help prevent silt entering the watercourse, reducing the impact of water quality	Construction company	Yes
Emergency spill plan	This will reduce the impact of any accidental spills.	Construction company	Yes
Pile machinery work from existing road/pile cap – no plant entering the water	By basing equipment out of the water, this reduces the risk if accidental spillages directly into the watercourses as well as reducing impact of invasive species transfer.	Construction company	Yes
Grout infill: Works conducted at low tide to ensure any leaks are identified and	Working at low tide reduces spillage access directly into the water course and	Construction company	Yes

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List avoidance measures	How will the measure be applied	Who will be responsible for applying them?	Will this remove the risk of deterioration or prevent the achievement of water body objectives.
dealt with prior to any grout entering watercourse	allows scope to identify and rectify and leaks.		

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7.3.1 Conclusion

Can the potential risk that your proposal may cause deterioration or prevent the water body and/or Protected Area from meeting its objectives be ruled out either alone or in combination?

Stage 3 decision summary table.

Water body name & ID	WFD element/s scoped in	Is there a risk the proposal may cause deterioration?* 'YES' or 'NO'	Is there risk of the activity preventing the water body/ PA from meeting its objectives?* 'YES' or 'NO'
Neath Estuary (GB541005800700).	Hydro morphology	No	No
	Biology: Fish	No	No
	Water quality	No	No
	Protected areas	No	No
	Invasive non-native species	No	No

* If yes or where there is uncertainty if the proposed activity may prevent a water body or PA from meeting its objectives or may cause deterioration then follow a precautionary approach and select yes.