



A548 Foryd Bridge Deck Waterproofing and Re-surfacing

Water Framework Directive Assessment

CPF8406



Document Control Sheet

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Reviews

Name	Title	Date	Version
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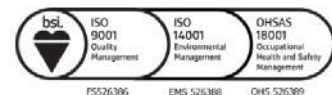
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Background

YGC have been commissioned to carry out Environmental Assessments, including a Water Framework Directive Assessment, in support of a Marine Licence application, for waterproofing and re-surfacing works at Foryd Bridge, Rhyl. The site of proposed works is located towards the mouth of the Afon Clwyd watercourse.

Introduction

The proposed works involve undertaking waterproofing and re-surfacing works to the bridge deck of Foryd Bridge, on the A548 crossing the River Clwyd between Rhyl and Kinmel Bay, which borders the counties of Conwy and Denbighshire. The works are proposed to address surface defects on the main span of the bridge, including any repairs required to the concrete deck which may become evident following removal of existing asphalt surfacing, which will help maintain the structural integrity of the bridge.

The scheme involves the removal of existing surfacing by means of cold milling, any damage to the concrete deck will be investigated and repaired by breaking out any loose concrete and repairing with appropriate concrete repair products. Expansion joints shall be replaced with new expansion joints. Existing road surface drainage gully covers will be removed and replaced with new ironwork. Once concrete repairs have cured sufficiently and expansion joints replaced, resurfacing work will commence with a spray-on waterproofing system applied to the bridge deck followed by a new asphalt binder course and surface course. An existing streetlamp suspended by cables will be removed and height restriction signs will be erected as part of the scheme.

Works are expected to commence in October 2023 for a period of approx. 10 days.

The proposal is subject to a Marine Licence by Natural Resource Wales and must also follow the guidelines set out by the WFD legislation and not cause negative effects to the water environment, water quality, ecosystems or biodiversity. This report therefore highlights any impacts the work could potentially have on the waterbody, along with mitigation and an assessment (if required) of whether the proposals comply with the Water Framework Directive.

A full method statement can be found as a supporting document.

Legislative Background

The Water Framework Directive (WFD) is a European Directive which sets out a strategic planning process for the purposes of managing, protecting and improving the water environment. The WFD introduces new environmental requirements which aim to meet good status in all water bodies. For surface waters, good status is made up of 'good ecological status (GES)' (or good ecological potential (GEP) where artificial or heavily modified) and 'good chemical status'. Ecological status and potential are made up of a number of biological, hydromorphological and physio-chemical quality elements. Chemical status is recorded as either good or failing. For groundwater to be in overall 'good' status, both quantitative and chemical status must be 'good'. The WFD also requires prevention of deterioration in water body status including deterioration of any of the individual quality elements.

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.

New activities and schemes that affect the water environment may adversely impact biological, hydromorphological, physico-chemical and/or chemical quality elements (WFD quality elements), leading to deterioration in water body status. They may also render proposed improvement measures ineffective, leading to the water body failing to meet its WFD objectives for GES/GEP. Under the WFD, activities must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by invalidating improvement measures.

WFD Assessment in Stages

The Water Framework Directive Assessment can have up to three stages, which are

- **Screening Stage:** excludes any activities that do not need to go through the scoping or impact assessment stages
- **Scoping Stage:** identifies the receptors that are potentially at risk from your activity and need impact assessment
- **Impact Assessment Stage:** considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status

The Proposal

Your activity	Description, notes or more information
Name of activity	Foryd Bridge re-surfacing.
Brief description of activity	Removal of existing surfacing by means of cold milling. Repairing any damage to the concrete deck. Replace expansion joints. Existing road surface drainage gully covers will be removed and replaced with new ironwork. Once concrete repairs have cured sufficiently and expansion joints replaced, resurfacing work will commence with a spray-on waterproofing system applied to the bridge deck followed by a new asphalt binder course and surface course.
Location of activity (central point XY coordinates or national grid reference)	<u>Scheme location:</u> NGR: SH 99456 80633
Footprint of activity (ha)	0.1ha.
Timings of activity (including start and finish dates)	Start date: 16 th October 2023 End date: 26 th October 2023 <i>*Exact timings to be confirmed on contractor appointment.</i>

Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	All works will be confined to the bridge deck. Plant machinery will be required on the bridge deck and will access site via the A548. All waste materials generated during the maintenance work will be removed from site.
Use or release of chemicals (state which ones)	Plant machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels into the environment, albeit, the risk is considered to be low.

WFD Assessment

WFD Classification

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

- 'biological elements' such as fish, invertebrates, phytobenthos (which includes plants, macro-algae and 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 River Basin Management Plan (RBMP)¹ and provides a baseline condition against which compliance and future improvements can be measured.

The activity / proposal involves the Clwyd waterbody, and a summary of key elements is provided below.

Water body ¹	Description, notes or more information
WFD water body name	<i>Clwyd</i>
Water body ID	<i>GB541006608000</i>
River basin district name	<i>Western Wales River Basin</i>
Water body type (estuarine or coastal)	<i>Transitional</i>
Water body total area (ha)	<i>64.4ha</i>
Overall water body status (2018)	<i>Moderate</i>
Ecological status	<i>Moderate</i>
Chemical status	<i>High</i>
Target water body status and deadline	<i>Moderate by 2027</i>
Hydromorphology status of water body	<i>Not High</i>
Heavily modified water body and for what use	<i>Yes, for 'coastal protection use'.</i>
Higher sensitivity habitats present	<i>None</i>

¹ <https://www.gov.uk/government/collections/river-basin-management-plans-2015#north-west-river-basin-district-rbmp-2015>

Lower sensitivity habitats present	<i>intertidal soft sediment (mudflats and sandflats).</i>
Phytoplankton status	<i>Not recorded</i>
History of harmful algae	<i>None Known</i>
WFD protected areas within 2km	<i>Liverpool Bay SPA</i>

WFD Assessment - Screening:

The WFD is also required in support of a Band 2 Marine Licence Application, by NRW.

WFD Assessment – Scoping Exercise:

The scoping exercise is carried out to identify all the potential risks to each receptor element that are used to determine the status of the waterbody. The receptors / elements are:

- Hydromorphology
- biology – habitats
- biology – fish
- water quality
- protected areas

These receptors are based on the water body's quality elements (supporting elements, biological elements, and chemical elements).

The scoping exercise has been undertaken following the template provided on the gov.uk² website.

² <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters#contents>

Hydromorphology:

Consider if your activity:	Yes	No	Hydromorphology risk issue(s) / observations
Could impact on the hydro morphology (for example morphology or tidal patterns) of a water body at high status	Requires impact assessment	Impact assessment not required	<i>The proposed maintenance works are confined to the bridge deck. No works will take place within the waterbody, on the riverbanks, or on the underside of the bridge structure.</i>
Could significantly impact the hydro morphology of any water body	Requires impact assessment	Impact assessment not required	<i>As above.</i>

²

Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact Assessment not required	<i>The Clwyd is designated as heavily modified for 'coastal protection use'.</i>
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Biology - habitats:

Consider if habitats are at risk from your activity.

Higher sensitivity habitats ³	Lower sensitivity habitats ⁴
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	

Consider if the footprint ⁵ of your activity is:	Yes	No	Biology habitats risk issue(s) / observations
0.5km ² or larger	Yes to one or more – requires impact assessment	No to all impact assessment not required	<i>No – the total area of the proposed activity is 0.1ha.</i>
1% or more of the water body's area			<i>No - the total area of water body is 64.4 ha, and area of proposed activity does not exceed 0.1ha, which represents 0.1% of the waterbody area.</i>
Within 500m of any higher sensitivity habitat			<i>No – The proposed work is not within 500m of a higher sensitivity habitat.</i>

³ Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

⁴ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

⁵

1% or more of any lower sensitivity habitat			<i>No – There are lower sensitivity habitats within the area of the works. However, it is not believed that the footprint of the scheme would exceed a total area of more than 1% of the habitat area.</i>

Biology – fish

Consider if fish are 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:	Yes	No	Biology fish risk issue(s) / observations
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	Continue with questions	Go to next section	Whilst the work is located on the lower reaches of Afon Clwyd, the work does not involve creating any physical barriers within the watercourse that would impact fish movement.
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)	Requires impact assessment	Impact assessment not required	Not applicable
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	Not applicable

Water Quality:

Consider if water quality is at risk from your activity.

Consider if your activity:	Yes	No	Water quality risk issue(s) / observations
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment	Impact assessment not required	No – the proposed work would be carried out on the bridge deck, above tide level, and therefore would not directly impact water clarity, temperature, oxygen levels, nutrients or microbial patterns of the water body, especially not for continuous periods longer than 14 days.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	No – The waterbody's phytoplankton status has not been recorded.
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No – As far as we are aware, the waterbody does not have a history of harmful algae.

Consider if 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:	Yes	No	Water quality risk issue(s) / observations
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	Plant machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels into the environment, albeit, the risk is considered to be low. There is a small risk of releasing chemicals through spray applied waterproofing, however provided that this activity takes place during appropriate weather conditions (e.g not during high winds or heavy rain) the risk is minimal. Similarly, any concrete repair work carries a small risk, however such repair work is likely to be small in scale and providing that pollution prevention measures are adhered to, the risk is considered minimal.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	No – no sediment disturbance will take place.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s) / observations
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment ⁵	Impact assessment not required	No – the proposal does not use a chemical mixing zone.

WFD Protected Areas

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

Consider if your activity is:	Yes	No	Protected areas risk issue(s) / observations
Within 2km of any WFD protected area ⁶	Requires impact assessment	Impact assessment not required	The proposed activity is located approximately 900m upstream of Liverpool Bay Special Protected Area (SPA).

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) / observations
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	No temporary working area will be required for the works. There will be presence of plant machinery on the bridge deck only. It is therefore considered that there is no risk of introducing marine INNS in this instance.

Summary of Scoping:

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	It is concluded that the resurfacing work will not have any impact on hydromorphology, due to the maintenance works being confined to the bridge deck. No works will take place within the waterbody, on the riverbanks, or on the underside of the bridge structure.
Biology: habitats	No	The proposed works is not within 500m of a Higher Sensitivity Habitat.

Biology: fish	No	Whilst the work is located on the lower reaches of Afon Clwyd, the work does not involve creating any physical barriers within the watercourse that would impact fish movement.
Water quality	Yes	Plant and machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels (PAHs) into the environment, albeit, the risk is considered to be low. The risk of contamination from spray applied waterproofing and concrete repair work is also considered to be minimal, provided appropriate measures are adhered to.
Protected areas	Yes	The proposed activity is located approximately 900m upstream of Liverpool Bay Special Protected Area (SPA). Risk / issues for impact assessment include pollution and disturbance.
Invasive non-native species	No	No temporary working area will be required for the works. There will be presence of plant machinery on the bridge deck only. It is therefore considered that there is no risk of introducing marine INNS in this instance.

Assessment of impacts on waterbody quality elements

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 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 Good Ecological Potential (GEP) through planned RBMP mitigation measures.

The first two objections must be met to avoid infraction of the WFD. The delivery of the third objective is central to the 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.

Water Quality

Plant and machinery will be required to undertake the proposed activity, and therefore there is an inherent risk of releasing oils and fuels into the environment, although the risk is considered to be low due to no in water works, the impact on the waterbody could not be completely ruled out at the scoping stage. The following Reasonable Avoidance and Mitigation Measures will be implemented during the course of the proposed work:

- Use biodegradable lubricant and hydraulic oil in plant machinery if possible. Biodegradable oils are less toxic than most synthetic oil but should be stored to the same standards as other oils and prevented from entering the water environment;
- Implement best practice to ensure good housekeeping, for example ensuring all machinery used is kept to good repair and subject to regular checks;
- Ensure all fuel and other potentially hazardous chemicals is stored in a safe compound at a distance of at least 10m from the shoreline;
- Refuelling of plant will be at a designated area located a suitable distance away from the watercourse and bridge deck.
- Use of spill kits and personnel trained to use the kit will be available on site on case of oil leak.
- Good working practices will be taken, such as adhering to GPP5 Works and maintenance in or near water. Pollution prevention measures to be stipulated in a Construction Environmental Management Plan (CEMP)
- Gully outlets to be covered to prevent debris/materials entering the drainage system.
- NRW emergency help line (0300 065 3000) will be contacted in the case of an emergency spill.
- No cold milling works will be undertaken in periods of high winds to prevent dust contamination of the watercourse.
- No concrete repairs or waterproofing tasks to be carried out during periods of heavy rain to prevent the risk of contaminating the watercourse.
- No spray-applied waterproofing tasks to be undertaken during periods of high winds to prevent overspray and contamination of the watercourse.

Since the plant and machinery would not directly enter the waterbody, and assuming that machinery used are well maintained, it is considered unlikely that the proposed activity would result in a contravention of Objective 1. However, accidents do happen – and by having the above measures in place it will reduce any impact should an accident occur.

Protected Areas

The proposed work is located within 2km of WFD Protected Areas, namely Liverpool Bay SPA.

The proposed activity is located approximately 900m upstream of Liverpool Bay Special Protected Area (SPA). The SPA borders the coastlines of north-west England and north Wales, and runs as a broad arc from Morcambe Bay to the east coast of Anglesey. It is classified for the protection of red-throated diver (*Gavia stellata*), common scoter (*Melanitta nigra*), and little gul (*Hydrocoloeus minutus*) in the non-breeding season; common tern (*Sterna hirundo*) and little tern (*Sterna albifrons*) in the breeding season, and an internationally important waterbird assemblage.

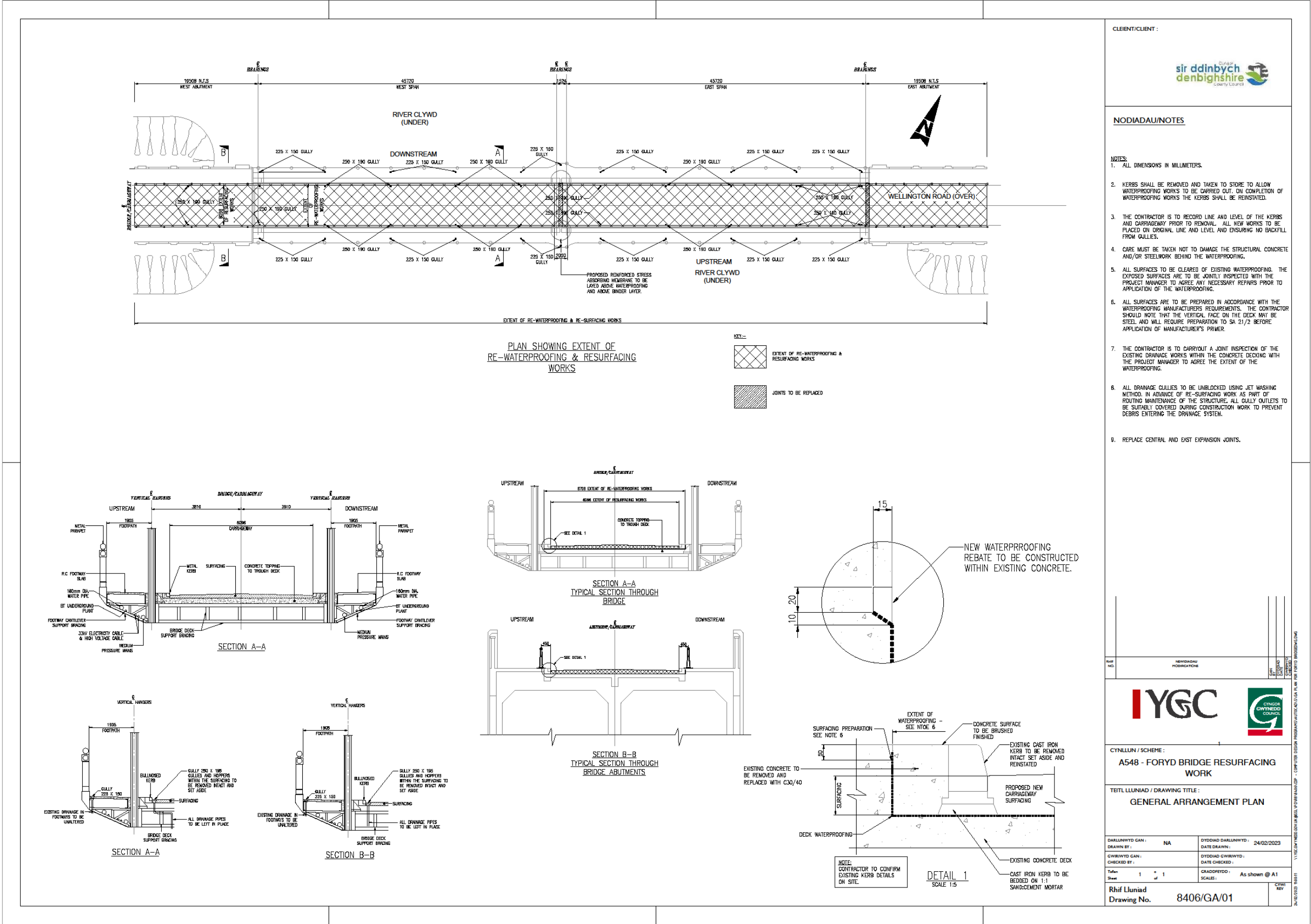
Due to the requirement for plant and machinery on the bridge to undertake the proposed maintenance works, there is a low risk of pollution impact to the water environment beneath. The Afon Clwyd estuary beneath the bridge is hydrologically connected to the SPA which is located out in the bay to the north. However, taking into account the nature and scale of the works proposed, and the dilution factor associated with the marine environment it is not considered likely that a pollution incident would cause a likely significant effect on the site or its mobile species features. Likewise, the works will be taking place on a structure which is already subject to regular traffic, therefore it is unlikely that the maintenance works will result in disturbance impacts that will effect the features of the SPA during the short duration of the works.

Conclusion

It is established through the assessment above that by implementing good working practices and reasonable avoidance measures that the proposed works would not lead to deterioration of any quality element of the waterbody (objective 1) nor would prevent the overall objectives for the waterbody being met (Objective 2).

Appendices

Appendix A – General Arrangement Plan



Appendix B – Outline Method Statement

A548 Foryd Bridge, Rhyl – Deck Waterproofing and Re-surfacing **Outline Method Statement**

1.0 Introduction

This document has been prepared by YGC as overseeing organisation for the proposal to carry out Waterproofing and re-surfacing of Foryd Bridge on the A548 crossing the River Clwyd between Rhyl and Kinmel Bay, which borders the counties of Conwy and Denbighshire, Grid Reference 299470E 380630N. The works are proposed to address surfacing defects on the main span of the bridge, the work will address any repairs required to the concrete deck of the bridge which may become evident following removal of the existing asphalt surfacing, the proposed remedial work will help maintain the structural integrity of the bridge.

The scheme involves the removal of existing surfacing by means of cold milling, any damage to the concrete deck will be investigated and repaired by breaking out any loose concrete and repairing with appropriate concrete repair products. Expansion joints shall be replaced with new expansion joints. Existing road surface drainage gully covers will be removed and replaced with new ironwork. Once concrete repairs have cured sufficiently and expansion joints replaced, resurfacing work will commence with a spray-on waterproofing system applied to the bridge deck followed by a new asphalt binder course and surface course. An existing streetlamp suspended by cables will be removed and height restriction signs will be erected as part of the scheme.

Due to the structure spanning over the river Clwyd, the contractor will ensure strict adherence to this method statement and pollution prevention requirements. A copy of the IEA, and dialogue with statutory environmental bodies will be sent to contractors as part of the tender documents.

Prior to commencement, the contractor must prepare a Construction Environmental Management Plan (CEMP) detailing pollution prevention, ecology mitigation and Reasonable Avoidance Measures (RAMs) for approval by the client and YGC environmental officers. This must be always adhered to during the works. Any deviation from this will result in immediate suspension of the works.

2.0 Method of Construction

The work will be carried out on the bridge deck following a full closure and diversion of traffic, it is anticipated that 24hr working will be utilised to minimise the disruption to the traveling public. The outline sequence is as follows:

1. Establish and implement diversion route and appropriate signage.
2. Full Closure of bridge to traffic.
3. Break out ironwork and road studs.
4. Cold milling of carriageway surfacing over the main span of the Foryd Bridge to 20mm above concrete deck to avoid milling of concrete as to not reduce cover to the deck steel reinforcement.
5. Remaining 20mm to be removed by hand or excavator bucket, no jackhammering.
6. Removal of existing expansion joints at both ends of the bridge and central joint.
7. Identify areas of concrete repair, break out any damaged/cracked/loose material. Possible method would be by form of vacuum blasting to reduce dust pollution.
8. Apply suitable concrete repair, such as flowable cementous grout.
9. Install new gully cover ironworks.
10. Removal of one cable suspended streetlamp using a mobile extendable work platform (MEWP).

11. Erect height restriction signs on both approaches of bridge.
12. Install 3 new expansion joints.
13. Spray-applied waterproofing to concrete deck after sufficient curing time of any concrete repairs.
14. Lay surfacing after waterproofing layer has cured, approximate thickness of asphalt surfacing is 120mm (80mm Binder, 40mm wearing), to be confirmed.
15. Re-instate Road markings and road studs.
16. Install permanent diversion route signs to guide oversized vehicles due to new height restriction on bridge.
17. Re-open bridge to traffic.

3.0 Standard Practice

1. Dust suppression shall be implemented where possible to minimise air pollution.
2. Gully outlets to be covered to prevent debris entering the drainage system.
3. Any task lights required during overnight work shall be directed to the bridge deck only to minimise light pollution to the river Clwyd and surrounding banks.
4. All precautions are to be taken to prevent pollution of the watercourse. As work will be undertaken on the bridge deck, there is minimal risk of pollution of the watercourse. During all phases of work, good working practices in accordance with GPP5 and PPG6 will be applied which will minimise the risk of hazardous material entering the watercourse. Should pollution occur, work is to be stopped and working practices reviewed!
5. Appropriate encapsulation methods to be used where required, such as during concrete repair work, if there is any risk of materials dropping off the bridge deck.
6. All site compound areas and material storage areas will be sited at a suitable distance from the watercourse to prevent contamination.
7. Refuelling of plant will be at a designated area located a suitable distance away from the watercourse and bridge deck.
8. Any waste excavation material or building waste generated in the course of this work must be disposed of satisfactorily and in accordance with Section 34 of the Environment Protection Act 1990.

4.0 Emergency Procedures

The weather will be monitored constantly throughout the works and the following procedures put into place in times when high wind or heavy rain is forecast:

1. No cold milling works will be undertaken in periods of high winds to prevent dust contamination of the watercourse.
2. No concrete repairs or waterproofing tasks to be carried out during periods of heavy rain to prevent the risk of contaminating the watercourse.
3. No spray-applied waterproofing tasks to be undertaken during periods of high winds to prevent overspray and contamination of the watercourse.

5.0 Emergency Contacts

EA/NRW incident hotline: 0800 807060

HSE hotline: 0845 3009923

Tomos Lloyd (Project Manager, YGC) 01286 679277

Rhys Thomas (Senior Environment Officer, YGC): 01286 679802