



Salt Island Bridge Replacement Water Framework Directive Assessment

CPF15008



Document Control Sheet

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Reviews

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Approvals

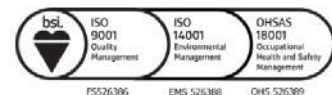
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Background

YGC have been commissioned by Stena Line Ports Ltd to undertake a Water Framework Directive Assessment (WFD) in relation to the proposed works to replace the Salt Island Bridge at Holyhead Port in Anglesey, North Wales. The proposal seeks to replace a like for like bridge that acts as the main link between the two main areas of Holyhead Port and Salt Island, with all traffic traversing through to reach the ferry berthing area for T3 and T5 (SH 25069 82953).

This Water Framework Directive Assessment (WFD) is in support of a Marine Licence application, submitted to Natural Resources Wales (NRW) as the regulating body, for permission to carry out the Salt Island Bridge Replacement works at Holyhead Port.

Introduction

The area of proposed works is currently in poor condition with a recent Principal Bridge Inspection (PBI) identifying high levels of corrosion on the metal work, damage to the concrete and poor standard construction work on the north section known as Salt Island bridge.

For reference, the bridge is split into three distinct sections:

- Causeway South (*also referred as Eastern Section in supporting documents¹*) this is the most recently constructed section of the bridge. It is thought to have been constructed in 1985. The bridge is constructed of reinforced longitudinal concrete beams that span between the abutments. It is assumed that all these beams are of the same dimensions. This section is currently used to manage all live traffic for access / egress to Salt Island.
- North Section (*also referred as the Western Section in supporting documents*) – this is made up of 2 parts with different construction methodologies as follows:
 - a. Causeway North **East** - This area has been constructed using jack arch methodology and is believed that it was constructed in 1850. It is made of steel transverse girders located on top of the main steel support beams. Between the transverse girders brick arches have been installed, with the running deck located above the arches. It is not clear what material was used to backfill between the running deck and the brick arches.
 - b. Causeway North **West** - This area of is made of concrete beams resting on the 1850 steel beams. The concrete beams appear to have been poured in situ rather than prefabricated and lifted into place and are thought to have been installed in 1985.

Due to the poor condition of the North Section of the Salt Island Bridge, usage has been ceased with all traffic diverted through alternative routes until the issue has been rectified. The existing section of bridge will need to be demolished prior to any installation works. Stena have issued a Pre-Construction Information report for the contractor tender process, which states the following considerations for the contractor in the design and build of the new bridge.

¹ For reader reference, Causeway South (Royal HaskoningDHV documents) is referred to as Eastern Section in Stena Line supporting documents, with North Section (Royal HaskoningDHV documents) referred to as Western Section in Stena Line documents.

The preferred option is to replace the bridge section with a modern prefabricated bridge structure, maintaining the bridge crossing in the current arrangement.

All main elements of works are currently scheduled to take place from dry land. As part of the works, existing debris that has embedded in the seabed under the bridge will be removed. Minor works will be carried out on the abutments.

An outline method statement can be viewed as a supporting Appendix (C) to this document. This document also includes indicative cross sections of the proposed bridge. The main elements of work included in the method statement are:

- Installing piles into the substructure to provide reinforcement.
- Installing precast beams to form the bridge deck.
- Carrying out finishing works to the deck, tie –ins to existing pavements and works to existing abutments.
- Debris clearance from under the bridge.

The proposed works is located directly adjacent to North Anglesey Marine SAC, Anglesey Terns SPA and in close proximity to other European protected sites. The potential impact of the proposed works has been assessed via a Habitats Regulations Assessment (HRA) and should be viewed alongside this report 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	Salt Island Bridge Replacement works (western section).
Brief description of activity	The preferred option is to replace the bridge with a modern prefabricated bridge structure on a like for like basis at the north section of the Salt Island bridge at Holyhead Port. The existing section of bridge must be demolished prior to the construction of the new. During the demolition process there are many considerations that need to be taken into account, including working within the marine environment. It has been stipulated that no direct works are planned within the marine environment. Beneath the bridge there is a culvert that is tidal. All works including temporary will be carried out from the dry. Debris that has accumulated and embedded in the bed under the bridge will also be cleared as part of the scheme (the area under the bridge is tidal therefore can be carried out from the dry).
Location of activity (central point XY coordinates or national grid reference)	<u>Scheme location:</u> SH 25069 82953
Footprint of activity (ha)	The footprint of the activity is approximately 0.04ha.

Timings of activity (including start and finish dates)	Project Start Date – 01/02/2026. Project End Date – 30/06/2026. The above dates are based on a preliminary programme, however could be subject to change.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	The section of bridge scheduled for replacement is approximately 25m in length with a width of 12m (totalling approx. 300m² in area) Supporting documents have stated that the existing section of bridge must be demolished prior to the construction of the new. During the demolition process it has been stipulated that there are no direct works planned within the marine environment. All temporary and permanent works will be carried out on either low tide or from dry ground.
Use or release of chemicals (state which ones)	<i>None</i>

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 Holyhead Bay waterbody, and a summary of key elements is provided below.

Water body ¹	Description, notes or more information
WFD water body name	<i>Holyhead Bay</i>
Water body ID	<i>GB681010360000</i>
River basin district name	<i>Western Wales</i>
Water body type (estuarine or coastal)	<i>Coastal</i>
Water body total area (ha)	<i>1171</i>
Overall water body status (2021 WFD Cycle 3)	<i>Moderate</i>
Ecological status (2021)	<i>Moderate</i>
Chemical status (2021)	<i>Moderate</i>
Target water body status and deadline	<i>N/A</i>
Hydromorphology status of water body	<i>N/A</i>
Heavily modified water body and for what use	<i>Heavily Modified – harbour and port facilities including navigation</i>
Higher sensitivity habitats present	<i>N/A</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 mudflats, rocky intertidal reef.</i>
Phytoplankton status	<i>Good</i>
History of harmful algae	<i>N/A</i>
WFD protected areas within 2km	<i>North Anglesey Marine SAC Anglesey Terns 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.

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	No - This point is not applicable to the proposed development.
Could significantly impact the hydro morphology of any water body	Requires impact assessment	Impact assessment not required	No - The proposal seeks only to replace the Salt Island Bridge with a prefabricated like for like bridge on the existing footprint. It is therefore not considered likely to impact the tidal patterns.

Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	Yes - The proposed activity is located within a waterbody that is heavily modified for its use as a port and for navigation purposes. The proposed replacement bridge, although on the footprint of the existing, will continue to be used to facilitate port and navigational activities.
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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	No to all impact assessment not required	No - The footprint of the working area is no bigger than 500m ² .
1% or more of the water body's area			No - The total area proposed for nourishment is less than 1% of the water body's area.

Within 500m of any higher sensitivity habitat	impact assessment		No – there are no recorded higher sensitivity habitats within 500m of the proposed works.
1% or more of any lower sensitivity habitat			Yes – although not located within any lower sensitivity habitat, the working area is directly adjacent to an intertidal mudflats and rocky reefs lower sensitivity habitat. The proposal does meet the 1% threshold for the intertidal mudflats and closest intertidal reefs. Therefore, for the avoidance of any doubt, this point shall be scoped in.

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.

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	No - The proposed work is not located within or directly outside an estuary.

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	<i>Yes - The proposed bridge replacement work will be carried out mostly from dry land. Additionally, due to the nature and use of the surrounding area – busy port with both marine and terrestrial disturbance – it is not considered likely that the proposed scheme would impact on normal fish behaviour due to noise and vibration. However, construction derived pollution could impact on fish species within the vicinity of the works, and as a result, for the avoidance of doubt, this point is scoped in at this stage.</i>
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	<i>No - Not applicable</i>

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	Yes – the proposed work would predominantly be carried out from dry land, however the removal of debris that has accumulated and embedded into the bed under the bridge could temporarily impact water clarity, temperature, oxygen levels, nutrients or microbial patterns of the water body.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	No - The phytoplankton status for the area is classed as 'good' therefore this point is not considered further.
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No - Information regarding algae not available.

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	Yes - <i>The use of plant and heavy machinery will be required to transport the materials and carry out the demolition and construction, therefore there is an inherent risk of releasing oils and fuels into the environment, albeit, the risk is considered to be low. Further assessment is required to ensure adequate measures are in place to prevent the accidental spilling of chemical pollutants.</i>
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	No – <i>Testing of the material has confirmed that no contaminants above Cefas Action Level 1 are present. No excavation will take place within the waterbody. It is not considered likely that the works will disturb any contaminants.</i>

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 – <i>the proposal does not discharge into a waterbody.</i>

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	<i>The bridge is located directly over the Anglesey Terns SPA. The HRA produced outlines that the works could have adverse pollution and disturbance to mobile features of the SPA.</i> <i>North Anglesey Marine SAC is located 20m to the north-west of the proposal. The HRA has identified potential pollution and disturbance impact on the designated features of the SAC therefore requires impact assessment in this report.</i>

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	<i>The works will be primarily carried out by terrestrial plant machinery in predominantly dry conditions therefore the risk of introducing marine or water-based INNS is considered negligible.</i> <i>The risk will be managed further by ensuring the plant are cleaned before leaving the existing / preceding site and are clean on arrival onto this site.</i> <i>The machinery used to transport the materials to site, pontoon and scaffolding installation should follow principles such as the Check Clean Dry to avoid contamination of any INNS into the site.</i> <i>The Habitats Regulations Assessment does not conclude the presence of any recorded INNS within or adjacent to the site of proposed works.</i>

Summary of Scoping:

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	Yes	The proposed activity is located within a waterbody that is heavily modified for its use as a port and for navigation purposes. The proposed replacement bridge, although on the footprint of the existing, will continue to be used to facilitate port and navigational activities.
Biology: habitats	Yes	Although not located within any lower sensitivity habitat, the working area is directly adjacent to an intertidal mudflats and rocky reefs lower sensitivity habitat. The proposal does meet the 1% threshold for the intertidal mudflats and closest intertidal reefs. Therefore, for the avoidance of any doubt, this point shall be scoped in.

Biology: fish	Yes	The proposed bridge replacement work will be carried out mostly from dry land. Additionally, due to the nature and use of the surrounding area – busy port with both marine and terrestrial disturbance – it is not considered likely that the proposed scheme would impact on normal fish behaviour due to noise and vibration. However, construction derived pollution could impact on fish species within the vicinity of the works, and as a result, for the avoidance of doubt, this point is scoped in at this stage.
Water quality	Yes	The proposed work would predominantly be carried out from dry land; however, the removal of debris that has accumulated and embedded into the bed under the bridge could temporarily impact water clarity, temperature, oxygen levels, nutrients or microbial patterns of the water body.
Protected areas	Yes	The bridge is located directly over the Anglesey Terns SPA. The HRA produced outlines that the works could have adverse pollution and disturbance to mobile features of the SPA. North Anglesey Marine SAC is also located 20m to the north-west of the proposal. The HRA has identified potential pollution and disturbance impact on the designated features of the SAC therefore requires impact assessment in this report.
Invasive non-native species	No	There were no known of and recorded INNS within the scheme area or proximity. It is expected of contractors to adhere to stringent biosecurity measures when carrying out the works in order to minimise the risk of introducing any INNS to/from the site. Structures to support the temporary aspect of works will be placed within the water column.

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.

Hydromorphology

The proposed activity is located within a waterbody that is heavily modified for its use as a port and for navigation purposes. The proposed replacement bridge, although on the footprint of the existing, will continue to be used to facilitate port and navigational activities.

The works will predominantly be carried out from dry land. An element of the temporary works will be carried out from the water column, however a floating pontoon/scaffolding structure will be utilised to carry the debris from the bridge removal off site via the port.

Biology: habitats and fish

The western extent of proposed works is located directly adjacent to an intertidal mudflat and rocky reefs lower sensitivity habitats. The whole scheme footprint is likely to equate to +1% of these small, designated areas. No increase in background sediment loads are predicted within the adjacent water column.

Given that there are no works to take place within the lower sensitivity habitats and given that the sole purpose of the proposal is to reinstate the usage of the bridge as a crossing to Salt Island, on a like for like basis (on the original footprint), it is not considered that the proposal will have a detrimental impact on both lower sensitivity habitats. Reasonable avoidance and mitigation measures (as stipulated within the HRA) should be strictly followed through the course of the works in order to further reduce the risk to the habitats in question.

Fish habitat point was scoped in on the basis that construction derived pollution and vibration could impact on fish species within the vicinity of the works (prey for features of nearby protected sites). In order to mitigate, as stipulated within the HRA it is expected that appointed contractor will adhere to the pollution prevention mitigation measures as stipulated within the supporting HRA.

Water Quality and Protected Sites

The site of proposed works is located directly over the Anglesey Terns SPA. North Anglesey Marine SAC is also located 20m north-west of the site of proposed works.

Plant and machinery will be required to undertake the proposed activity from the dry. Although the debris clearance under the bridge is scheduled to take place in line with tidal patterns and in the dry, without mitigation there is an inherent risk of both construction derived pollution and disturbance to mobile species features during the works. As a result, the impact on the waterbody could not be completely ruled out at scoping stage. The following Reasonable Avoidance and Mitigation Measures (RAMS) will be implemented during the course of the proposed works:

- Implementation of a range of measures to ensure working practices and good environmental site management are secured, minimising the risk of pollution or other incidents. These would include the adoption of best practice guidelines including GPP and CIRIA guidance, particularly GPP 5: Works and maintenance in or near water for construction or maintenance works near, in or over water. The mechanism for ensuring the delivery of these would be via a Construction Environmental Management Plan (CEMP) and associated Method Statements for the works, to be agreed in advance with the Authority and Natural Resources Wales where necessary, beforehand. Typical examples would comprise ensuring the use of spill kits and refuelling in designated areas away from the intertidal area and ensuring an Emergency Pollution Response Plan is put in place;
- All materials stored on site shall be located more than 10m away from the intertidal zone at all times;
- Ensure that any fuels or chemicals required for machinery/equipment are safely stored in an appropriately bunded compound/container, at least 10m from the intertidal zone;
- All concrete works will only be undertaken when there is no chance of heavy rain before the concrete has set;
- When undertaking any demolition/removal operation precautions shall be adopted to ensure that any debris is prevented from entering any intertidal or marine habitat. Contractor shall submit a method statement which will be subject to approval from the site supervisor/engineer;
- Pollution spill kits to be readily available on site and in plant/machinery at all times, with staff suitably trained in how to deploy;
- Contractor to adhere to pollution prevention best practice guidelines, including;
 - GPG1: Understanding your environmental responsibilities.
 - GPP5: Works and maintenance in or near water.
 - GPG6: Working at construction and demolition sites.
 - GPP21: Pollution response planning.
 - GPP22: Dealing with spills.
- Plant machinery shall use a biodegradable hydraulic oil;
- No dewatering water from on-site excavations shall be discharged directly to the intertidal zone, and should receive sufficient settlement to settle out all solids before being discharged;
- Tracking of vehicles / machinery within the intertidal habitat must be minimised;
- All works to be supervised by an Environmental Manager or Environmental Clerk of Works, as appropriate;
- Site personnel to follow good practice guidelines and be briefed with a toolbox talk on the ecological issues relevant to the site to ensure they comply with environmental protocols;
- Works to be completed at or around low tide, with all works within the intertidal area taking place within 3 hours either side of low tide to minimise the risk of pollution entering the marine environment;
- Best practical biosecurity measures (check, clean, dry protocol) must be applied during the operations, including cleaning of equipment and footwear before deployment to site.

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. All methods of working will be readily available following appointment of contractor.

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: Proposed Works Area

Appendix B: Salt Island Bridge (HRA) (separate document)

Appendix C: Outline Method Statement including indicative sections of bridge (separate document)

Appendix A – Proposed Works Area



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