

Dŵr Cymru Welsh Water

**Cardigan (Lower Town) SPS
Upgrade**

WFD Compliance Assessment

4293_S_205-ARP-07-XX-RP-NX-10045

Issue | 1 June 2020

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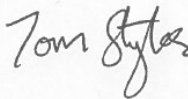
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Ove Arup & Partners Ltd
63 St Thomas Street
Bristol BS1 6JZ
United Kingdom
www.arup.com

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			Prepared by	Checked by	Approved by
		Name	Tamsin Chisnall	Tom Styles	Gareth McIlquham
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

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1 Introduction

Arup has been commissioned by Dŵr Cymru Welsh Water (DCWW) to undertake a Water Framework Directive (WFD) Assessment for the scheme known as 'Cardigan (Lower Town) SPS Upgrade'.

Under the WFD¹, all proposed schemes with the potential to impact upon WFD-designated water bodies must be assessed to ensure:

- No deterioration of the current status or potential of any WFD quality elements; and
- No prevention of future attainment of the 'good' status or potential objectives of any WFD quality elements.

This report follows guidance produced by Natural Resource Wales² (NRW) to produce a WFD Assessment Report which identifies the activities related to the scheme that may cause deterioration or prevent a water body from meeting its objectives. The report follows the scoping template provided as part of this guidance, along with a detailed impact assessment of residual risk identified.

¹ European Commission. Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

² Natural Resources Wales / Environment Agency. Water Framework Directive assessment: estuarine and coastal water. Available at: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>

2 Project Details

Your activity	Description, notes or more information
Applicant name	Morgan Sindall (On behalf of Dŵr Cymru Welsh Water)
Name of activity	Installation of the discharge chamber for the Cardigan SPS outfall pipe.
Brief description of activity	The purpose of the works is to prevent flooding at 11 properties on the Definitive Flooding List. The proposed works involve: • Diversion of excess flows from St Mary Street and Pwllhai to a new Combined Sewer Outfall (CSO) and Sewage Pumping Station (SPS) located on Morgan Street. • The pumped flows will discharge via a new outfall. • Flows from Pwllhai are diverted at high level once flows along the sewer along Pwllhai reach a critical flow rate. An actuated penstock will be located on the normal flow path of the sewer and will operate to restrict pass forward flow and hence back the sewer up at the overflow point. Flows from the overflow will discharge to St Mary Street, where a new Combined Sewer Overflow will be installed. • Flows from St Mary Street will back up to the CSO, and once flows reach a critical flow rate, the CSO weir will be breached and will overflow to the new sewage pumping station. The CSO will be mechanically raked so as to maintain screenings in the main sewer rather than the outfall. The screen will be a Lokertek RoK1 or similar, with a 6mm screen. This report will assess the impact of the proposed new discharge chamber, outfall and headwall on the water framework directive status of the transitional Afon Teifi (Estuary). The outfall SPS requires the following: • One wet well complete with valve chamber. • Four submersible centrifugal pumps (duty/assist/assist/standby) and associated station pipework, isolation valves, non-return valves, Bauer connection, flow meter and air valve. Note: Pipework, valves, Bauer and flow meter- all to be located above ground on a civil slab. • 500mm diameter plastic rising main to a new river outfall. A schematic summarising the proposed works is shown in Appendix A.
Location of activity (central point XY coordinates or national grid reference)	SN 17894 46030
Footprint of activity (ha)	<0.1ha

Timings of activity (including start and finish dates)	Approximate start date: September 2020 Approximate finish date: November 2020. Approximate number of working days: 30
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	Flow rates expected from the proposed St Mary's Street relief CSO will be in the region of 180-374l/s. It should be noted that the discharge to the River Teifi will be from either of the two CSOs. (The existing CSO is consented to discharge at 53.7l/s.)
Use or release of chemicals (state which ones)	N/A

3 WFD Baseline Information

Water body ³	Description, notes or more information
WFD water body name	Teifi Estuary
Water body ID	GB511006206900
River basin district name	Western Wales
Water body type (estuarine or coastal)	Estuarine
Water body total area (ha)	100,800 (including catchment)
Overall water body status	Moderate
Ecological status	Moderate. The reason for not achieving good ecological status in 2018 appears to be 'moderate' records for Dissolved Inorganic Nitrogen and Angiosperms.
Chemical status	Good
Target water body status and deadline	The Teifi estuary is to achieve 'good' overall waterbody status by 2021.
Hydromorphology status of water body	Not high.
Heavily modified water body and for what use	The waterbody is not classified as Heavily Modified.
Higher sensitivity habitats present	There is an area (0.5ha) of Saltmarsh located 1km downstream of the proposed outfall.
Lower sensitivity habitats present	The transitional Afon Teifi has 'Intertidal Soft Sediment' (Sand and Mud) and 'Gravel and Cobbles' dispersed along both bank faces. The closest lower sensitivity habitat being intertidal soft sediment located on the left-hand bank immediately opposite the outfall.
Phytoplankton status	High
History of harmful algae	Not monitored
WFD protected areas within 2km	The only WFD protected area within 2km of the site is the Afon Teifi itself which is designated as a Special Area of Conservation (SAC) (UK0012670).

³ Water body information can be found in Natural Resource Wales – Water Watch Wales data and information and the Environment Agency's water body summary table. Magic maps provide additional information on habitats and protected areas.

4 Scoping Assessment

4.1 Hydromorphology

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status		No - Impact assessment not required	Water body is not of at high status.
Could significantly impact the hydromorphology of any water body		No - Impact assessment not required	The proposed outfall will result in localised modification of the hydromorphology around the outfall. The modifications include: • Installation of Althon SFA15A headwall. • River bank to be cut away and existing bank to be re-graded with approx. 1.3 slope. • In front of the regraded river bank the soft ground will be removed to a depth of 250mm and filled with pre-filled rock mattress. If bedrock is encountered, rock filled mattresses are not required. • Installation of a Bionet erosion control blanket (Coconut fibre, 100% biodegradable Jute). At a water body scale, this would not result in a significant impact upon hydromorphology.
Is in a water body that is heavily modified for the same use as your activity		No - Impact assessment not required	Proposal is not located in a HMWB.

4.2 Biology

4.2.1 Habitats

The list of habitats considered to be higher sensitivity and lower sensitivity by the WFD which should be considered within an assessment are shown below.

Higher sensitivity habitats ⁴	Lower sensitivity habitats ⁵
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 ⁶ of your activity is:	Yes	No	Biology habitats risk issue(s)
50ha or larger	Yes		The footprint of the activity is approximately <0.1ha this is less than 1% of the Afon Teifi area. There is saltmarsh (higher sensitivity habitat) located 462m south east (upstream) of the proposed works. The footprint of the activity is not within 1% or more of any lower sensitivity habitat.
1% or more of the water body's area			
Within 500m of any higher sensitivity habitat			
1% or more of any lower sensitivity habitat			

4.2.2 Fish

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		No	The proposed outfall is within the Afon Teifi estuary. The construction of the outfall and discharge chamber has the potential to cause a pollution event or sediment discharge.

⁴ Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

⁵ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

⁶ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
			This construction risk has been minimised by the following standard pollution prevention procedures: • Works will take place during low tide periods. • In the area marked out a sand bag bund will be created by lifting in several jumbo bags to form a perimeter bund adjacent to the water's edge. The bund will not encroach on the existing water course. • Works will take place within an oil absorbent boom and silt curtain will sit within the bund. The operation of the outfall is not expected to cause any erosion or increase in sediment suspension due to the stone mattress (if required) and bionet erosion blanket being installed to prevent this. The works will not impede fish passage through the Teifi Estuary or associated tributaries. Any sediment release due to the works will be localised and contained (cofferdam with silt netting).
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise,		No	As above.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
chemical change or a change in depth or flow)			
Could cause entrainment or impingement of fish		No	The construction works are proposed to take place on the bank face.

4.3 Water Quality

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		No – impact assessment not required	Construction activities will occur for longer than 20 working days. However, the construction is not anticipated to pose risk to: water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days). The construction poses minimal risk to water quality of the Afon Teifi due to the standard pollution prevention measures (stated in 4.2.2). A new discharge consent will be applied for and agreed with NRW.
Is in a water body with a phytoplankton status of moderate, poor or bad		No - impact assessment not required.	Phytoplankton status 'high'. This is due to the high dissolved inorganic nitrogen which causes eutrophication. The proposed works are unlikely to impact phytoplankton status of the waterbody.
Is in a water body with a history of harmful algae		No – Impact assessment not required	N/A (Not a category in Wales data)
If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue (s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		No – Impact assessment not required	The proposal is not anticipated to release any chemicals which are Environmental Quality Standards Directive (EQSD) list.

It disturbs sediment with contaminants above Cefas Action Level 1.		No – Impact assessment not required	The release / disturbance of sediment as a result of the proposed works is anticipated to be localised and contained (cofferdam with silt netting). The sediment disturbed is not expected to have contaminants above Cefas Action Level 1.
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If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		No – Impact assessment not required	The proposed outfall is not anticipated to release any chemicals which are Environmental Quality Standards Directive (EQSD) list. A new discharge consent will be applied for and agreed with NRW.

4.4 WFD Protected Areas

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Yes		The proposed activities will take place adjacent to the Afon Teifi Special Areas of Conservation (SAC).

4.5 Invasive Non-Native Species (INNS)

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		No	No evidence of invasive non-native species was identified during the Extended Phase 1 Habitat Survey, as specified in the Habitat Regulation Assessment (HRA).

4.6 Scoping Summary

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	The proposed construction and operation of the outfall is not anticipated to impact on the Hydromorphology of the Afon Teifi at a waterbody scale.
Biology: habitats	Yes	The footprint of the activity is within 500m (upstream) of saltmarsh (higher sensitivity habitat).

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Biology: fish	No	The proposed construction and operation of the outfall is not anticipated to impact on fish entering or migrating through the estuary.
Water quality	No	Construction activities will occur for longer than 20 working days. However construction is not anticipated to pose a risk to the following parameters water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than 14 days. The construction poses minimal risk to water quality of the Afon Teifi due to the standard pollution prevention measures (stated in 4.2.2).
Protected areas	Yes	The proposed site is directly adjacent to Afon Teifi SAC (UK0012670).
Invasive non-native species	No	No evidence of invasive non-native species was identified during the Extended Phase 1 Habitat Survey.

5 Detailed Assessment

The WFD Scoping Assessment identified potential risks to the following receptors: habitats and protected areas.

A Habitats Regulation Assessment (HRA)⁷ has been prepared for the works (Appendix G of the Marine Licence) which assesses the potential for impacts to protected areas, habitats and species in detail. For brevity, the findings of the HRA have been used to inform the conclusions of this assessment as they relate to the same works and protected areas/habitats. Both assessments will support a Marine Licence application for the works.

5.1 Potential Risks

5.1.1 Habitats

The footprint of the proposed works is located within 500m of the higher sensitivity habitat 'saltmarsh'. The saltmarsh is located 462m (southeast) upstream of the proposed works so no direct effect will occur, and the works are proposed to take place during the low tide period hence there is no pathway for indirect effect.

5.1.2 Protected Areas

The working area is located adjacent to the Afon Teifi SAC. The footprint of the works is small in size (45m²) and hence any potential impacts associated with the construction and operation of the outfall are not considered to be significant, particularly when considered alongside the standard pollution prevention measures (outlined in section 4.2.2. and 5.2) and alongside the natural transfer of sediment in this area.

The HRA prepared for the works have assessed the impacts on the protected areas and proposed suitable mitigation to minimise potential impacts on the areas. In addition, the Contractor's Risk Assessment / Method Statement (RAMS) will include requirements to adhere to standard practice pollution prevention e.g. GPP5 and CIRIA guidance. No further mitigation is considered necessary.

5.2 Pollution prevention measures

The RAMS incorporates the following mitigation measures:

- Limiting the physical works footprint and the dimensions of the access corridor as far as reasonably practicable.
- Vehicles will be loaded with all plant and materials necessary to undertake the works to minimise plant movements.

⁷ DCWW Cardigan Lower Town SPS, Habitats Regulations Assessment (HRA) – Marine Licence Appendix G.

- Minimal quantities of fuels, materials, etc. will be taken on to the foreshore with biodegradable fuel oils used on relevant plant.
- All storage containers will remain within the site compound and be appropriately bunded to prevent any spillages or leaks. No storage of materials or refuelling operations will be permitted outside the site compound.

6 Conclusion

The assessment has established the potential risks to receptors associated with the proposed installation of the discharge chamber for the Cardigan SPS outfall pipe.

The key receptor identified was the WFD protected site of the Afon Teifi SAC located adjacent to the proposal. Given the potential impacts relate to protected areas, the findings of the HRA prepared for the works have been used to inform the conclusions of this assessment.

Following adherence to requirements specified within this report, the proposed works are not anticipated to give rise to any adverse effects upon WFD water bodies or habitats or prevent them from attaining good status in the future.

This assessment has been based on currently available WFD baseline data and design information for the scheme. It is considered a 'live' document and should be reviewed and updated during construction, particularly if:

- NRW update or provide additional WFD baseline data for the relevant water bodies; and/or
- Significant changes to the nature, spatial extent, scale or construction methods of the scheme are made.

The outcomes of this assessment should be shared and agreed with NRW (as the regulatory authority for the WFD in Wales) as part of the Marine Licensing process.

Appendix A: Schematic of proposed solution

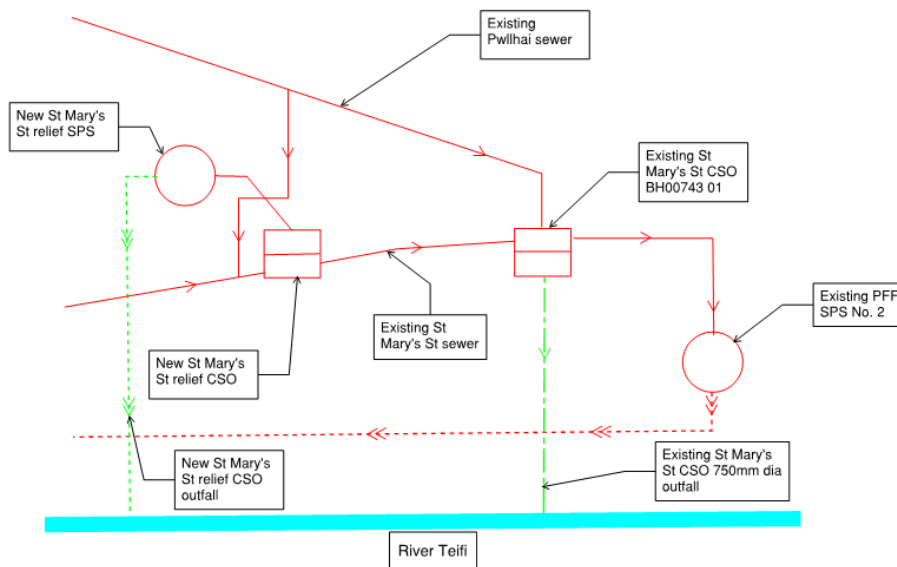


Figure 1: Outline of proposed solution