

Aberavon Promenade Water Framework Directive (WFD) Assessment

Draft Report

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Borough Council



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Purpose

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Abbreviations

CEMP	Construction Environmental Management Plan
DCO	Development Consent Order
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
EQSD	Environmental Quality Standards Directive
GEP	Good Ecological Potential
GES	Good Ecological Status
HMWB	Heavily Modified Water Body
HTL	Hold The Line
LDP	Local Development Plan
MAGIC	Multi-Agency Geographic Information for the Countryside
MHWS	Mean High Water Spring
NPTCBC	Neath Port Talbot County Borough Council
RBMP	River Basin Management Plan
SMP2	Shoreline Management Plan 2
SSSI	Site of Special Scientific Interest
WFD	Water Framework Directive

1 Introduction

1.1 Background

This Water Framework Directive (WFD) assessment has been prepared to inform the development and design of proposed works to the existing coastal defences at Aberavon. It accompanies an application to Natural Resources Wales (NRW) for a Marine Licence for the proposed development.

The assessment has been prepared following a range of good practice guidance for WFD assessment:

- Guidance for assessing activities and projects for compliance with the Water Framework Directive, OGN72, Version 1.1, May 2017, Natural Resources Wales.
- Water Framework Directive assessment: estuarine and coastal waters – How to assess the impact of your activity in estuarine (transitional) and coastal waters for the Water Framework Directive (WFD), 9 November 2017, Environment Agency. Available at: <https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>
- Advice Note 18: The Water Framework Directive, Version 1, June 2017, The Planning Inspectorate. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf
- Local Authority services and the water environment: Advice note on the Water Framework Directive, Natural Resources Wales. Available at: <https://naturalresources.wales/media/2627/wfd-docs-eng.pdf>

It includes key elements of the Scoping Template provided within the Environment Agency guidance (2017), which clearly sets out all potential risks to the WFD receptors associated with the proposed development. The Scoping Template has been modified to enable consideration of WFD groundwater waterbodies in addition to surface waterbodies.

Data on the location and status of WFD waterbodies has been obtained from the Water Watch Wales website¹, the Catchment Data Explorer website², and the Multi-Agency Geographic Information for the Countryside (MAGIC) website³.

1.2 Project description

The proposed development seeks to maintain and repair the existing coastal defences along a 1.3km section of Aberavon Sands in Swansea Bay.

The existing defences, which comprise a concrete wave return seawall and stepped revetment, require maintenance works to repair damage to the concrete structures and stabilisation of the revetment toe to reduce scour of, and damage to, the revetment.

The flood defences provide protection from coastal flooding to adjacent residential and business properties, as well as coastal erosion of Aberavon Promenade and the Wales Coast Path, which are important components of the local tourism industry. The wider hinterland area historically supported a range of industrial uses and ground contamination has been found in the vicinity of the scheme⁴.

¹ Water Watch Wales website: <http://waterwatchwales.naturalresourceswales.gov.uk/en/> [Accessed 16 July 2018]

² Catchment Data Explorer website: <http://environment.data.gov.uk/catchment-planning/> [Accessed 16 July 2018]

³ Multi-Agency Geographic Information for the Countryside (MAGIC) website: <http://www.magic.gov.uk/> [Accessed 16 July 2018]

⁴ Ian Farmer Associates (2018) Factual Report on Ground Investigation – Aberavon Coastal Defence, July 2018

The existing concrete revetment has a vertical sheet pile toe, with small sections of rock armour protection at its eastern and western extents. Immediately to the north west of the defences is Baglan Burrows dune system, which is the remnant of the much more extensive dune system on which Aberavon Promenade and adjacent hinterland were constructed. The eastern section of the dune system is protected by rock armour, with the western section remaining unprotected.

Aberavon Sands varies in width along the existing defences. The beach profile also varies in height over time, with significant beach drawdown at the toe of the defences during the winter months and recovery during other periods of the year⁵. Overall, the beach is in a state of dynamic equilibrium, with eroded beach material retained locally and available for recovery.

The proposed scheme will prevent further erosion of the existing coastal defences, which maintain flood protection to a small number of neighbouring properties and other important infrastructure and community assets. Failure of the defences would impact on the adjacent hinterland, affecting Aberavon Promenade and leading to erosion of associated Made Ground. This in turn could increase flood risk to adjacent properties and increase the risk of contamination of coastal waters and habitats.

1.2.1 Proposed development

The proposed development will extend the design life of the coastal defences, maintaining protection for the adjacent hinterland and improving public access to the beach from the Promenade for both beach users and routine maintenance activities.

The proposed development will comprise the following activities:

- Installation of rock armour toe protection to the existing concrete revetment along the 1.3km section of defences. The rock will be installed to a depth of 2.5m below the level of the lowest revetment step and will extend 11m onto the foreshore. This will reduce wave reflection and so reduce expected beach lowering, affording more protection to the existing defence toe.
- Works to repair localised cracking in the existing seawall and replace expansion joint material and fill voids under the concrete revetment, to reduce the risk of collapses in the concrete structures.
- Construction of reinforced concrete steps through the rock armour at six existing access points to provide safe access for the public to the beach.
- Construction of a temporary access ramp onto the beach at the north west end of the scheme off Scarlet Avenue car park, to provide construction access to the beach to undertake the works. On completion of the rock armour toe, the access ramp will be removed and replaced with a permanent, gated concrete slipway to provide maintenance vehicles with easier access to the northern half of the defences.

The majority of the proposed scheme is located above current Mean High Water Spring (MHWS) tidal level.

All site material (rock armour and precast concrete step units) will be delivered to the site by road and onto the beach using the proposed temporary rock ramp at the northern end of the scheme or the existing concrete slipway off the Princess Margaret Way roundabout at the southern end. Stockpiling of rock will take place on the beach adjacent to the temporary ramp; stockpiling will be relatively limited due to phased construction of the rock armour using short sections, meaning rock will be transported

⁵ Ove Arup & Partners Ltd (2017), Aberavon Conceptual Understanding, January 2017.

to site in small quantities and then used soon afterwards, avoiding extensive stockpiling.

Concrete works on the steps will be undertaken with small plant due to the type of structure and practicalities of using large plant.

1.2.2 Breakdown of development components

Table 1-1 provides a breakdown of the individual components of the proposed development. These components will be assessed to determine whether they could cause or contribute to the deterioration in status of a WFD waterbody or inhibit a waterbody from achieving its status objective.

Table 1-1: Breakdown of individual components of the proposed development

Component of proposed development
Establishment, use, and decommissioning of temporary construction compound in Scarlet Avenue car park.
Temporary diversion of Wales Coast Path/National Cycle Route around construction area.
Construction of temporary haulage ramp onto the beach.
Temporary storage of rock armour on foreshore adjacent to ramp/slipway.
Construction of rock armour scour protection involving temporary excavation and storage of beach material, installation of geotextile membrane, placement of rock armour blocks, and backfilling of excavated material.
Construction of new access steps through rock armour involving excavation of foundation area, in-situ construction of concrete foundation, and installation of precast step units.
Concrete repairs to existing seawall/ revetment/promenade.
Construction of permanent slipway onto the beach involving excavation of foundation area, in-situ construction of concrete foundation, construction of slipway, and installation of rock armour scour protection.
Operation of the completed flood defence scheme.
Periodic maintenance of the completed flood defence scheme.

1.3 Purpose of the report

1.3.1 Scope of this assessment

The WFD (2000/60/EC) is implemented in England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, which revoke and replace The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003. The framework for delivering requirements of the WFD is through River Basin Management Plans (RBMPs).

The Regulations require that Environmental Objectives are set for all surface (including river, lake, coastal, and transitional waters) and groundwaters in England and Wales to enable them to achieve Good Status by a defined date. These Environmental Objectives are listed below:

- 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 waterbodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve good status by 2021 or 2027;
- Meet the requirements of WFD Protected Areas;
- Promote sustainable use of water as a natural resource;

- 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
- Contribute to mitigating the effects of floods and droughts.

Surface waterbody status is made up of its ecological status and chemical status. Ecological status is defined by a series of biological 'quality elements' and physico-chemical, hydromorphological, and chemical 'supporting elements' (which support the biological elements). Chemical status comprises a series of priority substances and other pollutants (listed in the Environmental Quality Standards Directive (EQSD)). These quality elements are taken from Annex V of the Directive.

The status of all relevant quality elements is classified according to five categories: 'High', 'Good', 'Moderate', 'Poor', and 'Bad'. The overall status of a waterbody is determined by the lowest element status e.g., if all biological quality elements and supporting elements are at 'Good' status, except for one, which is at 'Moderate' status, then the ecological status of the waterbody is 'Moderate' and the overall status is 'Moderate'. Published guidance requires that all quality elements need to be considered as part of a WFD assessment.

Groundwater waterbody status is defined by its 'quantitative status' and 'chemical status'. Two classes are attributed: 'Good' and 'Poor'. Both elements need to be at good status before the waterbody can be classified as 'Good'.

Under the WFD, Heavily Modified Waterbodies (HMWB) are bodies of water that are substantially changed in character due to physical alterations by human activity and cannot meet 'Good Ecological Status' (GES). Therefore, mitigation measures are set for the waterbody so that it achieves 'Good Ecological Potential' (GEP).

1.3.2 Small non-reportable waterbodies

All waterbodies are protected under the WFD. This includes stretches of water considered to be too small to be a formal WFD waterbody, such as reens, ditches, small streams, and brackish lagoons. As such, deterioration of such waters should be prevented. In the absence of any classification data relating to these waterbodies, it should be assumed that they are at 'Good' status. Therefore, any proposed development that could affect such a waterbody should be assessed to determine whether it could cause deterioration from good status.

1.3.3 Protected areas, priority habitats, and invasive non-native species

Published guidance states that the assessment must also consider the potential for impacts on the following:

- Protected Areas – these are defined under Article 6 of the Directive and include:
 - o Areas designated for the abstraction of water for human consumption (Drinking Water Protected Areas);
 - o Areas designated for the protection of economically significant aquatic species (Freshwater Fish and Shellfish);
 - o Bodies of water designated as recreational waters, including areas designated as Bathing Waters;
 - o Nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under Urban Waste Water Treatment Directive (UWWTD); and

- o Areas designated for the protection of water-dependent habitats or species, including relevant Natura 2000 sites.
- Priority Habitats – these are “habitats of principal importance for the conservation of biodiversity”, which are defined under Section 7 of the Environment (Wales) Act 2016 in Wales. Detailed assessment is required if a proposed development would significantly impact on a priority habitat that is critical to the ecological health of a waterbody i.e., directly impacts habitats that are critical to the individual biological quality elements.
- Invasive non-native species (INNS) – assessment of INNS (as identified on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) in England and Wales) is required if a development could cause the introduction or spread of INNS to a waterbody.

1.3.4 Approach to WFD Assessment

All new activities in the water environment need to take account of the requirements of the WFD. For a project or activity to be compliant with the WFD, it should demonstrate that:

- There is no risk of it causing a deterioration of the status of any element; in addition, for groundwater, it will limit or prevent the input of pollutants;
- There is no risk of it preventing WFD protected areas from achieving their objectives;
- It will not jeopardise any waterbody from achieving good status/potential; and
- It will contribute to the protection, enhancement, and restoration of waterbodies.

Therefore, this WFD assessment aims to determine whether the proposed development would have the potential to cause or contribute to the deterioration in status of a WFD waterbody or inhibit a waterbody from achieving its status objective. It also assesses the potential for the development to contribute to the objectives of the WFD.

The assessment identifies all activities that will take place as part of the proposed development, during both construction and operation, and where risks of an impact on the WFD quality elements might arise due to these activities.

This assessment follows published good practice guidance and has been undertaken following a staged approach:

- Stage 1: screening – to determine whether any activities associated with the proposed development do not require further consideration i.e., do not need to go through the scoping or impact assessment stages because there is no more than a low risk of a potential impact on a waterbody;
- Stage 2: scoping – identifies the potential risks associated with the proposed activities that have been screened into the assessment and the WFD receptors that are at risk i.e., those risks that need impact assessment; and
- Stage 3: impact assessment – a comprehensive assessment of the potential impacts of each activity, including consideration of ways to avoid or minimise impacts, and enhancement opportunities, to determine whether an activity may cause deterioration or jeopardise the waterbody from achieving good status.

This staged approach is summarised in Figure 1-3, which reproduces an assessment flow checklist taken from the NRW WFD guidance (2017). The NRW guidance also includes detailed screening criteria that can be used to determine whether a proposed activity is not likely to cause a deterioration in the status of a waterbody. This includes a list of activities that in general will not cause a deterioration, such as ‘temporary’ works that do not normally last more than six months and are not likely to have a residual impact on a waterbody. The guidance also lists other physical works and

defines screening thresholds for each; these thresholds help to determine whether an activity presents a risk to a waterbody and any requirements for further assessment. However, these thresholds are for guidance only and expert judgement is required to determine if a proposed activity may have an impact on a waterbody.

A more detailed WFD assessment would be required if it cannot be concluded that the proposed development would not cause deterioration or inhibit the objective status of a waterbody. Further to this and in line with WFD requirements, there would be a need to apply the Article 4.7 test to seek approval for progression of the development if, after the full impact assessment (including the implementation of mitigation measures), it cannot be determined that the development would not cause deterioration to a waterbody or prevent it from achieving its status objectives.

1.3.5 Cumulative and in-combination impacts

Good practice guidance published by NRW (2017) requires that the proposed development is also assessed for potential cumulative and in-combination impacts.

Cumulative impacts

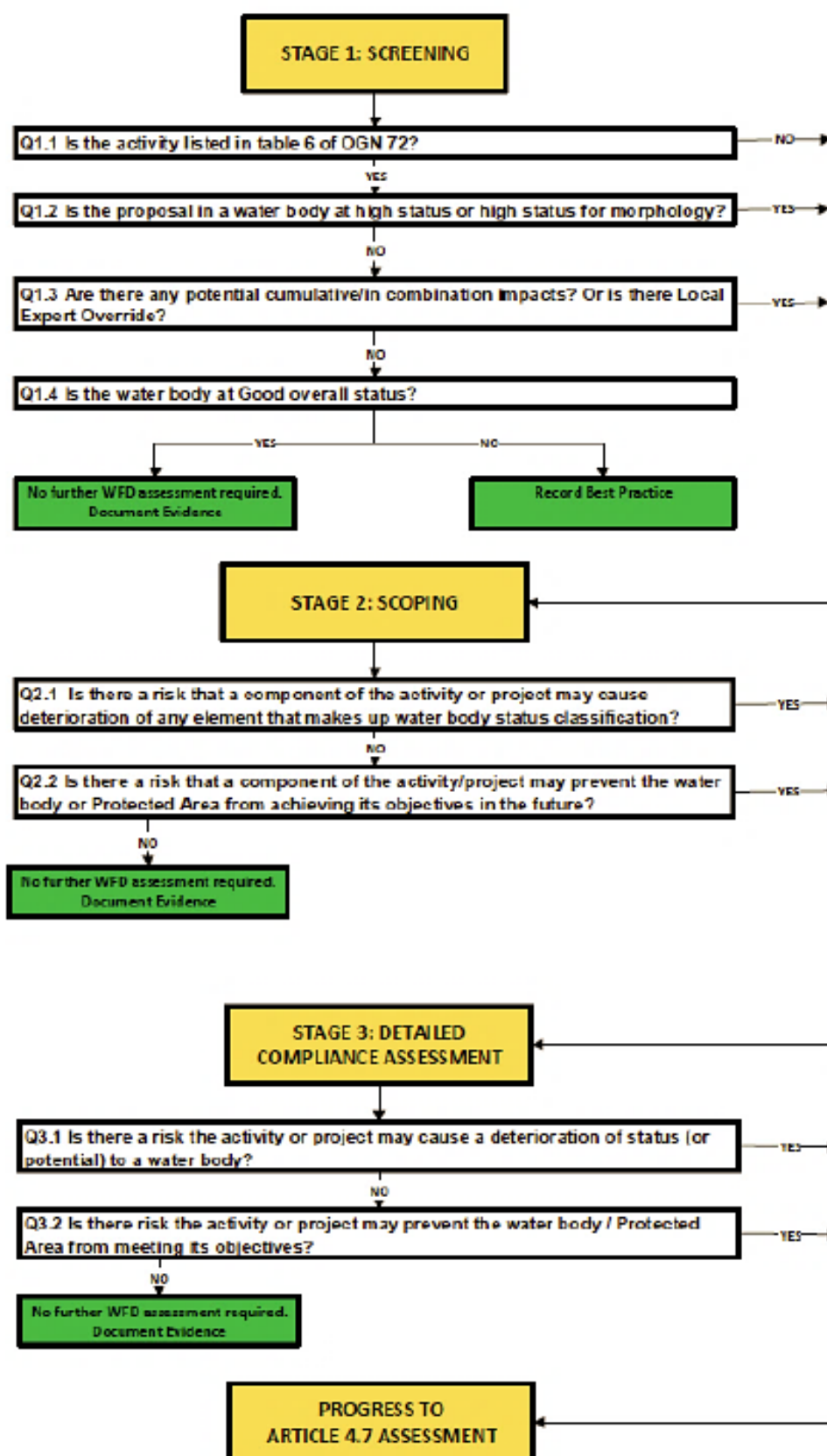
Cumulative impacts are multiple impacts on the same waterbody quality element that arise from the proposed development together with those from all developments that have been built and are operational.

In-combination impacts

In-combination impacts are those impacts that may arise from the proposed development in-combination with other plans and projects proposed/consented but not yet built and operational i.e., those developments that are separate from the baseline. These include:

- Activities started but not yet completed.
- Activities consented but not started.
- Ongoing activities subject to repeated authorisations (e.g. annual licences).
- Applications submitted but not yet determined.
- Refusals subject to appeals procedures not yet determined.
- Activities not requiring consent, but which have been approved by the relevant competent authority.

Figure 1-1: WFD assessment process flowchart (taken from Natural Resources Wales (2017) WFD guidance)



2 Baseline conditions

2.1 Relevant WFD waterbodies and screening

The Water Watch Wales website shows that the proposed development lies within the 'Swansea Bay coastal waterbody' (WFD Ref: GB641008260000) and overlies the 'Swansea Carboniferous Coal Measures' groundwater body (WFD Ref: GB41002G201000).

2.2 Swansea Bay coastal waterbody

2.2.1 River Basin Management Plan measures

The Swansea Bay coastal waterbody encompasses an area stretching from the Mumbles in the west to Kenfig in the east, equating to an area of 110.19km². The waterbody is classified as a HMWB due to modifications associated with coastal protection. As such, the specific objective of the RBMP for this waterbody is to achieve GEP by 2021 and good chemical status by 2027.

The waterbody is currently assessed as having an overall status of 'Moderate', with 'Moderate' ecological potential, whilst its chemical status is currently 'Fail'. The quality elements that are contributing to the failing status of the waterbody include mercury (and its compounds), dissolved inorganic nitrogen (DIN), and its mitigation measures assessment. Table 2-1 provides a summary of the current status of the WFD quality elements for this waterbody.

Table 2-1 WFD quality elements and current status for Swansea Bay (GB641008260000)

Waterbody criteria	RBMP Cycle 2 (2015)
Biological quality elements	
Invertebrates	Good
Macrophytes	High
Phytoplankton	High
Hydromorphological supporting elements	
Flow	Pass
Chemical and physico-chemical (water quality) supporting elements	
Dissolved Inorganic Nitrogen (DIN)	Moderate
Dissolved Oxygen (DO)	High
Specific pollutants (Annex 8)	High
Arsenic	Good
Copper	Good
Zinc	Good
Chemical quality elements	
Priority hazardous substances (Annex 10)	Fail
Mercury and its compounds	Fail
Cadmium and its compounds	Good
Lead and its compounds	Good
Nickel and its compounds	Good

The Water Watch Wales website identifies the following reasons why the waterbody has failed to achieve GEP:

- DIN from point and diffuse sewage discharge from the water industry, and urban and transport (affecting ecological status).
- Mercury and its compounds from an unknown source.

2.2.2 Mitigation measures

Mitigation measures have been identified within the RBMP to enable the waterbody to achieve its WFD objectives. For a waterbody to be able to achieve GEP, all of the mitigation measures have to be in place and functioning.

Many of these measures are related to the control of dredging activities and disposal of dredged materials; the proposed scheme will not affect these activities or decision-making relating to the control of these activities, and therefore these measures are not considered further. The following mitigation measures are relevant to the proposed scheme and are not currently in place:

- Indirect mitigation
- Realign flood defences
- Enhance ecology
- Preserve or restore habitats

2.3 Swansea Carboniferous Coal Measures

Swansea Carboniferous Coal Measures groundwater body stretches from Swansea in the west to Tonypany in the east, and from Abercrave in the north to Kenfig and Sarn in the south. It encompasses an area 758.38km² in size.

The groundwater body has a quantitative status of 'Good' and a chemical status of 'Poor', giving it an overall status of 'Poor'.

The 'Reasons for Not Achieving Good Cycle 2 Data' document on Water Watch Wales website identifies the following reason why the Swansea Carboniferous Coal Measures groundwater body has failed to achieve Good overall status:

- Point source pollution from an abandoned mine.

2.4 Protected areas, priority habitats, and invasive non-native species

The MAGIC website identifies that there are two WFD Protected Areas within 2km of the development site:

- Aberavon Bathing Water (EU Bathing Water Directive)
- Swansea Bay Shellfish Waters

The following priority habitats (as defined by Section 7 of the Environment (Wales) Act 2016) are present within 500m of the proposed scheme:

- Coastal sand dunes (Baglan Burrows) located 190m to the north west of the scheme area.

No WFD Higher Sensitivity Habitats are present within 500m of the proposed scheme. The closest such habitats – polychaete reef, mussel beds, and saltmarsh – are recorded approximately 1km to the east of Aberavon, at the mouth of the River Afan.

The following WFD Lower Sensitivity Habitats are recorded within 500m of the proposed scheme:

- Intertidal soft sediments (sand, mud and mixed) within and immediately adjacent to the scheme area.

- Small amounts of rocky shore, gravel, and cobbles are located within and immediately adjacent to the scheme area.

An ecological appraisal⁶ of the proposed development identified historic (2015) records for the presence of American Slipper Limpet *Crepidula fornicata* on Aberavon Beach. No evidence of this species was recorded within the scheme area during ecological sites surveys undertaken in December 2016 and March 2018.

2.5 Assessment of other activities (plans and projects) for potential cumulative and in-combination impacts

The following plans and projects have been reviewed to identify the potential for cumulative or in-combination impacts:

Western Wales Basin Management Plan (Natural Resources Wales/Environment Agency, December 2015)

The measures contained within this plan aim to improve the ecological and chemical status of the waterbody. These measures are not likely to cause an adverse effect on the waterbody and may deliver significant benefits. As such, there will be no cumulative or in-combination effects with the proposed development.

Lavernock Point to St Ann's Head Shoreline Management Plan (SMP2) (Swansea and Carmarthen Bay Engineering Group, January 2012)

The SMP2 sets out the long term (100 year) strategic policies to manage coastal flood and erosion risk in the strategy area, which encompasses Aberavon Beach. It informs decision-making at project level and coastal flood defence activities should be taken in-accordance with the overarching strategic policies as defined by the SMP2.

Aberavon Beach is located within SMP2 policy unit 8.4 (PU8.4); the strategic policy to manage coastal flood and erosion risk is Hold the Line (HTL) for the next 100 years (to 2105).

The SMP2 was subject to a WFD Assessment prior to strategy approval⁷. The assessment identified that the HTL policy potentially conflicted with the WFD; as mitigation, it highlighted that coastal protection schemes developed in this PU should take account in particular of the following mitigation measures:

- Remove obsolete structure (where feasible locally within the HTL frontage).
- Managed realignment of flood defence (where feasible locally within the HTL frontage).
- Removal of hard reinforcement/revetment, or replacement with soft engineering solution (as part of defence maintenance/upgrades).
- Shoreline rehabilitation/reprofiling.
- Operational and structural changes to beach control, etc.
- Preserve and, where possible, restore historic aquatic habitats.
- Preserve and where possible enhance ecological value of marginal aquatic habitat.

However, the WFD assessment considered that defending Port Talbot and Swansea against coastal flooding presents a case of overriding public interest since such flood protection is essential for:

⁶ Ove Arup & Partners Ltd (2017), Aberavon Promenade Coastal Defences: Preliminary Environmental Information Report (PEIR), 15 June 2017.

⁷ Swansea and Carmarthen Bay Engineering Group (2012), Lavernock Point to St Ann's Head Shoreline Management Plan SMP2, Appendix I: Water Framework Directive Assessment, January 2012.

- Protection of life;
- Implementation of state policies for flood protection; and
- Protection of economic and social stability.

The assessment also concluded that HTL at Aberavon Beach is necessary to defend the waterbody from ground contamination due to historic industrial land use in the adjacent hinterland.

Neath Port Talbot Local Development Plan 2011-2026 (Neath Port Talbot County Borough Council, January 2016)

The adopted Local Development Plan (LDP) includes policy provisions for the protection of the water environment in accordance with national policy.

This includes Policy SP1 (climate change), which seeks to avoid new development in areas at risk from flooding; policies SP14 (the countryside and undeveloped coast) and EN1 (undeveloped coast), which protects the undeveloped coast from inappropriate development; and policy SP16 (environmental protection), which promotes actions to ensure environmental protection including ensuring proposals do not have significant effects on water, ground, or air quality.

In addition, the LDP includes policy provisions promoting other aspects of the Plan area and identifies Aberavon seafront as an important local tourism/recreation centre that has the potential to contribute to the growth of the local economy. The LDP supports this through a range of policy provisions including Policy CCRS1 (coastal corridor regeneration schemes), SP3 (sustainable communities), SP5 (development in the coastal corridor), and TR1 (transport proposals).

Implementation of these and other associated environmental policies will deliver benefits to the water environment and support achievement of WFD objectives. In addition, permission for development allocated in the Local Plan should only be granted if these developments are in accordance with these environmental policies; these developments should include adequate safeguards to ensure no adverse impact on the water environment and should support delivery of WFD objectives. As such, there will be no cumulative or in-combination effects with the proposed development.

Swansea Bay Tidal Lagoon (Tidal Lagoon Power)

Tidal Lagoon Swansea Bay is a proposed 320MW tidal energy lagoon. It will enclose part of Swansea Bay in a 9.5km long U-shaped breakwater structure stretching from the eastern side of the River Tawe to the eastern edge of the new Swansea University Bay Campus. At its closest, it is approximately 7km west of Aberavon Sands. A Development Consent Order (DCO) was issued for the project by the Secretary of State on the 9 June 2015. An application for a Marine Licence was submitted to NRW in February 2014, which remains pending.

A series of WFD Assessments have been prepared in support of the tidal lagoon project. These assessments identified several risks to the Swansea Bay coastal waterbody, including a potential risk of deterioration of the benthic invertebrate quality element and the biological quality element supporting hydromorphological conditions. The project also has the potential to affect the mitigation measures proposed for the HMWB and may affect the potential of the waterbody to achieve GEP by 2027.

An EIA screening opinion⁸ provided by NPTCBC on the 10 April 2018 confirmed that “Due to the scale of the proposed Tidal Lagoon and its documented limited impacts upon Aberavon Beach, these impacts when considered together with the proposed development and not considered likely to be significant.”

⁸ NPTCBC (2018), Aberavon Promenade EIA Screening Opinion, Officer Report, 10 April 2018.

Other development proposals

In addition, a search of the NPTCBC planning application portal (<http://planning.npt.gov.uk/search.asp>) undertaken on the 24 September 2018 did not identify any other developments that would be likely to have a cumulative or in-combination effect with the proposed development.

3 Stage 1: screening assessment

Published guidance states that a WFD assessment is not required if an activity is assessed as being low risk, i.e., all criteria set out in Stage 1 screening are met (see Figure 1-3) or where there is no (adverse) impact pathway to a WFD waterbody. Maintenance, repair, and changes to the operation of existing structures still in use for their original design purpose, where the design and the footprint of the structure remain the same, and the same or equivalent materials are used, can in most cases be screened out.

In relation to the Swansea Carboniferous Coal Measures groundwater body, none of the activities (components of the proposed development) will involve large-scale excavation, dewatering or pumping, or the significant release of contaminants. Therefore, no impact on the quantitative or chemical status of the waterbody is anticipated and no further assessment is made in relation to this waterbody.

The outcomes of the screening assessment in relation to the Swansea Bay coastal waterbody are summarised in Table 3-1.

Table 3-1: Screening assessment

Component of proposed development	Is the component low risk to the Swansea Bay coastal waterbody?
Establishment, use, and decommissioning of temporary construction compound in Scarlet Avenue car park.	Yes – the construction compound is located within an existing hardstanding car park located outside of the waterbody. No vegetation removal or physical change to the coastline or coastal habitats will be undertaken. Establishment, use, and decommissioning of the construction compound, which will contain all site welfare facilities, vehicle/plant parking, and waste storage/management facilities, will be managed in accordance with approved method statements prepared following good construction practice and an approved Construction Environmental Management Plan (CEMP) (approved via planning application and Marine Licence regimes).
Temporary diversion of Wales Coast Path/National Cycle Route around construction area.	Yes – temporary diversion of the Wales Coast Path and National Cycle Route will not affect waterbody status.
Construction of temporary haulage ramp onto the beach.	Yes – a temporary haulage ramp will be constructed from the construction compound onto the beach over an area of existing rock armour; this ramp is required to facilitate construction plant and material access to the beach. Given the very limited scale of the proposed works to establish the ramp, no impact on waterbody status is likely.
Temporary storage of rock armour on foreshore adjacent to ramp/slipway.	Yes – construction of the rock armour toe protection will require the temporary storage of rock in an area of beach immediately adjacent to the temporary haulage ramp. Construction of the toe protection will be undertaken in sections, with the rock required for each section transported to site immediately prior to works commencing on a section. As such, only the rock required for the next section will be stored on the beach. Whilst storage of the rock has the potential to damage and disturb beach habitat within the footprint of the storage area, any impacts are likely to be very limited in geographic scale and temporary in nature and will not significantly affect waterbody status.

Component of proposed development	Is the component low risk to the Swansea Bay coastal waterbody?
Construction of rock armour scour protection involving temporary excavation and storage of beach material, installation of geotextile membrane, placement of rock armour blocks, and backfilling of excavated material.	No – this will require extensive intrusive works within, and immediately adjacent to, the waterbody that will result in a permanent change to a section of the beach. These works have the potential to conflict with several RBMP mitigation measures identified for the waterbody.
Construction of new access steps through rock armour involving excavation of foundation area, in-situ construction of concrete foundation, and installation of precast step units.	Yes – permanent access steps through the new rock armour will be constructed in six locations to enable continued public access to the beach. This will require limited excavation works, concrete pouring, and installation of pre-cast steps. Whilst these activities may present a contamination risk to the environment, they will be managed in-accordance with approved method statements prepared following good construction practice and an approved CEMP (approved via planning application and Marine Licence regimes). As such, these risks will be effectively managed. Given the very limited scale of the proposed works and use of good construction practice, no impact on waterbody status is likely.
Concrete repairs to existing seawall/revetment/promenade.	Yes – works to the existing flood defence infrastructure is required to repair cracks and voids under the concrete revetment. This work is required to prolong the lifetime of the flood defence structures, thus avoiding extensive works to demolish and replace these structures. Whilst these activities may present a contamination risk to the environment, they will be managed in-accordance with approved (via planning application and Marine Licence regimes) method statements prepared following good construction practice and a CEMP. As such, these risks will be effectively managed. Given the very limited scale of the proposed works and use of good construction practice, no impact on waterbody status is likely.
Construction of permanent slipway onto the beach involving excavation of foundation area, in-situ construction of concrete foundation, construction of slipway, and installation of rock armour scour protection.	Yes – the proposed scheme includes removal of the temporary access ramp following installation of the rock armour scour protection and construction of a permanent slipway onto the beach. Whilst this activity may present a contamination risk to the environment, the construction works will be managed in-accordance with approved method statements and a CEMP. As such, these risks will be effectively managed. Given the very limited scale of the proposed works and use of good construction practice, no impact on waterbody status is likely.
Operation of the completed flood defence scheme.	No – operation of the proposed scheme has the potential to impact on remaining anthropogenic and semi-natural sections of coastline due to changes in coastal process and/or associated with sea level rise due to climate change.
Periodic maintenance of the completed flood defence scheme.	Yes – maintenance activities associated with the proposed scheme are likely to be limited in extent to small-scale repair work. As such, these activities are not likely to impact on waterbody status.

Based on the above screening assessment, potential impacts on the Swansea Bay coastal waterbody are limited to risks associated with:

- Construction of rock armour scour protection.
- Operation of the completed flood defence scheme.

This is due to the potential for direct impacts on existing beach habitats during construction and during operation as a result of potential changes to coastal processes.

These aspects will be taken forward to the next stage (Stage 2) of the assessment process (impact scoping) to assess the potential for an adverse impact on the status of waterbody quality elements and associated WFD objectives.

4 Stage 2: scoping assessment

The purpose of the Scoping Assessment is to identify whether aspects of the proposed development not screened out during Stage 1 could present a significant risk to any of the WFD quality element receptors. In doing so, it assesses whether these activities may cause deterioration in the status of a quality element or prevent the waterbody (or protected area) from achieving its WFD objectives in the future.

It utilises the Scoping Template provided within the Environment Agency guidance (2017), which comprises a series of scoping tables that aim to identify the need for a further, more-focused impact assessment (Stage 3). Such a detailed impact assessment draws upon more in-depth evidence to determine whether the risks identified for each quality element could cause a deterioration in the status of a waterbody or prevent a waterbody from achieving its WFD objectives.

4.1 Hydromorphology

Table 4-1: Hydromorphology scoping assessment

Could any activity:	Yes / No	Hydromorphology risk issue(s)
Impact on the hydromorphology of a waterbody at High status?	No	The Swansea Bay coastal waterbody is not at High status for its hydromorphological supporting elements.
Is in a waterbody that is heavily modified for the same use as the activity?	Yes	The Swansea Bay coastal waterbody is a HMWB due to modifications associated with coastal protection.
Significantly impact the hydromorphology of any waterbody?	No	The majority of the proposed scheme is located above current MHWS tide level. Aberavon Sands has been assessed as being in a state of dynamic equilibrium. Longshore sediment transport is limited due to the near perpendicular wave action along the defence frontage. Beach drawdown and recovery occurs periodically at the defence toe with little evidence of a net gain/loss of sediment across the beach. However, drawdown and exposure of the defence toe has led to scour of the revetment and cracking along the seawall, meaning the revetment is at risk of collapse. Construction of the rock armour toe protection is not expected to affect existing coastal processes or the current dynamic equilibrium along the frontage. Periodic drawdown of beach material will continue (exposing buried rock armour), although this is expected to be less as the toe protection will reduce wave reflection, whilst beach recovery will also continue (reburying exposed rock armour). No change to the limited longshore sediment transport processes is predicted. As such, no impact on Baglan Burrows dune system is likely.

4.2 Physico-chemical

Table 4-2: Physico-chemical scoping assessment

Could any activity:	Yes / No	Physico-chemical risk issue(s)
Affect water clarity, temperature, salinity, oxygen levels, nutrients, or microbial patterns continuously?	No	Extensive earthworks are required immediately adjacent to the existing defences to enable installation of the rock armour toe protection. The rock armour will be installed in short sections. For each section, all excavated beach material will be temporarily stockpiled adjacent to the excavation and then returned to the excavated area once the rock armour is in place and before it is inundated by the incoming tide. As such, the risk of mobilisation of extensive additional beach material by the tide is low, particularly as the majority of construction works are located above MHWS tide level. Construction of the reinforced concrete steps, concrete slipway, and maintenance works to the existing defences (void filling and repair of cracks) will be undertaken in dry conditions following good construction practice and robust environmental management procedures will be adopted during construction to minimise the risk of contamination (both of which can be controlled through appropriate consent conditions). As such, no significant impacts on water quality are likely.
Is in a waterbody with a phytoplankton status of moderate, poor or bad?	No	The phytoplankton status of the waterbody is High.
Is in a waterbody with a history of harmful algae?	No	There is no evidence to indicate that the waterbody has a history of harmful algae.

4.3 Biology

4.3.1 Habitats

Table 4-3: Biology (habitats) scoping assessment

Is the footprint of any activity:	Yes / No	Biology (habitats) risk issue(s)
0.5km ² or larger?	No	The area of works associated with construction of the rock armour toe protection is significantly less (0.02km ²) than 0.5km ² .
1% or more of the waterbody's area?	No	Less than 0.02% of the waterbody area will be affected by the proposed works.
Within 500m of any higher sensitivity habitat?	No	The nearest higher sensitivity habitat (polychaete reef) is located approximately 1km to the south east.
1% or more of any lower sensitivity habitat?	Yes	Aberavon Sands is classified as a WFD lower sensitivity habitat and the proposed scheme will result in temporary and permanent impacts on approximately 0.02km ² of beach habitat.
Impact on macrophyte or phytoplankton community diversity, condition, or distribution?	No	No adverse impacts on macrophyte or phytoplankton communities are anticipated. Construction of the rock armour has the potential to provide new habitat opportunities for a range of marine fauna and flora.

Impact on invertebrate community diversity, condition or distribution?	No	Within the footprint of the scheme (excavated toe area), the invertebrate community is likely to be relatively impoverished. However, species living in this area will be directly affected by the excavation of beach material and installation of the rock armour. Notwithstanding this, the significance of any impacts on the invertebrate community are very low given the abundance of similar adjacent habitats and likely rapid re-colonisation of the works area. As such, no adverse impacts on invertebrates are predicted; conversely, construction of the rock armour has the potential to provide new habitat opportunities for a range of marine fauna and flora.
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4.3.2 Fish

Table 4-4: Biology (fish) scoping assessment

Could any activity:	Yes / No	Biology (fish) risk issue(s)
Impact on normal fish behaviour, such as movement, migration or spawning?	No	Construction of the proposed scheme will take place in dry working conditions; therefore, it is not likely to affect fish behaviour and does not include any aspects that will affect fish migration, movement, or spawning.
Could cause entrainment or impingement of fish?	No	Construction and operation of the proposed scheme does not include any aspects that could cause entrainment or impingement of fish.

4.4 Chemical

Table 4-5: Water quality (pollutants) scoping assessment

Could any activity use or release chemicals:	Yes / No	Water quality risk issue(s)
That are on the Environmental Quality Standards Directive (EQSD) list?	No	No use of these chemicals is proposed.
That disturbs sediment with contaminants above Cefas Action Level 1?	No	No evidence has been identified to indicate that beach sediments contain contaminants above this level ⁹ .

Table 4-6: Water quality (mixing zone) scoping assessment

If your activity has a mixing zone consider if:	Yes / No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list?	No	The proposed scheme will not create a mixing zone.

⁹ Ian Famer Associates (2018), Aberavon Coastal Defence, Factual Report on Ground Investigation, July 2018.

4.5 WFD Protected Areas

Table 4-7: WFD Protected Areas scoping assessment

Is any activity:	Yes / No	Protected Area risk issue(s)
Within 2km of any WFD protected area?	Yes	Aberavon Sands is a designated Bathing Water, whilst Swansea Bay (East) Shellfish Waters are immediately adjacent to the beach.

4.6 Invasive non-native species

Table 4-8: Invasive non-native species scoping assessment

Could any activity:	Yes / No	INNS risk issue(s)
Introduce or spread INNS?	No	Historic (2015) records for American Slipper Limpet <i>Crepidula fornicata</i> on Aberavon beach have been identified. However, no evidence of this species was recorded within the scheme area during ecological sites surveys undertaken in December 2016 and March 2018. Risks associated with INNS can be effectively managed through application of good construction practice and robust environmental management procedures.

4.7 Scoping summary and requirement for impact assessment

The preceding sections provide the scoping assessment of the potential risks to WFD quality element receptors as a result of the proposed scheme. The outcomes of this work are summarised in Table 4-9. It concludes that further assessment is required in relation to potential risks to hydromorphology (particularly in relation to WFD mitigation measures) and biology (habitats).

Table 4-9: Scoping summary and further assessment

WFD receptor	Potential risk to WFD receptor?	Risk issue(s) for impact assessment
Hydromorphology	Yes	No significant impacts on hydromorphology are predicted. The majority of the proposed scheme is located above current MHWS tide level. Notwithstanding this, the proposed scheme is in a waterbody that is heavily modified for the same use as the activity (coastal protection) and the quality elements that are contributing to the failing status of the waterbody include its mitigation measures assessment. In addition, the WFD Assessment of the SMP2 identified that the HTL policy potentially conflicted with the WFD; as mitigation, it highlighted that coastal protection schemes developed in this PU should take account of mitigation measures identified in the Western Wales RBMP. Therefore, at this stage of the assessment, risks to hydromorphology are scoped in for further assessment.
Biology (habitats)	Yes	The proposed scheme will cause temporary and permanent impacts on beach habitats (Section 7 Priority Habitat and WFD Lower Sensitivity Habitat), flora and fauna. No impacts on designated sites or WFD Higher Sensitivity Habitats are anticipated.

WFD receptor	Potential risk to WFD receptor?	Risk issue(s) for impact assessment
		Conversely, construction of the rock armour has the potential to provide new habitat opportunities for a range of marine fauna and flora.
Biology (fish)	No	The proposed scheme is unlikely to affect fish as construction of the scheme will be undertaken in dry working conditions.
Physico-chemical	No	The proposed scheme is not likely to have an adverse effect on physico-chemical conditions in the Swansea Bay waterbody or any other waterbody. Any potential risks to water quality during construction of the scheme will be carefully managed through implementation of good construction practice and closely monitored throughout construction.
Chemical	No	No use of EQSD chemicals is proposed. In addition, no evidence has been identified to indicate that excavated beach material is likely to contain contaminants above Cefas Action Level 1.
Invasive non-native species (INNS)	No	Despite recent historic records for American Slipper Limpet <i>Crepidula fornicata</i> on Aberavon beach, no evidence for this INNS was identified during ecology site surveys undertaken in 2016 and 2018. As such, the risk of spreading INNS is considered to be low. Notwithstanding this, it is recommended that a further ecology walkover survey of the scheme area is undertaken in-advance of the start of construction to identify the presence of any INNS. If INNS are identified, appropriate mitigation measures will be required to ensure the proposed scheme does not cause their spread. In addition, it is recommended that biosecurity good practise is implemented throughout construction of the scheme, such as the 'check-clean-dry' protocols and Be Plant Wise.
Protected Areas	Yes	The proposed scheme is located immediately adjacent to Aberavon Bathing Waters and Swansea Bay Shellfish Waters. Shellfish Waters are unlikely to be impacted since deteriorations in water quality are not anticipated, and sediment containing shellfish will not be disturbed by the proposed scheme. Bacterial contamination is not expected to occur as a result of the proposed scheme and therefore will not impact on Bathing Waters. Notwithstanding this, at this stage of the assessment, risks to Protected Areas are scoped in for further assessment.

5 Stage 3: impact assessment

5.1 Hydromorphology

Assessment undertaken at Stage 1 (screening) and Stage 2 (scoping) has identified that the proposed scheme may present a potential risk to hydromorphology in the Swansea Bay coastal waterbody.

The majority of the proposed scheme is located above current MHWS tidal level. A conceptual study of coastal process undertaken by Arup (2017)⁵ identified that Aberavon Sands is in a state of dynamic equilibrium. Longshore sediment transport is limited due to near perpendicular wave action along the defence frontage, whilst beach drawdown and recovery occurs periodically at the existing defence toe (and to a lesser degree across the wider beach area), with little evidence of a net gain/loss of sediment across the beach.

Construction of the rock armour toe protection is not expected to affect existing coastal processes or the current dynamic equilibrium along the frontage. Periodic drawdown and beach recovery will continue (although drawdown may occur to a lesser extent due to decreased wave reflection at the toe). No change to the limited longshore sediment transport processes is predicted.

The WFD Assessment⁸ undertaken to support development of the Lavernock Point to St Ann's Head SMP2 policies (the proposed scheme is in accordance with the SMP2 HTL policy for policy unit (PU) 8.4) identified that the HTL policy in the PU is at risk of conflicting with WFD objectives for the Swansea Bay coastal waterbody; however, the assessment acknowledged that at a waterbody scale, other policy units (particularly PU8.1 and PU8.5) will positively contribute to WFD objectives (to partly mitigate any adverse effects in PU 8.4 and other policy units).

The WFD assessment concluded that any proposed schemes in the waterbody should consider incorporating mitigation measures identified in the RBMP into their design/delivery. The assessment acknowledged that these measures are particularly required for several other PUs in the waterbody.

The assessment also identified that an alternative SMP2 policy for the PU (i.e., managed realignment) would not provide a better environmental outcome because of significant land contamination in the hinterland, which if mobilised through coastal erosion could affect waterbody chemical and biological status. The assessment considered that there is overriding public interest in implementing the HTL policy. No impacts on other waterbodies or designated sites were identified.

The assessment identified that HTL could cause future coastal squeeze. In-combination (across several PUs) this could conflict with WFD objectives.

As stated previously, the proposed scheme is not considered likely to have a significant impact on current hydromorphology. However, the scheme does not directly contribute towards delivery of mitigation measures highlighted in the RBMP and the WFD Assessment of the SMP2 for this waterbody. Mitigation measures are particularly necessary should HTL policies be implemented across other PUs in the waterbody and to reduce the risk of waterbody status being affected by coastal squeeze (due to sea level rise) in the future. As such, it is recommended that the proposed scheme should seek to contribute to the objectives of the waterbody by contributing to the delivery of the waterbody mitigation measures.

In particular, the following mitigation measures are directly relevant to the proposed scheme:

- Preserve and, where possible, restore historic aquatic habitats.
- Preserve and where possible enhance ecological value of marginal aquatic habitat.

It is therefore recommended that the proposed scheme included within its design measures to increase the ecological value of the rock armour toe protection (whilst acknowledging that the rock armour itself may provide some ecological benefit) and the existing concrete revetment/seawall. If this is not technically feasible, the scheme should consider offsite enhancement opportunities, such as enhancement of Baglan Burrows dune system or the existing rock armour at the mouth of the River Afan.

In addition, as recommended in the Arup (2017) conceptual study, annual monitoring of the beach profile should be undertaken to further assess longer term trends in beach dynamics. It is expected that beach levels will remain volatile, but monitoring will support identification of patterns in beach lowering and sediment transport.

5.2 Biology

The proposed scheme will cause both temporary and permanent impacts on beach habitat (these habitats are classified as a WFD Lower Sensitivity Habitat), flora and fauna. No impacts on designated sites, Section 7 Priority Habitats, or WFD Higher Sensitivity Habitats are anticipated.

Construction of the rock armour toe protection will require significant excavation of beach materials and the installation of rock armour; this will cause habitat damage and disturbance to the affected beach areas and the addition of a new habitat type (rock armour). Excavated beach material will be backfilled in the same area once the rock armour has been installed. The damage to this habitat will be largely temporary and no significant impacts on WFD Lower Sensitivity Habitat is anticipated, particularly given the abundance of this habitat type in the immediate vicinity of the scheme and likely rapid re-colonisation of the scheme area by marine fauna.

The addition of new rock armour habitat has the potential to provide an ecological benefit by providing opportunities for existing and new flora and fauna to colonise the scheme area, potentially increasing biodiversity. This includes providing new roosting opportunities for waterbirds and foraging habitat for species such as Otter *Lutra lutra*. In addition, the rock armour may encourage establishment of WFD Higher Sensitivity Habitats, including mussel beds and polychaete reefs, which are already present in the wider area.

No significant impacts on any designated habitats are anticipated, including the adjacent Baglan Burrows sand dune system (designated as a Site of Importance for Nature Conservation). The dunes are experiencing a general landward recession caused by extreme wave activity, wind blowout, and the presence of the adjacent River Neath channel training wall. The proposed scheme is not expected to affect existing coastal processes and so will not interfere with the limited sediment transport system across the frontage. This conclusion is supported by the EIA Screening Opinion provided by NPTCBC, which states that “given the scale of the project, its location, together with the prevailing tides would mean that such impacts [on coastal processes or geomorphology that could impact Baglan Burrows SINC or Crymlyn Burrows SSSI] are unlikely to be significant.”

However, given the importance and sensitivity of this habitat, both in terms of its designated status and the mitigation it provides for other potential impacts on the waterbody, it is recommended that annual monitoring of the beach be extended to include Baglan Burrows to monitor future evolution of the dune system once the proposed scheme is in operation.

5.3 Protected Areas

The proposed scheme is located immediately adjacent to Aberavon Bathing Waters, designated under the Bathing Water Regulations 2013 (2013/1675), and Swansea Bay Shellfish Waters, previously designated under the Shellfish Waters (Wales) Notice 2013

and since protected under The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2016.

Impacts on the designated Shellfish Waters are not likely as an adverse effect on water quality is not anticipated, whilst the proposed scheme will not impact on sediment containing shellfish.

No impacts on the designated bathing water are anticipated. There is no evidence of significant bacterial contamination of the beach¹⁰ and bathing water quality has been assessed as 'good' since 2014. The proposed scheme will not alter existing sewerage infrastructure or surface runoff patterns or result in the direct release of foul water/faecal matter into the bathing water.

Notwithstanding this, it is recommended that visual monitoring of the construction area is undertaken daily during the construction period to identify any signs of sewage debris, animal faeces, litter, and oil or tar that has been discharged into the area, particularly after storm or heavy rainfall events. If any such debris is identified, it should be removed from site to a suitable waste disposal facility. This will minimise the risk of bacterial contamination adversely affecting both users of the beach/bathing waters and construction personnel.

¹⁰ Natural Resources Wales, 2018 Bathing Water Profile for Aberafan. Available online: <http://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?site=uk11702-36800> [accessed 25 September 2018].

6 Conclusion and recommendations

The proposed scheme is not likely to have a significant impact on any WFD receptors. The majority of the scheme is located above the current MWHS tide level. No impact on existing coastal processes is predicted, whilst impacts on beach habitats, including damage and disturbance during construction, will be temporary in nature and will not be significant. Conversely, construction of the rock armour toe protection may provide an ecological benefit. No impacts on WFD Protected Areas are likely.

Notwithstanding this, as identified in the WFD Assessment supporting the development of the Lavernock Point to St Ann's Head SMP2 policies, a HTL policy in the Aberavon Sands policy unit has the potential to contribute to future adverse impacts on the waterbody. The waterbody is currently failing its WFD objectives, with one of the principal causes due to non-delivery of all required mitigation measures.

The following recommendations are made to support the delivery of the proposed scheme and compliance with the requirements of the WFD:

- It is recommended that the proposed scheme seeks to contribute to the delivery of the mitigation measures identified for this waterbody in the RBMP. This should principally focus on opportunities to provide ecological enhancement of the rock armour and the existing concrete revetment/seawall, or offsite enhancement in an adjacent SMP2 policy unit should opportunities within the Aberavon Sands frontage be very limited. This could include enhancement of the Baglan Burrows dune system or the existing rock armour present at the mouth of the River Afan.
- Annual monitoring of beach levels should be undertaken to assess longer-term variations and to determine whether there is a general trend towards beach lowering. The monitoring should be extended to include Baglan Burrows dune system, to assess changes (landward regression) in the dune geography.
- It is recommended that a further ecology walkover survey of the scheme area is undertaken in-advance of construction to identify the presence of any INNS. If INNS are identified, appropriate mitigation measures may be required to ensure the proposed scheme does not cause their spread. In addition, it is recommended that biosecurity good practice is implemented throughout construction of the scheme, such as the 'check-clean-dry' protocols and Be Plant Wise.
- Visual monitoring of the construction area should be undertaken daily during the construction period to identify any signs of sewage debris or any other contaminated materials, which should be removed offsite for disposal. This will minimise the risk of bacterial contamination adversely affecting beach users and construction personnel.
- A Construction Environmental Management Plan (CEMP) should be prepared, which sets out the actions that will be implemented to control construction of the proposed scheme so as to avoid adverse impacts on the environment. The CEMP should form part of the construction contract. It should adhere to construction best practice for works on the coast so as to reduce the risk of environmental contamination during construction and include biosecurity procedures to prevent the spread of INNS (if present).

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