

AtkinsRéalis



**Water Framework
Directive (WFD)
Assessment**

Swansea Council

May 2026

Brockhole Flood Alleviation Scheme

Notice

This document and its contents have been prepared and are intended solely as information for Swansea Council and use in relation to a band 2 marine licence from Natural Resources Wales

AtkinsRéalis UK Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 36 pages including the cover.

Document history

Document title: Water Framework Directive (WFD)

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0.1	Originated	AJ	FS	RF	DMH	29/05/2026

Client signoff

Client	Swansea Council
Project	BROCKHOLE FLOOD ALLEVIATION SCHEME
Job number	100098307
Client signature/date	



Contents

1.	Introduction	6
1.1	Overview.....	6
1.2	Legislative Background	7
1.2.1	WFD classification	8
1.2.2	WFD compliance	9
1.3	Background to WFD	9
2.	Data sources used	10
3.	Proposed Works	11
3.1	Location	11
3.2	Description of the Proposed Works.....	11
3.3	Method of works	14
3.3.1	Site Mobilisation and Compound Establishment	14
3.3.2	Temporary Beach Access and Working Areas	14
3.3.3	Excavation and Management of Beach and Channel Sediment.....	14
3.3.4	Cutting through the existing sea wall.....	15
3.3.5	Installation of culvert through the sea wall	15
3.3.6	Scour Protection and Channel Reinstatement	15
3.3.7	Removal of Temporary Works and Demobilisation	16
4.	Stage 1 - Screening.....	17
4.1	Site baseline	19
4.1.1	Geomorphology and hydrodynamics.....	19
4.1.2	Aquatic Ecology.....	19
4.1.3	Geology	20
4.1.4	WFD Protected Areas.....	20
4.1.5	Swansea Bay Baseline.....	21
4.2	Screening Summary	21
5.	Scoping assessment	23
6.	Impact Assessment	28
6.1	Swansea Bay Coastal Water body	28
7.	Conclusion	29
Appendix A.	Scoping stage: Coastal water body assessment	31



Tables

Table 4-1 - Screening assessment for WFD waterbodies	17
Table 4-2 - Baseline for Swansea Bay WFD data	21
Table 5-1 - Scoping Assessment for Swansea Bay Coastal water body	23
Table 6-1 - Level of impact on the WFD receptors for Swansea Bay Coastal water body	28

Figures

Figure 1-1 - Location of Proposed Works	6
Figure 3-1 - Google earth screenshot of Proposed Works location.....	11
Figure 3-3 - Drawings of the Proposed Works.....	13
Figure 4-1 – Location of WFD higher sensitivity habitats located within Swansea Bay, based on habitat layers sources from MAGiC ⁸ . The black box indicates the location of the Proposed Works....	19
Figure 4-2 - WFD Lower sensitivity habitats located within Swansea Bay, based on habitat layers sources from MAGiC ⁸ . The black box indicates the location of the Proposed Works.	20



INTRODUCTION

1. Introduction

1.1 Overview

This document presents a Water Framework Directive (WFD) compliance assessment for the Proposed Works associated with the outfall located at Blackpill, Swansea Bay (Figure 1-1). The Proposed Works require a marine licence from Natural Resources Wales (NRW) and, therefore, must demonstrate compliance with the requirements of the WFD. The aims of the document are to provide:

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

A compliance assessment is a statutory requirement for all new developments that have potential to affect the water environment. The assessment must demonstrate that the Proposed Works will not cause deterioration to (or prevent achievement of Good Status in) the water bodies it affects. Further details on the Water Framework Directive, its implementation into UK legislation and its retention post-Brexit, can be found in Section 1.2 below.



Figure 1-1 - Location of Proposed Works

1.2 Legislative Background

The Water Framework Directive (WFD), originally an initiative of the European Commission, with the primary aim of establishing a framework for the protection and enhancement of inland surface waters, estuaries, coastal waters and groundwater. The WFD sets objectives for water bodies to achieve:

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

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

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

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

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

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

The European Union (EU) Water Framework Directive (Council Directive 2000/60/EC)¹ aims to protect and enhance the quality of the water environment across all EU Member States. Whilst the United Kingdom is no longer a member of the EU (as of 31 January 2020), the WFD continues to be transposed into English and Welsh law through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017², which revoke and replace The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and its amendments.

The main objectives of the WFD are to:

- Prevent the deterioration of aquatic ecosystems.
- Protect, enhance and restore waterbodies to Good Status, which is based on ecology (with its supporting hydromorphological and physico-chemical factors) and chemical factors for surface water, and water quantity and chemical status for groundwaters.
- Progressively reduce pollution from priority substances and phase out emissions, discharges and losses of priority hazardous substances into the water environment.

1.2.1 WFD classification

Each WFD water body is provided with a classification, which outlines the current condition of the water body. For coastal and transitional waterbodies, this is comprised of two statuses:

- Ecological Status – including Biological Quality Elements, Physico-Chemical Quality Elements, Specific Pollutants, and Hydromorphological Supporting elements.
- Chemical Status – including Priority Substances, Priority Hazardous Substances, and Other Pollutants.

A transitional water body is a body of water in the vicinity of river mouths, which are partly saline in character as a result of their proximity to coastal waters, but which are substantially influenced by freshwater flows³.

The WFD requires all natural transitional and coastal waterbodies to achieve both Good Chemical Status (GCS) and Good Ecological Status (GES).

Artificial and Heavily Modified Water Bodies (A/HMWB) are considered unable to attain GES due to the modifications necessary to maintain their 'human use' (e.g. flood risk management, navigation, etc.). Accordingly, they are required to achieve Good Ecological Potential (GEP), through the implementation of a series of mitigation measures that would improve the ecology of these waterbodies without compromising their human use. These measures are identified through Mitigation Measures Assessment (MMA), outlined in the relevant River Basin Management Plan (RBMP).

¹ Directive 2000/60/EC of the European Parliament and of the council of 23 October 2000 establishing a framework for community action in the field of water policy. Official Journal of the European Communities. Available at: [resource.html](#) [Accessed January 2026]

² The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available at: [The Water Environment \(Water Framework Directive\) \(England and Wales\) Regulations 2017](#). [Accessed January 2026]

³ European Environment Agency (2025). Transitional waters. Available at: [transitional waters — European Environment Agency](#) [Accessed January 2026]

1.2.2 WFD compliance

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 a deterioration in water body status. 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 Project will not cause a deterioration in any quality element that contributes directly or indirectly to the water body classification.
- Objective 2: The Project will not prevent measures being implemented that would deliver the WFD status objectives within the water body or other downstream waterbodies.
- Objective 3: The Project will contribute, where practicable, to the delivery of the relevant WFD objectives.

If it is considered that the Project is likely to cause deterioration in water body status (Objective 1) or prevent a water body from meeting its ecological objectives (Objective 2), 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”, specifically in respect to physical modification, 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.

1.3 Background to WFD

In Wales, Natural Resources Wales (NRW) is the regulatory body responsible for the implementation of the WFD and is also responsible for classifying the current condition of surface water and groundwater bodies and setting a series of objectives for maintaining or improving their condition. For estuarine (i.e. transitional) and coastal waters, NRW's Guidance Note 78 (GN078) for Screening⁴, Scoping⁵ and detailed assessment⁶ was used as well as the Clearing the Waters⁷ for All guidance. The guidance detailed above states that a WFD assessment can be comprised of up to three stages:

1. Screening assessment - to determine what activities associated with the Proposed Works require further consideration and what activities can be screened out at this stage of the process.
2. Scoping assessment - to identify risks associated with the Proposed Works activities on relevant waterbodies and their quality elements, and if a WFD impact assessment is required.
3. WFD impact assessment - a detailed impact assessment of the waterbodies and their quality elements that are likely to be affected by the Proposed Works. Any potential for non-compliance would be highlighted at this stage, along with a consideration of any necessary mitigation measures and enhancements that are considered necessary for the Proposed Works to comply with the WFD objectives.

⁴ Natural Resources Wales (2024) Complying with the WFD Regulations 2017: Screening [Accessed January 2026]

⁵ Natural Resources Wales (2024) Complying with the WFD Regulations 2017: Scoping [Accessed January 2026]

⁶ Natural Resources Wales (2024) Complying with the WFD Regulations 2017: Detailed Assessment [Accessed January 2026]

⁷ Water Framework Directive assessment: estuaries and coastal waters. Available at: [Water Framework Directive assessment: estuarine and coastal waters - GOV.UK](#) [Accessed January 2026]

2. Data sources used

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

- Water Watch Wales⁸;
- DEFRA Magic Map⁹;
- BGS GeoIndex¹⁰; and
- Data Map Wales¹¹.

⁸ Water Watch Wales (2021). Available at: [Water Watch Wales](#) [Accessed May 2026]

⁹ Multi-Agency Geographic Information for the Countryside (2026). Available at: [MAGIC](#) [Accessed May 2026]

¹⁰ British Geological Survey (2026) Geoindex Onshore. Available at: [GeoIndex - British Geological Survey](#) [Accessed May 2026]

¹¹ Data Map Wales (2026) NRW Marine Fish Surveys. Available at: [NRW Marine Fish Surveys | DataMapWales](#) [Accessed May 2026].

3. Proposed Works

3.1 Location

The Proposed Works are situated in Blackpill, Swansea, a small coastal district approximately 5km southwest of Swansea city centre, positioned along Mumbles Road. The site lies directly on Swansea Beach, with its location recorded at grid reference SS 61954 90510. The location of the Proposed Works is shown in Figure 1-1 and 3-1.



Figure 3-1 - Google earth screenshot of Proposed Works location

To the rear of the site runs the Swansea Bay cycle path, a well-used pedestrian and cycling route that follows the coastline. An existing surface water outfall passes beneath this path and discharges onto the beach.

As the Proposed Works form part of a wider Flood Alleviation Scheme (FAS), this document refers to the overall scheme as the 'Scheme', and to the elements requiring a marine licence as the 'Proposed Works'. Only works to do with the Proposed Works are assessed in this WFD assessment.

3.2 Description of the Proposed Works

The Proposed Works form part of a wider Flood Alleviation Scheme being delivered through a combination of planning permission and Permitted Development Rights (PDR). The Brockhole Stream FAS is situated in Blackpill, Swansea. The Scheme is required to address the long-standing and recurrent flooding associated with the Brockhole Stream, which poses significant risk to residential and commercial properties, the local community and the critical transport link of Mumbles Road.

The proposed FAS includes a series of integrated works designed to provide flood protection and to improve conveyance capacity to reduce flood risk throughout the Brockhole stream catchment (between Clyne Gardens and Mumbles Road). While the overall Scheme involves improvements within Clyne Gardens, Woodman Lane and the upstream channel, only the outfall works below Mean

High Water Springs (MHWS) fall within the context of a marine licence application. The works upstream of the existing seawall are above MHWS and have already received planning consent from Swansea Council (2022/0703/FUL) or are being undertaken under Permitted Development Rights (PDR).

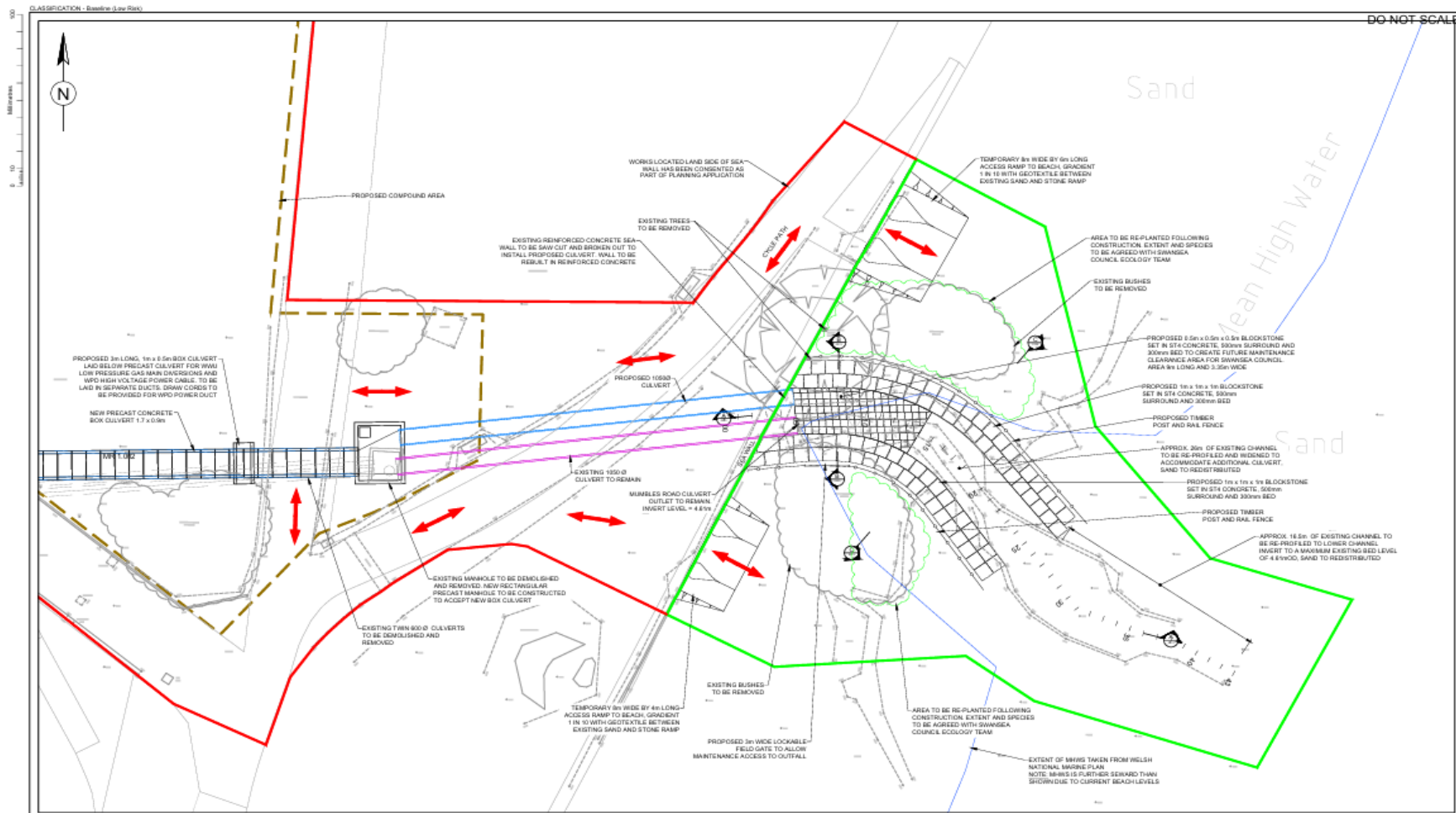
For the purposes of the WFD assessment and the marine licence application, the scope of works will involve the construction of a new 1050mm diameter culvert, extending from an existing manhole on land behind the existing sea wall and located adjacent to the footpath/cycleway along Mumbles Road to a new outfall structure discharging through the sea wall into Swansea Bay. The detailed works will be executed through a sequence of controlled activities, including:

- Construction of a new 1050mm diameter buried culvert on land behind the existing sea wall, with discharge to Swansea Bay.
- Excavation and redistribution of existing sediment and sand on the beach to form a new wider channel to accommodate the new outfall pipe.
- Saw-cutting and break-out of the existing concrete sea wall to accommodate the new outfall pipe.
- In-situ concrete placement to form the sea wall around the new outfall pipe.
- Installation of 89 1m x 1m x 1m blockstones to form the banks of the widened open channel as part of the permanent works. The blockstone will lie upon geotextile and be set within concrete.
- Installation of 124 0.5m x 0.5m x 0.5m blockstones to the channel invert for a length of 9m to provide scour protection.
- Associated fencing, access gates and vegetation removal to allow construction of the works.

It should be noted that the methodology is an outline method based on the knowledge and experience of Atkins Realis. The appointed contractor's detailed method statement may vary.

The drawings illustrating the marine elements of the Proposed Works are presented in Figure 3-2.

Figure 3-2 - Drawings of the Proposed Works



3.3 Method of works

The works below MHWS involve the installation of a new 1050mm diameter concrete culvert to improve outflow from Brockhole Stream into Swansea Bay. Activities include site mobilisation, creation of temporary beach access ramps, removal of sediment and widening of the existing outfall channel, excavation for the new culvert alignment, coring through the sea wall, installing the new pipe and manhole interfaces, scour protection, and reinstating the stream channel and surrounding areas.

The works in relation the outfall below Mean High Water Springs (MHWS) associated with this marine licence application are likely to take place over a 6-month period. This is dependent on weather and tidal conditions.

3.3.1 Site Mobilisation and Compound Establishment

Prior to commencement of construction activities, a temporary site compound will be established above MHWS, located to the south of Mumbles Road as shown on the relevant site compound drawing. The compound will be fenced and gated to ensure site security and will accommodate site welfare facilities, offices, plant storage areas and material stockpiles. A designated, bunded fuel storage and refuelling area will be provided within the compound. All fuel storage, refuelling and maintenance activities will be carried out in accordance with best practice pollution prevention guidance, with spill kits available at all times.

Construction materials, including granular backfill and pipe sections, will be delivered to the site by road, via Mumbles Road, and temporarily stored within the compound. This arrangement ensures that materials are stored above MHWS and only transferred near to the foreshore when required for the works.

3.3.2 Temporary Beach Access and Working Areas

Temporary access ramps to the beach will be achieved via two access ramps constructed from the cycle path down onto the beach on either side of the outfall, as shown on Figure 3-1. Each ramp will be formed by placing a geotextile layer directly onto the beach surface, overlaid with compacted clean granular stone material to provide a stable and defined access route for plant and equipment.

The ramps will remain in place for the duration of the marine works (approximately six months), enabling controlled movement of excavators and materials between the site compound and the beach. Access routes below MHWS will be clearly delineated, and plant movements will be restricted to these routes to minimise disturbance to beach sediments and adjacent habitats.

3.3.3 Excavation and Management of Beach and Channel Sediment

The existing outfall channel below MHWS will be widened and deepened by means of controlled excavation undertaken using a tracked excavator operating from the beach. Prior to the commencement of these activities, a temporary bypass channel or an over-pumped outfall extension will be installed to divert flows around the excavation and discharge flows further down the bay. This will ensure that plant operates within dry working conditions. Excavation will be carried out using an excavator on the beach and will be in short, sequential sections, progressing in a seaward direction, in order to maintain stability of channel banks and to avoid excessive disturbance of beach material.

Sediment, sand and gravel removed during excavation are anticipated to be non-contaminated. This material will be temporarily stockpiled within the working area and subsequently redistributed within the vicinity of the works, thereby retaining sediment within the local coastal system. If any contaminated sediment is encountered during the works, it will be removed from site and disposed of at an appropriately licensed waste facility. Silt control measures, such as silt fencing, settlement tanks or silt bags, will be deployed as required to limit sediment mobilisation and prevent release into the wider marine environment.

3.3.4 Cutting through the existing sea wall

Cutting through the existing sea wall will be undertaken during suitable low-tide periods to allow safe working access and to minimise environmental risk. Prior to cutting, a geotextile or impermeable membrane will be placed on the beach surface at the base of the wall to capture debris and prevent concrete fragments from entering the marine environment.

Concrete cutting will be carried out using disc cutters in controlled stages to prevent uncontrolled breakout. A small cut will be made both vertically and horizontally. This will be broken out with a breaker on excavator to break out the required size to accommodate the 1050mm pipe. All slurry, cutting water and concrete arisings will be fully contained on the protected working surface and collected for removal from site. At no point will cutting residues or debris be permitted to enter the tidally influenced area.

3.3.5 Installation of culvert through the sea wall

Once the opening through the sea wall has been formed, the culvert outfall will be lifted into position using an excavator fitted with certified lifting equipment. The pipe will be aligned and temporarily supported before localised backfilling is carried out to provide initial stability.

Formwork will then be installed around the opening and in-situ concrete will be placed to reinstate the sea wall around the pipe. Geotextile and containment measures will remain in place throughout concreting works to prevent washout or pollution. All concreting activities will be completed within low-tide windows, and no concrete, wash water or slurry will be permitted to enter the marine environment. The concrete to be used will have special anti-washout additives for use in a marine environment. All concrete poured will be sealed within the timber formwork and falsework.

3.3.6 Scour Protection and Channel Reinstatement

Following culvert installation, the outfall channel below MHWS will be reinstated to the design profile. All sand material will be redistributed around the beach. A geotextile separation layer will be placed within the scour protection footprint to limit settlement and to prevent washout of underlying material. 89 Blockstone units measuring approximately 1m x 1m x 1m and 124 blockstone units measuring approximately 0.5m x 0.5m x 0.5m will then be installed using an excavator on the beach with a grab attachment to aid placement. The blockstone to the invert will provide long-term scour and erosion protection at the outfall. Blockstone to the sides will be used to form the new channel sides. The blockstone used will be bedded on a layer of concrete to ensure stability over the design life of the scheme. These works will be undertaken at low tide and working in the dry.

To provide even more certainty of working in the dry the contractor will use the material excavated from the channel to create a bund around the working area and above the MHWS level.

Channel bed and bank levels will be trimmed to achieve a stable tie-in with the culvert outlet and the widened channel. All works will be completed within low-tide windows to ensure environmental protection and safe working conditions.

3.3.7 Removal of Temporary Works and Demobilisation

On completion of the works below MHWS, all temporary access ramps, geotextiles, and other temporary works will be removed. The beach will be reinstated to its pre-construction condition as far as reasonably practicable, and all plant and materials will be removed from the working area.

4. Stage 1 - Screening

The Proposed Works are located in the intertidal area of Swansea Bay. They are located in the Swansea Bay (GB641008260000) coastal water body and in the Carmarthen Carboniferous Coal Measures (GB1002G200600) Groundwater water body. Within 2km of the Proposed Works is the Clyne River –Headwaters to Tidal Limit (GB10059025620) river water body, located approximately 300m east.

The outcome of the water body screening is presented in Table 4-1. This screening used information on WFD waterbodies collected by Water Watch Wales⁸.

Table 4-1 - Screening assessment for WFD waterbodies

Waterbody name	Screen in or out	Explanation for screening outcome
Swansea Bay (ID: GB641008260000)	In	The Proposed Works lie directly in the boundary of this water body and, therefore, it has been screened in for further assessment.
Carmarthen Carboniferous Coal Measures (ID: GB1002G200600)	Out	The Proposed Works do not include any activities that would disturb the groundwater environment. No intrusive works are proposed that would interact with the underlying groundwater body. The works are limited to surface and near-surface activities, including site mobilisation, creation of temporary beach access ramps, removal of sediment and widening of the existing outfall channel, excavation for the new culvert alignment, coring through the sea wall, installation of the new pipe and manhole interfaces, and reinstatement of the stream channel and surrounding areas. As these activities do not extend to depths at which groundwater is present, it is considered unlikely that the groundwater body will be affected. The groundwater receptor is, therefore, screened out from further assessment.
Clyne River – headwaters to tidal limit (ID: GB10059025620)	Out	This water body is located approximately 300 m east of the Proposed Works. The works are confined to the lower section of the Brockhole Stream and its outfall and, given the position of the river water body, there is no hydrological pathway through which the scheme could influence its status or condition. The works are highly localised and will not affect flows,

sediment transport, or water quality within the upstream water body. It is, therefore, considered unlikely that any impacts will occur and this water body has been **screened out** from further assessment.

4.1 Site baseline

4.1.1 Geomorphology and hydrodynamics

Swansea Bay has semi-diurnal tides, meaning two high water and two low water per lunar day. The bay consists of intertidal soft sediment, such as sand and mud, with some patches of mussel beds and rocky shore intertidal rock.

4.1.2 Aquatic Ecology

4.1.2.1 Biology- Fish

The nearest available fish data on DataMapWales is from the Llanrhidian Sands Seine Net sampling point, located approximately 50 km from the Proposed Works within Carmarthen Bay. No NRW marine fish survey locations or datasets were identified within Swansea Bay itself and, therefore, no site-specific fish data are available for the immediate vicinity of the Scheme.

4.1.2.2 Biology- Habitat

The intertidal habitat substrate extends across the intertidal zone of Swansea Bay, including within the area of the Proposed Works. Both higher-sensitivity and lower-sensitivity WFD habitats are present within Swansea Bay. The higher-sensitivity habitats include mussel beds (*Modiolus modiolus*, *Mytilus edulis* and others). The lower-sensitivity habitats include intertidal soft sediment (sand, mud and mixed) and gravel and cobbles, comprising both intertidal and subtidal coarse sediment. The full range of both higher- and lower-sensitivity habitat types is illustrated in Figures 4-1 and 4-2.

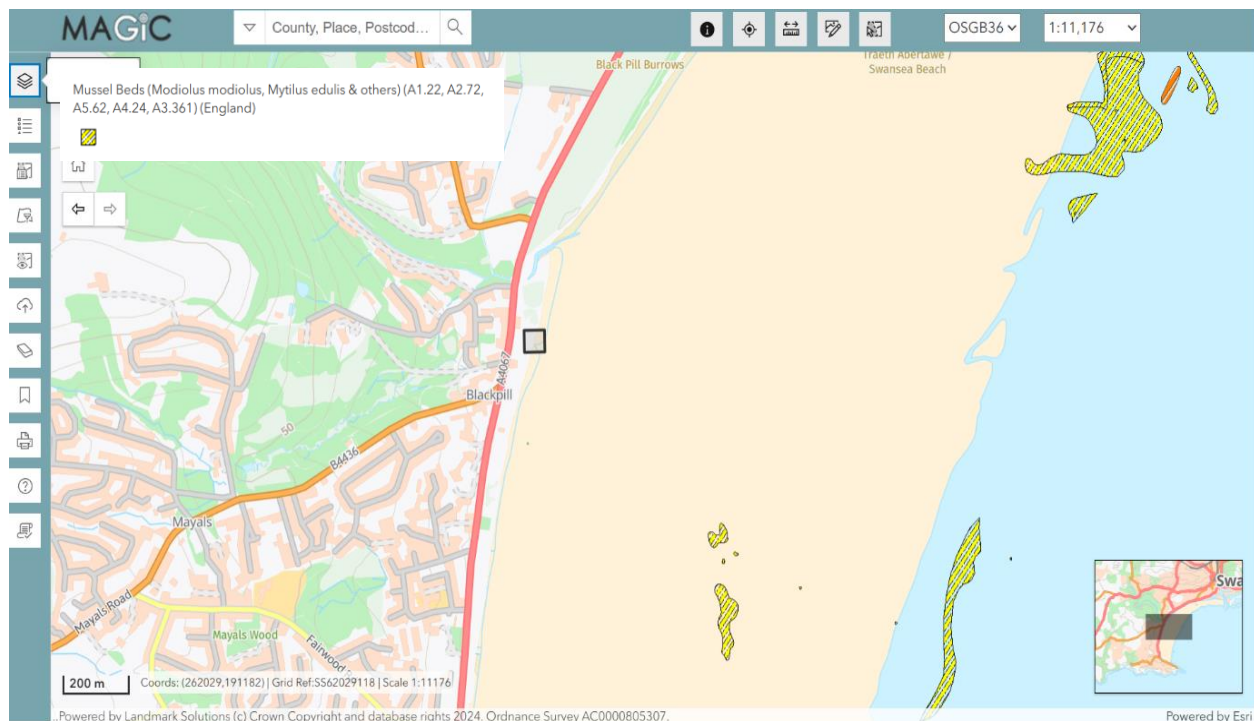


Figure 4-1 – Location of WFD higher sensitivity habitats located within Swansea Bay, based on habitat layers sources from MAGIC⁸. The black box indicates the location of the Proposed Works.

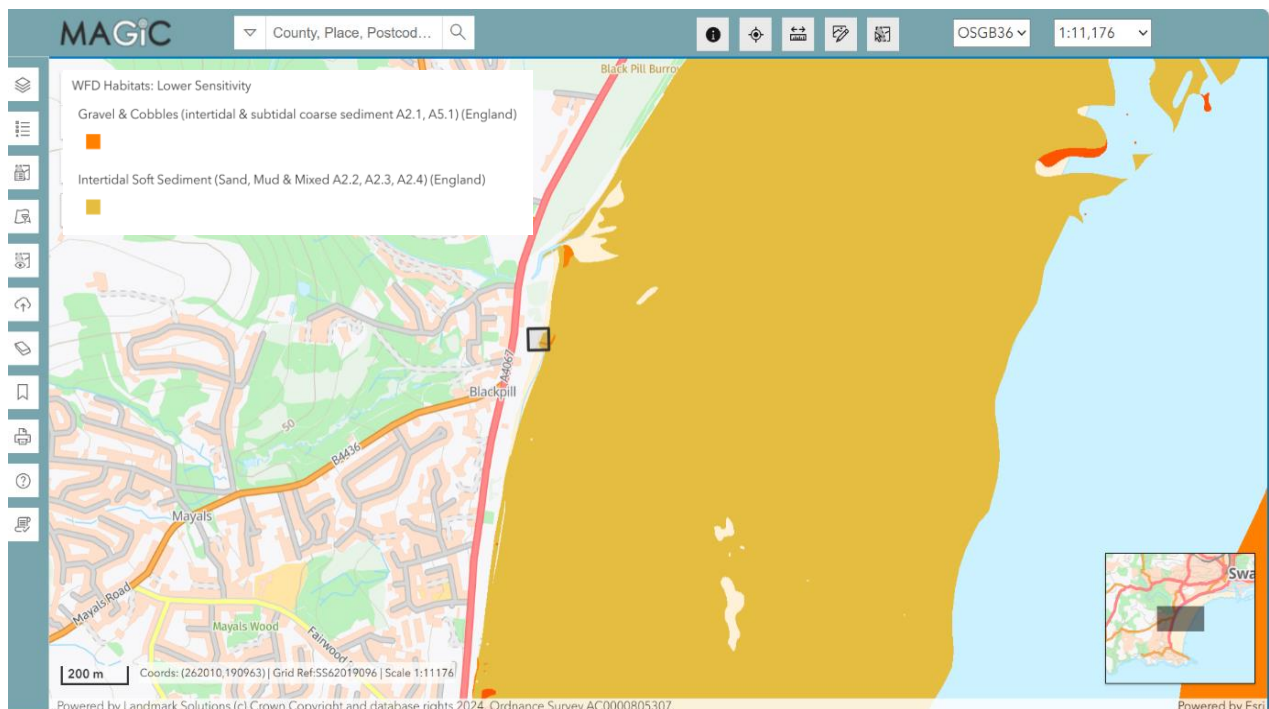


Figure 4-2 - WFD Lower sensitivity habitats located within Swansea Bay, based on habitat layers sources from MAGIC⁸. The black box indicates the location of the Proposed Works.

4.1.3 Geology

According to the British Geological Survey (BGS) GeoIndex Onshore¹⁰, the bedrock geology underlying Swansea Bay comprises coal-bearing mudstones and siltstones, with seat-earth and minor sandstone units. The intertidal zone is predominantly characterised by sandy deposits with subsidiary gravels and may also contain shell fragments. Superficial materials in this area include shingle, sand, silt and clay, which can occur either as bedded sequences or as more chaotic deposits. Beach sediments may be present in the form of dunes, sheets or banks, reflecting the dynamic coastal processes operating within the bay.

4.1.4 WFD Protected Areas

The Proposed Works fall within two WFD Protected Areas: the Swansea Bay (West) Shellfish Waters and the Swansea Bay Bathing Waters. Both designations require careful consideration of potential impacts on water quality, ecological receptors, and compliance with statutory objectives.

4.1.5 Swansea Bay Baseline

Table 4-2 provides information from the 2021 Cycle 3 WFD assessment of Swansea Bay coastal water body. The water body is designated as a Heavily Modified Water Body (HMWB) and is currently classified as Moderate overall status. Full details of the baseline are in Table 4-2.

Table 4-2 - Baseline for Swansea Bay WFD data

Water body name	Swansea Bay
Water body ID	GB641008260000
River Basin District	Western Wales
Management Catchment	Tawe to Cadoxton TraC
Operational Catchment	Swansea Bay
Classification	2021 Cycle 3
Overall water body	Moderate
Chemical	Moderate
Copper	High
Zinc	High
Arsenic	High
Iron	High
Dissolved Inorganic Nitrogen (DIN)	Moderate
Dissolved Oxygen	High
Ecological	Moderate
Biological quality elements	Good
Angiosperms	N/A
Invertebrates	Good
Macroalgae	High
Opportunistic macroalgae	High
Infraunal Quality Index (IQI)	Good
Saltmarsh	N/A
Hydro morphology	N/A
Artificial or HMWB	HMWB

4.2 Screening Summary

- The Swansea Bay Coastal water body will be **screened in** as the Proposed Works are located within this water body.
- Carmarthen Carboniferous Coal Measures will be **screened out** as there will be no impact to the groundwater body from the Proposed Works.
- Clyne River – Headwaters to Tidal Limit will be **screened out** due to the distance, lack of hydrological connectivity, and localised nature of the Proposed Works.

- There are several higher and lower sensitivity habitats and WFD protected areas within 2km of the Proposed Works.
- All elements of the Proposed Works have been **screened in** for the construction phase.
- The operation of the Proposed Works has been **screened out** of further assessment, as the works will behave passively, with no further works proposed at this stage.

5. Scoping assessment

The scoping exercise looks to determine the risks associated with the Proposed Works activities on relevant water bodies and their quality elements to determine whether a WFD impact assessment is required. This is undertaken for each of the WFD quality elements from the water body, defined in the guidance as the following:

- Hydromorphology
- Biology – habitats
- Biology – fish, invertebrates
- Water quality
- Protected areas
- Invasive non-native species (INNS)

The scoping assessment is detailed in Table 5-1 and for full details of the scoping assessment please refer to Appendix A.

Table 5-1 - Scoping Assessment for Swansea Bay Coastal water body

WFD Receptors	Potential risk to receptor	Scoping assessment
Hydromorphology	No	The water body is designated as a Heavily Modified Water Body (HMWB) for coastal protection; however, the Proposed Works are not related to coastal protection and comprise only minor interventions within a wider flood alleviation scheme. The activities with potential to influence hydromorphology include the removal and redistribution of sediment and the placement of block stones along the channel. These works will be undertaken during low-tide conditions, and the channel bed and bank levels will be trimmed carefully to achieve stable tie-ins with existing structures, thereby maintaining overall hydromorphological integrity. A localised hydromorphological impact is anticipated from the placement of block stones. This will introduce small adjustments to the immediate bed and bank profile and sediment transport; however, the footprint is limited to the outfall location and area covered by the marine licence. While the block stones constitute a physical modification, they are not expected to alter the wider tidal, wave or sediment regime along the beach or to affect

		hydromorphological status at the water-body scale. The block stones will be placed in a controlled manner to ensure stability and to avoid creating areas of increased scour or erosion. Given the confined footprint of the works, any hydromorphological effects are expected to be highly localised, Hydromorphology is therefore scoped out of further assessment.
Biology: habitats	No	There are no higher-sensitivity habitats within 500m of the Proposed Works. The works are located within lower-sensitivity intertidal habitats, including soft sediments (sand, mud and mixed) and areas of gravel and cobbles. The footprint of the works affects less than 1% of the total water body area and covers less than 0.5 km², indicating a limited spatial extent of potential impact. To further minimise risks to habitats within Swansea Bay, the following mitigation measures will be implemented: • Use of silt control measures (e.g., silt fencing, settlement tanks, silt bags) to minimise sediment mobilisation and prevent release into the wider marine environment. • Channel bed and bank trimming undertaken during low-tide windows to reduce turbidity and ensure safe working conditions. • All concrete works undertaken at low tide, with no concrete, wash water or slurry permitted to enter the marine environment. • Use of anti-washout concrete additives suitable for marine conditions. • All poured concrete contained within sealed timber formwork and falsework. • Adherence to pollution prevention guidance (e.g., GPP5). As a result, the impact on the habitat is negligible, and the activity is not expected to cause permanent deterioration at the

		water body scale and is scoped out of further assessment.
Biology: fish and invertebrates	No	The spatial extent of the works is limited to the upper beach area of Swansea Bay in the vicinity of the outfall, with controlled access for construction vehicles and personnel onto the beach. All works will take place during suitable low-tide windows. Therefore, no in-water works are required. In addition, to further minimise risks to habitats within Swansea Bay, the following mitigation measures will be implemented: • Use of silt control measures (e.g., silt fencing, settlement tanks, silt bags) to minimise sediment mobilisation and prevent release into the wider marine environment. • Channel bed and bank trimming undertaken during low-tide windows to reduce turbidity and ensure safe working conditions. • All concrete works undertaken at low tide, with no concrete, wash water or slurry permitted to enter the marine environment. • Use of anti-washout concrete additives suitable for marine conditions. • All poured concrete contained within sealed timber formwork and falsework. • Adherence to pollution prevention guidance (e.g., GPP5). As a result, the impact on fish and invertebrates is negligible, and the activity is not expected to cause permanent deterioration at the water body scale and is scoped out of further assessment.
Water quality		All works will be undertaken during suitable low-tide windows to minimise interaction with the water column. There is a low risk of accidental pollution arising from the operation of vehicles and plant on site, with a potential pathway for contaminants to enter Swansea Bay. The removal of sediment to widen and deepen the channel at the outfall may also temporarily increase

		turbidity and result in short-term, localised changes to sedimentation patterns. However, these effects will be confined to the immediate working area, will be short-lived, and are expected to dissipate within a single tidal cycle. Any sediment removed and redistributed will be taken from the immediate outfall location and deposited within the surrounding area, ensuring it remains within the same sediment system. In addition, to further minimise risks to water quality within Swansea Bay, the following mitigation measures will be implemented: • Use of silt control measures (e.g., silt fencing, settlement tanks, silt bags) to minimise sediment mobilisation and prevent release into the wider marine environment. • Channel bed and bank trimming undertaken during low-tide windows to reduce turbidity and ensure safe working conditions. • All concrete works undertaken at low tide, with no concrete, wash water or slurry permitted to enter the marine environment. • Use of anti-washout concrete additives suitable for marine conditions. • All poured concrete contained within sealed timber formwork and falsework. • Adherence to pollution prevention guidance (e.g., GPP5). As a result, the impact on water quality is negligible, and the activity is not expected to cause permanent deterioration at the water body scale and is scoped out of further assessment.
Protected areas	Yes	The works are located within the Blackpill Swansea Bay (West) shellfish waters and Swansea Bay bathing waters, and, therefore, must be scoped in for further assessment.

Invasive non-native species (INNS)	No	All works will be undertaken during suitable low-tide windows to minimise interaction with the water column. The works will follow a strict Check-Clean-Dry policy at the very start and then at end of each working day. All activities will also comply with GPP5: Works and Maintenance in or Near Water to minimise the risk of pollution or biological contamination. All equipment, machinery, materials and PPE (personal protective equipment) will be cleaned before arriving on site and again before removal, ensuring that no non-native species are introduced or spread within the water body. As a result of these measures, the risk of INNS transfer is negligible, and the activity is not expected to cause permanent deterioration at the water body scale. INNS is, therefore, scoped out of further WFD assessment.
------------------------------------	----	---

6. Impact Assessment

6.1 Swansea Bay Coastal Water body

Table 6-1 below shows the impact of the scheme on the WFD receptors identified as potentially at risk in the scoping stage for the Swansea Bay Coastal water body.

Table 6-1 - Level of impact on the WFD receptors for Swansea Bay Coastal water body

WFD Receptor	Level of Impact
WFD Protected Areas <i>Questions:</i> <i>Is the footprint of your activity within 2km of WFD protected areas.</i>	The Proposed Works are located within Swansea Bay West Shellfish Water Protected Area and Bathing Waters. All construction activities will be undertaken outside the water column and scheduled to occur during low tide, thereby minimising the potential for direct interaction with the coastal water body. . General mitigation measures will also be implemented to reduce the risk on Swansea Bay Shellfish and Bathing waters. These include: • Silt control: Use of silt fencing, settlement tanks or silt bags to minimise sediment mobilisation and prevent release into the wider marine environment. • Low-tide working: All works to be undertaken during low-tide windows to reduce turbidity and ensure safe working conditions. • Concrete management: All concrete works will be undertaken at low tide, with no concrete, wash water or slurry permitted to enter the marine environment. Anti-washout additives suitable for marine conditions will be used, and all poured concrete will be fully contained within sealed timber formwork and falsework. • Pollution prevention guidance: All works will adhere to relevant pollution prevention guidance (e.g., GPP5: Works and Maintenance in or Near Water). With the mitigation measures in place and given the short-term and temporary nature of the works, no deterioration of the WFD water body is anticipated.

7. Conclusion

With all mitigation measures in place and given that the Proposed Works are small-scale, temporary, and undertaken outside the water column during low-tide conditions, the activity will not cause deterioration of the Swansea Bay coastal water body. There are no identified pathways for adverse effects on biology, habitats, fish, or water quality, and hydromorphological impacts remain negligible and highly localised.

Although a minor, localised hydromorphological impact may arise from the placement of blockstones, the limited footprint of the works means that these changes will not influence the wider tidal, wave, or sediment regime, nor will they affect hydromorphological status at the water-body scale.

The Proposed Works are located within two WFD Protected Areas—Swansea Bay (West) Shellfish Waters and Swansea Bay Bathing Waters. The assessment concludes that the works will not adversely affect the status or objectives of either designation, and neither will they introduce pressures that could compromise their ability to meet required environmental standards.

In relation to WFD Objective 2, the Proposed Works will not prevent the implementation of any existing or future measures required for the Swansea Bay water body to achieve Good Ecological or Chemical Status. The temporary and localised nature of the activity ensures that it does not interfere with wider catchment-scale programmes of measures or ongoing water-quality improvements.

Given the negligible magnitude of effects predicted from the Proposed Works alone, no cumulative or in-combination effects with other known or planned activities in Swansea Bay are anticipated. The works will not contribute to any deterioration trend nor interact with other pressures in a way that would compromise WFD objectives.

Overall, the Proposed Works are considered to be fully compliant with the requirements of the Water Framework Directive, and no deterioration of the WFD water body or its Protected Areas is anticipated.

APPENDICES

Appendix A. Scoping stage: Coastal water body assessment

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Your activity	Description, notes or more information
Applicant name	Swansea Council
Application reference number (where applicable)	N/A
Name of activity	Brockhole Flood Alleviation Scheme
Brief description of activity	- Construction of a new 1050m diameter buried culvert on land behind the existing sea wall, with discharge to Swansea Bay. - Excavation and redistribution of existing sediment and sand on the beach to form a new wider channel to accommodate the new outfall pipe - Saw-cutting and break-out of the existing concrete sea wall to accommodate the new outfall pipe. - In-situ concrete placement to form the sea wall around the new outfall pipe. - Installation of 89 1m x 1m x1m blockstone to form the banks of the widened open channel as part of the permanent works. The blockstone will be laid upon geotextile and set within concrete. - Installation of 124 0.5m x 0.5m x 0.5m blockstone to the channel invert for a length of 9m to provide scour protection. - Associated fencing, access gates and vegetation removal to allow construction of the works.
Location of activity (central point XY coordinates or national grid reference)	SS 61955 90511
Footprint of activity (ha)	
Timings of activity (including start and finish dates)	Maximum of 6 months
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	N/A
Use or release of chemicals (state which ones)	N/A

Water body ¹	Description, notes or more information
WFD water body name	Swansea Bay
Water body ID	GB641008260000
River basin district name	Tawe to Cadoxton TraC
Water body type (estuarine or coastal)	Coastal
Water body total area (ha)	284938584.063477
Overall water body status	Moderate
Ecological status	Moderate
Chemical status	Moderate
Target water body status and deadline	
Hydromorphology status of water body	N/A
Heavily modified water body and for what use	HMWB for coastal protection
Higher sensitivity habitats present	Yes
Lower sensitivity habitats present	Yes
Phytoplankton status	Good
History of harmful algae	Unknown
WFD protected areas within 2km	Yes

¹ Water body information can be found in the Environment Agency’s catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.



Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

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	Requires impact assessment	Impact assessment not required	The water body is not at high status, and the activities associated with the Proposed Works are limited in scale and extent. The works comprise the construction of a new outfall pipe, coring through the existing sea wall, placement of block stones for scour protection, and the removal of accumulated sediment at the outfall. The construction of the outfall pipe and coring through the sea wall represent small-scale engineering interventions within an already heavily modified coastal frontage. These works do not alter the alignment, profile, or function of the sea wall, nor do they introduce any new structures capable of influencing wave action, tidal flows, or sediment transport at the water body scale. A localised hydromorphological impact is anticipated from the placement of block stones. This will introduce small adjustments to the immediate bed and bank profile and sediment transport; however, the footprint is limited to the outfall location and area covered by the marine licence. While the block stones constitute a physical modification, they are not expected to alter the wider tidal, wave or sediment regime along the beach or to affect hydromorphological status at the water-body scale. The block stones will be placed in a controlled manner to ensure stability and to avoid creating areas of increased scour or erosion. Sediment removal at the outfall is limited to clearing accumulated deposits to maintain hydraulic performance. The volume of material to be removed is small, and the activity will not alter the seabed profile beyond the immediate outfall channel. Given the highly localised nature of the works, the Proposed Works do not pose a risk of hydromorphological deterioration.
Could significantly impact the hydromorphology of any water body	Requires impact assessment	Impact assessment not required	
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

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

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger	Yes to one or more – requires impact assessment	No to all – impact assessment not required	No, the footprint of the Proposed Works is less than 0.5km ²
1% or more of the water body's area			No the footprint of the Proposed Works is less than 1% of the water body area.
Within 500m of any higher sensitivity habitat			No
1% or more of any lower sensitivity habitat			No

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

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)
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	All construction activities will be undertaken during suitable low-tide windows, ensuring that works occur entirely outside the water column. As a result, there will be no direct in-water

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	disturbance, no requirement for dewatering, and no activities that could impede fish movement or access to habitats.
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	

Record the findings for biology habitats and fish and go to section 3: water quality.



Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

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)	Requires impact assessment	Impact assessment not required	All works will be undertaken outside of the water column during suitable low-tide windows, ensuring that no direct in-water construction activity occurs. Any temporary changes in water quality arising from the disturbance of surface sediments will be highly localised to the immediate outfall area. Any fine material mobilised during sediment removal will disperse rapidly on the incoming tide and is expected to dissipate fully within a single tidal cycle. Given the small scale of the works and the limited volume of sediment involved, no measurable or sustained increase in turbidity or suspended solids concentrations is anticipated within the wider water body.
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	Phytoplankton status is Good.
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	Unknown.

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)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	No release or use of chemicals.
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	Sediment not likely to be contaminated. All sediment is from Swansea Bay around the outfall.



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	Requires impact assessment ⁵	Impact assessment not required	N/A

⁵ Carry out your impact assessment using the Environment Agency’s surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: 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

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

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2 km of any WFD protected area ⁶	Requires impact assessment	Impact assessment not required	Yes, within Swansea Bay Shellfish and Bathing Waters.

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

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

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

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other waterbodies
- activities that help spread existing INNS, either within the immediate water body or other waterbodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	INNS are not considered a risk for the Proposed Works, as all activities occur on the open beach during low-tide conditions, with no works undertaken within the water column

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	
Biology: habitats	No	
Biology: fish	No	
Water quality	No	
Protected areas	Yes	Within Swansea Bay Shellfish and Bathing Waters.
Invasive non-native species	No	

If you haven’t identified any receptors at risk during scoping, you don’t need to continue to the impact assessment stage and your WFD assessment is complete.

If you’ve identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity’s regulator as part of your application for permission to carry out the activity.



AtkinsRéalis



AtkinsRéalis UK Limited
West Glamorgan House
12 Orchard Street
Swansea
SA1 5AD
<contact info>

© AtkinsRéalis UK Limited except where stated otherwise