AtkinsRéalis

Marine Licence Methodology

Swansea Council

27 May 2026

5122859-ATK-XX-GEN-RP-C-00003

BROCKHOLE STREAM 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 the Brockhole Stream Flood Alleviation Scheme Marine Licence Application to National Resources Wales (NRW).

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 17 pages including the cover.

Document history

Document title: Marine Licence Methodology

Document reference: 5122859-ATK-XX-GEN-RP-C-00003

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Methodology for Marine Licence application	KH	MJT	DMH	DMH	15/05/26

Client signoff

Client	Swansea Council
Project	BROCKHOLE STREAM FLOOD ALLEVIATION SCHEME
Job number	5122859_60 (100098307)
Client signature/date	

Contents

Tables

Figures

1. Description of the proposed project

The Brockhole Stream Flood Alleviation Scheme (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 the Mean High Water Springs level (MHWS) falls within the marine licence application. The works upstream of the existing seawall are above MHWS and have already received planning consent from Swansea Council.

2. Proposed works

The proposed works are detailed on drawings 5122859_60-ATK-XX-ZZ-DR-C-0034 and 5122859_60-ATK-XX-ZZ-DR-C-0035 and are submitted in support of this marine licence application. In summary, the scope of works will involve the construction of a new 1050m 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 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 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 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.

It should be noted that works methodology outlined in this document is based on the knowledge and experience of AtkinsRealis. The appointed contractor's detailed method statement may vary.

The location of the works is shown in 5122859_60-ATK-XX-ZZ-DR-C-0100 included in the Appendices.

3. Estimate timescales

A contractor for the works has not been appointed at this stage and a construction programme is not available until one is procured and appointed by Swansea Council. However, it is envisaged that the entire works relating to the Brockhole Stream FAS and the defects period will take a duration of approximately 3 years (November 2026 – December 2029). 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. The works are planned to take place starting in the winter months (November) and will be undertaken on low tides, therefore working within the dry. It is anticipated that all construction activities will be limited to daytime hours (for, example 8:00am to 18:00 from Monday to Friday and from 8:00am to 13:00 on Saturday). There will be no nighttime working. There will be no works over Christmas, New Year, Easter public holidays and Bank Holidays. However, actual working times will vary and will need to coincide with the low tide times at the time of the works.

4. Estimated Quantities and materials

Table 4-1 - Estimated materials and quantities

Material	Quantity	Temporary or Permanent
Fencing (Timber post and rail fencing)	42 (m)	Permanent
Fencing (3m wide field gate)	1.0 (nr)	Permanent
Blockstone ($1m^3$) to channel sides	89 (nr)	Permanent
Blockstone ($0.5m^3$) to channel invert	124 (nr)	Permanent
Concrete (Bed and surround for $1m^3$ and $0.5m^3$ blocks)	61 (m^3)	Permanent
Geotextile (beneath blockstone)	268 (m^2)	Permanent
Excavation of channel (sand to be redistributed)	292 (m^3)	Permanent
Breaking out existing sea wall	3 (m^3)	Permanent
Geotextile (beneath ramps)	70.0 (m^2)	Temporary
Stone for ramps	11 (m^3)	Temporary

5. Predicted plant and equipment required

No vessels are required for the works, and all work will be undertaken using land-based machinery. The following plant and Equipment is anticipated to being required to complete the works (The exact sizes of these may vary depending upon the preferred contractor):

- 6T- 9T Wheeled dumper
- Wheeled Telehandler to transport materials

- 20-25T Tracked excavator with excavation bucket
- 20–25T Tracked excavator with grab to place blockstone
- Lifting apparatus
- Small tools such as drills, disc cutters, breakers and whacker plates
- Pumps and settlement tanks for over pumping
- Concrete mixer and pumps.
- Temporary timber formwork and metal falsework to form the shuttering for the concrete wall.

Typical plant that will be used to construct these works are shown below. All plant and equipment will be taken off the beach and stored in the site compound above MHWS at the end of each day.

Figure 5-1 - Tracked Excavator

Figure 5-2 - Wheeled Dumper

6. Access/egress route and vehicle movements

The green line boundary indicating the working area for the outfall works below MHWS is shown on the Site Location drawing 5122859_60-ATK-XX-ZZ-DR-C-0034. The site compound is shown in the red line boundary behind the sea wall which is above MHWS. Access to the site and the site compound will be via Mumbles Road then across the pedestrian footpath/ cycle path. Plant and equipment for all works will access the beach via two temporary ramps (One to the North East and One to the South West) constructed from the cycle path level and down onto the existing beach on either side of the outfall (As depicted in 5122859_60-ATK-XX-ZZ-DR-C-0034). The access to and from the beach is indicated as a red arrow on the drawing. These ramps will be constructed by placing geotextile on the sand and placing clean stone on top. These will provide a stable, controlled access route and will be used throughout the works to move machinery and materials safely between the upper path and the beach.

The principal materials imported associated with the works covered by this marine licence relate to blockstone, pipework, geotextile and concrete. It is anticipated that these will be delivered by road along Mumbles Road and will be stockpiled and stored in the compound above MHWS until used within the works.

Excavated material to form the widened channel on the beach will be redistributed along the bay within the vicinity of the works.

7. Site compound and storage areas for plant and materials

The site compound and storage area for plant and materials will be located just off to the south of Mumbles Road. This is show on drawing 5122859_60-ATK-XX-ZZ-DR-Z-0200 and 5122859_60-ATK-XX-XX-DR-C-0034. This will be gated and fenced off and will also be situated above MHWS. The site compound will be used to store construction materials, plant and machinery, site offices and basic welfare facilities for the contractor. The site compound will also contain a bunded storage area for diesel and fuels and all refuelling plant will take place in the site compound. All fuels will be stored and handled in accordance with the best practice procedures.

On completion of all construction activities, the site compound will be removed and the area will be returned to its existing condition.

For materials, the blockstone, geotextile and concrete will initially be delivered to the site compound by road. This will then be transported to the works location below MHWS and organised into temporary stockpile areas below prior to placement. All other materials will be stored above MHWS in the site compound area.

8. Proposed Methodology

The proposed works comprise of elements both above and below MHWS.

Works below MHWS constitute of the activities that this marine licence covers and are therefore described in detail. Works above MHWS are included for context only, to demonstrate how the overall construction sequence interfaces with the marine works.

The details of outfall works are shown in 5122859_60-ATK-XX-XX-DR-C-0034 and 5122859_60-ATK-XX-XX-DR-C-0035.

8.1 Works Above Mean High Water Springs for information

The following activities will be undertaken above MHWS and are not subject to marine licensing and are provided for information only. The works in section 8.1 are covered under planning consent. These works are included to provide context for the overall construction methodology and interfaces with the works below MHWS.

8.1.1 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.

8.1.2 Enabling works

Localised enabling works will be undertaken above MHWS to facilitate safe access to the outfall area and to provide sufficient working space for plant and operatives. These works will include the cutting back or removal of small trees, shrubs, brambles and other vegetation surrounding the existing outfall and adjacent areas. Vegetation clearance will be limited to the minimum area necessary for construction and access.

All arisings generated from vegetation clearance will be collected and removed from site for appropriate disposal, ensuring that no material enters the watercourse, foreshore or marine environment. Where required, temporary pedestrian and cycle management measures will be implemented along Mumbles Road and the adjacent shared path to maintain public safety during construction activities.

8.1.3 Installation of culvert Landward of Sea Wall above MHWS

Works landward of the sea wall will comprise of excavation for the new culvert alignment, placement of pipe bedding stone material, installation of culvert sections and connection to the new precast manhole. Excavation will be undertaken in short, controlled sections to minimise the extent of open trench and to maintain ground stability. Temporary over pumping of stream flows will be provided as it is required to maintain continuity of flow around the active working area.

Pumped water will be passed through settlement tanks or silt control measures prior to discharge to prevent silty runoff entering downstream environments. Granular bedding stone will be placed and compacted to the required line and level before installation of the 1050 mm diameter culvert sections, which will be installed progressively towards the inland face of the sea wall. All joints will be sealed using the manufacturer's approved system to ensure a watertight connection.

Following installation, the excavation will be backfilled in layers using granular material and suitable reused excavated material, compacted to prevent future settlement. Ground levels and surfaces will then be reinstated to their original condition or to the approved design.

8.2 Works Below Mean High Water Springs

All works below MHWS covered in this marine licence application will be undertaken during suitable low-tide windows to provide safe access to the beach and to minimise environmental risk or working within water. Activities will be carefully programmed by the contractor to avoid inundation by the incoming tide, and environmental protection measures will remain in place at all times to prevent sediment release, pollution, or disturbance to the marine environment in accordance with the Guidance for Pollution Prevention (GPP5). Examples of these protection measures are included within the methodology below.

8.2.1 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 drawing 5122859_60-ATK-XX-ZZ-DR-C-0034. 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 be used for the duration of the marine works to allow controlled movement of excavators and materials between the compound and the beach. Access routes below MHWS will be clearly defined, and plant movements will be restricted to these routes to minimise disturbance to beach sediments and adjacent habitats.

8.2.2 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. Thus, ensuring 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. 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.

8.2.3 Cutting through the existing sea wall

Cutting through the existing sea wall will be undertaken during suitable low-tide periods to allow safe 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 and all concrete faces. This will be broken out with a breaker on a 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.

8.2.4 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 antiwash out additives for use in a marine environment. All concrete poured will be sealed with in the timber formwork and falsework.

8.2.5 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. Blockstone units measuring approximately 1m x 1m x 1m (1m3) and 0.5m x 0.5m x 0.5m (0.5m3) 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 bed 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.

8.2.6 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.

9. Environmental mitigation measures

- The following list of mitigation measures will be used to minimise impacts on the marine environment:
- Pollution prevention and control procedures will be adhered to by the contractor (guidance available at: gpp-5-works-and-maintenance-in-or-near-water.pdf)
- Spill response kits will be available on all plant
- Works will include appropriate silt control measures (anticipated to be settlement tanks, silt fencing, silt bags etc.)
- Minimise plant traffic
- Designated access and egress routes, marking features of importance.
- Storage of materials (fuel, chemicals, construction waste) above MHWS
- All equipment, temporary structures, access tracks, waste and/or debris associated with the works will be removed on completion of the works.
- Bunding, storage facilities and spill kits will be employed to contain and prevent the release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment.
- Plant, vehicles and machinery will not be refuelled on the foreshore and will be in the site compound above MHWS only.
- All equipment, materials, machinery and PPE used will be in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing non-native species into the marine environment.
- Works will commence in daylight hours.
- Small rip rap material observed to have migrated downstream will be recovered and reinstated where practicable. Any displaced stone will be reused within the permanent works where suitable or removed from the site.

10. Supporting Photographs

Figure 10-1 - Outfall location - looking seaward showing existing channel

Figure 10-2 - Outfall location - looking inland showing vegetation to be cleared

Figure 10-3 - Outfall location - looking seaward showing the channel to be widened

Figure 10-4 - Outfall location - Vegetation to be cleared and existing sea wall

APPENDICES

Appendix A. Supporting Drawings

A.1 5122859_60-ATK-XX-ZZ-DR-C-0034 - Proposed Outfall Arrangement

A.2 5122859_60-ATK-XX-ZZ-DR-C-0035 - Proposed Outfall Sections

A.3 5122859_60-ATK-XX-ZZ-DR-C-0100 - Key Plan and extent of works

A.4 5122859_60-ATK-XX-ZZ-DR-Z-0200 - Site Compound

Katie Hopkins
AtkinsRéalis UK Limited
West Glamorgan House
12 Orchard Street
Swansea
SA1 5AD

<contact info>