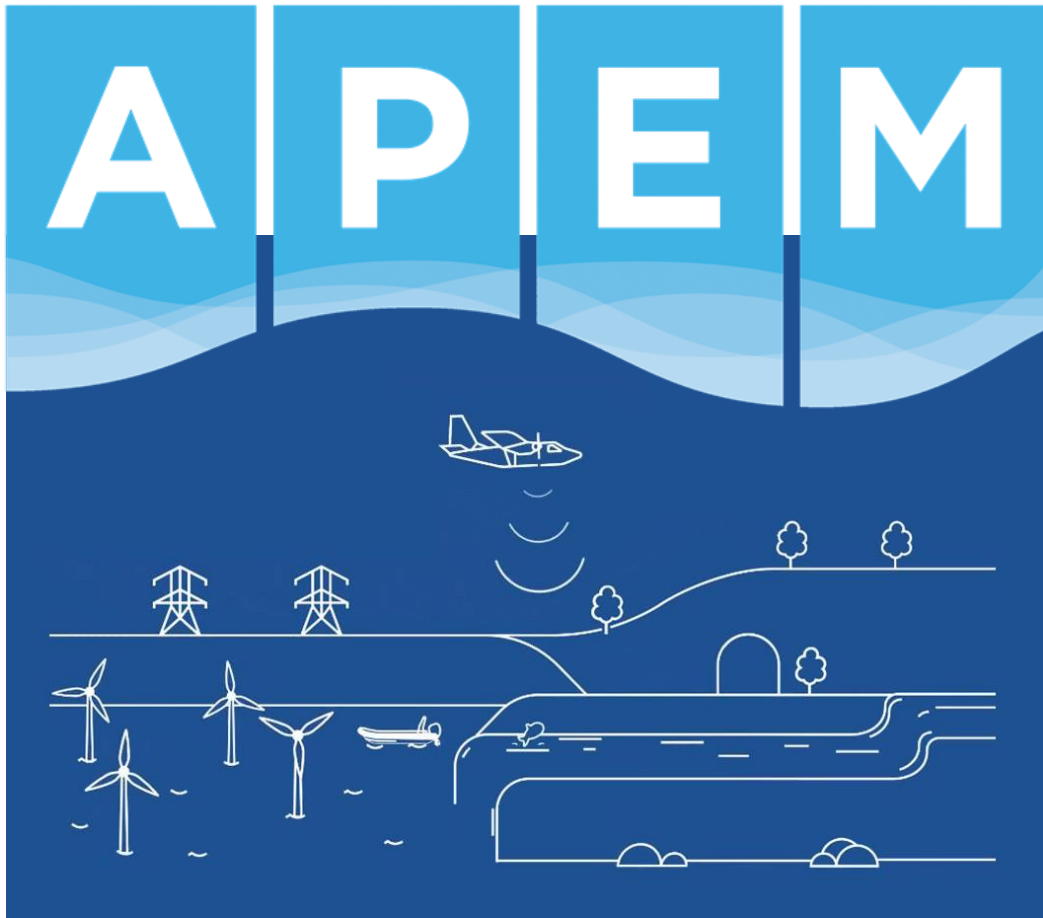




Newport Effluent Pipe Replacement Scheme

Construction Works

Habitat Regulations Assessment Screening Report

APEM Ref: P00008585b

March 2022

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1. Introduction

1.1 Overview

Proposed plans or projects that have the potential to affect European and Internationally designated nature conservation sites (detailed below) are required to be considered through the Habitats Regulations Assessment (HRA) process as required by The Conservation of Habitats and Species Regulations 2017 (as amended¹) (the Habitats Regulations).

This report (hereafter referred to as the HRA Screening Report) considers the proposed construction works (hereafter referred to as 'the proposed works') required for an effluent pipe replacement scheme at Newport, South Wales, as part of the HRA process. The report provides the information required by Natural Resources Wales (NRW) to fulfil its function as a 'competent authority' under the Habitats Regulations and determine if the proposed works are likely to have a significant effect on the conservation objectives of a European Site, either alone, or in-combination with other plans or projects.

1.2 Background to the Project

A pipeline, approximately 1,360 m long, is currently in place to safely discharge effluent from Eastman Chemicals in Newport, South Wales, into the Severn Estuary and it has reached the end of its operational lifecycle. The pipeline crosses the intertidal zone and discharges below mean low water spring (MLWS). To continue to safely discharge effluent into the Severn Estuary the current pipeline needs to be replaced to reduce risks associated with the structure's integrity and to reduce the likelihood of any future leaks.

Kaymac Marine & Civil Engineering Ltd. (hereafter referred to as Kaymac) have been commissioned by Solutia UK to carry out the pipeline and sea outfall replacement works, which will involve the placement of the new effluent pipe adjacent to the existing pipe.

The location of the proposed works within the Severn Estuary is indicated in Figure 1.

¹ The legal provisions that amend the 2017 Regulations are:
The Conservation of Habitats and Species and Planning (Various Amendments) (England and Wales) Regulations 2018 [Statutory Instrument 2018 No 1307]
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 [Statutory Instrument 2019 No 579]

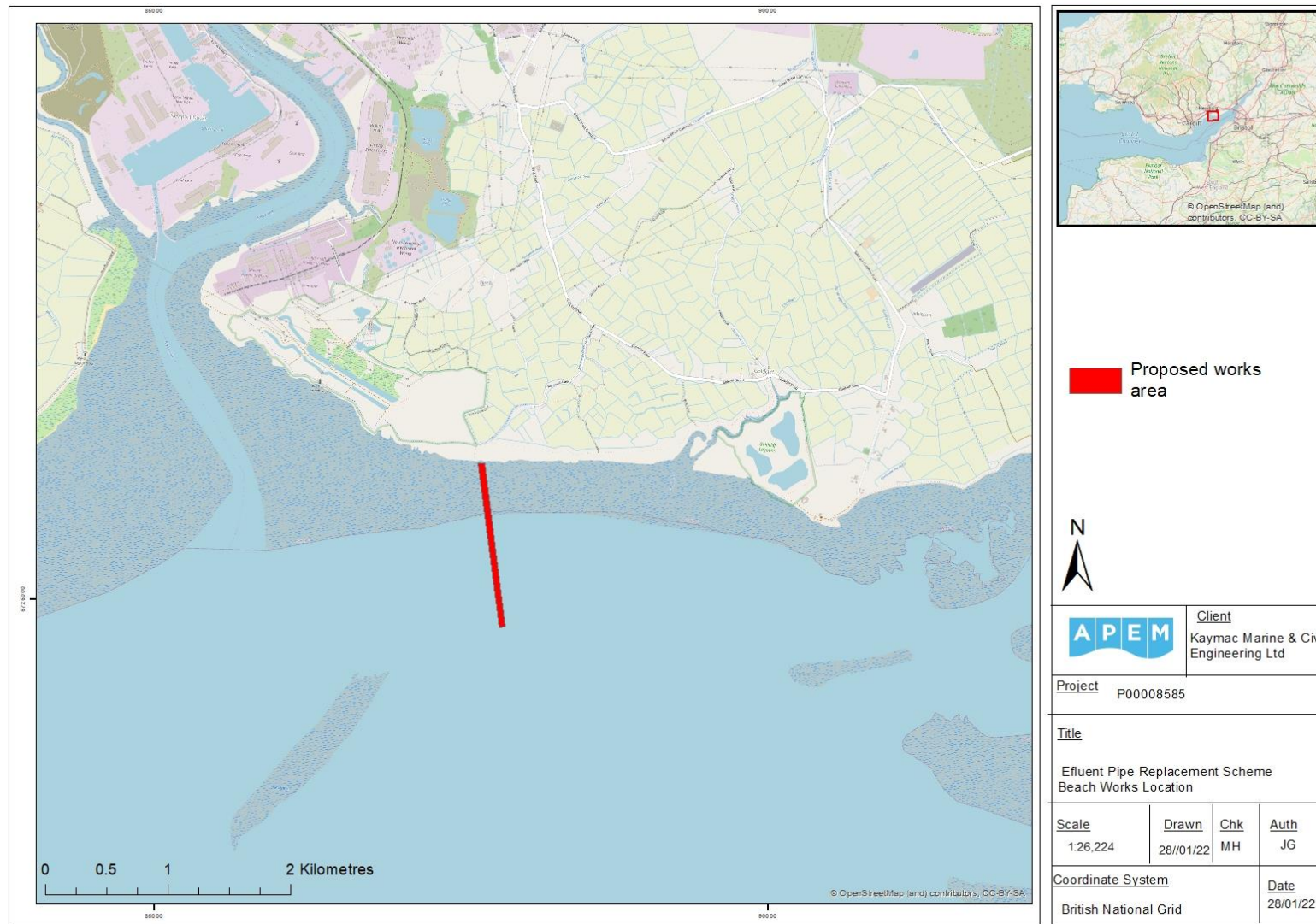


Figure 1: Proposed works location within the Severn Estuary.

1.3 Habitats Regulations Assessments

The Habitats Regulations require that an Appropriate Assessment of the implications of any development consent must be made by the relevant competent authority, in this case Natural Resources Wales, if a project (or plan) is likely to have a significant effect on the conservation objectives of a European Site (defined below), either alone, or in-combination with other plans or projects.

HRA is a progressive, staged process which determines if there is potential for Likely Significant Effect (LSE) and, where appropriate, assesses potential adverse impacts on the integrity of a European Site. Further detail on the process followed and the definition of particular terms, is provided in the methodology (Section 3).

1.4 Structure and purpose of the report

This report provides information on the construction works and the HRA Screening and Appropriate Assessment process. It then carries out the different stages in that process (where required) and presents the results and conclusion.

This report provides information to allow NRW (as the competent authority) to determine whether there will be an adverse effect on the integrity of any sites within the National Site Network in view of their conservation objectives as a result of the project.

In the context of a HRA, where the potential for LSE cannot be excluded, a competent authority must make an Appropriate Assessment of the implications of the plan or project for that site, in view of the Site's conservation objectives. The competent authority may agree to the plan or project only after having ruled out adverse effects on the integrity of the site/s within the National Site Network. Where an adverse effect on the site's integrity cannot be ruled out and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest (IROPI) and if the necessary compensatory measures can be secured.

2. The Proposed Works

2.1 Summary of the Proposed Works

A full description of the activities and methods associated with the proposed works is provided in Kaymac (2022). A summary of key aspects of relevance to this assessment is provided in this section.

The proposed works involve the placement of the new effluent pipe adjacent to the existing pipe and outfall. The proposed works will be contained within a footprint of approximately 1,360 m by 50 m (0.068 km²) (Figure 2) and involve activities in the intertidal zone and landward of the sea defence wall. The volume of excavated material will total circa 7,344 m³.

The works will be completed in two stages; Stage 1 being completed between the end of July 2022 through the end of September 2022 and Stage 2 being completed from the end of April 2023 through the end of September 2023.

The primary activities within each stage will include:

Stage 1

- Works landward of the sea defence;
 - Establishment of site compound; and
 - Land-based works (excavation, cutting out section of existing pipe, installation of chamber to house return valves).
- Works within the upper intertidal;
 - Cutting out section of existing pipe; and
 - Slip lining of new pipe through the existing pipe.

Stage 2

- Works within the intertidal;
 - Excavation of trench;
 - Pipe laying and installation of diffuser; and
 - Laying of concrete mattresses and backfilling.

The primary plant required for the works are:

- Landing craft (26.3 m x 7 m);
- Floating barge with excavator (30.48 m x 9.14 m x 2.13 m);
- 2 x support vessels (12.2 m x 4.9 m);
- 2 x small dory support vessels (5 m length);
- 15 tonne excavator; and
- Dumper

The excavation of the trench works will largely be undertaken on the flood tide by an excavator mounted on the floating barge, which will be maintained in position by the vessels' spud legs. Approximately 900 m of the trench will be excavated in this way with the remainder of the trench in the upper intertidal excavated in the dry.

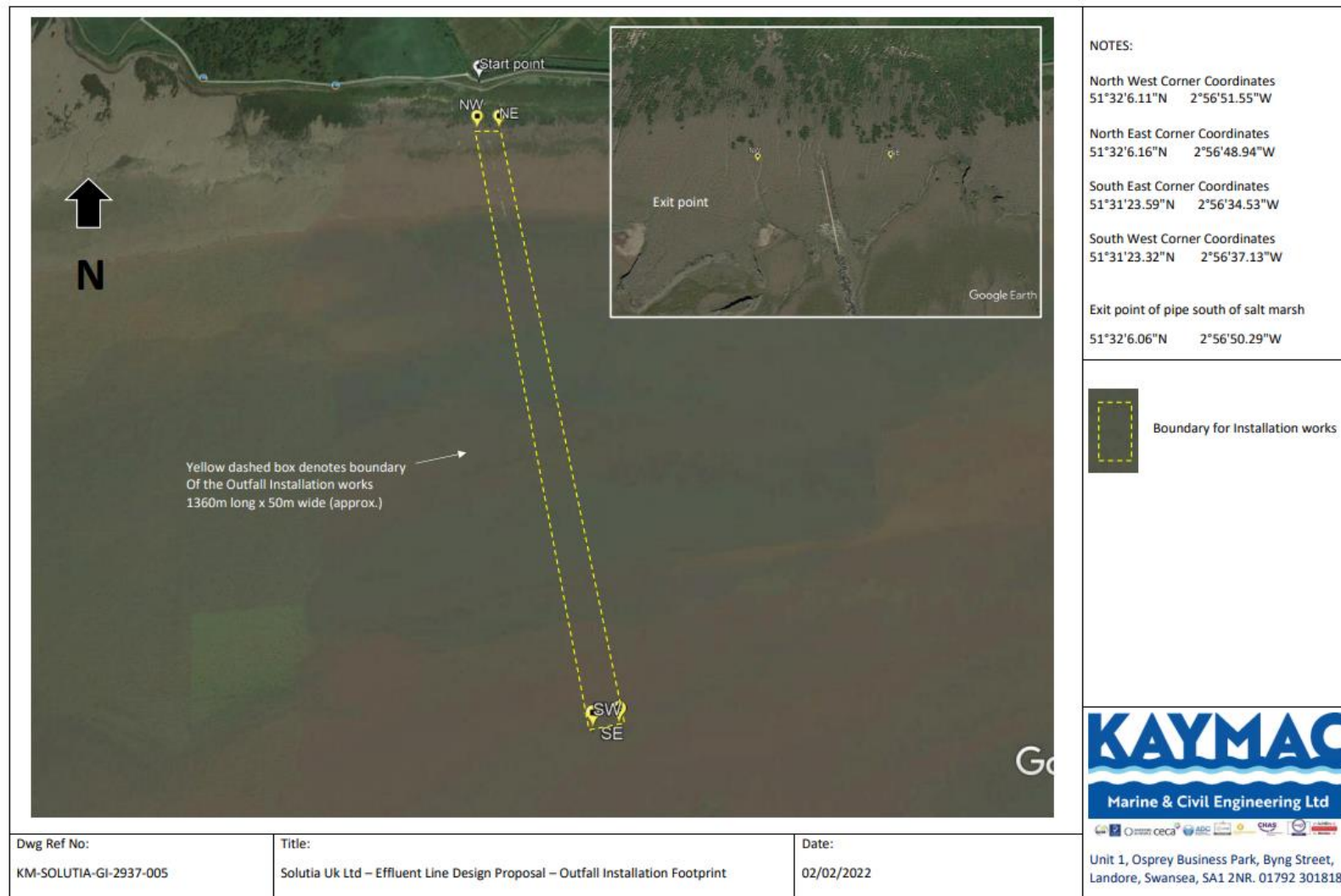


Figure 2: The proposed works footprint (Image provided by Kaymac Marine & Civil Engineering Ltd).

2.2.1 Phase 1

Works landward of the sea defence

Establish site compound

A site compound for the storage of equipment and materials will be established landward of the sea defence wall. The footprint of the temporary compound will be circa 20 m x 10 m (approximately 200 m²) and secured using fencing to prevent unauthorised access. The compound will be in place for approximately 2 months.

Land based works

The excavator will undertake excavation works around the existing pipeline on the landward side of the sea defence wall. A section of the existing pipe will then be cut out in order to slip-line the new pipe through the existing pipe.

Once the new pipe has been slip-lined through to the landward connection point, a bespoke 'swan neck' section will be lifted into place using the excavator to make the connection between the new and existing pipe. A concrete access chamber will be installed to allow future access to the valves. Once these works are completed, the pipe will be commissioned and Kaymac will remove the site compound, reinstate the landward works area and demobilise from site.

Works in the upper intertidal zone

Cut out section of existing pipe

Where the new trench meets the existing pipe, a section of this pipe will be cut out in order to slip-line the new pipe through the existing pipe.

The cutting of the existing pipe and slip-lining will be undertaken during a 96-hour shutdown. Effluent in the pipe will be drawn back before shutdown and any remaining effluent will be safely dewatered by a specialist contractor prior to removal of the section of pipe. Any dewatered effluent will then be disposed of at a licensed facility.

Slip-lining

The new pipe will be slip-lined through the existing pipe from the intertidal connection point through to the connection point on the landward side of the sea defence wall. Pulling the pipe through in this way avoids the need to work in the area of saltmarsh habitat in the upper intertidal zone, which will be avoided during the works.

A winch cable will be fed through the existing pipe from the landward connection point and the new pipe pulled through underneath the saltmarsh habitat and the sea defence wall.

2.2.1 Phase 2

Works in the intertidal zone

The excavation works in the intertidal zone will primarily be undertaken from a self-propelled floating barge. The landing craft will be used to deliver plant, equipment and the new pipe sections from a satellite compound at the Associated British Ports port of Newport (Newport ABP) circa 2.5 nm away from the site.

Excavation of trench

The primary activity of the intertidal works is the excavation of the trench for the new pipe. The trench will be adjacent to the existing pipe, offset by circa 10 m and will be excavated in 150 m sections.

When the works area is submerged, the trench will be excavated by a traditional land-based excavator mounted on a floating barge. Onboard GPS, depth sounder and surveying equipment will be used to position the barge such that the excavator can dig the trench accurately to the required line and depth. The excavated bed material will be side-cast adjacent to the trench to avoid the need for material to be transported to and from the site and allow easy backfilling of the trench once the pipe is in position.

It is estimated that the lowest 900 m of the trench, from approximately chainage 1,470 m to chainage 570 m, will be excavated on the flood tide. The trench will be excavated to a depth of approximately 1.5 m with a cross section of circa 5.4 m². As such, if circa 900 m of the trench is excavated on the flood tide, the total volume of excavated material in this area will be circa 4,860 m³.

The trench in the upper intertidal zone is expected to be excavated when the tide is on ebb. In this case, the excavator will be delivered to the beach by the landing craft and excavation will occur in the dry. The landing craft will deliver plant to site and land as high up the beach as possible to maximise the available working window as the tide falls.

The trench in this area will be excavated along a length of circa 460 m and to a depth of approximately 1.5 m with a cross section of circa 5.4 m². The total volume of excavated material in the upper intertidal area will be circa 2,484 m³. The excavated material will be side-cast and later used to backfill the trench.

The excavation will continue up the intertidal zone until the trench has reached a chainage of approximately 140 m. At this point, the trench will be angled towards the existing pipe in order to make a connection and to slip-line the new pipe through the existing pipe.

Pipe laying and installation of outfall

The pipe sections will be transported to site by the landing craft. The pipe laying technique will depend on the state of tide and the tidal level at the time the pipe is ready to be laid. It will either be sunk into the trench with the falling tide, or the sinking valve will be opened, and the pipe allowed to fill with water to aid sinking into position. The outfall section at the terminus of the pipe will be lowered from the landing craft using the excavator and installed by a dive team.

Laying of concrete mattresses and backfilling

Once in the trench, the pipe sections will be maintained in position using concrete mattresses. Once the pipe is in position the concrete mattresses will be placed on top of the pipe using the excavator. Once the mattresses are in position, the trench will be backfilled using the side-cast material.

3. Methodology

3.1 Legislative and policy context

This section describes the legislation as it applies now that the UK has left the European Union (EU). Guidance from Defra has been provided on the application of the relevant legislation in the post-Brexit period in their policy paper published on 1st January 2021². The Habitats Regulations provide for the protection of particular habitats, plants and animals through the creation of, and specific decision-making procedures applied to, the 'national site network' (Regulation 3 'Interpretation'). This 'national site network' consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) that were designated both in that period when the UK was a member of the EU and since the UK left the EU.

Since those particular parts of the Habitats Regulations relating to the HRA process continue to refer to the designated sites collectively as 'European Sites', rather than as the 'national site network', that approach has been followed in this report.

3.1.1 UK (domestic) HRA legislation

The Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, protects habitats and species of European nature conservation importance. Together with the Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive'), the Habitats Directive established a network of internationally important sites, designated for their ecological status: Special Areas of Conservation (SACs), under the Habitats Directive to promote the protection of flora, fauna and habitats; and Special Protection Areas (SPAs), under the Birds Directive to protect rare, vulnerable and migratory birds. These sites combined to create a Europe-wide 'Natura 2000' network of designated sites, which are referred to as 'European sites'.

The above Directives were transposed into UK legislation through a series of Regulations. Terrestrial areas of the UK, and territorial waters out to 12 nautical miles (nm), are covered under The Conservation of Habitats and Species Regulations 2017, with waters beyond 12 nm, to the extent of the British Fishery Limits and UK Continental Shelf Designated Area, covered under The Conservation of Offshore Marine Habitats and Species Regulations 2017 (collectively referred to here as the Habitats Regulations). The Habitats Regulations incorporate all SPAs into the definition of 'European sites' and, consequently, the protections afforded to European sites under the Habitats Directive apply to SPAs designated under the Birds Directive. The UK left the European Union (Brexit) on Exit day, 31st January 2020, followed by Completion Day on 31st December 2020.

² <https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017>

3.1.2 Policy requirements additional to domestic legislation

It is UK Government policy that all competent authorities should treat candidate SACs (cSACs) and potential SPAs (pSPAs) as being within the requirements of the Habitats Regulations. In the UK this is identified in paragraph 176 of the National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2019).

Accordingly, in this report the term 'European Site' is used to refer collectively to SACs, cSACs, SPAs and pSPAs.

3.1.3 International legal and policy obligations

The UK is a contracting party to the Convention on wetlands of international importance especially as waterfowl habitat, Ramsar, Iran, 1971 (the 'Ramsar Convention') which seeks to protect wetlands of international importance, especially those wetlands utilised as waterfowl habitat.

It is UK Government policy that all competent authorities should treat Ramsar Sites in their decision-making processes as if they are SACs or SPAs and hence Ramsar Sites are considered within the requirements for HRA of the Habitats Regulations. In the UK this is identified in paragraph 176 of the National Planning Policy Framework (MHCLG 2019). As a consequence, in this report Ramsar Sites are referred to alongside European Sites collectively as European and Ramsar Sites. UK Government policy (ODPM Circular 06/2005) states that internationally important wetlands designated under the Convention on Wetlands 1971, called the Ramsar Convention (Ramsar sites) are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them.

3.1.4 Land that is functionally linked to European and Ramsar Sites

Animals that are interest features of European and Ramsar Sites may be mobile and not confined to the boundary of the designated site. For example, wintering waterbirds may forage or roost on agricultural land outside of the designated site. Although that agricultural land is not part of the European or Ramsar Site, it is 'functionally linked' because it serves a function for waterfowl that are interest features of the designated site. Account has to be taken of such functionally linked land in the HRA process since, for instance, the loss of such land to development could potentially adversely affect the survival of those wintering waterbirds and lead to a reduction in the population of birds within the designated site.

Functionally linked land has been defined as follows (Chapman & Tyldesley 2016):

'the term 'functional linkage' refers to the role or 'function' that land or sea beyond the boundary of a European Site might fulfil in terms of ecologically supporting the populations for which the site was designated or classified. Such land is therefore 'linked' to the European Site in question because it provides an important role in maintaining or restoring the population of qualifying species at favourable conservation status.'

3.2 The Habitats Regulations Assessment process

3.2.1 Overview

The requirements of the Habitats Regulations with regard to the implications of plans or projects are set out within Regulation 63. The step-based approach implicit within this Regulation is referred to as a 'Habitats Regulations Assessment' (HRA), which is the term that has been used throughout this report.

It is a requirement of any public body, referred to as a 'competent authority' within the Habitats Regulations, to carry out a HRA when they are proposing to carry out a project, implement a plan or authorise another party to carry out a plan or project. Competent authorities are required to record the process undertaken, ensuring that there will be no adverse effects on the integrity of any European or Ramsar Site as a result of a plan or project whether alone or in combination with other plans or projects.

3.2.2 Assessment stages

The assessment of a plan or project goes through a number of stages, with published guidance available to aid competent authorities to fulfil their responsibilities. Those stages are summarised in Table 1.

Table 1. Stages in the HRA process

Stage	Description	Legislative Context
Purpose	Determines if the purpose of the plan or project is directly connected with, or necessary, to the management of a European or Ramsar Site. If it is, then no further assessment is necessary	Regulation 63(1)(b)
Scoping	The identification of any European or Ramsar Site that might be within scope of an HRA i.e. those sites that should be taken forward to the screening stage based on a wide consideration of spatial and ecological factors. Such a site may be located within the plan or project area but may also include sites located in neighbouring authority areas.	
Screening	Assessment of whether a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect on any qualifying feature (habitats and species) and the achievement of the conservation objectives of a European or Ramsar Site. This is also known as the 'test of likely significant effect' (ToLSE).	Regulation 63(1)(a)

Stage	Description	Legislative Context
Appropriate Assessment	Consideration of the effects of the proposals to determine whether or not it is possible to conclude with certainty that the development will not result in any adverse effect on the integrity of European or Ramsar Site, either alone or in combination with other plans or projects and with reference to the conservation objectives of the European or Ramsar Site. This is also known as the test of 'adverse effect on integrity' (AEoI). At this stage consent may be granted for the plan or project if it is possible to conclude with certainty that the proposal will not result in any adverse effect on the integrity of any European or Ramsar Site, either alone or in combination with other plans or projects.	Regulation 63(5)
If it cannot be concluded with certainty that the proposal will not result in any adverse effect on the integrity of any European or Ramsar Site then proceed to:		
Assessment of alternative solutions	Assess whether there is an alternative solution to the plan or project i.e. one that better respect the European or Ramsar sites. If no such alternative solution exists, the process continues to Assessment of IROPI.	Regulation 64(1)
Assessment of IROPI	Assess whether a plan or project can be justified as being needed for 'imperative reasons of overriding public interest' (IROPI).	Regulation 64(1)
Compensatory measures	Identify and secure any necessary compensatory measures to ensure that the overall coherence of the 'national site network' is protected.	Regulation 68

3.2.3 In-combination assessment

The Habitats Regulations, taken with Government policy, require the consideration of the potential effects of a project on European and Ramsar Sites both alone and in-combination with other plans or projects.

The identification of plans and projects to include in the in-combination assessment will be based on:

- approved plans;
- constructed projects;
- approved, but as yet unconstructed projects; and
- projects for which an application has been made, are currently under consideration and will be consented before the proposed development begin.

3.3 Guidance on the HRA process

In preparing this report, consideration has been given to the relevant guidance issued by a number of Governmental, statutory and industry bodies.

Guidance from Government bodies includes:

- Ministry of Housing, Communities and Local Government online Guidance on the use of Habitats Regulations Assessment <https://www.gov.uk/guidance/appropriate-assessment>
- Defra, NE, Welsh Government and NRW guidance on Habitat Regulations Assessments <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>

Guidance from the Statutory Bodies includes:

- MMO online guidance on Marine Licensing: impact assessments <https://www.gov.uk/guidance/marine-licensing-impact-assessments>
- NRW online guidance on HRA in the marine licensing process <https://naturalresources.wales/permits-and-permissions/marine-licensing/marine-licence-habitats-regulations-assessment/?lang=en>

In addition to recent guidance are a series of notable recent rulings by the European Court of Justice (ECJ), referred to here as Sweetman II or ‘People over Wind’³, and Holohan⁴. The People over Wind ruling relates to how screening for potential LSE is carried out, specifically that mitigation cannot be taken into account at that stage (but remains applicable for the determination of adverse effects on integrity). The Holohan ruling relates to the importance of species and habitats which are not a reason for the designation of the site but are relevant to the conservation objectives of the site (e.g. prey items of a designated species). Both these rulings have been taken into consideration during preparation of the HRA Screening Report.

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62017CJ0323>

⁴ <http://curia.europa.eu/juris/liste.jsf?language=en&td=ALL&num=C-461/17>

4. Identification of European and Ramsar Sites and features potentially affected by the proposed works

4.1 European and Ramsar Site identification process

For the screening process, European and Ramsar Sites in the vicinity of the proposed works which could potentially be influenced by the works were identified. The different interest features within these sites were then considered individually.

It only requires one site interest feature to be considered to be potentially impacted by the proposed works for the European and/or Ramsar Site to be screened into the HRA, along with each of its associated interest features.

The HRA screening process for this project used the conceptual 'source-pathway-receptor' model. The model was used to identify potential environmental effects resulting from the proposed works. This process provides an easy to follow assessment route between impact sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of the model are defined as follows:

- source – the origin of a potential effect (noting that one source may have several pathways and receptors);
- pathway – the means by which the effect of the activity could impact a receptor; and
- receptor – the element of the receiving environment that is impacted.

Where there is no pathway, or the pathway is so long that the effect from the source has dissipated to a negligible level before reaching the receptor, there is justification for the screening out of that particular receptor.

Where the receptor (site interest feature) only occurs in the area on a seasonal basis and/or that receptor is not present in the period in which particular activities of the proposed works are a source of a potential effect, there is justification for the screening out of that particular receptor.

4.2 Potential European and Ramsar Sites (receptors)

An initial screening exercise was undertaken for all European and Ramsar Sites within 15 km of the site of the proposed works. Given the nature of the works, the Zone of Influence is anticipated to be very limited, however a precautionary approach was taken and a 15 km buffer from the proposed works was included for screening.

The European and Ramsar Sites that fall within the screening criteria described above are:

- The Severn Estuary SAC;
- The Severn Estuary SPA;
- The Severn Estuary Ramsar site; and
- River Usk SAC.

The boundaries of these sites in relation to the proposed works are indicated in Figure 3 (SACs) and Figure 4 (SPA and Ramsar site).

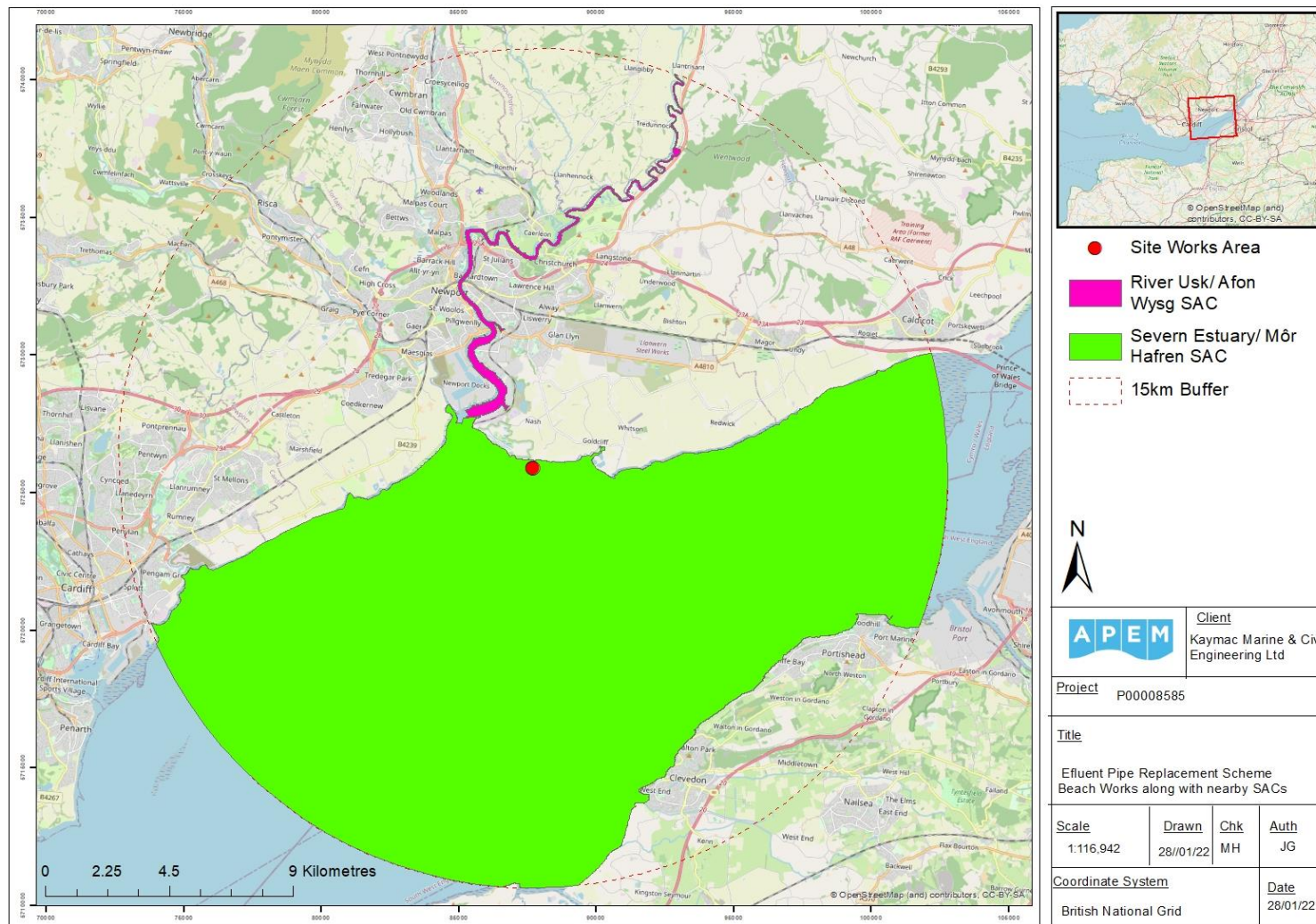


Figure 3: Location of the proposed works in relation to nearby SACs.

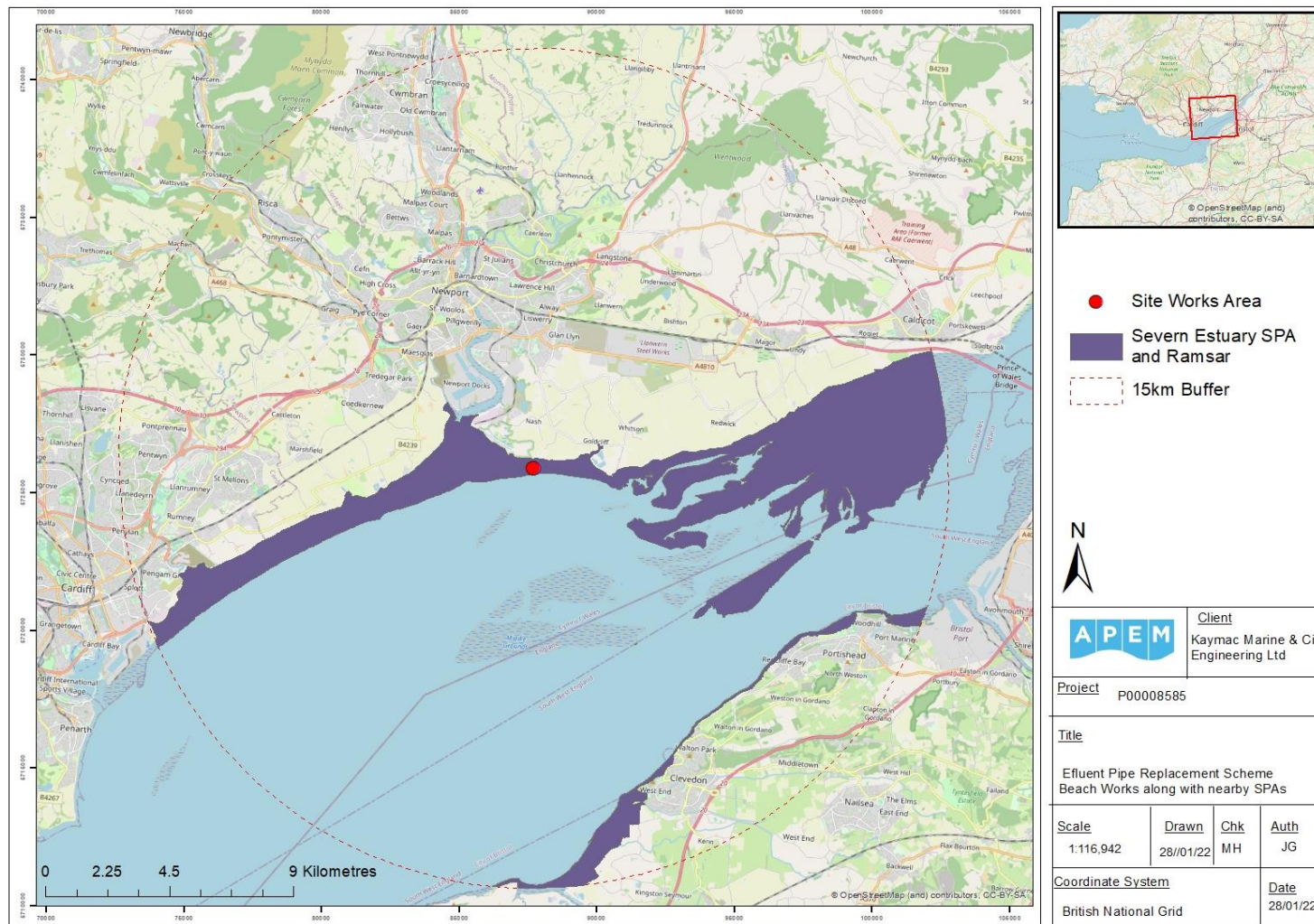


Figure 4: Location of proposed works in relation to nearby SPA and Ramsar sites.

4.3 European and Ramsar Site features of interest

The interest features screened in from each European and Ramsar site are indicated in Table 2.

Table 2. Features of interest of the European and Ramsar Sites within 15 km of the proposed development.

Site	Interest feature
The Severn Estuary / Môr Hafren SAC UK0013030 (JNCC website)	• 1130 Estuaries • 1140 Mudflats and sandflats not covered by seawater at low tide • 1330 Atlantic salt meadow (<i>Glauco-Puccinellietalia maritima</i>) • 1110 Sandbanks which are slightly covered by sea water all the time • 1170 Reefs • 1095 Sea lamprey <i>Petromyzon marinus</i> • 1099 River lamprey <i>Lampetra fluviatilis</i>
The Severn Estuary Ramsar (NE and CCW 2009)	• Estuaries • Sea lamprey <i>Petromyzon marinus</i> • River lamprey <i>Lampetra fluviatilis</i> • Twaite shad <i>Alosa fallax</i> • Allis shad <i>Alosa alosa</i> • Atlantic salmon <i>Salmo salar</i> • Sea trout <i>Salmo trutta</i> • European eel <i>Anguilla anguilla</i> • Bewick's swan <i>Cygnus columbianus bewickii</i> • European white-fronted goose <i>Anser albifrons albifrons</i> • Dunlin <i>Calidris alpina alpina</i> • Redshank <i>Tringa tetanus</i> • Shelduck <i>Tadorna tadorna</i> • Gadwall <i>Anas strepera</i> • Waterfowl assemblage, including; wigeon <i>Anas penelope</i>, teal <i>Anas crecca</i>, pintail <i>Anas acuta</i>, pochard <i>Aythya farina</i>, tufted duck <i>Aythya fuligula</i>, grey plover <i>Pluvialis squatarola</i>, curlew <i>Numenius arquata</i>, whimbrel <i>Numenius phaeopus</i>, ringed plover <i>Charadrius hiaticula</i>, spotted redshank <i>Tringa erythropus</i>.
The Severn Estuary SPA UK9015022 (ASERA Website)	• Bewick's swan <i>Cygnus columbianus bewickii</i> • European white-fronted goose <i>Anser albifrons albifrons</i> • Dunlin <i>Calidris alpina alpina</i> • Redshank <i>Tringa tetanus</i> • Shelduck <i>Tadorna tadorna</i> • Gadwall <i>Anas strepera</i> • Waterfowl assemblage, including; wigeon, teal, pintail, pochard, tufted duck, ringed plover, grey plover, curlew, whimbrel and spotted redshank.
River Usk / Afon Wysg SAC	• 3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation

Site	Interest feature
UK0013007 (Natura 2000 2015)	• 1095 Sea lamprey <i>Petromyzon marinus</i> • 1096 Brook lamprey <i>Lampetra planeri</i> • 1099 River lamprey <i>Lampetra fluviatilis</i> • 1103 Twaite shad <i>Alosa fallax</i> • 1106 Atlantic salmon <i>Salmo salar</i> • 1163 Bullhead <i>Cottus gobio</i> • 1355 Otter <i>Lutra lutra</i>

5. Potential Effects of the Proposed Works

5.1 The Assessment Process

The process of testing for significant effects considers the adverse effects that might arise from the proposed works and identifies whether or not there is a probability that each adverse effect can affect each European or Ramsar site and their interest features.

The process that is followed is to identify if the proposed works generate effects that could affect any of the interest features of the relevant European and Ramsar Sites. At this point, the pathway will be identified and what may reduce or prevent the effects reaching the relevant European and Ramsar sites. Only when there is a source, a pathway and an effect that reaches the interest feature is it judged that there is an LSE that requires the more detailed assessment that is carried out at the Appropriate Assessment stage.

Potential adverse effects of the proposed works on European and Ramsar Sites have been identified using a combination of:

- Advice on Operations (AoO) from Natural England was considered for The Wash and North Norfolk SAC for the activity 'Coastal Infrastructure: Outfalls / Intake pipes (maintenance / construction / usage)⁵'. The Wash and North Norfolk SAC was chosen as a proxy for the Severn Estuary designated sites (for which recent AoO was not available) as it has similar interest features;
- Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994 for the Severn Estuary / Môr Hafren European Marine Site which provides AoO for the designated features was also used to determine potential adverse effects of the proposed works, however, this source is dated 2012. Therefore, as indicated above, AoO for The Wash and North Norfolk SAC was used as a proxy to provide more up-to-date evidence on the sensitivity of features to the pressures exerted by similar activities; and
- Professional judgement based on experience of conducting numerous assessments of similar projects in the vicinity of European and Ramsar Sites;

In Section 6, a table is provided for the Screening Stage of the HRA which tests for LSEs indicating:

- The pressure being considered (derived from AoO from Natural England for Coastal Infrastructure: Outfalls / Intake pipes (maintenance / construction / usage);
- The features being assessed;
- Whether alone, or in combination, there is a LSE for each pressure / feature combination; and
- Justification for the assessment.

⁵ Accessed via <https://designatedsites.naturalengland.org.uk/>

Pressures indicated as being of Medium-High Risk which could be associated with the proposed works and that could affect European and Ramsar Site features were considered in this screening, in line with the AoO guidance. These pressures were as follows:

- Above water noise;
- Abrasion / disturbance of the substrate on the surface of the seabed;
- Changes in suspended solids (water clarity)
- Habitat structure changes – removal of substratum (extraction);
- Penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion;
- Physical loss;
- Smothering and siltation rate change (light);
- Smothering and siltation rate change (heavy); and
- Visual disturbance.

Low risk pressures would not usually be taken through to screening. However, for some pressures indicated as Low risk for habitats and species within the SAC and Ramsar, the feature habitats are indicated to be sensitive to these pressures in the AoO. Consequently, a precautionary approach has been taken and the following Low risk pressures were also considered in this screening:

- Underwater noise; and
- Introduction of light.

The following Medium-High risk pressures that were not anticipated to be associated with the proposed works and / or did not have the potential to affect designated site features were not included in the screening, in line with the AoO guidance:

- Barrier to species movement;
- Physical change (to another seabed type); and
- Physical change (to another sediment type).

The following Low risk pressures were also not included in the screening, in line with the AoO guidance:

- Collision below water with static or moving objects not naturally found in the marine environment;
- Deoxygenation;
- Genetic modification & translocation of indigenous species;
- Hydrocarbon & PAH contamination;
- Introduction of microbial pathogens;
- Introduction or spread of invasive non-native species (INNS);
- Litter;
- Nutrient enrichment;
- Organic enrichment;
- Radionuclide contamination;
- Salinity decrease;

- Salinity increase;
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals);
- Temperature decrease;
- Temperature increase;
- Transition elements & organo-metal (e.g TBT) contamination;
- Water flow (tidal current) change, including sediment transport considerations; and
- Wave exposure changes.

6. Screening: Testing for LSE

The table below shows the test for LSE for the qualifying features within the European sites and Ramsar site.

The Severn Estuary / Môr Hafren SAC – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Abrasion / disturbance of the substrate on the surface of the seabed	1130 Estuaries (73,677.25 ha within SAC) 1140 Mudflats and sandflats not covered by seawater at low tide (20,271.38 ha within SAC) 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (656.06 ha within SAC) 1110 Sandbanks which are slightly covered by sea water all	No	There is no overlap between the proposed works and the feature 'Atlantic salt meadow'. Works have been designed to avoid areas of Atlantic salt meadow.
Changes in suspended solids (water clarity)			There is no overlap between the proposed works and the feature 'Reefs'. Although reefs are a designated feature located within the SAC, the closest reef is located over 2 km from the project site (Defra Magic Maps).
Habitat structure changes – removal of substratum (extraction)			'Estuaries', 'Mudflats and sandflats not covered by seawater at low tide' and 'Sandbanks which are slightly covered by sea water all the time' will be in the vicinity of the work activities and will experience some habitat loss and disturbance, however the footprint of works will be limited to 0.068 km². The trench is 1,360 m in length and will be dug to approximately 1.5 m deep with a cross section of circa 5.4 m² and a total volume of sediment excavated being approximately 7,344 m³. All excavated bed material will be side-cast adjacent to the trench, covering an area of approximately 5,440 m² (0.54 ha) and graded to a shallow angle while the trench is being excavated, the material will then be used to backfill the trench once the pipe is installed. The works will result in a small area of habitat structure change (removal of substratum), smothering and siltation rate change and physical loss; however, this will be a minimal relative to the total area of these habitats within the SAC (note the areas of different habitat qualifying features are provided in the 'Qualifying feature' column of this table).
Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion			
Physical loss			

The Severn Estuary / Môr Hafren SAC – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Smothering and siltation rate changes	the time (11779.51 ha within SAC) 1170 Reefs (1474.28 ha within SAC)		Smothering and siltation rate change will take place in the area of excavated bed material being side-cast along the trench, however works will be temporary and this area, as mentioned above will cover approximately 5,440 m² (0.54 ha or approximately 0.0026% of the total area of the 'Mudflats and sandflats not covered by seawater at low tide' habitat within the SAC [assuming a side-cast area of 4 m x 1,360 m]) which is minimal relative to the total area of this habitat within the SAC which covers an area of 20,271.38 ha The proposed works may cause abrasion / disturbance of the substrate on the surface of the seabed, changes in suspended solids (water clarity), penetration and / or disturbance of the substratum below the surface of the seabed and including abrasion. However, the proposed work activities will be temporary, restricted to a 3-month period, and limited to the 0.068 km² footprint of works. Any disturbance to the sediment will be limited and minimal relative to the size of the affected habitats within the SAC. As such, there is considered to be no LSE on the qualifying features of the Severn Estuary SAC.
Underwater noise	1095 Sea lamprey <i>Petromyzon marinus</i> 1099 River lamprey <i>Lampetra fluviatilis</i>	No	As all works will be completed using an excavator and landing craft with no pilling or drilling, underwater noise will be very limited and therefore will be unlikely to have any impact on Sea lamprey or River lamprey.
Visual disturbance			Underwater works will be spatially constrained and time limited, therefore, visual disturbance will be minimal and will be unlikely to have any impact on the designated fish species. As such, there is no LSE on the qualifying features of the Severn Estuary SAC.

The Severn Estuary Ramsar – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Abrasion / disturbance of the substrate on the surface of the seabed	Estuaries	No	'Estuaries' will be in the vicinity of the work activities and will experience some habitat loss and disturbance, however the footprint of works will be limited to 0.068 km². The trench is 1,360 m in length and will be dug to approximately 1.5 m deep with a cross section of circa 5.4 m². All excavated bed material will be side-cast adjacent to the trench and graded to a shallow angle while the trench is being excavated, the material will then be used to as a layer of backfill to be laid over the pipe. The works will result in a small area of habitat structure change (removal of substratum) and physical loss; however, this will be a minimal relative to the total area of these habitats within the Ramsar. The proposed works may cause abrasion / disturbance of the substrate on the surface of the seabed, changes in suspended solids (water clarity), penetration and / or disturbance of the substratum below the surface of the seabed, including abrasion and smothering and siltation rate change. However, the proposed work activities will be temporary, restricted to a 3-month period, and limited to the 0.068 km² footprint of works. Any disturbance to the sediment will be limited and minimal relative to the total area of this habitat within the Ramsar site. As such, there is considered to be no LSE on these qualifying features of the Severn Estuary Ramsar.
Changes in suspended solids (water clarity)			
Habitat structure changes – removal of substratum (extraction)			
Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion			
Physical loss			
Smothering and siltation rate changes			
Underwater noise	- Sea lamprey - River lamprey - Twaite shad - Allis shad - Atlantic Salmon - Sea trout - Eel	No	As all works will be completed using an excavator and landing craft with no pilling or drilling, underwater noise will be very limited and therefore will be unlikely to have any impact on the designated fish species. Underwater works will be spatially constrained and time limited, therefore, visual disturbance will be minimal and will be unlikely to have any impact on the designated fish species.
Visual disturbance			

The Severn Estuary Ramsar – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
			As such, there is considered to be no LSE on these qualifying features of the Severn Estuary Ramsar site.
Visual disturbance	- Bewick's swan - European white-fronted goose - Dunlin - Redshank - Shelduck - Gadwall - Waterfowl assemblage (including; wigeon, teal, pintail, pochard, tufted duck, ringed plover, grey plover, curlew, whimbrel and spotted redshank).	No	Bewick's swan, European white-fronted goose and gadwall are not birds of intertidal environments, so do not reside within or in close proximity to the proposed works. They are also not present within the months during which the proposed works are being undertaken. Therefore, there is no potential for LSE on wintering Bewick's swans, European white-fronted geese or gadwall since these features will be absent from this area of the Ramsar site.
Above water noise			The Ramsar is designated for non-breeding dunlin, redshank and shelduck, which have the potential to be present within or in proximity to the proposed works during the winter period (peaking during the core winter period from November through to February in the Severn estuary). As the proposed works are being undertaken mostly between June and August with very limited works in early September these species are not likely to be present. Therefore, there is no potential for an LSE on these non-breeding species since these features will be absent from the SPA during the proposed works period. Some of the non-breeding waterfowl assemblage bird species (including; pintail, pochard and tufted duck) are not birds that utilise intertidal environments, so do not reside within or in close proximity to the proposed works. They are also not present within the months during which the proposed works are being undertaken. Therefore, there is no potential for LSE on these species in the non-breeding waterfowl assemblage. Other bird species in the non-breeding waterfowl assemblage (including; wigeon, teal, ringed plover, grey plover, spotted redshank and curlew) have the potential to be present within or in close proximity to the proposed works during the non-breeding period (mostly from October through to March). Other species (including; whimbrel) are only found during migratory periods in the spring and / or autumn. As the proposed works are being undertaken mostly

The Severn Estuary Ramsar – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
			between June and August with very limited works in early September these species are not likely to be present. Therefore, there is no potential for an LSE on the non-breeding waterfowl assemblage since the species that make up this feature will be absent from the SPA during the proposed works period.

The Severn Estuary SPA – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Visual disturbance	• Bewick's swan • European white-fronted goose • Dunlin • Redshank • Shelduck • Gadwall		Bewick's swan, European white-fronted goose and gadwall are not birds of intertidal environments, so do not reside within or in close proximity to the site proposed works. They are also not present within the months during which the proposed works are being undertaken. Therefore, there is no potential for LSE on wintering Bewick's swans, European white-fronted geese or gadwall since these feature will be absent from this area of the SPA. The SPA is designated for non-breeding dunlin, redshank and shelduck, which have the potential to be present within or in close proximity to the proposed works during the winter

The Severn Estuary SPA – 0 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Above water noise	Waterfowl assemblage (including; wigeon, teal, pintail, pochard, tufted duck, ringed plover, grey plover, curlew, whimbrel and spotted redshank).		period (peaking during the core winter period from November through to February in the Severn estuary). As the proposed works are being undertaken mostly between June and August with very limited works in early September these species are not likely to be present. Therefore, there is no potential for an LSE on these non-breeding species since these features will be absent from the SPA during the proposed works period. Some of the non-breeding waterfowl assemblage bird species (including; pintail, pochard and tufted duck) are not birds that utilise intertidal environments, so do not reside within or in close proximity to the proposed works. They are also not present within the months during which the proposed works are being undertaken. Therefore, there is no potential for LSE on these species in the non-breeding waterfowl assemblage Other bird species in the non-breeding waterfowl assemblage (including; wigeon, teal, ringed plover, grey plover, spotted redshank and curlew) have the potential to be present within or in close proximity to the proposed works during the non-breeding period (peaking during the core winter period from November through to February in the Severn estuary). Other species (including; whimbrel) are only found during migratory periods in the spring and / or autumn. As the proposed works are being undertaken mostly between June and August with very limited works in early September these species are not likely to be present. Therefore, there is no potential for an LSE on the non-breeding waterfowl assemblage since the species that make up this feature will be absent from the SPA during the proposed works period.

River Usk / Afon Wysg SAC – 2.6 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Abrasion / disturbance of the substrate on the surface of the seabed	3260 Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	No	There is no overlap between the work activities and the feature 'Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation'. As such, there is no LSE on the qualifying features of the River Usk / Afon Wysg SAC.
Changes in suspended solids (water clarity)			
Habitat structure changes – removal of substratum (extraction)			
Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion			
Physical loss			
Smothering and siltation rate changes;			

River Usk / Afon Wysg SAC – 2.6 (km) from the Proposed Works			
Pressure	Qualifying feature or species (include sub-features and supporting habitats)	LSE?	Justification
Underwater noise	1095 Sea lamprey <i>Petromyzon marinus</i> 1096 Brooke lamprey <i>Lampetra planeri</i> 1099 River lamprey <i>Lampetra fluviatilis</i> 1103 Twaite shad <i>Alosa fallax</i> 1106 Atlantic salmon <i>Salmo salar</i> 1163 Bullhead <i>Cottus gobio</i> 1355 Otter <i>Lutra lutra</i>	No	As all works will be completed using an excavator and landing craft with no pilling or drilling, underwater noise will be a very limited and therefore will be unlikely to have any impact of the designated fish species.
Visual disturbance			Underwater works will be spatially constrained and time limited, therefore, visual disturbance will be minimal and will be unlikely to have any impact of the designated fish species. As such, there is no LSE on the qualifying features of the River Usk / Afon Wysg SAC.

6.1 LSE Conclusion

The tests for LSE carried out above on the European and Ramsar Sites (considering their interest features) and on functionally linked land, have been based on the range of pressures and potential effects anticipated to arise from the proposed works in isolation. These tests have concluded:

- The Severn Estuary / Môr Hafren SAC: No LSE
- The Severn Estuary Ramsar: No LSE
- The Severn Estuary SPA SPA: No LSE
- River Usk / Afon Wysg SAC: No LSE

Based on these conclusions the proposed works will not be carried forward to Appropriate Assessment (the next stage of the HRA process).

7. In-combination Assessment

7.1 Projects considered

The identification of plans and projects to include in the in-combination assessment is based on:

- Approved plans;
- Constructed projects;
- Approved but as yet unconstructed projects; and
- Projects for which an application has been made, are currently under consideration and will be consented before the proposed works begin.

To identify the projects or plans a combination of local knowledge, the Lle Geo Portal for Wales and Newport City Planning Portal was used. Three projects were identified that are within the vicinity of the proposed works and have the potential to have an in-combination effect with the proposed works. Distances to the proposed works are provided within brackets:

- Associated British Ports (ABP) marine licence application for dredge and disposal of sediment as part of the Newport maintenance dredging operations. (1.6 km)
- Construction of Plasterboard Manufacturing facility and Associated Development at Tom Lewis Way Alexandra Docks (3.3 km).
- Newport dredge disposal site (Bristol Channel) (3.75 km).
- St Julian's Viaduct Scour Protection Works (8.2 km).

DML1950 – Marine licence renewal for Newport maintenance dredging

ABP applied to renew their marine licence for undertaking maintenance dredging of the approaches to Alexandra Docks at Newport and the River Usk from the Bristol Channel. The dredge areas are approximately 1.6 km from the proposed works site. It is assumed that the maintenance dredging operations were subject to assessment at the time of application and that with appropriate mitigation measures the works alone would not have the potential to impact the European and Ramsar Sites indicated within this report. Given

the nature of the proposed works and the limited effects outlined in this report, it is concluded that there is no potential for the proposed works and the maintenance dredging activities to have in-combination effects on the European and Ramsar Sites and there would be no LSE.

Construction of Plasterboard Manufacturing facility and Associated Development at Tom Lewis Way Alexandra Docks - Licence number 21/1054

A planning permission application was submitted for the construction of plasterboard manufacturing facility, associated development, creation of new access off Tom Lewis way and provision of ecological enhancement areas. There are no details provided for the timings of the proposed works, however the planning application was submitted in October 2021 and is awaiting a decision. The proposed works are approximately 3.3 km from the site. Approval has not been granted for this application yet and no start date for the works have been set.

Given the distance of the works from this project, there is no crossover for impact pathways with the proposed works.

Given that there is no overlap with the proposed works and the fact that it was concluded that the works would have no LSE on the protected European sites or Ramsar site it can be concluded that the proposed works would not act in-combination to give rise to a LSE on any European or Ramsar sites.

Newport dredge disposal site – Site reference LU140

The Newport dredge disposal site is approximately 3.75 km offshore from the proposed works site. The dredge disposal site receives dredged sediment from nearby dredging operations. The schedule for disposals is unknown, however, given the nature of the proposed works and the temporary and short-term duration of the works, it is concluded that there is no potential for the works and activities at the dredge disposal site to have in-combination effects on the European and Ramsar Sites and there would be no LSE.

St Julian's Viaduct Scour Protection Works

St Julian's Viaduct is located 8.2 km in a straight line from the proposed works site and approximately 12.5 km along the River Usk. The proposed scour protection works include the installation of a double layer of 600 mm (d50) rock armour to four piers and are anticipated to be undertaken from April 2022 to October 2022.

An HRA conducted for the project concluded that there would be no significant impact on the Usk SAC or SSSI. Taking this into consideration, along with the distance to the proposed works site, there is no potential for the scour work activities to have in-combination effects on the European and Ramsar Sites and there would be no LSE.

7.2 In-combination assessment conclusion

The potential effects arising from identified projects in-combination with the proposed works concluded that the proposed works would not act in-combination to give rise to an LSE on any European or Ramsar sites.

We have considered the relevant qualifying features and concluded there is no LSE or adverse effects, alone or in-combination, on the integrity of the European and Ramsar sites.

8. Conclusions

The proposed works on the northern bank of the Severn Estuary have the potential to interact with European and Ramsar Sites. As part of this assessment, protected sites in the vicinity of the proposed works which could potentially be influenced by effects arising from the proposed works were identified. Interest features within these sites were then considered individually. Screening used the conceptual 'source-pathway-receptor' model. The model was used to identify potential environmental effects resulting from the proposed works.

Potential effects of the works were identified using the AoO from Natural England for The Wash and North Norfolk SAC for the activity Aggregate Extraction: Beach Sand Extraction. The Wash and North Norfolk SAC was used as a proxy for the Severn Estuary designated sites as it had similar interest features and no recent AoO was available for the Severn Estuary designated sites. Reference was also made to Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994 for the Severn Estuary / Môr Hafren European Marine Site dated from 2012. Following reference to this guidance the following pressures were assessed:

- Above water noise;
- Abrasion / disturbance of the substrate on the surface of the seabed;
- Changes in suspended solids (water clarity)
- Habitat structure changes – removal of substratum (extraction);
- Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;
- Physical loss;
- Smothering and siltation rate change (light) and (heavy);
- Underwater noise; and
- Visual disturbance.

The tests for LSE carried out on the European and Ramsar Sites concluded the following:

- The Severn Estuary/ Môr Hafren SAC: No LSE
- The Severn Estuary Ramsar: No LSE
- The Severn Estuary SPA: No LSE
- River Usk / Afon Wysg SAC: No LSE

As such the sites were not taken through to full assessment for consideration of adverse effects on site integrity (AEoI).

The in-combination assessment concluded no LSE or AEoI of any of the sites resulting from a combination of the projects considered.

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