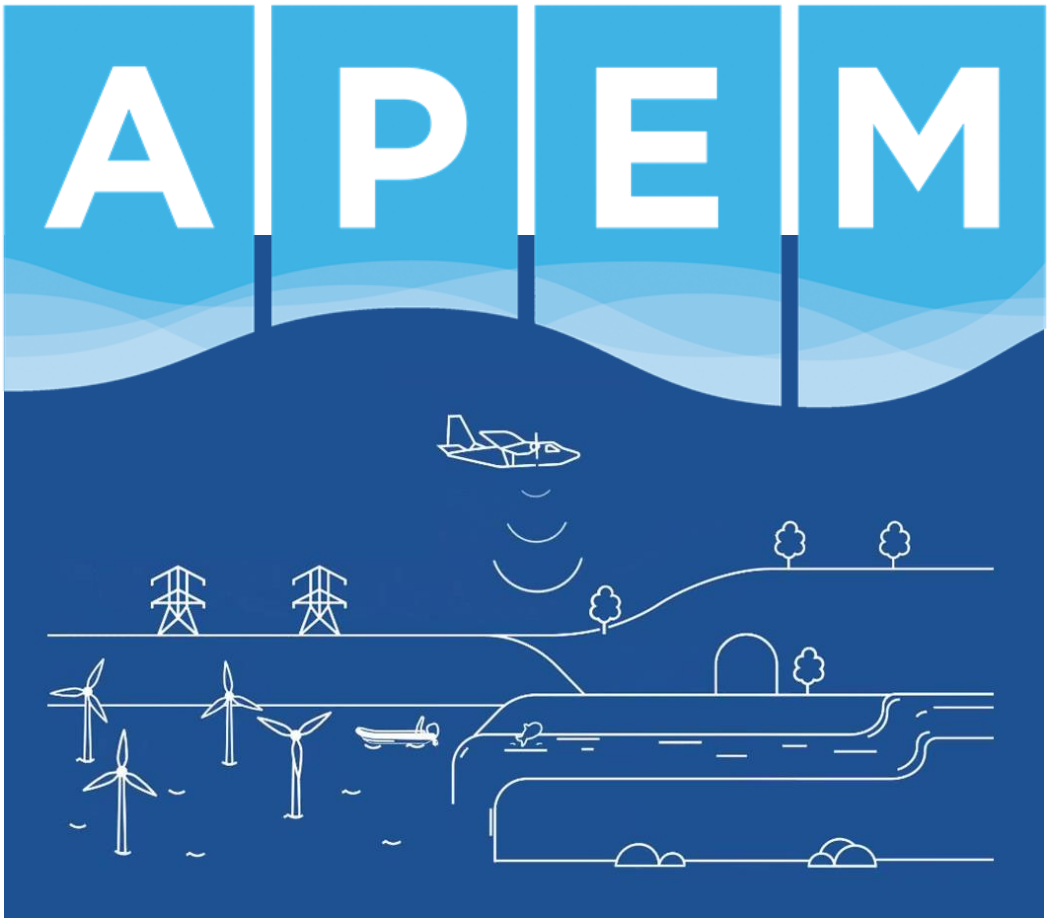

Newport Effluent Pipe Replacement Scheme

Ground Investigation Beach Works

Habitat Regulations Assessment Screening Report

APEM Ref: P00008214b

January 2022

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V1	21.01.22	All	All	Draft report	MH
V2	25.01.22	6	18	Final following client comments	MH

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1. Introduction

1.1 Overview

Proposed plans or projects that have the potential to affect designated nature conservation sites (detailed below) are required to be considered through the Habitats Regulations Assessment (HRA) process as a result of The Conservation of Habitats and Species Regulations 2017 (as amended[1]) (the Habitats Regulations).

This report (hereafter referred to as the HRA Screening Report) considers the proposed ground investigation works (hereafter referred to as 'the GI works'), required for an effluent pipe replacement scheme at Newport, South Wales, through the stages 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 GI 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 Project details

A full description of the activities and methods associated with the GI works is provided in Kaymac (2021). A summary of key aspects of relevance to this assessment is provided below.

The GI works involve the excavation of two trial pits and four boreholes along the length of the existing outfall in the intertidal zone and within an area with a footprint of approximately 500 m by 50 m (0.025 km^2) (Figure 1).

The works will be undertaken during spring low tides across two days. All plant will be delivered to site on a landing craft from Cardiff Barrage approximately 10 nm away. The landing craft will be grounded as far up the beach as possible to maximise the available working window before the tide comes back in. The landing craft will then be re-floated as the tide comes back in and all plant demobilised from site.

The primary plant required for the works are:

- Landing craft
- 15 tonne excavator
- Terrier rig (tracked drilling rig).

The ground investigation works are scheduled to take place in Q1 2022.

[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]

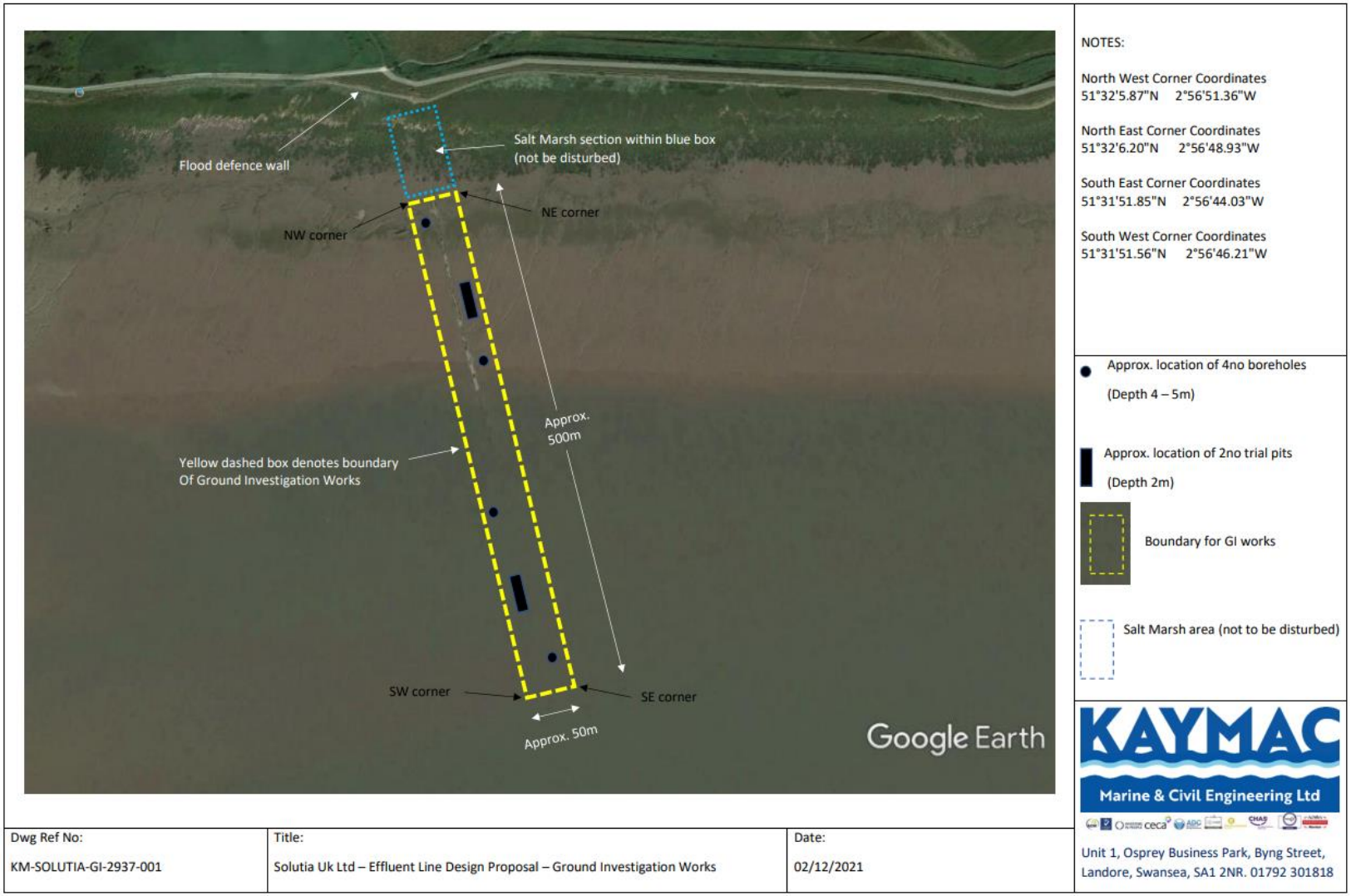

Figure 1: Proposed footprint of ground investigation works (Image supplied by Kaymac Marine & Civil Engineering Ltd).

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 NRW, 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 generally understood to be a progressive, four stage process which determines Likely Significant Effect (LSE) and, where appropriate, assesses potential adverse impacts on the integrity of a European Site, examines alternative solutions and provides justification of Imperative Reasons of Overriding Public Interest (IROPI) (Planning Inspectorate 2017). 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 GI works and the HRA screening and Appropriate Assessment process. It then carries out that process 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 European Site(s) in view of their conservation objectives (COs) as a result of the project.

In the context of an HRA, where the potential for likely significant effects 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 European Site. 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 Ground Investigation Works

2.1 Location and context

The proposed GI works are located along the bank of the Severn Estuary near Newport (Figure 2).

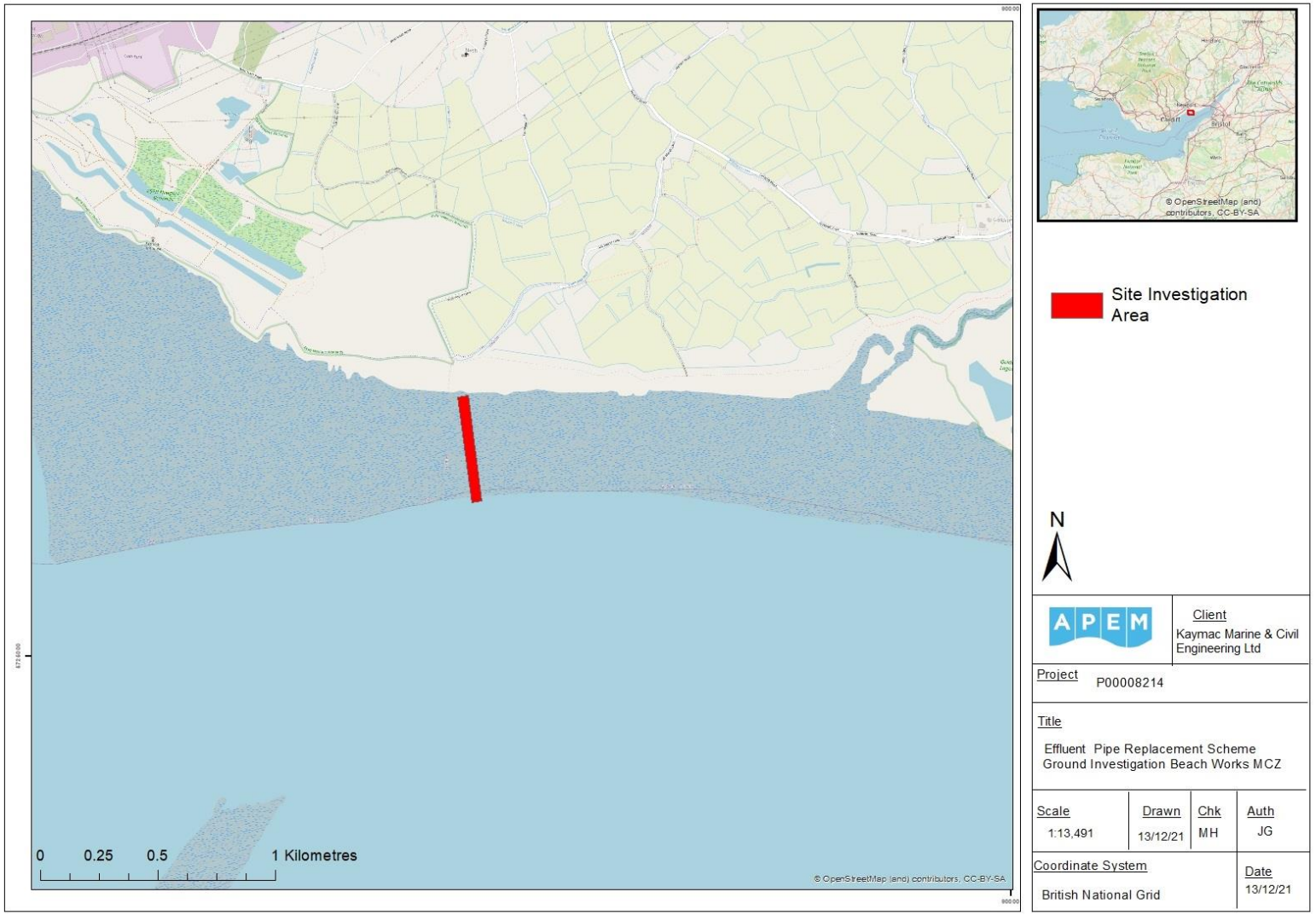

Figure 2: The proposed GI works location.

2.2 Summary of marine works

2.2.1 Excavation of trial pits

The trial pits will be excavated using the 15 tonne excavator, which will be delivered to site by the landing craft. The pits will be approximately 2 m by 0.6 m and excavated to a depth of approximately 2 m (approximate total area of 2.4 m^2 for the two pits).

The pits will be excavated in a methodical manner layer by layer. The excavated material will be stored adjacent to the pit in a manner that allows layers to be reinstated in the same order it was removed. The beach profile will be restored to its original state before demobilisation ensuring that the finished level is the same as the surrounding beach area.

The pits will be excavated across two days during spring low tides. As such, each pit will be excavated and reinstated during one spring low tide period with both trial pits being completed across two days.

2.2.2 Boreholes

The boreholes will be drilled using a small tracked Terrier rig that will be delivered to site on the landing craft. This rig is small enough to be manoeuvred by on-foot operatives. The rig uses a percussion hammer action at a rate of up to 50 blows per minute to drive the core in to the sediment. The boreholes will have a diameter of 150 mm (approximate total area of 0.07 m^2 for the four boreholes).

At each of the four borehole locations the first core and liner will be driven to a depth of 1m. Additional cores and liners will be added each metre until the desired depth of approximately 4m is reached. Holes will be filled to a similar level as the surrounding beach.

Two boreholes will be completed during the first day of works with the remaining two to be completed the following day.

3. Methodology

3.1 Legislative and policy context

3.1.1 UK (domestic) legislation

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 2021 available at https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017. 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 HRA Screening Report.

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 England 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 England 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.

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 HRA 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 guidance having been published 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 a 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
- The Planning Inspectorate Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects (Planning Inspectorate 2017).

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

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

4.1 European and Ramsar Site identification process

For the screening process, European and Ramsar Sites in the vicinity of the proposed development which could potentially be influenced by the proposed GI 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 GI works for the European and/or Ramsar Site to be screened into the HRA, along with each of its associated interest features.

This screening used the conceptual 'source-pathway-receptor' model. The model was used to identify potential environmental effects resulting from the proposed GI 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 GI 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 GI works.

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
- River Usk SAC

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

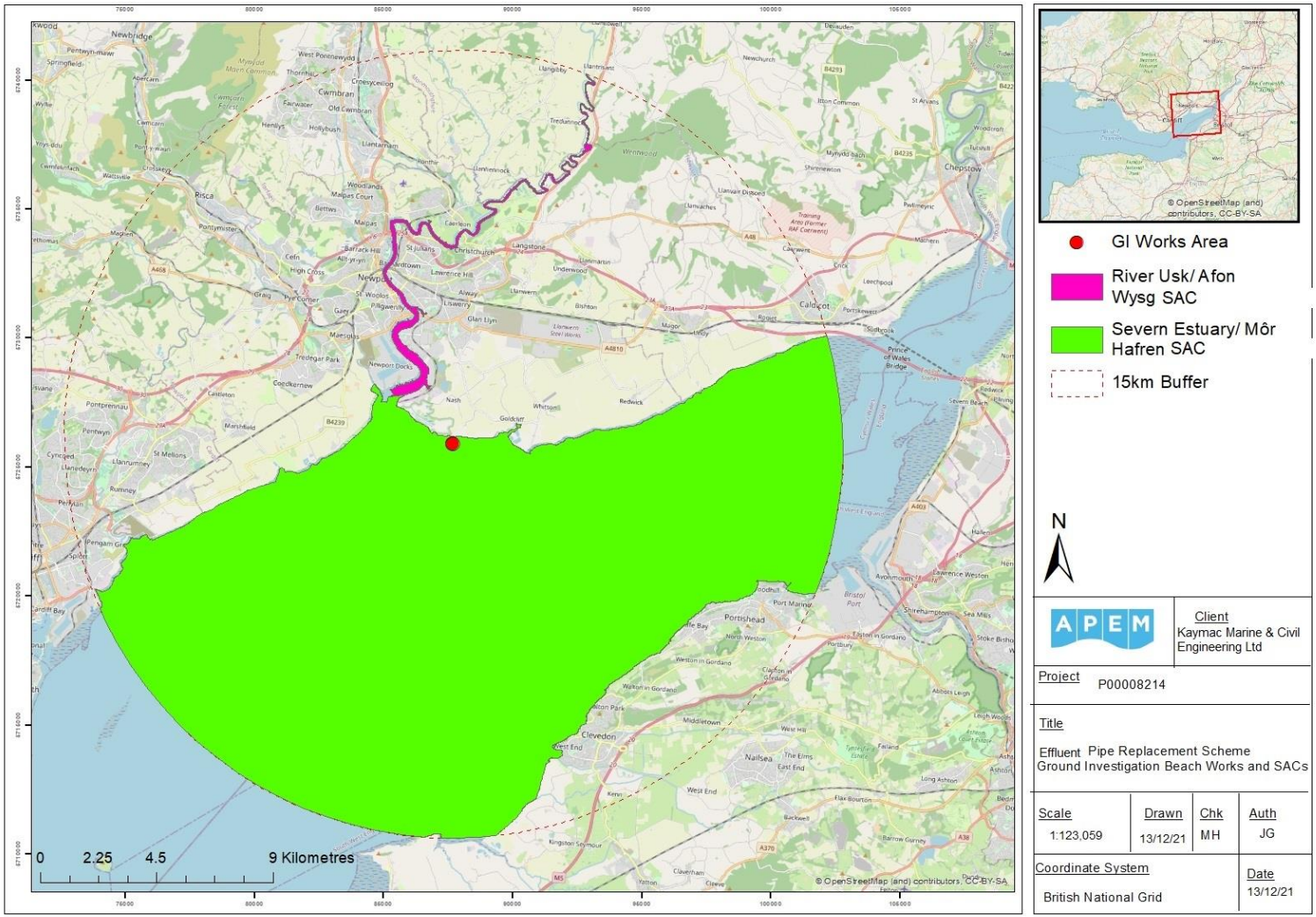

Figure 3: Location of ground investigation works in relation to nearby SACs.

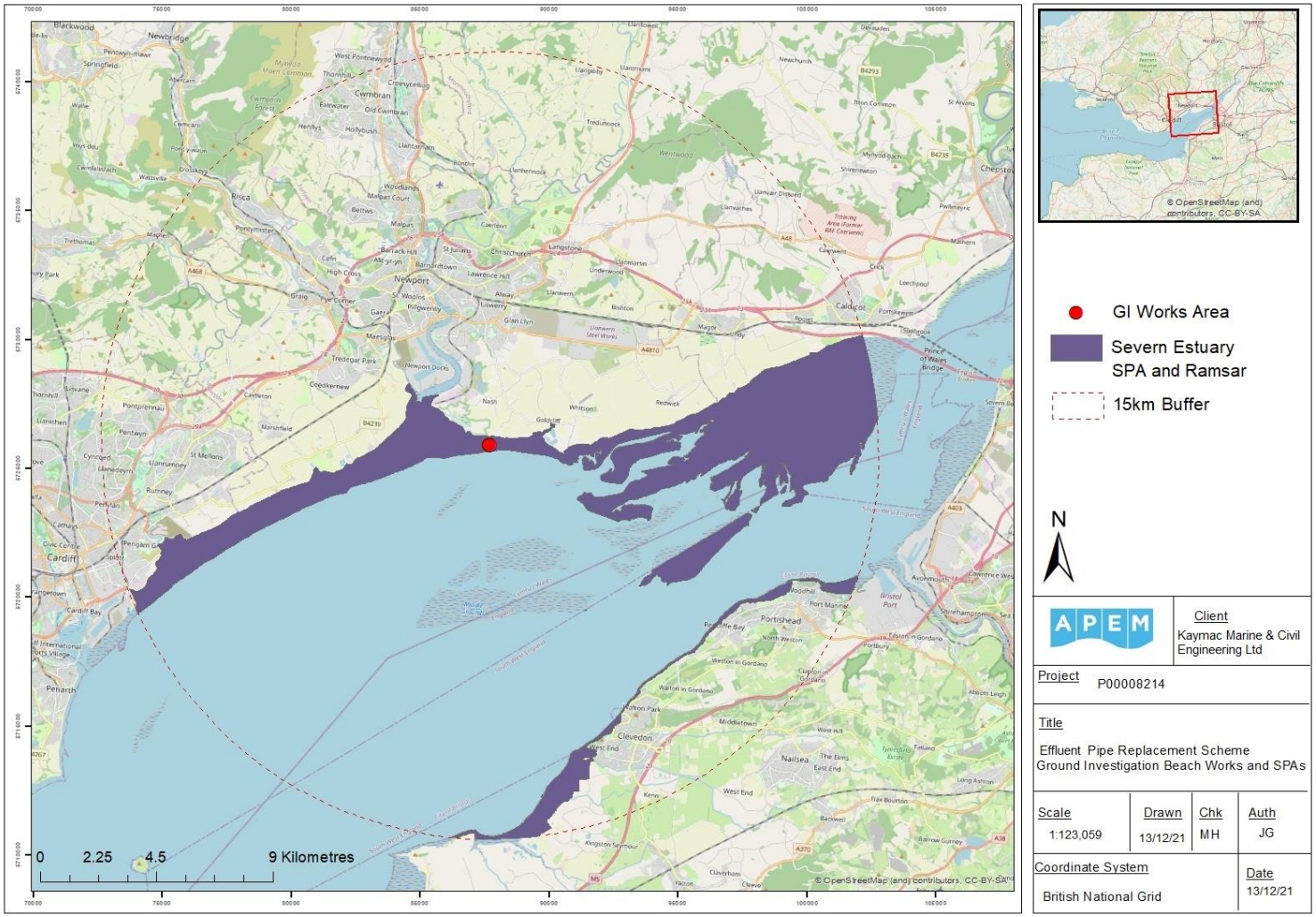

Figure 4: Location of ground investigation works in relation to nearby SPA and Ramsar sites.

4.3 European and Ramsar Site features of interest

The interest features of the screened in European and Ramsar sites are indicated in Table **2**.

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

Site	Interest feature
The Severn Estuary SAC (JNCC website)	• 1130 Estuaries • 1140 Mudflats and sandflats not covered by seawater at low tide • 1330 Atlantic salt meadow (*Glauco-Puccinellietalia maritimae*) • 1110 Sandbanks which are slightly covered by sea water all the time • 1170 Reefs • 1095 Sea lamprey *Petromyzon marinus* • 1099 River lamprey *Lampetra fluviatilis*
The Severn Estuary Ramsar (NE and CCW 2009)	• Estuaries • Sea lamprey *Petromyzon marinus* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax* • Allis shad *Alosa* • Atlantic salmon *Salmo salar* • Sea trout *Salmo trutta* • European eel *Anguilla* • Bewick's swan Cygnus *columbianus bewickii* • European white-fronted goose *Anser albifrons albifrons* • Dunlin *Calidris alpina alpine* • Redshank *Tringa tetanus* • Shelduck *Tadorna tadorna* • Gadwall *Anas Strepera* • Waterfowl assemblage, including; wigeon *Anas Penelope*, teal *Anas crecca*, pintail *Anas acuta*, pochard *Aythya farina*, tufted duck *Aythya fuligula*, grey plover *Pluvialis squatarola*, curlew *Numenius arquata*, whimbrel *Numenius phaeopus*, ringed plover *Charadrius hiaticula*, spotted redshank *Tringa erythropus*.
The Severn Estuary SPA (ASERA Website)	• Bewick's swan *Cygnus columbianus bewickii* • European white-fronted goose *Anser albifrons albifrons* • Dunlin *Calidris alpina alpine* • Redshank *Tringa tetanus* • Shelduck *Tadorna tadorna* • Gadwall *Anas Strepera*

Site	Interest feature
	• Waterfowl assemblage, including; wigeon, teal, pintail, pochard, tufted duck, ringed plover, grey plover, curlew, whimbrel and spotted redshank.
River Usk / Afon Wysg SAC (Natura 2000 2015)	• 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation • 1095 Sea lamprey *Petromyzon marinus* • 1096 Brook lamprey *Lampetra planeri* • 1099 River lamprey *Lampetra fluiatilis* • 1103 Twaite shad *Alosa fallax* • 1106 Atlantic salmon *Salmo salar* • 1163 Bullhead *Cottus gobio* • 1355 Otter *Lutra lutra*

5. Potential Effects of the Proposed GI Works

5.1 The Assessment Process

The process of testing for significant effects considers the adverse effects that might arise from the proposed GI 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 GI works generates 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 a LSE that requires the more detailed assessment that is carried out at the Appropriate Assessment stage.

Potential adverse effects of the proposed GI 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 'Aggregate Extraction: Beach Sand Extraction'. 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. Aggregate Extraction: Beach Sand Extraction was used as a proxy for the extraction activities to be conducted as part of the GI works as this activity was anticipated to result in similar pressures to the GI works[2];

- 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 GI works, however, this source is dated from 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 proposed works 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 Aggregate Extraction: Beach Sand Extraction;

- The features being assessed;

[2] Accessed via https://designatedsites.naturalengland.org.uk/

- Whether alone, or in combination, there is a LSE for each pressure/feature combination; and

- Justification for the assessment.

Pressures indicated as being of Medium-High Risk which could be associated with the proposed GI 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;
- Habitat structure changes – removal of substratum (extraction);
- Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;
- Toxic contamination; and
- Visual disturbance.

Low risk pressures would not usually be taken through to screening. However, for some pressures indicated as Low risk for habitats 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 pressure was also considered in this screening:

- Smothering and siltation rate changes.

The following Medium-High risk pressures that were not anticipated to be associated with the proposed GI 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:

- Non-toxic contamination;
- Biological disturbance; and
- Vibration.

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

- Barrier to species movement;
- Changes in suspended solids (water clarity)
- Emergence regime changes, including tidal level change considerations;
- Hydrocarbon & PAH contamination
- Introduction of light;
- Physical changes (to another seabed type);
- Physical change (to another sediment type);
- Removal of non-target species;
- Water flow (tidal current) changes, 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 SAC – 0 (km) from the Proposed GI 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 Habitat structure changes – removal of substratum (extraction) Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion Smothering and siltation rate changes Toxic contamination	• 1130 Estuaries • 1140 Mudflats and sandflats not covered by seawater at low tide • 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • 1110 Sandbanks which are slightly covered by sea water all the time • 1170 Reefs	No	There is no overlap between the GI activities and the features 'Atlantic salt meadow', 'Sandbanks which are slightly covered by sea water all the time' and 'Reefs'. All GI activities will take place in the intertidal area where none of the protected features are located, and the works will be conducted at low tide when the area will not be covered by water. 'Estuaries' and 'Mudflats and sandflats not covered by seawater at low tide' will be in the vicinity of the GI activities, however the activities will be small-scale, temporary and restricted to a two-day period. The two trial pits (2 m x 0.6 m; depth 2m – area of 2.4 m^2) and boreholes (total of 0.07m^2) are limited in size so very little sediment will be disturbed. All sediment that will be excavated during GI works will be replaced at the end of each work-day. All vessels will be MARPOL compliant and all equipment will be checked and monitored, in addition, the following measures will be implemented to prevent accidental spillage from plant and the landing craft and will be outlined in an Environmental Management Plan: • Any plant delivered to site will have been cleaned, properly maintained and will be fit for purpose. • On arrival at site, the Kaymac Supervisor will inspect all plant for visible signs of fuel / oil leaks before disembarkation from the landing craft. • All plant will come equipped with spill kits which all site personnel are trained in the use of. • All plant / equipment will be appropriately bunded to prevent the release of any accidental spillages. • No refuelling of plant or landing craft will be undertaken at sea. All refuelling will take place at Cardiff Harbour. Therefore, with these measures in place, toxic contamination is unlikely. As such, there is no LSE on the qualifying features of the Severn Estuary SAC.

The Severn Estuary SAC – 0 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
Visual disturbance	• 1095 Sea lamprey *Petromyzon marinus* • 1099 River lamprey *Lampetra fluiatilis*	No	All GI activities will take place in the intertidal area where none of the protected features are located, and works will be at low tide when the area will not be covered by water. Therefore, the GI activities will not interfere with the features 'Sea lamprey' or 'River lamprey'. As such, there is no LSE on the qualifying features of the Severn Estuary SAC.

The Severn Estuary Ramsar – 0 (km) from the Proposed GI 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 GI activities; however the activities will be small-scale, temporary and restricted to a two-day period. The two trial pits (2m x 0.6m; depth 2m - area of 2.4 m^2) and boreholes (total of 0.07m^2) are limited in size so very little sediment will be

The Severn Estuary Ramsar – 0 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
Habitat structure changes – removal of substratum (extraction)			disturbed. All sediment that will be excavated during GI works will be replaced at the end of each work-day. As such, there is no LSE on these qualifying features of the Severn Estuary Ramsar.
Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion			
Smothering and siltation rate changes;			
Toxic contamination			

The Severn Estuary Ramsar – 0 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
Visual disturbance	• Sea lamprey • River lamprey • Twaite shad • Allis shad • Atlantic Salmon • Sea trout • Eel	No	All GI activities will take place in the intertidal area where none of the protected features are located, and works will be at low tide when the area will not be covered by water. Therefore, the GI activities will not interfere with the features 'Sea lamprey', 'River lamprey', 'Twaite shad', 'Allis shad', 'Atlantic salmon', 'Sea trout' or 'Eel'. As such, there is no LSE on these qualifying features of the Severn Estuary Ramsar site.
Visual disturbance Above water noise	• Bewick's swan • European white-fronted goose • Dunlin • Redshank • Shelduck • Gadwall • Waterfowl assemblage (including; wigeon, teal, pintail, pochard, tufted duck, ringed	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 GI works. 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 SPA. Non-breeding dunlin, redshank and shelduck have the potential to be present within or in proximity to the GI works during the winter period (up to March / April). However, as the proposed GI works are spatially constrained to one small location with 6 small areas of sediment excavation (four boreholes and two trial pits) and temporally constricted to two days there is no potential for LSE from visual disturbance or above water noise, and these features can be screened out of further consideration. 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

The Severn Estuary Ramsar – 0 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
	plover, grey plover, curlew, whimbrel and spotted redshank).		in close proximity to the GI works. 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 GI works during the non-breeding period (mostly from September through to March). Other species (including; whimbrel) are only found during migratory periods in the spring and / or autumn. However, as the proposed GI works are spatially constrained to one small location with 6 small areas of sediment excavation (four boreholes and two trial pits) and temporally constricted to two days there is no potential for LSE from visual disturbance or above water noise, and these features can be screened out of further consideration. No works should take place if the air temperature is reduced to -3^{o}c in accordance with standard practice.

The Severn Estuary SPA – 0 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
Visual disturbance Above water noise	• 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).		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 investigation works. Therefore, there is no potential for LSE on wintering Bewick's swans, European white-fronted geese or gadwall since theses feature will be absent from this area of the SPA. Non-breeding dunlin, redshank and shelduck have the potential to be present within or in close proximity to the GI works during the winter period (up to March / April). However, as the proposed GI works are spatially constrained to one small location with 6 small areas of sediment excavation (four boreholes and two trial pits) and temporally constricted to two days there is no potential for LSE from visual disturbance or above water noise, and these features can be screened out of further consideration. 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 GI works. Therefore, there is no potential for LSE on wintering Bewick's swans, European white-fronted geese or gadwall since theses feature will be absent from this area of the SPA. 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 site investigation works during the non-breeding period (mostly from September through to March). Other species (including; whimbrel) are only found during migratory periods in the spring and / or autumn. However, as the proposed site investigation works are spatially constrained to one small location with 6 small areas of sediment excavation (four boreholes and two trial pits) and temporally constricted to two days there is no potential for LSE from visual disturbance or above water noise, and these features can be screened out of further consideration. No works should take place if the air temperature is reduced to -3^{o}c in accordance with standard practice.

River Usk / Afon Wysg SAC – 2.6 (km) from the Proposed GI 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 Habitat structure changes – removal of substratum (extraction) Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion Smothering and siltation rate changes; Toxic contamination	• 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	No	There is no overlap between the GI activities and the feature 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation'. All vessels will be MARPOL compliant and all equipment will be checked and monitored, therefore, therefore there is not expected to be introduction of other substances and toxic contamination. As such, there is no LSE on the qualifying features of the River Usk / Afon Wysg SAC.

River Usk / Afon Wysg SAC – 2.6 (km) from the Proposed GI Works			
Pressure	**Qualifying feature or species (include sub-features and supporting habitats)**	**LSE?**	**Justification**
Visual disturbance Above water noise	• 1095 Sea lamprey *Petromyzon marinus* • 1096 Brooke lamprey *Lampetra planeri* • 1099 River lamprey *Lampetra fluiatilis* • 1103 Twaite shad *Alosa fallax* • 1106 Atlantic salmon *Salmo salar* • 1163 Bullhead *Cottus gobio* • 1355 Otter *Lutra lutra*	No	All GI activities will take place in the intertidal area where none of the protected features are located, and works will be at low tide when the area will not be covered by water. Therefore, the GI activities will not interfere with the features 'Sea lamprey' 'Brooke lamprey' 'River lamprey', 'Twaite shad', 'Atlantic salmon', 'Bullhead' or 'Otter'. 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, on their interest features and on functionally linked land, applying the pressures and potential effects arising from the proposed GI works in isolation have concluded:

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

Based on these conclusions the proposed GI works will be not carried forward to the next stage of the HRA.

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 GI 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 GI works and have the potential to have an in-combination effect with the proposed works. Distances to the proposed GI 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).

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 GI 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 of the associated with this report. Given the nature of the proposed GI works for this site investigation and the limited effects outlined in this report, it is concluded that there is no potential for the proposed

GI works and the maintenance dredging activities to have cumulative effects on the European and Ramsar Sites and would have 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 GI site. As approval has not been granted for this application, it is safe to assume that works would not begin in February 2022 and therefore there would be no overlap with the proposed GI works.

Given that there is no overlap with the proposed GI works and it was concluded that the GI works would have no LSE on the protected European sites or Ramsar site it can be concluded that the proposed GI works would not act in-combination to give rise to a likely significant effect on any of the 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 GI 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 GI works for this site investigation 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 cumulative effects on the European and Ramsar Sites and would have no LSE.

7.2 In-combination assessment conclusion

The potential effects arising from identified projects in-combination with the proposed GI works concluded that the proposed GI works would not act in-combination to give rise to an LSE on any of the 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 GI works on the northern bank of the Severn Estuary have the potential to interact with multiple European and Ramsar Sites. As part of this assessment, protected sites in the vicinity of the proposed GI works which could potentially be influenced by effects arising from the proposed GI 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 GI works.

Potential effects of the GI 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;
- Habitat structure changes – removal of substratum (extraction);
- Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;
- Smothering and siltation rate changes;
- Toxic contamination; 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/ Môr Hafren Ramsar: No LSE
- The Severn Estuary SPA/ Môr Hafren: No LSE
- River Usk / Afon Wysg SAC: No LSE

As such the sites were not taken through to full assessment for consideration of adverse effect on site integrity.

The in-combination assessment concluded no LSE or adverse effect on the integrity of any of the sites resulting from a combination of the projects considered.

9. References

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