

Central Prestatyn Coastal Defence Scheme

Habitats Regulations Assessment

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Purpose

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Contents

1	Introduction	4
1.1	Project summary	4
1.2	Scope of Assessment	4
1.3	Legislative Context	5
2	Description of Project	6
2.1.1	Proposed development	6
2.1.2	Construction methodology	8
3	HRA Methodology	9
3.1	Introduction	9
3.2	Consultations	10
3.3	HRA Task 1 Screening method	10
3.3.1	Methodology	10
3.3.2	Assessments, reports and field data	10
3.3.3	Precautionary Principle	10
3.3.4	Limitations and Constraints	11
4	Identification of European Sites	12
4.1	Site Descriptions	12
4.1.1	Liverpool Bay/Bae Lerpwl Special Protection Area	12
4.1.2	Dee Estuary/Aber Dyfrdwy Special Area of Conservation	13
4.1.3	Dee Estuary Special Protection Area	14
4.1.4	Dee Estuary Ramsar site	15
4.2	Grouping of Interest Features for Screening	16
4.3	Interest features present near the proposed works	18
5	Other Relevant Plans and Projects	19
6	Assessment of Likely Significant Effects	21
6.1	Potential Hazards to European Sites	21
6.2	Potential in-combination impacts	34
7	Screening Statement and Conclusion	35
7.1	Assumptions and Limitations	35
7.2	Conclusions	35
8	Appropriate Assessment	36
8.1	Introduction	36
8.2	Hazards identified in screening assessment	36
8.3	Identified hazards	36
8.4	Mitigation measures	36
8.4.1	Pollution prevention measures	36
8.5	Conclusion	37
9	References	I

List of Figures

Figure 2-1: Scheme location	6
Figure 4-1: European designated sites shown in relation to the proposed works	12

List of Tables

Table 3-1: The HRA Process	9
Table 4-1. Details of the grouping of Qualifying Interests for each site.	16
Table 5-1: Developments that could combine with the proposed scheme to create a cumulative impact	19
Table 6-1 Potential Hazards to the European Sites	21
Table 6-2: Screening for likely significant effects of project impacts on the European sites	22

Abbreviations

AA	Appropriate Assessment
AOD	Above Ordnance Datum
EcIA	Ecological Impact Assessment
ES	Environmental Statement
EU	European Union
HRA	Habitat Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
NRW	Natural Resources Wales
SAC	Special Area of Conservation
SPA	Special Protection Area

1 Introduction

JBA Consulting are acting on behalf of Denbighshire County Council to undertake regulatory, design and environmental activities associated with the development of a flood risk management scheme for Central Prestatyn in Denbighshire (see Figure 1 1). Part of the requirements of the scheme is to undertake an assessment of impacts on sites designated under the 'Habitats Directive' (see Section 1.2). This report should be used by Denbighshire County Council to inform a screening assessment for the project under the Habitats Directive.

1.1 Project summary

The proposed development seeks to create a new flood embankment set back from the existing coastal defence which has been identified to be nearing the end of its life. The embankment will surround the western, southern and eastern boundaries of Rhyl Golf Course to provide flood protection to the community of Prestatyn in Denbighshire, North Wales.

Prestatyn is a seaside resort town located East of Rhyl. The existing coastal flood defences, which comprise a concrete seawall, concrete stepped revetment and section of newly constructed rock armour revetment around Splash Point, are subject to wave overtopping, which causes significant damage and disruption to adjacent residential and commercial properties, as well as Prestatyn Promenade and the Wales Coast Path, which are important components of the local tourism industry. This was evident in 2013 when deep flooding of 130 residential properties occurred. As the risk of extensive coastal flooding grows due to climate change and associated sea level rise, it is increasingly important that the existing sea defences are upgraded to provide a higher standard of protection. The proposed scheme will manage flood risk to 2,045 residential and 62 non-residential properties over 100 years and manage erosion to key tourism infrastructure

Ffrith Beach is a wide sandy beach with an extensive tidal range. It is a popular tourist destination and supports a range of recreational activities. Much of the beach is designated under the EU Bathing Waters Directive with the sub-tidal area designated as part of the Liverpool Bay Special Protection Area (SPA).

Ffrith Beach is located within a 15-mile section of the North Wales coast between Prestatyn and Colwyn Bay that has undergone extensive modification. This has had a significant effect on natural coastal processes with widespread beach lowering occurring throughout the 20th century. Recent data shows that onshore and longshore sediment transport processes are approximately balanced (JBA 2018).

1.2 Scope of Assessment

This report is based on an examination of National Site Network Site Synopsis, Standard Data Form and Conservation Objectives available from Natural Resources Wales and Joint Nature Conservation Committee (JNCC), as well as other readily accessible internet resources, concerning the nature and wildlife value of the designated site. The methodology used for this assessment is based upon the following guidance documents:

- The Habitats Regulations Assessment Handbook (DTA Publications, 2017)
- Assessment of plans and projects significantly affecting Natura 2000 sites (European Commission, 2001)
- Planning for the Protection of European Sites: Guidance for Regional Spatial Strategies and Local Development Documents (Department for Communities and Local Government, 2006)
- Planning Inspectorate's Guidance Note 10, Version 8 (November 2017)

1.3 Legislative Context

The Conservation of Habitats and Species Regulations 2017 (as amended) establishes the requirement for a European ecological network of protected sites by designating Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), which together make up the National Site Network of designated sites. The Conservation of Habitats and Species Regulations 2017 (as amended) have recently been amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and are hereafter referred to as 'the Regulations'. The Regulations (HMSO, 2019) require that a Habitats Regulations Assessment (HRA) is undertaken by a Competent Authority prior to the issue of any consent to consider whether a proposed project is likely to have a significant effect on a site within the National Site Network, previously referred to as 'Natura 2000' sites prior to the UK's withdrawal from the EU. Government guidance also requires that Ramsar sites (listed under the Convention on Wetlands of International Importance [Ramsar Convention]) are included within a HRA (together, SACs, SPAs and Ramsar sites are known as 'European sites' within the context of the Habitats Regulations, reflecting their international importance for the conservation of biodiversity).

For all plans and projects, which are not necessary to the conservation management of the site's qualifying features, a formal screening for any likely significant effects on European sites is required. This screening assessment is based on available ecological information on the designated sites, other plans, projects and policies relevant to the area and details of the proposed works.

If the screening assessment concludes that the works may have a significant adverse effect on the conservation objectives of the sites, or that such an effect cannot be ruled out (adopting a precautionary approach) an Appropriate Assessment (AA) must be carried out. An Appropriate Assessment involves an assessment of the potential effects of a development on the conservation objectives of the site. If significant adverse effects are identified, mitigation or avoidance measures can be applied.

SACs and SPAs within the National Site Network are also still designated for habitats listed on Annex I and for species listed on Annex II of the Habitats Directive, and criteria listed under the Birds Directive, and it is these Annex I habitats, Annex II species and Birds Directive Criteria against which assessments under the Habitats Regulations are still made.

If it cannot be concluded that the proposed works will not adversely impact upon the integrity of the site, the project will not be able to proceed without further conditions and/or assessment.

2 Description of Project

The proposed development seeks to improve the standard of coastal flood protection to the community of Prestatyn in Denbighshire, North Wales. Figure 2-1 shows the location of the proposed scheme at Rhyl Golf Club.

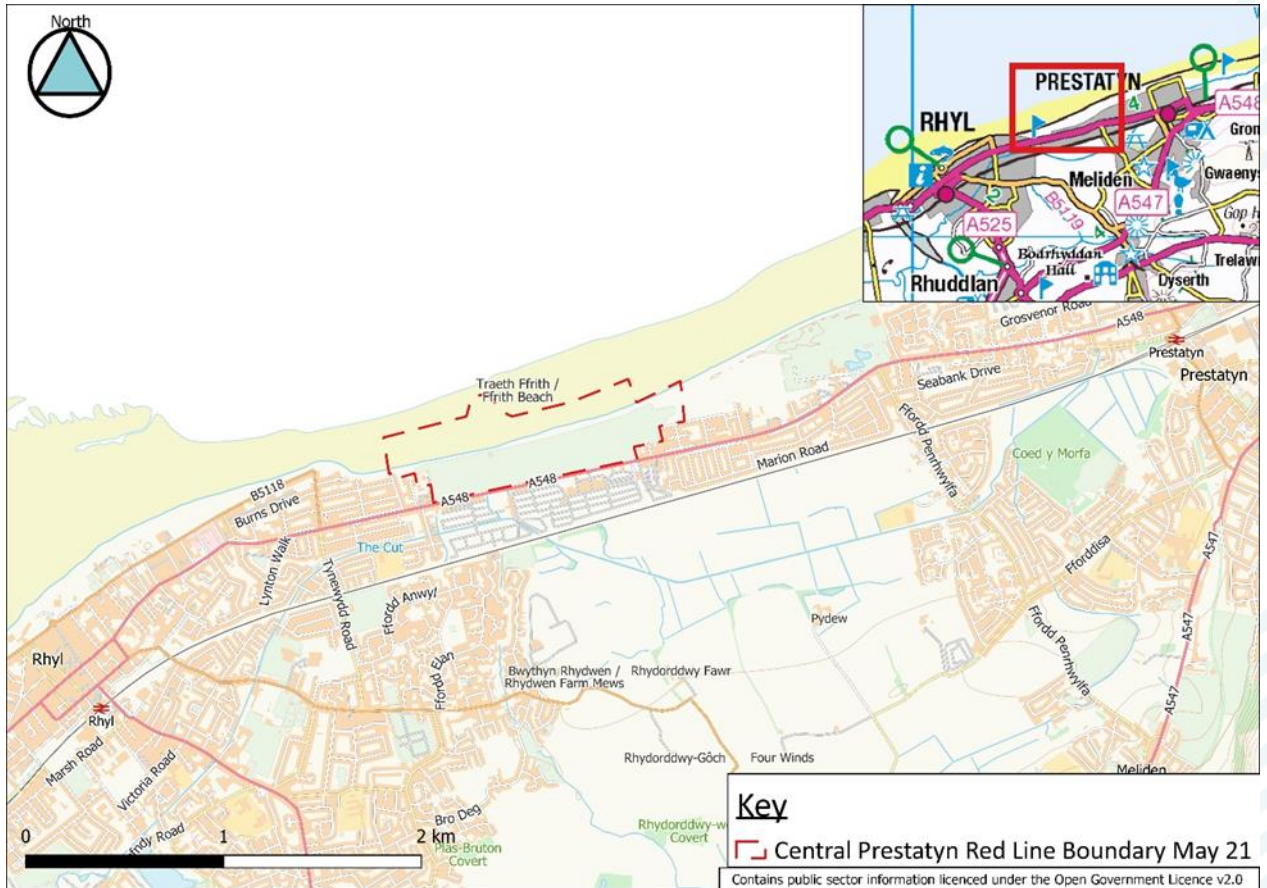


Figure 2-1: Scheme location

2.1.1 Proposed development

The Central Prestatyn coastal defence scheme involves the creation of a new flood embankment set back from the existing defence, surrounding the western, southern and eastern boundaries of Rhyl Golf Course, situated along the Rhyl Coast Road. The proposed development will improve the standard of coastal flood protection at Prestatyn, whilst maintaining public access from Prestatyn Promenade to the beach for both beach users and routine beach/flood defence maintenance activities.

The proposed embankment is approximately 1.66km long with a typical sloped gradient of 1 in 3 and a crest width of 3m. The final build level of the embankment crest will be approximately 8.30mAOD which includes an additional allowance for settlement (exact allowance for settlement to be confirmed at detailed design stage). The width of the embankment footprint is approximately 26m however this varies depending on ground levels across the embankment extent.

Additional key components of the Central Prestatyn coastal defence scheme are as follows.

- New ramp structures to provide access over the embankment crest (3 No. access ramps in total):
 - The western access ramp is designed at a 1 in 12 slope and 3.5m ramp width. The ramp is intended to provide access to the golf course for golf

buggies and private golf club users, and for maintenance / emergency vehicles (whilst ramp is closed to buggies and pedestrians).

- The central and eastern access ramps are designed at 1 in 20 slopes with intermittent flat landings and 2.5m ramp widths. The ramps are designed for combined cyclist (cyclists to dismount) and pedestrian use.
- Strengthening of, or a new bridging structure over an existing culvert owned by Natural Resources Wales (NRW), which spans beneath the proposed setback embankment. The works will ensure the culvert continues to operate in discharging water from Rhyl Cut to a pumping station and then out to sea.
- New outfall structures along the existing frontline coastal defence. This will include 2 No. sets of outfall structures, one at a central location within the golf course and one at the eastern end. Both outfall sets will include:
 - 2 No. circular culverts passing beneath the existing promenade to discharge attenuated flood water from the golf course to out to sea.
 - An inlet structure formed with a reinforced concrete precast headwall, wingwalls and apron structure, as well as a suitable security screen and walkway above the structure for maintenance access.
 - A non-return valve with a suitable security screen fixed at the outlet of each culvert.
 - A rock armour revetment along the toe of the existing stepped revetment to provide protection to the existing defence structure against wave action and the risk of undermining.
- The western tie-in will be formed of several key structural elements including:
 - A new rock armour revetment along the seaward slope of the embankment at the west frontline tie-in location. This will protect against the risk of wave action and reduce overtopping rates to an acceptable overtopping threshold limit.
 - A new single reinforced concrete precast culvert passing beneath the embankment to provide drainage from Garford car park (East Rhyl flood storage area) to the golf course (Central Prestatyn storage area). The inlet and outlet structures will be formed with reinforced concrete precast headwalls, wingwalls and apron structures, as well as a suitable security screen (inlet only), hinged flap valve (outlet only) and walkway above the structure for maintenance access (inlet only).
 - A new flood gate / wall spanning from the existing sea wall into the new embankment core. This structure will be founded on sheet piling and act as a seepage cut-off to reduce the risk of flood waters bypassing from Central Prestatyn flood storage area into East Rhyl flood storage area.
 - A rock armour revetment along the toe of the existing stepped revetment (between existing slipway and lagoon) will provide protection to the existing concrete stepped revetment against wave action and reduce the risk of undermining. The existing concrete slipway will also be extended through the new rock revetment to maintain existing beach access.
 - The existing access ramp providing access from Garford car park to the promenade will be backfilled and re-constructed to the west. The new ramp structure will have a 1 in 20 ramp slope with intermittent landings.
- The eastern end of the embankment will tie-in behind the existing dune system which will provide protection to the embankment against wave action.

A buried sheet pile will extend from the setback embankment beneath the dune surface and to the existing frontline sea wall to provide a seepage cut-off to reduce flood risk.

- A new footpath will be formed at the East of the site to provide access between Terfyn Pella Avenue and Green Lanes and also from Green Lanes to the east access ramp.

2.1.2 Construction methodology

At this stage, the construction sequence and temporary works design has not been finalised. Once these designs have been finalised this HRA must be reviewed and amended where necessary and re-submitted for approval.

3 HRA Methodology

3.1 Introduction

A HRA is an assessment of the potential effects of a proposed project on a European site both alone and in combination with other plans and projects. The Habitats Regulations promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the project should aim to avoid any significant adverse effects by identifying potential measures to avoid these effects. Where adverse effects remain, mitigation measures should be applied to a point where these effects are no longer significant. If sufficient mitigation measures cannot be applied, the project should not be taken forward in its current form. In such a scenario, the project may require an assessment to identify alternative solutions that deliver the project in a form that avoids any significant adverse effects.

Where significant adverse effects remain, compensatory measures may be required. However, the application of such measures will only be permitted if no alternative solutions exist and the project is required for Imperative Reasons of Overriding Public Interest (the 'IROPI' test).

There are four stages to the Habitats Regulations Assessment process as outlined in Table 3-1 below. This study comprises Stage 1 and Stage 2 of the process, namely a screening assessment to identify any likely significant effects of the project on a European site and an Appropriate Assessment to determine whether the works would have an adverse impact on the site, after mitigation measures have been applied.

Table 3-1: The HRA Process

HRA Stage	Description
Stage 1: Test of likely significant effect	This process identifies the likely significant effects upon a European site of a project or plan, either alone or in combination with other projects or plans and determines whether these impacts are likely to be significant. If no likely significant effect is determined, the project or plan can proceed. If a likely significant effect is identified, Stage 2 is commenced.
Stage 2: Appropriate Assessment	Stage 2 is subsequent to the identification of likely significant effects upon a European site in Stage 1. This assessment determines whether a project or plan would have an adverse impact on the integrity of a European site, either alone or in combination with other projects or plans. This assessment is confined to the effects on the internationally important habitats and species for which the site is designated (i.e. the interest features of the site). If no adverse impact is determined, the project or plan can proceed. If an adverse impact is identified, Stage 3 is commenced.
Stage 3: Assessment where no alternatives and adverse impacts remain	Where a plan or project has been found to have adverse impacts on the integrity of a European site, potential avoidance/mitigation measures or alternative options should be identified. If suitable avoidance/mitigation or alternative options are identified, that result in there being no adverse impacts from the project or plan on European sites, the project or plan can proceed. If no suitable avoidance/mitigation or alternative options are identified, as a rule the project or plan should not proceed. However, in exceptional circumstances, if there is an 'imperative reason of overriding public interest' for the implementation of the

	project or plan, consideration can be given to proceeding in the absence of alternative solutions. In these cases, compensatory measures will have to be put in place to offset any negative impacts.
Stage 4: Compensatory measures	Stage 4 comprises an assessment of the compensatory measures where, in light of an assessment of imperative reasons of overriding public interest, it is deemed that the project should proceed.

3.2 Consultations

This report is intended as a draft which will be submitted to Natural Resources Wales for comment. HRA is an iterative process and further consultations may be required.

3.3 HRA Task 1 Screening method

The following section details the methodology of the screening assessment undertaken to identify the likely impacts of the project upon European sites, and to determine whether these impacts are likely to be significant and whether an Appropriate Assessment (HRA Task 2) is required.

3.3.1 Methodology

In order to complete the screening assessment, it is necessary to:

- Identify the European sites likely to be affected, reasons for their designation and their conservation objectives
- Describe the project and its aims and objectives and those of other projects or plans that, in combination, have the potential to impact upon the European sites.
- Identify the potential effects on the European sites
- Assess the significance of these potential effects on the European sites.

3.3.2 Assessments, reports and field data

The assessment is based on field visits and assessments carried out as part of the Ecological Impact Assessment (EcIA) for the project. Particular reference was made to the following aspects:

- Impact summary (Environmental Statement (ES) chapter 6)
- Cumulative Effects (ES chapter 7)

These assessments included field visits to record marine biotopes, Phase 1 habitats and winter bird activity from 2017 (JBA Consulting, 2018). Vantage points from the wintering bird survey of 2016-2017 cover the area of interest on Ffrith beach, north of Rhyl Golf Club and are therefore deemed suitable to support this assessment.

3.3.3 Precautionary Principle

The HRA process is underpinned by the precautionary principle, especially in the assessment of potential impacts and their resolution. Following recent case law, screening does not take into account mitigation measures. If there is any uncertainty, and it is not possible, based on the information available, to confidently determine that there will be no significant effects on a site, then the precautionary principle will be applied, and the project will be subject to an Appropriate Assessment (HRA Stage 2). This represents a precautionary approach to the assessment.

If the Appropriate Assessment cannot determine without reasonable scientific doubt that there will be no adverse effects on site integrity, if no feasible alternative solutions can be found with no or reduced adverse effects, and if there are imperative reasons

of overriding public interest (IROPI), compensatory measures are considered. These are distinct from mitigation measures and are required to ensure the coherence of the National Site Network is protected, where adverse effects on site integrity cannot be discounted.

3.3.4 Limitations and Constraints

This Screening Assessment necessarily relies on some assumptions and it was inevitably subject to some limitations. These did not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Species territories and ranges change naturally over time. The assessment is based on current available knowledge and habitat suitability. This is considered sufficiently robust for the purpose of this assessment.

4 Identification of European Sites

European sites were screened up to 5km from the outer boundary of the proposed development.

The following two sites occur within the screening area:

- Liverpool Bay/Bae Lerpwl SPA
- The Dee Estuary European Marine Site; which includes;
 - Dee Estuary SPA
 - Dee Estuary/Aber Dyfrdwy SAC
 - Dee Estuary Ramsar site

The European designated sites are shown in relation to the proposed works in Figure 4-1 below.

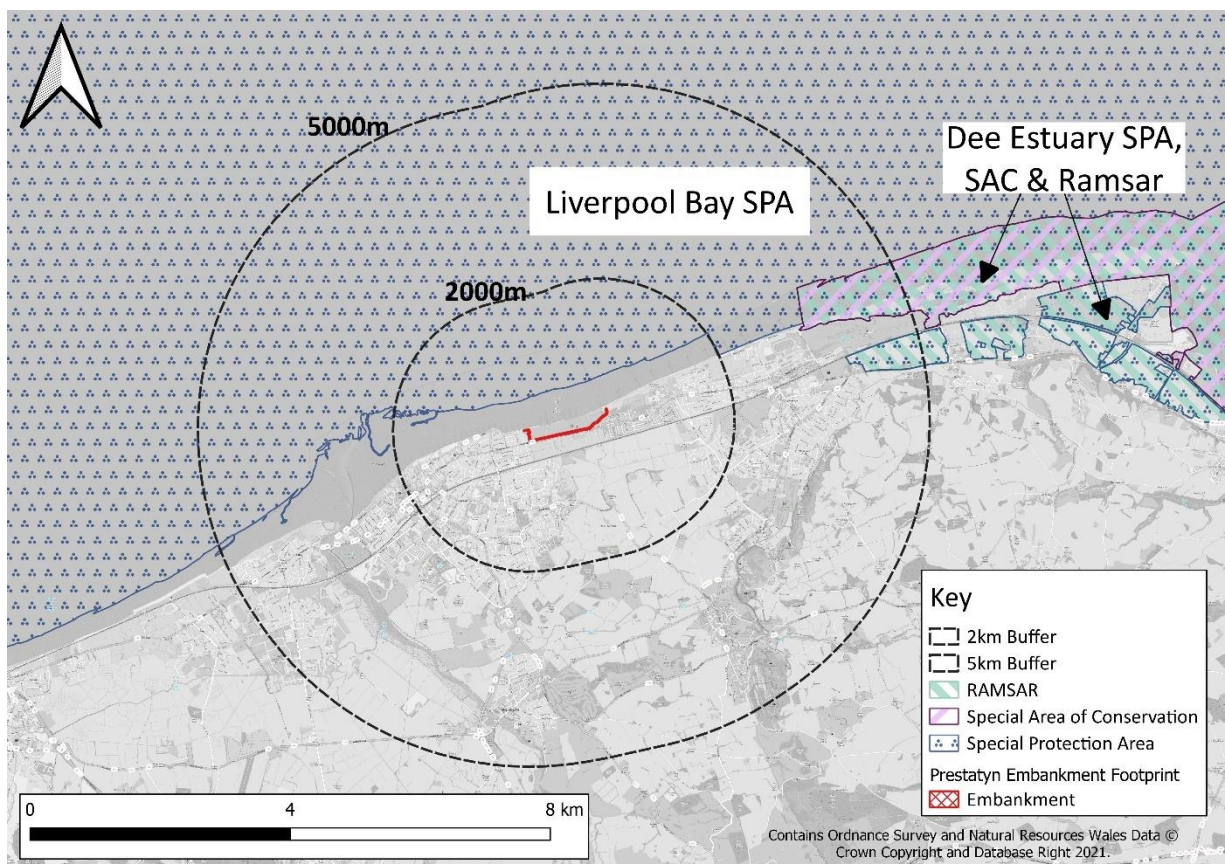


Figure 4-1: European designated sites shown in relation to the proposed works

4.1 Site Descriptions

4.1.1 Liverpool Bay/Bae Lerpwl Special Protection Area

Qualifying Interests

Liverpool Bay / Bae Lerpwl SPA is in the east of the Irish Sea, bordering the coastlines of north-west England and north Wales, and runs as a broad arc from Morecambe Bay to the east coast of Anglesey (Natural England 2016). A recent extension to the site has provided protection to foraging Common Tern and Little Tern. The extension is located approximately 3.2km east of the proposed scheme. Following consultation, the extension to the SPA was formally ratified on 31 October 2017. The site qualifies for populations of the following species:

- Red-throated Diver *Gavia stellata* (over winter)

- Little Gull *Hydrocoloeus minutus* (over winter)
- Little Tern *Sternula albifrons* (breeding)
- Common Tern *Sterna hirundo* (breeding)
- Common Scoter *Melanitta nigra* (over winter)
- Waterfowl assemblage (over winter)

Conservation Objectives

The conservation objectives for the site are listed as ensuring that the integrity of the site is maintained or restored as appropriate, and ensuring that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Vulnerabilities

The key issues for the SPA are identified by Natural England and the Countryside Council for Wales (2012) as:

- Physical habitat loss
- Physical habitat damage
- Non-physical disturbance
- Toxic contamination
- Non-toxic contamination
- Biological disturbance
- Human-induced mortality

4.1.2 Dee Estuary/Aber Dyfrdwy Special Area of Conservation

The Dee Estuary Special Area of Conservation (SAC) (UK0030131) is representative of tidal rivers and intertidal habitats and covers c. 15,800ha (JNCC 2015). It is located 3.3km east of the outer limited of the project's maximum works' area. The following Annex 1 habitats are the primary reason for the selection of the site:

- 1140: Mudflats and sandflats not covered by seawater at low tide
- 1310: *Salicornia* and other annuals colonizing mud and sand
- 1330: Atlantic Salt Meadows (*Glaucopuccinellietalia maritimae*)

In addition, the site also supports the following Annex 1 habitats:

- 1130 Estuaries
- 1210 Annual vegetation of drift lines
- 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts
- 2110 Embryonic shifting dunes
- 2120 "Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")"
- 2130 "Fixed coastal dunes with herbaceous vegetation ("grey dunes")"

- 2190 Humid dune slacks

The following Annex II species are also present as a qualifying feature but not a primary reason for selection of the site:

- 1095 Sea Lamprey *Petromyzon marinus*
- 1099 River Lamprey *Lampetra fluviatilis*
- 1395 Petalwort *Petalophyllum ralfsii*

For the purpose of the HRA, all of the Annex 1 and Annex II features present in the SAC are treated equally, whether a primary reason for selection or not.

Conservation Objectives

The conservation objectives for the site are to maintain (or restore if in unfavourable condition) the following features in favourable condition:

- Estuaries
- Mudflats and sandflats
- *Salicornia* and other annuals colonising mud and sand
- Atlantic salt meadow
- Annual vegetation of drift lines
- River Lamprey, *Lampetra fluviatilis*
- Sea Lamprey, *Petromyzon marinus*

Vulnerabilities

Threats to the estuary's conservation come from its industrialised shorelines on the Welsh side and the impact of adjacent historic industrial use. These include land contamination from chemical and steel manufacture and localised water quality problems. Remediation works are being undertaken.

Contemporary issues relate to dock development and navigational dredging, coastal defence works and their impact on coastal process, regulation of shellfisheries, and the recreational use of sand dunes and saltmarshes.

4.1.3 Dee Estuary Special Protection Area

The Dee Estuary is designated as a SPA for European waterbirds, providing feeding and roosting sites for ducks and waders in winter, and supports Common Tern and Little Tern during the breeding season (Natural England, 2019). The site qualifies for populations of the following species:

- Common Tern *Sterna hirundo* (breeding)
- Little Tern *Sterna albifrons* (breeding)
- Sandwich Tern *Sterna sandvicensis* (passage)
- Bar-tailed Godwit *Limosa lapponica* (over winter)
- Redshank *Tringa totanus* (passage)
- Black-tailed Godwit *Limosa limosa islandica* (over winter)
- Curlew *Numenius arquata* (over winter)
- Dunlin *Calidris alpina alpina* (over winter)
- Grey Plover *Pluvialis squatarola* (over winter)
- Knot *Calidris canutus* (over winter)
- Oystercatcher *Haematopus ostralegus* (over winter)
- Pintail *Anas acuta* (over winter)
- Redshank *Tringa totanus* (over winter)

- Shelduck *Tadorna tadorna* (over winter)
- Teal *Anas crecca* (over winter)
- Waterbird assemblage

Conservation Objectives

The conservation objectives for the site are listed as ensuring that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying species within the site.

Conservation Objectives are set for each bird species listed as a qualifying feature of the site.

Vulnerabilities

The following key vulnerabilities are identified (Natural England, Countryside Council for Wales (NRW), 2010):

- Physical loss (removal and smothering) of nesting, feeding and roosting habitats. Loss by removal may be caused directly by infrastructure construction and modification, coastal protection works, and land claim. Also the interruption of sediment transport from coastal defences and dredging of the main channel.
- Physical damage (siltation, abrasion and extraction)
- Non-physical disturbance (noise and visual) from industry, transport (aircraft, marine and rail) and recreational activities. Noise disturbance from boat traffic, leisure craft (and to a lesser degree fishing boats), cockle fishery, dog walking, fishing, motorcycle scrambling, water sports and the flying of model aircraft.
- Toxic contamination (introduction of synthetic compounds and non-synthetic compounds)
- Non-toxic contamination (changes in nutrient loading, organic loading and turbidity) can enter the estuarine environment in large quantities from sewage outfalls and industrial discharges, riverine inputs, agricultural run-off and from dredging works and disposal of dredged materials within the estuary.
- Biological disturbance (introduction of non-native species and translocation and selective extraction of species)

4.1.4 Dee Estuary Ramsar site

The Dee Estuary is also designated as a Ramsar site by meeting Ramsar criteria 1, 2, 5 and 6 as follows:

- Extensive intertidal mud and sand flats (20 km by 9 km) with large expanses of saltmarsh towards the head of the estuary (Criterion 1);
- The presence of (the re-introduced) Natterjack Toad *Epidalea calamita* (Criterion 2);
- Supporting an overall bird assemblage of international importance (Criterion 5); and
- Supporting the following species at levels of international importance: Shelduck, Oystercatcher, Curlew, Redshank, Teal, Pintail, Grey Plover, Red Knot, Dunlin, Bar-tailed Godwit, Black-tailed Godwit and Turnstone (Criterion 6)

Conservation Objectives

There are no specific conservation objectives for Ramsar sites. Therefore, the conservation objectives are the combination of the Dee Estuary SAC and SPA objectives.

Vulnerabilities

There are no specific vulnerabilities for Ramsar sites. Therefore, the key vulnerabilities are those presented for both the SAC and SPA. However, the factors adversely affecting the site's ecological character include:

- Introduction/ invasions of exotic animal species
- Introduction/invasion of non-native plant species
- Overfishing
- Pollution – industrial waste
- General disturbance from human activities. Particularly destabilisation of sand dune systems as a result of human recreational pressures.
- Transport infrastructure development
- Sand dune erosion and accretion along the North Wales open coast

4.2 Grouping of Interest Features for Screening

Due to the large number of qualifying interests they are grouped together for this analysis. The groupings are based on each species' ecology in terms of their likely response to construction impacts, based on guidance from the Environment Agency (2013). The grouping of the qualifying interests is given in Table 4-1.

Table 4-1. Details of the grouping of Qualifying Interests for each site.

Designation	Qualifying Interests	Group of Qualifying Interest with EA code
Liverpool Bay SPA	Red-throated Diver (over winter) Little Gull (over winter) Wetland bird assemblage (over winter) Common Scoter (over winter)	3.10 Birds of open sea and offshore rocks (winter)
	Little Tern (breeding) Common Tern (breeding)	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (breeding)
Dee Estuary SAC and Dee Estuary Ramsar Criterion 1	1140: Mudflats and sandflats not covered by seawater at low tide 1310: <i>Salicornia</i> and other annuals colonising mud and sand 1330: Atlantic Salt Meadows (<i>Glauco-Puccinellietalia maritima</i>) 1130 Estuaries	1.12 Estuarine and intertidal habitats
	1210 Annual vegetation of drift lines 1230 Vegetated sea cliffs of the	1.10 Coastal habitats, and 1.11 Coastal habitats sensitive to abstraction

	Atlantic and Baltic Coasts 2110 Embryonic shifting dunes 2120 "Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")" 2130 "Fixed coastal dunes with herbaceous vegetation ("grey dunes")" 2190 Humid dune slacks 1395 Petalwort	2.04 Mosses and Liverworts <i>2.04 is included as the only species in the SAC, Petalwort, is a species restricted to habitats 2120, 2130 and 2190.</i>
	1095 Sea Lamprey 1099 River Lamprey	2.05 Anadromous fish
Dee Estuary SPA and Dee Estuary Ramsar Criterion 5 and 6	Bar-tailed Godwit (over winter) Black-tailed Godwit (over winter) Curlew (over winter) Dunlin (over winter) Grey Plover (over winter) Knot (over winter) Oystercatcher (over winter) Pintail (over winter) Redshank (over winter) Shelduck (over winter) Teal (over winter) Wetland bird assemblage	3.4 Birds of lowland wet grasslands 3.7 Birds of farmland 3.8 Birds of coastal habitats, and 3.9 Birds of estuarine habitats (winter)
	Little Tern (breeding) Common Tern (breeding)	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (breeding)
	Sandwich Tern (passage) Redshank (passage)	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (migratory)
Dee Estuary Ramsar Criterion 2	Natterjack Toad	Natterjack Toad

4.3 Interest features present near the proposed works

Ecological surveys have been carried out within the area of the proposed works, including a Preliminary Ecological Appraisal, marine biotope survey and previously a wintering bird survey conducted in 2017 (JBA Consulting, 2017).

The area of works has been identified as barren or amphipod dominated sandy shores with polychaete/amphipod-dominated fine sand shores (LS.LSa.FiSa) surrounding the area (Connor et al. 2004).

The wintering bird survey was carried out between August 2016 and April 2017 (JBA Consulting, 2017). The survey found that bird numbers throughout the study period varied considerably, and often for no readily discernible reason. The period immediately following a high tide often held the greatest numbers of birds, possibly due to the limited open beach available for foraging or loafing birds and a fresh food supply. Wader numbers varied significantly during the survey period. Of note were several survey days where over 1000 Oystercatcher were present across the tideline, and large numbers of Cormorant assembled in extensive roosts either side of the study area. Due to the extensive sands available at low water, birds dispersed over a very large area and the reduction in bird concentration was marked during these surveys.

Common Scoter and Red-throated Diver were recorded during the surveys; however, these species were generally seen to forage in open water and were largely observed in flight, and in low numbers. It is therefore considered that these species are not likely to be disturbed by the proposed works. The scheme will not result in a net loss of habitat for these species post-works.

Fewer birds were recorded at low tide, partly due to the large area of intertidal habitat revealed and available for foraging. At this time, any foraging birds have a 50km length of similar shoreline habitat adjacent to the scheme.

Use of the beach by large numbers of people walking dogs or undertaking other leisure activities caused regular, but temporary, disturbance on the beach. In these events birds would be flushed from areas used for foraging or loafing but would generally fly less than 50m before re-settling.

The closest Little Tern or Common Tern nesting site is the Little Tern colony at Gronant Beach, located approximately 5km to the east of the proposed works. The Little Tern nests on a relatively small section of the shingle ridge on the beach in front of the dunes, rather than in the dunes themselves. Terns forage over open water, plunge-diving for fish and have been recorded foraging along the shoreline between Gronant Dunes and Rhyl.

5 Other Relevant Plans and Projects

It is possible that a series of individually modest effects may, in combination, produce effects that are likely to adversely affect the integrity of one or more European sites. Article 6(3) of the Habitats Directive tries to address this by considering the combination of effects from other plans or projects. The Directive does not explicitly define which other plans and projects are within the scope of the combination provision. Guidance in section 4.4.3 of 'Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', published by the European Commission, states:

'When determining likely significant effects, the combination of other plans or projects should also be considered to take account of cumulative impacts. It would seem appropriate to restrict the combination provision to other plans or projects which have been actually proposed'.

Table 5-1 gives details of potential in-combination projects.

Table 5-1: Developments that could combine with the proposed scheme to create a cumulative impact

Planning/ Marine Licence Reference Number	Description	Location	Status	Potential for Cumulative Effects	Significance
45/2018/1197	East Rhyl Coastal Defence	20 Molineaux Road, Rhyl, DENBIGHSHIRE, LL18 3UB	Granted	Construction is due to complete in March 2022, however there is still the potential for cumulative impacts due to the proximity of these works to the proposed scheme. The HRA carried out for the East Rhyl Coastal Defence scheme identified no likely significant effects as a result of the scheme. The cumulative impacts are expected to be negligible.	Not significant.
45/2021/0092	Central Rhyl Coastal Defence	Central Rhyl Coastal Defences Scheme, Rhyl	EIA Screening and Scoping (Not Committed)	The construction is due to commence in March 2022 and run alongside the Central Prestatyn scheme with the same total duration of 2 years. The coastal works at Central Prestatyn are small-scale in nature and short in duration, therefore it is expected that any cumulative effects of the work	Not significant.

Planning/ Marine Licence Reference Number	Description	Location	Status	Potential for Cumulative Effects	Significance
-	Awel y Môr Offshore Wind Farm	Proposed extension of Gwynt y Môr Offshore Wind Farm (OWF). Proposed connection to the National Grid would be at Bodelwyddan, Denbighshire.	Pre- application	will be negligible It is anticipated, that if granted consent, then construction will commence in 2026 and the OWF will be operational in 2028. Therefore, there should be no cumulative effects.	Not significant.
43/2020/1035	Erection of an arrivals lodge and associated works at Presthaven Beach Resort.	Presthaven Sands Holiday Park, Shore Road, Gronant, Prestatyn, LL19 9TT	Granted	The arrivals lodge building will be a maximum height of 3.4m, 11.7m in length and 3.4m wide. The construction was required before the main tourist season began in March 2021 and due to the scale, distance and shelter from the designated site and construction timings, there should be no in- combination effects.	Not significant.

6 Assessment of Likely Significant Effects

6.1 Potential Hazards to European Sites

This section identifies the potential hazards to the European sites that may arise because of the proposed coastal defence scheme at Central Prestatyn, and then goes on to identify the types of hazards to which the qualifying features present within the sites are particularly sensitive. Potential hazards to these interest features are identified in Table 6-1 below along with possible sources of cumulative impact identified in Table 5-1. Impacts not listed in Table 6-1 are not expected to impact on the European designated sites or their features.

Table 6-1 Potential Hazards to the European Sites

Impact to assess & category	Description	Sources of cumulative impact from Table 5-1
Land-take during construction (physical habitat loss or damage)	Loss of foraging sites causing a reduction in food resource availability for over wintering wildfowl populations.	None identified
Increased sediment mobilised during construction (Physical damage to supporting habitats)	Damage to benthic habitat from suspended sediments.	None identified
Noise and visual disturbance during construction (Non-physical disturbance)	Construction activities will increase the amount of noise and visual activity. This can cause displacement of qualifying species and their prey. This may act in combination with other sources of disturbance.	None identified
Release of harmful chemicals from machinery or works during construction (Toxic contamination)	The release of fuel or oil from machinery or spills of liquid concrete could pollute the ground or water leading to adverse effects.	None identified
Spread of invasive, non-native species (Biological disturbance)	Introduction or spread of non-native species or pathogens can have severe adverse effects.	None identified
Alteration of coastal morphology processes during operation (physical habitat loss or damage)	By altering the coastal processes of erosion and deposition, the new coast defence scheme could change the habitats within the sediment sub-cell	None identified

Table 6-2 presents the assessment whether the potential impacts of the project (Table 6-1) could have a significant effect on the groups of qualifying interested features as set out in Table 4-1.

Table 6-2: Screening for likely significant effects of project impacts on the European sites

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
Liverpool Bay SPA	3.10 Birds of open sea and offshore rocks (winter)	Land-take during construction (physical habitat loss or damage)	No land (or sea) forming part of any designated site would be taken either during construction or operation of the proposed scheme. The site compounds will be in areas of amenity grassland behind the existing sea defence in areas with high levels of human use not used by birds of the open water. The works will result in no significant permanent loss of intertidal sand habitat as rock armour will be placed below ground level on the beach in two locations. This habitat has previously been identified during surveys carried out to inform the East Rhyl Coast Defence Scheme, as barren or amphipod dominated sandy shores with polychaete/amphipod-dominated fine sand shores an intertidal habitat will little value for birds of the open sea. No likely significant effect.
		Increased sediment mobilisation during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	The majority of the works will take place set back from the existing sea wall and occur during normal working hours. Noise and visual disturbance as a result of the works on the beach will be limited to a small working window each day. Works are restricted and will take place around the daily tidal window as the access is permitted once the tide is out. These works will be irregular and more in sync with the tidal patterns along this coastline. The working areas are between the open water and Rhyl Golf Course, from which there is already regular noise and movement of people including dog walkers at low tide on the beach and bikes and occasionally vehicles on the promenade. Birds in the area are known to be habituated to some disturbance, with flushed birds observed to settle within 50m. Overall the works will cause a negligible increase in the level of visual or noise disturbance relative to the existing levels. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would likely be

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		(Toxic contamination)	limited to a small area, and contaminants would quickly disperse in the high-energy tidal environment. However, there is still the potential for a pollution event to occur. Some sections may require wet concrete to be added below the level of the highest astronomical tide, therefore there is the potential for impacts upon the European Sites as a result of the works. Potential likely significant effect.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SPA. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. Therefore, there is the potential for the spread of invasive non-native species if seeds are transported as a result of the works. However, the spread of these species as a result of the works would not significantly alter the habitats for the wintering bird species of the open sea and offshore rocks within the SPA. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The assessment of the likely impact on coastal morphological processes within the WFD (JBA Consulting, 2021) concluded that there would be no significant effect on hydrodynamic regimes during the construction or operational phases. In practical terms this means that there will be no change in the main patterns of erosion or deposition, but a small amount of material may move differently with the tidal cycles. Coastal processes operating at the scale of the site are limited to the immediate nearshore zone and would therefore not significantly affect any adjacent intertidal habitat within the Liverpool Bay SPA. No likely significant effect.
	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (breeding) NB. Specifically Little Tern and	Land-take during construction (physical habitat loss or damage)	No land (or sea) forming part of any designated site would be taken either during construction or operation of the proposed scheme. Little and Common Terns forage over the sea. The works will not directly affect this habitat, so no significant effect is expected as a result of the works. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. This means that the ability of Terns to plunge-fish will not be compromised by the proposed works.

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
	Common Tern		No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Visual impacts from noise and disturbance will be limited to a small working window each day. Works are restricted around the daily tidal window as the access is permitted once the tide is out. These works will be irregular and more in sync with the tidal patterns along this coastline. The working areas are between the open water and Rhyl Golf Course, from which there is already regular noise and movement of people including dog walkers at low tide on the beach and bikes and occasionally vehicles on the promenade. Overall, the works will cause a negligible increase in the level of visual or noise disturbance relative to the existing levels. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete would impact on a negligible area of low-quality habitat. Potential likely significant effect. NB. Best-practice environmental mitigation that will be included as part of the project to avoid, reduce and contain spills is not necessary to avoid significant effects on the European sites, but its use will further reduce the impact of any accidental spills or leaks.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SPA. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. Therefore, there is the potential for the spread of invasive non-native species if seeds are transported as a result of the works. However, the spread of these species as a result of the works would not significantly affect SPA designated birds. No likely significant effect.

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		Alteration of coastal morphology processes during operation (Physical habitat loss or damage)	The assessment of the likely impact on coastal morphological processes concluded that there would be no significant effect on hydrodynamic regimes during the construction or operational phases. In practical terms this means that there will be no change in the main patterns of erosion or deposition but that a small amount of material may move differently with the tidal cycles. Coastal processes operating at the scale of the site, or limited to the immediate nearshore zone, would therefore not significantly affect any adjacent intertidal habitat within the Liverpool Bay SPA. The works will therefore not change the conditions at Tern nesting sites. No likely significant effect.
Dee Estuary SAC and the habitats of Dee Estuary Ramsar site.	1.12 Estuarine and intertidal habitats	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SAC and Ramsar site so there will be no loss of habitat within the Dee Estuary SAC or Dee Estuary Ramsar site. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works will be mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect habitats in the Dee Estuary SAC and Ramsar site over 3km away. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete involved would not affect the SAC. No likely significant effect.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SAC/Ramsar. Even if it were spread further or faster as a result of the works, this would not significantly alter

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
			habitats in the sites. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is low potential for the spread of seeds of invasive non-native species over 3km away from the site as a result of the works and this will not impact upon estuarine and intertidal habitats. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The assessment of the likely impact on coastal morphological processes concluded that there would be no significant effect on hydrodynamic regimes during the construction or operational phases. In practical terms this means that there will be no change in the patterns of erosion or deposition. Coastal processes operating at the scale of the site, or limited to the immediate nearshore zone, would therefore not significantly affect any habitats in the Dee Estuary SAC located over 3km away. No likely significant effect.
	1.10 Coastal habitats, and 1.11 Coastal habitats sensitive to abstraction, and 2.04 Mosses and Liverworts	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SAC and Ramsar site so there will be no loss of habitat within the Dee Estuary SAC or Dee Estuary Ramsar site. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. The coastal habitats in the Dee Estuary SAC are located over 3 km east of the proposed scheme, so there will be no impact on these habitats. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect habitats in the Dee Estuary SAC and Ramsar site over 3km away. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would likely be limited to a small area, and contaminants would quickly disperse in the

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
			high-energy tidal environment. However, there is still the potential for a pollution event to occur. Some sections may require wet concrete to be added below the level of the highest astronomical tide, therefore there is the potential for impacts upon the European Sites as a result of the works. No likely significant effect.
		Spread of invasive, non-native species (Biological disturbance)	During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is low potential for the spread of seeds of invasive non-native species over 3km away from the site as a result of the works. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 10m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. There will be no impact on coastal habitats over 3km away. No likely significant effect.
	2.05 Anadromous fish	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SAC and Ramsar site so there will be no loss of habitat within the Dee Estuary SAC or Dee Estuary Ramsar site. No likely significant effect.
		Increased siltation during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect habitats for or migration of anadromous fish in the Dee Estuary SAC and Ramsar site over 3km away. No likely significant effect.
		Release of harmful chemicals from machinery	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		or works during construction (Toxic contamination of supporting habitat)	zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete involved would impact on a negligible area of low-quality habitat in areas of low importance for anadromous fish. No likely significant effect.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the anadromous fish of the SAC/Ramsar. Even if it were spread further or faster as a result of the works, this would not significantly alter habitats for anadromous fish. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is the potential for the spread of invasive non-native species if seeds are transported as a result of the works, however this will not impact upon anadromous fish within the SAC which is situated over 3km away. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The assessment of the likely impact on coastal morphological processes concluded that there would be no significant effect on hydrodynamic regimes during the construction or operational phases. In practical terms this means that there will be no change in the main patterns of erosion or deposition. Coastal processes operating at the scale of the site, or limited to the immediate nearshore zone, would therefore not significantly affect any adjacent intertidal habitat within the Dee Estuary SAC. No likely significant effect.
Dee Estuary SPA and birds of Dee Estuary Ramsar site	3.4 Birds of lowland wet grasslands 3.7 Birds of farmland 3.8 Birds of coastal habitats, and 3.9 Birds of estuarine habitats	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SPA and Ramsar site so there will be no direct loss of habitat within the Dee Estuary SPA or Dee Estuary Ramsar site. There will be a temporary loss of grassland habitat within the golf course on site during construction. This area is subject to disturbance at present by golfers and machinery associated with the golf course maintenance, thus it is considered that this area is likely of low importance for foraging birds due to the abundance of similar habitat in the surrounding area. There will be an impact during construction upon the barren or amphipod dominated sandy shores with polychaete/amphipod-dominated fine sand shores. This is a common habitat in the area, so the temporary loss of small areas will have no impact on birds of the Dee Estuary SPA/Ramsar

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
	(winter)		site. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect features within the Dee Estuary SPA and Ramsar site over 3km away. There is the potential for foraging species to be utilising the golf course, if so these may be disturbed during the duration of the works. However, there is abundant similar habitat located closer to the SPA/Ramsar sites so no significant effect is expected upon these bird species. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination of supporting habitat)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete involved would impact on a negligible area of low-quality habitat in areas of low importance for bird species. No likely significant effect.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SPA/Ramsar. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is low potential for the spread of seeds of invasive non-native species over 3km away from the site as a result of the works and these features would not be affected. No likely significant effect.
		Alteration of coastal	The amount of sediment mobilised by the works, which take place around

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		morphology processes during operation (physical habitat loss or damage)	low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. There will be no impact on bird species or the estuarine and coastal habitats that support them. No likely significant effect.
	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (breeding) NB. Specifically Little Tern and Common Tern	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SPA and Ramsar site so there will be no loss of habitat within the Dee Estuary SPA or Dee Estuary Ramsar site. The area of habitat was identified as barren or amphipod dominated sandy shores with polychaete/amphipod-dominated fine sand shores, a common habitat in the area so temporary loss of small areas will have no impact on birds of the Dee Estuary SPA/Ramsar site. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect habitats or features within the Dee Estuary SPA and Ramsar site over 3km away. Although there is the potential for disturbance to occur if species forage in the vicinity of the works, it is unlikely that there will be a significant impact upon these species. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination of supporting habitat)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete involved would impact on a negligible area of low-quality habitat in areas of low importance for bird species. No likely significant effect.

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
			NB. Best-practice environmental mitigation that will be included as part of the project to avoid, reduce and contain spills is not necessary to avoid significant effects on the European sites, but its use will further reduce the impact of any accidental spills or leaks.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SPA/Ramsar. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is low potential for the spread of seeds of invasive non-native species over 3km away from the site as a result of the works and these features would not be affected. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 10m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. There will be no impact on bird species or the estuarine and coastal habitats that support them. No likely significant effect.
	3.8 Birds of coastal habitats 3.9 Birds of estuarine habitats, and 3.10 Birds of open sea and offshore rocks (migratory)	Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary SPA and Ramsar site so there will be no loss of habitat within the Dee Estuary SPA or Dee Estuary Ramsar site. The area of habitat was identified as barren or amphipod dominated sandy shores with polychaete/amphipod-dominated fine sand shores, a common habitat in the area so temporary loss of small areas will have no impact on birds of the Dee Estuary SPA/Ramsar site. No likely significant effect.
		Increased sediment mobilised during construction (Physical damage to supporting habitats)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. No likely significant effect.
		Noise and visual disturbance during construction	Any noise and visual disturbance from the scheme, or potential sources of cumulative impacts, will not affect habitats in the Dee Estuary SPA and Ramsar site over 3km away.

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		(Non-physical disturbance)	No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination of supporting habitat)	Any harmful chemicals would be stored in accordance with COSHH within the secure construction compounds which are located above the highest astronomical tide on Rhyl Golf Course. Most chemicals entering the tidal zone will be contained within vehicles, and therefore of small volume. If these chemicals were to spill from a vehicle, the impact would be limited to a tiny area, and contaminants would quickly disperse in the high-energy tidal environment. Some sections may require wet concrete to be added below the level of the highest astronomical tide but will involve small quantities of concrete so that accidental spills of the concrete involved would impact on a negligible area of low-quality habitat in areas of low importance for bird species. No likely significant effect. NB. Best-practice environmental mitigation that will be included as part of the project to avoid, reduce and contain spills is not necessary to avoid significant effects on the European sites, but its use will further reduce the impact of any accidental spills or leaks.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the biological condition of the SPA. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. There is low potential for the spread of seeds of invasive non-native species over 3km away from the site as a result of the works and these features would not be affected. No likely significant effect.
Dee Estuary Ramsar	Natterjack Toad	Alteration of coastal morphology processes during operation (physical habitat loss or damage)	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 10m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system. There will be no impact on bird species or the estuarine and coastal habitats that support them. No likely significant effect.
		Land-take during construction (physical habitat loss or damage)	The works are over 3km from the Dee Estuary Ramsar site so there will be no loss of habitat within the Dee Estuary Ramsar site. No likely significant effect.
		Increased sediment mobilised during	The amount of sediment mobilised by the works, which take place around low tide, is small. Only a small proportion of the sediment disturbed during

Site Name	Interest Feature	Potential Hazard	Potential exposure to hazard and mechanism of effect/impact if known:
		construction (Physical damage to supporting habitats)	the works is mobilised at each tidal cycle. The estuary system naturally carries high loads of sediment, particularly in the high energy system around Splash Point. Therefore, any sediment mobilised when working one or two 20m sections at each tidal cycle will be negligible in comparison to the natural volume of sediment in the system and will not impact on Natterjack Toad habitat over 3km away. No likely significant effect.
		Noise and visual disturbance during construction (Non-physical disturbance)	The noise and visual disturbance will not affect Natterjack Toad habitats in the Dee Estuary Ramsar site, over 3km away. Three other projects with the possibility to increase disturbance were also identified and these are also 3km away and will not cause disturbance to Natterjack Toad. No likely significant effect.
		Release of harmful chemicals from machinery or works during construction (Toxic contamination of supporting habitat)	Natterjack Toad is a terrestrial species and there is no terrestrial pathway for this species to be impacted by harmful chemicals from the scheme location over 3km away. No likely significant effect. NB. Best-practice environmental mitigation that will be included as part of the project to avoid, reduce and contain spills is not necessary to avoid significant effects on the European sites, but its use will further reduce the impact of any accidental spills or leaks.
		Spread of invasive, non-native species (Biological disturbance)	The invasive non-native species the barnacle <i>Austrominius modestus</i> may be present in or near the works footprint. This species is not thought to be a hazard to the Natterjack Toad. During the Preliminary Ecological Appraisal, no INNS listed on Schedule 9 of the Wildlife and Countryside Act 1981 were observed within the site boundary, however records of Japanese Rose <i>Rosa rugosa</i> were returned from the data search in the adjacent sand dunes. Therefore, there is the potential for the spread of invasive non-native species if seeds are transported as a result of the works. However, the spread of these species as a result of the works would not significantly affect the Natterjack Toad. No likely significant effect.
		Alteration of coastal morphology processes during operation (physical habitat loss or damage)	Natterjack Toad is a terrestrial species and so there is no potential for any changes in coastal processes to impact upon this species. No likely significant effect.

6.2 Potential in-combination impacts

The Denbighshire County Council's planning portal (<https://planning.denbighshire.gov.uk/planning>) was searched for any potential plans or projects that may run concurrently with the proposed scheme and that may have the potential for in-combination effects.

No plans or projects were found that were considered to have the potential to create in-combinations effects.

The Denbighshire Local Plan was also consulted. Given the small scale and temporary nature of the scheme, it is considered very unlikely that any elements of the local plan would cause in-combination effects with the scheme.

No elements of the local plan likely to cause in-combination effects were identified.

7 Screening Statement and Conclusion

7.1 Assumptions and Limitations

The screening assessment necessarily relies on certain assumptions and was inevitably subject to some limitations. These are not considered to affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Cumulative impacts are based on published documentation and assumptions; no consultation has taken place with the project or plan proposers.
- Information on the works and conditions on site are based on current knowledge at the time of writing. Changes to the site since surveys were undertaken cannot be accounted for.
- A detailed works methodology is not currently available. This assessment is based on an outline methodology: once a detailed methodology is available it will be checked to ensure it is compliant with this assessment. The HRA will require updating if any significant changes are made.

7.2 Conclusions

It is concluded that there could be a **likely significant effect** from the Prestatyn Coastal Defence Scheme project on the Liverpool Bay SPA. Therefore, this protected site has been screened into the Appropriate Assessment.

Following initial screening, and based upon best scientific judgement it is concluded that there will be **no likely significant effects** from the Prestatyn Coastal Defence Scheme project on the following sites within the National Site Network either alone or in combination with any other plans or projects:

- Dee Estuary SAC
- Dee Estuary SPA
- Dee Estuary Ramsar

If any changes occur in the design of these works, a new screening assessment will be required.

8 Appropriate Assessment

8.1 Introduction

Stage 2 of the HRA process is an appropriate assessment, which is required because there could be likely significant effects from the works on the Liverpool Bay SPA. The appropriate assessment determines whether a project or plan would have an adverse impact on the integrity of a European site, either alone or in combination with other projects or plans. In this assessment mitigation measures are applied to a point where the effects identified are no longer significant. If no adverse impact is determined, the project or plan can proceed. If sufficient mitigation measures cannot be applied, the project should not be taken forward in its current form.

8.2 Hazards identified in screening assessment

The proposed works have the potential to cause significant effects to Liverpool Bay SPA. The potential hazard to the interest features of the SPA is the release of harmful chemicals from machinery or works during construction. Specifically, the following Annex II species have been screened in:

- Red-throated Diver (over winter)
- Little Gull (over winter)
- Wetland bird assemblage (over winter)
- Common Scoter (over winter)
- Little Tern (breeding)
- Common Tern (breeding)

8.3 Identified hazards

Although each species is a separate interest feature, their ecological requirements are sufficiently similar that they are grouped as a single feature (Birds of open sea and offshore rocks, Birds of coastal habitats, Birds of estuarine habitats) in this assessment. This grouping follows the guidance provided in the Environment Agency's Quick guide on habitats and species protected under the Habitats Regulations (Environment Agency, 2013).

The identified pathway to impact was:

- Potential for pollution events to decrease water quality in the SPA, leading to a reduction in suitable supporting habitat for the birds of coastal habitats.

8.4 Mitigation measures

Appropriate mitigation measures are necessary to reduce the impact of the works on the qualifying features of Liverpool Bay SPA.

8.4.1 Pollution prevention measures

Abiding by relevant pollution prevention measures e.g. CIRIA Guidance: Control of water pollution from construction sites, Guidance for consultants and contractors (C532D) (Masters-Williams, 2001). Information useful for Toolbox Talks on working near water and pollution prevention can be found on the CIRIA website.

Preventing accidental oil and fuel leaks can be achieved by the following actions:

- Any chemical, fuel and oil stores should be located on impervious bases within a secured bund with a storage capacity 110% of the stored volume.
- Biodegradable oils and fuels should be used where possible.
- Drip trays should be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Where practicable, refuelling of vehicles and machinery

should be carried out on an impermeable surface in one designated area well away from any watercourse or drainage (at least 10m).

- Emergency spill kits should be available on site and staff trained in their use.
- Operators should check their vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages should be reported immediately; and
- Daily checks should be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective should be removed from site immediately or positioned in a place of safety until such time that it can be removed.
- Environmentally sensitive products should be used where possible.

8.5 Conclusion

With the outlined mitigation measures in place for the construction period, it is concluded that the works undertaken as part of the Central Prestatyn Coastal Defence Scheme will have no adverse effect on site integrity of Liverpool Bay SPA.

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