HyNet North West

MARINE LICENCE APPLICATION

Habitats Regulations Assessment – Information to Inform an Appropriate Assessment

HyNet Newbuild Carbon Dioxide Pipeline – Trenchless Crossing of the River Dee

Part 4 of the Marine and Coastal Access Act 2009 (MCAA)

The Conservation of Habitats and Species Regulations 2017 (as amended)

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1. INTRODUCTION

1.1.1. This Habitats Regulations Assessment (HRA) has been prepared in support of the Marine Licence application for the trenchless crossing of the River Dee, below Mean High Water Springs (MHWS), by the newbuild carbon dioxide pipeline (the Proposed Development). These works are also included in the HRA for the HyNet Carbon Dioxide Pipeline Development Consent Order (DCO) Application, as they form part of that larger project.

1.1.2. This combined Screening and Information to Inform an Appropriate Assessment report has been produced with regard to Regulations 27 to 30 and 32 to 37 of the Conservation of Habitats and Species Regulations 2017 (as amended) 'the Habitats Regulations' (**Ref. 1**).

1.1.3. This report provides information to enable the HRA on the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC, the Dee Estuary/Aber Dyfrdwy SAC, and the Dee Estuary SPA and Ramsar for the Proposed Development project as follows:

- Stage 1: Screening of the Proposed Development, and
- Stage 2: Appropriate Assessment to be completed by the 'Competent Authority' in relation to adverse effects upon 'European Sites' (as defined within **Section 3.2** of this report).

1.1.4. The Competent Authority for this Marine Licence application is Natural Resources Wales (NRW).

1.1.5. A description of the Proposed Development and associated ecological baseline assessments to inform the development are provided in **Sections 2** and **4**.

1.1.6. The methodology for the HRA relevant to Stages 1 and 2 is set out in **Section 3**.

1.1.7. A description of the identified European Sites is provided in **Section 5** whilst consideration of potential effects of the Proposed Development upon the European Sites (including in-combination effects), and whether these are likely to be significant is provided in **Section 6**. Where Likely Significant Effects (LSE) are identified, these are addressed under Appropriate Assessment within **Section 7**.

2. PROPOSED DEVELOPMENT

2.1. OVERVIEW

2.1.1. The pipeline crossing of the River Dee will be carried out using a trenchless crossing technique, either micro-tunnelling or Horizontal Directional Drilling (HDD). The trenchless crossing of the River Dee has been proposed to prevent disruption to the River Dee (Afon Dyfrdwy). For both trenchless techniques the following parameters would apply:

- The entry and exit pits for the trenchless crossing will be sited a minimum of 16 m away from the transitional (tidal) waters (and any defence structures on that watercourse).
- The compounds for the entrance and exit pits for micro-tunnelling would be approximately 30x30m and 20x20m.
- The compounds for the entrance and exit pits for HDD would be approximately 50x50m and 30x30m.
- The trenchless crossing depth below riverbed would be a minimum of 8m for micro-tunnelling, and a minimum of 15m for HDD.
- Up to four weeks working for both micro-tunnelling and for HDD.

2.1.2. The marine licensable activities associated with the Proposed Development relate only to those elements that will be carried out and installed below Mean High Water Springs (MHWS). For the Proposed Development this would be the approximately 75 m in length bored section of pipe installed below the River Dee between the MHWS mark on each bank. However, for completeness, and context, the works required for the entry and exit pits, and the whole length of the pipe connection between them, have been described in this section. This is because the anticipated effects of the Proposed Development on the designated sites are intrinsically linked to these connected activities.

2.1.3. Further details of the HDD and Micro-Tunnelling installation techniques is presented in the **Environment Report** at **Section 2: Proposed Development.**

3. HABITATS REGULATIONS ASSESSMENT PROCEDURE

3.1. INTRODUCTION

3.1.1. This Section sets out the applicable methodologies and assumptions for the assessment of the Proposed Development with regards to the requirements of the Habitats Regulations.

3.1.2. The HRA has been completed in co-ordination with the EIA for the HyNet Carbon Dioxide Pipeline Development Consent Order (DCO) Application, and the Environment Report for the Marine Licence Application for the Proposed Development. This is in recognition that the HRA must be co-ordinated with the EIA in accordance with Regulation 28 of the EIA Regulations.

3.2. THE HABITATS REGULATIONS

3.2.1. The Habitats Regulations transposed the requirements of the European Council Directive 92/43/EEC 'the Habitats Directive' (**Ref. 2**) into domestic law. The Habitats Regulations apply to plans and projects that may have significant effects on sites designated under the Habitats Directive and 'the Birds Directive' (Directive 2009/147/EC (**Ref. 3**)). Sites designated under the Directives include Special Protection Areas (SPAs) and Special Areas of Conservation (SACs).

3.2.2. 'Competent Authorities' must assess plans and projects for their potential to cause LSE on the above designated sites. Should LSE be identified by the initial screening process it is necessary to further consider the effects by way of an Appropriate Assessment (AA). The AA determines whether the plan or project would lead to adverse effects on the integrity of these site(s). If adverse effects on integrity are identified, the plan or project cannot be permitted without meeting strict additional tests.

3.2.3. Overall, this process of assessment is known as HRA, and further details of the applicable legislative context are summarised below.

3.2.4. Following the UK's exit from the European Union (EU), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (**Ref. 4**) were enacted and resulted in amendments to the Habitats Regulations. Defra guidance (**Ref. 5**) states that SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (**Ref. 4**) created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

- existing SACs and SPAs; and
- new SACs and SPAs designated under these Regulations.

3.2.5. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

3.2.6. Maintaining a coherent network of protected sites with overarching conservation objectives is still required to:

- fulfil the commitment made by government to maintain environmental protections; and
- continue to meet international legal obligations, such as the Bern Convention, the Oslo and Paris Conventions (OSPAR), Bonn and Ramsar Conventions.

3.2.7. It is also a matter of government policy (parts 6.4.18 and 6.4.19 of Planning Policy Wales (PPW)) (**Ref. 7**) that sites designated under the 1971 Convention on Wetlands of International Importance (commonly known as Ramsar sites) and potential SPA (pSPA) and possible SAC (pSAC) are also considered in the same way as SACs, SPAs, and candidate SACs (cSACs).

3.2.8. For the purpose of this report, the range of sites identified above are considered under the grouped term ‘European Sites’.

3.3. STAGES OF HABITATS REGULATIONS ASSESSMENT

3.3.1. Guidance on the Habitats Directive (**Ref. 8**) sets out the step wise approach which should be followed to enable Competent Authorities to discharge their duties under the Habitats Directive and provides further clarity on the interpretation of Articles 6 (3) and 6 (4). The process used is usually summarised in four distinct stages of assessment:

- **Stage 1: Screening:** the process which identifies whether effects upon a European Site of a plan or project are possible, either alone or in combination with other plans or projects and considers whether these effects are likely to be significant. Following the European Court of Justice case in People Over Wind and Sweetman v Coillte Teoranta (Case 323/17), all Stage 1 assessments must be undertaken without taking into account proposed mitigation measures intended to reduce or avoid negative impacts of the project on European sites;
- **Stage 2: Appropriate Assessment:** the detailed consideration of the effect on the integrity of the European Site of the plan or project, either alone or in combination with other plans or projects, with respect to the site’s conservation objectives and its structure and function;
- **Stage 3: Assessment of alternative solutions:** the process which examines alternative ways of achieving the objectives of the plan or project that reduce or avoid adverse effects on the integrity of the European Site; and
- **Stage 4: Assessment where no alternative solutions exist and where adverse effects remain:** an assessment of whether the development is necessary for Imperative Reasons of Overriding Public Interest (IROPI) and, if so, an assessment of the compensatory measures needed to maintain the overall coherence of the national site network.

3.3.2. The integrity of a site is defined as the coherence of the site's ecological structure and function, across the whole of its area, which enables it to sustain the habitat, complex of habitats and/or populations of species for which the site has been designated (**Ref. 8**). An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status as it did at the time of designation.

3.3.3. The precautionary principle is applied at all stages of the HRA process. In relation to Stage 1: Screening, this means that projects or plans where effects are considered likely and those where uncertainty exists as to whether effects are likely to be significant, must be subject to Stage 2 (AA) of the HRA process.

3.4. PURPOSE OF THIS REPORT

3.4.1. This report provides information to enable the HRA Stage 1: Screening of the Proposed Development, and Stage 2: Appropriate Assessment. The purpose of this report is to assist the Competent Authority in establishing whether the Proposed Development would have a likely significant effect upon European Sites (Stage 1). Where the potential for LSE is identified, the report then provides information to support an assessment of the potential for an adverse effect on the integrity of the European Sites (Stage 2).

3.4.2. The methodology for Stage 1 and Stage 2 of the HRA process is discussed further in **Sections 3.5** and **3.6** respectively.

3.5. STAGE 1: SCREENING METHODOLOGY

3.5.1. The screening methodology uses pathways to link development impacts and effects on European Sites that may be vulnerable to those impacts. Each development impact is considered, and its pathway assessed to understand the likelihood of an impact resulting in an LSE on a European Site.

3.5.2. When screening in/out European Sites and their features of interest, it needs to be established whether there is a pathway between the likely development impacts (causes) and the possible effect they may have on qualifying interest features of European Sites. Where there are no pathways to affect a European Site from the Proposed Development, they are not considered further. Where a pathway is identified, consideration is then given to whether there is a 'mechanism' for LSEs to occur. The screening methodology considers the sensitivity of the qualifying interest features in question to the identified impact pathways.

3.5.3. If it is considered there will be no LSEs upon the qualifying interest features from the potential identified impact pathways alone and in combination with other plans and projects, the Proposed Development may proceed (subject to all other appropriate consents), and an AA is not required.

3.5.4. If LSEs are identified, an AA must be undertaken.

3.6. STAGE 2: APPROPRIATE ASSESSMENT

3.6.1. In accordance with the Habitats Regulations, AA is required when, in view of a European Site's objectives, a plan or project:

- is likely to have a significant effect on a European Site (either alone or in combination with other projects and/or plans); and
- is not directly connected with or necessary to the management of the European Site.

3.6.2. Stage 2 considers LSE in greater detail, including consideration of mitigation measures where these may be applied to avert an effect on the integrity of the European Sites concerned. If information is not sufficient to confirm that an adverse effect upon the European Site's integrity cannot be ruled out, then Stage 3 is undertaken to investigate alternative solutions.

3.6.3. The methods used to make such an assessment in Stage 2 depend on the nature of the likely effects, and the interest features, conservation objectives and conservation status of the site potentially affected. **Section 4** below sets out European Sites and qualifying features that have been screened in and out of further assessment in Stage 1, along with a justification for doing so.

3.7. CONSULTATION

3.7.1. The HRA and the scope of the HRA assessment has been discussed with statutory consultees during the development of the Proposed Development.

4. ECOLOGICAL BASELINE ASSESSMENT

4.1. SITE-SPECIFIC SURVEYS

4.1.1. The Proposed Development Boundary and adjacent habitats, where relevant, have been subject to a variety of ecological surveys, which aim to provide a baseline assessment and to confirm the presence or likely absence of protected species and habitats to inform the Preliminary Design of the Proposed Development. A summary of the site-specific baseline survey data collected for the Proposed Development and relevant to this HRA is provided below (i.e. related to qualifying species of the European Sites). The methods for the species surveys detailed below were discussed and agreed with Natural Resources Wales during consultation.

4.2. BIRDS – BREEDING/WINTERING BIRDS

4.2.1. The Proposed Development is located within 4 km of the Dee Estuary SPA and Ramsar, which is designated for its bird assemblages. Breeding and wintering bird surveys have been undertaken to inform of the presence, distribution, and population size of Annex 1 species within and surrounding the Proposed Development. The surveys were also undertaken to give an overall idea of the bird assemblages present and whether or not any species that are notified features of the international sites are regularly present, such as those that may use the mudflat habitats of the River Dee.

METHODS

4.2.2. Field surveys were undertaken along eight transect routes distributed evenly along the length of the Proposed Development. All transect routes were planned to be walked along Public Rights of Way (PRoW) and were designed to incorporate a variety of habitat types including, arable land, dry grassland, marshy grassland, swamp, urban fringe, woodland/scrub, hedgerows, ponds and riparian habitats. This mixture of habitat types allowed representative bird communities to be sampled across the length of the Proposed Development. Importantly, the survey included transects at locations where the Proposed Development falls in close proximity to the European Sites detailed above. Notably, Transect 2 was undertaken along the River Dee where it is bisected by the Proposed Development.

4.2.3. At least one full year of data for each transect route was recorded, with a minimum of one visit per month throughout October to February and two visits per month during March to September. Survey effort was increased for Transect 2 around the location of the trenchless crossing of the River Dee, as large numbers of waterbirds were recorded during winter 2020/21 and no Wetland Bird Survey (WeBS) data was available for this stretch of the River Dee.

4.2.4. Potential ornithological constraints to the Proposed Development are identified, with the most significant impact being disturbance to overwintering and passage

SPA qualifying species during works around the River Dee. For the purpose of this HRA, birds within the Proposed Development Boundary plus at least 300m (zone of influence related to disturbance, see **Table 6.1**) were considered.

RESULTS

4.2.5. Count data has been presented for each of the qualifying features of the Dee Estuary SPA and Mersey Estuary SPA under Articles 4.1 and 4.2 of the Birds Directive (**Ref. 3**) (see **Table 4.1** below). The following qualifying species have been omitted from **Table 4.1** as none of these species were recorded during the bird surveys:

- Little tern (Sterna albifrons);
- Sandwich tern (Sterna sandvicensis);
- Bar-tailed godwit (Limosa lapponica);
- Pintail (Anas acuta);
- Golden plover (Pluvialis apricaria);
- Grey plover (Pluvialis squatarola);
- Knot (Calidris canutus islandica);
- Dunlin (Calidris alpina alpina); and
- Black-tailed godwit (Limosa limosa islandica).

4.2.6. **Table 4.1** presents the peak count of birds (highest number of birds recorded along a single transect during a single visit) alongside the mean monthly count, calculated as the mean number of birds along the transect with the peak count across the survey months applicable to the season/period within the SPA citation/Ramsar Information Sheet. The mean monthly count was calculated across the survey months when the species would be expected to be present and/or the season/period identified within the SPA citation/Ramsar Information Sheet. The passage period is defined as March to April and August to September and the winter period as October to February. The breeding season is defined as March to August.

4.2.7. **Table 4.1** also presents the peak and mean monthly counts as a percentage of the SPA/Ramsar population, as provided on the SPA citation/Ramsar Information Sheet documents. It should be noted that the SPA/Ramsar populations in the citations/information sheets are the five-year mean of annual peak counts between 1994/5 and 1998/9 for the Dee Estuary SPA/Ramsar and between 1993/94 and 1997/98 for the Mersey Estuary SPA. As such, more up-to-date data is provided from the most recent Wetland Bird Survey (WeBS) (**Ref. 9**) for the “Dee Estuary (England and Wales)”. This data represents the mean peak count for each species for the period 2015/16 to 2019/20. Where the mean or peak count exceeds 1% of the SPA citation population or the current five-year peak mean from the WeBS report, the figure is shown in bold.

4.2.8. Of the seven qualifying features of the SPAs/Ramsar recorded during the surveys, the peak counts and majority of recordings for qualifying species were primarily recorded on Transect 2 along the River Dee. Qualifying bird species were recorded along other transects during the baseline surveys, although in low numbers that did not exceed those recorded along Transect 2. The only exception to this was shelduck, where the peak count was recorded on Transect 1. It is therefore considered that the River Dee and its associated mudflats is the primary location of importance for SPA/Ramsar qualifying bird species within the Proposed Development Boundary. Disturbance to SPA/Ramsar qualifying species is therefore most likely as a result of activities within the vicinity of the River Dee. The peak count of shelduck, four birds, was recorded along Transect 1. For comparison, the peak count of shelduck on Transect 2 near the River Dee was two birds.

4.2.9. Only common tern (*Sterna hirundo*) and redshank were recorded in numbers greater than 1% of the SPA citation/Ramsar Information Sheet or WeBS populations during the baseline surveys. Although, there is a notable difference between peak counts and the monthly mean count, highlighting that peak numbers were not a common occurrence during the surveys. It is notable that the mean monthly count as a percentage of the WeBS five-year average (most recent population data) for both common tern and over wintering redshank are below 1%.

Table 4.1 – Peak and Monthly Count Comparisons for SPA Qualifying Bird Species

Species	Season	Transect (T) No. and month peak count recorded	Population Data			Peak Count Comparison				Mean Monthly Count Comparison			
			Dee Estuary SPA / Ramsar Citation Population	Mersey Estuary SPA Citation Population	WeBS five-year average 2015/15 to 2019/20	Peak Count	Peak Count as a % of Dee Estuary SPA / Ramsar population	Peak Count as a % of Mersey Estuary SPA population	Peak count as % of WeBS five-year average	Mean monthly count for season	Mean monthly count as a % if Dee Estuary SPA / Ramsar population	Mean monthly count as a % of Mersey Estuary SPA population	Mean monthly count as a % of WeBS five-year average
Common tern*	Breeding season	T2, July '21	784	N/A	388	8	**1.02%**	N/A	**2.06%**	1	0.13%	N/A	0.26%
Redshank *	On passage	T2, March '21	8,795	4,513	9,614	165	**1.88%**	**3.66%**	**1.72%**	59	0.67%	**1.30%**	0.61%
Redshank *	Over winter	T2, December '21	5,293	4,993	9,614	100	**1.89%**	**2.00%**	**1.04%**	45	0.85%	0.90%	0.47%
Shelduck*	Over winter	T1, June '21	7,725	6,476	9,602	4**	0.05%	0.06%	0.04%	0.23	0.003%	0.004%	0.002%
Teal*	Over winter	T2, February '21	5,251	11,723	6,062	49	0.93%	0.42%	0.81%	3.8	0.07%	0.03%	0.06%
Oystercatcher*	Over winter	T2, March '22	22,677	-	23,309	17	0.07%	-	0.07%	2.1	0.009%	-	0.009%
Curlew	Over winter	T2, April '21	3,899	-	3,553	1***	0.03%	-	0.03%	(N/A)	(N/A)	-	(N/A)

*** The following notes are applicable to calculations of the mean monthly count above:**

- Common tern – mean monthly count calculated using data from **Transect 2,** March to August 2021. No common tern were recorded in the 2022 survey period.
- Redshank on passage – mean monthly count calculated using data from **Transect 2** during the spring passage periods in 2021 and 2022. No redshank were recorded during the autumn passage periods.
- Redshank over winter – mean monthly count calculated using data from **Transect 2** during all winter survey months (2020, 2021 and 2022).
- Shelduck – mean monthly count calculated using data from **Transect 2** during all winter survey months (2020, 2021 and 2022). The peak count of four birds along Transect 1 was recorded in June and represented the only record of shelduck along Transect 1. As such, this data would not provide comparative data to the peak count numbers within the SPA citations/Ramsar Information Sheet, which represents peak numbers during the winter season.
- Teal – mean monthly count calculated using data from **Transect 2** during all winter survey months (2020, 2021 and 2022). Whilst a peak of 60 teal were recorded flying along **Transect 2** in February 2021, they did not land and were only recorded on a single occasion.
- Oystercatcher recorded throughout the survey period and more frequently during passage and summer periods. As such, the mean monthly count was calculated from **Transect 2** across all survey visits.

****** Peak count of shelduck recorded in June, rather than during the winter period. Whilst shelduck is highlighted in the SPA citations/Ramsar Information Sheet with peak counts during the winter period and as part of the bird assemblage "*in the non-breeding season*", birds recorded at other times of the year would support the winter population and have therefore been considered with reference to peak numbers.

******* Peak count of curlew recorded in April, rather than during the winter period. Whilst curlew is highlighted in the SPA citation/Ramsar Information Sheet with peak counts during the winter period and as part of the bird assemblage "*in the non-breeding season*", birds recorded at other times of the year would support the winter population and have therefore been considered with reference to peak numbers.

(N/A) Curlew recorded infrequently and in low numbers across the survey area and therefore unable to calculate an accurate mean value.

4.3. OTTER

4.3.1. A desk study was undertaken in 2020 to review existing baseline information available in the public domain and to obtain information held by relevant third parties in relation to otter. For the purpose of the desk study exercise, records were collated within 2km of the Proposed Development boundary.

4.3.2. Otter presence/likely absence surveys were combined with those for water vole *Arvicola amphibius* and therefore may be referenced as “riparian mammal” surveys within this document. The riparian mammal surveys took place between May 2021 and September 2022. The riparian mammal surveys comprise two visits to each watercourse scoped in for further survey, primarily to comply with best practice in relation to survey effort for water vole. There is no similar guidance for otter, but the level of survey effort is considered suitable and sufficient to inform this HRA.

4.3.3. The otter field surveys involved walkover surveys of the lengths of watercourses within the Proposed Development Boundary, plus an additional 150m beyond the Boundary limits (where access was possible). The surveys comprised a thorough visual inspection of the watercourse banks and immediate vicinity to search for signs of otter, including spraint (otter faeces), footprints, feeding remains and confirmed or potential resting sites.

4.3.4. No otter field signs were recorded along the River Dee (Group 14) during the two survey visits undertaken in March and June 2022.

4.4. FISH

4.4.1. A desk study was undertaken in 2021 to review data from the last 10 years and within 10km upstream and downstream of the Proposed Development. Desk study data were sourced from statutory bodies in both England and Wales, including records from the Environment Agency.

4.4.2. Field surveys comprised initially of aquatic habitat walkover surveys between April 2021 and June 2022 along all watercourses crossed by the Proposed Development and those watercourses that form part of the proposed surface water drainage routes. The aquatic habitat walkover surveys were undertaken to identify the potential value of the aquatic habitat and species receptors within the surveyed area. The potential for each watercourse to support legally protected and/or notable aquatic species was assessed through field observations of various channel and bank characteristics and the requirement for further survey identified.

4.4.3. Fish surveys were subsequently undertaken to establish the species present within watercourses identified for further survey. These comprised:

- Electric fishing and seine netting: within all watercourses scoped for further fish survey during the aquatic habitat walkover surveys (i.e. those suitable to support fish) where access was possible.

- eDNA surveys: where traditional electric fishing could not be carried out.

4.4.4. Seine netting surveys were conducted on the River Dee. Two species of conservation interest were recorded; sea trout *Salmo trutta* in March 2022 and smelt *Osmerus eperlanus* in May 2022.

4.4.5. The species recorded in the eDNA surveys include three species of conservation interest, namely European eel *Anguilla anguilla*, brown/sea trout and smelt.

5. RELEVANT DESIGNATED SITES

5.1.1. There are nine European Sites within 10km of the Proposed Development Boundary of the Proposed Development, as shown on **Figure 5.1**. These are:

- River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC (Proposed Development crosses the European Site; River Dee).
- Deeside and Buckley Newt Sites SAC (4.7 km from the Proposed Development).
- Dee Estuary/Aber Dyfrdwy SAC (approximately 3.9 km to the north).
- The Dee Estuary SPA (approximately 3.9 km to the north).
- The Dee Estuary Ramsar (approximately 3.9 km to the north).

5.1.2. The Dee Estuary SPA and Ramsar and the Dee Estuary/Aber Dyfrdwy SAC are cross border sites, with constituent parts in both England and Wales. Therefore, these European Sites are covered by a number of documents prepared by the respective country agencies, in addition to the Natura 2000 standard data forms which are prepared by Joint Nature Conservation Committee (JNCC) for submission to the European Union. The Proposed Development is located within Wales, however, effects must be assessed against the European Sites as a whole. Therefore, applicable information from both Natural Resources Wales (NRW) and Natural England (NE) is included within this section.

5.1.3. The reasons for designation of each of the European Sites is summarised in **Table 5.1** below. The known vulnerabilities of the European Sites are also summarised below in **Table 5.2**, collated from the Natura 2000 standard data forms and Ramsar information sheets (available from JNCC, **Ref. 13**), Core Management Plans available from NRW and Site Improvement Plans available from NE.

5.1.4. In addition, the conservation objectives of the European Sites have been summarised within **Appendix A**, which collates information from Natura 2000 site conservation objectives available from NE and Core Management Plans available from NRW. The overall aim of the conservation objectives is to maintain the European Sites in 'favourable conservation status'. The Habitats Directive provides further interpretation of the meaning of 'favourable conservation status' within Article 1 parts a, e and i as below:

'(a) conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status as defined in (e) and (i);…

(e) conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2. The conservative status of a natural habitat will be taken as "favourable" when:

- *its natural range and areas it covers within that range are stable or increasing, and*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable as defined in (i);*

(i) conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as "favourable" when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis'.*

Table 5.1 – Relevant European Sites

Site Name	Summary of reasons for designation
River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC	River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC covers 11 **Annex I habitats that are a primary reason for the selection of th** • Water courses of plain to montane levels with the *Ranunculion flu* **Annex II species that are a primary reason for the selection of th** • Atlantic salmon (*Salmo salar*) • Floating water-plantain (*Luronium natans*) **Annex II species present as a qualifying feature, but not a prima** • Sea lamprey (*Petromyzon marinus*) • Brook lamprey (*lampetra planeri*) • River lamprey (*Lampetra fluviatilis*) • Bullhead (*Cottus gobio*) • Otter (*Lutra lutra*)
Deeside and Buckley Newt Sites SAC	Deeside and Buckley Newt Sites SAC covers 207.52 ha in Wales. Th **Annex I habitats present as a qualifying feature, but not a prima** • Old sessile oak woods with Ilex and Blechnum in the British Isles **Annex II species that are a primary reason for the selection of th** Great crested newt (*Triturus cristatus*)
Dee Estuary/Aber Dyfrdwy SAC	Dee Estuary/Aber Dyfrdwy SAC covers 15805.27 ha and spans acro **Annex I habitats that are a primary reason for the selection of th** • Mudflats and sandflats not covered by seawater at low tide • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* **Annex I habitats present as a qualifying feature, but not a prima** • Estuaries • Annual vegetation of drift lines • Vegetated sea cliffs of the Atlantic and Baltic Coasts • Embryonic shifting dunes • Shifting dunes along the shoreline with *Ammophila arenaria* • Fixed coastal dunes with herbaceous vegetation • Humid dune slacks **Annex II species present as a qualifying feature, but not a prima** • Sea lamprey • River lamprey • Petalwort (*Petalophyllum ralfsii*)
The Dee Estuary SPA	The Dee Estuary SPA covers 14,294.95 ha and spans across Engla **The SPA qualifies under Article 4.1 of the Wild Birds Directive a** **species listed in Annex I in any season:** • Common tern (breeding season)

Site Name	Summary of reasons for designation
	• Little tern (breeding season) • Sandwich tern (on passage) • Bar-tailed godwit (over winter) **The SPA qualifies under Article 4.2 of the Wild Birds Directive as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in listed in Annex I) in any season:** • Redshank (on passage and over winter) • Shelduck (over winter) • Teal (over winter) • Pintail (over winter) • Oystercatcher (*Haematopus ostralegus*) (over winter) • Grey plover (over winter) • Knot (over winter) • Dunlin (over winter) • Black-tailed godwit (over winter) • Curlew (over winter) **The SPA also qualifies under Article 4.2 of the Wild Birds Directive as it is used regularly by over 20,000 waterbirds in any season (assemblage qualification).** In the non-breeding season, the area regularly supports 120,726 individual waterbirds, including great crested grebe, cormorant (*Phalacrocorax carbo*), shelduck, wigeon, teal, pintail, oystercatcher, grey plover, lapwing, knot, sanderling (*Calidris alba*), dunlin, black-tailed godwit, bar-tailed godwit, curlew and redshank.
The Dee Estuary Ramsar	The Dee Estuary Ramsar covers 14,303.02 ha and spans across England and Wales. **The site qualifies under Ramsar Criterion 1 because it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographical region. This includes the following Annex I Habitats:** • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Annual vegetation of drift lines • Vegetated sea cliffs of the Atlantic and Baltic coasts • *Salicornia* and other annuals colonising mud and sand • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Embryonic shifting dunes • Shifting dunes along the shoreline with *Ammophila arenaria* • Fixed dunes with herbaceous vegetation • Humid dune slacks **The site qualifies under Ramsar Criterion 2 because it supports vulnerable, endangered, or critically endangered species or threatened ecological communities:** • Natterjack toad (*Epidalea calamita*) **The site qualifies under Ramsar Criterion 5 because it supports an assemblage of waterbirds of international importance:** • In the non-breeding season, the area regularly supports 120,726 individual waterbirds (5-year peak mean 1994/95 - 1998/99).

Site Name	Summary of reasons for designation
	The site qualifies under Criterion 6 because it regularly supports 1% of the individuals in the populations of the following species or subspecies of waterbird: Peak counts in spring/autumn: • Redshank Peak counts in winter: • Teal • Shelduck • Oystercatcher • Curlew • Pintail • Grey plover • Knot • Dunlin • Black-tailed godwit • Bar-tailed godwit • Redshank

Table 5.2 – Known threats and pressures upon relevant designated sites

Site Name	Activities with greatest effect upon the site, as listed on Natura 2000 Standard Data Forms	Threats summarised from information within the Core Management Plan (CCW, various dates (plans adopted by NRW))	Pressures and threats listed within the Site Improvement Plan (NE, undated) and Prioritised Improvement Plan (NRW, referenced when used)
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC	The Standard Data Form does not list any factors in relation to negative impacts to the SAC. The following are listed as factors with positive effects upon the SAC: • Other ecosystem modifications inside the SAC	• Water quality and levels – potential sources of pollution, nutrient enrichment and/or suspended solids, such as (but not confined to) diffuse pollution or disturbance to sediments • Barriers to movement of fish species • Invasive non-native species (such as impact of non-native crayfish on bullhead densities) • Disturbance of otters and habitat • Dredging activities • Spawning site availability for qualifying fish species	The Site Improvement Plan refers to issues contained within the Prioritised Improvement Plan from NRW (**Ref. 14**), which details the following: • Angling/fishing • Overgrazing • Herbicide use • Water course modifications (including weirs and other structures) • Invasive species • Water pollution (diffuse sources)
Deeside and Buckley Newt Sites SAC	The following are listed as factors with the highest negative effects upon the SAC: • Mowing/cutting of grassland • Soil pollution and solid waste (excluding discharges) • Other ecosystem modifications • Biocenotic evolution, succession • Invasive non-native species • Grazing • Problematic native species	• Water quality and levels in great crested newt breeding ponds • Presence of and predation from fish • Recreational pressures within the SAC • Invasive species • Obstructions to movement • Development • Grazing	N/A – this site is in Wales only.

Site Name	Activities with greatest effect upon the site, as listed on Natura 2000 Standard Data Forms	Threats summarised from information within the Core Management Plan (CCW, various dates (plans adopted by NRW))	Pressures and threats listed within the Site Improvement Plan (NE, undated) and Prioritised Improvement Plan (NRW, referenced when used)
	• Forestry activities not referred to above • Air pollution, air-borne pollutants The following are listed as factors with positive effects upon the SAC: • Outdoor sports and leisure activities, recreational activities outside the SAC		
Dee Estuary/Aber Dyfrdwy SAC	The following are listed as factors with the highest negative effects upon the SAC: • Changes in biotic conditions • Invasive non-native species • Changes in abiotic conditions • Outdoor sports and leisure activities, recreational activities The following are listed as factors with positive effects upon the SAC: • Grazing • Improved access to site • Modification of cultivation practices • Interpretative centres	A summary of threats relating to the Dee Estuary SAC is provided below. Full details can be found in The Dee Estuary advice document (Natural England, Welsh Assembly Government and CCW, January 2010) (**Ref. 15**): • Physical loss – Removal (e.g. land claim, dredging), smothering (e.g. depositing dredge soil, beach feeding) • Physical damage – Siltation (e.g. dredging, outfalls, coastal development), abrasion (e.g. recreational activity, vehicles), selective extraction (e.g. aggregate extraction) • Toxic contamination – Introduction of synthetic compounds (e.g. TBT, PCBs from effluent outfalls), introduction of non-synthetic compounds (e.g. effluent outfalls, crude oil), introduction of radionuclides • Non-toxic contamination – Changes in nutrient loading (e.g. agricultural run-off, effluent outfalls), changes in organic loading (e.g. effluent outfalls, aquaculture), changes in thermal regime (e.g. power station discharges), changes in turbidity (e.g. effluent outfalls, dredging, depositing dredged spoil), changes in salinity (e.g. water abstraction, effluent outfalls) • Biological disturbance – Introduction of microbial pathogens (e.g. effluent outfalls), introduction of non-native species and translocation, selective extraction of species (e.g. samphire picking, bait collection)	• Public access/disturbance • Changes in species distribution • Invasive species • Climate change • Coastal squeeze • Inappropriate scrub control • Water pollution • Fisheries • Inappropriate coastal management • Overgrazing • Direct impact from third party • Marine litter • Planning permission: general • Marine consents and permits • Wildfire/arson • Air Pollution - Impact of atmospheric nitrogen deposition • Physical modification
The Dee Estuary SPA	The following are listed as factors with the highest negative effects upon the SPA: • Invasive non-native species; • Changes in biotic conditions; • Outdoor sports and leisure activities, recreational activities; and • Changes in abiotic conditions. The following are listed as factors with positive effects upon the SPA:	A summary of threats relating to the Dee Estuary SPA is provided below. Full details can be found in The Dee Estuary advice document (Natural England, Welsh Assembly Government and CCW, January 2010): • Physical loss – Removal (e.g. land claim, dredging), smothering (e.g. depositing dredge soil, beach feeding). • Physical damage – Siltation (e.g. dredging, outfalls), abrasion (e.g. recreational activity, vehicles), selective extraction (e.g. aggregate extraction).	• Public access/disturbance • Changes in species distribution • Invasive species • Climate change • Coastal squeeze • Inappropriate scrub control • Water pollution • Fisheries: Commercial marine and estuarine • Inappropriate coastal management

Site Name	Activities with greatest effect upon the site, as listed on Natura 2000 Standard Data Forms	Threats summarised from information within the Core Management Plan (CCW, various dates (plans adopted by NRW))	Pressures and threats listed within the Site Improvement Plan (NE, undated) and Prioritised Improvement Plan (NRW, referenced when used)
	• Grazing; • Annual and perennial non-timber crops; • Improved access to site; • Interpretative centres; • Improved access to site; and • Modification of cultivation practices.	• Non-physical disturbance – Noise and visual presence (land/water-based recreation, marine traffic). • Toxic contamination – Introduction of synthetic compounds (e.g. TBT, PCBs), introduction of non-synthetic compounds (e.g. domestic effluent outfalls, crude oil), introduction of radionuclides. • Non-toxic contamination – Changes in nutrient loading (e.g. agricultural run-off, domestic effluent outfalls), changes in organic loading (e.g. domestic effluent outfalls, aquaculture), changes in thermal regime (e.g. power station discharges), changes in turbidity (e.g. effluent outfalls, dredging, depositing dredged spoil), changes in salinity (e.g. water abstraction, effluent outfalls). • Biological disturbance – Introduction of microbial pathogens (e.g. domestic/industrial effluent outfalls), introduction of non-native species and translocation, selective extraction of species (e.g. samphire picking, bait collection).	• Overgrazing • Direct impact from third party • Marine litter • Predation • Planning permission: general • Marine consents and permits • Wildfire/arson • Air Pollution: impact of atmospheric nitrogen deposition • Transportation and threat service corridors • Physical modification
The Dee Estuary Ramsar	• Introduction/invasion of exotic animal species • Introduction/invasion of non-native plant species • Overfishing • Pollution – Industrial waste • General disturbance from human activities • Transport infrastructure development • Sand dune erosion and accretion along the north Wales open coast.	A summary of threats relating to the Dee Estuary Ramsar is provided below. Full details can be found in The Dee Estuary advice document (Natural England, Welsh Assembly Government and CCW, January 2010): • Physical loss – Removal (e.g. land claim, dredging), smothering (e.g. depositing dredge soil, beach feeding). • Physical damage – Siltation (e.g. dredging, outfalls), abrasion (e.g. recreational activity, vehicles), selective extraction (e.g. aggregate extraction). • Non-physical disturbance – Noise and visual presence (land/water-based recreation, marine traffic). • Toxic contamination – Introduction of synthetic compounds (e.g. TBT, PCBs), introduction of non-synthetic compounds (e.g. domestic effluent outfalls, crude oil), introduction of radionuclides. • Non-toxic contamination – Changes in nutrient loading (e.g. agricultural run-off, domestic effluent outfalls), changes in organic loading (e.g. domestic effluent outfalls, aquaculture), changes in thermal regime (e.g. power station discharges), changes in turbidity (e.g. effluent outfalls, dredging, depositing dredged spoil), changes in salinity (e.g. water abstraction, effluent outfalls).	• Introduction/invasion of exotic animal species (including the Chinese mitten crab [*Eriocheir sinensis*] and alien woody species at Gronant Dunes) • Overfishing • Pollution – industrial waste • General disturbance from human activities • Transport infrastructure development • Sand dune erosion and accretion along the north Wales open coast.

Site Name	Activities with greatest effect upon the site, as listed on Natura 2000 Standard Data Forms	Threats summarised from information within the Core Management Plan (CCW, various dates (plans adopted by NRW))	Pressures and threats listed within the Site Improvement Plan (NE, undated) and Prioritised Improvement Plan (NRW, referenced when used)
		• Biological disturbance – Introduction of microbial pathogens (e.g. domestic/industrial effluent outfalls), introduction of non-native species and translocation, selective extraction of species (e.g. samphire picking, bait collection).	

6. STAGE 1: SCREENING OF POTENTIAL EFFECTS

6.1. APPROACH

6.1.1. The Proposed Development has been subject to Stage 1 of the HRA or 'test of likely significance' to identify likely significant effects on European Sites. This screening exercise has considered whether cause-effect pathways exist between the Proposed Development and the European Sites that have been identified within the Zone of Influence (ZoI), see below.

6.1.2. Due to case law referenced in **paragraph 3.3.1** of this document, the screening assessment was prepared and completed whilst omitting proposed mitigation measures for the Proposed Development. The following mitigation measures were not included during Stage 1:

- The Construction Environmental Management Plan (CEMP);
- Ecological Management Plans (EcMPs);
- Specific/targeted mitigation measures to avoid or minimise impacts of construction and operational disturbance on species; and
- Pollution prevention controls.

6.1.3. The Proposed Development is not directly connected with or necessary for the management of the European Sites, has not been conceived solely to further the conservation of the European Sites nor is it essential to the management of the European Sites. Therefore, further consideration of the Proposed Development within the HRA process is required.

6.2. ZONE OF INFLUENCE

6.2.1. The ZoI is defined by the potential impacts arising from the Proposed Development and the potential pathways for those impacts to reach and affect qualifying features of the European Sites, resulting in effects upon those qualifying features. **Table 6.1** below details the ZoI for potential effects (in the absence of mitigation) of the Proposed Development on the European Sites. This takes into account the linear nature of the Proposed Development and the likely localised nature of any impacts.

Table 6.1 – Potential pathways between cause and effect and likely Zone of Influence

Effect	Cause	Likely ZoI
Direct and indirect habitat loss (including functional habitat)	Vegetation and site clearance, construction activities (including movement of plant/machinery)	Within the Proposed Development Boundary

Effect	Cause	Likely ZoI
and/or mortality of species[1]		
Disturbance of qualifying species	Noise, vibration, and light pollution resulting from construction activities	300m from the Proposed Development Boundary[2]
Fragmentation of habitats and/or species	Habitat loss resulting in severance of connectivity	Dependent on the qualifying feature (habitat or species). Source of fragmentation would be within the Proposed Development Boundary but habitat loss within this boundary could result in severance to habitats further afield from the European Site(s).
Hydrological effects	Pollution and contamination incidents associated with hydrological effects (including run-off)	Downstream: Determined by the type, dynamics and morphology of the connected watercourse (as detailed within the assessment) Upstream: the tidal extent
Air quality effects	Dust pollution and contamination incidents as a result of construction activities	50m from the Proposed Development Boundary (**Ref. 16**)[3]

DIRECT HABITAT LOSS

6.2.2. Land take from within the boundary of a European Site (either temporary or permanent) could remove a proportion of the habitats which form (or support) the qualifying interests for which the European Site is designated. Land take from adjacent habitats that are functionally linked (for example clearance of areas of heathland habitat from an area adjacent to a SAC designated for heathland habitats) may also be relevant, if these support the overall status of

[1] Excludes those effects relating to hydrology or air quality, which are considered separately.
[2] Distance relates to disturbance to bird species, as detailed in **paragraph 6.2.11**. This distance is considered sufficient for other qualifying species of the European Sites.
[3] Therefore, only relevant for River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC and Deeside and Buckley Newt Sites SAC.

habitats within the designated site. Land take could lead to the following impacts on European Site qualifying interests:

- Permanent habitat removal;
- Temporary removal/disturbance of habitats; and
- Reduction in foraging opportunities (removal/disturbance of habitats used by designated interest species).

INDIRECT HABITAT LOSS

6.2.3. Indirect habitat loss can occur as a result of construction activity. For example, this could include spillages of fuels or other substances or as a result of sedimentation release into a watercourse.

DISTURBANCE TO BIRDS

6.2.4. Visual or noise/vibration disturbance resulting from major development schemes such as the construction of a pipeline, and the associated components involved, can affect bird species. The susceptibility of birds to disturbance such as this depends on the intensity, frequency, and duration of the source of disturbance (**Ref. 17**). In general, infrequent, high-intensity activities tend to cause more disturbance than continuous low-intensity activities (**Ref. 17**). In terms of visual disturbance, human figures are tolerated less well than vehicles and vehicle-movements (**Ref. 17)**. With noise/vibration disturbance, birds appear to quickly habituate to continual noises/vibrations, but large amplitude 'startling' components may cause undue disturbance (**Ref. 17)**.

6.2.5. Although different species vary in their tolerance of disturbance, waterbirds such as those qualifying within The Dee Estuary SPA and Ramsar are generally susceptible to disturbance and tend to preferentially select roosting or foraging sites where levels of disturbance are low. Larger bird species, which form flocks in open habitats, tend to be more vulnerable to disturbance than smaller species in more enclosed habitats.

6.2.6. Taken in isolation, disturbance from a single development may simply result in birds being displaced into alternative habitat further from the source of disturbance. In many cases this may have no discernible effect on the population of the species concerned. However, if birds are unable to compensate for lost feeding time, disturbance can affect their ability to maintain their energy reserves and may therefore affect individuals' chances of surviving cold weather. Sustained disturbance can also affect numbers of birds using a site in the longer term (**Ref. 18**). The impact of disturbance on whole sites depends on the availability and carrying capacity of alternative habitats within the site. The carrying capacity of sites is rarely known with certainty and as such a precautionary approach should be adopted.

6.2.7. Visual disturbance is possible if works take place adjacent to areas used by SPA/Ramsar qualifying bird species.

6.2.8. Noise disturbance is likely during construction. The noise levels that potentially cause disturbance to birds are similar to thresholds set for people i.e. not exceeding 75dBA (A-weighted decibels). Examples of studies that have considered the impacts of noise on birds during the winter period include the following:

- Waders: lower abundance of waders where noise levels > 56dB (**Ref. 19**).
- All waterfowl: long term plant noise to 85 dBA and personnel disturbance moderate to low. Birds were seen to accept a wide range of steady state noise levels from 55dBA to 85 dBA (**Ref. 20**).

6.2.9. An example of a study that has reviewed the potential impacts of relevant disturbance sources, such as plant noise and construction/demolition noise on coastal and estuarine waterbirds, is Borgmann (2011) (**Ref. 21**). This study stated that although responses to disturbance are quite variable, establishing set back distances of 250m from groups of diving ducks, other waterfowl, wading birds, and shorebirds will likely lessen the impacts to the most sensitive species.

6.2.10. The most comprehensive recent review considering the impacts of disturbance, when informing estuarine and planning and construction projects, is Cutts et al. (2013) (**Ref. 22**). This study points out that different species of bird have different tolerance thresholds to noise disturbance (and visual disturbance). Construction work and other operations therefore impact upon different species in different ways. The converse to disturbance is habituation, as birds can become more tolerant with increased exposure to regular activities.

6.2.11. Artificial lighting can have a negative impact on birds. Lighting proposed primarily relates to security lighting at temporary construction compounds. However, lighting is also anticipated to facilitate night works, most notably in relation to 24-hour working associated with the Proposed Development. The **Environment Report** at **Section 2: Proposed Development**. states that "…*continual 24-hour working may be required to allow the tunnelling activities to be completed as safely and quickly as possible. The duration of 24-hour working at the longer River Dee crossing, if the ground conditions prove difficult, is expected to last up to four weeks. Lighting is anticipated to facilitate night works for both trenchless crossing techniques, most notably in relation to 24-hour working*".

6.2.12. Although the precise distance at which birds may be disturbed will vary by species, and in response to a range of site-specific factors, it has been assumed, based on the findings of Cutts et al. (2013) (**Ref. 22**), that significant disturbance is unlikely beyond a distance of 300m.

DISTURBANCE TO FISH SPECIES

6.2.13. Salmon are an 'anadromous' species, meaning that they spawn in fresh water, but feed and grow at sea. Salmon migrate from their Atlantic Ocean waters to

fresh water to spawn in areas of rivers with clean gravel (**Ref. 23**). Salmon spawn in autumn or winter in excavated depressions in the river substrate.

6.2.14. Adult sea lamprey enter the estuaries of many North Atlantic rivers from April onwards, but relatively little is known about the precise habitats occupied by adult sea lampreys (**Ref. 24**). Although adults are sometimes caught at sea, the precise conditions in which they occur have not been described, nor is it certain which fish are the main prey species. Most adults found in fresh water are either migrating upstream to spawn, or dying after spawning.

6.2.15. Habitat within, or hydrologically connected to the Proposed Development Boundary seems only to be important in relation to the ability for these species to get to the spawning beds, and direct impacts to rivers with potential spawning habitat are not anticipated.

6.2.16. Bullhead is a widely distributed freshwater species, which "*predominantly occurs in stony streams and rivers where the flow is moderate and the water is cool and oxygen-rich*" (**Ref. 25**).

6.2.17. These fish species are qualifying features of the European Sites associated with the River Dee. The Proposed Development includes works beneath and adjacent to the River Dee and therefore pollution events and noise/vibration could directly disturb fish species, if present. Artificial lighting can also impact fish by altering patterns of feeding and predator avoidance (**Ref. 26**) and also potentially impede navigation of fish to upstream natal habitats (salmon and lamprey species) (**Ref. 27**), thereby potentially effecting breeding success. As detailed in **paragraph 6.2.11**, artificial lighting would be required for works around the River Dee associated with 24-hour working. Further, works within or adjacent to watercourses hydrologically connected to the River Dee could also indirectly impact fish species of the River Dee as the hydrological connection may result in the transport of pollutants (for example) into the River Dee.

HYDROLOGICAL EFFECTS

6.2.18. The Proposed Development crosses, most notably, and of relevance to this HRA, the River Dee watercourse.

6.2.19. As detailed in the **Environment Report** at **Section 2: Proposed Development**, the crossing of the River Dee is proposed to be achieved by specialist trenchless crossing methods. Either via HDD, or Micro-Tunnelling.

River Dee

6.2.20. The crossing under the River Dee will be carried out using either a HDD method or Micro-Tunnelling method. The depth of the crossing would be at a minimum depth of either 15m for HDD, or 8m for Micro-Tunnelling (distance between the top of the casing and the riverbed). These depths are collectively hereafter referred to as the 'minimum trenchless crossing depths' for the River Dee crossing. In addition, as it is a tidal watercourse, the entrance/exit pits for both

methods will be situated at least 16m from the riverbanks, therefore located outside the boundaries of the European Sites.

6.2.21. Full details for the specialist trenchless crossing methods are detailed in the **Environment Report** at **Section 2: Proposed Development**. To perform either specialist trenchless crossing method, a drilling fluid/mud will be required to keep the borehole open and to transport the spoil from the borehole to the surface. Drilling mud is usually made up of bentonite and biodegradable polymers. As standard practice, use of polymers would be approved by Natural Resources Wales. For the purpose of this document, reference to 'bentonite' is made when referring to the drilling fluid/mud substance.

6.2.22. In relation to HDD, if a frac-out event[4] were to occur and bentonite were to enter the watercourse, adverse effects could occur as a result of the bentonite material causing turbidity in the water, which can block sunlight and smother water-based flora and sensitive habitat (such as spawning gravels for qualifying fish species[5]). The suspended bentonite could result in deterioration of water quality, having adverse effects on the health of aquatic life, including qualifying fish species through blocking the gills of fish causing mortality. Impacts to fish could also have an adverse effect on species further up the food-chain (such as otter or bird species, which prey on fish species).

6.2.23. However, geotechnical investigations either side of the River Dee identified the presence of tidal flat deposits consisting of sand and clay between 0 and 18 mbgl. These deposits were underlain by glacial till deposits consisting of stiff clay to at least a depth of 30 mbgl. With a crossing depth of at least 15m for HDD, there would be a sufficient thickness of low permeability, stiff cohesive strata that a frac-out of bentonite is unlikely to occur. Frac-out is not a concern for the Micro-Tunnelling method due to the reduced drilling fluid/mud pressures involved, which are localised to the face of the excavation.

6.3. CONSIDERATION OF EFFECTS IN ISOLATION

6.3.1. Utilising the information included within **Sections 2, 3**, **4** and **5**, the Proposed Development has been screened to identify whether potential impact pathways between the Proposed Development and the European Sites exist that are likely to result in significant effects upon the European Sites.

6.3.1. Screening matrices have been prepared and are documented below in **Table 6.2** to **Table 6.9**. The matrices detail the potential effects upon the European Sites as a result of the Proposed Development.

[4] the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.
[5] Although, it should be noted that there are no gravels in the section of the River Dee that may be impacted by a release of bentonite.

Table 6.2 – River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC: Screening of effects in isolation

Name of European Site and EU Code	**River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC (**UK0030252)				
Closest Point of European Site to Proposed Development	0m. Proposed Development crosses the European Site				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	X (a)	N/A	X (e)	X (g)	✓ **(h)**
Atlantic salmon	X (a)	✓ **(d)**	✓ **(f)**	X (g)	✓ **(h)**
Floating water-plantain	X (a)	N/A	X (e)	X (g)	✓ **(h)**
Sea lamprey	X (a)	✓ **(d)**	✓ **(f)**	X (g)	✓ **(h)**
Brook lamprey	X (a)	✓ **(d)**	✓ **(f)**	X (g)	✓ **(h)**
River lamprey	X (a)	✓ **(d)**	✓ **(f)**	X (g)	✓ **(h)**
Bullhead	X (a)	✓ **(d)**	✓ **(f)**	X (g)	✓ **(h)**
Otter	✓ **(b)**	X (c)	X (c)	X (g)	✓ **(h)**

Evidence Supporting Conclusions

(a) The crossing under the River Dee will be carried out using specialist trenchless crossing methods (HDD or Micro-Tunnelling method) at the minimum trenchless crossing depths detailed in **paragraph 6.2.20**. In addition, the entrance/exit pits will be situated at least 16m from the riverbanks, therefore located outside the boundaries of the SAC. Habitat loss a result of bentonite frac-out is assessed separately as part of hydrological effects (see (g) below). There is no functionally linked habitat associated with the qualifying habitats or fish species of the SAC present that would be impacted by the Proposed Development. As such, the Proposed Development will not result in direct or indirect impacts as a result of habitat loss or mortality to these qualifying features.

(b) The crossing under the River Dee will be undertaken at the minimum trenchless crossing depths and the entrance/exit pits will be situated at least 16m from the riverbanks (as detailed in **paragraph 6.2.20**). The otter surveys undertaken did not record any otter resting sites (such as holts or couches) within the Proposed Development Boundary along the River Dee. However, the River Dee is hydrologically connected to Wepre Brook and Alltami Brook, where otter field signs were recorded. This included, along Wepre Brook, potential otter holts and resting sites adjacent to the Proposed Development Boundary. The River Dee is also hydrologically connected to New Inn Brook, although no signs of otter were recorded along this watercourse during the baseline survey. As otter presence within the 'potential' otter holts has not been confirmed, for the purpose of this assessment, otter use has been assumed (precautionary principle). Whilst the crossing of the River Dee would be achieved underground via specialist trenchless crossing methods, construction of the Newbuild Carbon Dioxide Pipeline on the approach to the entrance/exit pits would be achieved through open-cut techniques. As such, there is a risk of otter becoming entrapped in trenches/voids which, in a worst-case scenario, may lead to mortality of individual otter. **It is therefore considered that LSE cannot be ruled out in the absence of mitigation**. Mortality resulting in LSE as a result of construction vehicle movements near the River Dee are considered unlikely, as these movements would be anticipated to be relatively infrequent and subject to appropriate speed restrictions.

(c) Construction along the River Dee is anticipated to require 24-hour working over a period of up to four weeks, as detailed in **paragraph 6.2.11** above. Construction may involve night working during periods when otter are active. The equipment for the specialist trenchless crossing method would comprise a large diesel power-pack for the drill rig; pumps, and auxiliary plant for the processing of bentonite, slurry, and cuttings with associated power generation plant; and generators for site lighting and welfare facilities. This equipment would result in the generation of noise, vibration and light that may result in disturbance of otter. However, the entrance/exit pits are expected to be a minimum of 125m apart and therefore noise/vibration and lighting levels are not anticipated to result in a fragmentation or severance effect, preventing otter from moving up and down the river. The width of the River Dee and natural topography of the crossing location (water level is set below the top of the banks) would also mean that noise/vibration and light generated would unlikely prevent otter from foraging during periods of active works. Overall, LSE to otter are not anticipated as a result of disturbance or fragmentation impacts.

(d) The specialist trenching crossing would avoid works within the River Dee watercourse and would be undertaken at the minimum trenchless crossing depths detailed in **paragraph 6.2.20**. Geotechnical investigations either side of the River Dee identified the presence of tidal flat deposits consisting of sand and clay between 0 and 18 metres below ground level (mbgl). These deposits were underlain by glacial till deposits consisting of stiff clay to at least a depth of 30 mbgl. With the minimum trenchless crossing depths, the intensity of vibration at the riverbed would be negligible and therefore not incur disturbance to fish. As such, LSE are not predicted in relation to vibration disturbance impacts to fish species. However, as detailed in **paragraph 6.2.11**, the crossing of the River Dee may require 24-hour working and may therefore require lighting at the location of the entrance/exit pits. The trenchless methods would include entrance/exit pits that will be a minimum of 16m from the riverbanks. Light spill onto the River Dee has the potential to adversely impact the qualifying fish species, as detailed in **paragraph 6.2.17**. **It is therefore considered that LSE cannot be ruled out in the absence of mitigation in relation to disturbance from lighting**.

(e) The crossing would avoid works within the River Dee watercourse and would be undertaken at the minimum trenchless crossing depths detailed in **paragraph 6.2.20** and the entrance/exit pits will be situated at least 16m from the riverbanks. As such, there would be no severance of habitat for qualifying species of the SAC.

(f) As detailed above in (d), lighting has the potential to adversely impact fish and may prevent movement upstream or within the watercourse (a fragmentation effect), of particular importance for migratory species such as salmon and lamprey. **It is considered that LSE cannot be ruled out in the absence of mitigation**.

(g) Further to the information presented in **paragraphs 6.2.20 to 6.2.23,** given the geotechnical information and the minimum trenchless crossing depths for the River Dee, a frac-out event of bentonite is not considered likely. As such, there are no LSE identified as a result of hydrological impacts through use of bentonite.

(h) The crossing of the River Dee will be carried out using specialist trenchless crossing methods with the entrance/exit pits situated at least 16m from the riverbanks. Trenching on the approach to the entrance/exit pits would be achieved through open-cut techniques. Impacts as a result of dust are generally realised within approximately 50m of the source (**Ref. 11**), which informs the ZoI detailed in **Table 6.1** above. As such, dust generated as a result of construction activities within 50m of the River Dee could give rise to adverse effects, as high levels of dust deposition could result in the smothering of vegetation/habitats or a deterioration in water quality of the river. **It is considered that LSE cannot be ruled out in the absence of mitigation**.

Table 6.3 – Dee Estuary/Aber Dyfrdwy SAC: Screening of effects in isolation

Name of European Site and EU Code	**Dee Estuary/Aber Dyfrdwy SAC (UK00310131)**				
Closest Point of European Site to Proposed Development	3.9km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Mudflats and sandflats not covered by seawater at low tide	X (a)	N/A	X (a)	X (d)	N/A
Salicornia and other annuals colonizing mud and sand	X (a)	N/A	X (a)	X (d)	N/A
Atlantic salt meadows *Glauco-Puccinellietalia maritimae*	X (a)	N/A	X (a)	X (d)	N/A
Estuaries	X (a)	N/A	X (a)	X (d)	N/A
Annual vegetation of drift lines	X (a)	N/A	X (a)	X (d)	N/A
Vegetated sea cliffs of the Atlantic and Baltic Coasts	X (a)	N/A	X (a)	X (d)	N/A
Embryonic shifting dunes	X (a)	N/A	X (a)	X (d)	N/A

Name of European Site and EU Code	**Dee Estuary/Aber Dyfrdwy SAC (UK00310131)**				
Closest Point of European Site to Proposed Development	3.9km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Shifting dunes along the shoreline with *Ammophila arenaria*	X (a)	N/A	X (a)	X (d)	N/A
Fixed coastal dune with herbaceous vegetation	X (a)	N/A	X (a)	X (d)	N/A
Humid dune slacks	X (a)	N/A	X (a)	X (d)	N/A
Sea lamprey	X (a)	✓ **(b)**	✓ **(c)**	X (d)	N/A
River lamprey	X (a)	✓ **(b)**	✓ **(c)**	X (d)	N/A
Petalwort	X (a)	X (b)	X (a)	X (d)	N/A

Evidence Supporting Conclusions

(a) The Proposed Development is located outside of the SAC. The Proposed Development crosses the River Dee approximately 3.9km upstream of the SAC, achieved by specialist trenchless crossing methods beneath the River Dee. Habitat loss as a result of bentonite frac-out is assessed separately as part of hydrological effects (see (d) below). There is no functionally linked habitat associated with the qualifying features of the SAC present that would be impacted by the Proposed Development. As such, the Proposed Development will not result in direct or indirect impacts as a result of habitat loss or mortality to qualifying features or fragmentation of qualifying habitats/floral species.

(b) The crossing method would avoid works within the River Dee watercourse and would be undertaken at the minimum trenchless crossing depths detailed in **paragraph 6.2.20**. Geotechnical investigations either side of the River Dee identified the presence of tidal flat deposits consisting of sand and clay between 0 and 18 mbgl. These deposits were underlain by glacial till deposits consisting of stiff clay to at least a depth of 30 mbgl. With the minimum trenchless crossing depths, the intensity of vibration at the riverbed would be negligible and therefore not incur disturbance to fish. As such, LSE are not predicted in relation to vibration disturbance impacts to fish species. However, as detailed in **paragraph 6.2.11**, the crossing of the River Dee may require 24-hour working and include lighting at the location of the entrance/exit pits. The trenchless methods would include entrance/exit pits that will be a minimum of 16m from the riverbanks. Light spill onto the River Dee has the potential to adversely impact the qualifying fish species, as detailed in **paragraph 6.2.17**. **It is therefore considered that LSE cannot be ruled out in the absence of mitigation in relation to disturbance from lighting**.

(c) Sea and river lamprey are a qualifying feature of the SAC and also the adjoining (upstream) River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC. Both species of lamprey migrate from the sea to freshwater environments to spawn and their young, in the larval stages, remain in the freshwater for a number of years before returning to the ocean. As such, it is reasonable to determine that the populations of these species are supported by both the Dee Estuary / Aber Dyfrdwy SAC and the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC. Sea and river lamprey were not recorded within any hydrologically linked watercourses (functionally linked habitat) of the River Dee or Dee Estuary. The crossing method for the River Dee crossing would avoid works within the River Dee watercourse and would be undertaken at the minimum trenchless crossing depths detailed in **paragraph 6.2.20** and the entrance/exit pits will be situated at least 16m from the riverbanks. As such, there would be no physical severance of habitat for the qualifying lamprey species of the Dee Estuary/Aber Dyfrdwy SAC. As detailed above in (b), lighting has the potential to adversely impact fish and may prevent movement upstream or within the watercourse (a fragmentation effect), of particular importance for migratory species such as salmon and lamprey. **It is considered that LSE cannot be ruled out in the absence of mitigation**.

(d) Further to the information presented in **paragraphs 6.2.20 to 6.2.23,** given the SAC is located approximately 3.9 km downstream of the Proposed Development, the geotechnical information and crossing depth under the River Dee, no LSE are anticipated to the qualifying features of the Dee Estuary/Aber Dyfrdwy SAC as a result of hydrological impacts through use of bentonite.

Table 6.4 – The Dee Estuary SPA: Screening of effects in isolation

Name of European Site and EU Code	**The Dee Estuary SPA (UK9013011)**				
Closest Point of European Site to Proposed Development	3.9km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Common tern (breeding season) – Article 4.1	X (a)	X (b)	X (e)	X (f)	N/A
Little tern (breeding season) – Article 4.1	X (a)	X (c)	X (e)	X (f)	N/A
Sandwich tern (on passage) – Article 4.1	X (a)	X (c)	X (e)	X (f)	N/A
Bar-tailed godwit (over winter) – Article 4.1	X (a)	X (c)	X (e)	X (f)	N/A
Redshank (on passage and over winter) – Article 4.2	X (a)	✓ **(d)**	X (e)	X (f)	N/A
Shelduck (over winter) – Article 4.2	X (a)	X (d)	X (e)	X (f)	N/A

Name of European Site and EU Code	**The Dee Estuary SPA (UK9013011)**				
Closest Point of European Site to Proposed Development	3.9km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Teal (over winter) – Article 4.2	X (a)	X (d)	X (e)	X (f)	N/A
Pintail (over winter) – Article 4.2	X (a)	X (c)	X (e)	X (f)	N/A
Oystercatcher (over winter) – Article 4.2	X (a)	X (d)	X (e)	X (f)	N/A
Grey plover (over winter) – Article 4.2	X (a)	X (c)	X (e)	X (f)	N/A
Knot (over winter) – Article 4.2	X (a)	X (c)	X (e)	X (f)	N/A
Dunlin (over winter) – Article 4.2	X (a)	X (c)	X (e)	X (f)	N/A
Black-tailed godwit (over winter) – Article 4.2	X (a)	X (c)	X (e)	X (f)	N/A
Curlew (over winter) – Article 4.2	X (a)	X (d)	X (e)	X (f)	N/A
Bird assemblage qualification (any season) – Article 4.2	X (a)	✓ **(d)**	X (e)	X (f)	N/A

Evidence Supporting Conclusions

(a) The Proposed Development is located outside of the SPA and therefore would not result in direct loss of habitat within the SPA that supports the qualifying bird species. Little tern, sandwich tern, bar-tailed godwit, pintail, grey plover, knot, dunlin, and black-tailed godwit were not recorded during the baseline bird surveys, and therefore direct and indirect loss of functionally linked habitat or mortality is not considered with regard to these species. The majority of the Proposed Development Boundary comprises arable farmland, poor semi-improved grassland and improved grassland, which are unfavourable habitats for the qualifying bird species of the SPA and therefore not considered functionally linked to the SPA. Furthermore, these habitats are well represented within the immediate surrounding landscape. Where functionally linked habitat is present, the numbers of qualifying bird species were low and did not exceed the numbers recorded along **Transect 2** of the River Dee, as detailed in **paragraph 4.2.8**. The River Dee and its associated habitats were the primary location of interest for SPA qualifying species within the Proposed Development Boundary. At this location, the Proposed Development crosses the River Dee using specialist trenchless crossing methods and therefore would avoid the loss of habitat that may support SPA qualifying species. Whilst construction activities may result in displacement, it is not anticipated that activities would result in the mortality of SPA qualifying bird species. As a result, no LSE is anticipated.

(b) There are no breeding colonies for common tern within a zone of influence of the Proposed Development. Whilst common tern may forage along the River Dee, which would be crossed by the Proposed Development via specialist trenchless crossing methods, the temporary disturbance that may occur at this location would not detrimentally impact the tern's ability to forage or support their young. Further, although peak counts of common tern were greater than 1% of SPA population, these numbers were recorded on single occasions and not representative of the numbers regularly encountered during the bird surveys. When assessing the mean monthly count of common tern recorded along the River Dee, the numbers were less than 0.3% of the SPA population (in comparison to the SPA citation or WeBS five-year average values). Given the low numbers of birds recorded along the River Dee and the methods proposed for the crossing, no LSE as a result of disturbance to tern species are predicted.

(c) Little tern, sandwich tern, bar-tailed godwit, pintail, grey plover, knot, dunlin and black-tailed godwit were not recorded during the baseline bird surveys and therefore LSE as a result of disturbance are not predicted.

(d) The Proposed Development Boundary is approximately 3.9km from the SPA at its closest point and therefore disturbance of qualifying species within the SPA would not occur. As detailed in **paragraph 4.2.8**, the River Dee and its associated habitats (mudflats) were the primary location of interest for SPA qualifying species within the Proposed Development Boundary, which may be used by qualifying birds of the SPA. Numbers of qualifying bird species recorded elsewhere were low and did not exceed the numbers recorded along **Transect 2** of the River Dee. Shelduck, teal, oystercatcher and curlew were recorded in low numbers along the River Dee in comparison to the SPA population (less than 1% of the SPA population for the peak count and less than 0.1% for mean monthly counts). As such, disturbance of these species would not result in an LSE. Redshank on passage were recorded in numbers greater than 1% (peak count and mean

monthly count), although only the peak count was greater than 1% for over wintering redshank. Redshank also forms part of the bird assemblage qualification for the SPA. The Proposed Development crosses the River Dee using specialist trenchless crossing methods, with the exit and entry pits located at least 16m from the riverbanks. The natural topography at the River Dee means the river and mudflat habitat are set below the ground level at the top of the banks (a difference in elevation of approximately 2m). As such, human presence at the exit/entrance pits near the River Dee is not predicted to be in a line of sight of SPA birds using the mudflat habitat along the same side of the river and would therefore naturally reduce disturbance resulting from human presence. Impacts as a result of human presence are not considered to give rise to LSE. Predicted noise levels at 10m from the trenchless installation techniques are predicted to be 82dB. The exit and entry pits would be located at least 16m from the riverbanks and the resultant noise levels at 16m from the trenchless installation techniques are predicted to be approximately 78dB. As such, the noise levels are predicted to exceed thresholds that may elicit a response and cause disturbance to redshank that may use the mudflat habitats of the River Dee (**paragraph 6.2.8**). The elevation difference between the mudflat habitat and exit/entrance pits is estimated to be at approximately 2m, potentially resulting in a small degree of attenuation. The crossing of the River Dee is expected to take up to four weeks (**paragraph 2.1.1** of **Chapter 2 –Proposed Development**) and would therefore be relatively short in duration. However, **it is considered that LSE cannot be ruled out in the absence of mitigation associated with noise disturbance during construction**. As detailed in **paragraph 6.2.13** above, 24-hour working is anticipated for up to a four-week period to achieve the River Dee crossing. The trenchless methods would include entrance/exit pits that will be a minimum of 16m from the riverbanks. Artificial lighting would be required during night working and light spill onto the mudflats may result in the disturbance of redshank, which may roost on the mudflat habitat along the river. Whilst there is availability of sufficient alternative habitat resource in the surrounding area, for the purpose of this assessment, **it is considered that LSE cannot be ruled out in the absence of mitigation associated with lighting**.

(e) The Proposed Development is located outside of the SPA and would not result in fragmentation to qualifying bird species.

(f) Further to the information presented in **paragraphs 6.2.20 to 6.2.23,** given the geotechnical information and the minimum trenchless crossing depths for the River Dee, a frac-out event of bentonite is not considered likely. As such, there are no LSE identified as a result of hydrological impacts through use of bentonite.

Table 6.5 – The Dee Estuary Ramsar: Screening of effects in isolation

Name of European Site and EU Code	**The Dee Estuary Ramsar (UK11082)**				
Closest Point of European Site to Proposed Development	3.9 km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Estuaries – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Mudflats and sandflats not covered by seawater at low tide – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Annual vegetation of drift lines – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Vegetated sea cliffs of the Atlantic and Baltic coasts – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Salicornia and other annuals colonising mud and sand – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A

Name of European Site and EU Code	**The Dee Estuary Ramsar (UK11082)**				
Closest Point of European Site to Proposed Development	3.9 km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Embryonic shifting dunes – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Shifting dunes along the shoreline with *Ammophila arenaria* – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Fixed dunes with herbaceous vegetation – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Humid dune slacks – Criterion 1	X (a)	N/A	X (a)	X (b)	N/A
Natterjack toad – Criterion 2	X (c)	X (c)	X (c)	X (c)	N/A

Name of European Site and EU Code	**The Dee Estuary Ramsar (UK11082)**				
Closest Point of European Site to Proposed Development	3.9 km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Waterbird assemblage during non-breeding season – Criterion 5	X (d)	✓ **(e)**	X (d)	X (f)	N/A
Redshank (spring/autumn & winter) – Criterion 6	X (d)	✓ **(e)**	X (d)	X (f)	N/A
Teal (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Shelduck (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Oystercatcher (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Curlew (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Pintail (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Grey plover (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Knot (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A

Name of European Site and EU Code	**The Dee Estuary Ramsar (UK11082)**				
Closest Point of European Site to Proposed Development	3.9 km downstream via the River Dee				
Key **Likely Significant Effect: ✓** **No Effect: X**					
Qualifying Feature	**Likely Effects of the Proposed Development**				
	Direct and indirect habitat loss and/or mortality	Disturbance of qualifying species	Fragmentation of habitats/species	Hydrological effects	Air quality effects
Dunlin (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Black-tailed godwit (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A
Bar-tailed godwit (winter) – Criterion 6	X (d)	X (e)	X (d)	X (f)	N/A

Evidence Supporting Conclusions

(a) The Proposed Development is located outside of the Ramsar. The Proposed Development crosses the River Dee approximately 3.9km upstream of the Ramsar, achieved by specialist trenchless crossing methods beneath the River Dee. Habitat loss as a result of bentonite frac-out is assessed separately as part of hydrological effects. There is no functionally linked habitat associated with the qualifying habitats of the Ramsar present that would be impacted by the Proposed Development. As such, the Proposed Development will not result in direct or indirect impacts as a result of habitat loss or fragmentation of qualifying habitats.

(b) The Proposed Development is hydrologically linked to the Ramsar via the River Dee, a fast-flowing and tidal watercourse that discharges into the Dee Estuary. The Proposed Development crosses the River Dee, which will be carried out using a specialist trenchless crossing method. Further to the information presented in **paragraphs 6.2.20 to 6.2.23**, given the geotechnical information and the minimum trenchless crossing depths for the River Dee, a frac-out event of bentonite is not considered likely. As such, there are no LSE identified anticipated to the qualifying habitats of the Ramsar as a result of hydrological impacts through use of bentonite.

(c) Natterjack toad are supported by the coastal sand dunes of the Ramsar. This habitat is located approximately 28km in a straight line from the Proposed Development, greater if considering the distance via the hydrological pathway of the River Dee. Further, there is no other functionally linked habitat associated with the Proposed Development or within a ZoI. Due to distance, there would be no impacts to natterjack toad as a result of direct or indirect habitat loss, mortality, disturbance or fragmentation. In addition, hydrological impacts associated with works around the River Dee crossing (such as those from bentonite, as discussed above in (b)) are not anticipated to occur. As such, no LSE is predicted to natterjack toad.

(d) The Proposed Development is located outside of the Ramsar and therefore would not result in fragmentation to qualifying bird species or a direct/indirect loss of habitat within the Ramsar that supports the qualifying bird species. Pintail, grey plover, knot, dunlin, black-tailed godwit, and bar-tailed godwit were not recorded during the baseline bird surveys and therefore direct and indirect loss of functionally linked habitat or mortality is not considered with regard to these species. The majority of the Proposed Development Boundary comprises arable farmland, poor semi-improved grassland, and improved grassland, which are unfavourable habitats for the qualifying bird species of the SPA and therefore not considered functionally linked to the Ramsar. Furthermore, these habitats are well represented within the immediate surrounding landscape. Where functionally linked habitat is present, the numbers of qualifying bird species were low and did not exceed the numbers recorded along **Transect 2** of the River Dee, as detailed in **paragraph 4.2.8**. The River Dee and its associated habitats were the primary location of interest for SPA qualifying species within the Proposed Development Boundary. At this location, the Proposed Development crosses the River Dee using specialist trenchless crossing methods and therefore would avoid the loss of habitat that may support Ramsar qualifying species. Whilst construction activities may result in displacement, it is not anticipated that activities would result in the mortality of Ramsar qualifying bird species. As a result, no LSE is anticipated.

(e) The Proposed Development Boundary is approximately 3.9 km from the Ramsar at its closest point and therefore disturbance of qualifying species within the Ramsar would not occur. Pintail, grey plover, knot, dunlin, black-tailed godwit and bar-tailed godwit were not recorded during the baseline bird surveys and are therefore not considered further in relation to disturbance. As detailed in **paragraph 4.2.8**, the River Dee and its associated habitats (mudflats) were the primary location of interest for qualifying species of the Ramsar within the Proposed Development Boundary. Numbers of qualifying bird species recorded elsewhere were low and did not exceed the numbers recorded along **Transect 2** of the River Dee. Shelduck, teal, oystercatcher and curlew were recorded in low numbers along the River Dee in comparison to the Ramsar population (less than 1% of the Ramsar population for the peak count and less than 0.1% for mean monthly counts). As such, disturbance of these species would not result in a LSE. Redshank on passage were recorded in numbers greater than 1% (peak count and mean monthly count), although only the peak count was greater than 1% for over wintering redshank. Redshank also forms part of the bird assemblage qualification for the Ramsar. The Proposed Development crosses the River Dee using specialist trenchless crossing methods, with the exit and entry pits located at least 16m from the riverbanks. The natural topography at the River Dee means the river and mudflat habitat are set below the ground level at the top of the banks (a difference in elevation of approximately 2m). As such, human presence at the exit/entrance pits near the River Dee is not anticipated to be in a line of sight of Ramsar qualifying birds using the mudflat habitat along the same side of the river and would therefore naturally reduce disturbance resulting from human presence. Impacts as a result of human presence are not considered to give rise to LSE. Predicted noise levels at 10m from the trenchless installation techniques are predicted to be 82dB. The exit and entry pits would be located at least 16m from the riverbanks and the resultant noise levels at 16m from the trenchless installation techniques are predicted to be approximately 78dB. As such, the noise levels are predicted to exceed thresholds that may elicit a response and cause disturbance to redshank that may use the mudflat habitats of the River Dee (**paragraph 6.2.8**). The elevation difference between the mudflat habitat and exit/entrance pits is estimated to be at approximately 2m, potentially resulting in a small degree of attenuation. The crossing of the River Dee is expected to take up to four weeks (**paragraph 2.1.1** of **Chapter 2 –Proposed Development**) and would therefore be relatively short in duration. However, **it is considered that LSE cannot be ruled out in the absence of mitigation associated with noise disturbance during construction**. As detailed in **paragraph 6.2.13**, 24-hour working is anticipated for up to a four-week period to achieve the River Dee crossing. The trenchless methods would include entrance/exit pits that will be a minimum of 16m from the riverbanks. Artificial lighting would be required during night working and light spill onto the mudflats may result in the disturbance of redshank, which may roost on the mudflat habitat along the river. Whilst there is availability of sufficient alternative habitat resource in the surrounding area, for the purpose of this assessment, **it is considered that LSE cannot be ruled out in the absence of mitigation associated with lighting**.

(f) Further to the information presented in **paragraphs 6.2.20 to 6.2.23,** given the geotechnical information and the minimum trenchless crossing depths for the River Dee, a frac-out event of bentonite is not considered likely. As such, there are no LSE identified as a result of hydrological impacts through use of bentonite.

6.4. POTENTIAL IN-COMBINATION EFFECTS

6.4.1. A short-list of 41 'Other Developments' for the in-combination assessment was identified**.** The table provides justification (spatial, temporal, and other justifications) for the inclusion or exclusion of each of the Other Developments from the short-list.

6.4.2. A summary table of the in-combination assessment of LSE in relation to all 41 Other Developments is presented in **Appendix B** of this document. Where available[6], ecological baseline reports and HRAs were interrogated to determine the potential for in-combination effects.

6.4.3. Potential for in-combination LSE was confirmed in relation to four of the Other Developments; 1a, 19, 21 and 27. In addition, in-combination effects are assumed in relation to an additional four of the Other Developments (1c, 1d, 1f and 1g), which are at a pre-application stage and therefore information relating to the exact location of these development was not available at the time of writing. Based on a description of these Other Developments and an understanding of their general location, potential in-combination effects have been identified. **Table 6.6** provides a summary of the potential in-combination LSE identified.

[6] Obtained from the planning portal.

Table 6.6 – Potential In-Combination Effects that may result in LSE

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE
1a	Point of Ayr (PoA) Terminal and Foreshore Works upgrades and BVS sites (Cornist Lane, Babell and Pentre Halkyn) linked to the Proposed Development via the existing Flint Connection to PoA Terminal Pipeline.	**Yes. Potential in-combination (cumulative) impacts of disturbance to qualifying bird species of The Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development.**
1c	10km of powerlines (either all overhead or partial overhead and underground) to provide sufficient electricity capacity for the upgraded PoA terminal.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.
1d	Underground connections from BVS and AGI locations to connection points to electricity infrastructure.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.
1f	Additional pipeline is required by the Hydrogen Production Plant, part of the Project, that shares the Stanlow AGI plot and some initial routing out of Stanlow. The construction period expected within 2023-2026. It will provide natural gas for the HPP that is converted to H_2 and CO_2, which will feed into the Newbuild Carbon Dioxide Pipeline.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.
1g	The Hynet Northwest Hydrogen Pipeline will convey hydrogen from the Stanlow production site to industrial users and to blending points at Partington and Warburton for introduction into the existing gas network. It will also connect with associated hydrogen storage facilities to help balance supply and demand on the pipeline. It is anticipated to consist of approximately 125km of underground high pressure steel pipeline with associated user connection spurs, together with a number of Hydrogen Above Ground Installations along the route of the pipeline.	**Yes. Potential for cumulative disturbance of qualifying bird species of the Dee Estuary SPA.**
19	Hybrid Planning Application for a gas engine electricity generating plant with a maximum generating capacity of 22.5MWe and Units for B2/B8 General Industrial / Storage and Distribution uses.	**Yes. Other Development outside but adjacent to the Mersey Estuary. Potential for cumulative disturbance of qualifying bird species of the Dee Estuary SPA. Other Development site not understood to support functionally linked land of the SPA.**
21	Development of up to 500,000ft^2 (46,450m^2) of B2/B8 use class floorspace, with ancillary offices, service yards, and all associated works including landscaping and car parking with all matters reserved for future consideration.	**Yes. Other Development outside but adjacent to the Mersey Estuary. Potential for cumulative disturbance of qualifying bird species of the Dee Estuary SPA. Other Development site not understood to support functionally linked land of the SPA.**
27	Employment-led mixed-use development, incorporating Logistics and Technology Park (B1, B2, B8) with residential(C3), local retail centre (A1), hotel (C1), training and skills centre (C2, D1), new parkland; conversion of buildings, demolition of barns; and associated infrastructure comprising construction of accesses, roads, footpaths/ cycle paths, earthworks and flood mitigation/drainage works.	**Yes. Potential disturbance to SPA birds using habitats along the River Dee if construction undertaken simultaneously. Potential cumulative impacts to qualifying features of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC from dust deposition due to proximity. Potential cumulative impacts to otter. Potential cumulative disturbance of qualifying fish species.** **Other Development site is not understood to support functionally linked land of the European Sites.**

6.5. SCREENING CONCLUSION

6.5.1. **Table 6.7** below summarises the conclusions of the Stage 1: Screening assessment and details the European Sites (and the qualifying feature of these sites) where LSE were identified and the potential impact pathway(s) that exist.

Table 6.7 – Summary of Stage 1: Screening Results

Site Name	Qualifying Feature(s)	Pathway(s) of LSE identified
River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC	All qualifying features (habitats and species)	Air quality effects associated with dust deposition
	Otter	Loss of functionally linked habitat (potential otter holts along Wepre Brook) Mortality as a result of entrapment in voids
	Fish	Disturbance and fragmentation as a result of lighting during construction around the River Dee
Dee Estuary/Aber Dyfrdwy SAC	Sea and river lamprey	Disturbance and fragmentation as a result of lighting during construction around the River Dee
The Dee Estuary SPA and Ramsar	Redshank and bird assemblage qualification	Disturbance as a result of noise and lighting during construction around the River Dee

6.5.1. All LSE identified above are subject to further assessment of the potential for adverse effects on the integrity of the European Sites of concern, as discussed in **Section 6**.

6.5.2. All other impact pathways to European Sites and their qualifying features are not considered to give rise to LSE, either alone or in combination, and are therefore screened out at Stage 1.

7. APPROPRIATE ASSESSMENT (AA)

7.1. APPROACH

7.1.1. This AA section considers the potential effects identified during screening (**Section 6** and summarised above in **Table 6.7**) in more detail in terms of their nature and extent. The objective of the AA section is to establish whether the Proposed Development will adversely affect the integrity of a European Site, taking into account mitigation measures and the potential for further in-combination effects that may arise from other plans or projects.

7.1.2. In accordance with case law (see **paragraph 3.3.1**), avoidance and mitigation measures designed to reduce harm to European Sites were not considered during the Stage 1: Screening of the Proposed Scheme. At this stage in the HRA process (Stage 2: AA), it is appropriate to consider mitigation measures during the assessment. This assessment has therefore considered the implementation of mitigation measures, including targeted measures identified to address potential effects on European Sites.

7.1.3. The following assumptions related to mitigation are therefore relevant:

- A CEMP will be produced and implemented throughout the Proposed Development and during all construction activities. The CEMP will be produced by the Construction Contractor prior to the commencement of construction and will specify measures to avoid/control impacts on the natural environment. The CEMP will be informed by the measures detailed within the **Outline Construction Environmental Management Plan (OCEMP)** and a **Register of Environmental Actions and Commitments (REAC)** that accompany the Marine Licence application.

7.1.4. The sections below present the information to inform the AA, including any mitigation to avoid or reduce impacts, where appropriate.

7.2. RIVER DEE AND BALA LAKE/AFON DYFRDWY A LLYN TEGID SAC

AIR QUALITY IMPACTS – ALL QUALIFYING FEATURES

7.2.1. Trenching on the approach to the trenchless crossing of the River Dee would be achieved through open-cut techniques, which could result in significant dust emissions and deposition in adjacent areas. High levels of dust deposited in the River Dee could result in the smothering of vegetation/habitats or a deterioration in water quality of the river. This may indirectly affect the qualifying features of the SAC.

7.2.2. In order to avoid significant adverse effects, a Dust Management Plan (DMP) will be developed and implemented on site by the Construction Contractor (measure D-AQ-004 of the **REAC**). The DMP will capture best practice measures to reduce dust dispersal. Such measures would include:

- consideration of weather conditions and the dust-generating potential of material to be excavated prior to the commencement of works;
- planning the site layout to maximise distance of plant/stockpiles etc. to sensitive receptors as far as practicable (measure D-AQ-012 of the **REAC**);
- where practicable, erect solid screens or barriers around dusty activities (measure D-AQ-013 of the **REAC**);
- use of dust suppression techniques where required, such as water sprays (measure D-AQ-015 of the **REAC**);
- minimising dust generating activities as far as practicable; and
- monitoring of dust impacts, as required, during construction (measures D-AQ-008, 009, 010 and 011 of the **REAC**).

7.2.3. Full measures to be employed would be detailed in the CEMP to be followed at all times during the works (**OCEMP**).

7.2.4. Following the implementation of the above mitigation measures, **no adverse impact on the integrity of the SAC is concluded with regard to dust emissions or deposition.**

OTTERS

Loss of Habitat

7.2.5. Whilst no otter holts were recorded within the Proposed Development Boundary, otter resting sites and potential holts (assumed active based on the precautionary principle) were recorded along Wepre Brook, a functionally linked watercourse to the River Dee. As such, there is the potential for otter resting sites to be present and, in the absence of mitigation, the Proposed Development may result in the direct loss of otter habitat (resting sites).

7.2.6. It should be noted that the loss of a single or low numbers of otter resting sites along Wepre Brook is unlikely to result in an adverse impact on the integrity of the SAC. However, mitigation has been captured in the **REAC** to avoid and reduce impacts to otter.

7.2.7. To mitigate impacts to otter holts/resting sites, updated pre-commencement surveys will be undertaken to verify that the baseline data remains accurate and to identify any changes, such as a change in location or new location(s) of otter resting sites (measure B-DB-035 of the **REAC**). If otter resting sites are recorded but an offence[7] can be avoided through mitigation, the Ecological Clerk of Works (ECoW) will develop an appropriate plan and work with the Construction Contractor to implement this (measure B-DB-035 of the **REAC**). Where suitable mitigation cannot be implemented to avoid an offence, an EPS

[7] Otters are afforded protection under the Habitats Regulations (**Ref. 1**) and the Wildlife and Countryside Act 1981 (as amended) (**Ref. 31**). Otters are protected from killing and injury and its places of rest or shelter (holt) protected from damage or destruction. Protection is also afforded with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these places.

licence will be sought from the relevant statutory body. The EPS licence would be supported by appropriate mitigation, such as timing of the works and ecological supervision, to further reduce the impacts of the Proposed Development. The EPS licence would also identify any necessary compensation, as agreed with the relevant statutory body. As such, **no adverse impact on the integrity of the SAC is concluded with regard to loss of otter habitat (holts or resting places)**.

Mortality

7.2.8. Otters are known to be present in the vicinity of the Proposed Development and may become trapped in trenches/voids created during open-cut trenching on approaches to entry and exit pits for the trenchless crossing. In a worst-case scenario, entrapment may lead to the mortality of individual otter. This, in turn, could lead to a long-term reduction in the otter population along the River Dee.

7.2.9. To prevent entrapment of otter and other wildlife, trenches or voids created will be excavated and infilled within the same working day. If this is not practicable, suitable means of escape will be provided (such as a ramp at no greater than a 45° angle) at regular intervals along the excavated trench excavations. Any void will then be visually inspected prior to re-starting works to confirm the absence of entrapped wildlife. This mitigation is captured as measure D-BD-023 of the **REAC**.

7.2.10. Escape measures will be discussed and agreed with an appointed ECoW to ensure they are suitable for the size of void and wildlife that may become trapped. If deemed appropriate, the ECoW may enforce additional measures, such as the installation of temporary exclusion fencing around the void to prevent entry (measure D-BD-023 of the **REAC**).

7.2.11. In addition to the above, any exposed tunnels or pipes will also be blocked overnight to prevent entry by otter or other wildlife.

7.2.12. Following the implementation of the above mitigation measures, **no adverse impact on the integrity of the SAC is concluded with regard to mortality of otters**.

FISH

7.2.13. Use of artificial lighting during the proposed 24 hour working associated with the River Dee crossing may result in adverse impacts to qualifying fish species (salmon, lamprey species and bullhead).

7.2.14. Where lighting is required during construction, a suitable lighting design will be developed and implemented (measure D-BD-015 of the **REAC**). This will include:

- Avoidance of artificial lighting of the River Dee, particularly during the hours of darkness, to prevent impacts to fish behaviour or passage;
- Avoidance of light spill through use of directional and/or baffled lighting;

- Positioning of lighting columns away from the River Dee and also facing away from the River Dee; and
- Reducing the height of lighting columns to reduce light spill onto adjacent habitats.

7.2.15. Following the implementation of the above lighting mitigation, **no adverse impact on the integrity of the SAC is concluded with regard to fish disturbance and fragmentation**.

7.3. DEE ESTUARY/ABER DYFRDWY SAC

7.3.1. Use of artificial lighting during the proposed 24-hour working associated with the River Dee crossing may result in adverse impacts to qualifying fish species (lamprey species).

7.3.2. The mitigation presented above in **paragraph 7.2.14** in relation to lighting is also relevant to the impact assessment for the SAC.

7.3.3. Following the implementation of the lighting mitigation, **no adverse impact on the integrity of the SAC is concluded with regard to fish disturbance and fragmentation**.

7.4. THE DEE ESTUARY SPA AND RAMSAR

7.4.1. Use of artificial lighting during the proposed 24-hour working and noise generated by construction activities associated with the River Dee crossing may result in adverse impacts to qualifying bird species of the SPA, notably redshank.

7.4.2. The mitigation presented above in **paragraph 7.2.14** in relation to lighting and **paragraphs** Error! Reference source not found. and Error! Reference source not found. is also relevant to disturbance of birds.

7.4.3. Following the implementation of the lighting mitigation, **no adverse impact on the integrity of the SPA/Ramsar is concluded with regard to bird disturbance**.

7.5. CONCLUSION FOR THE PROPOSED DEVELOPMENT IN ISOLATION

7.5.1. Following the implementation of mitigation measures, it is predicted that there would be **no adverse impacts on the integrity of the European Sites or their qualifying features** as a result of the Proposed Development in isolation.

7.6. CONCLUSION IN-COMBINATION WITH OTHER DEVELOPMENTS

7.6.1. As detailed in **Appendix B**, Other Developments 1a, 19, 21 and 27 propose mitigation measures to reduce the impacts of each respective Other Development. Following the implementation of mitigation measures for the

Proposed Development and those identified for each of the Other Developments, it is predicted that **no in-combination adverse impacts on the integrity of the European Sites** would occur.

7.6.2. Other Developments 1c, 1d, 1f, and 1g are at a pre-application stage. Therefore, information regarding these proposals and any measures to avoid or reduce impacts to the European Sites was not available at the time of writing.

7.6.3. Other Development 1c, 1d, 1f and 1g are schemes that are part of the Project (HyNet North West), and therefore it is reasonable to assume these developments will secure appropriate mitigation to avoid any adverse impacts on the integrity of the European Sites.

7.6.4. It is also notable that the Proposed Development proposes mitigation to sufficiently address impacts and effects to the European Sites. As such, any contribution to in-combination effects is considered to be negligible.

7.6.5. Overall, in consideration of the above, it is predicted that there would be **no in-combination adverse impacts on the integrity of the European Sites**.

8. CONCLUSIONS

8.1.1. This combined HRA Screening and Report to Inform an Appropriate Assessment has been prepared in relation to the Proposed Development.

8.1.2. Works associated with the Proposed Development are detailed in **paragraph 2.1.1**.

8.1.3. During the screening assessment, the following LSE were identified as a result of the Proposed Development:

- adverse air quality effects on the various qualifying features of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC associated with dust deposition;
- loss of functionally linked otter habitat and mortality of otter associated with the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC;
- disturbance and fragmentation to qualifying fish species of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC and Dee Estuary/Aber Dyfrdwy SAC as a result of lighting during construction around the River Dee;
- disturbance of redshank and the bird assemblage qualification of the Dee Estuary SPA/Ramsar as a result of lighting and noise during construction around the River Dee.

8.1.4. Potential in-combination effects with eight Other Developments were also identified, primarily as a result of disturbance to qualifying species of the European Sites.

8.1.5. As LSE were identified during the screening stage, further assessment of the potential for adverse effects on the integrity of the European Sites was undertaken (Stage 2: AA). At the AA stage, avoidance and mitigation measures designed to reduce harm to European Sites were considered. Mitigation measures identified include (in summary):

- Best practice measures to be followed during construction in relation to dust deposition;
- Pre-commencement surveys to update baseline information relating to otter, the implementation of avoidance and mitigation measures if holts or resting places are identified or, if impacts are unavoidable, the implementation of an EPS licence obtained from the relevant statutory body;
- Measures to avoid entrapment of otters in voids, trenches or pipes;
- Appropriate lighting design to avoid of reduce impacts of light spill around the River Dee on birds and fish;
- Noise screening methods for works around the River Dee, if required, to reduce noise disturbance to qualifying bird species (namely redshank); and
- Best practice measures to be followed during construction in relation to pollution prevention.

8.1.6. The above mitigation measures are captured within the **REAC** and would be secured and implemented within the CEMP (**OCEMP**).

8.1.7. Following the implementation of the above mitigation measures, **it is concluded that the Proposed Development would not adversely affect the integrity of the European Sites either alone or in-combination**.

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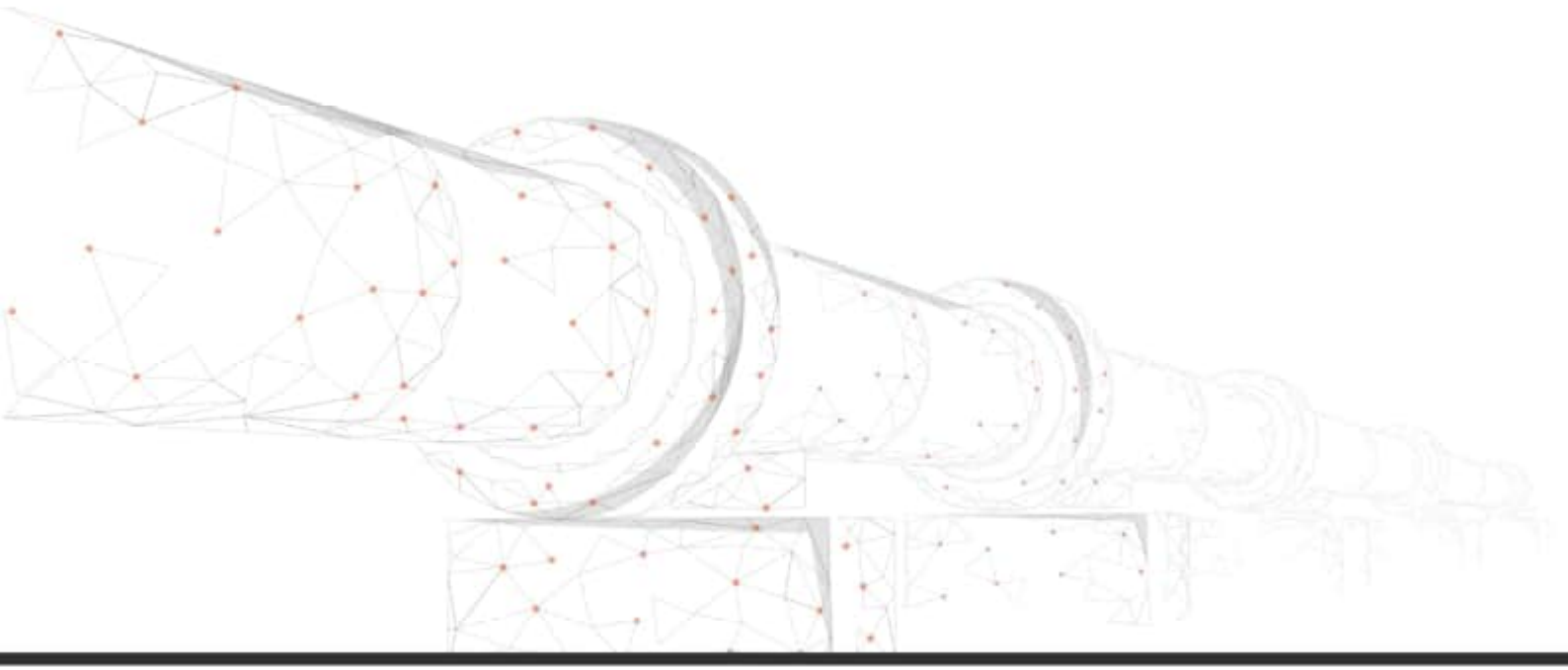
Appendix A

EUROPEAN SITES – CONSERVATION OBJECTIVES



Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC	NRW define conservation objectives as comprising two elements, the vision for the SAC feature and the performance indicators which enable the measurement of whether the SAC feature meets the vision. **Conservation objective for water courses (Rivers):** The vision for the water course is for it to be in favourable conservation status, where all of the following conditions are satisfied: 1. Ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature (including water quantity and quality, physical habitat and community composition and structure). 2. There will be no deterioration in water quality other than that temporarily generated by natural variations in water flow or by manmade variations occurring as a result of operating the River Dee flow control regime within its normal operating parameters. 3. The Dee flow regime should remain within 10% of 'recent actual flow' as described by Bethune (2006). 4. The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC will be avoided. 5. Artificial factors impacting on the capability of each feature to occupy the full extent of its potential range should be modified where necessary to allow passage, e.g. weirs, bridge sills, or other forms of barrier. 6. Natural limiting factors such as waterfalls, which may limit the natural range of a feature or its dispersal between naturally isolated populations, should not be modified. 7. Flow objectives for assessment points in the Dee Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary. 8. Levels for nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive waterbody in the River Dee and Bala Lake SAC, and measures taken to maintain nutrients below these levels. 9. The levels of water quality parameters, in addition to those deemed to be nutrients and including levels of suspended solids, that may affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain them below these levels. 10. Potential sources of pollution, nutrient enrichment and/or suspended solids that have not been addressed in the Review of Consents such as, but not confined to, diffuse pollution or disturbance to sediments, will be considered in assessing plans and projects. **Conservation objective for Feature 1 (watercourses of plain to montane levels):** The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. The conservation objective for the water course as defined for water courses (Rivers) as above must be met. 2. The area of this feature within its potential range in this SAC should remain stable or increase. 3. The area of the sub-communities that are represented within this feature should be stable or increasing. 4. The conservation status of the feature's typical species should be favourable. 5. All know, controllable features, that affect the achievement of these conditions are under control (many factors may be unknown or beyond human control). **Conservation objective for Feature 2 (Atlantic Salmon, *Salmo Salar*)**	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, 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 the habitats of qualifying species rely • The populations of qualifying species • The distribution of qualifying species within the site.

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. The parameters for the water course as defined for water courses (Rivers) as above must be met. 2. The SAC feature populations will be stable or increasing over the long term. 3. The natural range of the features in the SAC is neither being reduced not is likely to be reduced for the foreseeable future. 4. There will be no reduction in the area or quality or habitat for the feature populations in the SAC on a long-term basis. 5. All know, controllable features, that affect the achievement of these conditions are under control (many factors may be unknown or beyond human control). **Conservation objective for Feature 3 (*Luronium natans*/Floating water plantain)** The conservation objective for the lake water body as defined in conservation objective number 10 (water courses Rivers) must be met. The vision for this feature is for it be in favourable conservation status, where all of the following conditions are satisfied: 1. There will be no contraction of the current *L.natans* extent and distribution, and the populations will be viable throughout their current distribution and will be able to maintain themselves on a long-term basis. Each *L.natans* population must be able to complete sexual and/or vegetative reproduction successfully. 2. The lake will have sufficient habitat to support existing *L.natans* populations within their current distribution and for future expansion. 3. All factors affecting the achievement of these conditions are under control. **Conservation objective for Features 4, 5, and 6 (Sea lamprey, *Petromyszon marinus,* Brook lamprey, *Lampetra planeri,* River lamprey, *Lampetra fluviatilis*)** The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. The parameters for the water course as defined for water courses (Rivers) as above must be met. 2. The SAC feature populations will be stable or increasing over the long-term. 3. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. 4. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis. 5. All factors affecting the achievement of these conditions are under control. **Conservation objective for Feature 7 (Bullhead, *Cottus gobio*)** The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied: 1. The parameters for the water course as defined for water courses (Rivers) as above must be met. 2. The SAC feature populations will be stable or increasing over the long term. 3. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. 4. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis. 5. All factors affecting the achievement of these conditions are under control. **Conservation objective for Feature 8 (European otter, *Lutra lutra*)** The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	1. The parameters for the water course as defined for water courses (Rivers) as above must be met. 2. The SAC otter population is stable over the long term, both within the SAC and within its catchment. 3. There will be no loss of otter breeding or resting sites other than by natural means (such as naturally occurring river processes) within the SAC or its catchment. 4. There number of potential resting sites within the SAC will not be a factor limiting that limits the otter population's size or extent. 5. There should be no reduction of fish biomass within the SAC or its tributaries except for that attributable to natural fluctuations. 6. There should be no loss of amphibian habitat likely to provide a source of prey for members of the SAC otter population. 7. The potential range of otters in the within the SAC or its catchment is neither being reduced nor is likely to be reduced for the foreseeable future. 8. All known or potential access or dispersal routes within the catchement for otters that might be considered part of the SAC population should be maintained such that their function is not impaired including the incorporation of measures or features required to avoid disturbance. 9. Off-site habitats likely to function as 'stepping stones' within the catchment for members of the SAC otter population will be maintained for migration, dispersal, foraging and genetic exchange purposes. 10. All man-made structures within or likely to be used by otters from the SAC population must incorporate effective measures to facilitate the safe movement and dispersal of otters. 11. All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control). **Conservation objective for lake and marginal wetland SAC & Ramsar features 9 and 10 (the lake and aquatic/emergent vegetation, lake fen/swamp inc. wet woodland)** Vision for Features 9 and 10: 1. The total extent of the lake area, including lake fen and swamp shall be maintained as indicated on map in Annex 1, this includes some 10 ha of swamp/fen in total; of which at least 6 ha is attributable to NVC S11 *Carex vesicaria* (Blister sedge) swamp community. 2. The abundance and distribution of rare aquatic and emergent species will be maintained or increased and continue to be self-sustaining. 3. The abundance and distribution of typical species of aquatic /emergent species will be common and continue to be self-sustaining. 4. The distribution fen / swamp and wet woodland shall be as indicated on map in Annex 1, or more extensive. 5. The fen and swamp layers comprise locally native species. The abundance of typical species of each fen and swamp type will be common. 6. The abundance and distribution of uncommon / rare plants occurring within each fen and swamp vegetation community will be maintained or increased and continue to be self-sustaining. 7. Invasive non-native species such as rhododendron, Japanese knotweed, Canadian pondweed and Himalayan balsam will not be present. This condition is considered under "factors". 8. Water quality in the lake should be of a standard that will ensure it reaches at Good Ecological Status or better as defined by the Water Framework Directive, and that the River Dee at Llandderfel Bridge reaches its targets of Biological GQA class A and chemical quality standard of RE1. Eutrophication of the lake from diffuse and point source pollution will be under control and incidences of blue/green algal blooms will have stopped. The nutrient levels in the lake will be much lower and similar to the levels inferred from the diatom assemblages for the lake prior to 1925. 9. All factors affecting the achievement of these conditions are under control.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	Conservation objective for Feature 11 (Fish. Gwyniad, *Coregonus lavaretus*) The conservation objective for the lake water body as defined in conservation objective number 9 & 10 must be met. The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. The population of the feature in the SAC is stable or increasing over the long term. 2. The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. 3. Suitable habitat is defined in terms of near-natural hydrological regime, depth of water and substrate type at spawning sites, and ecosystem structure and functions e.g. food supply. 4. All factors affecting the achievement of these conditions are under control. **Conservation objective for Feature 12 (Glutinous snail, *Myxas glutinosa*)** The conservation objective for the lake water body as defined in conservation objective number 9 & 10 must be met. The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. This population will continue to thrive and colonise all suitable areas of habitat in the marginal zone. The species will have been extensively studied and its ecology, especially its response to fluctuating water levels, will be better understood so that its niche requirements can continue to be met. In addition, we will fully understand whether the apparently different mean growth rates in snail populations at different locations around the lake is due to minor habitat variance or to isolated sub-population differences. 2. Maintenance of the quality and extent of suitable habitat. 3. All factors affecting the achievement of these conditions are under control.	
Dee Estuary/Aber Dyfrdwy SAC	The conservation objective for the “estuaries” feature of the Dee Estuary SAC is to maintain the feature in favourable condition, as defined below: 1. The aggregate total extent of all estuarine communities within the site is maintained; 2. The spatial distribution of estuarine communities within the site is maintained; 3. The extent of individual estuarine habitat features within the site is maintained; 4. The variety and relative proportions of sediment and rocky substrates within the estuary is maintained; 5. The variety and extent of any notable subtidal sediment communities is maintained; 6. The variety and extent of notable intertidal hard substrata communities is maintained; and 7. The spatial and temporal patterns of salinity, suspended sediments and nutrients concentrations are maintained within limits sufficient to satisfy the requirements of statements 1 to 6 above. The conservation objective for the “mudflats and sandflats” feature of the Dee Estuary SAC is to maintain the feature in favourable condition, as defined below: 1. The total extent of mudflat and sandflat communities within the site is maintained; 2. The proportions of individual mudflat and sandflat communities within the site are maintained; 3. The topography of the intertidal flats and the dynamic processes of channel igration and sinuosity across the flats are maintained; and 4. The abundance of typical species of the mudflat and sandflat feature within the site is maintained.	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, 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 the habitats of qualifying species rely; • The populations of qualifying species; and The distribution of qualifying species within the site.

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	The conservation objective for the "*Salicornia* and other annuals colonising mud and sand" feature of the Dee Estuary SAC is to maintain the feature in favourable condition, as defined below: 1. subject to natural processes, each of the following below conditions are met: a. The total extent of pioneer saltmarsh vegetation communities within the site is maintained; b. The presence of pioneer saltmarsh vegetation communities as part of transitions from intertidal sediment communities to higher saltmarsh are maintained; c. The abundance of the typical species of the pioneer saltmarsh vegetation communities is maintained; d. The abundance of the notable species of the pioneer saltmarsh vegetation communities is maintained; and 2. Regardless of natural processes, the condition below is also met: a. The overall extent and abundance of common cord grass *Spartina anglica* is not increasing within the pioneer saltmarsh zone. The conservation objective for the "Atlantic salt meadow" feature of the Dee Estuary SAC is to maintain the feature in favourable condition, as defined below: 1. The total extent of Atlantic salt meadow vegetation communities within the site is maintained; 2. The proportions of individual Atlantic salt meadow vegetation communities within the site are maintained; 3. The zonation of Atlantic salt meadow vegetation communities and their transitions to fresh water and terrestrial vegetation are maintained; 4. The morphology of saltmarsh creeks and pans and the process of their evolution are maintained; 5. The extent of ungrazed areas of salt meadow within the estuary is maintained and there is no increase in grazing intensity over the rest of the salt meadow; 6. The relative abundance of the typical species of the Atlantic salt meadow vegetation communities is maintained; and 7. The abundance of the notable species of the Atlantic salt meadow vegetation communities is maintained. The conservation objective for the "annual vegetation of drift lines" feature of the Dee Estuary SAC is to maintain the feature in a favourable condition, as defined below: 1. The extent of coarse sediment/shingle formations capable of supporting drift line vegetation communities within the site is maintained; 2. The presence of annual drift line vegetation communities within the site is maintained; and 3. The presence of the typical species of the annual drift line vegetation communities is maintained. The conservation objective for river lamprey feature of the Dee Estuary SAC is to maintain the feature in a favourable condition, as defined below: 1. The migratory passage of both adult and juvenile river lamprey through the Dee Estuary between Liverpool Bay and the River Dee is unobstructed by physical barriers and/or poor water quality;	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	2. The five year mean count of river lampreys recorded by the Chester Weir fish trap is no less than 55 under the monitoring regime in use prior to notification; and 3. The abundance of prey species forming the river lamprey's food resource within the estuary, is maintained. The conservation objective for sea lamprey feature of the Dee Estuary SAC is to maintain the feature in a favourable condition, as defined below: 1. The migratory passage of both adult and juvenile sea lampreys through the Dee Estuary between Liverpool Bay and the River Dee is unobstructed by physical barriers and/or poor water quality; 2. The five year mean count of sea lampreys recorded by the Chester Weir fish trap is no less than 18 under the monitoring regime in use prior to notification; and 3. The abundance of prey species forming the sea lamprey's food resource within the estuary, is maintained. (Natural England, Welsh Assembly Government, CCW, January 2010)	
The Dee Estuary SPA	The conservation objective for the "wintering bar-tailed godwit" feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering bar-tailed godwit population is no less than 1,150 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent and spatial distribution of vegetation less than 10cm in height across the saltmarsh is maintained. 4. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 5. Aggregations of bar-tailed godwit roosting or feeding or on the intertidal flats or saltmarsh are not subject to significant disturbance. The conservation objective for the "breeding common tern" feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year mean population size for the breeding common tern population is no less than 392 breeding pairs [i.e. the 5 year mean between 1995-1999]. 2. The five year mean productivity of the breeding common tern population is no less than 1.34 chicks fledging per breeding pair per year [i.e. the 5 year mean between 1995-1999]. 3. The abundance of common tern prey species within the estuary is maintained. 4. Common terns are able to pass freely between the Dee Estuary and their breeding site at Shotton Lagoons and Reedbeds without obstruction. 5. Aggregations of common terns roosting on the upper shore over high tide are not subject to significant disturbance. The conservation objective for the "breeding little tern" feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below:	Ensure 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 the habitats of the qualifying features; • 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 features within the site.

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	1. The 5 year mean population size for the breeding little tern population is no less than 69 breeding pairs [i.e. the 5 year mean between 1995-1999]. 2. The five year mean productivity of the breeding little tern population is no less than 0.80 chicks fledging per breeding pair per year [i.e. the 5 year mean between 1995- 1999]. 3. The breeding site is not subject to significant disturbance. 4. The extent of shingle habitat at Gronant, which is suitable for nesting little terns is maintained. 5. Aggregations of little terns roosting on the beach at Gronant or Point of Ayr over high tide are not subject to significant disturbance. The conservation objective for the “passage Sandwich tern” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year mean peak population size for the autumn passage sandwich tern population is no less than 957 individuals [i.e. the 5 year mean peak between 1995- 1999]. 2. Aggregations of Sandwich terns roosting on the upper shore over high tide are not subject to significant disturbance. The conservation objective for the “passage redshank” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the passage redshank population is no less than 8,795 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of redshank prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding redshank are not subject to significant disturbance. The conservation objective for the “wintering shelduck” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering shelduck population is no less than 7,725 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained 3. The abundance and dispersion of shelduck prey species are maintained at levels sufficient to support the population size in 1.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	4. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 5. Aggregations of loafing or feeding shelduck are not subject to significant disturbance. The conservation objective for the “wintering teal” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering teal population is no less than 5,251 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 4. Greater than 25% cover of seed bearing plants is maintained during winter across the saltmarsh. 5. The extent of standing water pools or ‘flashes’ in the saltmarsh is maintained. 6. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas ; vii. aggregations of loafing or feeding teal are not subject to significant disturbance. The conservation objective for the “wintering pintail” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering pintail population is no less than 5,407 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 4. The abundance and dispersion of pintail prey species is maintained at levels required to support the population size in 1. 5. Greater than 25% cover of soft leaved herbs and grasses is maintained during winter across the saltmarsh. 6. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around loafing areas and feeding areas. 7. Aggregations of loafing or feeding pintail are not subject to significant disturbance. The conservation objective for the “wintering oystercatcher” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering oystercatcher population is no less than 22,677 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	3. The abundance and dispersion of oystercatcher prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. The extent of rocky shore at Hilbre Island, Middle Eye, Little Eye and Tanskey Rocks is maintained. 6. The extent and height of the shingle spit at Point of Ayr is maintained. 7. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 8. Aggregations of roosting or feeding oystercatcher are not subject to significant disturbance. The conservation objective for the “wintering grey plover” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering grey plover population is no less than 1,643 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of grey plover prey species are maintained at levels sufficient to support the population size in 1 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding grey plover are not subject to significant disturbance. The conservation objective for the “wintering knot” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering knot population is no less than 12,394 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution3of their constituent sediment community types is maintained. 3. The abundance and dispersion of knot prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding knot are not subject to significant disturbance. The conservation objective for the “wintering dunlin” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below:	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	1. The 5 year peak mean population size for the wintering dunlin population is no less than 27,769 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of dunlin prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding dunlin are not subject to significant disturbance. The conservation objective for the “wintering black-tailed godwit” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering black-tailed godwit population is no less than 1,747 individuals [i.e. the 5 year mean peak between 1994/95- 1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of black-tailed godwit prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting and feeding black-tailed godwit are not subject to significant disturbance. The conservation objective for the “wintering curlew” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering curlew population is no less than 3,899 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of curlew prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding curlew are not subject to significant disturbance.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	The conservation objective for the “wintering redshank” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering redshank population is no less than 5,293 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of redshank prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding redshank are not subject to significant disturbance. The conservation objective for the “internationally important assemblage of regularly occurring waterbirds” feature of The Dee Estuary SPA is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering waterbird assemblage is no less than 120,726 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The relative proportions of waders and wildfowl comprising the wintering waterbird assemblage is maintained. 3. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 4. The extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 5. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 6. The extent of rocky shore at Hilbre Island, Middle Eye, Little Eye and Tanskey Rocks is maintained. 7. The extent and height of the shingle spit at Point of Ayr is maintained. 8. The abundance of waterbird prey species are maintained at levels sufficient to support the population size in 1. 9. Greater than 25% cover of both seed bearing plants and soft leaved herbs and grasses is maintained during winter across the saltmarsh. 10. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around roosting sites, loafing and feeding areas. Aggregations of roosting, loafing or feeding waterbirds are not subject to significant disturbance.	
The Dee Estuary Ramsar	The conservation objective for the “internationally important wetland regularly supporting 20,000 or more waterbirds” feature of The Dee Estuary Ramsar Site is to maintain the feature in a favourable condition, as defined below:	Same as for The Dee Estuary SPA.

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	1. The 5 year peak mean population size for the wintering waterbird assemblage is no less than 120,726 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The relative proportions of waders and wildfowl comprising the wintering waterbird assemblage is maintained. 3. The extent of intertidal flats and the spatial distribution4 of their constituent sediment community types is maintained; iv. the extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 4. The extent and spatial distribution of saltmarsh vegetation less than 10 cm in height is maintained. 5. The extent of rocky shore at Hilbre Island, Middle Eye, Little Eye and Tanskey Rocks is maintained. 6. The extent and height of the shingle spit at Point of Ayr is maintained 7. The abundance of waterbird prey species10 are maintained at levels sufficient to support the population size in 1. 8. Greater than 25% cover of both seed bearing plants and soft leaved herbs and grasses is maintained during winter across the saltmarsh. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around roosting sites, loafing and feeding areas. 9. Aggregations of roosting13, loafing14 or feeding15 waterbirds are not subject to significant disturbance. The conservation objective for the “passage redshank” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the passage redshank population is no less than 8,795 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of redshank prey species are maintained at levels sufficient to support the population size in 1 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding redshank are not subject to significant disturbance. The conservation objective for the “wintering shelduck” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering shelduck population is no less than 7,725 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	3. The abundance and dispersion of shelduck prey species are maintained at levels sufficient to support the population size in 1. 4. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 5. Aggregations of loafing or feeding shelduck are not subject to significant disturbance. The conservation objective for the “wintering teal” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering teal population is no less than 5,251 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 4. Greater than 25% cover of seed bearing plants are ~~is~~ maintained during winter across the saltmarsh. 5. The extent of standing water pools or ‘flashes’ in the saltmarsh is maintained. 6. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites8 and feeding areas. 7. Aggregations of loafing8 or feeding teal are not subject to significant disturbance. The conservation objective for the “wintering pintail” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering pintail population is no less than 5,407 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent of saltmarsh and the spatial distribution of its constituent vegetation community types is maintained. 4. The abundance and dispersion of pintail prey species is maintained at levels required to support the population size in 1. 5. Greater than 25% cover of soft leaved herbs and grasses9 is maintained during winter across the saltmarsh. 6. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around loafing areas, and feeding areas. 7. Aggregations of loafing or feeding pintail are not subject to significant disturbance. The conservation objective for the “wintering oystercatcher” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below:	

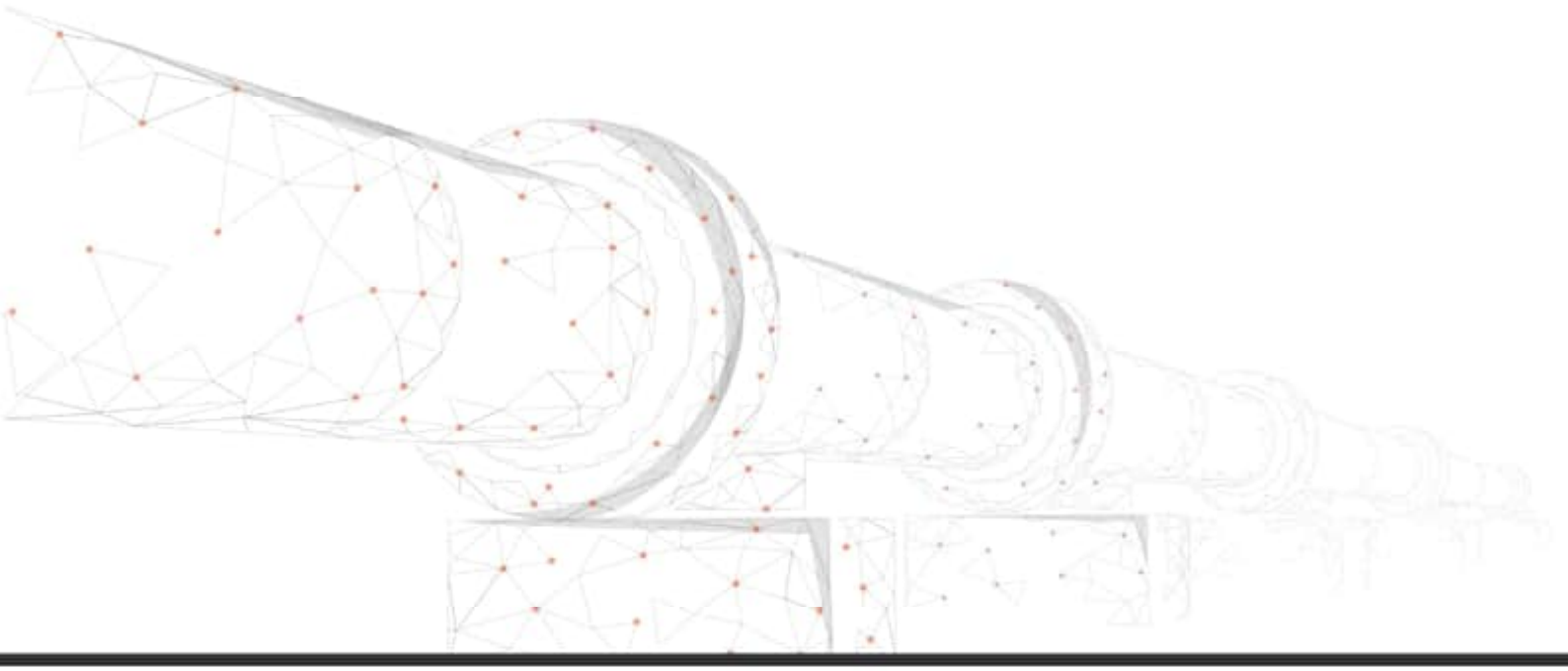
Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	1. The 5 year peak mean population size for the wintering oystercatcher population is no less than 22,677 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of oystercatcher prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. The extent of rocky shore at Hilbre Island, Middle Eye, Little Eye and Tanskey Rocks is maintained. 6. The extent and height of the shingle spit at Point of Ayr is maintained. 7. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 8. Aggregations of roosting9 or feeding10oystercatcher are not subject to significant disturbance. The conservation objective for the “wintering grey plover” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering grey plover population is no less than 1,643 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of grey plover prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10 cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding grey plover are not subject to significant disturbance. The conservation objective for the “wintering knot” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering knot population is no less than 12,394 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types4 is maintained 3. The abundance and dispersion5 of knot prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution3 of saltmarsh vegetation less than 10cm in height is maintained.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding knot are not subject to significant disturbance. The conservation objective for the “wintering dunlin” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering dunlin population is no less than 27,769 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion5 of dunlin prey species6 are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding dunlin are not subject to significant disturbance. The conservation objective for the “wintering black-tailed godwit” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering black-tailed godwit population is no less than 1,747 individuals [i.e. the 5 year mean peak between 1994/95- 1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types4 is maintained. 3. The abundance and dispersion of black-tailed godwit prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting7 and feeding8 black-tailed godwit are not subject to significant disturbance. The conservation objective for the “wintering bar-tailed godwit” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering bar-tailed godwit population is no less than 1,150 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The extent and spatial distribution of vegetation less than 10cm in height across the saltmarsh is maintained.	

Site Name	Conservation objectives as defined by Natural Resources Wales	Conservation objectives as defined by Natural England
	4. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 5. Aggregations of bar-tailed godwit roosting or feeding or on the intertidal flats or saltmarsh are not subject to significant disturbance. The conservation objective for the “wintering curlew” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering curlew population is no less than 3,899 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of curlew prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm in height is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. 6. Aggregations of roosting or feeding curlew are not subject to significant disturbance. The conservation objective for the “wintering redshank” feature of The Dee Estuary Ramsar site is to maintain the feature in a favourable condition, as defined below: 1. The 5 year peak mean population size for the wintering redshank population is no less than 5,293 individuals [i.e. the 5 year mean peak between 1994/95-1998/99]. 2. The extent of intertidal flats and the spatial distribution of their constituent sediment community types is maintained. 3. The abundance and dispersion of redshank prey species are maintained at levels sufficient to support the population size in 1. 4. The extent and spatial distribution of saltmarsh vegetation less than 10cm is maintained. 5. Existing unrestricted bird sightlines of at least 200m are maintained in every direction around both roosting sites and feeding areas. Aggregations of roosting or feeding redshank are not subject to significant disturbance.	

Appendix B

IN COMBINATION ASSESSMENT SUMMARY



Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
1a	Point of Ayr (PoA) Terminal and Foreshore Works upgrades and BVS sites (Cornist Lane, Babell and Pentre Halkyn) linked to the Proposed Development via the existing Flint Connection to PoA Terminal Pipeline.	BVSs of the Other Development are also included within the HyNet Carbon Dioxide Pipeline DCO development. As such, an assessment of these components is already captured within the HRA in relation to the assessment of the DCO Proposed Development. In-combination effects have been determined in relation to the terminal and foreshore works. **Yes. Potential in-combination (cumulative) impacts of disturbance to qualifying bird species of The Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development.**	HRA to be submitted as part of a planning application for the Other Development. The HRA identifies potential LSE as a result of disturbance to qualifying bird species during construction. Mitigation measures to avoid or reduce disturbance have been identified and presented within the HRA for the Other Development. These include (but not limited to): measures to control noise and vibration, working during daylight hours (where possible) and the implementation of suitable lighting. Following implementation of mitigation, the HRA for the Other Development concludes no adverse impact on the integrity of The Dee Estuary SPA/Ramsar.
1c	10km of powerlines (either all overhead or partial overhead and underground) to provide sufficient electricity capacity for the upgraded PoA terminal.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.	At the time of writing, the Other Development is in a pre-application stage and no information was available regarding proposals to avoid or mitigate impacts to the European Sites.
1d	Underground connections from BVS and AGI locations to connection points to electricity infrastructure.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.	At the time of writing, the Other Development is in a pre-application stage and no information was available regarding proposals to avoid or mitigate impacts to the European Sites.
1ei	A hydrogen production plant, storage and distribution facility comprising full planning permission for the demolition of existing structures and erection of facilities including a Flare Stack, Phase 1 Process Area (containing main combustion plant), Natural Gas Let-down Area and Pipeline Reception Area for Phase 1 and Phase 2, and Pipe Racks, Utilities Area, new site access and internal access roads including new Gate House and Weighbridge Shelter, Surface Water Drainage System, landscaping and	**No**. Other Development within existing industrial site that falls outside the boundaries of the European Sites and does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
	other associated infrastructure, and outline planning permission (matters of appearance, layout and scale reserved) for a Phase 2 Process Area, and Phase 1 and Phase 2 Air Separation Units, Oxygen and Nitrogen Storage Tanks, and other associated infrastructure Natural Gas Let-down Area for Phase 1 and Phase 2.		
1eii	Development of a hydrogen production facility and electricity generating plant, comprising of a waste reception and handling building, gasification facility, hydrogen production facility with associated/ ancillary infrastructure which includes access roads, weighbridge, fencing / gates, lighting, surface water drainage, and electricity distribution plant.	**No**. Other Development falls outside the boundaries of the European Sites and does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
1f	Additional pipeline is required by the HPP. Shares the Stanlow AGI plot and some initial routing out of Stanlow. The construction period expected within 2023-2026. It is not directly connected to CO_2 pipeline project but is in the same vicinity.	**Yes.** At the time of writing, the Other Development is in a pre-application stage and no information was available regarding the location of the Other Development. As such, on a precautionary approach, **it is assumed that there is potential for in-combination (cumulative) impacts of disturbance to qualifying bird species of the Dee Estuary SPA/Ramsar if construction is undertaken at the same time as the Proposed Development**.	At the time of writing, the Other Development is in a pre-application stage and no information was available regarding proposals to avoid or mitigate impacts to the European Sites.
1g	The Hynet Northwest Hydrogen Pipeline will convey hydrogen from the Stanlow production site to industrial users and to blending points at Partington and Warburton for introduction into the existing gas network. It will also connect with associated hydrogen storage facilities to help balance supply and demand on the pipeline. It is anticipated to consist of approximately 125km of underground high pressure steel pipeline with associated user connection spurs, together with a number of Hydrogen Above Ground Installations along the route of the pipeline.	**Yes. Potential for cumulative disturbance of qualifying bird species of the Dee Estuary SPA.**	At the time of writing, the Other Development is in a pre-application stage and no information was available regarding proposals to avoid or mitigate impacts to the European Sites.
3	Residential development comprising 84 dwellings including the provision of affordable units, areas of public open space, landscaping and associated works.	**No**. Other Development falls outside the European Sites. Other Development site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
4	Development of 56 dwellings on land to rear of 66A Mold Road, including new roadway, parking areas, landscaping and drainage connections including formation of swale.	**No.** Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
5	Demolition and erection of new Poultry Buildings and Associated Infrastructure	**No**. Other Development falls outside the European Sites. Other Development within existing farmstead that doesn't support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
6	Phased extraction of some 31.13m tonnes of limestone from within the existing permitted area at Hendre Quarry and from within an eastern extension to the quarry as a comprehensive extension and consolidation scheme; retention of the existing processing plant and related infrastructure for the duration of the development; retention and use of the existing access for the duration of the development; construction and landscaping of a screening landform; and implementation of a restoration scheme for both the existing quarry and extension area.	**No**. Other Development falls outside the European Sites. Other Development within existing quarry that doesn't support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
9	Demolition of the existing Argoed High School buildings and provision of a new Net Zero Carbon in operation school campus including nursery, primary and secondary school provision and associated school sports facilities, vehicular, pedestrian and cycle accesses, car and cycle parking, landscaping, Sustainable Urban Drainage and associated infrastructure.	**No**. Other Development falls outside the European Sites. Other Development within existing school grounds that doesn't support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
12	Circa 20mw standing operational reserve (STOR) electricity generating station	**No**. Other Development falls outside the European Sites. Other Development within an agricultural field. Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
18	Erection of a single unit (Use Classes B2 and B8) with ancillary offices, ancillary outbuildings, access, landscaping, sustainable drainage measures, car and cycle parking, pedestrian and cycle access routes, servicing and all ancillary enabling works.	**No**. Other Development falls outside the European Sites. Other Development within existing industrial site that doesn't support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
19	Hybrid Planning Application for a gas engine electricity generating plant with a maximum generating capacity of 22.5MWe and Units for B2/B8 General Industrial / Storage and Distribution uses.	**Yes. Development outside but adjacent to the Mersey Estuary. Potential for cumulative disturbance of qualifying bird species of the Mersey Estuary SPA and The Dee Estuary SPA. Other Development site not understood to support functionally linked land of the SPA.**	A shadow HRA[8] was submitted with the planning application for the Other Development. The shadow HRA identified the potential for LSE due to disturbance of estuarine and intertidal habitats of the Mersey Estuary SPA, which support qualifying bird species of the SPA.

[8] ERAP (Consultant Ecologists) Ltd. (2021). *Electricity Generation Plant and Warehousing at North Road, Wirral/Ellesmere Port CH65 1BA. Shadow Habitats Regulations Assessment*. December 2021, ERAP. Available at: https://pa.cheshirewestandchester.gov.uk/online-applications/applicationDetails.do?keyVal=QLSW4YTELSJ00&activeTab=summary [Accessed September 2022].

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
			The shadow HRA contains mitigation measures to reduce the impacts of the Other Development. This includes measures to ensure noise levels do not rise above accepted levels, such as the use of noise screens. Following implementation of mitigation, the HRA for the Other Development concludes no adverse effect on the integrity of the Mersey Estuary SPA.
21	Development of up to 500,000ft2 (46,450m2) of B2/B8 use class floorspace, with ancillary offices, service yards, and all associated works including landscaping and car parking with all matters reserved for future consideration.	**Yes. Development outside but adjacent to the Mersey Estuary. Potential for cumulative disturbance of qualifying bird species of the Mersey Estuary SPA and The Dee Estuary SPA. Other Development site not understood to support functionally linked land of the SPA.**	A shadow HRA[9] was submitted with the planning application for the Other Development. The shadow HRA identified the potential for LSE due to disturbance of estuarine and intertidal habitats of the Mersey Estuary SPA, which support qualifying bird species of the SPA. The shadow HRA details mitigation measures to reduce the impacts of the Other Development. This includes measures to ensure noise levels do not rise above accepted levels, such as use of a shroud over the hammed used in the piling rig and seasonal timing of works, if required. Following implementation of mitigation, the HRA for the Other Development concludes no adverse effect on the integrity of the Mersey Estuary SPA.
22	Erection of two industrial units for B1, B2 and B8 use, external lighting, electricity substation, car parking, service yards and other associated works	**No**. Other Development falls outside the European Sites. Other Development site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
23	Erection of two buildings for up to 21,708sqm (GEA) B2/B8 and ancillary B1(a) floorspace, associated areas of hardstanding, parking, associated works and infrastructure including security gatehouses, bin stores, pump houses, sprinkler tanks and retaining walls	**No**. Other Development falls outside the European Sites. Other Development site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
24	Part A - (full permission) for phased development of 483 dwellings and associated infrastructure (including playing	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species	N/A

[9] ERAP (Consultant Ecologists) Ltd (2020). *North Road Business Park, Wirral/Ellesmere Port CH65 1BL. Shadow Habitat Regulations Assessment*. February 2020, ERAP. Available at: https://pa.cheshirewestandchester.gov.uk/online-applications/applicationDetails.do?keyVal=Q2YZJPTE0I800&activeTab=summary [Accessed September 2022].

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
	fields / open space); Part B - (outline permission - all matters reserved apart from access) for a local centre (comprising supermarket (Use Class A1 (500sqm); other shops (Use Class A1)(500sqm); cafe/restaurant (Use Class A3)(200sqm); public house (Use Class A4)(650sqm); and nursery/creche (Use Class D1) (600sqm) plus an outdoor play area) and a primary school with associated playing fields (Hybrid application) - Variation to condition 4 (approved plans) to coincide with amendments to the layout including plot / house type substitutions and landscape details.	(or functionally linked land) of the European Sites. No potential impact pathways identified.	
27	Employment-led mixed-use development, incorporating Logistics and Technology Park (B1, B2, B8) with residential(C3), local retail centre (A1), hotel (C1), training and skills centre (C2, D1), new parkland; conversion of buildings, demolition of barns; and associated infrastructure comprising construction of accesses, roads, footpaths/ cycle paths, earthworks and flood mitigation/drainage works.	**Yes. Potential disturbance to SPA birds using habitats along the River Dee if construction undertaken simultaneously. Potential cumulative impacts to qualifying features of the River Dee and Bala Lake/Afon Dyfrdwy a Llyn Tegid SAC from dust deposition due to proximity. Potential cumulative impacts to otter. Potential cumulative disturbance of qualifying fish species.** **Other Development site is not understood to support functionally linked land of the European Sites.**	Whilst a HRA could not be located for the Other Project, the ES Addendum Ecology Technical Paper[10] identifies potential impacts to the River Dee and Bala/Afon Dyfrdwy a Llyn Tegid SAC and the Dee Estuary SAC, SPA and Ramsar. The Ecology Technical Paper identifies mitigation in response to potential impacts to the European Sites, including: controlling run off and pollution events (CEMP), seasonal restrictions of works likely to impact qualifying fish species, further otter survey (to obtain up-to-date information) and measures to reduce impacts of piling operations on birds (such as seasonal restriction). Following implementation of mitigation measures, the Ecology Technical Paper concludes that the effects of the Other Development on the European Sites would be negligible.
35	Erection of 142 dwellings, landscaping, public open space, internal access roads, garages, car parking, pumping stations and associated infrastructure.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
37	Erection of up to 150 dwellings and demolition of nos. 272, 274, 276 and 278 Sealand Road with all matters reserved except access.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species	N/A

[10] Middlemarch Environmental (2013). *Pochin Rosemound (Deeside) Ltd. Northern Gateway (former Corus Garden City site). Environmental Statement Addendum – Ecology Technical Paper.* Revision F, 18-11-13. Available at: https://planningapi.agileapplications.co.uk//api/application/document/FLINTSHIRE/41418 [Accessed September 2022].

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
		(or functionally linked land) of the European Sites. No potential impact pathways identified.	
38	Residential development of up to 190 dwellings with access and associated works (Phase 5 B Rossfield Park).	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
39	Erection of up to 70 dwellings and associated open space and infrastructure with details of access) (Phase 5 A Rossfield Park).	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
42	Residential development of up to 140 dwellings, means of access, open space, sustainable drainage infrastructure and all other associated works (Outline application including access, with all other matters reserved.).	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
43	Demolition of existing buildings and erection of 241 dwellings and apartments with access road and associated external works.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
44	Reserved matters application for 313 dwellings forming part of phases 4 and 5 and associated infrastructure and open space pursuant to outline application 12/02091/OUT (for a total of up to 2000 dwellings and associated development)	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites, with the exception of golden plover of the Mersey Estuary SPA. Peak count of golden plover recorded for the Other Development was six[11]. Golden plover was not recorded during surveys for the Proposed Development. Overall, no significant in-combination effect identified. No other potential impact pathways identified.	N/A
45	Reserved Matters application for 256 dwellings forming part of Phase 3 of the development, alongside associated infrastructure and open space pursuant to outline planning permission 12/02091/OUT (for a total of up to 2000 dwellings and associated development).	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites, with the exception of golden plover of the Mersey Estuary SPA. Peak count of golden plover recorded for the Other Development was six[12]. Golden plover was not recorded during surveys for the Proposed Development. Overall, no significant in-combination effect identified. No other potential impact pathways identified.	N/A

[11] The Environment Partnership (TEP) (2019). *Ledsham Garden Village, Phases 4 & 5. Little Sutton. Ecological Assessment Update.* Version 5.0, November 2022. https://pa.cheshirewestandchester.gov.uk/online-applications/files/5248C6C13566CCB3D66B76CF8907E6DA/pdf/19_04504_REM-ECOLOGICAL_ASSESSMENT-3847902.pdf

[12] The Environment Partnership (TEP) (2019). *Ledsham Garden Village, Phases 4 & 5. Little Sutton. Ecological Assessment Update.* Version 5.0, November 2022. Available at: https://pa.cheshirewestandchester.gov.uk/online-applications/files/5248C6C13566CCB3D66B76CF8907E6DA/pdf/19_04504_REM-ECOLOGICAL_ASSESSMENT-3847902.pdf [Accessed September 2022].

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
54	Materials recycling facility, two plastics recycling facilities, a polymer laminate recycling facility and a hydrogen refuelling station.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
55	Construction of a manufacturing facility with associated accesses, parking, landscaping and ancillary structures (in detail) and erection of a second manufacturing building (phase 2) in outline. Variation of conditions in relation to erection of 2 manufacturing buildings (phase 2) with production areas, offices, high bay warehouse, vehicle loading building with associated parking hard standing, landscaping, vehicle link to Phase 1 and construction of Conveyor bridge link to phase 1 (Following 17/04443/S73 and variation of conditions 2, 3, 4, 7, 10, 14, and 15 of planning permission 19/01947/REM). Variation to the design to reduce lorry parking, adjust to drainage strategy introducing an attenuation pond and increase soft landscaping and habitat area.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
63	Resource recovery facility (Plastics Recycling Facility).	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
67	Erection of 244 bed Hotel (Class C1) over 7 storeys, with associated parking, landscaping and other works with access from Black Diamond Park.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
70	Redevelopment of the racecourse land for a new Events Building with undercroft parking area, Pavilion Grandstand and associated works with the retention of car park at Saddlery Way for permanent use as car park.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
75	Erection of an advanced gasification plant and associated development	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
81	Residential development of 95 dwellings (including affordable housing), means of access, open space and all associated works.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
108	An outline permission for residential development of up to 145 dwellings (Use Class C3) and associated works	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species	N/A

Other Development Reference	Description of Other Development	Assessment of Potential In-Combination LSE	Assessment of Adverse Impact to the Integrity of the European Site
	including highways access. All other matters (relating to appearance, landscaping, unit mix, precise layout and Affordable Housing provision) reserved.	(or functionally linked land) of the European Sites. No potential impact pathways identified.	
109	Erection of 130 dwellings comprising bungalows, houses and two storey apartments with own access, new access road, associated external works and landscaping.	**No**. Other Development overlaps with the Proposed Development Boundary. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
120	Outline application for the redevelopment of a strategic brownfield site for an employment led mixed use development with new accesses and associated infrastructure including flood defences and landscaping. The development includes up to 1,100 residential units and over 300,00m^2 of floorspace for use classes B8, B2, B1 and A1.	**No.** Other Development falls outside the European Sites. The Other Development is approximately 400m from the River Dee and not anticipated to result in disturbance of qualifying species that may be using the mudflat habitat along the river. Only qualifying SPA species to be recorded on the Other Development site was curlew, with a peak count of 8 birds[13] (representing approximately 0.2% of the Dee Estuary SPA population). Peak count of curlew recorded during surveys for the Proposed Development was a single bird (see **Table 4.1**). In-combination, the peak counts remain below 1% of the SPA population. Other Development site does not support any other qualifying habitats or species (or functionally linked land) of the European Sites. No other potential impact pathways identified.	N/A
121	Outline application for approval in principle for residential development (up to 94 dwellings), all matters reserved except for access.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
124	Erection of residential development comprising of a variety of one, two, three and four bedroom homes (approximately 160 units), together with associated public open space and infrastructure including a new link road between Gwernaffield Road and Denbigh Road to enable Pool House Lane to become a dedicated bicycle and pedestrian route in part.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A
125	Repair and refurbishment of vacant historic (listed) former hospital buildings, with associated new build houses/apartments to create a total of 89 dwellings.	**No**. Other Development falls outside the European Sites. Other Development Site does not support qualifying habitats or species (or functionally linked land) of the European Sites. No potential impact pathways identified.	N/A

[13] Former RAF Sealand Site EIA, Environmental Statement, Chapter 4.0 Ecology. Available at: https://planningapi.agileapplications.co.uk//api/application/document/FLINTSHIRE/4575 [Accessed September 2020].