

Llanddulas & Kinmel Bay Coastal Improvement Scheme

Ecological Impact Assessment

August 2022

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Revision History

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Contract

This report describes work commissioned by Amey Consulting, on behalf of Conwy County Borough Council. JBA Consulting carried out this work.

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Purpose

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Abbreviations

AOD	Above Ordnance Datum
BTO	British Trust for Ornithology
BOCC	Birds of Conservation Concern
CEMP	Construction Environmental Management Plan
EcIA	Ecological Impact Assessment
EPS	European Protected Species
GCN	Great Crested Newt
HRA	Habitats Regulations Assessment
HSI	Habitat Suitability Index
INNS	Invasive Non-native Species
JBA	JBA Consulting
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LWS	Local Wildlife Site
MAGIC	Multi-agency Geographical Information for the Countryside
MHWS	Mean High Water Spring
PEA	Preliminary Ecological Appraisal
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SPA	Special Protection Area
TN	Target Note
W&CA	Wildlife and Countryside Act (1981, as amended).

1 Introduction

1.1 Purpose of Report

JBA Consulting have been commissioned by Conwy County Borough Council (CCBC) to undertake an Ecological Impact Assessment (EcIA) to provide an assessment of likely ecological effects associated with delivery of the Llanddulas to Kinmel Bay Coastal Improvement Scheme.

The approach to this assessment follows the principles set out in the Chartered Institute of Ecology and Environmental Management's (CIEEM) guidelines for EcIA (CIEEM, 2019). This report has been produced following CIEEM Guidelines for Ecological Report Writing (CIEEM, 2017), with reference to the British Standards Institution (BSI) BS 42020:2013 - Biodiversity: Code of Practice for Planning and Development (BSI, 2013).

This report identifies and describes all potentially significant ecological effects associated with the proposed development and will also identify appropriate mitigation measures where these are required and details how these could be secured. The significance of any residual effects has also been assessed. Appropriate enhancement measures have been identified, and any post-construction monitoring required detailed.

2 Method

2.1 Scope of Assessment

This EcIA has taken into account the following ecological features that may be influenced by the proposed development:

- Statutory designated sites for nature conservation;
- Non-statutory designated sites for nature conservation;
- Red Listed, Rare and Legally protected species;
- Species and habitats of principal importance for nature conservation;
- UK BAP and Local BAP priority species and habitats; and
- Legally controlled species, such as invasive non-native species.

For the purposes of this assessment, the zone of influence has been set at 2km from the site boundary. This is the maximum distance at which the development is likely to cause any discernible impacts. The distance was set based on the size of the development and the likely impacts that could reasonably assumed to arise during the construction, operation and decommissioning of the site.

2.2 Desk-Based Assessment

A desk-based study was undertaken to collate information on statutory and non-statutory conservation sites and records of species that are afforded legal protection or are otherwise of nature conservation importance. Ecological records were requested from Cofnod, North Wales Environmental Service. This included ecological species records and local nature conservation sites within 1km of the site boundary. In addition, the MAGIC database was searched for European designated sites (SACs and SPAs) and internationally designated Ramsar sites as well as nationally statutory designated sites including SSSIs, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) within 2km of the site boundary.

2.3 Field Surveys

The following field surveys have been undertaken at the site:

- Extended Phase 1 Habitat Survey
- Intertidal Biotope Survey
- Over-Wintering Bird Surveys

2.1 Method of Assessment

The assessment of ecological impacts has been undertaken following current best practice provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).

This assessment identifies the potential effects of the proposed works on biodiversity within each of the site boundaries and their wider zone of influence. It determines the significance of the identified effects of the construction and operational phases at each site.

Ecological features include nature conservation sites, habitats, species assemblages/communities or populations or groups of species. The assessment of the significance of predicted impacts on ecological features is based on both the 'importance' of a feature and the nature and magnitude of the impact that the project will have on it. Impacts may be direct (e.g. the loss of species or habitats), or indirect (e.g. effects due to noise, dust or disturbance).

The impact assessment process involves:

- Identifying and characterising impacts;
- Incorporating measures to avoid and mitigate (reduce) these impacts;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset residual effects; and
- Identifying opportunities for ecological enhancement

The assessment includes potential impacts (direct, indirect, secondary and cumulative) on each ecological feature determined as important from all phases of the project and describes in detail the impacts that are likely to be significant, making reference to the following characteristics:

- Positive or negative
- Extent
- Magnitude
- Duration
- Timing
- Frequency
- Reversibility

2.2 Important Ecological Features

It is impractical for an assessment of the ecological impacts of a project to consider every ecological feature (species, habitat etc.) that may be affected; instead it should focus on those that are important. These are ecological features that are valued in some way and could be affected by the proposed project; other valued ecological features may occur on or in the vicinity of the proposed works area but do not need to be considered because there is no potential for them to be affected significantly.

Various characteristics contribute towards the importance of ecological features, for example, naturalness, rarity, diversity, and connectivity.

The importance of an ecological feature should be considered within a defined geographical context. For the purposes of this assessment the following frame of reference has been used:

- International
- National
- Regional
- Local (i.e. the sites and their vicinities)

Consideration of impacts at all scales is important, and essential if objectives for no net loss of biodiversity and maintenance of healthy ecosystems are to be achieved.

Ecological features on sites have been valued within the geographical context.

The approach of this assessment is to consider the importance of the sites for the species under consideration, rather than the nature conservation importance of the species itself.

2.2.1 Legally protected species

Notwithstanding what has been said above, there is also a need to identify all legally protected species that could be affected by the proposed works. Therefore, it is inappropriate to assess the significance of impacts within the context of species' legal protection, as impacts on such species have to avoid contravention of the law, otherwise the scheme cannot go ahead.

2.3 Impact Assessment

2.3.1 Determining ecological significant effects

For the purposes of this assessment, a significant effect is an effect that either supports or undermines biodiversity conservation objectives for important ecological features or for biodiversity in general (CIEEM, 2018). Effects can be considered significant at a wide range of scales from international to local.

Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). Table 2-1 details the factors that have been considered in the determination of significant effects on ecological features.

Table 2-1: Determining Ecologically Significant Effects

Ecological Feature	Consideration
Designated sites	Will the project undermine the site's conservation objectives? Will the project positively or negatively affect the conservation status of habitats or species for which the site is designated? Will the project have positive or negative effects on the condition of the site or its interest/qualifying features? Will the project remove or change any key characteristics? Will there be an effect on the nature, extent, structure and function of component habitats? Will there be an effect on the average population size and viability of component species? Will there be an impact on wider ecosystem functions and processes?
Habitats	Will the project positively or negatively affect the conservation status of the habitat? Will it affect its extent, structure and function as well as its distribution and its typical species within a given geographical area?
Species	Will the project positively or negatively affect the conservation status of the species? Will it affect its abundance and distribution within a given geographical area?

2.3.2 Residual impacts

Where impacts are identified, mitigation measures are proposed to avoid, reduce or minimise them. Those impacts remaining after implementation of mitigation are the residual impacts. An assessment of the residual impacts has then been undertaken to determine the significance of their effects on ecological features.

2.3.3 Precautionary principle

The evaluation of significant effects has been based on current scientific evidence and professional judgement. Where sufficient information is not available to allow a robustly

justifiable conclusion of no significant effect, a significant effect is assumed, and any uncertainty is acknowledged.

2.3.4 Nature conservation evaluation

The section evaluates the nature conservation importance of each site in terms of its relative importance in a geographical context.

The nature conservation sites, habitats and species that have been identified as important ecological features have been evaluated based on the criteria given in Table 2-1. The importance of the feature is defined with reference to the geographical context of the site i.e. the specific importance of each site to each of the habitats or species populations identified as being present within it or making use of it.

2.3.5 Cumulative effects

A search of the Local Planning Authorities online planning portals was checked for any relevant plans or projects with the potential to act in-combination with the present proposals to increase the impact on the site's biodiversity.

2.4 Limitations and Assumptions

2.4.1 Desk-based assessment

Data from biological records centres or online databases is historical information, and datasets might be incomplete, inaccurate or missing. It is important to note that even where data is held, a lack of records for a defined geographical area does not necessarily mean that the species is absent; the area may simply be under-recorded. As such, records cannot be relied on and serve only as an indication of what might/ might not be found.

2.4.2 Ecological site surveys

The habitats and species present in a given area are subject to change over time. A single field visit of this nature captures and reports the situation at the time of survey. As such, the advice contained within this report is considered valid for a period of 18 months before a review on the need for an updated survey/assessment must be made by an ecologist (CIEEM 2019).

Site surveys were subject to differing tidal states. However, all sites were visited at low tide for at least one of the site visits to assess the intertidal habitats present within the works footprints

No further surveys such as any species-specific surveys have been undertaken to inform this assessment. For the purpose of this impact assessment, a precautionary approach has been taken when assessing the importance of an ecological feature on site when there is limited information available. For the majority of ecological features, no further survey work was considered necessary. Where there is no information about the populations of the ecological feature itself at a site, the likely importance of the habitat to protected species has been identified and mitigation has been designed appropriately.

2.4.3 Assessing ecological impacts

No specific coastal modelling has been undertaken to assess the impacts on sediment movement along the coast as a result of the proposed rock armour installation at Castletown. A precautionary approach into assessing indirect impacts upon Langness ASSI has been taken, in consultation with the Coastal Geomorphologist undertaking the impact assessment for this project.

2.4.4 Ecological recommendations

It is not usually appropriate to make recommendations for further site surveys or ecological mitigation within the context of an EcIA or EIA. An EcIA should identify all ecological impacts, secure suitable mitigation measures and describe any potential residual impacts. However, in the case of the proposed design for Douglas, significant unavoidable impacts to the intertidal habitats have been identified. There is potential to reduce the rock armour footprint at this site, but it is beyond the scope of the current design work by JBA Consulting to model the suitability of any alternative rock armour designs with reduced footprints. In agreement with the client, in the absence of any secured design to reduce the footprint of the rock armour, the current scheme footprint's ecological impacts have been described and recommendations to reduce the rock armour footprint, if proven feasible, have been given.

There is also some uncertainty to the potential impacts upon wider coastal habitats through altered coastal processes at Castletown and Kirk Michael. Potential recommendations for additional mitigation for these sites are also provided in this report, given this uncertainty.

2.5 Competent persons

The Ecological Impact Assessment was completed by Jonathan Harrison and Hannah Webster of JBA Consulting.

Jonathan Harrison is a senior ecologist with over 9 years experience in ecological consultancy. He is an experienced ornithologist and specialises in both terrestrial and coastal/marine ecology. Jonathan is a full member of CIEEM.

Hannah Webster is an ecologist with over 5 years experience in ecological consultancy, and has completed numerous Preliminary Ecological Appraisals and Ecological Impact Assessments, as well as being a competent field surveyor.

3 Baseline Conditions

3.1 Designated Sites

3.1.1 Statutory designated nature conservation sites

The Statutory Ecological Designations associated with the application site are shown below in **Error! Reference source not found.** and described in **Error! Reference source not found.** The offshore area to the north of the site is designated as Liverpool Bay (Bae Lerpwl) Special Protection Area (SPA). Within the study area itself lies Pensarn Beach (Traeth Pensarn) Site of Special Scientific Interest (SSSI). In addition to this, a number of SSSI's are located southwest of the study area, including Llanddulas limestone and Gwrych Castle Wood, Coed Y Gopa and Mynydd Marian. In the northeast corner of the site lies Kinnel Dunes, a Local Nature Reserve (LNR) of Kinnel Dunes.

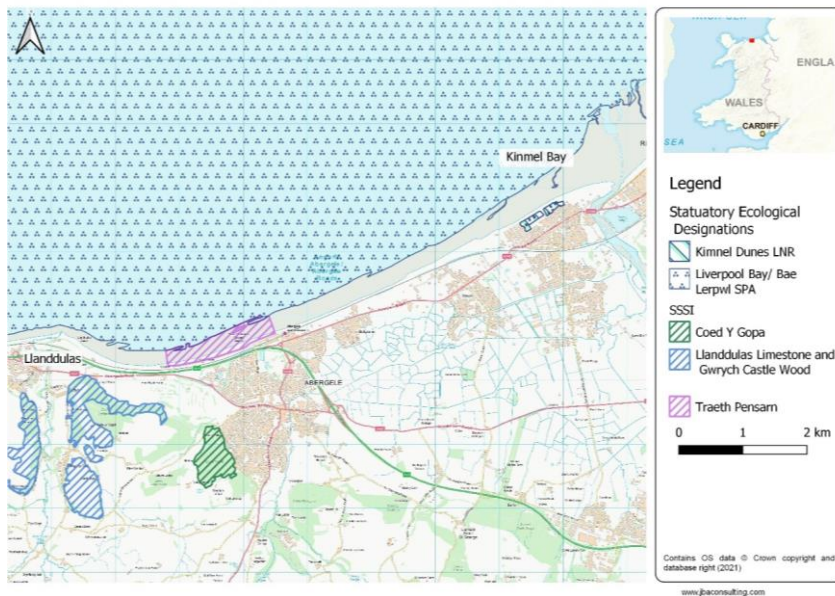


Figure 3-1: Statutory Ecological Designations

Table 3-1 Site designation

Designation	Site Name	Area	Description
SPA	Liverpool Bay / Bae Lerpwl	54,145 ha	Inter-tidal sands exposed calcareous rocks, limestone reefs, mobile sands, Red Throated Divers, Common Scoters.
SSSI	Pensarn Beach / Traeth Pensarn	51 ha	Vegetated shingle and sand beach. Species include Sea Radish, Ray's Knotgrass and Ringed Plover. The SSSI is designated due to the presence of an exemplary vegetated shingle bank known

			for its particularly rich flora and species, rare in North Wales.
LNR	Kinmel Dunes	6.7 ha	The LNR is one of the last remaining areas of sand dunes.

3.2 Habitats

3.2.1 Intertidal Sand

For the most part the foreshore in front of the proposed scheme consists of clean, medium to fine sand, with no coarse sand, gravel or mud present.

Fine sand shores can support a range of species including amphipods and polychaetes, and bivalves may also be present in varying numbers on the lower shore and where sediments are more stable.

On fine sand shores such as those found in Kinmel Bay there is the potential for seasonal changes, with sediment accretion during calm periods and beach erosion during more stormy winter months. There may be a change in sediment particle size structure, with finer sediment grains washed out during winter months, leaving behind coarser sediments.

A marine biotope survey was carried out by JBA Consulting along the entire frontage of the proposed scheme. This survey identified low numbers of polychaete worms and amphipods. For the most part the areas surveyed were highly mobile and as a result supported few macrofaunal species with large areas consistent with the biotope **LS.LSa.MoS - Barren or amphipod-dominated mobile sand shores**. In a few more sheltered areas of the beach the biotope **LS.LSa.FiSa - Polychaete/amphipod-dominated fine sand shores** is present, however, the number of individuals recorded was low.

At the top of the shore a strandline with a community of talitrid amphipods has developed where decaying seaweed accumulates. The strandline is relatively small; it is possible that the local council regularly clears this strandline.

3.2.2 Intertidal Rock Habitat

In a number of places rock armour has already been placed in front of the existing sea wall which act as rock armour defences in front of the seawall. The majority of the existing rock armour is located at the upper end of the foreshore and consists of the biotope **LR.FLR.Eph.Ent Enteromorpha spp. on freshwater-influenced and/or unstable upperlittoral rock**. The habitat is influenced by freshwater runoff and was dominated by a dense mat of *Enteromorpha* spp. No other species were recorded within this zone.

At the lower end of the beach the base of these rocks have become colonised by a number of species associated with exposed intertidal rocky conditions. The fauna present in these areas are similar those found on sand-abraded eulittoral rock with the barnacles *Semibalanus balanoides* and *Elminius modestus*, the limpet *Patella vulgata*, the winkle *Littorina littorea* and Dogwhelk *Nucella lapillus* all present in the cracks and crevices beneath the boulders and a large number of Dog Whelk eggs were recorded during the survey. The Beadlet Anemone *Actinia equina* was common in a number of cracks with a few Snakelocks Anemone *Anemonia viridis* individuals also present. For the most part this habitat will be undisturbed.

The reef worm *Sabellaria alveolata* was not recorded during the surveys, however, it has been recorded to the east of the proposed sites and there is the potential that if conditions become favourable to the species that recruitment will be rapid and there is the potential for reefs to form.

3.2.3 Rocks Above High Tide Mark

A line of rock armour, forming part of the existing coastal defences, stretches along the length of the survey area, in front of the sea wall, these rocks are above the high tide mark. In a few places lichens associated with the infra littoral zone have colonised, however, the majority of the rocks are clean.

3.2.4 Sea Wall

There is an existing sea wall that extends from east to west along the majority of the site. For the most part the sea wall remains dry at high tide and does not support species associated with littoral rock.

3.2.5 Open Dune

There are pockets of open dune present in front of the existing sea wall and promenade at the Kinmel Bay end of the scheme. A band of this habitat stretches from the eastern extent of the scheme to approximately 2.5km to the west. However, the habitat is interrupted towards the western extent by various car parks and other infrastructure.

The dunes in this area are mostly pioneer dunes and consist predominantly of Marram grass with some Sand Sedge being the most common. In some areas where sand accretion has slowed and the dune has become more stable other grass species predominantly Red Fescue.

3.2.6 Amenity Grassland

There are a number of small areas of amenity grassland along the sea front, associated with well-managed public open spaces. The areas of amenity grassland within the site are dominated by Perennial Rye-grass *Lolium perenne*.

3.2.7 Semi-improved Grassland

There is an area of semi-improved grassland adjacent to the Beach Caraven Park, this area of grassland is heavily managed and trampled but still support some species typical of coastal grassland.

3.2.8 Vegetated Shingle

The shingle at Traeth Pensarn SSSI grades from a larger size at the seaward side to a smaller size influenced by sand incursion towards the sea wall. The storm ridge plant community at Traeth Pensarn is of special interest and relies upon a larger freely draining shingle size ranging approximately from 100mm to 180mm.

The plant communities change as the shingle becomes more stable, at Pensarn shallow ridges of shingle are covered by a fine veneer of sand with a relatively closed grassland vegetation sward. This 'stabilised shingle' is characteristically colonised by red fescue dominated plant community. It should be noted that this area is not within the footprint of the proposed works, however, there are isolated pockets of vegetated shingle located throughout the length of the proposed works. For the most part these areas consist of areas where shingle has accumulated against the wall during storm events and consist of plants including Sea Beet, Yellow-horned Poppy and Curled Dock.

3.2.9 Hardstanding

The majority of the proposed development site consists of the existing promenade and associated infrastructure. This is mostly concrete and tarmacked walking areas.

3.3 Protected and notable species and species groups

The data search returned numerous records of protected and notable species and species groups within 2km of the proposed works location. Those of relevance to the habitats within the site are listed in Table 3-1 below. Historic records (those preceding the year 2000) have been excluded. In addition to these records there were numerous returns of common and



widespread bird species as well as the bird species that are features of the Liverpool Bay SPA- Red-throated Diver, Common Scoter, Little Gull and Common Tern, and these species are all likely to be present adjacent to the site boundary.

Table 3-1: Records of protected and notable species within 2km

Common name	Scientific Name	Proximity to Site
Birds		
Starling	<i>Sturnus vulgaris</i>	Within the site
Oystercatcher	<i>Haematopus ostralegus</i>	Within the site
Curlew	<i>Numenius arquata</i>	Within the site
Cormorant	<i>Phalacrocorax carbo</i>	Within the site
Peregrine	<i>Falco peregrinus</i>	Within the site
Gannet	<i>Morus bassanus</i>	Within the site
Linnet	<i>Carduelis cannabina</i>	Within the site
Barn Owl	<i>Tyto alba</i>	380m SE
Amphibians and Reptiles		
Common Frog	<i>Rana temporaria</i>	Within 1km
Common Lizard	<i>Zootoca vivipara</i>	1km S
Great Crested Newt	<i>Triturus cristatus</i>	1.5km SE
Common Toad	<i>Bufo bufo</i>	1.4km S
Smooth Newt	<i>Lissotriton vulgaris</i>	1.5km SE
Palmate Newt	<i>Lissotriton helveticus</i>	2km SE
Mammals		
Otter	<i>Lutra lutra</i>	Within the site
Hedgehog	<i>Erinaceus europaeus</i>	Within the site
Water Vole	<i>Arvicola amphibius</i>	400m E
Badger	<i>Meles meles</i>	1km S
Polecat	<i>Mustela putorius</i>	1.3km S
Weasel	<i>Mustela nivalis</i>	2km S
Invertebrates		
Grayling Butterfly	<i>Hipparchia semele</i>	200m SW
Cinnabar	<i>Tyria jacobaeae</i>	750m SE
Plants		
Sea Holly	<i>Eryngium maritimum</i>	Within the site
Marram	<i>Ammophila arenaria</i>	Within the site
Spiny Restharrow	<i>Ononis spinosa</i>	Within the site
Bluebell	<i>Hyacinthoides non-scripta</i>	1.2km SE

The full data search results can be provided on request.

3.3.1 Invertebrates

The foreshore provides habitat for a range of benthic invertebrate species. A benthic invertebrate survey carried out immediately adjacent to splash point on 20th June 2018 by JBA Consulting identified low numbers of polychaete worms and amphipods. However, sediments located within the scheme footprint do not hold high value for macroinvertebrate species and the

A small amount of *Sabellaria alveolata* has been recorded to the east of the scheme, however, the species was not recorded within Kinmel Bay. Given the ephemeral nature of the species there is the potential for it to colonise the scheme area before construction takes place. A survey will be undertaken prior to works being undertaken in the littoral zone to ensure that the species is not present.

The Small Heath butterfly has been recorded within the dunes located to the east of the scheme and has potential to support other priority invertebrate species such as Grayling, Wall and Garden Tiger, as suitable habitats and plant species are present on site. Birds

Wintering Bird Species

The foreshore at Kinmel provides potential foraging habitat for a range of wildfowl and wading bird species, some of which are features of the local European protected sites. At high tide there is also the potential for diving or other fish-eating species to utilise the intertidal areas.

A wintering bird survey was carried out between September 2021 and April 2022 along the scheme length by JBA Consulting to inform the potential constraints for the coastal defence scheme (JBA Consulting 2012).

The survey programme consisted of 12 vantage point surveys undertaken during the main overwintering and migratory period (September 2021 to April 2022 inclusive). The foreshore was utilised predominantly by wading and gull species with a total of 32 species recorded during the survey. These were usually in low numbers and generally concentrated at the eastern extent of the study area. Peak numbers of birds were recorded on falling tides when the receding tide provided the best foraging opportunities.

Common Scoter were recorded within 200m of the existing sea wall, foraging when the area was covered by water. Small numbers of red-throated diver were mostly recorded commuting past the site or occasionally foraging approximately 500m out to sea.

A peak count of wader numbers was recorded in December where approximately 150 Oystercatcher, 20 Sanderling, 60 Dunlin, 5 Curlew and 30 Redshank were recorded over the survey area. These birds were subject to frequent disturbance from dogwalkers and were flushed into the air continually before settling on another part of the beach.

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

Cormorants were recorded during these surveys on sand banks at the mouth of the River Clwyd. These were recorded again during the walkover survey.

Breeding Bird Species

The surrounding areas of introduced scrub and hedgerows provide potential nesting and foraging habitat for a range of passerine species, however, these areas will not be directly impacted upon by the proposed scheme.

The shingle areas at Pensarn have been used by ground nesting species, in particular Ringed Plover.

3.3.2 Fish

The study area is within 10km of nursery grounds¹ of the following fish species that are known to occasionally be associated with shallow (10m or less) nearshore waters²: Herring

1 Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. 2012. Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas, Lowestoft, 147: 56 pp.

2 Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N., and Brown, M., (2010a) Mapping spawning and nursery areas of species to be considered in Marine Protected Areas (Marine Conservation Zones).

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Clupea harengus; Cod *Gadus morhua*; Sandeel *Ammodytidae*; Plaice *Pleuronectes platessa*; Sole *Solea solea*; Whiting *Merlangius merlangus*; Spotted ray *Raja montagui*; Thornback ray *Raja clavate*; Angler fish *Lophius piscatorius*. All these species are listed under Section 41 of the NERC Act.

Furthermore, the site boundary is within 10km of spawning grounds³ of the following fish species that are known to occasionally be associated with shallow (10m or less) nearshore waters: Cod *Gadus morhua*; Mackerel *Scomber scombrus*; Sandeel *Ammodytidae*; Plaice *Pleuronectes platessa*; Sole *Solea solea*; Whiting *Merlangius merlangus*. All these species are listed under Section 41 of the NERC Act.

For the 2016 fishing season, a total of 388 Atlantic Salmon *Salmo salar* and 609 sea trout were caught from the Dee catchment, and 12 Atlantic salmon and 777 sea trout from the Clywd catchment⁴; these species are listed under Section 41 of the NERC Act. Being diadromous and spending a proportion of their lives migrating through coastal waters between marine and freshwater environments, it is likely that individuals (adults migrating into freshwater and juvenile smolts migrating to sea) pass close to the site boundary during migration periods.

European eel *Anguilla anguilla* have been recorded in fish surveys undertaken since 2010 in tributaries of the Mersey, Dee, Clywd, Elwy and Conwy⁵. This species is listed under Section 41 of the NERC Act. Being diadromous and spending a proportion of their lives migrating through coastal waters between marine and freshwater environments, it is likely that individuals (adults migrating to sea and juvenile migrating into freshwater) pass close to the site boundary during migration periods.

Brook Lamprey *Lampetra planeri* and Sea Lamprey *Petromyzon marinus* have been recorded in fish surveys undertaken since 2010 in tributaries of the Clywd, Dee and Elwy⁶. Both species are listed under Section 41 of the NERC Act. As Sea Lamprey are anadromous, with adults spending a proportion of their life at sea parasitically feeding on other estuarine and marine fish species, it is possible that individuals may pass close to the site boundary⁷.

Liverpool Bay supports various fish species of commercial importance including *Clupeidae* species such as herring *Clupea harengus* and sprat *Spratus spratus* which are known to have nursery grounds in the bay; other species such as plaice *Pleuronectes platessa* and sole *Solea solea* also use the bay for spawning and as a nursery area⁸. Herring and sprat are amongst the most frequently recorded prey species of red-throated divers which is one of the primary reasons for the SPA designation, although this species is also considered to be an opportunistic feeder and can also feed on a broad range of fish species⁹.

3.3.3 Otter

Otter have been recorded within close proximity to the study area (see Table 3-1) and the River Clwyd is considered to provide suitable foraging and resting habitats for Otter. Otter may also venture out into the coastal waters around Kinmel Bay. There is the potential for Otter to utilise the intertidal area for foraging, however, the existing sea walls and revetments within the study area did not provide sites suitable holts or laying up.

³ Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. 2012. Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas, Lowestoft, 147: 56 pp.

⁴ Environment Agency. 2017. Salmonid and Freshwater Fisheries Statistics for England and Wales, 2016 [online] Available at: <https://www.gov.uk/government/publications/salmonid-and-freshwater-fisheries-statistics> (Accessed 29th Sept 2018).

⁵ From Natural Resources Wales information. <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

⁶ From Natural Resources Wales information. <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

⁷ Maitland PS (2003). Ecology of the River, Brook and Sea Lamprey. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

⁸ Natural England, Countryside Council for Wales. 2012. Liverpool Bay SPA Conservation Advice Package. [Online] Available at: <http://publications.naturalengland.org.uk/publication/3236717>. (Accessed 5th January 2016).

⁹ Guse, N., Garthe, S. & Schirmeister, B. 2009. Diet of red-throated divers *Gavia stellata* reflects the seasonal availability of Atlantic herring *Clupea harengus* in the southwestern 34 Baltic sea. *Journal of Sea Research*, 62: 268-275.

3.3.4 Reptiles and amphibians

Although the desk study returned numerous reptile and amphibian records within 1km of the site, the habitats surveyed were considered unsuitable for these species.

The terrestrial habitats are considered unsuitable for Great Crested Newt.

Kinmel Bay LNR supports a small population of Common Lizard and the dune habitats to the east of the site also provide habitat for a number of reptile species

3.3.5 Marine mammals

No records for marine mammals were returned in the desk study, however it is likely that common species of marine mammal will use the coastal waters adjacent to the works area as well as the wider area of Liverpool Bay. There is anecdotal evidence of Grey and Common Seal occasionally hauling out at the eastern end of the scheme.

4 Assessment of Impacts

4.1 Statutory designated nature conservation sites

Liverpool Bay SPA

Liverpool Bay SPA is situated 0.5km to the north the proposed works. The works footprint and access do not fall within the boundary of the SPA, however, the potential for impacts on features of the SPA have also been considered. The HRA concluded that the only means of likely significant effect to the SPA is through release of harmful chemicals from machinery or works during construction. During Appropriate Assessment this pathway has been mitigated through the use of pollution prevention measures which will result in no significant effect on the site integrity of Liverpool Bay SPA.

Traeth Pensarn SSSI

The works will not directly impact upon the SSSI and all haul roads have been designed to avoid tracking through the site. There is the potential for damage to the site through release of harmful chemicals from machinery or works during construction.

The SSSI is at present subject to erosion, the proposed works will not increase this but will also not stop it.

4.2 Non-statutory designated nature conservation sites

The works will impact a small area of the Kinmel Bay Dunes LNR. This will impact on a small area of sand dune and dune scrub (approximately 1000m², equating to <1% of total LNR area). For the most part this will be temporary with sand replaced following the completion of the works.

4.3 Intertidal Habitats

The works will result in the direct impact to 25,300m² of intertidal habitats. For the most part this will consist of renewing artificial rock, however, the scheme will result in the direct loss of approximately 3000m² of littoral sediment which will be replaced by intertidal rock. The sediments in this area consist predominantly of coarse sand and at present do not provide habitat for a range of macroinvertebrate species.

There is also the potential to negatively impact intertidal and subtidal habitats through pollution incidents. Therefore, appropriate environmental management measures will be implemented prior to the construction phase to ensure that water quality is not adversely affected through pollution incidents and the release of contaminants from the construction site. These measures will be recorded in a detailed CEMP and agreed with the local planning authority and NRW prior to works taking place. Plant movement in the intertidal area also has the potential to negatively impact intertidal habitats through compaction of the foreshore.

4.4 Terrestrial Habitats

There will be short-term, temporary losses of amenity grassland habitats during construction. The works will directly impact a small area of open dune habitat within the Kinmel Bay LNR. For the most part this will be temporary, however, the scheme will result in the permanent loss of approximately 1000m² of open dune habitat.

4.5 Birds

The foreshore at Kinmel provides potential foraging habitat for a range of wildfowl and wading bird species, some of which are features of the local European protected sites. At high tide there is also the potential for diving or other fish-eating species to utilise the intertidal areas. Given that the birds present are already habituated to large amounts of disturbance, and the availability of alternate nearby intertidal habitat, it is considered unlikely that disturbance due to the works will result in a significant impact upon the

wintering birds that form part of the qualifying assemblage of the Liverpool SPA. Birds were not recorded in high densities and given that the works will likely be carried out at low tide, it is considered that there is ample alternative foraging and loafing habitat available nearby. The works will not directly impact habitats at Pensarn that have been identified as suitable for ground nesting species such as Ringed Plover.

4.5.1 Otter

There is potential for Otter to use the River Clwyd and potentially into the estuary and surrounding coast. However, it is considered unlikely that works will have any impact on Otter holts or resting sites, as no suitable sites were identified in the survey.

4.6 Reptiles

Kinmel Bay LNR supports a small population of Common Lizard and the dune habitats to the east of the site also provide habitat for a number of reptile species

Impacts to this species include direct harm and temporary, short-term loss of terrestrial habitats during construction activities.

4.7 Invertebrates

The foreshore provides habitat for a range of benthic invertebrate species. However, sediments located within the scheme footprint do not hold high value for macroinvertebrate species and the loss of this area will not have a significant impact upon macroinvertebrate assemblages.

There is the potential to negatively impact macroinvertebrate assemblages through pollution incidents. Plant movement in the intertidal area also has the potential to negatively impact intertidal habitats through compaction of the foreshore.

A small amount of *Sabellaria alveolata* has been recorded to outside of the scheme area, however, the species was not recorded within Kinmel Bay. Given the ephemeral nature of the species there is the potential for it to colonise the scheme area before construction takes place.

4.7.1 Fish

It is likely that the works will result in a small amount of intertidal habitat becoming inaccessible to fish at high tide, the impact of this would be localised to the site extent and therefore negligible.

There is the potential for a scheme to impact upon fish species during the construction phase. Fine sediment mobilisation has the potential to impact upon fish species as a result of reduced foraging efficiency of visual predators and cause minor gill irritation.

4.7.2 Marine Mammals

It is likely that a limited number of marine mammal species such as Grey Seal and Harbour Porpoise commute or forage infrequently in the sea near the proposed works area.

Although the intertidal habitat has the potential to be utilised by seals for hauling out and basking, this is considered unlikely due to the highly disturbed nature of the area arising from its popularity as a tourist beach.

Impacts from the works are therefore likely to be restricted to temporary noise disturbance to a few foraging and commuting individuals.

4.8 Other protected and priority species

Where small amounts of vegetation clearance will be timed to avoid sensitive periods such as breeding periods in the Spring and early summer, and the winter period when animals could be most sensitive to disturbance. During the project, vegetation will be maintained



short within working areas which will reduce the likelihood of small mammals being present.

There will be no permanent or long- term loss of habitat of these species as habitats will be reinstated and enhanced.



5 In-combination and cumulative effects

Planning/ Marine Licence Reference Number and Status	Description	Location	Potential for Cumulative Effects	Significance
Planning permission not yet submitted (expected 2022)	Awel y Môr Offshore Wind Farm	Off the coast of Rhyl, DENBIGHSHIRE	Ground Investigations (boreholes) are due to take place in July/ August 2021. Due to the timing, there should be no in-combination effects as the works relating to Central Prestatyn are not due to commence until March 2022.	Not significant.

6 Mitigation and Enhancements

6.1 Statutory designated nature conservation sites

Liverpool Bay SPA

Mitigation

The works should not have significant impact upon the Liverpool Bay SPA due to the small scale of works on the beach. However, the following mitigation measures are incorporated into the HRA:

Pollution prevention measures

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

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

- Any chemical, fuel and oil stores should be located on impervious bases within a secured bund with a storage capacity 110% of the stored volume.
- Biodegradable oils and fuels should be used where possible.
- Drip trays should be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Where practicable, refuelling of vehicles and machinery should be carried out on an impermeable surface in one designated area well away from any watercourse or drainage (at least 10m).
- Emergency spill kits should be available on site and staff trained in their use.
- Operators should check their vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages should be reported immediately; and
- Daily checks should be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective should be removed from site immediately or positioned in a place of safety until such time that it can be removed.
- Environmentally sensitive products should be used where possible.

Enhancements

The scheme enhancements do not aim to have a direct impact upon the qualifying features of the SPA.

Traeth Pensarn SSSI

Mitigation

The works will not directly impact upon the SSSI and all haul roads have been designed to avoid tracking through any interest features of the SSSI. This will be detailed in the CEMP and enforced by the ECoW. There is the potential for damage to the site through release of harmful chemicals from machinery or works during construction. Pollution prevention guidelines detailed above will be adopted to avoid indirect impacts.

Enhancements

The SSSI will not be directly impacted by the scheme, however, it is currently subject to erosion and the continued erosion is expected to impact on the existing area coverage of the SSSI. It has therefore been proposed that further beach replenishment could offer suitable intervention to reduce wave overtopping, erosion and protect the SSSI. This would involve the sourcing and placement of suitably sized, quarried material at Ty Crwn. This will

act to prevent the undermining of the sea wall and provide suitable habitat for colonisation of shingle vegetation. The size of shingle will be chosen to match the existing material within the SSSI. The deposited material will then be profiled to meet the required design specification. The deposition of recharged material will also act as a sediment source to the beaches east of this area, potentially increasing sediment volumes. The aim of this replenishment will be to increase the size of the habitats found at the SSSI with the potential to expand the designation. Technical details of how this will be achieved can be found in the design drawings and coastal processes chapter.

6.2 Non-statutory designated nature conservation sites

Mitigation

Small sections of dune habitat within the Kinmel Dunes will be temporarily disturbed during the construction works. The area impacted will be limited to as small a footprint as possible and all sand temporarily removed will be replaced within the LNR under the supervision of an ECoW.

Enhancements

Habitat management will be carried out across the LNR, following construction, in order to improve the condition of habitats present. In particular, interventions will be carried out in the areas of scrub in order to provide more structural diversity to encourage an increased diversity of plants and invertebrates to colonise.

Scrub management was identified as an opportunity for improving the condition of habitats present at Kinmel Bay LNR as there are currently extensive dense stands of Gorse and Bramble Scrub with very little regeneration as well as the INNS Red Valerian.

Finally, any areas of Sea Buckthorn will be removed as it is considered non-native in North Wales. It has been locally introduced and can rapidly invade and dominate dune habitats, reducing the value of the habitat to biodiversity through suppressing ground flora, and reducing invertebrates and bird diversity.

6.3 Coastal Habitats

Mitigation

Appropriate environmental management measures will be implemented prior to the construction phase to ensure that water quality is not adversely affected through pollution incidents and the release of contaminants from the construction site. These measures will be recorded in a detailed CEMP and agreed with the local planning authority and NRW prior to works taking place.

To minimise disturbance and habitat degradation, plant will keep to agreed haul routes and not stray outside of these areas. It is considered that in this case, the haul routes will rapidly recover following the completion of the works.

Enhancements

The scheme has the potential to result in the small-scale loss of intertidal habitats close to the existing sea wall, both through direct loss and future coastal squeeze. Whilst this is not considered to be a significant impact, intertidal habitats are a priority habitat and compensatory and enhancement measures are built into the scheme with the aim of the scheme having a net-gain for biodiversity in the area.

Enhancements to the sea wall should be made that encourage growth of algae and colonisation by marine invertebrates and seaweeds.

Ecological enhancements will be added in the form of carved rockpools in boulders within the intertidal zone. These indentations in the emplaced boulders retain tidal water creating habitat availability and ecological opportunities for colonisation by intertidal species.

Attention needs to be given to the placement of modified boulders, so they are suitably

positioned to receive and retain water during each tidal cycle and should be agreed with the ECoW.

6.4 Terrestrial Habitats

Mitigation

The loss of amenity grassland, pockets of vegetated shingle and small pockets of sand dune habitat will be compensated through coastal grassland and vegetated shingle planting.

Enhancements

Topsoil from the site will be reused wherever possible and this will be supplemented with a grass and wildflower mix that represents the surrounding coastal grassland and contains several of the larval foodplants for a number of butterfly, bumblebee and moth species, which have been recorded in the local area.

Using existing topsoil and supplementing it with a seed mix should allow a closed sward to establishment within 1-2 years. This should be monitored after a few years to check the diversity of the sward

Mowing or cutting should be carried out in late September, in order to retain seeds of grasses and wildflowers and avoid impact to birds and reptiles. The cuttings should be removed from the bank to allow the persistence of the wildflowers and prevent the build-up of thick thatch. This will improve the biodiversity value through attracting insects, birds, bats and reptiles and also improve the aesthetic value of these habitats for the adjacent residents.

6.5 Site enhancements for protected and priority species

The proposed enhancements that form part of the scheme, will provide overall gains to the following protected and priority species:

- Birds - through seeding a species diverse grass and wildflower mix along the new coastal embankment in order to encourage invertebrates and reptiles, which will provide new foraging habitat for birds.
- Reptiles - through seeding a species diverse grass and wildflower along the coastal embankment, which will encourage invertebrates, and also through conducting controlled scrub clearance of the dense areas of Gorse and Bramble scrub at Kinmel Bay LNR will improve the habitat mosaic for reptiles.
- Priority invertebrate species - through seeding specific grass species on the coastal embankment which are larval foodplants to many priority Butterfly and Moth species that have been recorded locally. The coastal grassland planting will provide linked corridors throughout the length of the scheme for a range of pollinator species such as bumblebees.

6.6 Construction phase mitigation and additional enhancement measures

The following sections include specific mitigation required on site during the construction phase. Where additional enhancement measures will be incorporated into the project, these are also given below.

6.7 Species

6.7.1 Invertebrates

Mitigation

A small amount of *Sabellaria alveolata* has been recorded to the east of the scheme, however, the species was not recorded within Kinmel Bay. Given the ephemeral nature of the species there is the potential for it to colonise the scheme area before construction

takes place. A survey will be undertaken prior to works being undertaken in the littoral zone to ensure that the species is not present.

As detailed above appropriate pollution prevention measures will be put in place to avoid impacts upon benthic invertebrate species. Haul roads within the intertidal areas will be agreed in advance and adhered to in order to avoid the compaction of a larger area of the foreshore.

6.7.2 Birds

Mitigation

Vegetation removal for the scheme will be minimal and it is considered unlikely that there will be impacts to nesting birds. Areas that have been identified as important for nesting Ringed Plover will not be directly impacted upon by the proposed works. The works will not require the removal of trees suitable for nesting birds, however, should it become necessary to remove small sections of scrub for access, all vegetation clearance will be undertaken outside of the main breeding season (typically between September and end February). If this is not possible, all vegetation clearance will be supervised by an experienced ecologist. Any identified nests will be safeguarded until the chicks have fledged to ensure there are no direct impacts upon nesting birds.

Enhancement

To further encourage nesting birds, including ground nesters, away from the construction footprint, areas of scrub and rough grassland will be maintained and/or created outside of the construction footprint.

A plan for signage and roped off areas at Pensarn will be developed with the local ranger to protect the area for nesting Ringed Plover.

6.7.3 Reptiles

Mitigation

Where works cannot avoid suitable reptile habitat (i.e. dunes, ecotones, rough grassland), vegetation clearance will be conducted in a sensitive manner to avoid direct harm to reptiles. Two-staged vegetation clearance will be conducted under watching brief by an Ecologist between September – October to fit between the bird breeding season and reptile hibernation.

All contracted site workers will be made aware of how to identify Common Lizard, the legal protection afforded to this species and the following actions including what to do if Common Lizard or other reptiles are found.

Should large numbers of reptiles be found during site clearance works, works are to be stopped immediately and working methods evaluated and adjusted as necessary to prevent further impacts to reptiles.

6.7.4 Fish

Mitigation

There is the potential for a scheme to impact upon fish species during the construction phase. Fine sediment mobilisation has the potential to impact upon fish species as a result of reduced foraging efficiency of visual predators and cause minor gill irritation.

The works will be carried out at low tide in the dry and therefore the proposals should not cause any noise or vibration impacts to the marine environment.

7 Impact Summary

Ecological Feature	Identified Impact	Effect without mitigation	Mitigation	Enhancement Measure	Residual Impact
Liverpool Bay SPA	Indirect damage through pollution event.	Significant negative effect	Appropriate pollution prevention measures will be put in place		No significant effect
Traeth Pensarn SSSI	Indirect damage through pollution event.	Significant negative effect	Appropriate pollution prevention measures will be put in place	A beach recharge will be carried out to the west of the site. The aim is to increase the available habitat for vegetated shingle species and decrease erosion of the SSSI	No significant effect. Medium term net gain in habitat quality.
Kinmel Bay LNR	Removal of sand dune habitat	Permanent degradation of the protected site	Clearance will be undertaken using a 2-staged method between September - October, as described in section 5.	Habitat management will be carried out across the LNR, following construction, in order to improve the condition of habitats present. In particular, interventions will be carried out in the areas of scrub in order to provide more structural diversity to encourage an increased diversity of plants and invertebrates to colonise.	No significant effect. Medium term net gain in habitat quality.
On site habitats (coastal)	Pollution of coastal habitats (construction)	Significant negative effect.	Pollution prevention measures following the latest CIRIA guidance will be implemented through the	None.	No significant effect.

Ecological Feature	Identified Impact	Effect without mitigation	Mitigation	Enhancement Measure	Residual Impact
			CEMP.		
	Loss of intertidal habitat (priority habitat) during construction	Significant negative effect.	Compensation through habitat improvement on the sea wall.	Enhancement suggested in Section 4 for improving the diversity of microhabitats on the sea wall should be incorporated.	No significant effect.
On site habitats (terrestrial)	Loss of existing area of reedbed (Section 7 Priority Habitat)	Temporary loss of a priority habitat	The areas of reedbed outside of the construction footprint, will be expanded through reduced mowing of these areas during construction A new area of reedbed will be created to compensate for the loss.	None.	No significant effect. Temporary loss of habitat during construction, while the new reedbed is created and as the vegetation matures.
	Removal of amenity grassland	Temporary loss of habitat.		New areas of coastal grassland will be created will be created using a suitable coastal grassland mix. Areas of vegetated shingle planting will also be carried out.	No significant effect.
Birds	Potential destruction of nests (construction)	Significant negative effect.	Avoidance of main nesting bird season for vegetation clearance or pre-works nesting bird checks if required. All identified nests will be safeguarded until the chicks have fledged.	Enhancing Ringed Plover nesting at Pensarn post construction through the provision of roped off areas and signage to stop disturbance of nests.	No significant effect.
Reptiles (Common Lizard)	Killing, injuring and disturbance (construction)	Significant negative effect.	Displacement of Common Lizard away from the construction area through appropriately timed vegetation clearance works conducted outside of the main		No significant effect.

Ecological Feature	Identified Impact	Effect without mitigation	Mitigation	Enhancement Measure	Residual Impact
			autumn and winter period using 2-staged clearance method.		
Terrestrial Invertebrates	Killing, injuring and disturbance (construction, vegetation clearance)	Significant negative effect.	Adults will be able to move away from areas of disturbance. Other life stages can remain in short areas of vegetation, any present within longer vegetation will be present within cutting which will be left on site.	Habitats will be reinstated and enhanced, allowing re-colonisation of invertebrate populations. These measures include, grass and wildflower seeding on the coastal embankment, scrub management and creation of scrapes within areas of fixed dune on the wildlife site to encourage a rich assemblage of plants and invertebrates, coastal wildflower meadow and creation of earth mounds, providing a variety of habitat features.	No significant effect.
Intertidal Invertebrates	Killing, injuring and disturbance	Small negative effect	A survey will be undertaken prior to works being undertaken in the littoral zone to ensure that Sabellaria is not present. Pollution prevention measures will be put in place to avoid impacts upon benthic invertebrate species. Haul roads within the intertidal areas will be agreed in advance and adhered to in order to avoid the compaction of a larger area of the foreshore.		No significant effect.
Marine Mammals	Disturbance	Significant negative	All works will be undertaken in the		None.

Ecological Feature	Identified Impact	Effect without mitigation	Mitigation	Enhancement Measure	Residual Impact
	(construction)	effect.	dry and a 'soft start' to works should be carried out each day as this will move seals and cetaceans away from the area.		

8 Conclusions

It is considered that the mitigation and avoidance measures, as outlined in Section 5 of this report will ensure that any potential impacts are minimised to an acceptable level. A CEMP will ensure that these measures are implemented on site during construction works. There will be no direct impact upon the Liverpool Bay SPA and following the mitigation measures outlined in the HRA there will be no significant impact upon any statutory designated nature conservation sites.

The works will result in the direct loss of a small amount of intertidal sediments and a temporary impact upon associated species, whilst it is not possible to recreate this habitat like for like it is considered that the proposed habitat creation work on site and at the adjacent SSSI and LNR is expected to benefit biodiversity, as well as additional priority species including invertebrates and plants, ensuring that the scheme will result in a net gain for biodiversity.

Appendices

A Legislative and Planning Context

References

A.1 Planning Policy Wales

Planning Policy Wales is the national land-use planning policy document for Wales. PPW sets out the land use policies of the Welsh Government and provides context for land use planning in Wales. In light of the Well-being of Future Generations (Wales) Act 2015, PPW has been restructured into policy themes which reflect the well-being goals and policy updated where necessary to reflect Welsh Government strategies and policies. The revision to PPW are currently under consultation. The draft of PPW Edition 10 has been reviewed during the production of this report to ensure that any changes to PPW likely to take place in the coming months are considered and this report remains current.

PPW sets out the land use planning policies of the Welsh Government and provides the context for land use planning in Wales. It is supplemented by a series of Technical Advice Notes and policy clarification letters. National planning policy should be taken into account in the preparation of all tiers of a development plan. PPW will sit alongside the National Development Framework which will set out where nationally important growth and infrastructure is needed and how the planning system at a national, regional and local level can deliver it by providing direction for Strategic Development Plans and Local Development Plans. The suite of documents translates the commitment to sustainable development into the planning system so that it can play an appropriate role in maximising the contribution towards the achievement of the well-being goals and ways of working set out in the Well-being of Future Generations (Wales) Act 2015.

The Natural and Distinctive Places policy theme covers: landscape, historic environment, biodiversity and habitats, coastal characteristics, air quality, soundscape, water services, flooding and other environmental risks.

Section 5.13 states that "Development plan strategies, policies and development proposals should be formulated to look to the long-term protection and enhancement of the special characteristics and intrinsic qualities of places, be these of natural, historic or built environments, ensuring their longevity in the face of change. This means both protecting and enhancing landscapes, habitats, biodiversity and the historic environment in their own right as well as other components of the natural world, such as water resources or air quality. Problems should be prevented from occurring or getting worse. Biodiversity loss should be reversed, pollution reduced, environmental risks addressed, and overall resilience of ecosystems improved. When appropriate development is proposed, it must be taken forward in an integrated way to ensure common issues are considered and accommodated early on and multiple benefits secured, such as safeguarding or securing green infrastructure."

Section 5.19 states that "Sites designated for their landscape or nature conservation importance are fully considered and their special characteristics and features protected and enhanced, whilst the network of sites should be recognised as being at the heart of improving the resilience of ecosystems."

Section 5.42 highlights the role the planning system performs in reversing the decline in biodiversity and increasing the resilience of ecosystems by ensuring appropriate mechanisms are in place to protect against loss and secure enhancement. Development proposals must take into account the need to:

- Promote the conservation of biodiversity, in particular the conservation of wildlife and habitats;
- Ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;
- Ensure statutorily designated sites are properly protected and managed;
- Safeguard protected species; and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil; and
- Seek enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

Section 5.57 details the protection for non-statutory designated sites and acknowledges that although the designation carries less weight than statutory designated sites, they make a significant contribution to delivering an ecological network for biodiversity and resilient ecosystems and should be given adequate protection in policy and decision making.

Planning authorities should follow a step-wise approach to protecting and enhancing biodiversity and building resilient ecological networks by ensuring that any adverse environmental effects are minimised and mitigated. Firstly, by retaining biodiversity and green-infrastructure features wherever possible. Secondly, where significant effects are predicted, alternative sites that would result in less or no harm have been considered. Thirdly, attaching planning conditions, obligations or advisory notes to a permission to secure beneficial biodiversity outcomes. And when all options have been exhausted and are insufficient to secure beneficial environmental outcomes, offsite compensation for unavoidable damage should be sought. Finally, where the adverse effect on the environment clearly outweighs other material considerations, the development should be refused.

A.2 Environment (Wales) Act 2016

The Environment (Wales) Act 2016 delivers a programme for the Welsh Government's commitment to introduce new legislation for the environment. Part 1 of the Act, regarding sustainable management of natural resources, includes provisions for Biodiversity and Resilience of Ecosystems Duty. This duty replaces and enhances the Natural Environment and Rural Communities (NERC) Act 2006, by requiring all public authorities to not only "maintain and enhance biodiversity" when carrying out their functions in Wales but also to "promote the resilience of ecosystems". This links biodiversity with the long-term health and functioning of Welsh ecosystems, aligning the biodiversity duty with the framework for sustainable natural resource management, also provided within the Environment Wales Act.

The Act also provides a list of the living organisms and types of habitat which are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales (Section 7). This list replaces the habitats and species of principal importance from Section 42 of the NERC Act 2006.

A.3 Statutory designated nature conservation sites

Sites with statutory designations receive varying degrees of legal protection under UK statute. There are several statutory designations used for sites of high nature conservation value in the UK, which are applied depending upon the importance of the site in a local, regional, national or international context. This includes:

- Ramsar Sites (International designation)

- Special Areas of Conservation (SAC) and Special Protection Area (SPA) (European designations)
- National Nature Reserves (NNR) and Site of Special Scientific Importance (National designations)
- Local Nature Reserves (LNR) (Local designation)

A.4 Non-statutory designated sites

Non-statutory sites are afforded no statutory legal protection, but are normally recognised by local planning authorities and statutory agencies as being of local nature conservation value. The protection afforded to such sites is usually discretionary, through Local Plan policies. Non-statutory sites are designated by the local authority, usually in partnership with the County Wildlife Trust (or equivalent).

A.5 Protected species

Several species are protected under UK and international legislation. In the UK, primary protection is provided under the Wildlife and Countryside Act 1981 (as amended). Species of European importance receive additional protection in Wales under the Conservation of Habitats and Species Regulations 2017 (as amended); others may receive protection through specific legislation. Further details on specific species and their levels of protection are provided below.

A.5.1 Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built
- take, destroy or possess the egg of any wild bird.

Certain species, such as the Barn Owl *Tyto alba*, receive additional protection under Schedule 1, which makes it an offence to intentionally or recklessly disturb birds and also their young at, on or near an active nest.

A.5.2 Badger

Badgers *Meles meles* are protected by the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended), Schedule 6. Under the Protection of Badgers Act, it is illegal to intentionally kill, capture, injure or ill-treat any Badger. It is also an offence to obstruct, destroy or damage a Badger sett or disturb Badgers within a sett. Disturbance is defined, for development purposes, as any activity that could damage a sett or be greater than what Badgers commonly tolerate.

A.5.3 Bats

All UK bat species are European Protected Species (EPS), protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitat and Species Regulations 2017 (as amended). This makes it an offence to:

- deliberately capture, injure or kill a bat
- intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
- damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
- intentionally or recklessly obstruct access to a bat roost.

A.5.4 Great Crested Newt

The Great Crested Newt *Triturus cristatus* is an EPS under the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to:

- kill, capture or disturb a Great Crested Newt
- take or destroy the eggs of a Great Crested Newt
- damage or destroy the breeding or resting places of Great Crested Newt.

It also receives additional protection under the Wildlife and Countryside Act 1981 (as amended) making it illegal to possess or control any Great Crested Newt, living or dead.

A.5.5 Reptiles and other amphibians

Legal protection varies considerably for different species. Smooth Snake *Coronella austriaca*, Sand Lizard *Lacerta agilis* and Natterjack Toad *Epidalea calamita* are EPS, and it is an offence to:

- deliberately kill, capture or disturb these species
- deliberately take or destroy the eggs of these species
- damage or destroy the breeding or resting places of these species.

Under the Wildlife and Countryside Act 1981 (as amended) Adder *Viperus berus*, Grass Snake *Natrix natrix/Natrix helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis* are protected from intentional killing or injuring, additionally Common Frog *Rana temporaria*, Common Toad *Bufo bufo* and other newt species are prohibited from sale.

A.5.6 Invertebrates

Numerous invertebrate species receive international under the following legislation:

The Conservation of Habitats and Species Regulations 2017 (as amended); Annex IIa, Annex Iva and Annex Va

Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) Appendix II and III

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

EU CITES Regulations

Approximately 70 species of invertebrate species receive legal protection through Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). There are various levels of protection according to the rarity of the species. Offences include combinations of the following:

- Sale, or offering / exposing for sale
- Possession
- Intentional taking, killing or injuring
- Intentionally / recklessly damaging or destroying its place of shelter / protection
- Intentionally / recklessly disturbing it whilst occupying its place of shelter / protection
- Intentionally / recklessly obstructing access to its place of shelter / protection

Species with full protection under the Act include the Marsh Fritillary *Euphydryas aurinia*, Southern Damselfly *Coenagrion mercuriale* and Violet Click Beetle *Limoniscus violaceus*.

There are also over 400 invertebrate species listed under Section 7 of the Environment (Wales) Act 2016.

A.6 Invasive non-native species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) lists plant species, groups of plants and animal species for which it is illegal to plant, release, allow to escape or cause to spread into the wild. Examples of species listed on Schedule 9, include Japanese Rose *Rosa rugosa*.

Some species are also classed as 'controlled waste' under the Environmental Protection Act 1990 and must be disposed of properly (i.e. Japanese Knotweed *Fallopia japonica* and Giant Hogweed *Heracleum mantegazzianum*). These provisions mean that, if these species occur on a site proposed for development or other work which may disturb the ground, control of these species is likely to be required.

