

## 15.0 Terrestrial Biodiversity and Ornithology

### Introduction

- 15.1 This chapter assesses the potential effects of the proposed development on terrestrial ecology and ornithology. In particular, it considers impacts that may arise as a result of the proposed development on ecological features, including terrestrial habitats, protected or notable species and breeding and non-breeding bird species.
- 15.2 The chapter describes the methods used to assess the baseline conditions currently existing at the site and surrounding area, the potential direct and indirect impacts arising from site clearance, construction and operational phases of the proposed development, mitigation measures (both embedded and additional) required to prevent, reduce, or offset the impacts; the residual impacts and cumulative impacts.
- 15.3 This chapter is accompanied by the following appendices, found in **Volume 2** of this Ecological Impact Assessment Report (EIAR):
- Preliminary Ecological Appraisal Report (March 2025) – **Appendix 15.1**;
  - Breeding / Summer Bird Survey Report (April 2025) – **Appendix 15.2**; and
  - Wintering Bird Survey Report (April 2025) – **Appendix 15.3**.

### *Competency Statement*

- 15.4 This chapter has been prepared by John Thompson. John holds a degree in Environmental Science and a master's degree in Ecological Assessment. John is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). John has a background in managing coastal designated sites and nature reserves / protected areas and has undertaken an extensive range of ecological assessment work on ports, harbours and other coastal infrastructure and operations throughout England, Scotland and Ireland. John is a trained European Seabirds at Sea (ESAS) surveyor and has undertaken ornithological surveys and assessments in the North Sea, Irish Sea, Atlantic coast of Ireland and English Channel as well as a range of inshore locations within harbours and estuaries. John has prepared and provided input to Environmental Impact Assessments for projects where marine and coastal ornithology have been sensitive receptors.
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## Legislation, Guidance and Policy

### Introduction

- 15.5 This section sets out the legislation and policy which have defined the scope of the assessment.

### Legislative and Policy Framework

#### National Planning Policy Context

##### National Planning Framework 4 (NPF4)

- 15.6 Overarching planning policies for Scotland are contained within the 'National Planning Framework 4' (NPF4)<sup>1</sup>. With specific reference to this chapter NPF4 states in relation to Biodiversity that the aim of the policy is *"To protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks"*.
- 15.7 Policy 1 of NPF4 gives significant weight to the nature crisis to ensure that it is recognised as a priority in all plans and decisions stating that *"When considering all development proposals significant weight will be given to the global climate and nature crises"*.
- 15.8 Policy 4 looks to protect and enhance natural heritage.
- 15.9 Policy 3's intent is "to protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks". The policy outcome aims are that *"biodiversity is enhanced and better connected including through strengthened nature networks and nature-based solutions"*.

### Local Policy and Guidance

#### Dumfries and Galloway Council Local Development Plan 2 (LDP2)

- 15.10 The Dumfries and Galloway Local Development Plan (adopted October 2019)<sup>2</sup> sets out a range of policies in relation to Nature Conservation relevant to the proposed development including:
- Policies NE 4 and NE 5 relating to sites and species of International Importance;
  - Policy NE6 Sites of National Importance for Biodiversity and Geodiversity;
  - Policy NE 8 Trees and Development; and
  - Policy NE 9 Developed and Undeveloped Coast
- 15.11 The statutory duty placed on Dumfries and Galloway Council by the Nature Conservation (Scotland) Act 2004<sup>3</sup> to further the conservation of biodiversity is not restricted to sites, habitats or species that

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<sup>1</sup> Scottish Government: National Planning Framework 4: February 2023

<sup>2</sup> [Adopted Local Development Plan 2](#)

<sup>3</sup> [Nature Conservation \(Scotland\) Act 2004](#)

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are subject to statutory protection. A number of Local Nature Conservation Sites have been identified and assessed as being of known local importance for biodiversity or geodiversity. These consist of Local Nature Reserves (LNRs) and non-statutory Local Wildlife Sites, Local Geodiversity Sites and nature reserves of conservation organisations. However, other features of local importance for biodiversity can be found outside of these sites, but their importance may never have been surveyed or assessed. Any development proposals being submitted in relation to any of these aspects will be considered against Policy OP1: Development Considerations.

- 15.12 The Dumfries and Galloway Biodiversity Action Plan (BAP)<sup>4</sup> includes a range of habitats and species which are relevant to the site and proposed development, including sea and seashore habitats, coastal habitats and a range of species including bird species associated with Dumfries and Galloways extensive coastline as well as a range of mammal species.

**Legislation**

- 15.13 A summary of relevant wildlife legislation is included in **Table 15.1** below. Specific consideration of legislation related to statutory designated sites is included in subsequent text

**Table 15-1 Summary of Relevant Legislation**

Legislation	Key Features
The Conservation of Habitats and Species (Amendment) (EU Exit ) Regulations 2019 <sup>5</sup>	<p>The Habitat Regulations transpose <i>Council Directive 79/409/EEC on the Protection of Wild Birds</i> (the EC Birds Directive 1979) and <i>Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna</i> (the EC Habitats Directive 1992) into UK law. The Birds Directive was amended in 2009, becoming Directive 2009/147/EC.</p> <p>The Habitat Regulations make it an offence (with certain exceptions) to deliberately capture, disturb, kill or trade in those animal species listed in Schedule 2, or to pick, cut, uproot, collect, destroy or trade in those plant species listed in Schedule 4.</p> <p>The EC Birds Directive requires member states to establish and monitor Special Protection Areas (SPAs) for all rare or vulnerable species included in Annex I, as well as for all regularly occurring migratory species, with key focus on wetlands of international importance. Annex I and II of the Habitats Directive respectively list those habitats and species for which a similar network of sites – Special Areas of Conservation (SACs) – must be established and monitored. Collectively, SPAs and SACs form a network of pan-European protected areas which are referred to as ‘Natura 2000’ sites or National Site Network Sites.</p>
The Convention on the Conservation of European Wildlife and Natural Habitats	The Bern Convention was adopted in 1979 and ratified by the UK Government in 1982. The principal aims of the Convention are to ensure the conservation and protection of all wild plant and animal species and their natural habitats (listed in Appendices I and II), to increase cooperation

<sup>4</sup> [Dumfries and Galloway Local Biodiversity Action Plan - Part 3 - SWSEIC](#)

<sup>5</sup> [The Conservation of Habitats and Species \(Amendment\) \(EU Exit\) Regulations 2019](#)

Legislation	Key Features
1979 (Bern Convention) <sup>6</sup>	<p>between contracting parties, and to afford special protection to the most vulnerable or threatened species (including migratory species).</p> <p>Members of the European Community meet their obligations via the Birds Directive and the Habitats Directive. These are transposed into UK law by the Wildlife and Countryside Act 1981 (as amended), Nature Conservation (Scotland) Act 2004 (as amended), Wildlife (Northern Ireland) Order 1985, and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.</p>
The Wildlife and Countryside Act 1981 (as amended) <sup>7</sup>	<p>The Wildlife and Countryside Act consolidates and amends existing national legislation to implement the requirements of the Bern Convention and the Birds Directive throughout Great Britain. The Act is the primary UK mechanism for the designation of statutory ecological sites - Sites of Special Scientific Interest (SSSIs) - and the protection of individual species listed under Schedules 1, 2, 5, 6 and 8 of the Act, each of which is subject to varying levels of protection.</p> <p>Schedule 9 of the Act also lists those plant species which it is an offence to plant or otherwise cause to grow in the wild, while Schedule 14 prevents the release into the wild or sale of certain plant and animal species which may cause ecological, environmental or socio-economic harm.</p>
Nature Conservation Scotland Act (2004) <sup>8</sup>	<p>The Nature Conservation Scotland Act places a duty on public bodies to consider and conserve biodiversity through the exercise of their functions and includes a range of measures to strengthen the protection of both habitats and wildlife. Under the Act a series of priority habitats and species are identified under the Scottish Biodiversity list SBL. The Act makes provision in respect of biodiversity, pesticides harmful to wildlife, protection of birds and invasive non-native species.</p>
The Wild Mammals (Protection) Act 1996 <sup>9</sup>	<p>This Act provides protection for wild mammals from acts of cruelty. An offence is committed if any person mutilates, kicks, beats, nails, or otherwise impales, stabs, burns, stones, crushes, drowns, drags or asphyxiates any wild mammal with intent to inflict unnecessary suffering.</p>
The Protection of Badgers Act 1992	<p>This consolidates the existing legislation relating to the protection of badgers, and makes it an offence in England and Wales to wilfully kill, injure or take a badger (or attempt to do so) and affords protection to both the animals themselves and their setts.</p>

15.14 In Scotland, European Sites are defined as candidate Special Areas of Conservation (cSACs), designated Special Areas of Conservation (SACs) and classified Special Protection Areas (SPAs).

<sup>6</sup> [Bern Convention | JNCC - Adviser to Government on Nature Conservation](#)

<sup>7</sup> [Wildlife and Countryside Act 1981](#)

<sup>8</sup> [Nature Conservation \(Scotland\) Act 2004](#)

<sup>9</sup> [Wild Mammals \(Protection\) Act 1996](#)

- 15.15 The Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the “1994 Habitats Regulations”) apply to European Sites. Where reserved matters (within the meaning of Schedule 5 of the Scotland Act 1998) are concerned, certain provisions of the Conservation of Habitats and Species Regulations 2019 (the “2019 Regulations”) apply instead. Both sets of regulations require an equivalent process in relation to the assessment of plans and projects with the potential to affect European sites.
- 15.16 "The Regulations require that, *“where an authority concludes that a development proposal unconnected with the nature conservation management of a Natura 2000 site is likely to have a significant effect on that site, it must undertake an appropriate assessment of the implications for the conservation interests for which the area has been designated.”*
- 15.17 Under regulation 48 of the 1994 Habitats Regulations (or regulation 63 of the 2019 Regulations in respect of reserved matters), this means that the competent authority has a duty to:
- determine whether the proposal is directly connected with or necessary to site management for conservation; and, if not;
  - determine whether the proposal is likely to have a significant effect on the site either individually or in combination with other plans or projects; and, if so, then;
  - make an appropriate assessment of the implications (of the proposal) for the site in view of that site's conservation objectives.
- 15.18 This consideration is commonly known as Habitats Regulations Appraisal (HRA) and extends where appropriate to plans or projects outwith the boundary of the site in order to determine their implications for the interests protected within the site.
- 15.19 If significant effects are unknown or likely, the competent authority can only agree to the proposal under regulation 48 (or regulation 63 of the 2017 Regulations in respect of reserved matters) after having ascertained by means of the appropriate assessment that it will not adversely affect the integrity of the site and having first consulted and had regard to any representations made by NatureScot.
- 15.20 If it is not possible to ascertain that the proposal will not adversely affect the integrity of the site and there are no alternative solutions, the proposal can only be allowed to proceed if there are imperative reasons of overriding public interest for doing so (and having obtained any necessary compensatory measures).
- 15.21 Where a priority habitat is affected reasons of overriding public interest can relate only to human health, public safety, beneficial consequences of primary importance for the environment or other reasons subject to the opinion of the Scottish Ministers. Where no priority habitat is affected imperative reasons of overriding public interest can include those of a social or economic nature.
- 15.22 If a competent authority proposes to approve a plan or project on the grounds of imperative reasons of overriding public interest then regulation 49 of the Habitats Regulations<sup>4</sup> states that the competent authority must inform Scottish Ministers (or the Secretary of State) and must not issue approval for a period of 21 days after receipt by Scottish Ministers (or the Secretary of State) unless notified otherwise.
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- 15.23 If proposals are allowed to proceed in accordance with regulation 49<sup>4</sup> then it should be noted that regulation 536 requires that Scottish Ministers (or the Secretary of State) shall secure that any necessary compensatory measures are taken to ensure that the overall coherence of the UK site network is protected.
- 15.24 Sites of Special Scientific Interest (SSSI) are Protected through the provisions of the Wildlife and Countryside Act (1981) as amended in Scotland.

### *Guidance*

- 15.25 As described below the Ecological Impact Assessment (EclA) of the proposed development upon identified ecological features has been undertaken with reference to the Ecological Impact Assessment Guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024<sup>10</sup>).
- 15.26 Consideration of seabirds which may utilise the study and their potential association with designated sites area has taken into account guidance presented by Woodward et al (2019)<sup>11</sup>.

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<sup>10</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

<sup>11</sup> Woodward, I., Thaxter, C.B., Owen, E. & Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening, Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate, ISBN 978-1-912642-12-0

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## Methodology Used For Assessment

### Introduction

15.27 The Ecological Impact Assessment (EclA) of the proposed development upon identified ecological features has been undertaken with reference to the Ecological Impact Assessment Guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024<sup>12</sup>). The EclA seeks to:

- Establish a robust and accurate ecological baseline for the application site;
- Identify and evaluate the nature conservation/biodiversity interest present;
- Identify any potential effects arising from the proposed development (construction and operational stages);
- Establish the character and significance of those identified effects;
- Identify mitigation measures to address any significant effects;
- Assess any residual effects and the need for any compensation; and,
- Assess cumulative effects from other surrounding developments.

15.28 This EclA reported within this chapter represents the outcome of the EIA process in relation to terrestrial biodiversity and ornithology.

### Consultation

15.29 An EIA Scoping Opinion (February 2023)<sup>13</sup> was received from Marine Scotland, which helped inform the scope of the EIA process, as discussed in this chapter.

15.30 *On terrestrial biodiversity and ornithology is outlined in Section 7 of the Scoping Report. Table 18.1 of the Scoping Report proposes that these impacts are scoped in to the EIA Report for both construction and operational stages. To the extent that the effects relate to the marine licensable activities of the Proposed Works, the Scottish Ministers agree with the proposal to scope in terrestrial biodiversity and ornithology and are broadly content with the potential impacts proposed to be scoped in, as detailed in Section 7.3 of the Scoping Report.*

15.31 *The Scottish Ministers however, advise that underwater noise impacts on marine ornithology and temporary loss of foraging habitats on diving waterbirds due to dredging activities must also be scoped in for further assessment in the EIA Report for the construction phase. Additionally, the Scottish Ministers advise that vessel traffic disturbance on waterbirds during the operational phase, specifically*

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<sup>12</sup> CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

<sup>13</sup> Marine Scotland: Scoping Opinion adopted by the Scottish Ministers under Part 4 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Dumfries and Galloway Council Stranraer Marina Development: February 2023

- within summer months must also be scoped for further assessment in the EIA Report. The Scottish Ministers direct the Applicant to MSS advice and advise that it is fully addressed within the EIA Report.*
- 15.32 *The Scottish Ministers support the Applicant's proposal to consider the wider context of Loch Ryan to birds through utilising Royal Society of the Protection of Birds and British Trust for Ornithology held data, by collating WeBS survey data and data within Lawson et al. 2015<sup>14</sup>. This is in line with the NatureScot pre-scoping advice dated November 2020. Regarding nesting birds, the Scottish Ministers support the proposed breeding bird checks prior to any works beginning, and reminds the Applicant that birdnesting locations may occur in places other than those identified in the Scoping Report.*
- 15.33 *NatureScot provide the following consultation feedback in a letter dated November 2020.*
- 15.34 *Given the coastal setting otters are expected to be present in suitable habitat throughout this area of shoreline. Therefore, in addition to the PEA a survey of all suitable habitats will be completed to ascertain presence or absence of otter. Otter surveys can be completed at any time of the year and we would propose to undertake the survey in conjunction with the PEA survey. The survey would follow the Common Standards Monitoring Guidance (2004), comprising of a standard walkover survey would be carried out by two qualified ecologists intensively searching all suitable habitat for signs of otter presence including: spraint, footprints and feeding remains. The survey will identify any otter resting sites within 200m of the site within suitable habitat.*
- 15.35 *The scope of the ornithology surveys would be agreed with NatureScot at the earliest opportunity at commission, but we propose:*
- a. Monthly Through the Tide Counts (TTTCs) will be undertaken in a survey area comprising the footprint of the works and in coastal habitats approximately 500m east and west of the works. The objective of the bird survey will be to identify any key high tide roost locations and low tide feeding areas used by waterbird species, as defined by Wetlands International (Rose & Scott, 1997), within the survey area.*
- 15.36 *b. TTTC survey methodology follows an adapted version of that used during the British Trust for Ornithology's (BTO) Wetland Bird Surveys (WeBS) core and low tide counts (as described in Bibby et al., 2000).*
- 15.37 *c. All birds seen and heard will be recorded on large-scale maps using standard BTO species codes and notes on behaviour (feeding, roosting, or loafing), as well as the number of birds in each corresponding location.*
- 15.38 *4. Results from the desk study, data search and field surveys will be compiled into an illustrated report, describing the survey methods and results of the surveys. Where relevant, recommendations for further survey and mitigation works will be made. The report will include figures to show the location of any features of botanical interest, the presence of protected species located during the PEA and otter*

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<sup>14</sup> Lawson, J., Kober, K., Win, I., Bingham, C., Buxton, N.E., Mudge, G., Webb, A., Reid, J.B., Black, J., Way, L. & O'Brien, S. 2015. An assessment of numbers of wintering divers, seaduck and grebes in inshore marine areas of Scotland, (Revised 2018). JNCC Report 567, ISSN 0963-8091

*survey, and any stands of problem plant species. As standard, reports will be issued in electronic format by email. The need for further Phase 2 surveys are considered low, though if features within 30m of the site are identified during the PEA to provide roosting opportunities for bat species, there may be a need for bat surveys during May to September 2021, which would not be possible during the current programme.*

- 15.39 A phone conversation was held between John Thompson of EcoNorth (Chapter Author) and Ian Stewart of Nature Scot on the 24<sup>th</sup> April 2025 confirming the scope of the ornithology and marine mammal surveys which had been completed to inform the assessment.

### **Study Area**

- 15.40 The study area encompasses the proposed development site plus an additional minimum buffer zone of 500m from the boundary which was used for the up-to-date desk-based assessment and, where appropriate, field surveys to identify any legally protected or notable sites, habitats or species which could be affected by the proposed development. This is illustrated in Figure 1 presented within the Preliminary Ecological Appraisal (**Appendix 15.1 – Volume 2**). Designated site locations are presented on **Drawings 15.1, 15.2 and 14.1 in Volume 3**.
- 15.41 Given the scale of the works and high mobility of species under consideration, data from outside the 500m immediate zone of influence is considered within the assessment where appropriate. For example, British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) data has been acquired for the whole of Loch Ryan.

### **Baseline conditions**

- 15.42 Baseline conditions for terrestrial ecology and ornithology have been collected through a combination of desk-based research and field survey.

### **Desk Study**

- 15.43 Contextual information was gathered as part of a desk study undertaken prior to the start of field surveys. Such information can identify protected or notable species which may occur on the proposed development site or in the local area, as well as identifying statutory and non-statutory ecological sites which may have the potential to be affected by the proposals. Species records and the location of statutory and non-statutory nature conservation sites within 2km of the survey site were requested from Southwest Scotland Environmental Information Centre (SWSEIC) and from the Multi-Agency Geographic Information for the Countryside (MAGIC) website ([www.magic.gov.uk](http://www.magic.gov.uk)).
- 15.44 Additionally, 1:10,000 Ordnance Survey maps were consulted to help identify waterbodies or watercourses within 500m of the site. This search reflects the potential for great crested newts to utilise terrestrial habitat up to 500m from their breeding ponds and also helps determine the potential for other
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riparian or semi-aquatic species which will move away from a watercourse to be present (e.g. otter *Lutra lutra*).

- 15.45 Ornithological data has been acquired from the British Trust for Ornithology (BTO), Wetland Bird Survey and includes data from the most recent 5 years available for the Loch Ryan recording area. Data included within the dataset covers much of the year though some data gaps are present between April – June in each year. Reference is also drawn to information presented by Lawson et al (2015)<sup>15</sup> in relation to the presence of divers, sea duck and grebes.

## Field Survey

### Habitats

- 15.46 Habitats within the site have been mapped followed UK Habitat Classification survey methodology (UK Hab) as set out by the UK Habitat Classification Working Group. This follows a standardised system which can be easily interpreted, with habitats and boundary features correlating to set definitions. Target notes were used to record further information regarding features of interest, or specific habitats or features identified during the survey which do not closely match any of the UK Habitat Classification survey criteria.
- 15.47 During the habitat survey an assessment of the site to support protected or notable species was also undertaken species specifically considered within the assessment given the nature and context of the site included;
- Bats;
  - Great Crested Newt (GCN); and
  - Otter.
- 15.48 Plant species were identified in accordance with Rose (2006)<sup>16</sup> and Stace (2019)<sup>17</sup>. A search was also conducted for presence of Schedule 9 invasive non-native plant species such as Japanese knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera*.
- 15.49 The results of the UK Hab survey are presented in **Appendix 15.1** Preliminary Ecological Appraisal (PEA) and summarised in this document,
- 15.50 Intertidal habitats within the Marina are reported separately in **Chapter 12** (Benthic Ecology).

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<sup>15</sup> Lawson, J., Kober, K., Win, I., Bingham, C., Buxton, N.E., Mudge, G., Webb, A., Reid, J.B., Black, J., Way, L. & O'Brien, S. 2015. An assessment of numbers of wintering divers, seaduck and grebes in inshore marine areas of Scotland, (Revised 2018). JNCC Report567, ISSN 0963-8091

<sup>16</sup> Rose, F. (1989). Colour Identification Guide to the Grasses, Sedges, Rushes and Ferns of the British Isles and north-western Europe. Viking.

<sup>17</sup> Stace, C (2019). New Flora of the British Isles, 4th Edition. Cambridge University Press.

### Ornithology – Winter

- 15.51 Given the nature of the site and nature of the interest features of relevant designated sites, surveys were based on the Wetland Bird Survey (WeBS) methodology as set out by the British Trust for Ornithology (2017)<sup>18</sup>. Surveys covered the red line boundary to identify species which may be affected by the construction works and/or habitat changes on the site. The site was walked so that all areas of the site and surrounding buffer could be viewed, and bird use recorded.
- 15.52 All target species associated with WeBS methodology including wading birds, wildfowl, gulls and, where relevant, raptors were recorded and plotted on suitably scaled plans following identification and census by experienced ornithologists. While the method was focused on wetland habitats and species, any other notable species outside the typical scope of WeBS were also recorded.
- 15.53 Surveys included a survey of bird species within the site within 2 hours of both low tide and high tide in the wintering months between November 2023 and October 2024. Following consultation feedback on the scope of surveys mid tide surveys were also included to extend the surveys to comprise a 'through the tide count (TTTC)' approach presenting data for low, mid and high tide periods where possible mid tide counts were included from February 2024 onwards.

### Ornithology – Breeding / Summer

- 15.54 Given the nature of the site and nature of the interest features of relevant designated sites, surveys were based on a combination of the Common Bird Census (for terrestrial breeding activity) and WeBS methodology as set out by the British Trust for Ornithology (2017) in relation to birds using the intertidal and marine areas. Surveys covered the red line boundary and a minimum buffer of 500m to identify species which may be affected by the construction works and/or habitat changes on the site. The site was walked so that all areas of the site and surrounding buffer could be viewed, and bird use recorded.
- 15.55 All target species associated with WeBS methodology including wading birds, wildfowl, gulls and, where relevant, raptors were recorded and plotted on suitably scaled plans following identification and census by experienced ornithologists. While the method was focused on wetland habitats and species, any other notable species outside the typical scope of WeBS were also recorded.
- 15.56 Surveys included a survey of species within the site around low tide, high tide and mid tide in the months between May 2024 and August 2024.

### Otter

- 15.57 Survey for otter was undertaken throughout the study area extending to a 500m buffer each side of the marina aligning with the breeding and wintering bird survey effort. Surveys were undertaken in accordance with Channin et al 2003<sup>19</sup>. Particular focus was made on areas of rock armour within the

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<sup>18</sup> [Wetland Bird Survey \(WeBS\) | BTO](#)

<sup>19</sup> Chanin P (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough

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marina which supported cavities which could potentially be used as resting places. Detailed searches were undertaken during low tide breeding and wintering bird surveys in July and October 2024.

### *Impact Assessment Methodology*

15.58 Although development proposals may result in multiple potential impacts on an important ecological features, the CIEEM approach requires that only those that are likely to occur and have significant impacts need be assessed, although a precautionary approach to scoping potential impacts is recommended. The following characteristics are used to describe impacts (not all may be relevant in all cases):

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

### *Significance Criteria*

15.59 Once an impact has been described it is necessary to determine if the effect is 'significant'. In the context of CIEEM EclA guidance, a significant effect is one that either supports or undermines biodiversity conservation objectives for 'important ecological features'. This can include impacts on the structure and function of sites and habitats or the conservation status of habitats and species (i.e. does the impact alter the extent, distribution or abundance of the feature)? The decision on significance is made irrespective of the geographical scale of importance of the feature; even if an effect is found not to be significant at the level at which the feature has been valued, it may be significant at a more local level. A significant negative effect is not necessarily one that would make the proposals unacceptable.

### *Construction Phase (Temporary)*

15.60 Impacts considered within this assessment at construction stage will include the following:

- Temporary changes to sediment transport and distribution during the construction phase, including sediment mobilisation during construction works.
  - Temporary noise and vibration and the effect of such noise or vibration on aquatic receptors and avian receptors not in channel. The potential for construction stage lighting to result in disturbance will also be considered.
  - Temporary visual disturbance as a result of people and plant being present during construction.
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- Construction stage pollution risks, including chemical or hydrocarbon spills or leakages or mobilisation of sediment (considered under bullet 1 above).
- Any temporary marine habitat loss considered necessary to construct the proposals as a result of the requirement for structures located in in the marine environment to enable construction.

### Operational Phase (Permanent)

15.61 Impacts at operational stage for the purposes of this assessment will relate to:

- Assessing the effects of permanent habitat loss as a result of the proposals; and
- The potential effect of increased vessel traffic on species which use the marina and the wider approach to the marina.
- Potential impacts of operational stage lighting.

### Sensitivity of Receptor

15.62 The CIEEM EclA guidance (2024) confirms that detailed assessment of ecological features that are ‘widespread, unthreatened and resilient to project impacts’ is not necessary. It is therefore necessary to determine which ecological features are sufficiently important (and potentially affected by the Scheme). Decisions on relative importance will be outlined in the assessment and consider quality, extent, rarity (including local rarity) and threats or declines of a feature. Relevant statutory and non-statutory designations, legislation and policies will be taken account of, although not all populations of legally protected species show the same rarity, so contextual information is vital. Importance could also relate to the supportive function of the feature (i.e. providing a buffer, connections or opportunities for expansion / climate change resilience of a neighbouring feature). Examples of defining receptor sensitivity are included in **Table 15-2** below.

**Table 15-2 Sensitivity of Ecological Receptors**

Value/ Sensitivity	Examples
International - High	<ul style="list-style-type: none"> <li>• An internationally designated site or candidate site (SPA, proposed SPA ( pSPA), SAC, possible SAC (pSAC), Ramsar site) or an area which meets the designation criteria for such sites.</li> <li>• Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole.</li> <li>• Any regularly occurring, globally threatened species.</li> <li>• A regularly occurring population of an internationally important species, which is threatened or rare in the UK, of uncertain conservation status</li> <li>• A regularly occurring, nationally significant population/number of any internationally important species.</li> </ul>

Value/ Sensitivity	Examples
National - High	<ul style="list-style-type: none"> <li>• A nationally designated site (e.g. SSSI, NNR) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified.</li> <li>• A viable area of a UK BAP priority habitat, or smaller areas of such habitat which are essential to maintain the viability of a larger whole.</li> <li>• A regularly occurring significant number/population of a nationally important species e.g. listed on the Wildlife and Countryside Act 1981 (as amended).</li> <li>• A regularly occurring population of a nationally important species that is threatened or rare in the county or region.</li> <li>• A feature identified as being of critical importance in the UK BAP.</li> </ul>
Regional/County Medium -	<ul style="list-style-type: none"> <li>• Viable areas of key habitat identified in the Regional or County BAP or smaller areas of such a habitat, which are essential to maintain the viability of the larger whole.</li> <li>• Regional/county significant and viable areas of key habitat identified as being of regional value in the appropriate English Nature (now Natural England) Natural Area.</li> <li>• A regularly occurring significant population/number of any important species important at a regional/county level.</li> <li>• Any regularly occurring, locally significant population of a species which is listed in a Regional/County Red Data Book or BAP on account of its regional rarity or localisation.</li> <li>• Sites of conservation importance that exceed the district selection criteria but that fall short of SSSI selection guidelines.</li> </ul>
City/District/Borough Medium -	<ul style="list-style-type: none"> <li>• Areas of habitat identified in a District/City/Borough BAP or in the relevant Natural Area profile.</li> <li>• Sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/City/Borough ecological criteria.</li> <li>• Sites/features that are scarce within the District/City/Borough or which appreciably enrich the District/City/Borough habitat resource.</li> <li>• A diverse and/or ecologically valuable hedgerow network.</li> <li>• A population of a species that is listed in a District/City/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation.</li> <li>• A regularly occurring, locally significant number of a District/City/Borough important species during key phases of its life cycle.</li> </ul>
Local - Low	<ul style="list-style-type: none"> <li>• Areas identified in a Local BAP or the relevant natural area profile.</li> <li>• Sites/features which are scarce in the locality or which are considered to appreciably enrich the habitat resource within the local context, e.g. species-rich hedgerows.</li> </ul>

Value/ Sensitivity	Examples
	<ul style="list-style-type: none"> <li>Local Nature Reserves selected on Parish/Local ecological criteria.</li> <li>Significant numbers/population of a locally important species e.g. one which is listed on the Local BAP.</li> <li>Any species, populations or habitats of local importance.</li> </ul>
Low	<ul style="list-style-type: none"> <li>Habitats of moderate to low diversity which support a range of locally and nationally common species, the loss of which can be easily mitigated.</li> </ul>

### Magnitude of Impact

15.63 Impact descriptors are identified as High, Medium, Low or Negligible, following the above impact characterisation approach. Descriptors of impact magnitude are included in **Table 15-3** below.

**Table 15-3 Impact Characterisation**

Impact Descriptor	Impact Characterisation
High	<p>An impact resulting in a permanent effect on the distribution and/ or abundance of a habitat, species assemblage/ community or population, in such a way as to alter the integrity of the feature and its conservation status.</p> <p>If adverse, this type of effect would reduce the integrity of the feature and its conservation status.</p> <p>If beneficial, it would result in an improvement to the conservation status of the feature.</p>
Medium	<p>An impact resulting in a long-term but reversible effect on the distribution and/ or abundance of a habitat, species assemblage/ community or population.</p> <p>If adverse, this type of effect would have neutral long-term implications for the integrity of the feature or its conservation status.</p> <p>If beneficial, it would not alter the long-term conservation status of the feature.</p>
Low	<p>An impact resulting in a short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/ community or population.</p>
Negligible	<p>No discernible impact on the distribution and/or abundance of a habitat, species assemblage/ community or population.</p>

### Significance of Effect

15.64 The overall significance of effects, detailed in **Table 15-4**, was determined taking into account sensitivity and magnitude, as set out above.

*Table 15-4: EIA Matrix - Assigning significance of Effect*

Sensitivity	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Substantial	Moderate/ Substantial	Slight/ Moderate	Slight
Medium	Moderate/ Substantial	Moderate	Slight	Negligible/ Slight
Low	Moderate	Slight/ Moderate	Negligible/ Slight	Negligible

*Limitations to Assessment*

15.65 The assessment is based on survey data collected at a point in time in relation in many cases to a number of highly mobile ecological receptors. This includes for example otter which could utilise suitable habitat where present at any point in time. Similarly, numbers of waterbirds or breeding bird features may fluctuate year on year and over time, in the case of waterbirds however BTO data has been acquired over a period of 5 years providing confidence in patterns of distribution. Some areas of the east pier were not directly accessible but were accessed by viewing the site as far as possible through security fencing. This is not considered a significant limitation to the assessment.

## Baseline Conditions

### Designated Sites

- 15.66 As part of the PEA survey and associated report (**Appendix 15.1**) a single designated site was identified within 2km of the scheme boundary.

**Table 15-5 Designated Sites Within 2km of Site**

Designated Site	Distance & Direction from Site	Reasons for Designation
Loch Ryan Important Bird Area (IBA)	Overlaps Site	A large, shallow sea loch at the western end of Dumfries and Galloway, which supports the only commercial native oyster beds in Scotland. The IBA supports important numbers of wintering waterbirds. See: <a href="https://datazone.birdlife.org/site/factsheet/loch-ryan-iba-united-kingdom">https://datazone.birdlife.org/site/factsheet/loch-ryan-iba-united-kingdom</a>

- 15.67 Give the marine nature of the site, a search for statutory designated sites related to marine ornithology was extended to identify potential sites which lie within foraging ranges of relevant designated sites. While the search area for marine species can often extend to several hundred kilometres due to the extensive foraging ranges of some species, the search was contained to 40 km on a proportional basis given the very coastal nature of the proposed development.
- 15.68 Outside 2km, a number of designated sites identified for breeding bird interests are present. These include Glenn App and Galloway Moors SPA which is located >4km away at the nearest point and is designated for its important population of breeding Hen Harrier. In relation to Marine Bird species, the closest designated site is Ailsa Craig SPA and Site of Special Scientific Interest SSSI, which although c36km distant, is well within foraging range<sup>20</sup> of the Marina and wider Loch Ryan for many of the interest features such as Atlantic Gannet, Lesser Black backed Gull, Guillemot, Black-Legged Kittiwake and Herring Gull.
- 15.69 The location of designated sites within 4km are shown on **Drawing 15.1 Volume 3**, while the location of Ailsa Craig is shown separately on **Drawing 15.2 Volume 3**. A single marine designated site North Channel Special Area of Conservation SAC for which harbour porpoise is a qualifying interest is considered separately in **Chapter 14** Marine mammals and is illustrated on **Drawing 14.1 Volume 3**.

<sup>20</sup> Woodward, I., Thaxter, C.B., Owen, E. & Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening, Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate, ISBN 978-1-912642-12-0

### *Terrestrial Habitats*

15.70 A description of terrestrial habitats is set out below in accordance with UKHab descriptions along with relevant UK Hab codes.

15.71 Habitats within the site were found to be dominated by hardstanding including car parks, road and public footpaths (u1b/u1e), with other habitats being present including sections of mixed scrub (h3h), sparsely vegetated ground dominated by ruderal and ephemeral species (s secondary code 81), modified grassland (g4), lines of mature trees (w secondary code 34), neutral grassland (g3), and beach (t2h) surrounding the marina. Parts of the Marina are shallow and are therefore intertidal, the nature of the intertidal habitats is comprised of a mixture of intertidal mud (t2) and littoral rock (t1). Intertidal habitats will be classified in specific surveys of the marine environment reported separately. Terrestrial habitats are described in the following sub-sections.

- h3h - Mixed scrub
  - Target Note (TN) A - Section of mixed scrub comprised of woody shrubs and semi-mature trees. Species noted included gorse *Ulex europaeus*, bramble *Rubus fruticosus agg.*, Japanese rose *Rosa rugosa*, ash *Fraxinus excelsior*, cherry *Prunus sp.*, Ivy *Hedera helix*, nettle *Urtica dioica*, ribwort plantain *Plantago lanceolata*, Dove's-foot cranesbill *Geranium molle*, sea mayweed *Tripleurospernum maritimum*, sea kale *Crambe maritima*, and cock's-foot *Dactylis glomerata*.
  - u1b – Developed land; sealed surface. A series of features are identified and are illustrated on **Figure B1 Appendix 15.1**. UK Hab survey Map. The features are summarised below.
    - TN B – u1b6 701. Man made sea wall constructed with large boulders.
    - TN D – u1b6. Artificial sealed pathway constructed with bricks (mosses growing between bricks)
    - TN M – u1b5. Building – Harbour Master's office
    - TN N – u1b5. Building – Clocktower and Tourist Information Centre
    - TN F – u1b6 804. Artificial sealed surface, car park
    - TN H - Artificial sealed surface, road
    - TN I - Artificial sealed surface, pier
    - T2h – Beach
    - TN C - Beach - sand and pebble intertidal sediment
  - TN E- Beach – sand and pebble intertidal sediment
-

- TN O - Beach vegetation restricted to sandy soil and sand above high tide line and includes a number of beach/shingle indicator species and a single Buddleia plant. Species noted included sea radish *Raphanus raphanistrum ssp. Maritimum*, sea kale *Crambe maritima*, sea mayweed *Tripleurospermum maritimum*, meadow grass *Poa sp.*, sea couch *Elymus pycnanthus*, broad-leaved dock *Rumex obtusifolius*, curled dock *Rumex crispus*, ragwort *Senecio jacobaea*, sea sandwort *Honkenya peploides*, and Babington's orache *Atriplex glabriuscula*.
  - g4 – modified grassland
  - TN G – Mown modified grassland with line of 33 mature trees. Species noted include annual meadowgrass *Poa annua*, perennial rye grass *Lolium perenne*, white clover *Trifolium repens*, daisy *Bellis perennis*, dandelion *Taraxacum agg.*, ragwort *Senecio jacobaea*, creeping buttercup *Ranunculus repens*, lawn moss *Rhytidiadelphus squarrosus*, sycamore *Acer pseudoplatanus*, maple *Acer sp.*, and whitebeam *Sorbus sp.*
  - g3c – Other neutral grassland
  - TN L - Other neutral grassland with scattered rushes. Species noted included Cock's-foot, Yorkshire fog *Holcus lanatus*, rushes *Juncus spp.*, creeping buttercup, ribwort plantain, broad-leaved dock, red clover *Trifolium pratense*, bird's foot trefoil *Lotus corniculatus*, field woodrush *Luzula campestris*, dandelion, red fescue *Festuca rubra*, meadow grass *Poa sp.*, and willow (sapling) *Salix sp.*
  - T1 700 – Marina
  - TN P – Open water and intertidal marina (assessed separately in Chapter 12 Benthic Ecology)
  - w1 33 - Line of Trees
  - TN J - Line of trees planted within artificial, unvegetated areas within car park. Species noted included whitebeam *Sorbus sp.*
  - TN K - Line of trees. 30 mature trees tentatively identified as Lime *Tilia sp.* from leaf litter. Low-mid trunks covered in ivy.
  - u1e – Built Linear Feature
  - TN Q - linear feature – tarmac path sparse coverage of predominantly seedlings of ephemeral and ruderal species including mouse-ear *Cerastium fontanum*, dandelion, groundsel *Senecio vulgaris*, cuckoo flower *Cardamine pratensis*, cock's-foot, dove's-foot cranesbill, scurvy grass *Cochleria officinalis*, willowherb *Epilobium sp.*, white clover, perennial rye grass, annual meadow grass, chickweed *Stellaria media*, common ragwort, common cat's-ear *Hypochaeris radicata*, shepherd's purse *Capsella bursa-pastoris*, yarrow *Achillea millefolium*, pineapple mayweed *Matricaria discoidea*, daisy, smooth sow thistle *Senecio oleracea*, Cushion mosses *Grimmea spp.*, and Liverwort(s).
  - h2b – Non-native Ornamental Hedgerow
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- TN R- Non-native ornamental hedgerow within parkland bordering (L) along western boundary. Species noted included *Eleagnus sp.*, rose sp. *Rosa sp.*, and bramble.

### *Protected and Notable Species*

#### *Preliminary Bat Roost Assessment / Field Sign Survey*

- 15.72 Two buildings are present within the application site boundary, including the tourist information centre with adjoining clock tower to the south of the site, and the harbour reception building to the north.
- 15.73 The tourist information centre is one storey in height and of stone construction, with a flat felt roof. There were some small gaps in the mortar and gaps where the roof overhangs the wall tops. Overall, the building was considered to have low bat roost potential.
- 15.74 The clocktower adjoins the building at the western elevation. It is two storeys in height and of stone construction, with a flat roof. Lead flashing is present around the roof overhang and over a dormer window. The flashing is slightly lifted in places, but gaps are minimal. Overall, the clocktower is considered to have negligible bat roost potential.
- 15.75 The harbour reception building is one storey in height and of rendered brick construction, with a metal complex roof structure, including a flat roof section. The building is sound with few gaps and is considered to have negligible bat roost potential.
- 15.76 No field signs indicating the presence of bats were recorded during the survey.

#### *Preliminary Bat Roost Assessment - Trees*

- 15.77 Most of the trees on site were found to be in good condition and lack any potential roost features. However, the line of trees along the western boundary, were noted to have low bat roost suitability due to the presence of ivy on the trunks.

#### *Great Crested Newt*

- 15.78 Terrestrial habitats are generally unsuitable for the species. The hard standing and modified grassland that dominate the site offer little shelter or foraging opportunities for the species. These habitats are also open and exposed, which increases the risk of predation and/or desiccation.
- 15.79 One pond is present within 500m of the site, which lies within Agnew Pond, c.80m west of the site. The pond is large and often has waterfowl present, which decreases the suitability for GCN. Terrestrial habitats surrounding the pond consists of managed modified grassland, which further reduces its suitability. The pond achieved a 'poor' HSI score, as shown in **Table 5** within **Appendix 15.1** PEA Report (**Volume 2**). It is therefore considered unlikely that the species is present within the site.
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### Otter

- 15.80 No field signs indicating the presence of otter were identified. However, the marina is likely to provide good quality foraging and commuting habitat, and otter are likely to be present within the site on occasion based on known otter behaviours at other Scottish West Coast ports and harbours. No holts or other resting places (or any other field signs) were identified during the PEA survey or subsequent searches undertaken throughout the course of wintering and breeding bird surveys. Sections of rock armour on the eastern boundary of the Marina and the rock armour of the existing breakwater provide potential places of rest or shelter; however, no evidence of use on these features has been recorded to date.

### Red Squirrel

- 15.81 The site generally lacks tree cover, although the line of trees along the western boundary may provide potential habitat. However, the tree line lacks connectivity to further areas of suitable habitat. Some records were returned from the desk study.

### Badger

- 15.82 The site is dominated by developed land, with only small areas of managed modified grassland and neutral grassland. There are limited foraging opportunities on site, and no sett creation opportunities. Habitats of higher quality are present within the wider area, although the site lacks connectivity due to dense residential development and roads.

### *Ornithology Winter*

- 15.83 An overview of conditions as presented in the accompanying Winter Bird Survey Report (**Appendix 15.3**) is included below. Full details of baseline conditions are presented in **Appendix 15.3**. Results are illustrated in Figures D1 – D14, **Appendix 15. 3. Table 15-6** summarises the species recorded within the Marina and surrounding area, their conservation status, and the context of the population present. The table sets out the Birds of Conservation Concern (BoCC) status in addition to noting whether the relevant bird species are included as priority species on the Scottish Biodiversity List (SBL). The table also sets out the estimated overall populations for relevant species within Loch Ryan to present the importance of birds using both the marina and the 500m study area throughout the winter period.

### Waders

- 15.84 Waders were regularly recorded utilising a range of high tide roosting features, including the rock armour, break water, old ferry terminal, and Stranraer West Beach. Waders were also recorded loafing and feeding on the mudflats at low tide. The distribution of bird species recorded are illustrated in Figures D1 – 14 **Appendix 15.3**. In summary, the baseline conditions for waders comprises:
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- Bar-tailed Godwit – One individual recorded only once in November during low tide located within the 500m buffer of the site. No Bar-tailed Godwit was recorded within the Marina, and are scarce within Loch Ryan with typically <3 recorded within WeBS counts.
  - Curlew – Recorded in low numbers at low tide, with a peak count of 4 recorded within the Marina feeding in intertidal habitats at low tide. Curlew were only recorded within the Marina itself on one other occasion. Peak counts of Curlew within Loch Ryan across the winter period extend to 397 and so the peak Curlew count represents c 1% of the Loch Ryan population. Higher numbers of Curlew were recorded on intertidal habitats to the east of the Marina but outside the 500m study area surrounding the marina.
  - Dunlin – Regularly recorded during the surveys at high tide with a peak count of 87. Dunlin were not recorded in the Marina itself however were reported roosting at High tide on the disused ferry terminal areas. Other roosting was recorded on the shore at Stranraer West Beach. Feeding was limited to mud flats east of the Marina and disused ferry terminal. These roosts comprise a significant proportion of the Loch Ryan population with peak WeBS counts of 223 reported in December.
  - Knot – 7 individuals were recorded in March at low tide both in the Marina and within the 500m buffer (likely the same group), Knot were not recorded in any other month. While this is a small number of Knot, it represents a significant proportion of the Loch Ryan population (peak count of 72).
  - Oystercatcher – Regularly recorded at both high and low tide across the survey period. High tide roosts include the old ferry terminal, rock armour within the Marina and West Beach. The peak count of Oystercatcher within the Marina was a group of 47 in March 2024 roosting at high tide. Peak counts of feeding Oystercatcher within the Marina were at Low tide in December (18). Oystercatcher are abundant in the wider area and counts within the 500m buffer peaked at 465 at low tide in January with the majority of those feeding on mudflats to the east of the Marina and disused ferry terminal. The overall counts present in the wider area comprise a large proportion of the overall Cairnryan population (peak high tide count of 627). While the number feeding (c 3%) or roosting (<10%) within the Marina represent a smaller proportion of the Cairnryan population of the Cairnryan population.
  - Redshank - Regularly recorded at both high and low tide across the survey period. High tide roosts include the old ferry terminal and the rock armour within the Marina. BTO WeBS data indicate that peak populations for Cairnryan comprise of 126 (November). Roosts located both inside the Marina (peak 70) and to the east side of the ferry terminal / rail embankment comprise significant proportions of the Loch Ryan wintering population.
  - Ringed Plover - Regularly recorded at both high and low tide across the survey period. High tide roosts include the old ferry terminal and West Bach. Populations of Ringed Plover recorded during the surveys typically recorded roosting on disused ferry terminal structures exceed the
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BTO high tide WeBS populations for Loch Ryan, which indicates that the roost present on the structures is notable within the local context. Some roosting was also noted to the west of the Marina at Stranraer West Beach.

- Turnstone – Recorded in low numbers at both high and low tide across the survey period. High tide roosting locations include the west beach area. Small numbers were also recorded roosting on the existing breakwater at the entrance to the marina and rock armour on the east of the rail line into the ferry terminal.

### Wildfowl

- 15.85 Scaup (peak 70) were the most abundant wildfowl recorded on site reflecting the importance of Loch Ryan for this species as noted within the Important Bird Area citation details, with Red-breasted Merganser, Wigeon, and Mallard also recorded regularly (peaking at 57, 29, and 23 respectively). Small numbers of Black Guillemot, Black-throated Diver, Common Scoter, Cormorant, Eider, Goldeneye, Great-crested Grebe, Grey Heron, Guillemot, Little Egret, Little Grebe, Long-tailed Duck, Mandarin Duck, Mute Swan, Razorbill, Red-throated Diver, Shag, Shelduck, and Slavonian Grebe were also recorded.
- 15.86 Of the wildfowl species described above some of the species were recorded within the Marina itself while most were associated with feeding in the open waters of Loch Ryan. Little Grebe (8), Red Throated Diver (2) were both recorded actively feeding in the Marina over the winter period with higher numbers feeding in the open waters of Loch Ryan a group of 26 Red-breasted Merganser were also recorded in the Marina on one occasion. A single Slavonian Grebe was recorded within the Marina as were small numbers of Goldeneye, Great Crested Grebe, Mallard and Mute Swan.
- 15.87 Mallard and Mute Swan were regularly present on the pond in Agnew Park and more abundant wildfowl gathered towards the south east corner of Loch Ryan (outside the 500m buffer) where species such as Scaup, Wigeon, Mute Swan, Red breasted Merganser, and Wigeon were abundant. Brent Goose were also present in this area outside the 500m buffer.
- 15.88 Shag and Cormorant were both recorded within the Marina in limited numbers and both species were recorded roosting on the most northerly features of the former ferry terminal. Both Grey Heron and Little Egret were recorded both within the Marina and within the wider study area in small numbers.

### Gulls

- 15.89 Herring Gull were present in high numbers across the site (peaking at 105), many of these were recorded roosting on the former ferry terminal structures with others present feeding on mudflats mostly to the east of the Marina. Black-headed Gull were also relatively abundant in the wider study area (peak 112) with some of these actively feeding within the Marina (41). Common Gull and Great Black-backed Gull were sighted in low numbers during the surveys.
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- 15.90 The data shows that the intertidal areas present in the southern end of Loch Ryan surrounding the marina support significant proportions of overall Loch Ryan populations of a number of species of wader and wildfowl. Populations using the Marina itself are shown to be more limited though roosts within the marina for both oystercatcher and Redshank can be significant and comprise > 25% of the Loch Ryan population for Redshank and >5 % of the Loch Ryan population for Oystercatcher.
- 15.91 Within **Table 15-6** below the Birds of Conservation Concern (BoCC)<sup>21</sup> status is presented in the second column highlighting species which are included on the green, amber and red lists colour coded accordingly. As described above peak populations within the marina itself and a study area of 500m surrounding the marina are presented as well as populations for Loch Ryan gathered from BTO data. Scottish wintering populations as reported by Forrester and Andrews<sup>22</sup> are also included for reference.

**Table 15-6 Summary of Overwintering Bird Survey Results**

Species	BoCC	SBL	Peak – Marina	Peak Study area	Loch Ryan Population	Scottish Population
Bar-Tailed - Godwit	Amber	Y	0	1	2	14,000
Black Guillemot	Amber	N	2	6	NA	40,000 – 60,000
Black-headed Gull	Amber	Y	41	112	NA	155,500
Black-throated Diver	Amber	Y	0	1	0	700-800
Common Gull	Amber	N	4	4	NA	79,700
Common Scoter	Red	Y	2	14	90	25,000 – 30,000
Cormorant	Green	N	5	9	52	9,000- 11,500
Curlew	Red	N	4	7	397	85,700
Dunlin	Red	N	0	87	194	37,000- 58,000

<sup>21</sup> Eaton, M.A., et al (2021); Birds of Conservation Concern 5: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man.

<sup>22</sup> Forester R and Andrews I (2007). The Birds of Scotland. Scottish Ornithologists Club.

Species	BoCC	SBL	Peak – Marina	Peak Study area	Loch Ryan Population	Scottish Population
Eider		N	4	15	952	64,500
Fulmar		N	3	3	NA	C 1,000,000
Goldeneye		N	2	6	182	10,000 – 12,000
Great-crested Grebe		N	1	8	196	900, 1,150
Great Black-backed Gull		N	0	6	NA	7,500 – 10,000
Grey Heron		N	2	7	2	10,000 – 15,000
Guillemot		N	6	12	NA	750,000
Herring Gull		N	21	105	NA	91,000
Knot		N	7	7	72	20,400- 25,800
Little Egret		N	4	4	NA	Scarce but increasing
Little Grebe		N	8	8	NA	5,000 – 6,000
Long-tailed Duck		N	0	2	2	15,000
Mallard		N	2	16	113	65,000 – 90,000
Mute Swan		N	6	8	32	5,000 – 8,000
Oystercatcher		N	47	465	634	80,000 – 120,000
Razorbill		N	0	2	NA	50,000 – 250,000
Red -breasted Merganser		N	31	32	88	8,500
Redshank		N	70	107	126	4,000 – 25,000
Red-throated Diver		Y	2	8	26	2,270
Ringed Plover		N	2	106	57	23,000 – 25,000
Scaup		Y	2	70	631	4,000 – 8,000

Species	BoCC	SBL	Peak – Marina	Peak Study area	Loch Ryan Population	Scottish Population
Shag		N	2	27	31	60,000 – 80,000
Shelduck		N	0	13	7	7,000
Slavonian Grebe		Y	1	1	16	300-500
Turnstone		N	10	20	110	35,300
Twite		Y	15	15	NA	14,000 – 35,000
Wigeon		N	0	29	1203	76,000 – 96,000

### *Ornithology Summer*

- 15.92 An overview of conditions as presented in the accompanying Breeding / Summer Bird Survey Report (**Appendix 15.2**) is included below. Full details of baseline conditions are presented in **Appendix 15.2**. Results are illustrated in Figures D1 – D12, **Appendix 15.2**. **Table 15-7** below summarises the species recorded within the Marina and surrounding area, their conservation status, and the context of the population present. The table sets out the Birds of Conservation Concern (BoCC) status in addition to noting whether the relevant bird species are included as priority species on the Scottish Biodiversity List (SBL). The table also sets out the estimated overall populations for relevant species within Loch Ryan to present the importance of birds using both the marina and the 500m study area throughout the winter period.
- 15.93 Table 4, found within **Appendix 15.2** (Summer /Breeding season bird report), sets out a summary of the use of habitats present within the red line boundary and surrounding areas by birds considered to be present breeding, with a description of breeding locations and estimated numbers. The majority of habitats within the application site boundary comprise of areas of intertidal and subtidal habitat or areas of car park or intensively managed grassland which are not suitable for breeding. The majority of bird species described breeding are associated with areas of hard standing and structures associated with the former ferry terminal area. Given the presence of a number of notable breeding species with restricted breeding ranges or locations (Arctic Tern and Black Guillemots) and arrange of other coastal species associated with the

birds species statement of the Dumfries and Galloway BAP, the populations present are considered to be regional value or **medium sensitivity**.

15.94 Within **Table 15-7** below the Birds of Conservation Concern (BoCC) status is presented in the second column highlighting species which are included on the green, amber and red lists colour coded accordingly. As described above, peak populations within the marina itself and a study area of 500m surrounding the marina are presented as well as populations for Loch Ryan gathered from BTO data.

**Table 15-7 Summary of Summer Bird Survey Results**

Species	BoCC	SBL	Peak – Marina	Peak Study area	Loch Ryan Population	Scottish Population
Arctic Tern	Amber	Y	0	8	2	47,300 pairs
Black Guillemot	Amber	N	2	6	NA	18,750 pairs
Black-headed Gull	Amber	Y	41	112	NA	43,200 pairs
Common Gull	Amber	N	4	4	NA	48,100 pairs
Cormorant	Green	N	5	9	52	3,600 pairs
Curlew	Red	N	4	7	397	58,800 pairs
Eider	Amber	N	4	15	952	20,000 br females
Gannet	Amber	N	0	5	NA	185,511 pairs
Great-crested Grebe	Green	N	1	8	196	240 – 365 pairs
Great Black-backed Gull	Amber	N	0	6	NA	14,800 pair
Grey Heron	Green	N	2	7	2	4,200 nests
Herring Gull	Red	N	21	105	NA	72,100 pairs
Lesser Black-backed Gull	Amber	N	1	2	NA	25,000 pairs

Species	BoCC	SBL	Peak – Marina	Peak Study area	Loch Ryan Population	Scottish Population
Mallard		N	2	16	113	C 43,000 pairs
Mute Swan		N	6	8	32	1,375 pairs
Oystercatcher		N	47	465	634	C116,500 pairs
Red -breasted Merganser		N	31	32	88	2,000 pairs
Redshank		N	33	107	126	11,700 – 17,500 pairs
Ringed Plover		N	2	106	57	4,900 – 6,700 pairs
Sandwich Tern		N	4	6	NA	1,100 pairs
Shag		N	2	27	31	C 30,000 pairs
Starling		Y	50	50	NA	170,000 – 300,000 p
Turnstone		N	10	20	110	Non breeding
Teal		N	0	5	3	1,950 – 3,400 pairs

### *Future Baseline*

15.95 Without the implementation of the project, baseline conditions for terrestrial biodiversity and ornithology are likely to remain relatively stable. There are many variables within the future baseline which included a broad range of bird species which breed and / or overwinter in areas outside of the study area and therefore changing populations may be affected by a range of factors. Any potential for climate change effects may results in more limited areas of exposed intertidal feeding habitat within the marina in the future as a result of potential increased sea levels. Many of the protected or notable species considered within the assessment are highly mobile and could potentially occupy habitat features at any point in time where suitable features exist or may form over the course of time. For this reason, any construction work will need to be preceded by update surveys for protected species.

## Impact Assessment

- 15.96 Embedded Mitigation and / or enhancement relevant to Terrestrial Ecology and Ornithology which has been identified and incorporated throughout the design phase is set out below.

### *Embedded Mitigation*

#### Terrestrial habitats

- 15.97 Opportunities have been identified to create space and opportunities for coastal vegetated shingle to colonise proposed beach profiles at the seaward edge of the reclaimed area.

#### Ornithology

- 15.98 A series of opportunities to minimise potential effects or identify opportunities for enhancement have been identified through the assessment process and are presented below.
- 15.99 Landscaping has included an element of screening at the periphery of community spaces to provide visual screening between the infill area and the location of roosting areas which occur along the rock armour at the eastern limit of the marina.
- 15.100 The breakwater will incorporate a shingle bed feature on top to facilitate a potential high tide roost feature and / or a potential nesting site for species such as Arctic Tern which currently attempt to breed on disused ferry terminal areas and are often associated with Islands or islets.
- 15.101 A series of nest box structures / additional nest boxes will be incorporated into existing marine structures or terrestrial structures to support breeding Starling and Black Guillemot.
- 15.102 Existing rock armour may be re-used at the reclaimed land area to retain potential sheltering opportunities for mammals such as otter where this can be agreed with the Crown Estate Scotland.

### *Construction Phase*

#### Terrestrial Habitats

- 15.103 During the construction phase of the proposed development much of the terrestrial elements are likely to be required to enable construction. This may include temporary compounds, works areas and storage areas. The majority of the terrestrial habitats present however comprise manmade or heavily modified habitats of **low value/ sensitivity**. The magnitude of impact of temporary loss or deterioration over a construction phase of circa 2 years would be **low adverse** because of the short term temporary and reversible nature of such effects. This is anticipated to result in an effect of **slight/ negligible significance** on terrestrial habitats. Permanent habitat loss is considered in relation to the operational phase.
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### Protected and Notable Species – Construction Stage Disturbance

- 15.104 Baseline conditions recorded between December 2023 and October 2024 in relation to protected and notable species indicate that there are currently no known protected species (excluding breeding birds) within the site and surrounding relevant buffer areas. The tourist information centre supports low suitability for roosting bats however this is not expected to be directly affected by construction disturbance and given the existing surrounding use adjacent works are not expected to result in an increase in disturbance levels.
- 15.105 Surveys have identified the suitability of the site for otter including areas which could form resting places. Based on the current baseline, the magnitude of construction stage disturbance on protected or notable species is **negligible magnitude** on features of up to potentially **medium sensitivity** and of **negligible** significance
- 15.106 In the event otter did utilise the available habitats for resting places construction stage disturbance may result in a worst-case **high magnitude** effect on a feature of **medium value or sensitivity** and would be of **moderate significance**.

### Overwintering Birds – Construction Stage Disturbance

- 15.107 Construction operations including piling, dredging and a range of other measures undertaken across an expected 24 month period could affect an estimated 2 winter periods. Populations within a 500m study area are reported within **Appendix 15.3**, however features most susceptible to disturbance during construction due to noise are likely to be those located within the Marina itself. It is expected that disturbance arising through both noise and visual disturbance pathways will be restricted to the Marina to some degree due to the presence of existing structures and associated visual and to some degree acoustic screening. It is considered that piling operations are likely to be the loudest construction phase operation, as discussed in chapter **19.0 (Noise and Vibration)** and **Chapter 20 (Underwater Noise)**.
- 15.108 Noise above ground and water is most likely to impact the notable roosts of birds which form inside the marina on existing rock armour.
- 15.109 To understand the likelihood of disturbance due to overground / water noise a review of data presented by Cutts et al<sup>23</sup> has been undertaken where possible for relevant species. Notably the high tide roosts identified on former ferry terminals or are likely to be the most vulnerable to disturbance due to noise or visual disturbance. It is noted at this stage however that some roosting areas are not 'undisturbed' in their current form as those roosting to the west of the Marina are exposed to recreational disturbance due to the proximity to the coastal footpath and those using the ferry terminal are exposed to vehicle and pedestrian noise and visual

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<sup>23</sup> Cutts N. Hemingway K. and Spencer J.,(2013) Waterbird Disturbance Mitigation Toolkit: Informing Estuarine Planning and Construction Projects. University of Hull.

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disturbance from vehicles and people parking around the ferry terminal structure and moving between the town and the train station.

**Table 15-8 Review of Relevant Disturbance Thresholds for Waders**

Species	Sensitivity to Noise disturbance	Sensitivity to visual disturbance	Relevance to Project
Turnstone	Turnstone are noted as having low sensitivity to noise disturbance with noise of up to 75dB being noted as acceptable at the bird.	Cutts <i>et al.</i> noted that highly disturbing activities should be avoided where birds are present within 50m and that the species are highly tolerant of visual disturbance.	Small numbers recorded feeding within Marina and on West Beach – based on information from Cutts those within the Marina are those most likely to be affected by disturbance due to noise.
Redshank	Noise of up to 70dB likely to acceptable when received by bird.	Caution should be applied for any works within 100m.	Roosting recorded on Rock armour within the east of the Marina comprising a significant proportion of the Loch Ryan population. Most birds present outside the Marina are unlikely to be significantly affected.
Curlew	Moderately sensitive to noise disturbance at 100m noise at source of 107 – 112 dB may create high level disturbance. Noise of 117 - 122dB at source may result in disturbance at 300m.	Wary of moderate – high level visual disturbance.	Small numbers recorded feeding occasionally within Marina with more extensive feeding and some roosting located on West Beach areas and also in areas of extensive open intertidal habitat to the east of the Marina.
Oystercatcher	Oystercatcher are considered to be of moderate sensitivity to noise disturbance with noise levels of up to 72dB acceptable at the bird without resulting in significant disturbance.	Considered sensitive to visual disturbance of operations on mudflats at up to 200m.	Regular feeding by small numbers within the marina with more extensive feeding areas located to the east of the marina structures.
Dunlin	Dunlin are not highly sensitive to noise stimuli. Noise measures as 72dB at the bird is unlikely to result in significant disturbance.	Highly tolerant of moderate and high level visual disturbance works within 75m may require mitigation measures.	Dunlin were recorded roosting on the ferry terminal structures. These are likely to fall within 75m of infill and dredging works.
Ringed Plover	Ringed Plover appear to be tolerant of noise disturbance with noise of up to	Very tolerant of moderate and high level visual disturbance. Works	Dunlin were recorded roosting on the ferry terminal structures. These are likely to fall within 50m of infill and dredging works.

Species	Sensitivity to Noise disturbance	Sensitivity to visual disturbance	Relevance to Project
	75dB acceptable at the bird.	within 50m may require mitigation.	

15.110 Construction stage disturbance is also likely to affect diving birds such as Red-throated Diver, Cormorant and Shag as a direct result of underwater noise and vibration, and as a minimum the small numbers of these species recorded using the Marina itself are likely to be displaced. Red-throated Diver are known to be sensitive to offshore construction operations and therefore this effect is likely to extend to those using the 500m study area as a minimum. Table 15.6 illustrates where bird species within the 500m study area surrounding the marina supports significant proportions of the Loch Ryan population which is the case for Red-throated Diver, Black-throated Diver, Great-crested Grebe, Cormorant and Shag amongst others.

15.111 There is little information available regarding hearing damage or direct injury to diving birds and it is likely that most often diving birds show an avoidance of marine construction operations as a response to visual presence of marine construction and associated avoidance however for the purpose of this assessment it will be assumed that temporary or permanent hearing damage or other injury which could threaten survival may occur over similar distances over which marine mammals are affected in absence of mitigation. Diving birds are likely to be affected by direct disturbance and displacement and as recorded in **Chapter 13 – Fish Ecology** some behavioural effects on fish will extend an extended distance from the source of the noise potentially impacting such diving birds ability to hunt. **Chapter 13** summarises that fish (prey species) may be subject to direct injury or even mortality within 10m of piling operations as a result of underwater noise following 1 second exposure with these effects (mortality) possible at ranges of up to 200m in relation to peak pressure levels. Behavioural effects may be possible at ranges of up to 4.2km and therefore on a simplistic level possible indirect effects on diving birds may be possible for much of the Loch Ryan populations. The presence of existing infrastructure will however shield birds and prey species within parts of the Loch from noise emanating from piling operations. Noise effects on fish from other operations are expected to be lower with behavioural disturbance possible out to 1,500m and no mortality expected. The extent of this effect (in absence of mitigation) is expected to be primarily in relation to those birds feeding in close proximity to the proposed works although the presence of construction operations is expected to displace those birds to some degree regardless of effects on prey items.

15.112 Overall, the effect of construction stage disturbance on overwintering birds will vary between species and will be variable depending on the tidal state (in absence of mitigation) however on a worst case basis, construction stage effects could impact roosts intertidal feeding areas and open water feeding areas which support significant proportions of populations which are of **regional / medium** value or sensitivity. The effect would be short-term but potentially undertaken over 2 years affecting up to 2 winter seasons and would be considered **medium magnitude** over this time frame and would be **moderate significance**.

**15.113** This assessment acknowledges that the deposition of dredged material outside of Loch Ryan at Beaufort's Dyke may introduce some short term and temporary construction related noise and vessel presence within areas of open sea. This relates to the disposal of dredged material at an existing licensed site. No detailed baseline for marine ornithology has been collected for this area as part of the assessment however it is likely that the assemblage of birds present during the overwintering period while highly variable throughout the year will comprise a range of seabirds which apply a range of feeding strategies at sea, all of which could be affected to some degree by operations associated with deposition of dredged material offshore. Due to the very short term temporary and localised nature of any deposition such effects at disposal sites are expected to have a **negligible magnitude** effect on receptors which may be considered at least **medium sensitivity** on a precautionary basis resulting in an effect of **negligible significance**.

#### Overwintering and Breeding / Summer Birds – Sedimentation and Construction Stage Pollution

15.114 The proposed works may result in the mobilisation of significant volumes of sediment, this sediment mobilisation could result in the following effects;

- Mobilisation of and deposition of contaminated sediment in intertidal feeding areas
- Smothering of intertidal habitats in sediment deposits
- Short-term increase in turbidity in feeding area limiting feeding ability for both aerial foragers such as terns or gulls or for birds which feed in the water column

15.115 This may occur to a small degree during a range of construction operations such as piling and extending the breakwater feature, however dredging works create the most potential for mobilising sediment, primarily due to the proposed capital dredge operations. The sediment modelling, as discussed within the Coastal Processes Chapter (**Chapter 7.0**) illustrates that mobilised sediment will primarily move northward out of the mouth of the existing Marina. This pattern of movement effectively illustrates that sediment movement and deposition will not reach intertidal feeding area used by a wide range of waders and wildfowl and therefore potential effects of deposition of contaminated sediment impacting wading birds and smothering of intertidal feeding areas is predicted to be **negligible** and **not significant**. Locations where sediment will be deposited will be subtidal and outside the marina footprint in all scenarios considered.

15.116 Mobilised sediment as assessed by Dredge Plume modelling will exist within the water column for a short period of time only; this is largely due to the types of sediments present; potential contaminants are mostly bound, being likely to settle moderately quickly and the low tidal currents present in the area create a limited zone of influence.

15.117 Therefore, these factors indicate a low ecotoxicological risk to both fish species as described in **Chapter 13** Fish Ecology, and accordingly a low risk to piscivorous (fish eating birds) through

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bioaccumulation considering the short-term nature of the increases in contaminants mobilised in the water column, the magnitude of the effect on receptors of medium sensitivity has subsequently been assessed as being **negligible** resulting in an effect of **slight significance** in relation to both overwintering and breeding / summer birds on a precautionary basis.

- 15.118 The dredge plume modelling also indicates that on a short-term basis, the suspended solids will primarily affect the marina area where suspended solids are shown to exceed 100mg/l during dredging operations for modelled Scenario 2 which comprises removal of dredged material to the land reclamation area. The majority of the zone modelled as the dredge plume displays a suspended solids concentration of <100mg / l for the nearest locations to the Marina rapidly dropping to concentrations of 50mg / l or below as the plume extends further north in a plume a few hundred meters in width. For context, River Estuaries known to be important for bird life including diving birds such as the Humber or Thames Estuaries in England, often have 'natural' suspended solids concentrations of between 10 – 100mg/l depending on rainfall and associated mobilisation of sediment into rivers indicating that the primary effects of the sediment plume will be within the marina itself. Given the limited modelled increase in suspended sediment over a relatively small area of the wider available foraging resource the effects of sediment increase of bird foraging both during the winter and summer periods is predicted to be a **low magnitude** on a receptor of **moderate sensitivity** resulting in an effect of **slight significance**.
- 15.119 Given the extensive requirement for working in over and adjacent to water the work presents a risk of accidental fuel, oil, cementitious materials or other construction chemicals entering the marine environment. The extent of this effect on ornithological receptors is very variable but at works would be expected to have a **medium adverse** effect and comprise a **moderate significant** impact in absence of mitigation.

#### Breeding / Summer Birds – Construction Disturbance

- 15.120 Construction operations including piling dredging and a range of other measures undertaken across an expected 24 month period could affect an estimated 2 breeding seasons or summer periods. Populations within a 500m study area are reported within **Appendix 15.2** however features most susceptible to disturbance during construction due to noise are likely to be those located within the Marina itself or associated with breeding sites located in close proximity to the marina including those located on the former ferry terminal structures. As discussed in **Chapter 19.0 (Noise and Vibration)** and **Chapter 20 (Underwater Noise)**, it is considered that piling operations are likely to be the loudest construction phase operation.
- 15.121 Breeding birds potentially subject to effects of noise or visual disturbance may include species such as Black Guillemot, Oystercatcher, Arctic Tern, Ringed Plover and Black-headed Gull, and Herring Gull which breed on disused ferry terminal structures. Underwater noise is not
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expected to affect these species at the nest sites themselves though may result in short term effects on prey items locally as described in **Chapter 13 – Fish Ecology**. The breeding populations are considered to be of regional importance / **medium sensitivity** due to the restricted nature of suitable breeding sites for species such as Arctic Tern and Black Guillemot. The effect of disturbance resulting from construction operations will be lessened to some degree due to the existing exposure to passive disturbance from vehicles and pedestrian users moving along the ferry terminal structure to the Train Station. The magnitude is therefore expected to be **Low** and construction stage disturbance expected to be of **slight significance**.

### *Operational Phase*

#### *Terrestrial habitats*

- 15.122 During the operational phase the proposed scheme will result in the loss or modification of small areas of a series of habitat types that are of low or at most local value. The impact of this will be permanent effect on a range of habitat types which are of **low sensitivity** and would be **slight adverse magnitude**. The overall impact of this would be **negligible**.
- 15.123 The proposed scheme will result in an overall increase in terrestrial habitats likely to be similar in nature to any public space habitats which may be lost or adversely affected. The proposed habitats as illustrated on **Drawing 161378-FRH-00-00-DG-L-000001 (Landscape Proposals Plan)** shows an area of amenity grassland, car parking with associated planting and trees. This inclusion of this community space element of the scheme represents a **slight beneficial effect** on a feature of **low sensitivity**. Given the scale this would be of **slight significance**.
- 15.124 While a slight beneficial effect is reported above in relation to terrestrial habitats the associated loss of intertidal habitats is considered and reported separately in **Chapter 12 Benthic Ecology**.

#### *Protected or notable species - Habitat loss*

- 15.125 As set out within the baseline section to this report and within the PEA report (**Appendix 15.1**). The scheme boundary comprises a mixture of marine habitats which are considered separately in **Chapter 12 Benthic Ecology** and a series of heavily managed or artificial habitat types. These habitats offer relatively limited opportunities for protected or notable terrestrial species.
- 15.126 The proposals may result in some modification to existing buildings however where these are present those which will be directly affected by works are assessed as being of negligible suitability for roosting bats and therefore **no adverse impacts on bats** are predicted as a result of habitat loss.
- 15.127 Similarly potential impacts on a range of other terrestrial species such as reptiles, great crested newt, red squirrel and badger are scoped out of impacts based on the absence of suitable habitat and / or the results of field surveys.
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15.128 The habitats present have been identified as supporting potential areas for otter to rest or shelter. Survey effort has however not resulted in the identification of any confirmed field signs. The area of infill will remove areas of rock armour which could in theory have supported otter resting places in cavities between rock armour and therefore a loss of a small area of potential resting habitat is acknowledged. This represents a **low magnitude** effect on a feature of up to potentially **local importance/ Low sensitivity** and is **not expected to be significant**. Given the mobility of the species updated surveys are likely to be required before works commence.

#### Overwintering Birds – Habitat loss / degradation

15.129 The areas of intertidal habitat which will be subject to infill from dredged material will affect an area used by small numbers of wading bird species and gulls as intertidal feeding habitat. Oystercatcher were typically present in each low tide survey feeding in numbers ranging from 4 – 17, similarly Redshank were also recorded though less frequently and generally in lower numbers, a peak count of 21 was however recorded in March. Other species recorded included individual Curlew, a flock of 7 Knot on 1 occasion and small numbers of Turnstone. The intertidal areas are also utilised by gull species notably Black-headed Gull and Herring Gull. The intertidal areas are accessible to the public and on occasion dog walking and other disturbing access was recorded limiting the value as feeding habitat. The intertidal areas comprise a relatively small proportion of the overall Loch Ryan intertidal feeding resource used periodically by limited numbers of the local wading bird population, notably with much more extensively used areas to the east of the rail line and ferry terminal. The effect of habitat loss is expected to be a **medium magnitude** impact on a feature of **medium sensitivity**. The overall significance of this effect is expected to be **slight**, taking into account embedded mitigation to incorporate beach profiles which will allow some retained foraging opportunities within the Marina. The intertidal habitat which may be in part subject to habitat loss is shown at an extreme low tide in **Photo 15-1** below.



*Photo 15-1 - Intertidal habitat*

- 15.130 Notable wading bird roosts within the Marina included Oystercatcher and Redshank (peaks of 47 and 70 respectively). The extension of infill has the potential to compromise the function of high tide roosts which form on rock armour on the inside of the marina by extending terrestrial habitats towards the roost site. The location of roosting Oystercatcher can be made out in **Photo 15-2** below. Based on the scheme layout, it is expected that the areas of rock armour primarily used for roosting will be retained; however the introduction of infilled land may limit its use or expose the roost to increased potential disturbance. The extent of compromised function is difficult to predict, however as this potential effect was identified at an early stage, some embedded mitigation was included to limit / offset this impact. Notably, observations from site indicates that roosting within the marina is most important when easterly winds or swell compromise roosting which takes place on rock armour east of the rail line outside the marina. Taking into account the embedded mitigation included in sections 15.8-15.14, this is expected to comprise a **medium magnitude** effect on a feature of **medium sensitivity** and the overall significance of this effect is expected to be **slight significant**.
- 15.131 Small numbers of diving birds use waters within the marina to forage which includes Little Grebe (8), Red-throated Diver (2), Black Guillemot (2), Cormorant and Shag. The installation of new floating moorings in theory may comprise some level of habitat loss of open water habitats. The scheme however through dredging proposals also increases the extent of open water column available for diving birds. Given that all species noted above have been recorded actively feeding around existing vessels and mooring berths the overall effect of this expected to be of **negligible magnitude** on a **medium sensitivity** receptor and **not significant**.



*Photo 15-2 - Indicative Location of Roosts*

### Breeding / Summer Birds - Habitat Loss or degradation

- 15.132 During the summer months similar to the winter period small numbers of bird utilise internal feeding areas – this is generally more limited than that recorded over winter and similar to effects predicted for overwintering birds’ **low magnitude** impact on a feature of **medium sensitivity**. The overall significance of this effect is expected to be **slight/ negligible**. Areas of open water affected by habitat loss or change are also used by a limited number of birds and so the effect of habitat loss of open water areas and expected to comprise a **low magnitude** effect on a feature of up to **regional/ medium sensitivity** representing at most an effect of **slight / negligible significance**. Roosting areas within the marina used to a lesser extent during the summer period **are also likely to be subject to a slight magnitude effect**
- 15.133 Areas of terrestrial habitat within the scheme boundary support limited confirmed or potential breeding opportunities, much of the breeding activity comprises features outside of the scheme boundaries. Given proposals for embedded mitigation, there is a potential **slight beneficial effect** possible as a result of the proposed scheme through inclusion of additional breeding sites / opportunities for a range of species.

### Overwintering Birds – Operational disturbance

- 15.134 The study area and associated areas of Loch Ryan are noted to be important for a range of overwintering bird species. Notably species such as Scaup, Eider and Red-breasted Merganser as reported by Lawton et al 2015<sup>24</sup>. While Loch Ryan supports a small existing operational marina the proposal will result in a significant overall increase in berths (>200% increase from the baseline with a projected 230 berths available in total on redevelopment) and therefore potential increase in marine traffic. Projections of use reported in **Chapter 8** Navigation and Safety however estimate that for the first 5 years that the marina will operate at 70% capacity during the summer and 40% during the winter extending to 85% and 55% respectively thereafter. This indicates that any increases will be much more limited during the period in the year of highest importance to overwintering wildfowl species.
- 15.135 The increase will be from a relatively limited baseline in marine traffic within the southern part of Loch Ryan. Observations during bird and marine mammal surveys during the winter period indicated that while many existing berths are used, the number of vessels active during the winter period is very limited. The reaction of birds to marine vessels will vary between species with some species such as eider often strongly associated with harbours and aggregations of boat traffic and others such as Red-throated Diver known to be vulnerable to disturbance from traffic and other operations associated with offshore wind construction as reported by the Joint

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<sup>24</sup> Lawson, J., Kober, K., Win, I., Bingham, C., Buxton, N.E., Mudge, G., Webb, A., Reid, J.B., Black, J., Way, L. & O’Brien, S. 2015. An assessment of numbers of wintering divers, seaduck and grebes in inshore marine areas of Scotland, (Revised 2018). JNCC Report 567, ISSN 0963-8091.

Statutory Nature Conservation Bodies (2022)<sup>25</sup>. The context of existing use of Loch Ryan as a well-used ferry route is also taken into consideration.

- 15.136 Operational disturbances may arise through the introduction of a new and amended lighting provide safe light provision for car parking and proposed pontoons. While the Marina areas is currently subject to some level of lighting from existing harbour and car park areas there is potential for this to subject. Any lighting will be restricted to Marina areas only and would only potentially affect relatively small some studies reported in Acta Oecologica<sup>26</sup> indicate that artificial lighting can increase foraging efficiency of wintering waders. On a precautionary basis in absence of mitigation, the effect of increase boat traffic during operation may have a **medium magnitude** effect on a feature of **medium sensitivity** and be of **slight / moderate significance** in relation to overwintering birds.

#### Breeding / Summer Birds – operational disturbance

- 15.137 During the summer, species are less likely to be adversely affected by boat traffic due to their behaviours (species such as gulls, terns and gannets are aerial foragers and therefore less likely to be flushed or forced to escape dive by marine traffic). Species such as Eider, Black Guillemot as well as some other wildfowl such as Teal, Red-Breasted Merganser and Mallard are also recorded in open waters during the summer period. The increase on marine traffic, which is likely to be more pronounced during the summer months when increases in recreational use are more likely, is expected to affect a feature of **medium sensitivity** and, on a precautionary basis, may result in a **medium magnitude** effect and would be an adverse effect of **slight / moderate significance** in absence of mitigation.
- 15.138 Notably, aggregations of Gannet, Lesser Black Backed Gull, and Herring Gull may be associated with Ailsa Craig SPA located c 36km to the north of the development site. Peak counts of Gannet in the study area comprise <0.1% of the potential SPA population of 46,000 birds (23000 pairs). The number of Herring Gull may comprise a significant proportion of the SPA population however most of these are likely to comprise birds associated with breeding efforts in Stranraer itself given that these species are at the outer limits of breeding season foraging ranges.

#### *Do Nothing Scenario*

- 15.139 In the do nothing scenario, receptors would not be affected by impacts of habitat loss or construction disturbance which comprise the main potential effects described above. It is noted however that birds using the Marina for foraging or surrounding areas for nesting are not

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<sup>25</sup> Joint SNCB1 Interim Advice On The Treatment Of Displacement For Red-Throated Diver (2022).

<sup>26</sup> Santos D.C, Miranda A.C, Granadiero J.P, Lourenco P.M, Saraiva, S.S and Palmeirim J.M.,(2010) Effects of Artificial Illumination on the Nocturnal Foraging of Waders. Acta Oecologica. Volume 36, Issue 2 March – April 2010.

currently protected from disturbance impacts due to the proximity to roads and footways in the current context similarly effects of potential construction stage pollution and sedimentation would not occur.

## Mitigation, Monitoring and Residual Effects

### *Mitigation/ Monitoring*

15.140 A range of embedded mitigation is described in sections **15.98 to 15.102** above. These measures will be taken into account in the consideration of residual effects below. In addition to design based mitigation included a series of measures related to seasonal and tidal restrictions are included to reduce or avoid the potential effects of the proposed development.

### Construction stage disturbance

15.141 Where possible, significant works such as dredging or piling will avoid the over wintering period October – March inclusive. Where this period cannot be avoided, works will avoid the periods 2 hours either side of high tide to minimise potential effects on high tide roosting. To protect spawning Fish no piling or dredging will take place during the late winter period (February – March) as reported in **Chapter 13**.

15.142 Piling and dredging operations will avoid the period April – June inclusive (much of this period will also be avoided for fish spawning reasons see **Chapter 13 Fish Ecology**). This will avoid the main breeding period for Black Guillemot which breed in cavities of existing structures.

15.143 Soft start methods will be applied to all piling operations. This method will allow a progressive response and for fauna to move away from the source of noise over a period of time this will include bird species (marine mammals – as discussed in **Chapter 14**) and prey items (fish species). As described in Chapter 20 Underwater Noise and Chapter 14 Marine Mammals soft start will be applied for a 20 minute period for each period of piling activity.

15.144 An ecological clerk of works (ECoW) will be appointed to monitor compliance with the requirements of the EIA and any Construction Environmental Management Plan (CEMP) developed for the construction phase. The ECoW will monitor bird usage of the area and any reactions to construction operations to monitor the effectiveness of construction stage mitigation.

15.145 Preconstruction surveys for protected or notable species will be required and are recommended 3 months in advance of planned construction work notably in relation to otter. If required, an otter licence and associated mitigation plan will be implemented to mitigate any effects on otter should they be present occupying the study area at the time of works.

### Operational Disturbance

15.146 Operational disturbance will arise from a predicted increase in boat use and traffic within Loch Ryan. This effect is difficult to quantify as it will arise through a range of different crafts and users and affect a wide range of species at different times of year. In order to minimise any effect during operation information will be provided through interpretative boards designed for

marina users setting out the nature of the species present throughout the year and behaviours which will help to minimise operational disturbance.

**Construction Stage Pollution**

15.147 Piling and dredging operations will avoid the period April – June inclusive (much of this period will also be avoided for fish spawning reasons see **Chapter 13 Fish Ecology**). This will avoid key periods when breeding species are tied in to breeding sites surrounding the marina.

15.148 Dredging will avoid the period April – June and therefore the effect of any sediment plumes on feeding associated with breeding efforts during this period will be minimised.

15.149 The construction phase of works will entail extensive over water work involving a range of marine plant. This inevitably introduces construction stage pollution risks, and a Construction Environmental Management Plan (CEMP) will be prepared to define parameters for biosecurity, pollution spill prevention, spill containment and emergency response.

**Residual Effects**

15.150 **Table 15-9** below sets out residual effects of the proposals following implementation of mitigation measures where appropriate.

**Table 15-9 Residual Effects**

Effect	Receptor	Receptor Sensitivity	Impact Magnitude	Impact Significance (prior to mitigation)	Mitigation Measures	Post Mitigation Impact Significance
<b>Construction stage pollution – sediment mobilisation</b>	Over wintering Birds	Medium	Low	Slight	Timing of dredging operations	Slight
	Breeding birds	Medium	Low	Slight	Timing of dredging operations	Slight
<b>Construction stage pollution – accidental spills</b>	Over wintering Birds	Medium	Medium	Moderate	CEMP	Negligible
	Breeding birds	Medium	Medium	Moderate	CEMP	Negligible
<b>Construction Stage Disturbance</b>	Notable Species – Otter*	Medium	High	Moderate	EPSML Licence – provision of alternative rest sites. Avoid disturbance	Slight

Effect	Receptor	Receptor Sensitivity	Impact Magnitude	Impact Significance (prior to mitigation)	Mitigation Measures	Post Mitigation Impact Significance
					while rest sites are in use.	
	Over wintering Birds	Medium	Moderate	Moderate	Seasonal / tidal restrictions / incorporation of alternative roost sites into scheme design	Slight
	Breeding / summer Birds	Medium	Moderate	Moderate	Seasonal restrictions, Visual screening – where relevant	Slight / Negligible
<b>Permanent Habitat Loss/ degradation</b>	Terrestrial Habitats	Low	Low Adverse	Negligible	-	Slight beneficial
	Over wintering Birds (intertidal)	Medium	Medium	Slight	Embedded mitigation within design	Slight
	Breeding / summer birds (intertidal)	Medium	Low	Slight / Negligible	Embedded mitigation within design	Slight
<b>Temporary Habitat Loss</b>	Terrestrial Habitats	Low	Low Adverse	Negligible	-	Negligible
<b>Operational disturbance</b>	Over Wintering birds	Medium	Medium	Moderate	Provision of Information to Marina users	Slight
	Breeding / summer birds	Medium	Low	Slight	Provision of Information to Marina users	Negligible

## Cumulative Effects

15.151 **Table 15-10** Projects Considered in Relation to Cumulative effects below sets out a summary of projects which are considered in relation to cumulative effects and highlights where cumulative effects may be possible and considers whether such cumulative effects results in a change to the significance of any effects identified after mitigation measures applied for the Stranraer Marina project and the other projects (where relevant).

**Table 15-10 Projects Considered in Relation to Cumulative effects**

Reference	Project	Description	Consideration of cumulative effects
23/0739/CLP	Land At Port Rodie Car Park Harbour Street Stranraer DG9 8EG	Installation of 4 electric vehicle charging points with associated charging upstands, supporting equipment cabinets and substation infrastructure	Habitat Loss affects car park only on negligible value. Installation timescales will be short term and temporary within an existing car park facility and therefore in combination effects relating to construction disturbance will be negligible.
23/0976/FUL	Land Between West Pier And Agnew Park, Stranraer Harbour, Stranraer	Erection of boat shelter with roof mounted solar panels; extension to boat yard including formation of hardstanding area, installation of pole mounted flood lights, erection of 2 metre high security fencing and formation of gated access; formation of instructor platform, equipment lay down area, open air showers, stepped access to the beach and erection of instructor shelter	Based on a review of the application details no specific ecological effects are identified as part of this application. The application does however fall within the wider red line boundary of the Marina scheme considered within this assessment and therefore relevant assessment and mitigation details remain relevant and no in combination effects are expected.
23/0970/FUL	Land To West Of Marina And Harbourmaster's Office Stranraer	Erection of watersports centre and installation of roof mounted solar photovoltaic panels, formation of additional parking area with associated hard and soft landscaping and formation of footpath	Based on a review of the application details no specific ecological effects are identified as part of this application. The application does however fall within the wider red line boundary of the Marina scheme considered within this assessment and therefore relevant assessment and mitigation details remain relevant and no in combination effects are expected.
22/0394/S36	Mid Moile Windfarm Cairnryan	Consent under section 36 of the electricity act 1989 and deemed planning permission under section 57(2) of the town and	The application is located several kilometres away and is generally separated from the coastal habitats and environment which is affected by the proposed Stranraer Marina

Reference	Project	Description	Consideration of cumulative effects
		country planning (Scotland) act 1997 for construction and operation of mid moile wind farm within the planning authority area of Dumfries and Galloway council	project considered in this report. On that basis no in-combination effects are expected as a result of this application.
24/2518/FUL	Site Adjacent To Springbank Road Stranraer DG9 0HS	Erection of 77 dwellinghouses with roof mounted solar panels and air source heat pumps, formation of access and internal road and footpath layout, 178 car parking spaces, landscaping, suds drainage pond and associated infrastructure	This scheme is separated from the Marina by much of the town and therefore effects such as habitat loss and construction disturbance or pollution are not expected to result in a cumulative effect.  During operation additional residences may result in increased use of the marine environment however this has been considered in relation to the increased marina capacity separately and this was not identified as a potential effect on the PEA for the Spring bank Road Scheme. No in-combination effect is expected.
24/1407/FUL	Former Stena Port, Port Rodie Stranraer	Change of use of part of former port to form haulage yard (class 6), siting of office, erection of 3 metre high security fencing and access gate and installation of security lighting columns (partially retrospective)	While no ecology report is available for review on the Dumfries and Galloway Planning Portal the location and nature of this may result in some in combination effects with the Stranraer Marina Application. The site is located in close proximity to areas to the east of the rail line used by roosting birds and areas used by roosting birds on the former ferry terminal itself. This may result in habitat loss for some nesting species (Herring Gull, Black Headed Gull and Arctic tern) and potentially short term construction disturbance affecting winter roosting areas. It is recommended that construction works / site set up should avoid the period April – August to avoid direct effects on birds while breeding. Should construction or site set up be undertaken during the winter then tidal restrictions may be necessary to avoid impacts on high tide roosts.
24/1534/FUL	Land To The West Of Loch Ryan And North Of Corsewall	Formation of coastal habitat for seabirds including formation of inland pool with islands,	The project appears to be strategic mitigation for the effects of offshore wind development in other parts of the UK. While the scheme is designed as

Reference	Project	Description	Consideration of cumulative effects
	Burn At Corsewall Estate Kirkcolm Stranraer DG9 0NX	water inlets and outlets from and into Loch Ryan, screening bunds up to 2 metre high, 3 bird hides, access routes, upgrading bridge crossing of corsewall burn, landscaping and associated works including relocation of excavated earth to southern field	offsetting for breeding seabirds in other locations the scheme may have an overall beneficial effect on breeding waders and terns which could be affected by the Stranraer Marina scheme. Overall the in-combination effect is considered to be negligible although the coastal habitat is generally likely to create an overall beneficial effect locally.
25/1190/FUL	Application for a new Transport Hub	Erection of transport hub with roof mounted photovoltaic panels incorporating provision of secure bicycle locker storage for bicycles, e-bikes (electric bicycles) and acc bikes (accessible electric bicycles), bike wash/pump/repair station, public toilets, bus waiting area(s), internal general purpose space and external shelter with fixed benching and installation of 5no. bike stands and 4no. electric vehicle charging units.	No ecology report is available however the application is located on existing sealed surface man-made habitats not capable of supporting protected or notable species. The site is located at the inshore end of an existing car park and therefore construction and operation activities are not considered likely to result in disturbance to breeding or overwintering birds associated with the Marina environment. No in combination or cumulative effect is expected because of this development.
25/0778/FUL	Installation for permission of one 10 m high street works column.	Installation of one 10 metre high street works column, 3 antennas, 1 network camera, 1 equipment cabinet and associated works.	The works are close to Loch Ryan however are small scale and construction work is expected to be very short term and temporary. Any cumulative effects of disturbance to marine fauna is likely to be minimal due to the small scale of the scheme.
00008983 (Marine Scotland)	Stranraer harbour - main basin, marina and approaches	Maintenance Dredging and sea deposit - Use of plough dredger to move material from the dredging area into the deep void situated off the old Stena Line terminal between the East Pier and Ross Pier. Water injection will be used to liquefy and move any material under the marina pontoons which are inaccessible to the plough dredger. This material will	Stranraer Marina has a history of maintenance dredging with materials moved from the Marina to other features within Loch Ryan. Depending on the timing of implementing maintenance dredging this has the potential to increase construction stage disturbance both through increased duration and scale of works. Similarly if the maintenance dredge associated with this coincided with the capital dredging required for the Marina then increased risk of sediment may occur. Based on

Reference	Project	Description	Consideration of cumulative effects
		then also be moved by plough dredging.	historic maintenance and the results of sediment modelling undertaken for the Marina redevelopment the cumulative effect of this is unlikely to increase in significance. Pollution risks are not considered likely to change given the nature of the sediment analysis presented for the maintenance dredge application and for the Marina development project..
07059 (Marine Scotland)	Loch Ryan, Dumfries and Galloway	Deposit of Oyster Shells - Marine Licence Application	No in-combination effects are considered relevant to the application to deposit oyster shells with an aim to enhance oyster beds in Loch Ryan.
00009930 (Marine Scotland)	Loch Ryan Port approach channel, berth pocket and swinging area	Capital Dredging and Sea Disposal - Loch Ryan Port, Cairnryan	This capital dredge licence is valid between December 2022 and December 2025. Given that the Marina works are expected to take place from 2026 onwards there is not considered to be a risk of construction and dredging operations coinciding and therefore no cumulative effects are predicted.
00010825 (Marine Scotland)	Stranraer Marina, Agnew Park, Stranraer	Construction of: Platform for instructor shelter. Removal of 2 no. redundant sewer outfall pipes & debris, unlit beacon, removal of boulders, beach clearance	This marine licence relates to planning application 23/0970/FUL considered above and accordingly no in cumulative effects are expected.
00010841 (Marine Scotland)	Stranraer Marina, Stranraer	Marine Construction & Pontoon Deposit - 8 (pontoons) + 3 (racing markers). Moorings are for offshore pontoons as opposed to vessels. Small craft (e.g. SUP, dinghies) will dock against the pontoons temporarily as rest stations. No vessels will be moored to the racing markers.	Proposals entail relatively minor works within the marine environment for the installation of pontoons and racing markers and associated removal of former sewage pipes. The timescales for delivery are not clear however given the location of the features presented they are unlikely to result in a cumulative construction stage disturbance effect for feeding or roosting waders. Given the very localised nature and small scale of the installations birds of open water are also unlikely to be affected by disturbance which is significant as a result of this proposal. No cumulative effects are expected.

Reference	Project	Description	Consideration of cumulative effects
00010772 (Marine Scotland)	Stranraer Marina, Stranraer	Marine Licence Application – 18 Moorings	Proposals entail relatively minor works within the marine environment for the installation of rowing moorings. The timescales for delivery are not clear (potential start in June 2024), however given the location of the features presented they are unlikely to result in a cumulative construction stage disturbance effect for feeding or roosting waders. Given the very localised nature and small scale of the installations birds of open water are also unlikely to be affected by disturbance which is significant as a result of this proposal. No cumulative effects are expected.

## Summary and Conclusions

- 15.152 A range of desk based and field-based data sources have been reviewed to establish baseline conditions both within the footprint of the proposed marina development and for a minimum 500m zone of immediate influence surrounding that. Given the mobility of some of the receptors considered desk-based information has been gathered and considered for a much wider area.
- 15.153 The baseline has identified a number of receptors within the scope of terrestrial biodiversity and ornithology which are valued and where relevant potential impacts are identified. A range of potential impacts are considered following consideration of the technical assessments presented throughout the EIA reports. These include;
- Temporary and permanent habitat loss;
  - Loss of feeding habitat;
  - Deterioration of roosting habitats for wintering
  - Construction stage pollution
  - Operational stage pollution
  - Operational stage disturbance resulting from vessels and / or lighting
- 15.154 During early stages and where possible embedded mitigation was developed to minimise and reduce effects or identify opportunities for enhancement.
- 15.155 Where throughout the assessment process potentially significant effects are identified a range of construction stage and operational stage mitigation measures are identified. Following the implementation of mitigation measures the assessment concludes that following the application of mitigation and considering the nature and location of potential effects that any residual effects are at most slight.
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## Abbreviations

ECoW- Ecological Clerk of Works

EIAR- Ecological Impact Assessment Report

EclA- Ecological Impact Assessment

PEA- Preliminary Ecological Appraisal

HRA- Habitat Regulations Appraisal

CIEEM- Chartered Institute of Ecology and Environmental Management

BTO- British Trust for Ornithology

WeBS- Wetland Bird Survey

ESAS – European Seabirds at Sea

NPF4- National Planning Framework 4

LDP2- Dumfries and Galloway Local Development Plan 2

LNR- Local Nature Reserve

BAP- Biodiversity Action Plan

SPA- Special Protection Area

pSPA- Potential Special Protection Area

SAC- Special Area of Conservation

cSAC- Candidate Special Area of Conservation

pSAC- Potential Special Area of Conservation

SSSI- Site of Special Scientific Interest

NNR- National Nature Reserve

IBA- Important Bird Area

GCN- Great Crested Newt

SNH- Scotland Natural Heritage

SWSEIC- Southwest Scotland Environmental Information Centre

MAGIC- Multi-Agency Geographic Information for the Countryside

UK Hab- UK Habitat Classification survey methodology

TN- Target Note

BoCC- Birds of Conservation Concern

SBL- Scottish Biodiversity List

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CEMP- Construction Environmental Management Plan

