2km and 4km zones around it. A similar, though less pronounced avoidance response to the Nysted offshore windfarm by red-throated divers was also recorded (Petersen et al. 2006). Data from Kentish Flats offshore windfarm suggest a decreasing displacement effect with distance from the wind turbine footprints (Percival 2010). Analysis of diver survey data collected in the Outer Thames to investigate windfarm effects identified shipping activity as one of only two covariates which explained significant amounts of the variation in the species' spatial distribution (bathymetry was the second; APEM 2016). This study found evidence for decreases in diver densities during windfarm construction compared with those observed prior to construction, but also indicated that following construction diver densities rapidly returned to previous levels (although this was caveated as a preliminary result). Recent studies in the German Bight also show very strong avoidance by red-throated divers of operational offshore windfarms and of associated ships in that area (Mendel et al. 2019). A report on the results of more recent surveys of the Outer Thames Estuary SPA (Irwin et al. 2019) proposed similar avoidance of shipping and wind turbines, although this conclusion was based on preliminary observations rather than analytical estimates.

6.7.2.23 The boundary of the Murrough SPA was extended offshore in 2023 such that the minimum distance between the SPA and the Proposed Development reduced from 10.1 km to 8 km. It is considered that wintering red-throated diver may be displaced within distances of up to 10 km from offshore windfarms (SNCBs 2022). The 10 km buffer of the Array overlaps with 5.3 km^2 of the SPA, which represents 5.4% of the SPA area. There is therefore potential that the Proposed Development may reduce the density of red-throated divers from this overlap area of the Murrough SPA.

6.7.3 Avoidance through Design and Standard Project Environmental Protection Measures of the Proposed Development

6.7.3.1 The design of the Proposed Development is such that some potential impact can be avoided as seen by applying the design features relevant to intertidal and offshore ornithology receptors which are presented in Table 6.42.

Table 6.42: Project design and environmental protection measures relevant for intertidal and offshore ornithology receptors

Measure	Justification
Impact avoidance/ reduction through an Environmental Management Plan (EMP) which has been prepared and will be implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The RWMP include mitigation/monitoring measures and commitments made within the EIAR and a Marine Pollution Contingency Plan (MPCP) which will include key emergency contact details (e.g. EPA). An EMP is included in NIS Volume III, Appendix 25.1: Environmental Management Plan.	Measures will be implemented to ensure that the potential for release of pollutants from construction, operational and maintenance, and decommissioning plant is minimised. These include: Storage of chemicals in secure designated area in line with appropriate regulations and guidelines; Double skinning of pipes and tanks containing hazardous substances; Storage of these substances in impenetrable bunds; Working vessels will handle all wastes in accordance with International Maritime Organisation (IMO) requirements and in accordance with the requirements of national legislation (i.e. Sea Pollution Acts 1991 to 1999; Sea

Measure	Justification
	Pollution (Miscellaneous Provisions) Act 2006) as applicable; All waste and/or litter, including potential pollutants produced during construction and/or operation of the windfarm will be stored and returned to shore for authorised disposal at suitable facilities; and Vessel refuelling will take place in port or under permit from the Irish Coast Guard. In this manner, accidental release of contaminants from vessels will be strictly controlled, thus providing protection for marine life across all phases of the Proposed Development. Any accidental pollution of the marine environment will be immediately reported to the Irish Coastguard and to any other local authorities who are likely to be affected by such pollution.
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339)	The Developer was granted a Foreshore Licence (FS007339) for Site Investigations (associated with the Proposed Development) from the Minister for Housing, Local Government and Heritage in May 2022. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339) being carried out. As such there is no temporal overlap between the activities consented in this Foreshore Licence and the Proposed Development and there will be no potential for cumulative effects.
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried	The Developer submitted a Foreshore Licence Application for Site Surveys to the Minister for Housing, Local Government and Heritage in April 2023 (FS007555) and this application is pending determination. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried out. As such there is no temporal overlap between the activities proposed in the Foreshore Licence Application and the Proposed Development.

Measure	Justification
Maximum number of wind turbines of 53.	The number of wind turbines has been refined to minimise the potential collision risk impacts (see Chapter 4: Consideration of Alternatives).
Minimum lower blade tip height of 37 m above LAT	Minimises potential seabird collision risks since the abundance of birds decreases with increasing height above the sea surface.

6.7.4 Impacts and Parameters Assessed

6.7.4.1 Both Project Design Options identified in Table 6.43 have the potential to result in AEoI on intertidal and offshore ornithology receptors.

6.7.4.2 Note that Project Design Option 1 has two variants (identified as WTG Model 1a and 1b) which differ only in the blade chord width and the average rotation speed. As these parameters can result in different predicted collision risks both WTG Model 1a and 1b have been assessed, as well as for WTG Model 2.

Table 6.43: Project Design Options 1 and 2 considered for the assessment of potential impacts on intertidal and offshore ornithology receptors

Potential impact	Phase			Project Design Option Assessed (1 and 2)	Parameter Differences Between Project Design Option 1 and 2 (if any)
	C	O	D		
Disturbance and displacement	✓	✓	✓	Project Design Option 1 **Construction Phase:** Disturbance and displacement from construction activity, including increased vessel and helicopter activity: • Installation of 53 Wind Turbine Generators (WTGs) and 2 OSPs within the Array Area; • Maximum of 1 foundation installed at any one time (within any 24 hour period); • Maximum of 69 installation vessels in the Array Area at any one time (including 12 installation vessels along the offshore Cable Corridor and Working Area at any one time, and maximum of 7 installation vessels in the vicinity of the landfall at any one time); • Maximum of 3 helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, 7 days a week for a maximum construction period of 4 years. Within this period, offshore export cable installation may take place over a period of 12 months. **Operational and maintenance phase:** Disturbance and displacement from operational and maintenance activity, including increased vessel and helicopter activity: • Presence of 55 (i.e. 53 x WTG + 2 x OSP) monopile foundations with base diameter between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Presence of associated cable protection for between 110 – 122 km inter-array cables and between 35 – 40 km offshore export cables. Assumes a maximum of 15% of inter-array cable route, 50% of interconnector and 20% of offshore export cable route may require cable protection; • Minimum spacing of 500 m between turbine blade tips; • A maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels;	Within the construction phase Project Design Option 1 consists of a larger number of foundations to be installed – 55 monopile foundations in total, whilst Project Design Option 2 comprises of 49 foundations. Therefore, Project Design Option 1 will have a marginally greater potential for Disturbance and Displacement. Within the Operational and Maintenance phase Project Design Option 1 comprises of 53 operational turbines, whilst Project Design Option 2 comprises of 47 operational turbines. Therefore, Project Design Option 1 will have a marginally greater potential for Disturbance and Displacement. Within the Decommissioning Phase Project Design Option 1 will result in the deconstruction and removal of all 53 WTGs, 2 OSPs and associated infrastructure, whilst Project Design Option 2 consists of the deconstruction and complete removal of all 47 WTGs and associated infrastructure. Therefore, Project Design Option 1 will have a marginally greater

Potential impact	Phase			Project Design Option Assessed (1 and 2)	Parameter Differences Between Project Design Option 1 and 2 (if any)
	C	O	D		
				• A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and Operational phase of 36.5 years. **Decommissioning Phase:** Disturbance is anticipated to be similar in nature but of lower magnitude than during construction.	potential for disturbance and displacement. Therefore, overall Project Design Option 1 is considered conservatively representative of Project Design Option 2 in respect of potential for disturbance and displacement.
	✓	✓	✓	Project Design Option 2 **Construction Phase:** Disturbance and displacement from construction activity, including increased vessel and helicopter activity and confirmatory surveys (see Volume I, Supporting Information for Screening for Appropriate Assessment Report) • Installation of 47 WTGs and 2 x OSPs within the Array Area; A maximum of 1 foundation installed at any one time (within any 24 hour period); • A maximum of 69 installation vessels in the Array Area at any one time (including 12 installation vessels along the Cable Corridor and Working Area at any one time, and 7 installation vessels in the vicinity of the landfall at any one time); • A maximum of 3 helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, 7 days a week for a maximum construction period of 4 years. Within this period, offshore export cable installation may take place over a period of 12 months. **Operational and Maintenance Phase:** Disturbance and displacement from operational and maintenance activity, including increased vessel and helicopter activity: • Presence of 49 (i.e. 47 x WTG + 2 x OSP) monopile foundations with base diametre between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Presence of associated cable protection for between 110 – 122 km inter-array cables and between 35 – 40 km offshore export cables. Assumes a	

Potential impact	Phase			Project Design Option Assessed (1 and 2)	Parameter Differences Between Project Design Option 1 and 2 (if any)
	C	O	D		
				maximum of 15% of inter-array cable route, 50% of interconnector and 20% of offshore export cable route may require cable protection; • Minimum spacing of 500 m between turbines; • A maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels; • A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and • Operational phase of 36.5 years. **Decommissioning Phase:** Disturbance is anticipated to be similar in nature but of lower magnitude than during construction.	
Collision risk	X	✓	X	Project Design Option 1 **Operational Phase:** • Presence of 53 wind turbines within the Array Area: • Hub height of 155 m above Lowest Astronomical Tide (LAT); • Lower blade tip height of 37 m above LAT; • Upper blade tip height of 273 m above LAT; and • Rotor diameter of 236 m. • Average rotation speed (RPM): 1a = 6.34; 1b = 5.73 Further details are provided in NIS Volume III, Appendix 12.4: Offshore Ornithology Technical Report - Seabird Collision Risk Model Input Parameters (Revised March 2026)	Collision risk is a function of all the turbine parameters so it is necessary to undertake collision risk modelling to identify impacts for any given design. All options have been assessed.

Potential impact	Phase			Project Design Option Assessed (1 and 2)	Parameter Differences Between Project Design Option 1 and 2 (if any)
	C	O	D		
	X	✓	X	Project Design Option 2 **Operational Phase:** • Presence of 47 wind turbines within the Array Area; • Hub height of 162 m above Lowest Astronomical Tide (LAT); • Lower blade tip height of 37 m above LAT; • Upper blade tip height of 287 m above LAT; and • Rotor diameter of 250 m.	Collision risk is a function of all the turbine parameters so it is necessary to undertake collision risk modelling to identify impacts for any given design. All options have been assessed.

6.8 Assessment of Proposed Development alone for Intertidal and Offshore Ornithology Receptors

6.8.1 Howth Head Coast SPA

COLLISION RISK

Kittiwake

6.8.1.1 The COs for kittiwake in Howth Head Coast SPA can be found in Table 5.2.

6.8.1.2 See section 6.7.2.7 for a summary of relevant kittiwake ecology.

6.8.1.3 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.1.4 The Howth Head Coast SPA population of kittiwakes at designation was 2,269 AON (apparently occupied nests) which equates to a breeding adult population of 4,538. More recent surveys have reported 1,773 AON (Cummins *et al.*, 2019).

6.8.1.5 The main concern with respect to windfarm impacts for kittiwakes is the risk of collision mortality. Kittiwakes were recorded in the Array Area in all months. Collision mortality predictions were estimated using the stochastic implementation (Caneco et al., 2022) of the Band (2012) Collision risk Model (CRM). The CRM uses a combination of site specific and generic parameters for seabird flight behaviour, together with turbine parameters, to predict the number of collisions per month (Appendix 12.4). The values advised by statutory conservation agencies for some of the generic seabird parameters have been investigated in recent studies (e.g. Skov et al., 2018; Bowgen and Cook, 2018; Furness et al., 2018) and the results have indicated that the current values are highly likely to be over-estimates and result in overly precautionary results. With respect to kittiwake, there is evidence that the currently recommended flight speed (13.1 m/s) is conservative and therefore an alternative evidence-based value (8.7 m/s) was considered to be more appropriate for use in the current CRM (Skov et al. 2018).

6.8.1.6 Collision risk modelling was run using both generic flight height data (referred to as Band Option updated to Jan2) and site-specific flight height data (referred to as Band Option 1), the latter data collected using boat-based surveys at three different sites: ABWP 2 (conducted between September 2025 and January 2026), the proposed Dublin Array Wind Farm (conducted between September 2016 and December 2020) and the proposed Codling Wind Farm (conducted between October 2018 and August 2020). The proportion of kittiwake estimated to be at potential collision height (PCH, >=37m from LAT) using the generic data and the three site-specific datasets are: 3.23% (generic), 0.07% (ABWP2), 0.66% (Dublin Array) and 1.6% (Codling).

6.8.1.7 There is a clear preference for the use of site-specific flight height data in guidance from both the UK (JNCC 2024) and Ireland (DCCAE 2018b). Therefore, while results of the CRM using both Band Option 2 and Band Option 1 are presented in the CRM Technical Report (Vol 2 Appendix 12.05 Offshore Ornithology Technical Report – Collision Risk Modelling Results) the assessment is based on Option 1. As can be seen in the site-specific estimates above, these have ranged between 0.07% and 1.6% at PCH. A regional estimate was calculated as the average of these three PCH estimates weighted by their sample sizes, using a lower rotor tip height of 35m (since each survey applied slightly different height bands). This gave a combined regional PCH of 0.0072 (0.72%).

6.8.1.8 Furness (2015) proposed that the full breeding season for kittiwake extends from March to August, with a migration-free breeding season of May-July. Recent tracking of kittiwake from Wicklow Head using geolocator (GLS) tags has indicated that breeding adults return to that colony

in April and depart in August (Murphy and Jessopp 2025). Therefore, collisions in March, which would be considered part of the breeding season by Furness (2015) have been allocated to the spring migration season on the basis of these locally recorded data (note that use of site specific data to refine seasonal definitions is encouraged by UK SNCBs, e.g. Parker et al. 2022).

6.8.1.9 Using the evidence-based flight speed and CRM Option 1 (i.e. weighted average PCH)the total kittiwake breeding season collision estimate for Project Design Option 1a was estimated to be 5.0, for Project Design Option 1b was 5.8 and for Project Design Option 2 was 5.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision risk Modelling Results).

6.8.1.10 The total kittiwake nonbreeding season collision estimate for Project Design Option 1a was 25.3, for Project Design Option 1b was 28.7 and for Project Design Option 2 was 27.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.1.11 The breeding season collision estimates will potentially affect individuals from colonies within range of the Proposed Development, therefore it is necessary to estimate the relative degree of connectivity between the Proposed Development and the SPAs screened into the Stage 2 appraisal. This was undertaken using the apportioning method developed for NatureScot[7]. This method uses distance, colony size and the area of sea within the foraging range to estimate the relative contribution from each colony under consideration to the at sea abundance recorded at a given location. This calculation also included non-SPA colonies (and SPAs where kittiwakes breed but are not listed as features) to ensure that impacts were apportioned appropriately. This apportioning used the most recent colony counts where available (e.g. Burnell et al. 2023). Table 6.44 provides the calculations and outputs from the apportioning tool.

Table 6.44: Estimated proportions of kittiwake from colonies with potential connectivity to the Proposed Development. SPA colonies assessed are highlighted in bold

Colony	Distance to Proposed Development (SPA edge to Proposed Development midpoint, km)	Colony size (AON)	Estimated sea proportion	Calculated colony weight	Apportioned Colony percentage
Lambay SPA	77	3,320	0.55	0.50	12.1
Irelands eye SPA	68	455	0.55	0.09	2.1
Rockabill	89	165	0.7	0.01	0.4
Howth Head Coast SPA	64	1,773	0.55	0.36	9.4
Bray Head	44	873	0.5	0.41	10.7
Wicklow Head SPA	19	851	0.5	2.34	56.1
Saltee Islands SPA	93	1,038	0.7	0.08	2.0
Carreg Y Llam	103	614	0.55	0.05	1.3

[7] https://www.nature.scot/doc/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations#Future+Approaches+to+Apportioning

Colony	Distance to Proposed Development (SPA edge to Proposed Development midpoint, km)	Colony size (AON)	Estimated sea proportion	Calculated colony weight	Apportioned Colony percentage
Skomer	120	1544	0.68	0.07	1.9
Great Orme	164	898	0.51	0.03	0.8
Maggys Leap to Newcastle 1	154	580	0.48	0.02	0.6
Port St Mary - Sound	160	553	0.53	0.02	0.5
St Tudwals Island East	102	310	0.54	0.03	0.7
New Quay Head	125	332	0.52	0.02	0.5
Bardsey Island	78	121	0.57	0.02	0.4
Dunmore East to Red Head	121	401	0.56	0.02	0.6

6.8.1.12 During the nonbreeding season, kittiwakes disperse from their colonies and migrate to overwintering areas on both sides of the North Atlantic. Thus, a considerable number of birds from colonies around the Irish Sea and from further north (e.g. Scotland, Norway and Russia) will pass through or be resident in the Irish Sea (Frederiksen *et al.*, 2012). Frederiksen *et al.* (2012) analysed tracking data from a wide range of colonies and estimated their non-breeding season movements.

6.8.1.13 The Proposed Development is within the region Frederiksen *et al.* (2012) identified as the Celtic Seas and Biscay. This comprised birds from British and Irish colonies (55%) and North Sea, Norwegian and Russian colonies (45%). Thus, to estimate the wintering population and thereby estimate the proportion originating from any given breeding colony, the breeding numbers at colonies within this region were summed (using counts from Burnell *et al.*, 2023 to ensure contemporary values were used).

6.8.1.14 This yielded a total British and Irish population (all age classes) with connectivity to the Celtic Seas and Biscay region of 230,008. Allowing for Norwegian and Russian birds (at 45%) this total was estimated to be 418,196 (Table 6.45). Alternatively, the biologically defined minimum population scale (BDMPS) estimated by Furness (2015) for the UK Western Waters (which includes the Irish Sea) was 801,556 (autumn and spring average). Adjusting this figure to incorporate colonies along the Irish coast of the Irish Sea (Table 12.12 Vol. 2 Offshore Ornithology EIAR) a revised figure of 822,927 was obtained. Thus, the nonbreeding kittiwake population was estimated to lie within a range from 418,196 and 822,927.

Table 6.45: British and Irish kittiwake colonies associated with the Celtic Seas and Biscay nonbreeding region (as defined by Frederiksen et al., 2012) and estimated total nonbreeding population

County	Region	AON (Burnell *et al.* 2023)	Adults (AON x 2)	Immatures (@ 47%)	Total
Ireland	Antrim	16,202	32,404	28,736	61,140
Ireland	Down	656	1,312	1,163	2,475
Ireland	Dublin	5,713	11,426	10,132	21,558
Ireland	Wicklow	1,646	3,292	2,919	6,211
Ireland	Wexford	1,038	2,076	1,841	3,917
Ireland	Waterford	883	1,766	1,566	3,332
Ireland	Cork	1,579	3,158	2,800	5,958
Wales	West Glamorgan	101	202	179	381
Wales	Dyfed	2,155	4,310	3,822	8,132
Wales	Gwynedd	2,526	5,052	4,480	9,532
England	Lancashire	220	440	390	830
England	Cumbria	809	1,618	1,435	3,053
Isle of Man	-	685	1,370	1,215	2,585
England	Dorset	17	34	30	64
England	Cornwall	736	1,472	1,305	2,777
England	Devon	707	1,414	1,254	2,668
Scotland	Wigtown	444	888	787	1,675
Scotland	Ailsa Craig	490	980	869	1,849
Scotland	Sutherland	9,819	19,638	17,415	37,053
Scotland	Argyll and Bute	4,767	9,534	8,455	17,989
Scotland	Lochaber	2,145	4,290	3,804	8,094
Scotland	Skye and Lochalsh	1,327	2,654	2,354	5,008
Scotland	Western Isles	6,287	12,574	11,151	23,725
Total associated with Irish Sea colonies		60,952	121,904	108,104	230,008
Inc. Russia/Norway/North Sea (@45%)					418,196

6.8.1.15 The percentage of kittiwakes recorded within the Proposed Development predicted to originate from the Howth Head Coast SPA in the breeding season was 9.4% (Table 6.44). As the collision

predictions are derived from at sea survey data, they include all age classes so it is also necessary to estimate what portion of these are adults. Kittiwake populations consist of an estimated 53% adults, with the remaining 47% distributed among sub-adult age classes (Furness, 2015). Application of both the SPA percentage and the adult percentage to the total breeding season collision predictions indicates that 0.25 (Project Design Option 1a), 0.29 (Project Design Option 1b) and 0.28 (Project Design Option 2) collisions would be apportioned to adults from the SPA (Table 6.46).

6.8.1.16 Of the total nonbreeding season collisions, the proportion originating from the Howth Head Coast SPA population was estimated to be between 0.43% and 0.85% (3,546 adults divided into 822,927 and 418,196, respectively). Thus, between 0.11 and 0.21 (Project Design Option 1a), 0.12 and 0.24 (Project Design Option 1b) and 0.12 and 0.23 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Howth Head Coast SPA (Table 6.46).

6.8.1.17 Thus, summing the breeding season and nonbreeding seasons the maximum annual mortality for Design Option 1a was between 0.4 and 0.5, for all Design Options.

Table 6.46: Kittiwake collisions and apportioned mortalities to the Howth Head Coast SPA. B=breeding, NB=nonbreeding.

Design Option	Total collisions		B apportioning (%)		NB Apportioning (%)		SPA collisions (B=Total B x SPA% x adult %) (NB= Total NB x SPA Low/High %)			
	B	NB	SPA	Adults	SPA Low estimate	SPA High estimate	B	NB		Total
								Low	High	
1a	5.0	25.3	9.4	53.0	0.43 (=3546/ 822,927)	0.85 (=3546/ 418,196)	0.25	0.11	0.21	**0.4-0.5**
1b	5.8	28.7					0.29	0.12	0.24	**0.4-0.5**
2	5.6	27.6					0.28	0.12	0.23	**0.4-0.5**

6.8.1.18 The background adult mortality rate for kittiwake is 0.146 per annum (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (1,773 AON, Cummins *et al.*, 2019) would be 518. Addition of up to 0.5 adults to this would increase the background rate of the designated population by 0.1%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker *et al.*, 2022).

6.8.1.19 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.1% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.1.20 **Therefore, on this basis there will be no AEoI on the kittiwake feature of Howth Head Coast SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.1.21 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.2 Ireland's Eye SPA

Kittiwake

6.8.2.1 The conservation objective for kittiwake in Ireland's Eye SPA can be found in Table 5.2.

6.8.2.2 See section 6.7.2.7 for a summary of relevant kittiwake ecology.

6.8.2.3 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.2.4 The Ireland's Eye SPA population of kittiwake at designation was 941 AON which equates to a breeding adult population of 1,882. More recent surveys have reported 455 AON (Burnell *et al.*, 2023).

6.8.2.5 As discussed in paragraphs 6.8.1.5 to 6.8.1.9, the total kittiwake breeding season collision estimate for Project Design Option 1a was estimated to be 5.0, for Project Design Option 1b was 5.8 and for Project Design Option 2 was 5.6 (Appendix 12.05 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.2.6 The total kittiwake nonbreeding season collision estimate for Project Design Option 1a was 25.3, for Project Design Option 1b was 28.7 and for Project Design Option 2 was 27.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.2.7 The percentage of kittiwakes recorded within the Proposed Development predicted to originate from the Ireland's Eye SPA in the breeding season was 2.1% (Table 6.44). As the collision predictions are derived from at sea survey data, they include all age classes so it is also necessary to estimate what proportion of these are adults. Kittiwake populations consist of an estimated 53% adults, with the remaining 47% distributed among sub-adult age classes (Furness, 2015). Application of both the SPA percentage and the adult percentage to the total breeding season collision predictions indicates that between 0.06 and 0.11 collisions would be apportioned to adults from the SPA for all Project Design Options (Table 6.47).

6.8.2.8 Of the total nonbreeding season collisions, the proportion originating from the Ireland's Eye SPA population was estimated to be between 0.11% and 0.22% (910 adults divided into 822,927 and 418,196, respectively). Thus, between 0.02 and 0.06 (Project Design Option 1a), 0.03 and 0.06 (Project Design Option 1b) and 0.03 and 0.06 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Ireland's Eye SPA (Table 6.47).

6.8.2.9 Thus, summing the breeding season and nonbreeding seasons the maximum annual mortality was 0.1 for all Design Options.

Table 6.47: Kittiwake collisions and apportioned mortalities to the Ireland's Eye SPA. B=breeding, NB=nonbreeding.

Design option	Total collisions		B apportioning (%)		NB apportioning (%)		SPA collisions (B=Total B x SPA% x adult %) (NB= Total NB x SPA Low/High %)			
	B	NB	SPA	Adults	SPA Low estimate	SPA High estimate	B	NB		Total
								Low	High	
1a	5.0	25.3	2.1	53.0	0.11 (=910/ 822,927)	0.22 (=910/ 418,196)	0.06	0.03	0.06	**0.1-0.1**
1b	5.8	28.7					0.06	0.03	0.06	**0.1-0.1**
2	5.6	27.6					0.06	0.03	0.06	**0.1-0.1**

6.8.2.10 The background adult mortality rate for kittiwake is 0.146 per annum (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (910 AON, Cummins *et al.*, 2019) would be 133. Addition of 0.1 adults to this would increase the background mortality rate of the designated population by 0.07%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker *et al.*, 2022).

6.8.2.11 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.12 **Therefore, on this basis there will be no AEoI on the kittiwake feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.2.13 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Herring gull

6.8.2.14 The conservation objective for herring gull in Ireland's Eye SPA can be found in Table 5.2.

6.8.2.15 See section 6.7.2.14 for a summary of relevant herring gull ecology.

6.8.2.16 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.2.17 The Ireland's Eye SPA population of herring gull at designation was 250 pairs which equates to a breeding adult population of 500. More recent surveys have reported 318 AON (Burnell et al., 2023).

6.8.2.18 Herring gull collisions were only predicted to occur in five months, February, March, April, August and November, with none in the core breeding season months (May – July), therefore there is no breeding season connectivity of relevance between the Ireland's Eye SPA and the Proposed Development.

6.8.2.19 The total nonbreeding season collisions (i.e. not apportioned among SPA colonies) was 2.6 (Project Design Option 1a), 2.9 (Project Design Option 1b) and 2.8 (Project Design Option 2). The most recent estimate of the herring gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 8,635 AON (Burnell et al. 2023). Birds from Ireland's Eye SPA would make up 3.7% of this population, therefore 3.7% of the total collisions would equate to no more than 0.1 individuals. The adult mortality rate for herring gull is 0.166 (Horswill and Robinson 2015).

6.8.2.20 The background mortality of herring gull from Ireland's Eye SPA would therefore be 105 individuals. Addition of the apportioned mortality to this would increase the rate by 0.1% which would be undetectable against background variations (Parker et al. 2022).

6.8.2.21 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.22 **Therefore, on this basis there will be no AEoI on the herring gull feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.2.23 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Guillemot

6.8.2.24 The conservation objective for guillemot in Ireland's Eye SPA can be found in Table 5.2.

6.8.2.25 See section 6.7.2.16 for a summary of relevant guillemot ecology.

6.8.2.26 The Ireland's Eye SPA population of guillemots at designation was 2,191 individuals. More recent surveys have reported 4,410 (Burnell et al., 2023).

6.8.2.27 Guillemots fly close to the sea surface and are therefore at very low risk of collisions. However, there is evidence that guillemots may have lower densities within windfarms than outside, and therefore some displacement appears to occur (Dierschke et al., 2016). It is not clear to what extent this may affect individuals or populations, since this depends on the importance of the site (e.g. habitat quality) and the extent of alternative suitable habitat. The approach to estimating displacement impacts for UK offshore windfarms is based on a matrix formulation, with estimates of the percentage of birds predicted to be displaced on one axis and the percentage which may suffer consequent mortality on the other. Natural England and NatureScot differ in the predicted rates of displacement and mortality recommended for assessing potential impacts on auks. Natural England assume there would be 100% displacement of auks within the 2 km buffer surrounding the cable laying vessel combined with consequent mortalities for displaced birds between 1% and 10%. In contrast, NatureScot, with respect to displacement from Array Areas, recommend an auk displacement rate of 60% and consequent mortality (for displaced individuals) of 1-3% in the nonbreeding season and 3-5% in the breeding season. MacArthur Green (2019) undertook a review of available evidence for auk displacement which concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. These figures are also considered suitably precautionary for the potential displacement around construction vessels. Therefore, the assessment presents estimates using a 60% displacement rate and a 1% mortality rate in order to ensure the assessment conclusions are conservative in this regard. The guillemot breeding season was defined as April to August, with all other months treated as nonbreeding.

6.8.2.28 There are three SPAs within the mean maximum foraging range of the Proposed Development; Ireland's Eye, Lambay Island and Saltee Islands, and small numbers of guillemots breed at some non-SPA colonies. The relative contribution from each main colony to the breeding season population on the Proposed Development was estimated using the NatureScot apportioning method[7] (Table 6.48). It should be noted that although the Wicklow Head, Bray Head and Howth Head population have been included in this table, guillemot are not a designated feature of these sites and therefore is not assessed in this NIS. However, they have been included in order that impacts on the SPA populations are not over-estimated. This apportioning could potentially include other non-SPA populations of guillemot therefore the current estimates are considered precautionary as they may over-estimate the contributions from SPA populations.

Table 6.48: Estimated proportions of guillemot from colonies with potential connectivity to the Proposed Development. SPA colonies assessed are highlighted in bold

Colony	Distance to Proposed Development (SPA edge to Proposed Development midpoint, km)	Colony size (Individuals)	Estimated sea proportion	Calculated colony weight	Apportioned Colony percentage
Lambay SPA	**77**	**59,983**	**0.55**	**0.46**	**60.8**
Ireland's eye SPA	**68**	**4,410**	**0.55**	**0.04**	**5.7**
Wicklow Head SPA	19	737	0.5	0.10	13.5
Saltee Islands SPA	**93**	**25,851**	**0.7**	**0.11**	**14.1**
Bray Head	44	1,414	0.55	0.03	4.4
Howth Head	64	871	0.5	0.01	1.4

6.8.2.29 On the basis of the apportioning, 5.7% of the adult guillemots recorded on the Proposed Development in the breeding season would be predicted to originate from Ireland's Eye SPA.

CONSTRUCTION

6.8.2.30 In order to calculate the number of guillemots that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (NIS Volume III, Appendix 12.1: Offshore Ornithology Technical Report – Overview (Revised March 2026)).

6.8.2.31 During the breeding season (March to July), the seasonal peak density in corridor 1 was 15.2 birds/ km^2 and in corridor 2 was 10.5 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 114 individuals (15.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 79 (10.53 x 12.56 x 60%) along corridor 2, 193 in total. This means that, across all populations, 1.93 individuals (1%) would be at risk of mortality due to cable installation, of which 5.7% (0.11 individuals) would be at risk from Ireland's Eye SPA.

6.8.2.32 During the nonbreeding season (August to February), the seasonal peak density in corridor 1 was 25.4 birds/ km^2 and in corridor 2 was 12.2 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 191 individuals (25.4 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 92 (12.2 x 12.56 x 60%) along corridor 2, 283 in total. This means that, across all populations, 2.83 individuals (1%) would be at risk of mortality due to cable installation.

6.8.2.33 During the nonbreeding season, guillemots disperse from their colonies to overwintering areas. Thus, a considerable number of birds from colonies around the Irish Sea will pass through, or be present in, the Irish Sea. Using just the colony estimates from the last comprehensive survey (Burnell et al. 2023), the total population with high connectivity to the Irish Sea was estimated as 563,371 (Table 6.49). Alternatively, the biologically defined minimum population scale (BDMPS) estimated by Furness (2015) for the UK Western Waters (which includes the Irish Sea) was 1,139,220. Adjusting this figure to incorporate colonies along the Irish coast of the Irish Sea a

revised figure of 1,567,463 was obtained. Thus, the nonbreeding guillemot population was estimated to lie within a range from 563,371 and 1,567,463.

Table 6.49: British and Irish guillemot colonies associated with the Irish Sea nonbreeding region and estimated total nonbreeding population

County	Region	Adults	Immatures (@ 43%)	Total
Ireland	Antrim	155,890	67,033	222,923
Ireland	Dublin	65,264	28,064	93,328
Ireland	Wicklow	2,150	925	3,075
Ireland	Wexford	25,851	11,116	36,967
Ireland	Waterford	1,595	686	2,281
Ireland	Cork	6,413	2,758	9,171
Wales	West Glamorgan	169	73	242
Wales	Dyfed	68,574	29,487	98,061
Wales	Gwynedd	35,994	15,477	51,471
England	Cumbria	17,501	7,525	25,026
Isle of Man	-	5,219	2,244	7,463
Scotland	Wigtown	2,206	949	3,155
Scotland	Ailsa Craig	7,140	3,070	10,210
Total associated with Irish Sea colonies		393,966	169,405	563,371

6.8.2.34 Of the total nonbreeding season mortalities, the proportion originating from the Ireland's Eye SPA population was estimated to be between 0.28% and 0.78% (4,410 adults divided into 1,567,463 and 563,371). Thus, a maximum of 0.02 of the nonbreeding construction displacement mortalities would be apportioned to the Ireland's Eye SPA.

6.8.2.35 Thus, summing the breeding season (0.11) and nonbreeding season (0.02) construction displacement mortalities, the potential annual mortality on the Ireland's Eye SPA guillemot population would be 0.13 adults.

6.8.2.36 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 269 individuals (4,410 x 0.061). Addition of a maximum of 0.05 individuals to this would increase the background rate by 0.05%. This is a very small increase and would be undetectable against natural variations. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.2.37 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.38 **Therefore, on this basis there will be no AEoI on the guillemot feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.2.39 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.2.40 The assumption for guillemots is that displacement from windfarms occurs at a constant level to a distance of 2 km in line with guidance (SNCBs 2022) and that within this area, following NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the non-breeding seasons.

6.8.2.41 Empirical evidence indicates that auk (guillemots and razorbills) displacement from windfarms is likely to be lower than 60%, although pre- and post-construction monitoring data have yielded variable results. Auks may be displaced to some extent by some windfarms, although displacement is partial and apparently negligible in some sites (Dierschke et al., 2016). Several studies have reported displacement: guillemots were displaced at Blighbank (Vanermen et al., 2012) and German offshore windfarms (Peschko et al. 2020, 2024), were displaced only in a minority of surveys at two Dutch windfarms (OWEZ and Princess Amalia Windpark (PAWP); Leopold et al., 2011; Krijgsveld et al., 2011), and were not significantly displaced at Horns Rev (although the data suggest that slight displacement was probably occurring; Petersen et al., 2007) or Thornton Bank (Vanermen et al., 2012). However, while at least some of these studies have recorded changes in abundance and reported these as displacement, these results should be treated with caution due to limits on their power to distinguish natural inter-annual variation from windfarm effects, as noted in recent re-evaluation of some of these studies (Zuur 2018). In a bespoke study, designed to estimate displacement distances in breeding seabirds, conducted at an operational offshore wind farm in Scotland, Trinder et al. (2024) found no evidence that guillemot avoided turbines, with no apparent variation in densities within the wind farm irrespective of distance to turbines.

6.8.2.42 The maximum 5% mortality rate for auks is unconfirmed and this magnitude of impact is not supported in the literature. Given that this is approximately the same level as the existing natural adult annual mortality for guillemot from all other sources of mortality (baseline mortality is 6.1%; Horswill and Robinson 2015), it is highly improbable that such an effect would occur. Mortality due to displacement might arise if displacement increased competition for resources in the remaining areas of auk habitat outside the windfarm. However, it should be recognised that the mortality rate due to displacement may well be 0% since the increase in density of auks outside the windfarm area will be negligible (because the rest of the available habitat is vast) and is very unlikely to be as high as 5%.

6.8.2.43 MacArthur Green (2019) undertook a review of available evidence for auk displacement and concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. Thus, this assessment presents displacement in the range from 50% displaced and 1% mortality to 60% displaced and 3% - 5% mortality (breeding season) and 1% - 3% mortality (non-breading season), with a focus on the evidence-based rates of 50% displaced and 1% mortality.

6.8.2.44 During the breeding season (March to July), the seasonal peak abundance in the Array Area and 2 km buffer was 9,010 birds. Thus, in total, between 162 (60% displaced and 3% mortality) and 270 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 45 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness, 2015) and 5.7% would be at risk from Irelands Eye SPA (Table 6.48), which combined equate to 1.46, 5.23 and 8.77 individual adults from the SPA at the respective rates (50x1, 60x3 and 60x5).

6.8.2.45 During the nonbreeding season (August to February), the seasonal peak abundance in the Array Area and 2 km buffer was 3,991 birds. Thus, in total, between 24 (60% displaced and 1% mortality) and 72 (60% displaced, 30% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 20 (50% displaced and 1% mortality). Of these, 0.028% to 0.78% would be adults at risk from Ireland's Eye SPA (Table 6.49) which equate to maximums of 0.16, 0.19 and 0.56 individuals at the respective rates.

6.8.2.46 Thus, summing the breeding season (1.46, 5.23, 8.77) and nonbreeding season (0.16, 0.19, 0.56) operational displacement mortalities, the potential annual mortality on the Ireland's Eye SPA guillemot population would be 1.62, 5.41 and 9.33 adults, respectively.

6.8.2.47 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 269 individuals (4,410 x 0.061). Addition of individuals subject to displacement mortality would increase the background rate by 0.6%, 2.0% and 3.5%. While the most precautionary displacement rates (60% displaced and 3-5% mortality) result in an increase in background mortality above the 1% threshold of detectability (Parker et al. 2022), this is not the case at the evidence-based rates (50% displaced and 1% mortality). Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.48 **Therefore, on this basis there will be no AEoI on the guillemot feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.2.49 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Razorbill

6.8.2.50 The conservation objective for razorbill in Ireland's Eye SPA can be found in Table 5.2.

6.8.2.51 See section 6.7.2.18 for a summary of relevant razorbill ecology.

6.8.2.52 The Ireland's Eye SPA population of razorbill at designation was 522 individuals. More recent surveys have reported 1,600 (Burnell et al., 2023).

6.8.2.53 Razorbills fly close to the sea surface and are therefore at very low risk of collisions. However, there is evidence that razorbills may have lower densities within windfarms than outside, and therefore some displacement appears to occur (Dierschke et al., 2016). It is not clear to what extent this may affect individuals or populations, since this depends on the importance of the site (e.g. habitat quality) and the extent of alternative suitable habitat. The approach to estimating displacement impacts for UK offshore windfarms is based on a matrix formulation, with estimates of the percentage of birds predicted to be displaced on one axis and the percentage which may suffer consequent mortality on the other. Natural England and NatureScot differ in the predicted rates of displacement and mortality recommended for assessing potential impacts on auks. Natural England assume there would be 100% displacement of auks within the 2 km buffer surrounding the cable laying vessel combined with consequent mortalities for displaced birds between 1% and 10%. In contrast, NatureScot, with respect to displacement from Array Areas, recommend an auk displacement rate of 60% and consequent mortality (for displaced individuals) of 1-3% in the nonbreeding season and 3-5% in the breeding season. MacArthur Green (2019) undertook a review of available evidence for auk displacement which concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. These figures are also considered suitably precautionary for the potential displacement around construction vessels. Therefore, the assessment presents estimates using

a 60% displacement rate and a 1% mortality rate in order to ensure the assessment conclusions are conservative in this regard. The razorbill breeding season was defined as April to July, autumn migration is defined as August to October, winter as November and December and spring migration as January to March.

6.8.2.54 There are three SPAs within the mean maximum foraging range of the Proposed Development; Ireland's Eye, Lambay Island and Saltee Islands, and small numbers of razorbills breeding at some non-SPA colonies. The relative contribution from each main colony to the breeding season population on the Proposed Development was estimated using the NatureScot apportioning method[7] (Table 6.50). It should be noted that although the Wicklow Head population has been included in this table, this population is not a designated feature and therefore is not assessed in this NIS. However, it has been included in order that impacts on the SPA populations are not over-estimated. This apportioning could potentially include other non-SPA populations of razorbill therefore the current estimates are considered precautionary as they may over-estimate the contributions from SPA populations.

Table 6.50: Estimated proportions of razorbill from colonies with potential connectivity to the Proposed Development. SPA colonies assessed are highlighted in bold

Colony	Distance to Proposed Development (SPA edge to Proposed Development midpoint, km)	Colony size (Individuals)	Estimated sea proportion	Calculated colony weight	Apportioned Colony percentage
Lambay SPA	**77**	**7,353**	**0.55**	**0.34**	**34.9**
Ireland's Eye SPA	**68**	**1,600**	**0.55**	**0.10**	**9.7**
Wicklow Head SPA	19	184	0.5	0.15	15.8
Saltee Islands SPA	**93**	**6,519**	**0.7**	**0.16**	**16.7**
Bardsey Island	80	3834	0.72	0.13	12.9
Bray Head	44	150	0.54	0.02	2.2
Howth	64	279	0.53	0.02	2.0
South Stack Cliffs	84	1378	0.81	0.04	3.7
Carreg y Llam	93	438	0.68	0.01	1.2
Lleyn Peninsula	83	292	0.7	0.01	0.9

6.8.2.55 On the basis of the apportioning, 9.7% of the adult razorbills recorded on the Proposed Development in the breeding season would be predicted to originate from Ireland's Eye SPA.

6.8.2.56 During the nonbreeding seasons, razorbills disperse from their colonies to overwintering areas. Thus, a considerable number of birds from colonies around the Irish Sea will pass through, or be present in, the Irish Sea. Using the colony estimates from the last comprehensive survey (Burnell et al. 2023), the total population with high connectivity to the Irish Sea was estimated as 96,268 (Table 6.51). Alternatively, the biologically defined minimum population scale (BDMPS) estimated

by Furness (2015) for the UK Western Waters (which includes the Irish Sea) was 518,417 (autumn, winter and spring average). Adjusting this figure to incorporate colonies along the Irish coast of the Irish Sea a revised figure of 554,179 was obtained. Thus, the nonbreeding razorbill population was estimated to lie within a range from 96,268 and 554,179.

Table 6.51: British and Irish razorbill colonies associated with the Irish Sea nonbreeding region and estimated total nonbreeding population

County	Region	Adults	Immatures (@ 43%)	Total
Ireland	Antrim	24,730	10,634	35,364
Ireland	Dublin	9,232	3,970	13,202
Ireland	Wicklow	184	79	263
Ireland	Wexford	6,519	2,803	9,322
Ireland	Waterford	294	126	420
Ireland	Cork	571	246	817
Wales	West Glamorgan	83	36	119
Wales	Dyfed	18,090	7,779	25,869
Wales	Gwynedd	5,467	2,351	7,818
England	Cumbria	94	40	134
Isle of Man	-	626	269	895
Scotland	Wigtown	269	116	385
Scotland	Ailsa Craig	1,161	499	1,660
Total associated with Irish Sea colonies		67,320	28,948	96,268

CONSTRUCTION

6.8.2.57 In order to calculate the number of razorbills that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (NIS Volume III, Appendix 12.1: Offshore Ornithology Technical Report – Overview (Revised March 2026)).

6.8.2.58 During the breeding season (April to July), the seasonal peak density in corridor 1 was 1.24 birds/ km^2 and in corridor 2 was 0.51 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 9.3 individuals (1.24 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 3.8 (0.3 x 12.56 x 60%) along corridor 2, 13.1 in total. This means that, across all populations, 0.13 individuals (1%) would be at risk of mortality due to cable installation, of which 9.7% (0.013 individuals) would be at risk from Ireland's Eye SPA.

6.8.2.59 During autumn migration (August to October), at a seasonal peak density of 2.173 birds/ km^2 (corridor 1) and 2.69 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 16.3 individuals (2.17 x 12.56 x 60%) could be at risk of

displacement along corridor 1 and 20.34 (2.69 x 12.56 x 60%) along corridor 2, 36.6 in total. This means that 0.37 individuals (1%) are at risk of mortality due to cable installation.

6.8.2.60 During the winter period (November and December), at a seasonal peak density of 8.2 birds/ km^2 (corridor 1) and 4.9 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 61.8 individuals (8.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 36.9 (4.95 x 12.56 x 60%) along corridor 2, 98.7 in total. This means that 1.0 individuals (1%) are at risk of mortality due to cable installation.

6.8.2.61 During the spring migration (January to March), at a seasonal peak density of 0.66 birds/ km^2 (corridor 1) and 1.8 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 5 individuals (0.66 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 13.5 (0.3 x 12.56 x 60%) along corridor 2, 18.5 in total. This means that 0.18 individuals (1%) are at risk of mortality due to cable installation.

6.8.2.62 Of the total autumn, winter and spring mortalities, the proportion originating from the Ireland's Eye SPA population was estimated to be between 0.29 and 1.66% (1,600 adults divided into 554,179 and 96,268). Thus, of the total nonbreeding construction displacement mortality of 1.6 (0.37, 1.0, 0.18), a maximum of 0.03 of the nonbreeding mortalities would be apportioned to the Ireland's Eye SPA.

6.8.2.63 Thus, summing the breeding season (0.013) and nonbreeding season (0.03) construction displacement mortalities, the potential annual mortality on the Ireland's Eye SPA razorbill population would be 0.043 adults.

6.8.2.64 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 168 individuals (1,600 x 0.105). Addition of a maximum of 0.043 individuals to this would increase the background rate by 0.02%. This is a very small increase and would be undetectable against natural variations. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.2.65 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.66 **Therefore, on this basis there will be no AEoI on the razorbill feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.2.67 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.2.68 The assumption for razorbills is that displacement from windfarms occurs at a constant level to a distance of 2 km in line with guidance (SNCBs 2022) and that within this area, following NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the nonbreeding seasons.

6.8.2.69 Empirical evidence indicates that auk (guillemot and razorbill) displacement from windfarms is likely to be lower than 60%, although pre- and post-construction monitoring data have yielded variable results (see Section 6.8.2.41 for a discussion).

6.8.2.70 The maximum 5% mortality rate for auks is unconfirmed and this magnitude of impact is not supported in the literature. Given that this is equivalent to half of the existing natural adult annual mortality for razorbill from all other sources of mortality (baseline mortality is 10.5%; Horswill and

Robinson 2015), it is highly improbable that such an effect would occur. Mortality due to displacement might arise if displacement increased competition for resources in the remaining areas of auk habitat outside the windfarm. However, it should be recognised that the mortality rate due to displacement may well be 0% since the increase in density of auks outside the windfarm area will be negligible (because the rest of the available habitat is vast) and is very unlikely to be as high as 5%.

6.8.2.71 MacArthur Green (2019) undertook a review of available evidence for auk displacement and concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. Thus, this assessment presents displacement in the range from 50% displaced and 1% mortality to 60% displaced and 3%-5%mortality breeding season) and 1%-3% mortality (nonbreeding seasons), with a focus on the evidence-based rates of 50% displaced and 1% mortality.

6.8.2.72 During the breeding season (April to July), the seasonal peak abundance in the Array Area and 2 km buffer was 488 birds. Thus, in total, between 8.8 (60% displaced and 3% mortality) and 14.6 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 2.4 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness, 2015) and 9.7% would be at risk from Ireland's Eye SPA (Table 6.50) which combined equate to 0.13, 0.49 and 0.81 individuals at the respective rates (60% and 3%, 60% and 5% and 50% and 1%).

6.8.2.73 During the autumn season (August to October), the seasonal peak abundance in the Array Area and 2 km buffer was 2,570 birds. Thus, in total, between 15.4 (60% displaced and 1% mortality) and 46.3 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.2.74 During the winter (November and December), the seasonal peak abundance in the Array Area and 2 km buffer was 2,558 birds. Thus, in total, between 15.36 (60% displaced and 1% mortality) and 46.0 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.2.75 During the spring season (January to March), the seasonal peak abundance in the Array Area and 2 km buffer was 3,711 birds. Thus, in total, between 22 (60% displaced and 1% mortality) and 66.8 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence based prediction of 18.6 (50% displaced and 1% mortality).

6.8.2.76 Of the total autumn, winter and spring mortalities, the proportion originating from the Ireland's Eye SPA population was estimated to be between 0.29 and 1.66% (1,600 adults divided into 554,179 and 96,268). Thus, of the total nonbreeding operational displacement mortality of 44.2, 52.7 and 159.1 (at each combination of rates respectively), maximums of between 0.74 (44.2 x 1.66%) and 2.6 (159.1 x 1.66%) of the nonbreeding mortalities would be apportioned to the Ireland's Eye SPA.

6.8.2.77 Thus, summing the breeding season mortality (0.13, 0.49 and 0.81) and the nonbreeding season mortality (0.7, 0.87 and 2.6) the annual mortality on the Ireland's Eye SPA razorbill population would be 0.2, 1.36 and 3.41 adults respectively.

6.8.2.78 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 168 individuals (1,600 x 0.105). Addition of individuals subject to displacement mortality would increase the background rate by 0.11%, 0.81% and 2.0%. While the most precautionary displacement rates result in an increase in background mortality above the 1% threshold of detectability (Parker et al. 2022), this is not the case at the evidence-based rates (50% displaced and 1% mortality). Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate,

the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.2.79 **Therefore, on this basis there will be no AEoI on the razorbill feature of Ireland's Eye SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.2.80 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.3 Lambay Island SPA

Kittiwake

6.8.3.1 The conservation objective for kittiwake in Lambay Island SPA can be found in Table 5.2.

6.8.3.2 See section 6.7.2.7 for a summary of relevant kittiwake ecology.

6.8.3.3 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.3.4 The Lambay Island SPA population of kittiwake at designation was 4,091 AON which equates to a breeding adult population of 8,182. More recent surveys have reported 3,320 AON (Burnell *et al.*, 2023).

6.8.3.5 As discussed in paragraphs 6.8.1.5 to 6.8.1.9, the total kittiwake breeding season collision estimate for Project Design Option 1a was estimated to be 5.0, for Project Design Option 1b was 5.8 and for Project Design Option 2 was 5.6 (Appendix 12.05 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.3.6 The total kittiwake nonbreeding season collision estimate for Project Design Option 1a was 25.3, for Project Design Option 1b was 28.7 and for Project Design Option 2 was 27.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.3.7 The percentage of kittiwakes on the Proposed Development predicted to originate from Lambay Island SPA in the breeding season was 12.1% (Table 6.44). As the collision predictions are derived from at sea survey data, they include all age classes so it is also necessary to estimate what proportion of these are adults. Kittiwake populations consist of an estimated 53% adults, with the remaining 47% distributed among sub-adult age classes (Furness, 2015). Application of both the SPA percentage and the adult percentage to the total breeding season collision predictions indicates that 0.32 (Project Design Option 1a), 0.37(Project Design Option 1b) and 0.36 (Project Design Option 2) of the breeding collisions would be apportioned to the Lambay Island SPA (Table 6.52).

6.8.3.8 Of the total nonbreeding season collisions, the proportion originating from the Lambay Island SPA population was estimated to be between 0.81% and 1.59% (6,640 adults divided into 822,927 and 418,196, respectively). Thus, between 0.20 and 0.40 (Project Design Option 1a), 0.23 and 0.46 (Project Design Option 1b) and 0.22 and 0.44 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Lambay Island SPA (Table 6.52).

6.8.3.9 Thus, summing the breeding and nonbreeding season collision estimates, the annual mortality for Lambay Island SPA would be between 0.5 and 0.7 (Project Design Option 1a), 0.6 and 0.8 (Project Design Option 1b) and 0.6 and 0.8 (Project Design Option 2).

Table 6.52: Kittiwake collisions and apportioned mortalities to the Lambay Island SPA. B=breeding, NB=nonbreeding.

Design option	Total collisions		B apportioning (%)		NB apportioning (%)		SPA collisions (B=Total B x SPA% x adult %) (NB= Total NB x SPA Low/High %)			
	B	NB	SPA	Adults	SPA Low estimate	SPA High estimate	B	NB		Total
								Low	High	
1a	5.0	25.3	12.1	53.0	0.81 (=6,640/ 822,927)	1.59 (=6,640/ 418,196)	0.32	0.20	0.40	**0.5-0.7**
1b	5.8	28.7					0.37	0.23	0.46	**0.6-0.8**
2	5.6	27.6					0.36	0.22	0.44	**0.6-0.8**

6.8.3.10 The background adult mortality rate for kittiwake is 0.146 (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (3,320 AON, Cummins *et al.*, 2019) would be 969. Addition of 0.5 to 0.8 adults to these would increase the background rate of the designated population by 0.05 to 0.08%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker *et al.* 2022).

6.8.3.11 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.12 **Therefore, on this basis there will be no AEoI on the kittiwake feature of Lambay Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.3.13 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Herring gull

6.8.3.14 The conservation objective for herring gull in Lambay Island SPA can be found in Table 5.2.

6.8.3.15 See section 6.7.2.14 for a summary of relevant herring gull ecology.

6.8.3.16 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.3.17 The Lambay Island SPA population of herring gull at designation was 1,806 pairs which equates to a breeding adult population of 3,612 individuals. More recent surveys have reported 906 AON (Burnell et al., 2023).

6.8.3.18 Herring gull collisions were only predicted to occur in five months, February, March, April, August and November, with none in the core breeding season months (May-July), therefore there is no breeding season connectivity of relevance between the Lambay Island SPA and the Proposed Development.

6.8.3.19 The total nonbreeding season collisions (i.e. not apportioned among SPA colonies) was 2.6 (Project Design Option 1a), 2.9 (Project Design Option 1b) and 2.8 (Project Design Option 2). The most recent estimate of the herring gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 8,635 AON (Burnell et al. 2023). Birds from Lambay Island SPA would make up 10.5% of this population, therefore 10.5% of the total collisions would equate to 0.30 individuals. The adult mortality rate for herring gull is 0.166

(Horswill and Robinson 2015). The background mortality of herring gull from Lambay Island SPA would therefore be 301 individuals. Addition of the apportioned mortality to this would increase the rate by 0.1% which would be undetectable against background variations (Parker et al. 2022).

6.8.3.20 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.1% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.21 **Therefore, on this basis there will be no AEoI on the herring gull feature of Lambay Island SPA, as defined by the Conservation Objectives of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.3.22 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Lesser black-backed gull

6.8.3.23 The conservation objective for lesser black-backed gull in Lambay Island SPA can be found in Table 5.2.

6.8.3.24 See section 6.7.2.15 for a summary of relevant lesser black-backed gull ecology.

6.8.3.25 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.3.26 The Lambay Island SPA population of lesser black-backed gull at designation was 309 pairs which equates to a breeding adult population of 618 individuals. More recent surveys have reported 345 AON (Burnell et al. 2023).

6.8.3.27 Lesser black-backed gull collisions were only predicted to occur in one month, March, with none in the breeding season, therefore there is no breeding season connectivity of relevance between the Lambay Island SPA and the Proposed Development.

6.8.3.28 The total nonbreeding season collisions (i.e. not apportioned among SPA colonies) was 0.8 (Project Design Option 1a), 0.8 (Project Design Option 1b) and 0.8 (Project Design Option 2). The most recent estimate of the lesser black-backed gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 5,362 AON (Burnell et al. 2023). Birds from Lambay Island SPA would make up 6.4% of this population, therefore 6.4% of the total collisions would equate to 0.05 individuals. The adult mortality rate for lesser black-backed gull is 0.115 (Horswill and Robinson 2015). The background mortality of lesser black-backed gull from Lambay Island SPA would therefore be 79 individuals. Addition of the apportioned mortality to this would increase the rate by 0.06% which would be undetectable against background variations (Parker et al. 2022).

6.8.3.29 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.06% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.30 **Therefore, on this basis there will be no AEoI on the lesser black-backed gull feature of Lambay Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.3.31 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Guillemot

6.8.3.32 The conservation objective for guillemot in Lambay Island SPA can be found in Table 5.2.

6.8.3.33 See Section 6.7.2.16 for a summary of relevant guillemot ecology and Section 6.8.2.27 for assessment methods.

6.8.3.34 The Lambay Island SPA population of guillemot at designation was 59,824 individuals. More recent surveys have reported 59,983 (Burnell et al., 2023).

6.8.3.35 On the basis of the apportioning (Table 6.48), 60.8% of the adult guillemots recorded on the Proposed Development in the breeding season would be predicted to originate from Lambay Island SPA. During the nonbreeding season, between 3.8% and 10.6% of the adult guillemots recorded on the Proposed Development in the breeding season would be predicted to originate from Lambay Island SPA (59,824 divided by 563,371 and 1,567,463 respectively).

CONSTRUCTION

6.8.3.36 In order to calculate the number of guillemots that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (NIS Volume III, Appendix Offshore Ornithology Technical Report – Overview (Revised March 2026)).

6.8.3.37 During the breeding season (March to July), the seasonal peak density in corridor 1 was 15.2 birds/ km^2 and in corridor 2 was 10.5 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 114 individuals (15.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 79 (10.5 x 12.56 x 60%) along corridor 2, 193 in total. This means that, across all populations, 1.93 individuals (1%) would be at risk of mortality due to cable installation, of which 60.8% (1.2 individuals) would be at risk from Lambay Island SPA.

6.8.3.38 During the nonbreeding season (August to February), the seasonal peak density in corridor 1 was 25.4 birds/ km2 and in corridor 2 was 12.2 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 191 individuals (25.4 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 92 (12.2 x 12.56 x 60%) along corridor 2, 283 in total. This means that, across all populations, 2.83 individuals (1%) would be at risk of mortality due to cable installation, of which between 3.8% and 10.6% (Table 6.49Table 6.49), 0.1 and 0.3 individuals, would be at risk from Lambay Island SPA.

6.8.3.39 Thus, summing the breeding season (1.2) and maximum nonbreeding season (0.3) construction displacement mortalities, the potential annual mortality on the Lambay Island SPA guillemot population would be 1.5 adults.

6.8.3.40 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 3,659 individuals (59,983 x 0.061). Addition of a maximum of 1.5 individuals to this would increase the background rate by 0.04%. This is a very small increase and would be undetectable against natural variations. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022). Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.41 **Therefore, on this basis there will be no AEoI on the guillemot feature of Lambay Island SPA, as defined by the Conservation Objectives of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.3.42 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.3.43 As discussed above (Section 6.8.2.27) the assumption for guillemots is that displacement from windfarms occurs at a constant level to a distance of 2 km in line with guidance (SNCBs 2022) and that within this area, following NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the nonbreeding seasons, with evidence-based rates of 50% displaced and 1% mortality (MacArthur Green, 2019).

6.8.3.44 During the breeding season (March to July), the seasonal peak abundance in the Array Area and 2 km buffer was 9,010 birds. Thus, in total, between 162 (60% displaced and 3% mortality) and 270 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 45 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness 2015) and, 60.8% would be at risk from Lambay Island SPA (Table 6.48) which combined equate to 15.6, 56.1 and 93.6, individual adults from the SPA at the respective rates (50x1, 60x3 and 60x5).

6.8.3.45 During the nonbreeding season (August to February), the seasonal peak abundance in the Array Area and 2 km buffer was 3,991 birds. Thus, in total, between 24 (60% displaced and 1% mortality) and 72 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 20 (50% displaced and 1% mortality). Of these, between 3.8% and 10.6% would be adults at risk from Lambay Island SPA (Table 6.49Table 6.49) which equate to maximums of 2.1, 2.5 and 7.6 individuals at the respective rates.

6.8.3.46 Thus, summing the breeding season (15.6, 56.1, 93.6) and nonbreeding season (12.1, 2.5, 7.6) operational displacement mortalities, the potential annual mortality on the Lambay Island SPA guillemot population would be 17.7, 58.6 and 101.2 adults, respectively.

6.8.3.47 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 3,659 individuals (59,983 x 0.061). Addition of individuals subject to displacement mortality would increase the background rate by 0.48%, 1.6% and 2.7%. While the most precautionary displacement rates result in an increase in background mortality above the 1% threshold of detectability (Parker *et al.* 2022), this is not the case at the evidence based rates (50% displaced and 1% mortality).

6.8.3.48 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.49 **Therefore, on this basis there will be no AEoI on the guillemot feature of Lambay Island SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.3.50 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Razorbill

6.8.3.51 The conservation objective for razorbill in Lambay Island SPA can be found in Table 5.2.

6.8.3.52 See Section 6.7.2.18 for a summary of relevant razorbill ecology and see section 6.8.2.53 for assessment methods.

6.8.3.53 The Lambay Island SPA population of razorbill at designation was 4,337 individuals. More recent surveys have reported 7,353 (Burnell et al., 2023).

6.8.3.54 On the basis of the apportioning (Table 6.50Table 6.50), 34.9% of the adult razorbills recorded on the Proposed Development in the breeding season would be predicted to originate from Lambay Island SPA. During the nonbreeding season, between 1.3% and 7.6% of the adult razorbills recorded on the Proposed Development in the breeding season would be predicted to originate from Lambay Island SPA (7,353 divided by 96,268 and 554,179 respectively).

CONSTRUCTION

6.8.3.55 In order to calculate the number of razorbills that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (Appendix 12.1: Offshore Ornithology Offshore Ornithology Technical Report - Overview).

6.8.3.56 During the breeding season (April to July), the seasonal peak density in corridor 1 was 1.24 birds/ km^2 and in corridor 2 was 0.51 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 9.3 individuals (1.24 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 3.8 (0.3 x 12.56 x 60%) along corridor 2, 13.1 in total. This means that, across all populations, 0.13 individuals (1%) would be at risk of mortality due to cable installation, of which 34.9 (0.04 individuals) would be at risk from Lambay Island SPA.

6.8.3.57 During autumn migration (August to October), at a seasonal peak density of 2.17 birds/ km2 (corridor 1) and 2.69 birds/ km2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km2), a maximum of 16.3 individuals (2.17 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 20.3 (2.69 x 12.56 x 60%) along corridor 2, 36.6 in total. This means that 0.37 individuals (1%) are at risk of mortality due to cable installation.

6.8.3.58 During the winter period (November and December), at a seasonal peak density of 8.2 birds/ km2 (corridor 1) and 4.9 birds/ km2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km2), a maximum of 61.8 individuals (8.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 36.9 (4.9 x 12.56 x 60%) along corridor 2, 98.7 in total. This means that 1.0 individuals (1%) are at risk of mortality due to cable installation.

6.8.3.59 During the spring migration (January to March), at a seasonal peak density of 0.66 birds/ km2 (corridor 1) and 1.8 birds/ km2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km2), a maximum of 5 individuals (0.66 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 13.5 (0.3 x 12.56 x 60%) along corridor 2, 18.5 in total. This means that 0.18 individuals (1%) are at risk of mortality due to cable installation.

6.8.3.60 Of the total autumn, winter and spring mortalities, the proportion originating from the Lambay Island SPA population was estimated to be between 1.3% and 7.6%. Thus, of the total nonbreeding construction displacement mortality of 1.6 (0.37 1.0, 0.18), a maximum of 0.12 of the nonbreeding mortalities would be apportioned to the Lambay Island SPA.

6.8.3.61 Thus, summing the breeding season (0.04) and nonbreeding season (0.12) construction displacement mortalities, the potential annual mortality on the Lambay Island SPA razorbill population would be 0.16 adults.

6.8.3.62 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 779 individuals (7,353 x 0.105). Addition of a maximum of 0.16 individuals to this would increase the background rate by 0.02%. This is a very small increase and would be undetectable against natural variations. The

threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.3.63 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.64 **Therefore, on this basis there will be no AEoI on the razorbill feature of Lambay Island SPA, as defined by the COs of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.3.65 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.3.66 The assumption for razorbills is that displacement from windfarms occurs at a constant level to a distance of 2 km in line with guidance (SNCBs 2022) and that within this area, following NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the nonbreeding seasons.

6.8.3.67 Empirical evidence indicates that auk (guillemot and razorbill) displacement from windfarms is likely to be lower than 60%, although pre- and post-construction monitoring data have yielded variable results (see Section 6.8.2.41 for a discussion).

6.8.3.68 The 5% mortality rate for auks is unconfirmed and this magnitude of impact is not supported in the literature. Given that this is equivalent to half of the existing natural adult annual mortality for razorbill from all other sources of mortality (baseline mortality is 10.5%; Horswill and Robinson 2015), it is highly improbable that such an effect would occur. Mortality due to displacement might arise if displacement increased competition for resources in the remaining areas of auk habitat outside the windfarm. However, it should be recognised that the mortality rate due to displacement may well be 0% since the increase in density of auks outside the windfarm area will be negligible (because the rest of the available habitat is vast) and is very unlikely to be as high as 5%.

6.8.3.69 MacArthur Green (2019) undertook a review of available evidence for auk displacement and concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. Thus, this assessment presents displacement in the range from 50% displaced and 1% mortality to 60% displaced and 3%-5% mortality (breeding season) and 1%-3% mortality (nonbreeding seasons), with a focus on the evidence-based rates of 50% displaced and 1% mortality.

6.8.3.70 During the breeding season (April to July), the seasonal peak abundance in the Array Area and 2 km buffer was 488 birds. Thus, in total, between 8.8 (60% displaced and 3% mortality) and 14.6 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 2.4 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness 2015) and 34.9% would be at risk from Lambay Island SPA (Table 6.50Table 6.50) which combined equate to 0.48, 1.75 and 2.9 individuals at the respective rates.

6.8.3.71 During the autumn season (August to October), the seasonal peak abundance in the Array Area and 2 km buffer was 2,570 birds. Thus, in total, between 15.4 (60% displaced and 1% mortality) and 46.3 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.3.72 During the winter (November and December), the seasonal peak abundance in the Array Area and 2 km buffer was 2,558 birds. Thus, in total, between 15.3 (60% displaced and 1% mortality)

and 46.0 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.3.73 During the spring season (January to March), the seasonal peak abundance in the Array Area and 2 km buffer was 3,711 birds. Thus, in total, between 22 (60% displaced and 1% mortality) and 66.8 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence based prediction of 18.6 (50% displaced and 1% mortality).

6.8.3.74 Of the total autumn, winter and spring mortalities, the proportion originating from the Lambay Island SPA population was estimated to be between 1.3% and 7.6% (7,353 adults divided into 554,179 and 96,268). Thus, of the total nonbreeding operational displacement mortality of 44.2, 52.7 and 159.1 (at each combination of rates respectively), maximums of between 3.3 (44.2 x 7.6%) and 12.1 (159.1 x 7.6%) of the nonbreeding mortalities would be apportioned to the Lambay Island SPA.

6.8.3.75 Thus, summing the breeding season mortality (0.48, 1.75 and 2.9) and the nonbreeding season mortality (3.3, 4.0 and 12.1) the annual mortality on the Lambay Island SPA razorbill population would be 3.78, 5.75 and 15.0 adults respectively.

6.8.3.76 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 779 individuals (7,353 x 0.105). Addition of individuals subject to displacement mortality would increase the background rate by 0.48%, 0.71% and 1.92%. While the most precautionary displacement rates result in an increase in background mortality above the 1% threshold of detectability (Parker et al. 2022), this is not the case at the evidence-based rates (50% displaced and 1% mortality).

6.8.3.77 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.3.78 **Therefore, on this basis there will be no AEoI on the razorbill feature of Lambay Island SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.3.79 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.4 Saltee Island SPA

Kittiwake

6.8.4.1 The conservation objective for kittiwake in Saltee Islands SPA can be found in Table 5.2.

6.8.4.2 See Section 6.7.2.7 for a summary of relevant kittiwake ecology.

6.8.4.3 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.4.4 The Saltee Islands SPA population of kittiwake at designation was 2,125 AON which equates to a breeding adult population of 4,250. More recent surveys have reported 1,038 AON (Burnell *et al.*, 2023).

6.8.4.5 As discussed in paragraphs 6.8.1.5 to 6.8.1.9, the total kittiwake breeding season collision estimate for Project Design Option 1a was estimated to be 5.0, for Project Design Option 1b was 5.8 and for Project Design Option 2 was 5.6 (Appendix 12.05 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.4.6 The total kittiwake nonbreeding season collision estimate for Project Design Option 1a was 25.3, for Project Design Option 1b was 28.7 and for Project Design Option 2 was 27.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.4.7 The percentage of kittiwakes recorded within the Proposed Development predicted to originate from the Saltee Islands SPA in the breeding season was 2.0% (Table 6.44). As the collision predictions are derived from at sea survey data, they include all age classes so it is also necessary to estimate what proportion of these are adults. Kittiwake populations consist of an estimated 53% adults, with the remaining 47% distributed among sub-adult age classes (Furness, 2015). Application of both the SPA percentage and the adult percentage to the total breeding season collision predictions indicates that between 0.05 and 0.10 collisions would be apportioned to adults from the SPA for all Project Design Options (Table 6.53).

6.8.4.8 Of the total nonbreeding season collisions, the proportion originating from the Saltee Islands SPA population was estimated to be between 0.25% and 0.49% (2,076 adults divided into 822,927 and 418,196, respectively). Thus, between 0.05 and 0.13 (Project Design Option 1a), 0.06 and 0.14 (Project Design Option 1b) and 0.06 and 0.14 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Saltee Islands SPA (Table 6.53).

6.8.4.9 Thus, summing the breeding season and nonbreeding seasons the maximum annual mortality for the Saltee Islands SPA would be between 0.1 and 0.2 for all design options.

Table 6.53: Kittiwake collisions and apportioned mortalities to the Saltee Islands SPA B=breeding, NB=nonbreeding

Design option	Total collisions		B apportioning (%)		NB apportioning (%)		SPA collisions (B=Total B x SPA% x adult %) (NB= Total NB x SPA Low/High %)			
	B	NB	SPA	Adults	SPA Low estimate	SPA High estimate	B	NB		Total
								Low	High	
1a	5.0	25.3	2.0	53.0	0.25 (=2,076/ 822,927)	0.49 (=2,076/ 418,196)	0.05	0.06	0.13	**0.1-0.2**
1b	5.8	28.7					0.06	0.07	0.14	**0.1-0.2**
2	5.6	27.6					0.06	0.07	0.14	**0.1-0.2**

6.8.4.10 The background adult mortality rate for kittiwake is 0.146 (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (1,038 AON, Cummins *et al.*, 2019) would be 303. Addition of 0.1 to 0.2 adults to these would increase the background rate of the designated population by 0.03 to 0.06%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker *et al.* 2022).

6.8.4.11 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.12 **Therefore, on this basis there will be no AEoI on the kittiwake feature of Saltee Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.4.13 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Gannet

6.8.4.14 The conservation objective for gannet in Saltee Islands SPA can be found in Table 5.2.

6.8.4.15 See section 6.7.2.11 for a summary of relevant gannet ecology.

6.8.4.16 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.4.17 The Saltee Islands SPA population of gannet at designation was 2,446 pairs (apparently occupied nests) which equates to a breeding adult population of 4,892. More recent surveys have reported 4,772 AON (Burnell et al., 2023).

6.8.4.18 Using the evidence-based rates, the total gannet breeding season collision estimates for the Proposed Development was 0.9, (Project Design Option 1a, Project Design Option 1b and Project Design Option 2). The total gannet nonbreeding season collision estimates for Project Design Option 1a was 0.4, for Project Design Option 1b was 0.5 and for Project Design Option 2 was 0.5.

6.8.4.19 The percentage of gannets on the Proposed Development predicted to originate from Saltee Islands SPA in the breeding season was 100%, on the basis that there is very little overlap in the foraging ranges from different gannet colonies and records from tracking studies has indicated that birds in the region of Arklow are expected to have originated from Saltee Islands SPA (Wakefield et al. 2013). Thus, all of the breeding season collisions (0.9) were apportioned to this SPA.

6.8.4.20 In addition, of the peak of 72 birds recorded in the breeding season which could be at risk of displacement, even at the highest combination of displacement (80%) and mortality (1%) this adds only 1 individual to the assessment.

6.8.4.21 As these collision and displacement predictions are derived from at sea survey data, they include all age classes. Gannet populations consist of an estimated 55% adults, with the remaining 45% distributed among sub-adult age classes (Furness, 2015). Thus, using these age class proportions the Saltee Islands SPA adult displacement and collisions in the breeding season would be 1.0 (0.9 + 1.0 x 55% Project Design Option 1a, Project Design Option 1b and Project Design Option 2).

6.8.4.22 Gannets range very widely during the nonbreeding season and many colonies could have the potential to pass through the Irish Sea in autumn and spring. The most recent all Britain and Ireland population estimate is 360,748 AON (Burnell et al. 2023). However, in order to be precautionary, for this assessment only Irish colonies in the Irish Sea have been considered. This gives a population of 12,386 AON which equates to an all age class population of 46,676 individuals (=12,836 x 2 x 1.82, to account for adults (x2) and immatures (x1.82)).

6.8.4.23 The nonbreeding season total gannet collision estimates, summing the autumn and spring BDMPS periods, were 0.4 (Project Design Option 1a), 0.4 (Project Design Option 1b) and 0.5 (Project Design Option 2). The proportion originating from the Saltee Islands SPA population was estimated to be 20% (9,544 adults divided into 46,676). Thus, 0.08 (Project Design Option 1a), 0.1 (Project Design Option 1b) and 0.1 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Saltee Islands SPA. There were no predicted displacement mortalities in the nonbreeding seasons so no displacement mortality is apportioned to the SPA in the nonbreeding seasons.

6.8.4.24 Thus, summing the breeding season displacement and collision estimates 1.0 (for Options 1a, 1b and 2 respectively) and nonbreeding season collision estimates 0.08, 0.08 and 0.1 (for Options 1a, 1b and 2 respectively), the annual mortality for Saltee Islands SPA adults would be 1.08 (Project Design Option 1a), 1.08 (Project Design Option 1b) and 1.1 (Project Design Option 2).

6.8.4.25 The background adult mortality rate for gannet is 0.081 (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (4,772 AON) would be 773. Addition of up to 1.1 adults to this would increase the background rate of the designated population by 0.14%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.4.26 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.14% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.27 **Therefore, on this basis there will be no AEoI on the gannet feature of Saltee Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.4.28 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Herring gull

6.8.4.29 The conservation objective for herring gull in Saltee Islands SPA can be found in Table 5.2.

6.8.4.30 See section 6.7.2.14 for a summary of relevant herring gull ecology.

6.8.4.31 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.4.32 The Saltee Islands SPA population of herring gull at designation was 73 pairs which equates to a breeding adult population of 146 individuals. More recent surveys have reported 115 AON (Burnell et al., 2023).

6.8.4.33 Herring gull collisions were only predicted to occur in five months, February, March, April, August and November, with none in the core breeding season months (May-July), therefore there is no breeding season connectivity of relevance between the Saltee Islands SPA and the Proposed Development.

6.8.4.34 The total nonbreeding season collisions (i.e. not apportioned among SPA colonies) were estimated at 2.6 (Project Design Option 1a), 2.9 (Project Design Option 1b) and 2.8 (Project Design Option 2). The most recent estimate of the herring gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 8,635 AON (Burnell et al. 2023). Birds from Saltee Islands SPA would make up 1.3% of this population, therefore 1.3% of the total collisions would equate to 0.02 individuals. The adult mortality rate for herring gull is 0.166 (Horswill and Robinson 2015). The background mortality of herring gull from Saltee Islands SPA would therefore be 38 individuals. Addition of the apportioned mortality to this would increase the rate by 0.1% which would be undetectable against background variations (Parker et al. 2022).

6.8.4.35 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.1% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.36 **Therefore, on this basis there will be no AEoI on the herring gull feature of Saltee Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.4.37 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Lesser black-backed gull

6.8.4.38 The conservation objective for lesser black-backed gull in Saltee Islands SPA can be found in Table 5.2.

6.8.4.39 See section 6.7.2.15 for a summary of relevant lesser black-backed gull ecology.

6.8.4.40 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.4.41 The Saltee Islands SPA population of lesser black-backed gull at designation was 175 pairs which equates to a breeding adult population of 350 individuals. More recent surveys have reported 251 AON (Burnell et al., 2023).

6.8.4.42 Lesser black-backed gull collisions were only predicted to occur in one month, March, with none in the breeding season, therefore there is no breeding season connectivity of relevance between the Saltee Islands SPA and the Proposed Development.

6.8.4.43 The total nonbreeding season collisions (i.e. not apportioned among SPA colonies) were estimated at 0.8 (Project Design Option 1a), 0.8 (Project Design Option 1b) and 0.8 (Project Design Option 2). The most recent estimate of the lesser black-backed gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 5,362 AON (Burnell et al. 2023). Birds from Saltee Islands SPA would make up 9.4% of this population, therefore 9.4% of the total collisions would equate to 0.07 individuals. The adult mortality rate for lesser black-backed gull is 0.115 (Horswill and Robinson 2015). The background mortality of lesser black-backed gull from Saltee Islands SPA would therefore be 58 individuals. Addition of the apportioned mortality to this would increase the rate by 0.13% which would be undetectable against background variations (Parker et al. 2022). Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold (in this case around 0.13% rather than 1%), even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.44 **Therefore, on this basis there will be no AEoI on the lesser black-backed gull feature of Saltee Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.4.45 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Guillemot

6.8.4.46 The conservation objective for guillemot in Saltee Islands SPA can be found in Table 5.2.

6.8.4.47 See section 6.7.2.16 for a summary of relevant guillemot ecology and section 6.8.2.27 for assessment methods.

6.8.4.48 The Saltee Islands SPA population of guillemot at designation was 21,436 individuals. More recent surveys have reported 25,581 (Burnell et al. 2023).

6.8.4.49 On the basis of the apportioning (Table 6.48), 14.1% of the adult guillemots recorded on the Proposed Development in the breeding season would be predicted to originate from Saltee Islands SPA. During the nonbreeding season, between 1.6% and 4.5% of the adult guillemots recorded on the Proposed Development in the breeding season would be predicted to originate from Saltee Island SPA (25,581 divided by 563,371 and 1,567,463 respectively).

CONSTRUCTION

6.8.4.50 In order to calculate the number of guillemots that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (Appendix 12.1: Offshore Ornithology Technical Report - Overview).

6.8.4.51 During the breeding season (March to July), the seasonal peak density in corridor 1 was 15.2 birds/ km^2 and in corridor 2 was 10.5 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 114 individuals (15.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 79 (10.5 x 12.56 x 60%) along corridor 2, 193 in total. This means that, across all populations, 1.93 individuals (1%) would be at risk of mortality due to cable installation, of which 14.1(0.27 individuals) would be at risk from Saltee Islands SPA.

6.8.4.52 During the nonbreeding season (August to February), the seasonal peak density in corridor 1 was 25.4 birds/ km^2 and in corridor 2 was 12.2 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 191 individuals (25.4 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 92 (12.2 x 12.56 x 60%) along corridor 2, 283 in total. This means that, across all populations, 2.83 individuals (1%) would be at risk of mortality due to cable installation, of which between 1.6% and 4.5% (Table 6.49), 0.04 and 0.13 individuals, would be at risk from Saltee Islands SPA.

6.8.4.53 Thus, summing the breeding season (0.27) and maximum nonbreeding season (0.13) construction displacement mortalities, the potential annual mortality on the Saltee Islands SPA guillemot population would be 0.4 adults.

6.8.4.54 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 1,577 individuals (25,851 x 0.061). Addition of a maximum of 0.4 individuals to this would increase the background rate by 0.02%. This is a very small increase and would be undetectable against natural variations. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.4.55 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.56 **Therefore, on this basis there will be no AEoI on the guillemot feature of Saltee Island SPA, as defined by the Conservation Objectivess of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.4.57 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.4.58 As discussed above (Section 6.8.2.27), the assumption for guillemots is that displacement from windfarms occurs at a constant level to a distance of 2 km, in line with guidance (SNCBs 2022) and that within this area, following NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the nonbreeding seasons, with evidence based rates of 50% displaced and 1% mortality (MacArthur Green 2019).

6.8.4.59 During the breeding season (March to July), the seasonal peak abundance in the Array Area and 2 km buffer was 9,010 birds. Thus, in total, between 162 (60% displaced and 3% mortality) and 270 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-

based prediction of 45 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness 2015) and 14.1% would be at risk from Saltee Islands SPA (Table 6.48) which combined equate to 3.6, 13.0 and 21.7 individuals at the respective rates.

6.8.4.60 During the nonbreeding season (August to February), the seasonal peak abundance in the Array Area and 2 km buffer was 3,991 birds. Thus, in total, between 24 (60% displaced and 1% mortality) and 72 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 20 (50% displaced and 1% mortality). Of these, between 1.6% and 4.5% would be adults at risk from Saltee Islands SPA (Table 6.49) which equate to maximums of 0.9, 1.1 and 3.2 individuals at the respective rates.

6.8.4.61 Thus, summing the breeding season (3.6, 13.0 and 21.7) and nonbreeding season (0.9, 11.1 and 3.2) operational displacement mortalities, the potential annual mortality on the Saltee Islands SPA guillemot population would be 4.5, 14.1and 24.9 adults, respectively.

6.8.4.62 The background adult mortality rate for guillemot is 0.061 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 1,577 individuals (25,851 x 0.061). Addition of individuals subject to displacement mortality would increase the background rate by 0.28%, 0.89% and 1.58%. While the most precautionary displacement rates result in an increase in background mortality above the 1% threshold of detectability (Parker *et al.* 2022), this is not the case at the evidence based rates (50% displaced and 1% mortality).

6.8.4.63 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.64 **Therefore, on this basis there will be no AEoI on the guillemot feature of Saltee Island SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.4.65 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Razorbill

6.8.4.66 The conservation objective for razorbill in Saltee Islands SPA can be found in Table 5.2.

6.8.4.67 See section 6.7.2.18 for a summary of relevant razorbill ecology and section 6.8.2.53 for assessment methods..

6.8.4.68 The Saltee Islands SPA population of razorbill at designation was 5,200 individuals. More recent surveys have reported 6,519 (Burnell et al. 2023).

6.8.4.69 On the basis of the apportioning (Table 6.50), 16.7% of the adult razorbills recorded on the Proposed Development in the breeding season would be predicted to originate from Saltee Islands SPA. During the nonbreeding season, between 1.2% and 6.8% of the adult razorbills recorded on the Proposed Development in the breeding season would be predicted to originate from Saltee Islands SPA (6,519 divided by 96,268 and 554,179 respectively).

CONSTRUCTION

6.8.4.70 In order to calculate the number of razorbills that potentially would be at risk of displacement from the Cable Corridor and Working Area during the cable laying process, the density of this species in the Cable Corridor and Working Area (corridor 1 and corridor 2) was estimated from the site-specific surveys carried out for the Proposed Development (NIS Volume III, Appendix 12.1: Offshore Ornithology Technical Report – Overview (Revised March 2026)).

6.8.4.71 During the breeding season (April to July), the seasonal peak density in corridor 1 was 1.24 birds/ km^2 and in corridor 2 was 0.51 birds/ km^2. Within a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), 9.3 individuals (1.24 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 3.8 (0.3 x 12.56 x 60%) along corridor 2, 13.1 in total. This means that, across all populations, 0.13 individuals (1%) would be at risk of mortality due to cable installation, of which 16.7 (0.02 individuals) would be at risk from Saltee Islands SPA.

6.8.4.72 During autumn migration (August to October), at a seasonal peak density of 2.17 birds/ km2 (corridor 1) and 2.69 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 16.3 individuals (2.17 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 20.3 (2.69 x 12.56 x 60%) along corridor 2, 36.6 in total. This means that 0.37 individuals (1%) are at risk of mortality due to cable installation.

6.8.4.73 During the winter period (November and December), at a seasonal peak density of 8.2 birds/ km^2 (corridor 1) and 4.9 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 61.8 individuals (8.2 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 36.9 (4.9 x 12.56 x 60%) along corridor 2, 98.7 in total. This means that 1.0 individuals (1%) are at risk of mortality due to cable installation.

6.8.4.74 During the spring migration (January to March), at a seasonal peak density of 0.66 birds/ km^2 (corridor 1) and 1.8 birds/ km^2 (corridor 2), with a 2 km radius of disturbance around a cable laying vessel (12.56 km^2), a maximum of 5 individuals (0.66 x 12.56 x 60%) could be at risk of displacement along corridor 1 and 13.5 (0.3 x 12.56 x 60%) along corridor 2, 18.5 in total. This means that 0.18 individuals (1%) are at risk of mortality due to cable installation.

6.8.4.75 Of the total autumn, winter and spring mortalities, the proportion originating from the Saltee Island SPA population was estimated to be between 1.1% and 6.8%. Thus, of the total nonbreeding construction displacement mortality of 1.6 (0.37, 1.0, 0.18), a maximum of 0.11 of the nonbreeding mortalities would be apportioned to the Saltee Island SPA.

6.8.4.76 Thus, summing the breeding season (0.02) and nonbreeding season (0.114) construction displacement mortalities, the potential annual mortality on the Saltee Island SPA razorbill population would be 0.13 adults.

6.8.4.77 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 684 individuals (6,519 x 0.105). Addition of a maximum of 0.13 individuals to this would increase the background rate by 0.02%. This is a very small increase and would be undetectable against natural variations. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker et al. 2022).

6.8.4.78 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.79 **Therefore, on this basis there will be no AEoI on the razorbill feature of Saltee Island SPA, as defined by the COs of the site, as a result of construction displacement effects considered above, from Project Design Option 1.**

6.8.4.80 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

OPERATIONAL

6.8.4.81 The assumption for razorbills is that displacement from windfarms occurs at a constant level to a distance of 2 km in line with guidance (SNCBs 2022) and that within this area, following

NatureScot guidance, 60% of birds will be displaced of which mortality would be between 3% and 5% in the breeding season and between 1% and 3% in the nonbreeding seasons.

6.8.4.82 Empirical evidence indicates that auk (guillemots and razorbills) displacement from windfarms is likely to be lower than 60%, although pre- and post-construction monitoring data have yielded variable results (see Section 6.8.2.41 for a discussion).

6.8.4.83 The 5% mortality rate for auks is unconfirmed and this magnitude of impact is not supported in the literature. Given that this is equivalent to half of the existing natural adult annual mortality for razorbill from all other sources of mortality (baseline mortality is 10.5%; Horswill and Robinson 2015), it is highly improbable that such an effect would occur. Mortality due to displacement might arise if displacement increased competition for resources in the remaining areas of auk habitat outside the windfarm. However, it should be recognised that the mortality rate due to displacement may well be 0% since the increase in density of auks outside the windfarm area will be negligible (because the rest of the available habitat is vast) and is very unlikely to be as high as 5%.

6.8.4.84 MacArthur Green (2019) undertook a review of available evidence for auk displacement and concluded that precautionary rates of displacement and mortality from operational windfarms would be 50% and 1% respectively. Thus, this assessment presents displacement in the range from 50% displaced and 1% mortality to60% displaced and 3%-5% mortality (breeding season) and 1%-3% mortality (nonbreeding seasons), with a focus on the evidence-based rates of 50% displaced and 1% mortality.

6.8.4.85 During the breeding season (April to July), the seasonal peak abundance in the Array Area and 2 km buffer was 488 birds. Thus, in total, between 8.8 (60% displaced and 3% mortality) and 14.6 (60% displaced, 5% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 2.4 (50% displaced and 1% mortality). Of these, 57% would be adults (Furness 2015) and, 16.7% would be at risk from Saltee Islands SPA (Table 6.50) equate to 0.22, 0.84 and 1.39 individuals at the respective rates.

6.8.4.86 During the autumn season (August to October), the seasonal peak abundance in the Array Area and 2 km buffer was 2,570 birds. Thus, in total, between 15.4 (60% displaced and 1% mortality) and 46.3 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.4.87 During the winter (November and December), the seasonal peak abundance in the Array Area and 2 km buffer was 2,558 birds. Thus, in total, between 15.3 (60% displaced and 1% mortality) and 46.0 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence-based prediction of 12.8 (50% displaced and 1% mortality).

6.8.4.88 During the spring season (January to March), the seasonal peak abundance in the Array Area and 2 km buffer was 3,711 birds. Thus, in total, between 22 (60% displaced and 1% mortality) and 66.8 (60% displaced, 3% mortality) could be at risk of displacement mortality, with the evidence based prediction of 18.6 (50% displaced and 1% mortality).

6.8.4.89 Of the total autumn, winter and spring mortalities, the proportion originating from the Saltee Islands SPA population was estimated to be between 1.1% and 6.8% (6,519 adults divided into 554,179 and 96,268). Thus, of the total nonbreeding operational displacement mortality of 44.2, 52.7 and 159.1 (at each combination of rates respectively), between 3.0 (44.2 x 6.8%) and 26.6 (159.1 x 6.8%) of the nonbreeding mortalities would be apportioned to the Saltee Island SPA.

6.8.4.90 Thus, summing the breeding season mortality (0.22, 0.84 and 1.39) and the nonbreeding season mortality (3.0, 3.6 and 26.6) the annual mortality on the Saltee Island SPA razorbill population would be 3.22, 4.44 and 28.0 adults respectively

6.8.4.91 The background adult mortality rate for razorbill is 0.105 (Horswill and Robinson, 2015), which indicates that the natural mortality for this SPA population would be 684 individuals (6,519 x

0.105). Addition of individuals subject to displacement mortality would increase the background rate by 0.47%, 0.65% and 4.1%. While the most precautionary displacement rates result in an increase in background mortality above the 1% threshold of detectability (Parker et al. 2022), this is not the case at the evidence-based rates (50% displaced and 1% mortality).

6.8.4.92 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.4.93 **Therefore, on this basis there will be no AEoI on the razorbill feature of Saltee Island SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.4.94 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.5 Skerries Island SPA

Herring Gull

6.8.5.1 The conservation objective for herring gull in Skerries Islands SPA can be found in Table 5.2.

6.8.5.2 See section 6.7.2.14 for a summary of relevant herring gull ecology.

6.8.5.3 The only potential impacts are present within the operational and maintenance phase and so therefore the other phases of development are not considered within this qualifying features assessment.

6.8.5.4 The Skerries Islands SPA population of herring gull at designation was 250 pairs which equates to a breeding adult population of 500 individuals. No update is available for this site (Burnell *et al.* 2023).

6.8.5.5 Herring gull collisions were only predicted to occur in five months, February, March, April, August and November, with none in the core breeding season months (May – July), therefore there is no breeding season connectivity between the Skerries Islands SPA and the Proposed Development.

6.8.5.6 The total nonbreeding season collision estimates (i.e. not apportioned among SPA colonies) were 2.6 (Project Design Option 1a), 2.9 (Project Design Option 1b) and 2.8 (Project Design Option 2). The most recent estimate of the herring gull population from Northern Irish and Irish colonies with connectivity to the Irish Sea (from Antrim to Waterford) is 8,635 AON (Burnell *et al.* 2023). Birds from Skerries Islands SPA would make up 2.9% of this population, therefore 2.9% of the total collisions would equate to 0.084 individuals. The adult mortality rate for herring gull is 0.166 (Horswill and Robinson 2015). The background mortality of herring gull from Skerries Islands SPA would therefore be 83 individuals. Addition of the apportioned mortality to this would increase the rate by 0.1% which would be undetectable against background variations (Parker *et al.* 2022).

6.8.5.7 Since the additional mortality based on a reasonable but precautionary assessment is far below the 1% threshold, even if the impact was substantially greater than this (already precautionary) estimate, the impact would still most likely fall well below the 1% threshold, and so we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.5.8 **Therefore, on this basis there will be no AEoI on the herring gull feature of Skerries Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.5.9 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.6 The Murrough SPA

Red-throated diver

6.8.6.1 The conservation objective for red-throated diver in the Murrough SPA can be found in Table 5.2.

6.8.6.2 See section 6.7.2.21 for a summary of relevant red-throated diver ecology.

6.8.6.3 The Murrough SPA population of red-throated diver is reported as 91 in September and 131 in November/December (NPWS, 2024f). Prior to that the 5 year mean peak count was reported as 32 (The Murrough SPA synopsis [8]).

6.8.6.4 Red-throated divers are considered to have a very high general sensitivity to disturbance and displacement and they are prone to avoiding disturbed areas such as shipping lanes, as well as offshore windfarms (Garthe and Hüppop 2004; Bellebaum et al. 2006; Petersen et al. 2006; Schwemmer et al. 2011 Furness and Wade 2012; Furness et al. 2013; Bradbury et al. 2014; Percival 2014; Dierschke et al., 2017; Mendell et al. 2019; Irwin et al. 2019).

6.8.6.5 A detailed review of the evidence for displacement of red-throated divers from offshore windfarms, and the likely effects on displacement on population mortality rates, was included in Norfolk Vanguard Ltd (2019). Based on this review, most studies found a marked decrease (around 90%) in red-throated diver densities within operational windfarms when compared to pre-construction data, however the distance outside the windfarm over which diver densities were reduced was more variable. At the extremes, Percival (2013) found no reduction in diver density outside Thanet offshore windfarm even within 500m of the outer wind turbines, whereas Mendel et al. (2019) found a statistically detectable reduction in density up to 16km from the outer wind turbines. The source of this variation is uncertain but may relate to ecological conditions or to the seascape/landscape of the site. Behaviour may vary seasonally, for example, depending on ecological constraints at different times of year, such as may arise during flight-feather moult when birds may become flightless. Birds might show greater avoidance distances where they are unconstrained. At sites where suitable or optimal habitat is limited, birds might show lower displacement distances because of constraints imposed by habitat availability. Alternatively, divers may show stronger avoidance of visible structures at sea where these are against an 'empty' background seascape. Where structures are in front of a cluttered background of coast, perhaps especially a coast with industrial development, wind turbines may appear less prominent and/or may be seen by divers as less threatening. The largest distances from offshore windfarms over which diver densities were reduced were in the German Bight, a very large area of open sea far from the coast. The smallest displacement distances from offshore windfarms were at sites close to the UK coast where anthropogenic influences on the coastal scenery are high (e.g. Thanet wind farm and Kentish Flats wind farm) (MacArthur Green 2019a).

6.8.6.6 Spatial modelling analysis of red-throated diver data in the Outer Thames area over a 20 year period during which several offshore wind farms were constructed was provided as part of the East Anglia ONE North application[9]. This study, which compared distributions before and after the construction of the wind farms, found a maximum reduction in diver density in the wind farms of 33% which declined to zero at around 7km.

6.8.6.7 Therefore, since there is considerable variation in the reported distances over which diver densities appear to be influenced by offshore wind farms, the UK SNCBs advise that a precautionary buffer of 10 km is appropriate for considering the potential range of effect.

[8] https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004186.pdf

[9] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010077/EN010077-005242-ExA.AS-2.D11.V5%20EA1N&EA2%20Displacement%20of%20red-throated%20divers%20in%20the%20Outer%20Thames%20Estuary.pdf

6.8.6.8 Therefore, the potential impact on the SPA is not a result of displacement from the Proposed Development area itself, nor from within the 10 km buffer of the Array, but rather that the spatial distribution of red-throated divers within the SPA in the area of overlap between the 10 km buffer and the SPA may be affected.

6.8.6.9 The area of the overlap between the 10 km buffer and the SPA is 5.3 km^2 while the total area of the SPA is 97.7 km^2. Thus, the overlap represents 5.4% of the SPA area, and is located in the south-eastern corner of the SPA (i.e. the seaward boundary). Calculations of the density of red-throated divers in the SPA and how that might change if birds avoid the overlap area are provided in Table 6.54: The Murrough SPA red-throated diver abundance and estimated density changes due to the Proposed Development. The Murrough SPA has an area of 97.7 km^2 and the overlap with the 10km buffer is 5.3km^{2}Table 6.54.

Table 6.54: The Murrough SPA red-throated diver abundance and estimated density changes due to the Proposed Development. The Murrough SPA has an area of 97.7 km^2 and the overlap with the 10km buffer is 5.3km^2

Data source	Red-throated diver population estimate	Density across SPA (population/ area)	Abundance in overlap zone	Density in reduced area (SPA minus overlap)	Increase in density (km2)	Increase in density (%)
SPA original citation	32	0.327	1.75	0.346	0.019	5.8%
NPWS 2024	91	0.931	4.96	0.985	0.053	
	131	1.341	7.15	1.418	0.077	

6.8.6.10 If it is assumed that red-throated divers are uniformly distributed through the SPA and that they will completely avoid the overlap area and relocate within the SPA, the density across the remainder of the SPA would increase by up to 0.077 birds/km2, which would be a 5.8% increase. However, it is clear from the ObSERVE data (Jessopp et al. 2018) that most divers were observed along the coast with very few recorded at the outer edge of the SPA in the region of the overlap. Furthermore, it is unlikely that the overlap area would be completely avoided, but at worst would have reduced densities. The range of densities reported by Jessopp et al. (2018) in the area of the SPA was up to 2-5 birds/km2. Thus, even the highest increase in density, from 1.34 to 1.42 birds per km2 would not elevate the density above observed levels.

6.8.6.11 The above calculations can be considered highly precautionary and represent the most precautionary magnitude of impact. The specific conservation objective to which this potential impact relates states that the target is to ensure there is a:

> *Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target (NPWS 2024)*

6.8.6.12 Since even the most precautionary scenario will result in a small re-distribution which would not increase density in the remainder of the SPA above recorded levels it can be concluded that this effect would be undetectable and we can be confident that there is no reasonable scientific doubt as to the absence of an effect.

6.8.6.13 **Therefore, on this basis there will be no AEoI on the red-throated diver feature of The Murrough SPA, as defined by the COs of the site, as a result of operational displacement effects considered above, from Project Design Option 1.**

6.8.6.14 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.7 Wicklow Head SPA

Kittiwake

6.8.7.1 The conservation objective for kittiwake in Wicklow Head SPA can be found in Table 5.2.

6.8.7.2 See section 6.7.2.7 for a summary of relevant kittiwake ecology.

6.8.7.3 The Wicklow Head SPA population of kittiwake at designation was 956 AON which equates to a breeding adult population of 1,912. More recent surveys have reported 851 AON (ABPWP2 2024)).

6.8.7.4 As discussed in paragraphs 6.8.1.5 to 6.8.1.9, the total kittiwake breeding season collision estimate for Project Design Option 1a was estimated to be 5.0, for Project Design Option 1b was 5.8 and for Project Design Option 2 was 5.6 (Appendix 12.05 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.7.5 The total kittiwake nonbreeding season collision estimate for Project Design Option 1a was 25.3, for Project Design Option 1b was 28.7 and for Project Design Option 2 was 27.6 (Appendix 12.5 Offshore Ornithology Technical Report – Collision Risk Modelling Results).

6.8.7.6 The percentage of kittiwakes on the Proposed Development predicted to originate from Wicklow Head SPA in the breeding season was 56.1% (Table 6.44). As the collision predictions are derived from at sea survey data, they include all age classes so it is also necessary to estimate what proportion of these are adults. Kittiwake populations consist of an estimated 53% adults with the remaining 47% distributed among sub-adult classes (Furness, 2015). Application of both the SPA percentage and the adult percentage to the total breeding season collision predictions indicates 1.5 (Project Design Option 1a), 1.7(Project Design Option 1b) and 1.7 (Project Design Option 2) breeding season collisions would be apportioned to the SPA.

6.8.7.7 Of the total nonbreeding season collisions, the proportion originating from the Wicklow Head SPA population was estimated to be between 0.21% and 0.41% (1,702 adults divided into 822,927 and 418,196, respectively). Thus, between 0.05 and 0.10 (Project Design Option 1a), 0.05 and 0.12 (Project Design Option 1b) and 0.05 and 0.11 (Project Design Option 2) of the nonbreeding collisions would be apportioned to the Wicklow Head SPA (Table 6.55).

6.8.7.8 Thus, summing the breeding season and nonbreeding seasons the maximum annual mortality was between 1.5 and 1.8 for all Design Options.

Table 6.55 Kittiwake collisions and apportioned mortalities to the Wicklow Head SPA B = breeding, NB = nonbreeding

Design option	Total collisions		B apportioning (%)		NB apportioning (%)		SPA collisions (B=Total B x SPA% x adult %) (NB= Total NB x SPA Low/High %)			
	B	NB	SPA	Adults	SPA Low estimate	SPA High estimate	B	NB		Total
								Low	High	
1a	5.0	25.3	56.1	53.0	0.21 (=1,702/ 822,927)	0.41 (=1,702/ 418,196)	1.49	0.05	0.10	**1.5-1.6**
1b	5.8	28.7					1.72	0.06	0.12	**1.8-1.8**
2	5.6	27.6					1.67	0.06	0.11	**1.7-1.8**

6.8.7.9 The background adult mortality rate for kittiwake is 0.146 (Horswill and Robinson 2015), which indicates that the natural mortality for the SPA population using the most recent count (851 AON) would be 248. Addition of 1.5 to 1.8 adults to these would increase the background rate of the designated population by 0.6% to 0.7%. The threshold below which increases in background mortality are considered to be undetectable against natural variations is 1% (Parker *et al.* 2022).

6.8.7.10 Since the additional mortality based on a reasonable but precautionary assessment is below the 1% threshold, there is little risk of an effect on the population. However, given the proximity of the Proposed Development to the SPA and that the upper end of the range of predicted mortalities approaches the 1% threshold (0.72%), additional consideration of the potential impact on the SPA population has been undertaken using the results from a kittiwake population model of the Wicklow Head SPA population (Volume III, Technical Appendix 12.10 Offshore Ornithology: Kittiwake Population Viability Analysis).

6.8.7.11 The kittiwake population viability analysis (PVA) was run both with the incorporation of density dependent regulation (to simulate the natural feedback processes by which wild populations are regulated) and without this regulation (density independent). The justification for using the results of density independent models, rather than those from more realistic density dependent ones, is typically because it is considered there is insufficient information available to define the relationships between a population's size and the rates of survival and reproduction (which are expected to vary as levels of competition among members of the population for limiting resources varies). However, this situation does not prevent reasonable assumptions being made about the action of density dependent regulation, for example derived from similar species or alternative locations, with which to parameterise a population model. Furthermore, natural populations of seabirds will, with rare exceptions, almost never be expected to change in size without experiencing density dependent regulation. In that sense, a density independent model for a seabird population can be considered to be the *most* unrealistic form of population model. Thus, by presenting results from both a density independent model and a precautionary density dependent one (i.e. with the feedback set to be relatively weak), the results are intended to bracket the range of expected responses, albeit that (for the reasons outlined above and discussed in more detail in Volume III, Technical Appendix 12.10 Offshore Ornithology: Kittiwake Population Viability Analysis) the density dependent results are expected to be more appropriate.

6.8.7.12 The model results are presented as comparisons of the predicted population size and population growth rate between unimpacted (baseline) model runs and impacted ones, presented as proportions and referred to as counterfactuals: CPS (counterfactual of population size) and CPGR (counterfactual of population growth rate).

6.8.7.13 As well as density dependent and independent runs, each version of the model was also run with two alternative productivity rates. The first was calculated as the average of all the years of available productivity data (2001-2010, 2018-2024), giving a value of 0.677 and the second used just the most recent five-year period (2020-2024) and gave a value of 0.582. It is not straightforward to determine which of these is more appropriate for making predictions of future population change, since they represent different potential situations. However, while the two rates generate different predictions for the future population size, the counterfactual metrics are in fact almost identical. In other words, while the different productivity rates predict different rates of population growth, the comparison of that growth with and without the additional wind farm impact is almost completely unaffected by the productivity rate used: counterfactual differences were less than 1/100th of a percent different between models with a productivity of 0.677 and ones with 0.582 (see Volume III, Technical Appendix 12.10 Offshore Ornithology: Kittiwake Population Viability Analysis for details). It therefore makes no difference which value is used when using the PVA to consider the potential impacts of ABWP2.

6.8.7.14 Due to the differences in how population change is predicted using density independent and density dependent models, it is also appropriate to give greater weight to a different counterfactual for each type. Density independent population projections undergo exponential increase, so the baseline and impacted populations will diverge by an ever-increasing margin as the duration of the simulation increases. However, the growth rate of the two projections will be constant, hence the CPGR is more appropriate than the CPS. In contrast, density dependent projections will stabilise around a level, with no net growth or decline. Thus, there is little to be gained from comparing the growth rate of baseline and impacted runs, since these will be the same in both (once the populations have settled to their new levels). However, the size of the population will differ. Hence, for density dependent simulations the CPS is more appropriate than the CPGR. The relevant metrics, in line with the above considerations, have been highlighted in the results (Table 6.56)

Table 6.56: Summary outputs from Wicklow Head SPA kittiwake population model, mean values (and 95% confidence intervals). Shaded cells indicate the most appropriate metric for either density independent (CPGR) or density dependent (CPS) models. All values taken from the lower productivity (0.582) model (i.e. more precautionary).

Impact magnitude (annual adult collisions)	Model type	Counterfactual of population size (CPS)	Counterfactual of population growth rate (CPGR)
1	Density independent	0.9766 (0.8249-1.1468)	0.9993 (0.9944-1.0038)
	Density dependent	0.9923 (0.9246-1.0634)	0.9997 (0.9968-1.0027)
2	Density independent	0.9529 (0.8117-1.1264)	0.9985 (0.9938-1.0033)
	Density dependent	0.9840 (0.9154-1.0557)	0.9995 (0.9965-1.0024)
3	Density independent	0.9311 (0.7870-1.0970)	0.9978 (0.9929-1.0025)
	Density dependent	0.9760 (0.9068-1.0471)	0.9992 (0.9962-1.0022)

6.8.7.15 The first aspect to note is that the 95% confidence intervals for annual mortality for both the CPS (counterfactual of population size) and CPGR (counterfactual of population growth rate) for all of the 16 results presented include 1.0. Therefore, none of these results would be considered to indicate a statistically significant effect.

6.8.7.16 The CPGR for the density independent models indicates that for a maximum mortality of 3 (greater than the maximum predicted mortality of 1.8), the growth rate would be reduced by 0.2% (0.9978) and the population would be reduced by no more than 2.4% (0.9760). The latter would indicate the number of pairs, after 36.5 years, might be reduced from 850 to 830, while the former

(density independent) suggests there might be a reduction in the long-term growth rate from 1.005 (the average observed growth rate between 1999 and 2024) to 1.002 (=1.005 x 0.9978).

6.8.7.17 As noted above, while the strength and form of density dependence in kittiwake populations is not fully understood, there is strong evidence for density dependence acting on kittiwake populations in terms of their competition for food around the colony (Furness and Birkhead, 1984; Ford *et al.*, 2007, Wakefield *et al.*, 2017), and in terms of colony growth and net immigration rates (Coulson 2011; Miller *et al.*, 2019). There is also strong evidence that kittiwake colonies form a meta-population with high levels of immigration of young birds into colonies (Coulson, 2011). That flow of immigrant birds will also tend to reduce the assessed impact of additional mortality at the focal colony compared with population models (such as used here) that assume each SPA population to be a closed population (Miller *et al.*, 2019). Therefore, the prediction that the population size would be 2.4% smaller than it would otherwise have been without the additional mortality, is considered to represent a more reliable guide to the level of potential impact on the population. It is also important to note that the SPA population in 2025 had increased to an estimated 1,077 pairs (NIS Volume III, Appendix 12.16: Wicklow Head Seabird Monitoring (RFI March 2026) and therefore this assessment included an additional source of precaution since the impacts were modelled against a slightly smaller population size of 850 pairs.

In addition, the owner and operator of the ABWP1, Arklow Energy Limited has commenced pre-application consultation (Case Reference OC27.321635) with the appropriate local authorities to decommission ABWP1, which has reached the end of its operating life. The ABWP1 team has begun engaging with the Maritime Area Regulatory Authority (MARA) and is working closely with An Coimisiún Pleanála to agree on the details of the decommissioning and removal works. Based on the fact that the ABWP1 team has commenced the pre-application process for decommissioning we expect ABWP1 to be fully decommissioned before commencement of operation of ABWP2.

6.8.7.18 Discounting the annual predicted collisions for ABWP1 that would be apportioned to Wicklow Head (0.5-1.0 collisions, applying the same rates as used above to the annual total of 17.4; see Volume III, Technical Appendix 12.12: Offshore Ornithology Technical Report - Kittiwake Collision Risk Modelling at ABWP1 (RFI March 2026)) further reduces the predicted impacts on the SPA population.

6.8.7.19 In view of the predicted small effects on the population status, it is concluded that the population dynamics of the species indicate that any additional mortality due to the Proposed Development will not materially affect the population's ability to maintain itself on a long-term basis as a viable component of its natural habitats; the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

6.8.7.20 **Overall therefore, on the basis of the precautionary impact predictions and PVA results it is concluded beyond reasonable scientific doubt that there will be no AEoI on the kittiwake feature of Wicklow Island SPA, as defined by the COs of the site, as a result of collision effects considered above, from Project Design Option 1.**

6.8.7.21 **Based on the representative risk of effect of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

6.8.8 Summary of Stage 2 Appraisal for Sites Screened in for Intertidal and Offshore Ornithology QIs

6.8.8.1 The potential effects on seabird features of SPAs with connectivity to the Proposed Development have been assessed with respect to collision and displacement risks. Table 6.57 provides a summary of the assessment and conclusions.

Table 6.57: Conclusion for the assessment of potential impacts on intertidal and offshore ornithology receptors

Potential impact	Differences between Project Design Option 1 and 2	Conclusion
Collision risk with operational turbines	No difference between Project Design Option 1 and 2	No AEoI for Howth Head Coast SPA, Ireland's Eye SPA, Lambay Island SPA, Skerries Islands SPA, Saltee Islands SPA and Wicklow Head SPA for any seabird features.
Displacement risk during construction	No difference between Project Design Option 1 and 2	No AEoI for Howth Head Coast SPA, Ireland's Eye SPA, Lambay Island SPA, Skerries Islands SPA, Saltee Islands SPA and Wicklow Head SPA for any seabird features.
Displacement risk during operation	No difference between Project Design Option 1 and 2	No AEoI for Howth Head Coast SPA, Ireland's Eye SPA, Lambay Island SPA, Skerries Islands SPA, Saltee Islands SPA and Wicklow Head SPA for any seabird features.
Redistribution within SPA	No difference between Project Design Option 1 and 2	No AEoI for the Murrough SPA for any seabird features.

7 Stage 2 Information to inform the In-Combination Assessment

7.1 Approach to tiering

7.1.1.1 The in-combination assessment takes into account the effects associated with the Proposed Development together with other projects and plans. The projects and plans selected as relevant to the in-combination assessment are based upon the results of the NIS Volume I: Supporting Information for Screening for Appropriate Assessment (Revised March 2026) and also the more in-depth Stage 2 appraisal on each of the QIs of the European sites concerned, in the foregoing sections of this NIS.

7.1.1.2 Each project and plan has been considered on a case by case basis for screening in or out of this assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

7.1.1.3 When assessing the potential in-combination impacts of the Proposed Development, it is important to recognise that some projects, particularly those labelled as 'proposed' or outlined in development plans, may not ultimately materialise or, may not be implemented to the full extent of their assessed design parameters. Therefore, there is a need to incorporate a degree of certainty (or uncertainty) regarding the potential impacts which might arise from such proposals. For example, projects which are already under construction are more likely to contribute to in-combination effects (assuming effects or spatial pathways exist) than those development applications that are not yet determined, as some may not attain approval or may not be realised due to various factors.

7.1.1.4 To account for these uncertainties, all the relevant long list of projects considered alongside the Proposed Development have been allocated into 'Tiers', reflecting their current status within the planning and development process. This allows the in-combination assessment to present various future development scenarios, each reflecting the varying levels of certainty of an activity proceeding and therefore the potential for impacts to arise that might act in-combination with the impacts arising from the Proposed Development. It is important to note that for the purposes of the NIS, the level of assessment made for 'future projects' will be greatly influenced by, and reflective of, the level of information available on such projects at the time of compilation of the NIS.

7.1.1.5 A tiered approach to assessment has been adopted as described in Table 7.1. The tiering structure reflects descending levels of certainty in terms of project delivery and availability of detailed information, and is consistent with established guidance.

Table 7.1: Tiered approach to the in-combination assessment

Tiers	Development Stage
Tier 1	• The other elements of the project, which are required for the operation of the Proposed Development, including: the Operation and Maintenance (O&M) Facility, Onshore Grid Infrastructure (OGI) and EirGrid Upgrade works; • Phase One Projects, which are on similar development timelines to the Proposed Development; • Projects under construction. Those projects that are only partially constructed at the time that baseline characterisation was undertaken; • Those that were only recently completed, during the development of the baseline characterisation, the full extent of the impacts arising from the development(s) may not be reflected in the baseline; and/ or

Tiers	Development Stage
	• Those plans and projects which may have consent or licences to undertake further work, such as maintenance dredging or notable maintenance works which may arise in additional effects. • Built and operational projects will be included within the in-combination assessment where they have not been included within the environmental characterisation, i.e. they were not operational when the baseline characterisations were undertaken, and/ or any residual impact may not have yet fed through to and been captured in estimates of 'baseline' conditions or there is an ongoing effect.
Tier 2	• Permitted application(s), but not yet implemented;
Tier 3	• Submitted application(s), but not yet determined; • Identified in the relevant development plan (and emerging development plans – with appropriate weight given as they move closer to adoption) recognising that much information on any relevant proposals will be limited; • Identified in other plans and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward; and • It is expected that ABWP1 will seek consent for the decommissioning of the existing seven WTGs in the near future. Although no public information is available, the decommissioning has been assessed on a precautionary basis i.e. a temporal overlap with the construction of the Proposed Development.

7.1.1.6 Shipping noise is a key characteristic of the ambient underwater noise in the area, and the noise produced by vessels during construction, operational and maintenance and decommissioning phases of the Proposed Development, when considered in-combination with noise associated with existing shipping, shall not increase peak background underwater noise to levels that could disrupt communication due to masking, or alter behaviour patterns, in mobile marine species. The Array Area and Cable Corridor and Working Area are subject to relatively high levels of shipping activity currently, and it is expected that the vessel activity would be no greater than the baseline during construction activities (due to construction exclusion zones reducing current shipping activity and the number of construction vessels expected to be much lower than that which currently transit the area). The underwater noise impacts from vessel noise are generally spatially limited to the immediate area around the vessel rather than having impacts over a wide area (e.g., Mitson, 1993). This is the case for both Project Design Options.

7.1.1.7 On this basis, plans and/or projects considered have been limited to those with the potential to have in-combination effects with the Proposed Development, namely marine developments or activities in the vicinity of the Array Area and marine developments at a greater distance where disturbance, displacement and collision risks arise in the case of mobile Habitats Directive Annex II species and Birds Directive species. Projects were identified using the same distances used for screening of European sites.

7.1.1.8 A longlist of reasonably foreseeable plans and projects has been identified and has been reduced to a shortlist for assessment based on whether there is a spatial or temporal overlap between the potential effects of the projects.

7.1.2 Foreshore licence Applications and Temporal Overlap

7.1.2.1 The Developer was granted a Foreshore Licence (FS007339) for site investigations associated with the Proposed Development by the Minister for Housing, Local Government and Heritage in May 2022. The Developer confirms that works undertaken pursuant to this Foreshore Licence will not overlap temporally with works carried out under the planning permission for the Proposed

Development (if granted). Accordingly, there is no potential for in-combination effects to arise and FS007339 is not included within the in-combination assessment of this NIS.

7.1.2.2 The Developer was granted a Foreshore Licence for Site Surveys (associated with the Proposed Development) by the Minister for Housing, Local Government and Heritage in April 2023 (FS007555). This application was determined and granted on 04 July 2024 and is valid until 04 June 2029. The Developer confirms and commits that they will not conduct any activities the subject of the Foreshore Licence for Site Surveys at the same time as any development is being carried out under this permission (if granted). As such there is no temporal overlap between the activities proposed in the Foreshore Licence and the Proposed Development. For this reason, FS007555 is not included within the in-combination assessment of this NIS.

7.1.3 Tiered Assessment and Phase One Offshore Wind Projects in Ireland

7.1.3.1 In applying the tiered assessment approach, it is recognised that other offshore wind projects may be at varying stages of development and that differing levels of information may be available. Offshore wind farms designated as Phase One Projects are on similar development timelines to the Proposed Development.

7.1.3.2 All Phase One projects (Codling Wind Park, Dublin Array, North Irish Sea Array (NISA), and Oriel) have been awarded a Maritime Area Consent (MAC) and have formally submitted applications for planning consent. While planning consent has not yet been granted, the potential for overlapping development timelines presents a risk of in-combination effects. Phase One Projects are therefore included within Tier 1 of the in-combination assessments, reflecting their reasonable foreseeability and the potential for temporal and spatial overlap with the Proposed Development.

7.1.3.3 In-combination effects associated with these projects are assessed at a proportionate level, making use of available information and applying precautionary assumptions where necessary. Where more detailed information has been made available through project collaboration or data sharing, this has been used to inform topic-specific in-combination assessments, including for ornithological receptors.

7.1.4 Arklow Bank Wind Park 1

OVERVIEW

7.1.4.1 The owner and operator of the ABWP1, Arklow Energy Limited has commenced pre-application consultation (Case Reference OC27.321635) with the appropriate local authorities to decommission ABWP1, which has reached the end of its operating life.

7.1.4.2 The ABWP1 team has begun engaging with the Maritime Area Regulatory Authority (MARA) and is working closely with An Coimisiún Pleanála to agree on the details of the decommissioning and removal works. Based on the fact that the ABWP1 team has commenced the pre-application process for decommissioning we expect ABWP1 to be fully decommissioned before commencement of operation of ABWP2.

DECOMMISSIONING ASSUMPTIONS FOR ASSESSMENT

7.1.4.3 For the purposes of this NIS, a precautionary approach has been adopted, assuming the potential for temporal overlap between ABWP1 decommissioning and the construction phase of the Proposed Development. This ensures that any reasonably foreseeable in-combination effects on European sites and their associated QIs are considered.

7.1.4.4 Under this assumption, ABWP1 is considered to be undergoing decommissioning concurrently with construction of the Proposed Development. While this may lead to some degree of overlap

in potential impacts (for example, disturbance to Annex II marine mammals or habitat alteration), the approach is precautionary and ensures that any potential additive or cumulative pressures on qualifying interests are captured in the assessment.

APPROACH TO IN-COMBINATION ASSESSMENT BY RECEPTOR GROUP

7.1.4.5 The scope of the in-combination assessment for ABWP1 varies by receptor group and reflects the relevant impact pathways identified for each receptor:

- For Annex I Coastal and Marine Habitats and Annex II Migratory Fish, both the operational infrastructure of ABWP1 (including the offshore array and export power cable), i.e. the continued presence of infrastructure, as well as potential future decommissioning activities. This is precautionary as these receptors may be influenced by the continued presence of seabed infrastructure or sediment disturbance and associated changes to seabed processes from decommissioning;
- For Annex II Marine Mammals and offshore ornithology receptors, the in-combination assessment focuses on the potential temporal overlap between ABWP1 decommissioning activities and the construction phase of the Proposed Development. This reflects the primary impact pathways for these receptors, which relate to temporary construction-decommissioning type pressures such as underwater noise, vessel activity and disturbance, rather than the continued operational presence of infrastructure; and
- In the case of offshore ornithology, the potential contribution of the existing ABWP1 turbines to collision risk has been considered in EIAR Chapter 12: Offshore Ornithology, which concluded that predicted collision levels are very low (fewer than approximately 11 collisions per year across all seven turbines). In addition, the owner and operator of ABWP1 has commenced pre-application consultation with An Coimisiún Pleanála for the decommissioning of ABWP1, which has reached the end of its operational life. On this basis, ABWP1 is expected to be decommissioned prior to operation of the Proposed Development, and therefore operational collision risk from ABWP1 is not considered further within the NIS.

7.2 Other elements of the Proposed Development Included in the In-Combination Assessment

7.2.1 Onshore Grid Infrastructure and Operational and Maintenance Facility

7.2.1.1 In May 2022, ABP granted planning approval to develop the Onshore Grid Infrastructure (OGI) (Case Reference: 310090). The OGI includes a 220 kV substation at Shelton Abbey, with an associated connection from the new substation to the existing National Electricity Transmission Network. The consented development also includes an underground cable route and associated infrastructure connecting the substation to the landfall point at Johnstown North (approximately 5 km north of Arklow harbour), where it will meet the proposed offshore export cables connecting to ABWP2.

7.2.1.2 In June 2022, the Developer received planning permission from Wicklow County Council (Planning Register Reference: 21/1316) to develop an Operations and Maintenance Facility (OMF) at South Dock, Arklow Harbour. The building and associated pontoon and ancillary infrastructure will serve as the support base for ABWP2 throughout its operational lifetime and will support around 60 – 70 long term local jobs. This facility will also incorporate a Sustainable Education Centre.

7.2.2 EirGrid upgrade works

7.2.2.1 EirGrid published the Shaping Our Electricity Future (SOEF) Roadmap Version 1.0 in November 2021 and Version 1.1. in July 2023 which is a roadmap for how EirGrid plans to develop the network in line with Ireland's climate change policies which are reflected in the Climate Action Plan (CAP). One of the key targets of the CAP, and a key input to SOEF, is delivery of 5,000MW of Offshore Wind by 2030. EirGrid included all Phase 1 Offshore projects, which includes this development, in their SOEF analysis and confirmed that Arklow-Ballybeg-Carrickmines would need to be up-voltaged to 220kV with a new 220kV/110kV substation at Ballybeg. This project (CP1196) is now in the EirGrid Network Delivery Portfolio (NDP) and is progressing through the EirGrid Project Development Gateways.

7.2.2.2 The Developer has also received a Grid Connection Assessment (GCA) for an 800 MW offshore project connecting via a loop-in connection just south of Arklow on the Arklow-Lodgewood 220 kV OHL which passes within 230 m of the proposed loop-in site. The 220 kV double circuit pylons extend south of Arklow 220 kV substation to this location. Currently only one side of the pylons is strung so the other side will need to be strung between Arklow and the proposed substation site. The stringing of the second circuit is defined as non-contestable works required to facilitate the project and will be subject to a separate consent application which will be progressed by EirGrid. A Final Connection Offer will be issued to Developer and executed by EirGrid once the developer achieves full consent for the project and provides proof of route to market.

7.3 Other Projects and Plans Included in the In-combination Assessment

7.3.1.1 The plans and projects included within the in-combination assessment can be seen in Table 7.2 – Table 7.5 below.

7.3.1.2 Although plans have been considered, none have been screened in for the in-combination assessment below.

Table 7.2: List of other projects and plans considered within the in-combination assessment for Annex I Coastal and Marine Habitats.

Project/Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Tier 1							
Arklow Bank Wind Park 1 Power Cable	Operational	0.0	0.0	Export cable from ABWP1 Array Area to the Irish mainland.	Complete	2003/2004 onwards	Temporal overlap of operational phase with the Proposed Development construction and operational and maintenance phases.
ABWP1 Offshore Array	Operational	0.0	0.5	Initial foreshore lease granted in 2002	Complete	2003/2004 onwards	Temporal overlap of operational and maintenance activities with the Proposed Development construction and operational and maintenance phases.
Arklow Waste Water Treatment Plant	Operational	3.4	10.8	Relates to ABWP2. The Project (proposed development) will comprise a new Wastewater Treatment Plant (WwTP), associated infrastructure including the interceptor sewer network and marine outfalls as well as an upgrade to the existing coastal revetment. 80% Complete as of 2022.	2021-2024	2025 onwards	Temporal overlap of operational phase with the Proposed Development construction and operational and maintenance phases.
Development to the south of South Quay	Consented	4.3	11.9	Relates to ABWP2. As part of the works, a pontoon is proposed along with up to 4 cranes for loading and unloading of vessels.	2026-2030	2034 onwards	Temporal overlap of construction and operational phases with the Proposed Development

Project/Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Arklow - ABWP2 OMF				Additionally, dredging of approximately 6,000 m^3 of material from the nearshore is also proposed, to provide for navigational depth, berthing area and manoeuvring area for vessels.			construction and operational and maintenance phases.
Hibernia Atlantic	Operational	15.4	14.8	Telecom	Complete	Ongoing	Temporal overlap of operational phase with the Proposed Development construction and operational and maintenance phases.
Irish Mussel Seed Company Ltd.	Operational	9.9	5.3	Aquaculture	Complete	Ongoing	Temporal overlap of operational phase with the Proposed Development construction and operational and maintenance phases.
Codling Wind Park	Application submitted	10.3	9.4	Application submitted under the Maritime Area Planning (MAP) Act 2021.	2026 - 2029	2029onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and maintenance phases.
Codling Wind Park ECC	Application submitted	18.9	18.0	Power	2026-2029	2029 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operation and maintenance phases.

Project/Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Dublin Array	Application submitted	25.8	24.9	Application submitted under the Maritime Area Planning (MAP) Act 2021	2029-2032	2032 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and maintenance phases.
Dublin Array ECC	Application submitted	31.9	31.0	Power	2029 - 2032	2032 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operation and maintenance phases.
Arklow Flood Relief Scheme	Consented	4.01	11.5	Wicklow County Council funded by the Office of Public Works (OPW), proposes to undertake engineering works along the Avoca River and surrounds to mitigate the risk of flooding in the Arklow town area in County Wicklow. Proposed works include dredging, installation of flood defence embankments/ walls and gravel/ debris traps.	2024 - 2028	2028 -	Potential for temporal overlap with Proposed Development construction phase.
Tier 3							
Decommissioning of ABWP1	Pre-application consultation	0.0	0.5	Proposed decommissioning of the seven existing offshore wind turbines at ABWP1. For assessment purposes, a reasonable precautionary scenario is assumed whereby decommissioning activities overlap	Not defined – assumed to overlap with Proposed Development construction phase for assessment purposes.		Temporal overlap of decommissioning phase with the Proposed Development construction phase.

Project/Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
				temporally with construction of the Proposed Development. Indicative decommissioning methods are informed by the ABWP2 Rehabilitation Schedule.			

Table 7.3: List of other projects and plans considered within the in-combination assessment for Annex II Migratory Fish.

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Tier 1							
Arklow Phase 1 Power Cable	Operational	0	0	Export cable from ABWP1 Array Area to the Irish mainland	Complete	2003/2004 - onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
ABWP1 Offshore Array	Operational	0	0.5	Initial foreshore licence granted in 2002	Complete	2003/04 onwards	Temporal overlap of operational phase with the Proposed Development construction and operational and maintenance phases.
Wicklow County Council dredging	Operational	9.7	8.9	Bed-level dredging and mechanical dredging		2024 - 2027	Potential for temporal overlap with Proposed Development construction phases.
Codling Wind Park	Application submitted	10.3	9.4	Application submitted under the Maritime Area Planning	2026 - 2029	2029 onwards	Potential for temporal overlap of construction and operation with Proposed

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
				(MAP) Act 2021.			Development construction and operational and maintenance phases.
Hibernia Atlantic Telecom	Operational	15.4	14.8	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Codling Wind Park ECC	Application submitted	18.9	18.0	Power	2026-2029	2029 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and maintenance phases.
Dublin Array	Application submitted	25.8	24.9	Application submitted under the Maritime Area Planning (MAP) Act 2021.	2029-2032	2032 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
							maintenance phases.
Dublin Array ECC	*Application submitted*	31.9	*31*	Power	*2029-2032*	2032 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and maintenance phases.
UK-Ireland 2 Telecom	Operational	39.0	38.4	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Dublin Port Company dredge disposal	Operational	45.1	44.2	Disposal of dredged material		2022 - 2034	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.
Dublin Port Company dredge disposal	Operational	45.2	44.3	Disposal of dredged material		2022 - 2029	Potential for temporal overlap with Proposed

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
							Development construction phase.
ESAT 2	Operational	46.3	45.4	Telecom	2021	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
CeltixConnect - Sea Fibre Networks	Operational	49.2	48.3	Telecom cable	Complete	2026 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Hibernia Atlantic – Hibernia C	Operational	54.8	53.9	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
ZAYO Emerald Bridge One - Telecom	Operational	58.5	57.6	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
							Proposed Development construction and operational and maintenance phases.
SIRIUS South - Telecom	Operational	58.7	57.8	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Rockabill	Operational	64.9	64.0	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
North Irish Sea Array (NISA)	Planning application submitted	65.1	64.1	Application submitted under the Maritime Area Planning Act 2021. Updated application expected to be made under	2027 - 2030	2030 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
				the MAP Act 2021.			maintenance phases.
UK-Ireland crossing 1	Operational	67.0	66.4	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
East West Interconnector	Operational	68.5	67.6	Power	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
SOLAS	Operational	69.0	68.4	Telecom	Complete	2021 onwards	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Havhingsten	Operational	70.3	69.3	Telecom	2021	2021 onwards	Potential for temporal overlap of operation with

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
							Proposed Development construction and operational and maintenance phases.
Wexford County council dredge disposal	Operational	75.9	75.3	Disposal of dredged material	N/A	2021-2027	Potential for temporal overlap with Proposed Development construction phase.
Greenlink Interconnector	Operational	79.6	79.0	Power	2024-2026	2026 onwards	Potential for temporal overlap of operation with Proposed Development construction and operation and maintenance phases.
NISA ECC	*Application submitted*	*80.0*	*79.1*	*Power*	*2027-2030*	*2030 onwards*	Potential for temporal overlap of operation with Proposed Development construction and operational and maintenance phases.
Tier 3							

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Decommissioning of ABWP1	Pre-application consultation	0	0	Proposed decommissioning of the seven existing offshore wind turbines at ABWP1. For assessment purposes, a reasonable precautionary scenario is assumed whereby decommissioning activities overlap temporally with construction of the Proposed Development. Indicative decommissioning methods are informed by the ABWP2 Rehabilitation Schedule.	Not defined – assumed to overlap with Proposed Development construction phase for assessment purposes.		Potential for temporal overlap of decommissioning with Proposed Development construction phase.
Mares Connect	Proposed	37.5	36.6	Power cable	2026 - 2028	2028 onwards	Potential for temporal overlap of construction and operation with Proposed Development construction and operational and

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
							maintenance phases.
Rosslare Euro Port (Rosslare Offshore Renewable Hub)	Planning application submitted	52.2	51.6	Proposed development of Rosslare Offshore Renewable Energy (ORE) Hub for offshore wind energy.	2027 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.

Table 7.4: List of other projects and plans considered within the in-combination assessment for Annex II Marine Mammals.

Project/ Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Tier 1							
Codling Wind Park	Application submitted	10.3	9.4	'Relevant Project'. Application made under the Maritime Area Planning (MAP) Act 2021.	2026 - 2029	2029 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.
Dublin Array	Application submitted	25.8	24.9	'Relevant Project'. Application made under the MAP Act 2021.	2029 -2032	2032 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.
NISA	Application submitted	65.1	64.1	'Relevant Project'. Application made under the MAP Act 2021.	2027 - 2030	2030 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.
Oriel	Planning application submitted	108.1	107.2	Application submitted under the Maritime Area Planning Act 2021.	2028 - 2030	2030 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phase.
Greenlink Interconnector	Under construction	79.6	79.0	Power cable.	2024 – 2026	From 2027	Potential in-combination effects exist.
Erebus Floating Wind Demo	Consented	133.3	132.7	Consented for up to 7 turbines.	2023 - 2026	From 2027	Potential in-combination effects exist.

Project/ Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Awel y Môr	Consented	148.5	147.6	Consented for up to 50 turbines.	2025 – 2027	From 2028	Potential for temporal overlap with Proposed Development construction phase.
Morgan	Consented	165.3	164.3	English Round 4 project with up to 96 turbines.	2028 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.
North Hoyle	Decommissioning	170.9	170.1	Decommissioning of 60 MW offshore wind farm comprising of 30 turbines.	2031 - 2034	Pre 2021 - 2030	Potential in-combination effects exist.
White Cross	Consented	174.7	174.0	A 100 MW floating offshore wind demonstration project with up to 8 turbines.	2026 – 2027	From 2028	Potential for temporal overlap with Proposed Development construction phase.
Burbo Bank	Operational	189.9	189.0	Decommissioning of original 90 MW site comprising of 25 turbines.	2031 - 2034	Pre 2021 - 2030	Potential in-combination effects exist.
Walney 1	Operational	199.1	198.1	Decommissioning of 184 MW offshore wind farm comprising of 51 monopiles.	2031 - 2034	Pre 2021 - 2030	Potential in-combination effects exist.
TwinHub	Operational	256.2	255.6	Floating wind demonstration site with up to 4 turbines.	2024 - 2026	From 2027	Potential in-combination effects exist.
Tier 2							

Project/ Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Holyhead Deep	Consented	84.0	83.1	Tidal.	2026 – 2027	From 2028	Potential for temporal overlap with Proposed Development construction phase.
West Anglesey demonstration zone	Consented	85.0	84.1	Tidal.	2022 – 2026	From 2027	Potential in-combination effects exist.
Mona	Consented	146.7	145.7	English Round 4 project with up to 107 turbines. Lease awarded.	2025 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.
Celtic Interconnector	Under construction	151.9	151.3	Power cable.	2024 – 2027	From 2028	Potential for temporal overlap with Proposed Development construction phase.
Tier 3							
Decommissioning of ABWP1	Pre-application consultation	0.0	0.0	Proposed decommissioning of the seven existing offshore wind turbines at ABWP1. For assessment purposes, a reasonable precautionary scenario is assumed whereby decommissioning activities overlap temporally with construction of the Proposed Development. Indicative decommissioning methods are informed by the ABWP2 Rehabilitation Schedule.	Not defined – assumed to overlap with Proposed Development construction phase for assessment purposes		Potential for temporal overlap with Proposed Development construction phase.

Project/ Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Mares Connect	Proposed	37.5	36.6	Power cable.	2026 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.
Rosslare Euro Port	Planning application submitted	52.2	51.6	Proposed development of Rosslare Offshore Renewable Energy (ORE) Hub for offshore wind energy.	2027 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.
Port of Waterford ORE Capable Terminal (Belview)	Planning application submitted	88.8	88.2	Proposed development of Port of Waterford ORE for offshore wind energy.	2027 – 2028	From 2029	Potential for temporal overlap with Proposed Development construction phase.
Erebus / Valorous proposed cable route	Proposed	123.7	123.0	Power cable.	2025 – 2026	From 2027	Potential for temporal overlap with Proposed Development construction phase.
Pembrokeshire Demonstration Zone	Pre-planning application	144.3	143.7	Wave.	2025 - 2026	From 2027	Potential in-combination effects exist.
Llyr 1	Planning application submitted	148.0	147.3	A 200 MW test and demonstration site for floating offshore wind with up to 10 turbines.	2027 – 2029	From 2030	Potential for temporal overlap with Proposed Development construction phase.

Project/ Plan	Status	Distance from Array Area (km)	Distance from Export Cable Corridors and Working Areas (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Llyr 2	Pre-planning application	151.9	151.2	A 200 MW test and demonstration site for floating offshore wind with up to 10 turbines.	2027 – 2029	From 2030	Potential for temporal overlap with Proposed Development construction phase.
Morecambe	Pre-planning application	174.2	173.3	English Round 4 project with up to 40 turbines.	2027 - 2030	From 2031	Potential for temporal overlap with Proposed Development construction phase.
Isle of Man (Mooir Vannin)	Planning application submitted	179.2	178.2	A 1.4 GW offshore windfarm with up to 100 turbines.	2028 - 2031	From 2032	Potential for temporal overlap with Proposed Development construction phase.
North Channel Wind 2	Pre-planning application	204.0	203.1	A 420 MW offshore windfarm in Northern Ireland.	2028 – 2031	From 2032	Potential for temporal overlap with Proposed Development construction phase.
LirIC	Proposed	204.6	203.7	Power cable.	2028 - 2029	From 2030	Potential for temporal overlap with Proposed Development construction phase.
North Channel Wind 1	Pre-planning application	227.9	227.0	A 1 GW offshore windfarm in Northern Ireland.	2028 – 2031	From 2032	Potential for temporal overlap with Proposed Development construction phase.

Table 7.5: List of other projects and plans considered within the in-combination assessment for waders and offshore ornithology.

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
Tier 1							
Codling Wind Park	Application submitted	10.3	9.5	'Relevant Project'. Application made under the MAP Act 2021.	2026 - 2029	2029 onwards	Potential for overlap with Proposed Development construction and operational and maintenance phases.
Dublin Array	Application submitted	25.8	24.9	'Relevant Project'. Application made under the MAP Act 2021	2029 - 2032	2032 onwards	Potential for overlap with Proposed Development construction and operational and maintenance phases.
NISA	Application submitted	65.1	64.1	'Relevant Project'. Application made under the MAP Act 2021.	2027 - 2030	2030 onwards	Potential for overlap with Proposed Development construction and operational and maintenance phases.
Oriel Wind Park	Application submitted	108.1	107.2	'Relevant Project' Application made under the MAP Act 2021.	2028 - 2030	2030 onwards	Potential for overlap with Proposed Development construction an

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
							operational and maintenance phases.
Rhyl Flats	Operational	156.3	155.5	Operational windfarm comprising 25 turbines	N/A	2009 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Barrow Offshore Windfarm	Operational	208.6	207.6	Operational windfarm comprising 30 turbines	N/A	2006 to ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Gwynt y Mor Offshore Windfarm	Operational	159	158.1	Operational windfarm comprising 160 turbines	N/A	2015 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
North Hoyle	Operational	170.9	170.1	Operational windfarm comprising 30 turbines	N/A	2003 – ongoing	Screened in due to ongoing impact. Located within Irish

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
							Sea with potential to contribute to impacts on regional seabird populations
Walney Extension	Operational	187.1	186.1	Operational windfarm comprising 47 turbines	N/A	2018 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Burbo Bank	Operational	189.9	189.0	Operational windfarm comprising 25 turbines	N/A	2007 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Burbo Bank Extension	Operational	180.6	179.8	Operational windfarm comprising 32 turbines	N/A	2017- ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
Robin Rigg Offshore Windfarm	Operational	247.3	246.3	Operational windfarm comprising 58 turbines	N/A	2010 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
West of Duddon Sands Offshore Windfarm	Operational	196.9	195.9	Operational windfarm comprising 108 turbines	N/A	2014 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Walney Offshore Windfarm	Operational	199.1	198.1	Operational windfarm comprising 102 turbines	N/A	2010 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Erebus Offshore Windfarm	Consented	133.3	132.7	Consented for up to 7 turbines	2025-2027	From 2028	Potential for overlap with Proposed Development construction and operational and maintenance phases

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
Awel y Mor Offshore Windfarm	Consented	148.5	147.6	Consented for up to 50 turbines	2026-2030	From 2031	Potential for overlap with Proposed Development construction and operational and maintenance phases
Morgan Offshore Windfarm	Consented	165.3	164.3	English Round 4 project with up to 96 turbines	2028-2029	From 2030	Potential for overlap with Proposed Development construction and operational and maintenance phases
Morecambe Offshore Windfarm	Consented	174.2	173.3	English Round 4 project with up to 40 turbines	2026-2029	From 2030	Potential for overlap with Proposed Development construction and operational and maintenance phases
Twin Hub Offshore Windfarm	Consented	256.2	255.6	Floating test site with 4 turbines	2026	2027	Potential for overlap with Proposed Development construction and operational and maintenance phases.

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
White Cross	Consented	174.7	174.0	Floating turbine demonstration site with up to 8 turbines	2028	2029	Potential for overlap with Proposed Development construction and operational and maintenance phases
Ormonde	Operational	207.4	206.4	Operational windfarm comprising 30 turbines	N/A	2012 – ongoing	Screened in due to ongoing impact. Located within Irish Sea with potential to contribute to impacts on regional seabird populations
Tier 2							
Mona Offshore Windfarm	Consented	146.7	145.7	English Round 4 project with up to 107 turbines	2026-2027	From 2028	Potential for overlap with Proposed Development construction and operational and maintenance phases
Tier 3							
Decommissioning of ABWP1	Pre-application consultation	0	0	Proposed decommissioning of the seven existing offshore wind turbines	Not defined – assumed to overlap with Proposed Development construction phase for assessment purposes.		Screened in due to potential for overlap between decommissioning of

Project/Plan	Status	Distance from Array Area (km)	Distance from **Export Cable Corridors and Working Areas** (km)	Description of Project/Plan	Dates of Construction (if applicable)	**Dates of Operation (if applicable)**	Overlap with the Proposed Development
				at Arklow Bank Wind Park 1 (ABWP1). For assessment purposes, a precautionary scenario is assumed whereby decommissioning activities overlap temporally with construction of the Proposed Development.	N/A		ABWP1 and construction of ABWP2
Valorous Offshore Windfarm	Proposed	141.9	141.3	Early stage planning	2029	From 2030	Potential overlap of operational and maintenance phases.
Mooir Vannin	Planning application submitted	179.2	178.2	Application submitted to the Isle of Man Government in 2025. Up to 89 WTGs	2031-2033	From 2033	Potential overlap of operational and maintenance phases.
Llyr 1 Windfarm	Application submitted	148.0	147.3	Floating turbine demonstration site with up to 10 turbines	2027	From 2027	Potential for overlap with Proposed Development construction and operational and maintenance phases

7.4 In-Combination Assessment

7.4.1 Annex I Coastal and Marine Habitats

7.4.1.1 The in-combination Annex I Coastal and Marine Habitats assessment has screened in the same potential impacts, SAC and QIs screened in for assessment of the Proposed Development alone (Section 6.2). The additional Plans and Projects considered are listed in Table 7.2 above.

7.4.1.2 Annex I Coastal Habitats are not considered further within the in-combination assessment. No credible pathways for effects were identified for the Proposed Development alone and therefore no potential exists for impacts that interfere with the COs of these habitats at Buckroney-Brittas Dunes and Fen SAC, Magherabeg Dunes and Fen SAC, Kilpatrick Sandhills SAC, The Murrough Wetlands SAC (refer to Sections 6.2.3.7, 6.2.3.18 and 6.2.3.27–6.2.3.28 for further detail). In the absence of any credible pathway or potential effect on COs, in-combination effects on Annex I Coastal Habitats can be excluded.

7.4.1.3 However, as credible pathways for effects were identified for the Proposed Development alone in relation to Annex I Marine Habitats of Wicklow Reef SAC and Blackwater Bank SAC are considered within the in-combination assessment.

7.4.1.4 Tier 1 projects screened in include ABWP1, subsea cables for ABWP1 and Hibernia Atlantic, Arklow Wastewater Treatment Plant, ABWP2 OMF, aquaculture for the Irish Mussel Seed Company Ltd and the Arklow Flood Relief Scheme. All Tier 1 projects other than the Phase 1 projects (discussed separately below) and ABWP2 OMF will be operational at the time construction works of the proposed development commence and the operation and potential decommissioning of these projects may overlap with the construction, operational and maintenance and decommissioning phases of the Proposed Development. The construction of ABWP2 OMF may overlap with the construction and operational and maintenance phases of the Proposed Development, whilst the operation and decommissioning of ABWP2 OMF may overlap with the operational and maintenance and decommissioning phases of the Proposed Development. Although the majority of works associated with ABWP2 OMF will be completed onshore, some elements will exist within the offshore environment. For example, plans for the development of the ABWP2 OMF will include a pontoon for vessels and dredging of approximately 6,000 m^3 of material from a nearshore area.

7.4.1.5 The Arklow Flood Relief Scheme involves engineering works along the Avoca River and surrounds. These works will include dredging, installation of flood defence embankments/ walls and gravel/ debris traps. These works will occur between 2026-2030 and may overlap with the construction phase of the Proposed Development. This project only has potential to impact via SSCs and associated deposition.

7.4.1.6 Phase 1 projects are also captured in Tier 1 with Codling Wind Park and Dublin Array screened in for Annex I Marine Habitats. The construction phase of Codling Wind Park and Dublin Array may overlap with the construction phase of the Proposed Development. The operation phase of Codling Wind Park and Dublin Array may overlap with the construction and operational phases of the Proposed Development. The planning application for Dublin Array indicate that the proposed development will comprise a maximum of 45 WTGs and 1 OSP (Kish Offshore Wind Ltd., 2025). Plans for Codling Wind Park indicate that the proposed development may comprise up to 75 WTGs and up to three OSPs (Codling Wind Park, 2024). Phase 1 projects show similar construction, operational and decommissioning activities and therefore the impacts and magnitudes of the impacts are expected to be similar in nature to that of the Proposed Development.

7.4.1.7 The only Tier 3 project screened in is the decommissioning of ABWP1 infrastructure, which will involve the cutting of monopiles at a depth of 2 m below seabed, removal of monopiles and

cutting, burial and backfilling of proportions of the inter-array cables. The programme for these works are not defined, although for assessment purposes it is assumed that they will overlap with the construction phase of the Proposed Development..

Construction and Decommissioning

ELEVATED LEVELS OF SUSPENDED SEDIMENT CONCENTRATIONS AND ASSOCIATED DEPOSITION

7.4.1.8 The following in-combination assessment considers the Wicklow Reef SAC which is designated for Reefs and Blackwater Bank SAC which is designated for Sandbanks which are slightly covered by seawater all the time.

7.4.1.9 There is the potential for in-combination elevated levels of SSCs and associated deposition as a result of both the construction and decommissioning activities associated with the Proposed Development and the Tier 1, 2, and 3 projects identified in Table 7.2.

TIER 1 PROJECTS

7.4.1.10 From the Tier 1 projects, elevated levels of SSCs and associated deposition may occur as a result of the installation of the pontoon and associated dredging required for the ABWP2 OMF. All other Tier 1 projects (with the exception of Phase 1 projects which are discussed below) will be operational during the construction phase of the Proposed Development. However, increased SSCs and associated deposition may occur as a result of any repair and maintenance activities required to infrastructure for ABWP1, ABWP1 and Hibernia Atlantic subsea cables and the long sea outfall for the Arklow Waste Water Treatment Plant. From the Phase 1 projects, elevated = SSCs and associated deposition may occur as a result the installation of WTGs, OSPs and associated cables during the construction phase of Codling Wind Park and Dublin Array, and during any repair and maintenance activities required and/ or decommissioning activities associated with the developments at the end of their project timelines. Elevated SSCs and associated deposition during construction and operational and maintenance activities as part of the Tier 1 projects are expected to be temporary and intermittent, with sediment plumes expected to quickly dissipate following cessation of activities. Any areas likely to be exposed to heavy sediment deposition are expected to be localised and small in the context of subtidal habitats within the Annex I Coastal and Marine Habitats ZoI, being 20 km. Elevated SSCs and associated deposition are not anticipated to occur during the operational phase activities of the Irish Mussel Seed Company Ltd, so that has not been considered here. As highlighted within the alone assessment (Section 6.2), the results of the modelling (NIS Volume III, Appendix 6.1: Marine Physical Processes Numerical Modelling (Revised March 2026)) confirm that there is no potential for construction phase sediment plumes or associated sediment deposition to reach the QIs within the European sites designated for Annex I Coastal and Marine habitats.

7.4.1.11 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of elevated levels of SSCs on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.12 **Based on the same potential risk of in-combination effects as Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.1.13 Elevated levels of SSCs and associated deposition may occur as a result of the anticipated decommissioning of seven wind turbines for ABWP1. Elevated levels of SSCs and associated deposition during decommissioning activities as part of ABWP1 are expected to be temporary and intermittent, with sediment plumes expected to quickly dissipate following cessation of

activities. Any areas likely to be exposed to heavy sediment deposition are expected to be localised and small in the context of subtidal habitats within the Coastal and Marine Habitats ZoI, being 20 km. As highlighted within the alone assessment (Section 6.2), the results of the modelling (NIS Volume III, Appendix 6.1: Marine Physical Processes Numerical Modelling (Revised March 2026)) confirm that there is no potential for construction phase sediment plumes or associated sediment deposition to reach the QIs within the European sites designated for Coastal and Marine habitats.

7.4.1.14 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 3 Projects as a result of elevated levels of SSCs on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.15 **Based on the same potential risk of in-combination effects as Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

ACCIDENTAL POLLUTION

7.4.1.16 The following in-combination assessment considers the Wicklow Reef SAC which is designated for Reefs and Blackwater Bank SAC which is designated for Sandbanks which are slightly covered by seawater all the time.

7.4.1.17 There is the potential for in-combination accidental pollution as a result of both the construction and decommissioning activities associated with the Proposed Development and the Tier 1 and 3 projects identified in Table 7.2.

TIER 1 PROJECTS

7.4.1.18 From the Tier 1 projects (other than Phase 1 projects), accidental pollution may occur as a result of any vessels and machinery required during the installation of the pontoon and associated dredging required for the Arklow ABWP2 OMF. In relation to Phase 1 projects, accidental pollution may occur as a result of any vessels and machinery required for the installation of WTGs, OSPs and associated cables during the construction phase of Codling Wind Park and Dublin Array, and during any repair and maintenance activities required for both developments. All other Tier 1 projects will be operational during the construction phase of the Proposed Development and accidental pollution may occur as a result of vessels and machinery required during operational and maintenance activities. Accidental pollution during construction activities as part of the Tier 1 projects is expected to be highly infrequent and of short-term duration where any chemicals released to the water column will be quickly dispersed and diluted via currents and other water movement. As highlighted within the alone assessment (Section 6.2), the avoidance of effect through factored in measures for the Proposed Development includes an EMP (Appendix 25.1) and Marine Pollution Contingency Plan (Annex 2 of Appendix 25.1). Adherence to the avoidance by design measures outlined in Table 6.2 and good working practices will significantly reduce the likelihood of an accidental pollution incident occurring. Given the factored-in measures, the likelihood of accidental release is considered to be extremely low.

7.4.1.19 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of accidental pollution on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.20 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.1.21 Accidental pollution may occur as a result of any vessels and machinery required as a result of a result of the anticipated decommissioning of seven wind turbines for ABWP1. Accidental pollution during decommissioning activities as part of ABWP1 are expected to be highly infrequent and of short-term duration where any chemicals released to the water column will be quickly dispersed and diluted via currents and other water movement. As highlighted within the alone assessment (Section 6.2), the avoidance of effect through factored in measures for the Proposed Development includes an EMP and Marine Pollution Contingency Plan. Adherence to the avoidance by design measures outlined in Table 6.2 and good working practices will significantly reduce the likelihood of an accidental pollution incident occurring. Given the factored-in measures, the likelihood of accidental release is considered to be extremely low.

7.4.1.22 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 3 Projects as a result of accidental pollution on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.23 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Operational and Maintenance

ELEVATED LEVELS OF SUSPENDED SEDIMENT CONCENTRATIONS AND ASSOCIATED DEPOSITION

7.4.1.24 The following in-combination assessment considers the Wicklow Reef SAC which is designated for Reefs and Blackwater Bank SAC which is designated for Sandbanks which are slightly covered by seawater all the time.

7.4.1.25 There is the potential for in-combination elevated levels of SSCs and associated deposition as a result of the operational and maintenance activities associated with the Proposed Development and the Tier 1 and 2 projects identified in Table 7.2.

TIER 1 PROJECTS

7.4.1.26 From the Tier 1 projects (other than Phase 1 projects), elevated levels of SSCs and associated deposition may occur as a result of the installation of the pontoon and associated dredging required for the Arklow ABWP2 OMF during construction and any repair and maintenance required during operation. In relation to Phase 1 projects, elevated levels of SSCs and associated deposition may occur as a result of the installation of WTGs, OSPs and associated cables during the construction phase of Codling Wind Park and Dublin Array, and during any repair and maintenance activities associated with Codling Wind Park and Dublin Array. All other Tier 1 projects will be operational during the operational and maintenance phase of the Proposed Development and therefore, increased SSCs and associated deposition may also occur as a result of any operational and maintenance activities required for these projects. Elevated levels of SSCs and associated deposition during the construction and operation activities as part of the Tier 1 projects are expected to be temporary and intermittent, with sediment plumes expected to quickly dissipate following cessation of activities. Any areas likely to be exposed to heavy sediment deposition are expected to be localised and small in the context of subtidal habitats within the Coastal and Marine Habitats ZoI, being 20 km. Elevated levels of SSCs and associated deposition are not anticipated to occur during the operational phase of the aquaculture of shellfish from the Irish Mussel Seed Company Ltd, so this has not been considered here. As highlighted within the alone assessment (Section 6.2), the results of the modelling (NIS Volume III, Appendix 6.1: Marine Physical Processes Numerical Modelling (Revised March 2026)) confirm that there is no potential for construction phase sediment plumes or associated sediment deposition to reach

the QIs within the European sites designated for Coastal and Marine habitats. Any sediment plumes and associated deposition during operation are expected to be smaller than those during construction and as a result, there will be no potential for these to reach the QIs within the European sites designated for Coastal and Marine habitats.

7.4.1.27 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of elevated levels of SSCs and associated deposition on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.28 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

ACCIDENTAL POLLUTION

7.4.1.29 The following in-combination assessment considers the Wicklow Reef SAC which is designated for Reefs and Blackwater Bank SAC which is designated for Sandbanks which are slightly covered by seawater all the time.

7.4.1.30 There is the potential for in-combination accidental pollution as a result of the operation activities associated with the Proposed Development and the Tier 1projects identified in Table 7.2.

TIER 1 PROJECTS

7.4.1.31 From the Tier 1 projects (other than Phase 1 projects), accidental pollution may occur as a result of any vessels and machinery required during the installation of the pontoon and associated dredging required for the Arklow ABWP2 OMF. In relation to Phase 1 projects, accidental pollution may occur as a result of any vessels and machinery required during the construction and operational phases of Dublin Array and the operational phase of Codling Wind Park. All other Tier 1 projects will be operational during the operational phase of the Proposed Development and accidental pollution may occur as a result of vessels and machinery required during operational and maintenance activities. Accidental pollution during construction and operational activities as part of the Tier 1 projects is expected to be highly infrequent and of short-term duration where any chemicals released to the water column will be quickly dispersed and diluted via currents and other water movement. As highlighted within the alone assessment (Section 6.2), the avoidance of effect through factored in measures for the Proposed Development includes an EMP and Marine Pollution Contingency Plan. Adherence to the avoidance by design measures outlined in Table 6.2 and good working practices will significantly reduce the likelihood of an accidental pollution incident occurring. Given the factored-in measures, the likelihood of accidental release is considered to be extremely low.

7.4.1.32 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of accidental pollution on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.33 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

CHANGES IN PHYSICAL PROCESSES

7.4.1.34 The following in-combination assessment considers the Wicklow Reef SAC which is designated for Reefs and Blackwater Bank SAC which is designated for Sandbanks which are slightly covered by seawater all the time.

7.4.1.35 There is the potential for in-combination elevated levels of changes in physical processes as a result of the operational and maintenance activities associated with the Proposed Development and the Tier 1 projects identified in Table 7.2.

TIER 1 PROJECTS

7.4.1.36 From the Tier 1 projects, alteration of seabed habitats arising from changes in physical processes may occur as a result of the presence of offshore infrastructure such as the pontoon for ABWP2, WTGs, OSPs for ABWP1, Codling Wind Park and Dublin Array, cables and cable protected associated with ABWP1 and Hibernia Atlantic, and the long-sea outfall associated with the Arklow Waste Water Treatment Plant. Any alteration of seabed habitat associated with the other Tier 1 projects is expected to be highly localised and restricted to discrete areas within the project areas. Therefore, the magnitude of impact is considered to be Low.

7.4.1.37 However, as detailed in numerical modelling designed to assess the impacts of the Proposed Development during the operational and maintenance phase on tidal currents, sediment transport and seabed dynamics (Deltares, 2026) indicates that any effects are not anticipated to extend to the regional or larger-scale sediment transport pathways in the south-western Irish sea (see Section 6.2.1). Similarly, the modelling indicates that morphological and sediment transport changes at Arklow Bank appear to be insufficient to affect the morphological behaviour of receptors within the wider morphological system.

7.4.1.38 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of changes in physical processes on 'Reefs' or 'Sandbanks which are slightly covered by seawater all the time' from Project Design Option 1.**

7.4.1.39 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

7.4.2 Annex II Marine Mammal Species

7.4.2.1 The specific projects relevant to the Annex II marine mammal QIs in the in-combination assessment, along with the tiers to which they have been allocated, are presented in Table 7.4.

Screening impact pathways

7.4.2.2 Certain impacts assessed for the Proposed Development alone are not incorporated into the Annex II marine mammal QIs in-combination assessment due to several factors:

- The impacts are highly localised in nature;
- Existing management and mitigation measures implemented for the Proposed Development and other projects will effectively diminish the likelihood of these impacts; and
- The potential effect of the Proposed Development alone is negligible, meaning there is no plausible mechanism by which these impacts could comprise site integrity or the COs of relevant European sites.

7.4.2.3 Based on the criteria above, the following impacts listed in Table 6.8 are excluded from the Annex II marine mammal QIs in-combination assessment:

- *Auditory injury (PTS):* While activities such as pile driving, UXO clearance and site surveys may lead to PTS, robust mitigation measures (Table 6.7) will be implemented to reduce the risk of auditory injury to relevant Annex II marine mammals QIs to imperceptible levels;
- *Injury from vessel activities:* It is anticipated that all offshore energy projects will adopt a Environmental VMP (or similar) or adhere to established guidelines to further minimise the already low risk of vessel collisions with Annex II marine mammal QIs;

- *Disturbance from vessels*: It is also expected that all offshore energy projects will implement an Environmental VMP or adhere to best practice recommendations to mitigate the potential for disturbance (due to vessel behaviour) to Annex II marine mammal QIs.
- *Injury and disturbance from dredging and trenching*: Impacts are highly localised and minor, and no EDR is identified for these activities (JNCC, 2025), reflecting the negligible likelihood of these activities contributing to in-combination disturbance;
- *Changes in fish and shellfish community affecting prey resources:* Potential changes in prey availability are highly localised and temporary, with no plausible risk to site integrity;
- *Changes in EMF from subsea cabling*: Predicted changes are of imperceptible significance and not expected to affect site integrity; and
- *Accidental pollution:* It is anticipated that all offshore energy projects will implement an EMP to ensure that the potential release from pollutants is minimised and strictly controlled.

7.4.2.4 Accordingly, the impacts included in the Annex II marine mammal QIs in-combination assessment focus on potential for behavioural disturbance arising from underwater noise associated with impulsive or specific high-energy sources (piling, UXO clearance and certain confirmatory surveys) during the construction and decommissioning phases of other offshore developments, where data for these developments are available.

7.4.2.5 For the Proposed Development alone, the only pathways assessed during the decommissioning phase comprise injury and disturbance from vessel activities, changes in fish and shellfish community affecting prey resources, and accidental pollution. All of these pathways are expected to generate impacts that are highly localised, mitigated through the implementation of standard measures, or otherwise negligible. Recognising that decommissioning activities generally generate similar or lower levels of disturbance compared with construction, it can be concluded that any in-combination effects during the decommissioning phase would be equivalent to, or lower than those already assessed for the construction phase, and are therefore, not expected to result in any adverse effect on the integrity of Natura 2000 sites.

7.4.2.6 Indicative construction programme information for the Phase One projects were informed by the latest available planning application documentation in the public domain, reviewed in response to the ACP RFIs. The indicative construction periods applied within the Annex II marine mammal in-combination assessment are:

- Proposed Development: 2027 – 2030;
- Codling Wind Park: 2026 – 2029;
- Dublin Array: 2029 – 2032;
- NISA: 2027 –2030; and
- Oriel: 2028 – 2030.

7.4.2.7 These construction periods represent overall construction windows and may include foundation installation, cable installation and other associated activities. Given the uncertainty in final construction schedules, a precautionary approach has been applied whereby construction, operation and maintenance, and decommissioning activities associated with the Phase One projects are assumed to temporally overlap with those of the Proposed Development. As all Phase One projects comprise of broadly similar activities, the resulting impacts are expected to be similar in nature to those associated with the Proposed Development, with in-combination effects primarily driven by spatial proximity and temporal overlap.

7.4.2.8 For the purposes of the in-combination assessment, decommissioning activities are only considered for other offshore wind projects that are currently approaching the end of their operational lifetime and for which sufficient information exists to indicate that decommissioning could reasonably coincide with the planned construction and other noisy activities of the Proposed Development. This reflects that the potential for in-combination effects on Annex II marine mammal QIs would be greatest where multiple projects are concurrently undertaking activities

that generate impulsive underwater noise (e.g. piling or UXO clearance). Where information on decommissioning timing or methods is not available, it is assumed that the decommissioning activities would generate underwater noise levels similar to, or lower than, those associated with construction, in line with the industry standard approach to impact assessments for marine mammals. As such, only offshore wind projects with reasonably foreseeable decommissioning activities at a time that overlaps with the Proposed Development are considered in the assessment.

7.4.2.9 In addition, while site surveys and other routine activities may occur during the operational and maintenance phase of the Proposed Development, these have not been included in the Annex II marine mammal QIs in-combination assessment. The precise nature of site surveys during the operational and maintenance phase is unknown, however such surveys will be used to inspect cables which typically utilises sources that have negligible potential to disturb marine mammals due to their high-frequency sources, low source output, and directionality. As a result, the overall spatial extent of potential exposure is minimal, and these operational and maintenance site survey activities are not expected to contribute meaningfully to in-combination disturbance of Annex II marine mammal QIs.

Assessment Methodology

7.4.2.10 The temporal scope considered for the Annex II marine mammal QI in-combination assessment spans 2021 to 2034 inclusive. This timeframe allows for a quantitative assessment of impacts to SACs with Annex II marine mammal QIs both prior to the construction of the Proposed Development (using baseline data compiled from 2021 onwards), and during the anticipated construction window of the Proposed Development. The Proposed Development is expected to be constructed between 2027 and 2030, with piling scheduled for 2028 and UXO clearance occurring in 2027.

7.4.2.11 For the Proposed Development, the indicative number of Annex II marine mammal QIs disturbed per day has been taken as the maximum daily number calculated from the alone assessments (Section 6.4), based on the precautionary scenario generating the largest predicted disturbance ranges and applying the highest species-specific density estimates (Table 6.6). This approach ensures that the in-combination reflects the upper-bound disturbance scenario, providing robust conclusions under uncertainty associated with the other projects. As a result, the predicted numbers are likely to represent an overestimate of actual disturbance on any given day.

7.4.2.12 For all other offshore projects (including Phase One projects), the indicative number of animals disturbed per day has been calculated using species-specific densities within the corresponding SCANS-IV survey blocks for each cetacean species (Gilles *et al.,* 2023), and average modelled at-sea density estimates for both pinniped species (Carter *et al*., 2020), alongside a fixed EDR approach. For projects that are situated outside of the SCANS-IV survey boundaries, cetacean densities were derived from the corresponding ObSERVE survey strata (Rogan *et al.,* 2018; Giralt Paradell *et al*., 2024). However, it is important to note that this approach is highly precautionary, given the high level of uncertainty with large-scale density estimates, the assumptions inherent in applying fixed EDRs, and the limited availability of project-specific information for other offshore developments, as described in further detail below.

7.4.2.13 The EDR threshold parameters used to assess the number of Annex II marine mammal QIs potentially disturbed from offshore projects are based on the updated JNCC (2025) guidance. Under this guidance, the EDR applied to unabated pile driving and high order UXO detonation is the same. As a result, disturbance arising from these activities is assessed collectively as high-noise construction activities, without disaggregating effects by activity type. This reflects current best available guidance and avoids artificial separation of impacts where the spatial extent of disturbance is identical.

7.4.2.14 The EDRs and corresponding impact areas applied within the Annex II marine mammal QI in-combination assessment are summarised as:

- A 20 km EDR for piling of all offshore windfarm projects (fixed and floating) in UK and Irish waters (including Phase One projects), based on guidance from JNCC (2025) for unabated pile driving of a monopile. This results in an impact area of 1,256.64 km^2 for other projects, and 1,159.98 km^2 for the Proposed Development given location relative to the coast;
- A 20 km EDR for UXO clearance based on the high order detonation of UXOs without noise abatement only (JNCC, 2025), resulting in an impact area of 1,256.64 km^2;
- A 11 km EDR for piling of EU offshore windfarm projects (excluding UK and Irish waters), based on the current noise abatement expectations in those countries, resulting in an impact area of 380.13 km^2;
- A 10 km EDR for seismic surveys based on guidance from JNCC (2025), and an impact area of 314.16 km^2;
- A 5 km EDR for tidal and wave projects (assuming that low-level activities such as sheet or conductor piling may occur), resulting in an impact area of 78.5 km^2; and
- A 5 km EDR for subsea cabling, based on guidance from JNCC (2025) (assuming that only geophysical surveys will be undertaken), resulting in an impact area of 78.5 km^2.

7.4.2.15 These EDRs relate to specific noise-generating activities and are independent of the project phase, as such they can be used where comparable activities occur during any phase (such as foundation removal, cutting, or UXO clearance during decommissioning).

7.4.2.16 Seismic surveys have been considered as Tier 3 projects as the potential number of seismic surveys that could be undertaken is unknown. Based on the size of the relative species-specific MU and its location, it has been assumed that there could be:

- One seismic survey occurring on any given day in the Irish Sea MU included within the in-combination assessment for bottlenose dolphin; and
- Two seismic surveys occurring on any given day in the Celtic and Irish Sea MU within the in-combination assessment for harbour porpoise.

7.4.2.17 Given that the East region of RoI populations for Annex II seal species (grey seal and harbour seal) are largely restricted to nearshore coastal habitats centred around haul-out sites, and seismic surveys typically occur in offshore areas beyond these core use ranges, the potential for spatial overlap is considered to be very limited. On this basis, no realistic pathway for in-combination effects from seismic surveys on Annex II seal QIs is identified, and such are activities are not considered within this in-combination assessment for seals.

7.4.2.18 To estimate the number of Annex II cetaceans predicted to be disturbed from in-combination seismic surveys, the average density across the seas in which they are assumed to occur was calculated using the abundance of the corresponding SCANS-IV survey blocks:

- Harbour porpoise density of 0.162 animals/km^2; and
- Bottlenose dolphin density of 0.350 animals/km^2.

CUMULATIVE IPCOD MODELLING

7.4.2.19 Given the proximity of the Phase One offshore wind projects, there is potential for in-combination disturbance of marine mammals from underwater noise during piling. To estimate potential population consequences of in-combination disturbance from piling on Annex II marine mammal QIs (harbour porpoise, bottlenose dolphin, grey seal, and harbour seal), the iPCoD framework (Harwood *et al.*, 2014; King *et al.*, 2015) was applied (NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling).

7.4.2.20 iPCoD combined predicted impacts of disturbance for each projects in isolation to assess cumulative effects on the population, providing a link between disturbance and population-level outcomes. The scenarios considered in the modelling captured the range of foundation types and piling activity across Phase One projects during the construction period, providing precautionary estimates of in-combination disturbance while accounting for variation in noise output and spatial disturbance patterns :

- *Scenario 1:* Monopiles at all five Phase One projects; and
- *Scenario 2:* Monopiles at the Proposed Development, Oriel, Codling Wind Park; with pin pile jackets at NISA and Dublin Array.

7.4.2.21 The iPCoD modelling methodology, input parameters used, and assumptions made are fully described in NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling. The conservative nature of the scenarios and built-in precautions ensure that the results provide robust, precautionary estimates of population-level effects.This assessment follows best practice and uses the best available scientific information, providing a sufficient basis for assessing potential population-level consequences, although precaution should be applied when interpreting the results and subsequently in making conclusions.

7.4.2.22 To note, the iPCoD modelling has been undertaken against the species-specific MU population rather than any specific SAC population. As such, it provides valuable contextual information on the potential for regional-level population impacts, but does not provide specific information on the potential for impacts to SAC-specific populations.

ASSUMPTIONS AND PRECAUTION

7.4.2.23 In-combination assessments over large spatial scales require a number of assumptions, which introduce high levels of precaution. As a result, the estimated effects are likely overly conservative. The main areas of precaution in this assessment are:

- *High order UXO detonation*: Assumption for all projects due to lack of information regarding preferences for low order methodologies per project (which would have a 5 km EDR);
- *Piling assumptions for offshore wind*: All floating and fixed offshore wind projects are assumed to involve monopiles or pin piles without noise abatement on a precautionary basis given a lack of information on foundation types and mitigation that could be used to reduce noise exposure;
- *Temporal overlap*: Piling or UXO clearance are assumed to occur at any time during the construction period (though not at the same time), potentially over consecutive years, leading to higher in-combination disturbance than would occur in reality;
- *Number of concurrent projects*: Assumes all relevant offshore projects and developments are active simultaneously, which is unlikely given vessel and logistical constraints.
- *Tier 3 projects and limited information:* Lower tier developments (Tier 3) with limited or no public data (i.e. no ES/PEIR) are included using precautionary assumptions in the absence of other information;
- *Spatial overlap*: Impact footprints are assumed to be additive across projects, without accounting for actual overlap, likely overestimating in-combination disturbance;
- *EDR application*: Assumption that the EDRs developed for harbour porpoise can be applied across all Annex II marine mammal QIs; other species are generally less sensitive, therefore this is considered conservative;
- *EDR limits*: Published EDRs reflect areas of bulk effect had been detected, not maximum avoidance distance. Evidence suggests animals may habituate to repeated piling, so actual disturbance may be lower than assumed (Graham *et al.,* 2019);

- *Seismic surveys*: Assumed to occur continuously throughout survey days, whereas in practice airguns are switched off between survey lines (i.e. turns can take 2-3 hours and several can occur in a single day; BEIS, 2020), reducing actual exposure; and
- *Absence of project-specific noise modelling*: Where modelling is unavailable, standard EDRs are applied, which may overestimate disturbance compared with outputs from detailed noise modelling.

Construction and Decommissioning Phase Assessment

DISTURBANCE FROM UNDERWATER NOISE ON HARBOUR PORPOISE

7.4.2.24 The following are the designated sites for harbour porpoise considered within this in-combination assessment:

- Blackwater Bank SAC;
- Rockabill to Dalkey Island SAC;
- Codling Fault Zone SAC;
- West Wales Marine/ Gorllewin Cymru Forol SAC;
- Carnsore Point SAC;
- North Anglesey Marine / Gogledd Môn Forol SAC;
- Lambay Island SAC;
- Hook Head SAC;
- North Channel SAC;
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC;
- Roaringwater Bay and Islands SAC;
- Kenmare River SAC;
- Blasket Island SAC;
- Belgica Mound Province SAC;
- Bunduff Lough and Machair / Trawalua / Mullaghmore SAC;
- Inishmore Island SAC;
- Kilkieran Bay and Islands SAC;
- West Connacht Coast SAC; and
- Transboundary sites with Mainland Europe (listed in Section 6.4.24).

TIER 1 PROJECTS

7.4.2.25 Across Tier 1 projects, the highest predicted level of in-combination harbour porpoise predicted to be disturbed between 2021 and 2034 is in 2027, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour porpoise predicted to be disturbed in 2027 is 3,930 animals, representing 6.29% of the Irish and Celtic Sea MU population of 62,517 individuals (Table 7.6: Number of harbour porpoise disturbed by underwater noise in the in-combination assessment.. The number of harbour porpoise predicted to be impacted by the Proposed Development represents 48.55% of the total, with the remaining predicted in-combination disturbance attributable to other concurrent activities and projects within the MU.

7.4.2.26 iPCoD modelling undertaken for the Phase One projects (ABWP2, NISA, Dublin Array, Codling Wind Park, Oriel) indicates that, under both piling scenarios, predicted disturbance levels are insufficient to result in population-level effects, with the impacted population remaining on a stable trajectory at 99.6-99.7% of the un-impacted population size (NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling).

7.4.2.27 Taking account of the conclusions of the assessment alone for the harbour porpoise QI of Blackwater Bank SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.1), the in-combination effects are considered to affect a small proportion of the MU population, albeit at an increased proportion relative to the project alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.28 In relation to the COs for Irish, UK and transboundary sites for harbour porpoise (Table 5.1), the potential effects of underwater noise associated with construction on harbour porpoise have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the community at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. For UK sites, this is to maintain integrity of the site and FCS of the species, by ensuring the species is a viable component of the site, there is no significant disturbance, and the condition of supporting habitats and processes, and the availability of prey is maintained. For more detail, and the approach to sites for which no COs are outlined see the site-specific assessments (Bunduff Lough and Machair SAC (Section 6.4.13) and mainland European transboundary sites (Section 6.4.24)).

7.4.2.29 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour porpoise, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within one to two days (Brandt *et al.*, 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with cumulative noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the effects on the harbour porpoise population are insufficient to result in a population-level effect. All other Tier 1 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters) or will affect a very small number of animals (i.e. Greenlink Interconnector), therefore these additional projects are not expected to measurably increase in-combination effects on any given SAC with a harbour porpoise QI. Therefore, the community at any SAC within the MU is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with harbour porpoise expected to return following the cessation of high-noise construction activities.

7.4.2.30 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the harbour porpoise QI for Project Design Option 1.**

7.4.2.31 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND 2 PROJECTS

7.4.2.32 The assessment of Tier 1 and 2 projects is considered to be the most realistic as this includes projects that have been applied for. This means that full environmental impact assessments are available and there is reasonable confidence in the timelines of project construction.

7.4.2.33 Across Tier 1 and 2 projects, the highest predicted level of in-combination harbour porpoise disturbance between 2021 and 2034 is in 2027, which coincides with the expected construction

period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour porpoise predicted to be disturbed in 2027 is 4,602 animals, representing 7.36% of the MU population (Table 7.6: Number of harbour porpoise disturbed by underwater noise in the in-combination assessment.. The number of harbour porpoises predicted to be impacted by the Proposed Development represents 41.46% of the total, with the remaining predicted in-combination disturbance attributable to other concurrent activities and projects within the MU.

7.4.2.34 Taking account of the conclusions of the assessment alone for the harbour porpoise QI of Blackwater Bank SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.1), the in-combination effects are considered to affect only a small proportion of the MU population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.35 In relation to the COs for Irish, UK and transboundary sites for harbour porpoise (Table 5.1), the potential effects of underwater noise associated with construction on harbour porpoise have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the community at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. For UK sites, this is to maintain integrity of the site and FCS of the species, by ensuring the species is a viable component of the site, there is no significant disturbance, and the condition of supporting habitats and processes, and the availability of prey is maintained. For more detail, and the approach to sites for which no COs are outlined see the site-specific assessments (Bunduff Lough and Machair SAC (Section 6.4.13) and mainland European transboundary sites (Section 6.4.24)).

7.4.2.36 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour porpoise, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within one to two days (Brandt *et al.*, 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with cumulative noise disturbance occurring across up to five offshore wind projects in close proximity, the in-combination effects on the harbour porpoise population are insufficient to result in a population-level effect. All other Tier 1 and 2 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters) or will affect a very small number of animals (e.g. interconnectors or tidal devices), therefore these additional projects are not expected to measurably increase in-combination effects on any given SAC with a harbour porpoise QI. Therefore, the community at any SAC within the MU is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with harbour porpoise expected to return following the cessation of high-noise construction activities.

7.4.2.37 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and 2 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise impacting to the harbour porpoise QI for Project Design Option 1.**

7.4.2.38 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1, 2 AND 3 PROJECTS

7.4.2.39 The assessment of Tier 3 projects is subject to a high degree of uncertainty as these projects are not yet consented and may not proceed. As such, Tier 3 projects are considered less likely to contribute to an in-combination effects, and the results of this assessment are associated with low confidence.

7.4.2.40 Across Tier 1, 2 and 3 projects, the highest predicted level of in-combination harbour porpoise disturbance between 2021 and 2034 is in 2028, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour porpoise predicted to be disturbed in 2028 is 6,539 animals, representing 10.46% of the MU population (Table 7.6: Number of harbour porpoise disturbed by underwater noise in the in-combination assessment.. The number of harbour porpoises predicted to be impacted by the Proposed Development represents 29.18% of the total, indicating that the majority of predicted in-combination disturbance arises from other concurrent activities and projects within the MU.

7.4.2.41 When considering only projects with higher data confidence (Tier 1 and 2), predicted in-combination disturbance remains low throughout the assessment period (2021 – 2034). The highest predicted levels of disturbance for Tier 1 and Tier 2 projects occur between 2025 and 2034, peaking in 2027 at approximately 7.36% of the MU population (Table 7.6). Outside this peak construction window, disturbance levels are lower, with an average of 3.37% of the MU population predicted to be disturbed across all years considered in this in-combination assessment (2021 to 2034).

7.4.2.42 However, it is important to recognise that the likelihood of all Tier 1, 2, and 3 projects undertaking high-noise construction related activities at the same time is extremely unlikely. In 2028, this scenario assumes concurrent construction of 11 offshore windfarms and two power cable projects, decommissioning of one offshore windfarm, two seismic surveys, and piling at the Proposed Development (Table 7.6). Given logistical constraints, particularly the limited availability of piling vessels, simultaneous execution of all these activities is considered improbable. As such, predicted peak levels of disturbance should be interpreted as conservative upper bounds rather than realistic expectations.

7.4.2.43 Further precaution is associated with the assessment of seismic survey impacts. While large-scale 2D and 3D seismic surveys used in oil and gas exploration may generate large impact ranges (up to 10 km EDR for harbour porpoise; JNCC, 2025), evidence indicates that behavioural responses are short-term. Thompson *et al.* (2013b) demonstrated that harbour porpoise typically return to affected areas within approximately 19 hours following the cessation of survey activity. Accordingly, behavioural disturbance from seismic surveys is considered recoverable and unlikely to result in long-term displacement or population-level effects.

7.4.2.44 Although insufficient information on piling schedules across the Tier 3 projects precludes detailed population-level modelling, previous theoretical studies provide relevant context. For example, the Disturbance Effects of Noise on the Harbour Porpoise Population in the North Sea (DEPONS) modelling undertaken by Nabe-Nielsen *et al.* (2018) indicated that the North Sea harbour porpoise population was unlikely to experience significant long-term impacts from construction of 60 offshore windfarms (each comprising 65 turbines), despite up to 3,900 days of disturbance (between 2011 and 2020) and a temporary population decline of up 20%. Recovery to baseline population size was predicted within six to seven years. This scenario far exceeds the scale and duration of disturbance predicted in this in-combination assessment, indicating that any potential

population decline or population-level effects here would be smaller and with a quicker recovery to baseline.

7.4.2.45 Taking account of the conclusions for the assessment alone for the harbour porpoise QI Blackwater Bank SAC ((the closest designated site of relevance to the Proposed Development; see Section 6.4.1), the in-combination effects are considered to affect only a small proportion of the MU population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.46 In relation to the COs for Irish, UK and transboundary sites for harbour porpoise (Table 5.1), the potential effects of underwater noise associated with construction on harbour porpoise have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the community at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. For UK sites, this is to maintain integrity of the site and FCS of the species, by ensuring the species is a viable component of the site, there is no significant disturbance, and the condition of supporting habitats and processes, and the availability of prey is maintained. For more detail, and the approach to sites for which no COs are outlined see the site-specific assessments (Bunduff Lough and Machair SAC (Section 6.4.13) and mainland European transboundary sites (Section 6.4.24)).

7.4.2.47 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour porpoise, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within one to two days (Brandt *et al.*, 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with cumulative noise disturbance occurring across up to five offshore wind projects in close proximity, the in-combination effects on the harbour porpoise population are insufficient to result in a population-level effect. All other Tier 1 or 2 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters) or will affect a very small number of animals (e.g. interconnectors or tidal devices), therefore these additional projects are not expected to measurably increase in-combination effects on any given SAC with a harbour porpoise QI. The potential for the Tier 3 projects to contribute to in-combination disturbance on any SAC, in addition to the Proposed Development, is of lower likelihood. Therefore, the community at any SAC within the MU is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with harbour porpoise expected to return following the cessation of high-noise construction activities.

7.4.2.48 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1, 2 and 3 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the harbour porpoise QI for Project Design Option 1.**

7.4.2.49 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Table 7.6: Number of harbour porpoise disturbed by underwater noise in the in-combination assessment.

The Proposed Development construction window is indicated by red bars. Orange = Not yet/no longer operational; Grey = Abandoned/not in use; Blue = Construction; Pale blue = Decommissioning; Navy = Operation and maintenance

Project	Tier	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Proposed Development	1							1,908	1,908	1,908	1,908				
Codling Wind Park	1						353	353	353	353					
Dublin Array	1									353	353	353	353		
NISA	1							353	353	353	353				
Oriel	1								353	353	353				
Greenlink Interconnector	1				2	2	2								
Erebus Floating Wind Demo	1			20	20	20	20								
Awel y Môr	1			648	648	648	648	648							
Morgan	1					648	648	648	648						
North Hoyle	1											648	648	648	648
White Cross	1					20	20	20							
Burbo Bank	1											648	648	648	648
Walney 1	1											648	648	648	648
TwinHub	1				20	20	20								
Holyhead Deep	2						23	23							
West Anglesey Demonstration Zone	2		23	23	23	23	23								
Mona	2					648	648	648	648						
Celtic Interconnector	2				1	1	1	1							
ABWP 1	3							353	353	353	353				
Mares Connect	3						23	23	23						
Rosslare ORE Hub	3							23	23						
Port of Waterford ORE	3						3	3	3						

Pembrokeshire Demonstration Zone	3					2	2								
Erebus/Valorous Potential Cable Route	3						2	2	2						
Llyr 1	3							20	20	20					
Llyr 2	3							20	20	20					
Morecambe	3							648	648	648	648				
Mooir Vannin	3								353	353	353	353			
North Channel Wind 2	3								353	353	353	353			
LirlC	3						23	23	23	23					
North Channel Wind 1	3								353	353	353	353			
Seismic survey 1	3	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Seismic survey 2	3	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Tier 1		0	0	668	690	1,358	1,711	3,930	3,615	3,320	2,967	2,297	2,297	1,944	1,944
% MU[1]		0.00 %	0.00 %	1.07 %	1.10 %	2.17 %	2.74 %	6.29 %	5.78%	5.31 %	4.75 %	3.67 %	3.67 %	3.11 %	3.11 %
Tier 1 and 2		0	23	691	714	2,030	2,406	4,602	4,263	3,320	2,967	2,297	2,297	1,944	1,944
% MU[1]		0.00 %	0.04 %	1.11 %	1.14 %	3.25 %	3.85 %	7.36 %	6.82%	5.31 %	4.75 %	3.67 %	3.67 %	3.11 %	3.11 %
Tier 1, 2 and 3		102	125	793	816	2,134	2,561	5,819	6,539	5,545	5,129	3,458	2,399	2,046	2,046
% MU[1]		0.16 %	0.20 %	1.27 %	1.31 %	3.41 %	4.10 %	9.31 %	10.46 %	8.87 %	8.20 %	5.53 %	3.84 %	3.27 %	3.27 %

[1]Reference population represents the Celtic and Irish Sea MU population of 62,517 individuals (IAMMWG, 2023).

DISTURBANCE FROM UNDERWATER NOISE ON HARBOUR SEAL

7.4.2.50 The following are the designated sites for harbour seal considered within this in-combination assessment:

- Slaney River Valley SAC.

TIER 1 PROJECTS

7.4.2.51 Across Tier 1 projects, the highest predicted level of in-combination harbour seal disturbance between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour seal predicted to be disturbed in 2029 is 157 animals, representing 86.26% of the East region of RoI population of 182 individuals, and 11.39% of the combined population of 1,378 individuals from across the East and South-east RoI, Wales MU, and Northern Ireland MU for harbour seals (Table 7.7). The number of harbour seals predicted to be impacted by the Proposed Development represents 0.64% of the total, indicating that the majority of predicted in-combination disturbance arises from other concurrent activities and projects within the East RoI region.

7.4.2.52 iPCoD modelling results indicates that the level of disturbance predicted under both piling are insufficient to result in any population-level effects, with the impacted population remaining on a stable trajectory at the same size as the un-impacted population (NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling).

7.4.2.53 Taking account of the appropriate larger population size for the in-combination assessment, the conclusions of the assessment alone for the harbour seal QI of the Slaney River SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.2), the in-combination effects are considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.54 In relation to the site-specific COs for Slaney River Valley SAC (Table 5.1), the potential effects of underwater noise associated with construction on harbour seal have been assessed with reference to the CO for the QI for the site; to maintain the favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise.

7.4.2.55 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour seal, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within two hours (Russell *et al.,* 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to the SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with in-combination noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the in-combination effects on the harbour seal population are insufficient to result in a population-level effect (noting this comprises all the Tier 1 projects). Therefore, the population at the SAC is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response,

this will not comprise a permanent effect on the access or usage of the site, with harbour seals expected to return following the cessation of high-noise construction activities.

7.4.2.56 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects on the Slaney River Valley SAC, as defined by its COs, as a result of disturbance from underwater noise to the harbour seal QI for Project Design Option 1.**

7.4.2.57 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND 2 PROJECTS

7.4.2.58 Across Tier 1 and 2 projects, the predicted level of in-combination harbour seal disturbance is unchanged from the Tier 1 assessment. This reflects the fact that there are no Tier 2 projects located within the East region of RoI for harbour seals. Therefore, under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour seals predicted to be disturbed in 2029 remains as 157 animals, representing 86.26% of the East region of RoI population, and 11.39% of the combined population across the East and South-east RoI, Wales MU, and Northern Ireland MU for harbour seals (Table 7.7).

7.4.2.59 Taking account of the appropriate larger population size for the in-combination assessment, the conclusions of the assessment alone for the harbour seal QI of Slaney River SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.2), the conclusions presented for Tier 1 projects apply equally to the Tier 1 and Tier 2 scenario. In-combination effects are therefore considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.60 In relation to the site-specific COs for Slaney River Valley SAC (Table 5.1), the potential effects of underwater noise associated with construction on harbour seal have been assessed with reference to the CO for QI at the site; to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise.

7.4.2.61 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour seal, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within two hours (Russell *et al.,* 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to the SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with in-combination noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the in-combination effects on the harbour seal population are insufficient to result in a population-level effect. Therefore, the population at the SAC is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with harbour seals expected to return following the cessation of high-noise construction activities.

7.4.2.62 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and 2 Projects on the Slaney River Valley SAC, as defined by its COs, as a result of disturbance from underwater noise to the harbour seal QI for Project Design Option 1.**

7.4.2.63 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1, 2 AND 3 PROJECTS

7.4.2.64 Across Tier 1, 2 and 3 projects, the highest predicted level of in-combination harbour seal disturbance between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of harbour seals predicted to be disturbed in 2029 is 196 animals, representing 107.69% of the East region of RoI population of 182 animals, or 14.22% of the combined population of 1,378 animals across the East and South-east RoI, Wales MU, and Northern Ireland MU for harbour seals (Table 7.7). The number of harbour seals predicted to be impacted by the Proposed Development represents 0.83% of the total, indicating that the majority of predicted in-combination disturbance arises from other concurrent activities and projects within the wider region.

7.4.2.65 When considering only projects with higher data confidence (Tier 1 and 2), predicted in-combination disturbance of harbour seals remains limited throughout the assessment period (2021 – 2034). The highest predicted levels of disturbance for Tier 1 and Tier 2 projects occur during the Phase One offshore windfarm construction window between 2026 and 2032, peaking in 2029 at approximately 11.39% of the combined population size of 1,378 animals is assumed (Table 7.7). Outside this peak construction window, predicted levels of disturbance are lower, with an average of 3.05% of the combined reference population predicted to be disturbed across all years considered in this in-combination assessment (2021 to 2034)

7.4.2.66 Taking account of the appropriate larger population size for the in-combination assessment and the conclusions of the assessment alone for the harbour seal QI of Slaney River SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.2), the in-combination effects are considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.67 In relation to the site-specific COs for Slaney River Valley SAC (Table 5.1), the potential effects of underwater noise associated with construction on harbour seal have been assessed with reference to the CO for the QI; to maintain the favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise.

7.4.2.68 While underwater noise generated from high-noise activities during construction may result in temporary displacement of harbour seal, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within two hours (Russell *et al.,* 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to the SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with in-combination noise disturbance occurring across the five Phase One offshore

wind projects in close proximity, the in-combination effects on the harbour seal population are insufficient to result in a population-level effect. Furthermore, the potential for the Tier 3 project to contribute to in-combination disturbance on the SAC, in addition to the Proposed Development, is of lower likelihood. Therefore, the population at the SAC is not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with harbour seals expected to return following the cessation of high-noise construction activities.

7.4.2.69 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1, 2, and 3 Projects on the Slaney River Valley SAC, as defined by its COs, as a result of disturbance from underwater noise to the harbour seal QI for Project Design Option 1.**

7.4.2.70 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Table 7.7: Number of harbour seal disturbed by underwater noise in the in-combination assessment.

The Proposed Development construction window is indicated by red bars. Orange = Not yet/no longer operational; Grey = Abandoned/not in use; Blue = Construction; Pale blue = Decommissioning; Navy = Operation and maintenance

Project	Tier	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Proposed Development	1							1	1	1	1				
Codling Wind Park	1						39	39	39	39					
Dublin Array	1									39	39	39	39		
Oriel	1								39	39	39				
NISA	1							39	39	39	39				
Mares Connect	3						3	3	3						
ABWP 1	3							39	39	39	39				
Tier 1		0	0	0	0	0	39	79	118	157	118	39	39	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	21.43 %	43.41 %	64.84 %	86.26%	64.84 %	21.43 %	21.43 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	2.83%	5.73%	8.56%	11.39%	8.56%	2.83%	2.83%	0.00 %	0.00 %
Tier 1 and 2		0	0	0	0	0	39	79	118	157	118	39	39	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	21.43 %	43.41 %	64.84 %	86.26%	64.84 %	21.43 %	21.43 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	2.83%	5.73%	8.56%	11.39%	8.56%	2.83%	2.83%	0.00 %	0.00 %
Tier 1, 2 and 3		0	0	0	0	0	42	121	160	196	157	39	39	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	23.08 %	66.48 %	87.91 %	107.69 %	86.26 %	21.43 %	21.43 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	3.05%	8.78%	11.61 %	14.22%	11.39 %	2.83%	2.83%	0.00 %	0.00 %

[1]*Reference population represents the scaled East region of RoI population of 1,82 individuals (Morris and Duck, 2019).*

[2]*Reference population presents the scaled combined regions of East and South-east RoI, Wales MU and Northern Ireland MU of 1,378 individuals (Morris and Duck, 2019; SCOS, 2024).*

DISTURBANCE FROM UNDERWATER NOISE ON GREY SEAL

7.4.2.71 The following are the designated sites for grey seal considered within this in-combination assessment:

- Lambay Island SAC;
- Lleyn Peninsula and the Sarnau / Pen Llyn a'r Sarnau SAC;
- Cardigan Bay / Bae Ceredigion SAC;
- Pembrokeshire Marine / Sir Benfro Forol SAC; and
- Saltee Islands SAC.

TIER 1 PROJECTS

7.4.2.72 Across Tier 1 projects, the highest predicted level of in-combination grey seal disturbance between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of grey seal predicted to be disturbed in 2029 is 1,524 animals, representing 91.70% of the East region of RoI population of 1,662 individuals, and 15.34% of the combined population of 9,936 across the East and South-east RoI, Wales MU, and Northern Ireland MU for grey seals (Table 7.8). The number of grey seals predicted to be impacted by the Proposed Development represents 8.66% of the total, indicating that the majority of predicted in-combination disturbance arises from other concurrent activities and projects within the East RoI region.

7.4.2.73 iPCoD modelling results show that the level of disturbance predicted under both piling scenarios, predicted are insufficient to result in population-level effects, with the impacted population remaining on an increasing trajectory at the same size as the un-impacted population (NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling).

7.4.2.74 Taking into account the appropriate population size for the in-combination assessment, the conclusions for the assessment alone for the grey seal QI of the Lambay Island SAC (the closest designated site of relevance to the Proposed Development; see section 6.4.5), the in-combination effects are considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.75 In relation to the COs for the Irish and Welsh SACs with grey seal QIs (Table 5.1), the potential effects of underwater noise associated with construction on grey seal have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise. For Welsh sites, this is to maintain integrity of the site by ensuring that the grey seal population using the SAC remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, that seals can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.76 While underwater noise generated from high-noise activities during construction may result in temporary displacement of grey seal, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within two hours (Russell

et al., 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with in-combination noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the effects on the grey seal population are insufficient to result in a population-level effect (noting this comprises all the Tier 1 projects). Therefore, the populations in the SACs are not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with grey seals expected to return following the cessation of high-noise construction activities.

7.4.2.77 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the grey seal QI for Project Design Option 1.**

7.4.2.78 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND 2 PROJECTS

7.4.2.79 Across Tier 1 and 2 projects, the predicted level of in-combination grey seal disturbance is unchanged from the Tier 1 assessment. This reflects the fact that there are no Tier 2 projects located within the East region of RoI for grey seals. Therefore, under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of grey seals predicted to be disturbed in 2029 remains as 1,524 animals, representing 91.70% of the East region of RoI population, and 15.34% of the combined population across the East and South-east RoI, Wales MU, and Northern Ireland MU for grey seals (Table 7.8).

7.4.2.80 Taking into account the appropriate population size for the in-combination assessment, the conclusions for the assessment alone for the grey seal QI of the Lambay Island SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.5), the conclusions presented for Tier 1 projects apply equally to the Tier 1 and Tier 2 scenario. In-combination effects are therefore considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.81 In relation to the site-specific COs for the Irish and Welsh SACs with grey seal QIs (Table 5.1), the potential effects of underwater noise associated with construction on grey seal have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise. For Welsh sites, this is to maintain integrity of the site by ensuring that the grey seal population using the SAC remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, that seals can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.82 While underwater noise generated from high-noise activities during construction may result in temporary displacement of grey seal, any behavioural response is expected to be limited to the

period of noise generation, with individuals returning to affected areas within two hours (Russell *et al.,* 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with in-combination noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the effects on the grey seal population are insufficient to result in a population-level effect. The other Tier 2 project will affect a small number of animals, therefore this is not expected to measurably increase in-combination effects on the site. Therefore, the populations in the SACs are not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with grey seals expected to return following the cessation of high-noise construction activities.

7.4.2.83 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and 2 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the grey seal QI for Project Design Option 1.**

7.4.2.84 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1, 2 AND 3 PROJECTS

7.4.2.85 Across Tier 1, 2 and 3 projects, the highest number of grey seals predicted to be disturbed across Tier 1, 2, and 3 projects between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of grey seals predicted to be disturbed in 2029 is 1,872 animals, representing 112.64% of the East region of RoI population of 1,662 individuals and 18.84% of the combined population of 9,936 individuals across the East and South-east RoI, Wales MU, and Northern Ireland MU for grey seals (Table 7.8). The number of grey seals predicted to be impacted by the Proposed Development represents 7.05% of the total, indicating that the majority of predicted in-combination disturbance arises from other concurrent activities and projects within the wider region.

7.4.2.86 When considering only projects with higher data confidence (Tier 1 and 2), predicted in-combination disturbance of grey seals remains limited to a relatively small proportion of the MU population throughout the assessment period (2021 – 2034). The highest predicted levels of disturbance occur during the Phase One offshore windfarm construction window between 2026 and 2032, peaking in 2029 at approximately 15.34% of the reference populations when assuming the combined population size (Table 7.8). Outside this peak construction window, predicted levels of disturbance are lower, with an average of 4.13% of the combined reference population predicted to be disturbed across all years considered in this in-combination assessment (2021 to 2034).

7.4.2.87 Taking into account the appropriate larger population size for the in-combination assessment, the conclusions for the assessment alone for the grey seal QI of the Lambay Island SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.5), the in-combination effects are considered to affect a small proportion of the population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.88 In relation to the COs for the Irish and Welsh SACs with grey seal QIs (Table 5.1), the potential effects of underwater noise associated with construction on grey seal have been assessed with reference to the CO for the QI across sites. For Irish sites, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality), or restriction on access to or usage of the site. Coastal or terrestrial habitats used for breeding, moulting or resting will not be impacted by underwater noise. For Welsh sites, this is to maintain integrity of the site by ensuring that the grey seal population using the SAC remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, that seals can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.89 While underwater noise generated from high-noise activities during construction may result in temporary displacement of grey seal, any behavioural response is expected to be limited to the period of noise generation, with individuals returning to affected areas within two hours (Russell *et al.,* 2016). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return. However, the iPCoD modelling demonstrates that even with cumulative noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the effects on the grey seal population are insufficient to result in a population-level effect. Furthermore, the potential for the Tier 3 project to contribute to in-combination disturbance on an SAC, in addition to the Proposed Development, is of lower likelihood. Therefore, the populations of the SACs are not expected to be significantly affected by in-combination construction activities. Furthermore, due to the temporary nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with grey seals expected to return following the cessation of high-noise construction activities.

7.4.2.90 **Given the highly precautionary nature of the assessment, and the absence of predicted population-level effects or restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1, 2 and 3 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to grey seal QI for Project Design Option 1.**

7.4.2.91 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Table 7.8: Number of grey seal disturbed by underwater noise in the in-combination assessment.

The Proposed Development construction window is indicated by red bars. Orange = Not yet/no longer operational; Grey = Abandoned/not in use; Blue = Construction; Pale blue = Decommissioning; Navy = Operation and maintenance

Project	Tier	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Proposed Development	1							132	132	132	132				
Codling Wind Park	1						348	348	348	348					
Dublin Array	1									348	348	348	348		
Oriel	1								348	348	348				
NISA	1							348	348	348	348				
Mares Connect	3						22	22	22						
ABWP 1	3							348	348	348	348				
Tier 1		0	0	0	0	0	348	828	1,176	1,524	1,176	348	348	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	20.94 %	49.82 %	70.76 %	91.70%	70.76 %	20.94 %	20.94 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	3.50%	8.33%	11.84 %	15.34%	11.84 %	3.50%	3.50%	0.00 %	0.00 %
Tier 1 and 2		0	0	0	0	0	348	828	1,176	1,524	1,176	348	348	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	20.94 %	49.82 %	70.76 %	91.70%	70.76 %	20.94 %	20.94 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	3.50%	8.33%	11.84 %	15.34%	11.84 %	3.50%	3.50%	0.00 %	0.00 %
Tier 1, 2 and 3		0	0	0	0	0	370	1,198	1,524	1,872	1,524	348	348	0	0
% MU (alone)[1]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	22.26 %	72.08 %	91.70 %	112.64 %	91.70 %	20.94 %	20.94 %	0.00 %	0.00 %
% MU (combined)[2]		0.00 %	0.00 %	0.00 %	0.00 %	0.00 %	3.72%	12.06 %	15.34 %	18.84%	15.34 %	3.50%	3.50%	0.00 %	0.00 %

[1]Reference population represents the scaled East region of RoI population of 1,662 individuals (Morris and Duck, 2019).

[2]Reference population presents the scaled combined regions of East and South-east RoI, Wales MU and Northern Ireland MU of 9,936 individuals (Morris and Duck, 2019; SCOS, 2024).

DISTURBANCE FROM UNDERWATER NOISE ON BOTTLENOSE DOLPHIN

7.4.2.92 The following are the designated sites for bottlenose dolphin considered within this in-combination assessment:

- Lleyn Peninsula and the Sarnau / Pen Llyn a'r Sarnau SAC;
- Cardigan Bay / Bae Ceredigion SAC; and
- Hook Head SAC.

TIER 1 PROJECTS

7.4.2.93 Across Tier 1 projects, the highest predicted level of in-combination bottlenose dolphin disturbance between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of bottlenose dolphins predicted to be disturbed in 2029 is 2,365 animals, representing 807.17% of the Irish Sea MU population (Table 7.9).

7.4.2.94 As discussed within the alone assessment (see Section 6.4.18), the number of animals available in the area that could be disturbed are being over-predicted as it exceeds the Irish Sea MU population size of 293 animals. However, this population size does not take into account the connectivity of the MU population with other areas (O'Brien *et al.*, 2009; Robinson *et al.,* 2012; NRW, 2025b). If the SCANS-IV abundance estimate for the Irish Sea (blocks CS-D and CS-E) of 8,326 animals is utilised instead, the percentage of the population predicted to be disturbed reduces to 28.40% (Table 7.9). The number of bottlenose dolphins predicted to be impacted by the Proposed Development represents 49.94% of the total, with the remaining predicted in-combination disturbance attributable to other concurrent activities and projects within the MU.

7.4.2.95 A key source of precaution in this assessment is that the harbour porpoise EDRs have been used for bottlenose dolphins, as there is no equivalent for this species. Harbour porpoise have a higher hearing sensitivity than bottlenose dolphins (Southall *et al.*, 2019) and are considered to be particularly responsive to anthropogenic disturbance, with multiple studies showing that porpoises respond (avoidance and reduced vocalisation) to a variety of anthropogenic noise sources to distances of multiple kilometres (Brandt *et al.*, 2013; Thompson *et al.*, 2013a; Tougaard *et al.,* 2013; Brandt *et al.*, 2018; Sarnocinska *et al.*, 2020; Benhemma-Le Gall *et al.*, 2021; Benhemma-Le Gall *et al.*, 2023).

7.4.2.96 Studies have shown that dolphin species show comparatively less of a disturbance response from underwater noise compared to harbour porpoise (Kastelein *et al.*, 2006; Stone *et al.*, 2017). For example, bottlenose dolphins in the Moray Firth have been shown to remain in the impacted area during both seismic activities and pile installation activities (Fernandez-Betelu *et al.*, 2021), which demonstrates a reduced behavioural response (i.e. displacement) as compared to harbour porpoise. Considering the above, it can be concluded that using EDRs derived from studies on harbour porpoise as a proxy for bottlenose dolphins is likely to result in an over-estimate of the number of bottlenose dolphins predicted to experience disturbance.

7.4.2.97 The iPCoD modelling indicates that pile driving causes a slight initial reduction in mean bottlenose dolphin population size under both the dose-response and Level B harassment approaches, after which the population stabilises at approximately 95-98% of the un-impacted mean population size. It is also important to consider that as the iPCoD model does not currently allow for a density-dependent responses, there is no possibility for the impacted population to increase in size following piling disturbance. Despite this small initial reduction, the long-term population trajectory remains stable (NIS Volume III, Appendix 11.3: Phase 1 Irish Offshore Wind Farms: Cumulative iPCoD Modelling).

7.4.2.98 Taking account of the appropriate combined population size for the in-combination assessment and the conclusions of the assessment alone for the bottlenose dolphin QI of the Lleyn Peninsula and the Sarnau SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.18), the in-combination effects are considered to affect a small proportion of the MU population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.99 In relation to the COs for Irish and Welsh sites for bottlenose dolphin (Table 5.1), the potential effects of underwater noise associated with construction on bottlenose dolphin have been assessed with reference to the CO for the QI across sites. For Hook Head SAC, this is to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality, or effects on demographic parameters or residency), or restriction on access to or usage of the site. For Welsh sites, this is to maintain the integrity of the site by ensuring that the bottlenose dolphin population remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, dolphins can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.100 Underwater noise generated from high-noise activities during construction may result in temporary displacement of bottlenose dolphin (Graham *et al.*, 2017a), though other studies have demonstrated a lack of displacement from preferred habitat when distant from the piling noise (Fernandez-Betelu *et al.*, 2021). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return.

7.4.2.101 The iPCoD modelling demonstrates that with cumulative noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the bottlenose dolphin population trajectory remains stable at 95-98% of the original size, despite a slight initial reduction. All other Tier 1 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters) or will affect a small number of animals (i.e. Greenlink Interconnector), therefore these additional projects are not expected to increase in-combination effects on any local population (e.g. SAC population) of bottlenose dolphin within the MU. Therefore, the population at any SAC within the MU is not expected to be significantly affected by in-combination construction activities.

7.4.2.102 It is highlighted that the disturbance contours from the Proposed Development do not overlap with Hook Head SAC and Belgica Mound Province SAC, therefore there is not predicted to be any temporary disturbance in these sites from the Proposed Development. Therefore, the Proposed Development will not contribute to any in-combination displacement effects in those sites that could comprise restriction on access. The outermost disturbance contours from the Proposed Development overlap the Lleyn Peninsula and the Sarnau SAC, but the probability of a disturbance response to the noise levels in the sites are low (Section 6.4.18). This is also expected to be the case for Cardigan Bay SAC which is close to the Lleyn Peninsula and the Sarnau SAC. Other Tier 1 projects are similarly distant to these SACs and therefore expected to have a similar low probability of leading to displacement from these SACs, therefore no restriction on access to the sites or habitats surrounding the sites are predicted. Furthermore, due to the temporary or unlikely nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with bottlenose dolphin expected to return following the cessation of high-noise construction activities.

7.4.2.103 **Given the highly precautionary nature of the assessment, the predicted stable population trajectory, and absence of restrictions on site usage, it is concluded that there will be no**

AEoI from the Proposed Development in-combination with Tier 1 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the bottlenose dolphin QI for Project Design Option 1.

7.4.2.104 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND 2 PROJECTS

7.4.2.105 Across Tier 1 and 2 projects, the highest predicted level of in-combination bottlenose dolphin disturbance across Tier 1 and 2 projects between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of bottlenose dolphins predicted to be disturbed in 2029 is 2,365 animals, representing 807.17% of Irish Sea MU reference population or 28.40% of the population using the SCANS-IV abundance estimate (Table 7.9). The number of bottlenose dolphins predicted to be impacted by the Proposed Development represents 49.94% of the total, with the remaining predicted in-combination disturbance attributable to other concurrent activities and projects within the MU.

7.4.2.106 Taking account of the appropriate larger population size for the in-combination assessment, the conclusions of the assessment alone for the bottlenose dolphin QI of the Lleyn Peninsula and the Sarnau SAC (Section 6.4.18), the in-combination effects are considered to affect a small proportion of the MU population, albeit at an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.107 In relation to the site-specific COs for Irish and Welsh sites for bottlenose dolphin (Table 5.1), the potential effects of underwater noise associated with construction on bottlenose dolphin have been assessed with reference to the CO for the QI across sites, For Hook Head SAC, this to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality, or effects on demographic parameters or residency), or restriction on access to or usage of the site. For Welsh sites, this is to maintain the integrity of the site by ensuring that the bottlenose dolphin population remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, dolphins can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.108 Underwater noise generated from high-noise activities during construction may result in temporary displacement of bottlenose dolphin (Graham *et al.*, 2017a), though other studies have demonstrated a lack of displacement from preferred habitat when distant from the piling noise (Fernandez-Betelu *et al.*, 2021). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return.

7.4.2.109 The iPCoD modelling demonstrates that with cumulative noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the bottlenose dolphin population trajectory remains stable at 95-98% of the original size, despite a slight initial reduction. All other Tier 1 and 2 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters) or will affect a small number of animals (i.e. interconnectors and tidal devices), therefore these additional projects are not expected to increase in-combination effects on any local population (e.g. SAC population) of bottlenose dolphin within the MU.

Therefore, the population at any SAC within the MU is not expected to be significantly affected by in-combination construction activities.

7.4.2.110 It is highlighted that the disturbance contours from the Proposed Development do not overlap with Hook Head SAC and Belgica Mound Province SAC, therefore there is not predicted to be any temporary disturbance in these sites from the Proposed Development. Therefore, the Proposed Development will not contribute to any in-combination displacement effects in those sites that could comprise restriction on access. The outermost disturbance contours from the Proposed Development overlap the Lleyn Peninsula and the Sarnau SAC, but the probability of a disturbance response to the noise levels in the sites are low (Section 6.4.18). This is also expected to be the case for Cardigan Bay SAC which is close to the Lleyn Peninsula and the Sarnau SAC. Most other Tier 1 and 2 projects are similarly distant to these SACs and therefore expected to have a similar low probability of leading to displacement from these SACs; or they have a very low likelihood of leading to displacement (e.g. from tidal devices). Therefore, no restriction on access to the sites or habitats surrounding the sites are predicted. Furthermore, due to the temporary or unlikely nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with bottlenose dolphin expected to return following the cessation of high-noise construction activities.

7.4.2.111 **Given the highly precautionary nature of the assessment, the predicted stable population trajectory, and absence of restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and 2 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the bottlenose dolphin QI for Project Design Option 1.**

7.4.2.112 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1, 2 AND 3 PROJECTS

7.4.2.113 Across Tier 1, 2 and 3 projects, the highest predicted level of in-combination bottlenose dolphin disturbance between 2021 and 2034 is in 2029, which coincides with the expected construction period of the Proposed Development. Under a highly precautionary assumption that all other potential high-noise construction activities, including piling and UXO clearance, occur concurrently, the maximum in-combination number of bottlenose dolphins predicted to be disturbed in 2029 is 3,674 animals, representing 1,253.92% of the Irish Sea MU reference population or 44.13% of the population using the SCANS-IV abundance estimate (Table 7.9).

7.4.2.114 When considering only projects with higher data confidence (Tier 1 and 2), predicted in-combination disturbance remains low throughout the assessment period (2021-2034). The highest predicted levels of disturbance occur between 2027 and 2030, peaking in 2029 at approximately 28.40% of the larger population size (Table 7.9). Outside this peak construction window, predicted levels of disturbance are lower, with an average of 8.36% of the larger reference population predicted to be disturbed across all years considered in this in-combination assessment (2021 to 2034).

7.4.2.115 Taking account of the appropriate larger population size for the in-combination assessment and the conclusions of the assessment alone for the bottlenose dolphin QI of the Lleyn Peninsula and the Sarnau SAC (the closest designated site of relevance to the Proposed Development; see Section 6.4.18), the in-combination effects are considered to affect a moderate proportion of the MU population, an increased proportion relative to the alone assessment. While temporary behavioural changes or redistribution across multiple projects and years could result in minor, short-term reductions in reproductive output for some individuals, these effects are not expected to influence the population trajectory.

7.4.2.116 In relation to the COs for Irish and Welsh sites for bottlenose dolphin (Table 5.1), the potential effects of underwater noise associated with construction on bottlenose dolphin have been assessed with reference to the CO for the QI across sites. to maintain the species' favourable conservation condition, which is defined by the following attributes and targets: ensuring that human activities do not occur at levels that can affect the population at the site (through disturbance, injury or mortality, or effects on demographic parameters or residency), or restriction on access to or usage of the site. For Welsh sites, this is to maintain the integrity of the site by ensuring that the bottlenose dolphin population remains in favourable condition over the medium and long term. This requires that the population remains a viable component of the site, dolphins can access and utilise the habitats necessary to support the population, and the condition of supporting habitats and processes, and the availability of prey is maintained.

7.4.2.117 Underwater noise generated from high-noise activities during construction may result in temporary displacement of bottlenose dolphin (Graham *et al.*, 2017a), though other studies have demonstrated a lack of displacement from preferred habitat when distant from the piling noise (Fernandez-Betelu *et al.*, 2021). It is noted that, due to the in-combination nature of construction across multiple projects, noise from other projects in close proximity to an SAC may lead to an increase in the timeframe over which animals may return.

7.4.2.118 The iPCoD modelling demonstrates that with cumulative noise disturbance occurring across the five Phase One offshore wind projects in close proximity, the bottlenose dolphin population trajectory remains stable at 95-98% of the original size, despite a slight initial reduction. All other Tier 1, 2 and 3 projects are located at significant distance from the Phase Ones (e.g. offshore wind farms in Welsh or English waters), or will affect a small number of animals (i.e. interconnectors and tidal devices), or have a low likelihood of occurring at the assumed time (e.g. seismic survey), therefore these additional projects are not expected to increase in-combination effects on any local population (e.g. SAC population) of bottlenose dolphin within the MU. Therefore, the population at any SAC within the MU is not expected to be significantly affected by in-combination construction activities.

7.4.2.119 It is highlighted that the disturbance contours from the Proposed Development do not overlap with Hook Head SAC and Belgica Mound Province SAC, therefore there is not predicted to be any temporary disturbance in these sites from the Proposed Development. Therefore, the Proposed Development will not contribute to any in-combination displacement effects in those sites that could comprise restriction on access. The outermost disturbance contours from the Proposed Development overlap the Lleyn Peninsula and the Sarnau SAC, but the probability of a disturbance response to the noise levels in the sites are low (Section 6.4.18). This is also expected to be the case for Cardigan Bay SAC which is close to the Lleyn Peninsula and the Sarnau SAC. Most other Tier 1, 2 and 3 projects are similarly distant to these SACs and therefore expected to have a similar low probability of leading to displacement from these SACs; or they have a very low likelihood of leading to displacement (e.g. from tidal devices). Therefore no restriction on access to the sites or habitats surrounding the sites are predicted. Furthermore, due to the temporary or unlikely nature of the disturbance response, this will not comprise a permanent effect on the access or usage of the site, with bottlenose dolphin expected to return following the cessation of high-noise construction activities.

7.4.2.120 **Given the highly precautionary nature of the assessment, the predicted stable population trajectory, and absence of restrictions on site usage, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1, 2 and 3 Projects on any of the listed designated sites, as defined by their COs, as a result of disturbance from underwater noise to the bottlenose dolphin QI for Project Design Option 1.**

7.4.2.121 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Table 7.9: Number of bottlenose dolphins disturbed by underwater noise in the in-combination assessment.

The Project construction window is indicated by red bars. Orange = Not yet/no longer operational; Grey = Abandoned/not in use; Blue = Construction; Pale blue = Decommissioning; Navy = Operation and maintenance

Project	Tier	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Proposed Development	1							1,181	1,181	1,181	1,181				
Codling Wind Park	1						296	296	296	296					
Dublin Array	1									296	296	296	296		
NISA	1							296	296	296	296				
Oriel	1								296	296	296				
Greenlink Interconnector	1				33	33	33								
Burbo Bank	1											14	14	14	14
Walney 1	1											14	14	14	14
Awel y Môr	1			14	14	14	14	14							
Morgan	1					14	14	14	14						
North Hoyle	1											14	14	14	14
Holyhead Deep	2						19	19							
Mona	2					14	14	14	14						
West Anglesey Demonstration Zone	2		19	19	19	19	19								
Morecambe	3							14	14	14	14				
Mooir Vannin	3								296	296	296	296			
ABWP 1	3							296	296	296	296				
Mares Connect	3						19	19	19						
Rosslare ORE	3							19	19						
Port of Waterford ORE	3						0	0	0						
North Channel Wind 2	3								296	296	296	296			
North Channel Wind 1	3								296	296	296	296			
Seismic survey 1	3	111	111	111	111	111	111	111	111	111	111	111	111	111	111
Tier 1		0	0	14	47	61	357	1,801	2,083	2,365	2,069	338	338	42	42

% MU (alone)[1]	0.00 %	0.00 %	4.78 %	16.04%	20.82%	121.84%	614.68%	710.92 %	807.17 %	706.14 %	115.36%	115.36%	14.33%	14.33%
% MU (combined)[2]	0.00 %	0.00 %	0.17 %	0.56 %	0.73 %	4.29 %	21.63 %	25.02 %	28.40 %	24.85 %	4.06 %	4.06 %	0.50 %	0.50 %
Tier 1 and 2	0	19	33	66	94	409	1,834	2,097	2,365	2,069	338	338	42	42
% MU (alone)[1]	0.00 %	6.48 %	11.26%	22.53%	32.08%	139.59%	625.94%	715.70 %	807.17 %	706.14 %	115.36%	115.36%	14.33%	14.33%
% MU (combined)[2]	0.00 %	0.23 %	0.40 %	0.79 %	1.13 %	4.91 %	22.26 %	25.19 %	28.40 %	24.85 %	4.06 %	4.06 %	0.50 %	0.50 %
Tier 1, 2 and 3	111	130	144	177	205	539	2,293	3,444	3,674	3,378	1,337	449	153	153
% MU (alone)[1]	37.88%	44.37%	49.15%	60.41%	69.97%	183.96%	782.59%	1,175.43%	1,253.92%	1,152.90%	456.31%	153.24%	52.22%	52.22%
% MU (combined)[2]	1.33 %	1.56 %	1.73 %	2.13 %	2.46 %	6.47 %	27.54 %	41.14 %	44.13 %	40.57 %	16.06 %	5.39 %	1.84 %	1.84 %

[1]Reference population represents the Irish Sea MU population of 293 individuals (IAMMWG, 2023).

[2]Reference population represents SCANS-IV abundance estimate of the Irish Sea (blocks CS-D and CS-E) of 8,326 individuals (Gilles et al., 2023).

7.4.3 Annex II Migratory Fish Species

7.4.3.1 The in-combination migratory fish species assessment has considered the same potential impacts, SAC and QIs screened in for assessment of the Proposed Development alone (Section 6.6). The additional Plans and Projects considered are listed in Table 7.3 above.

7.4.3.2 Tier 1 projects screened in also includes dredge disposal for the Dublin Port company and Wexford County Council, with disposal scheduled to take place during the construction and operational and maintenance phases of the Proposed Development. Tier 1 projects also include the operation of ABWP1, bed-level dredging for Wicklow County Council and dredge disposal for the Wexford County Council. ABWP1 consists of seven WTGs and taking a precautionary approach the operational phase of ABWP1 may overlap with the construction and operational phases of the Proposed Development. Disposal for Wexford County Council and dredging for Wicklow County Council are scheduled to take place during the construction phase of the Proposed Development.

7.4.3.3 Phase One OWF projects screened in as Tier 1 projects (including associated ECC) consist of Codling Wind Park, Dublin Array and NISA. The construction phase of Codling Wind Park, Dublin Array and NISA may overlap with the construction phase of the Proposed Development, with the construction phase for Dublin Array also overlapping with the operational phase of the Proposed Development. The operational phase of Codling Wind Park, Dublin Array and NISA may overlap with the operational phase of the Proposed Development.

7.4.3.4 Plans for Dublin Array indicate that the proposed development will comprise a maximum of 45 WTGs and 1 OSP (Kish Offshore Wind Ltd., 2025). Plans for Codling Wind Park indicate that the proposed development may comprise up to 75 WTGs and up to three OSPs (Codling Wind Park, 2024). Plans for NISA indicate up to 49 WTGs and 1 OSP (Ove Arup & Partners Ireland Limited, 2024). All the Phase one projects show similar construction, operation and decommissioning activities and therefore the impacts and magnitudes of the impacts are expected to be similar in nature to that of the Proposed Development.

7.4.3.5 There are no Tier 2 project screened in to the assessment.

7.4.3.6 Tier 3 projects screened in are the decommissioning of ABWP1, Rosslare Euro Port and Mares Connect. The decommissioning of ABWP1 may overlap with the construction phase of the Proposed Development. In the absence of any decommissioning details in relation to ABWP1, indicative decommissioning methodologies and assumptions are informed by the Rehabilitation Schedule (NIS Volume III, Appendix 4.1: Rehabilitation Schedule) for the Proposed Development. The owner and operator of the ABWP1, Arklow Energy Limited has commenced pre-application consultation (Case Reference OC27.321635) with the appropriate local authorities to decommission ABWP1, which has reached the end of its operating life. The ABWP1 team has begun engaging with the Maritime Area Regulatory Authority (MARA) and is working closely with An Coimisiún Pleanála to agree on the details of the decommissioning and removal works. Based on the fact that the ABWP1 team has commenced the pre-application process for decommissioning it is expected that ABWP1 will be fully decommissioned before commencement of operation of the Proposed Development. The construction of Mares Connect may overlap with the construction phase of the Proposed Development, and the operation of the Mares Connect may overlap with the construction and operation phases of the Proposed Development. .

Construction and Decommissioning

INJURY AND/OR DISTURBANCE FROM UNDERWATER NOISE – PILING ACTIVITIES

7.4.3.7 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC

TIER 1 PROJECTS

7.4.3.8 From the other offshore windfarm Tier 1 projects (Phase One projects), underwater noise will occur as a result of the installation of WTGs and OSPs during the construction phase of Codling Wind Park, Dublin Array and NISA. The greatest risk of in-combination impacts from underwater noise has been identified as that generated in the event that concurrent piling of the Proposed Development occurs along with the concurrent piling of the Phase One projects.

7.4.3.9 The construction phase of Codling Wind Park is due to take place between 2026-2029, the construction phase of Dublin Array is due to take place between 2029-2032 and NISA is due to take place between 2027-2030. The timings of piling events are uncertain, and therefore it is assumed that the piling for these three Phase one projects may temporally overlap with the piling for the Proposed Development.

7.4.3.10 NISA is anticipated to involve the piling of 51 monopiles and 144 pin piles over a 9-month period, with individual piling events lasting a couple days followed by a couple days without piling (Ove Arup & Partners Ireland Limited, 2024). Dublin Array is anticipated to involve the pilling of either 45 monopiles, 39 monopiles or 50 4-leg jacket foundation pin piles, over either 57 days across a 4-month period or 125 days across a 19-month period (Kish Offshore Wind Ltd., 2025). Codling Wind Park is anticipated to involve the piling of 75 monopiles with 75 piling days (Codling Wind Park, 2024).

7.4.3.11 Mortality and mortal injuries and recoverable injuries are expected to be small in extent, with Atlantic salmon, twaite shad and lamprey being able to avoid the noise sources during soft start procedures before the onset of these effects. TTS and behavioural effects will affect a larger number of individuals, however these species are expected to be able to fully recover between project piling operations.

7.4.3.12 Piling operations will represent intermittent occurrences at these offshore windfarm sites, with each individual piling event likely to be similar in duration to that of the Proposed Development. The total duration of piling during the construction of all Phase One projects is anticipated to be at most short-term (i.e., lasting one to seven years).

TWAITE SHAD

7.4.3.13 It is considered that in-combination risks of recoverable injury or mortality of twaite shad, from piling noise would not be expected to occur as a result of the Proposed Development and these projects due to the distances between these OWFs being larger than the impact ranges (i.e. >207 dB SPL_{peak} thresholds for mortality and recoverable injury occur up to 330 m away from C monopile).

7.4.3.14 Should piling at the Proposed Development coincide with piling at the other Phase One projects, as well as coinciding with migration periods for twaite shad, behavioural and TTS effects may be greater than that for the project alone. Behavioural effects are likely to consist of avoidance behaviour of the noise source, which may interfere with their migration. However, behavioural effects are likely to be short term in duration given the short term and intermittent nature of piling events.

7.4.3.15 **In-combination risks are expected to be largely restricted to behavioural effects and are not expected to manifest at levels that would compromise the maintenance of the population. Considering the low duration and low frequency of piling events it is concluded that there will be no AEoI from the Proposed Development in-combination with**

the Tier 1 projects as a result of noise generated during piling on twaite shad from Project Design Option 1.

7.4.3.16 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

ATLANTIC SALMON

7.4.3.17 It is considered that in-combination risks of recoverable injury or mortality of Atlantic salmon, from piling noise would not be expected to occur as a result of the Proposed Development and these projects due to the distances between these OWFs being larger than the impact ranges (i.e. >207 dB SPL_{peak} thresholds for mortality and recoverable injury occur up to 330 m away from C monopile).

7.4.3.18 Should piling at the Proposed Development coincide with piling at the other Phase One projects, as well as coinciding with migration periods for Atlantic salmon, behavioural and TTS effects may be greater than that for the project alone. Behavioural effects are likely to consist of avoidance behaviour of the noise source, which may interfere with their migration. However, behavioural effects are likely to be short term in duration given the short term and intermittent nature of piling events.

7.4.3.19 **In-combination risks are expected to be largely restricted to behavioural effects and are not expected to manifest at levels that would compromise the maintenance of the population. Considering the low duration and low frequency of piling events it is concluded that there will be no AEoI from the Proposed Development in-combination with Phase 1 Projects as a result of noise generated during piling on Atlantic salmon from Project Design Option 1.**

7.4.3.20 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

FRESHWATER PEARL MUSSEL

7.4.3.21 **As it was concluded that there would be no AEoI for Atlantic salmon, the same is concluded for freshwater pearl mussels and therefore there is no AEoI on the freshwater pearl mussel QI from the Proposed Development in-combination with Phase 1 Projects as a result of noise generated during piling from Project Design Option 1.**

7.4.3.22 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

RIVER AND SEA LAMPREY

7.4.3.23 It is considered that in-combination risks of recoverable injury or mortality of river and sea lamprey, from piling noise would not be expected to occur as a result of the Proposed Development and these projects due to the distances between these OWFs being larger than the impact ranges (i.e. >213 dB SPL_{peak} thresholds for mortality and recoverable injury occur up to 140 m away from C monopile).

7.4.3.24 Should piling at the Proposed Development coincide with piling at the other Phase One projects, as well as coinciding with migration periods for lamprey, behavioural effects may be greater than that for the project alone. Behavioural effects are likely to consist of avoidance behaviour of the noise source, which may interfere with their migration. However, behavioural effects are likely to be short term in duration given the short term and intermittent nature of piling events.

7.4.3.25 **In-combination risks are expected to be largely restricted to behavioural effects and are not expected to manifest at levels that would compromise the maintenance of the**

population. Considering the low duration and low frequency of piling events it is concluded that there will be no AEoI from the Proposed Development in-combination with Phase 1 Projects as a result of noise generated during piling on lamprey from Project Design Option 1.

7.4.3.26 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.3.27 The construction of Rosslare Euro Port may overlap with the construction of the Proposed Development. However, underwater noise generated as a result of impact piling associated with the Rosslare Euro Port is anticipated to be restricted in extent, with project specific modelling indicating an exceedance of the peak threshold for mortality and potentially mortal injury and recoverable injury, for fish with a swim bladder (>213 dB peak, stationary receptor assumed), at 46 m (Irish Rail, 2024).

7.4.3.28 The other Tier 3 projects (decommissioning of ABWP1 and Mares Connect) are not anticipated to undertake piling, and have been considered under 'Injury and/or disturbance from underwater noise – other activities' below.

7.4.3.29 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Teir 1 and Tier 3 Projects as a result of noise generated during piling on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.30 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

INJURY AND/OR DISTURBANCE FROM UNDERWATER NOISE – OTHER ACTIVITIES

7.4.3.31 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC.

TIER 1 PROJECTS

7.4.3.32 Noise generated from continuous noise sources (e.g. vessel activity) and UXO detonation is likely to be low in extent and intermittent for both the Proposed Development and the Tier 1 projects.

7.4.3.33 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of noise generated during piling on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.34 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.3.35 Noise generated from continuous noise sources (e.g. vessel activity) and UXO detonation is likely to be low in extent and intermittent for both the Proposed Development and the Tier 3 projects.

7.4.3.36 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and Tier 3 Projects as a result of noise generated during piling on**

Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.

7.4.3.37 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

ACCIDENTAL POLLUTION

7.4.3.38 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC

TIER 1 PROJECTS

7.4.3.39 Accidental release of pollutants during the construction phase of the Proposed Development and the construction and operational phases of other Tier 1 projects is predicted to be of near-field and adjacent far field extent, short-term duration (any pollutant will be quickly dispersed), infrequent and of a low likelihood of occurring.

7.4.3.40 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of accidental pollution on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.41 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.3.42 Accidental release of pollutants during the decommissioning of ABWP1, construction of Rosslare Euro Port and construction and operation of Mares Connect is predicted to be of near-field and adjacent far field extent, short-term duration (any pollutant will be quickly dispersed), infrequent and of a low likelihood of occurring.

7.4.3.43 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Teir 1 and Tier 3 Projects as a result of accidental pollution on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.44 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

Operational and Maintenance

INJURY AND/OR DISTURBANCE FROM UNDERWATER NOISE

7.4.3.45 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC

TIER 1 PROJECTS

7.4.3.46 The operation of several subsea cables and OWFs overlap with the operational and maintenance phase of the Proposed Development, and the construction of Dublin Array may overlap with the operational and maintenance phase of the Proposed Development. The underwater noise generated during the operation of the Tier 1 projects is expected to be low.

7.4.3.47 Dublin Array is anticipated to involve the pilling of either 45 monopiles, 39 monopiles or 50 4-leg jacket foundation pin piles, over either 57 days across a 4-month period or 125 days across a 19-month period (Kish Offshore Wind Ltd., 2025). However, given there is no overlap of piling events during the operational and maintenance phase of the Proposed Development between Dublin Array and the Proposed Development and other Phase One projects, in-combination effects are not anticipated to occur.

7.4.3.48 **Given the low extent and infrequency of underwater noise from other activities it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of injury and disturbance from underwater noise from activities other than piling Atlantic salmon, twaite shad, freshwater pearl mussel and lamprey from Project Design Option 1.**

7.4.3.49 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TEIR 1 AND TIER 3 PROJECTS

7.4.3.50 A temporal overlap between the operational and maintenance phase of the Proposed Development with the decommissioning of ABWP1 is not anticipated, and underwater noise generated during the operation of Rosslare Euro Port and Mares Connect is anticipated to be minimal.

7.4.3.51 **Given the lack of a temporal overlap it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and Tier 3 Projects as a result of injury and disturbance from underwater noise from activities other than piling Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.52 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

CHANGES IN EMF

7.4.3.53 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC

TIER 1 PROJECTS

7.4.3.54 EMF effects associated with the Tier 1 projects are expected to be highly localised and restricted to areas immediately surrounding energised subsea power cables and telecommunications cables (e.g. export cables, inter-array cables and interconnector cables), Typically within metres of the cables). As such, EMF effects from Tier 1 projects will be spatially limited to the immediate vicinity of these cables. Given the highly localised nature of EMF emissions and the typical burial of cables within the seabed, the potential for overlap of EMF fields between projects is considered unlikely.

7.4.3.55 **Given the highly localised nature of EMF effects it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.56 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.3.57 EMF effects associated with Tier 1 and Tier 3 projects are expected to be highly localised and restricted to areas immediately surrounding energised subsea cables (e.g. HDVC interconnector cables), typically within metres of the cables).

7.4.3.58 **It is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and Tier 3 Projects on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.59 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

ACCIDENTAL POLLUTION

7.4.3.60 The following in-combination assessment considers the River Boyne and River Blackwater SAC designated for Atlantic salmon, as well as the following sites designated for Atlantic salmon, Twaite shad, sea lamprey, river lamprey and freshwater pearl mussels:

- Slaney River Valley SAC
- River Barrow and River Nore SAC
- Lower River Suir SAC

TIER 1 PROJECTS

7.4.3.61 Accidental release of pollutants during the operational and maintenance phase of the Proposed Development and the operation of the Tier 1 projects and construction of Dublin Array is predicted to be of near-field and adjacent far field extent, short-term duration (any pollutant will be quickly dispersed), infrequent and have a low likelihood of occurring.

7.4.3.62 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 Projects as a result of accidental pollution on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.63 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

TIER 1 AND TIER 3 PROJECTS

7.4.3.64 A temporal overlap between the operational and maintenance phase of the Proposed Development with the decommissioning of ABWP1 is not anticipated, and operational activities associated with Rosslare Euro Port and Mares Connect are anticipated to be minimal, with any impact being of near-field and adjacent far field extent, short-term duration (any pollutant will be quickly dispersed), infrequent and have a low likelihood of occurring

7.4.3.65 **Therefore, it is concluded that there will be no AEoI from the Proposed Development in-combination with Tier 1 and Tier 3 Projects as a result of accidental pollution on Atlantic salmon, freshwater pearl mussel, twaite shad and lamprey from Project Design Option 1.**

7.4.3.66 **Based on the representative risk of in-combination effects of Project Design Option 1, it is concluded that no AEoI would also apply to Project Design Option 2.**

7.4.4 Intertidal and Offshore Ornithology Receptors

7.4.4.1 The in-combination offshore ornithology assessment has considered the same potential impacts, SPAs and features screened in for assessment of the Proposed Development alone (Section 6.8). The additional Plans and Projects considered are listed in Table 7.5.

Howth Head Coast SPA

COLLISION RISK

KITTIWAKE

7.4.4.2 Assessment of the Project alone impact (paragraph 6.8.1.1 *et seq.*) concluded there would be no AEoI on the Howth Head Coast SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

Ireland's Eye SPA

COLLISION RISK

KITTIWAKE

7.4.4.3 Assessment of the Project alone impact (paragraph 6.8.2.1 *et seq.*) concluded there would be no AEoI on the Ireland's Eye SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

HERRING GULL

7.4.4.4 Assessment of the Project alone impact (paragraph 6.8.2.14 *et seq.*) concluded there would be no AEoI on the Ireland's Eye SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

DISPLACEMENT

GUILLEMOT

7.4.4.5 Assessment of the Project alone impact (paragraph 6.8.2.24 *et seq.*) concluded there would be no AEoI on the Ireland's Eye SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any

[10] https://curia.europa.eu/juris/document/document.jsf?text=&docid=130253&doclang=EN

effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

RAZORBILL

7.4.4.6 Assessment of the Project alone impact (paragraph 6.8.2.50 *et seq.*) concluded there would be no AEoI on the Ireland's Eye SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

Lambay Island SPA

COLLISION RISK

KITTIWAKE

7.4.4.7 Assessment of the Project alone impact (paragraph 6.8.3.1 *et seq.*) concluded there would be no AEoI on the Lambay Island SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

HERRING GULL

7.4.4.8 Assessment of the Project alone impact (paragraph 6.8.3.14 *et seq.*) concluded there would be no AEoI on the Lambay Island SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

LESSER BLACK-BACKED GULL

7.4.4.9 Assessment of the Project alone impact (paragraph 6.8.3.23 *et seq.*) concluded there would be no AEoI on the Lambay Island SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.

DISPLACEMENT

GUILLEMOT

7.4.4.10 Assessment of the Project alone impact (paragraph 6.8.3.32 *et seq.*) concluded there would be no AEoI on the Lambay Island SPA, and that the impact was comfortably below the threshold at which any effects could be distinguished from natural background variations (Parker *et al.* 2022). Plans or Projects which have no appreciable effect on a site are considered excluded as any effects, if there are any at all, are entirely negligible[10]. Therefore, there is no requirement to undertake an in-combination assessment for this feature.