Annex G Baseline Characterisation of Annex IV species

Annex G Baseline Characterisation

Annex G.1 Data Sources

Information on Annex IV species' distribution and abundance within the vicinity of the Proposed Development was collated through a detailed review of existing studies and datasets. The desk study sources used within this risk assessment were identified within the EIAR Volume II, Chapter 11: Marine Mammals (Revised March 2026) and are summarised in Annex Table B.

Annex Table B: Summary of key desktop reports and data resources for Annex IV cetacean species

Title	Source	Year	Author
Irish cetacean review	Irish Whale and Dolphin Group (IWDG)	2000-2009	Berrow *et al.* (2010)
Atlas of marine mammals in Irish offshore waters	IWDG	2005-2011	Wall *et al.* (2013)
Marine mammal surveys	NPWS and IWDG	2008-2011	Berrow *et al.* (2008; 2013)
Inshore surveys for cetaceans	IWDG	2011	Berrow *et al.* (2011)
Small cetacean abundance in the North Sea (SCANS) III	Sea Mammal Research Unit (SMRU)	2016	Hammond *et al.* (2017; 2021)
Modelled density surfaces of cetaceans in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys	SMRU	2016	Lacey *et al.* (2022)
'ObSERVE' programme aerial data	Department of Communications, Climate Action and Environment and NPWS	2015-2017	Rogan *et al.* (2018)
Modelled distributions and abundance of cetaceans of Wales and surrounding waters	Natural Resources Wales	1990-2020	Evans and Waggitt (2023)
SCANS-IV surveys	University of Veterinary Medicine Hanover	2022	Gilles *et al.* (2023) Gilles *et al.* (2025)
Management Units (MUs) for cetaceans	Joint Nature Conservation Committee (JNCC)	2023	IAMMWG (2023)
Site-specific surveys			
Boat-based visual surveys	Coveney Wildlife Consulting Ltd; Fulmar Ecological Services; Cork Ecology	2000 to 2009	(Cork Ecology, 2010; 2009; 2007; Fulmar Ecological Services, 2006; Coveney Wildlife Consulting Ltd., 2005; 2004; 2003; 2002)

Title	Source	Year	Author
Digital aerial surveys (DAS)	HiDef Aerial Surveying Limited	2018 to 2020	HiDef, 2020a, b
		2023 to 2025	GoBe Consultants (see Volume III, Appendix 11.2 Marine Mammals Technical Report RFI 2025 (Final))
Site investigation surveys	IWDG; Doherty Geosolutions Ltd	2019 - 2023	IWDG (2019) and Gavin & Doherty Geosolutions Ltd 2020; 2023a, b
	Mizen Archaeology; XOcean	2024	Mizen Archaeology, 2024; XOcean, 2024

Site specific surveys

Site-specific surveys were commissioned to support the marine mammal baseline for the Arklow Bank Wind Park 1 (ABWP1) planning application. These were boat-based visual surveys (2000 - 2009) and a Passive Acoustic Monitoring (PAM) campaign (2002). Additional surveys, in the form of DAS, were undertaken from 2018 - 2020, 2023 - 2024 and in 2025, to gather more recent data as part of site characterisation for the Proposed Development EIAR. All of these are reported below.

The site-specific surveys for ABWP1 include historical boat-based visual surveys undertaken between June 2000 and June 2009, and PAM data were also obtained to the northwest of the ABWP1 wind turbines. These acoustic data were collected for a total of 25 days during August and September 2002. Historical data has been considered as it is informative to trends in occurrence and distribution, although does not hold substantial weight in informing the baseline characterisation.

DAS data (March 2018 to February 2020 and April 2020; August 2023 to June 2024; and February 2025 to July 2025) are available to inform the baseline for this Risk Assessment (Table 11.5). During the 2018 to 2020 surveys an additional survey was conducted in April 2020 to account for a missed survey in April 2019. Across the 2018 to 2020 surveys, all calendar months were surveyed twice to capture seasonal seabird and marine mammal species presence across the Marine Mammal Study Area. Each calendar month was surveyed at least one more time through the further surveys in 2023 to 2025. Most surveys covered the Marine Mammal Study Area, however the surveys from May 2025 onwards include an extension of the existing buffer area to a 10 km buffer, thereby covering the Extended Marine Mammal Survey Area. However, it should be noted that the existing buffer applied in the Marine Mammal Study Area extends landwards to the coast and therefore exceeds the industry standard of a 4 km buffer, which is advised in guidance provided by Statutory Nature Conservation Bodies (SNCBs) in English and Scottish waters (SNCBs, 2022; NatureScot, 2023).

SCANS Surveys

The 'Small Cetaceans in European Atlantic waters and the North Sea' or SCANS surveys (Hammond *et al.*, 2021; Lacey *et al.*, 2022; Gilles *et al.*, 2023; Gilles *et al.*, 2025) are robust large-scale aerial and vessel-based surveys which provide estimates of cetacean abundance and distribution across the European Atlantic using aerial and boat-based surveys. These surveys were carried out during the summer months in 1994 (SCANS-I), 2005/07 (SCANS-II), 2016 (SCANS III; Hammond *et al.*, 2017; 2021; Lacey *et al.*, 2022), and the most recent survey, SCANS-IV, was completed in 2022 (Gilles *et al.*, 2023; 2025).

The Marine Mammal Study Area sits within SCANS-IV block CS-D and SCANS-III block E, both of which were surveyed by air. Although these blocks are commonly used, they have no biological significance; rather, they are logistical considerations with respect to carrying out the surveys. Nonetheless, for each block, a density estimate is calculated for those cetacean species that have been recorded in sufficient numbers, which can be used to give a broadscale density estimate relating to the Marine Mammal Study Area and the surrounding area.

ObSERVE Programme

The ObSERVE programme consists of aerial surveys to investigate the occurrence, distribution and abundance of key marine species in Irish waters, with a focus on marine mammals. Surveys were conducted in the summers of 2015 and 2016 and the winters of 2015-2016 and 2016-2017 in offshore waters around Ireland (Rogan *et al.,* 2018). The Proposed Development is located within ObSERVE Stratum 5.

It is noted that data from the ObSERVE 2 surveys have been published since the authoring of the EIAR Volume II, Chapter 11: Marine Mammals (Revised March 2026). In order to maintain consistency between the EIAR Volume II, Chapter 11: Marine Mammals (Revised March 2026), the ObSERVE 2 survey data have not been used in this risk assessment.

Cetacean Management units

The cetacean management unit (MU) boundaries are based on the best understanding of the structure of biological populations and ecological differentiation within such populations, also considering political boundaries and the management of human activities rather than distinct cetacean populations. An MU may be smaller than what is believed to be a 'population' to reflect spatial differences in human activities and their management (Inter-Agency Marine Mammal Working Group (IAMMWG), 2023).

For some species, these MUs can cover large areas, as is the case for minke whale, which has an MU comprising the Celtic Sea and Greater North Sea. Alternatively, MUs can be broken down into smaller areas, such as for harbour porpoise, which reflects the much higher density of this species in Irish and UK waters.

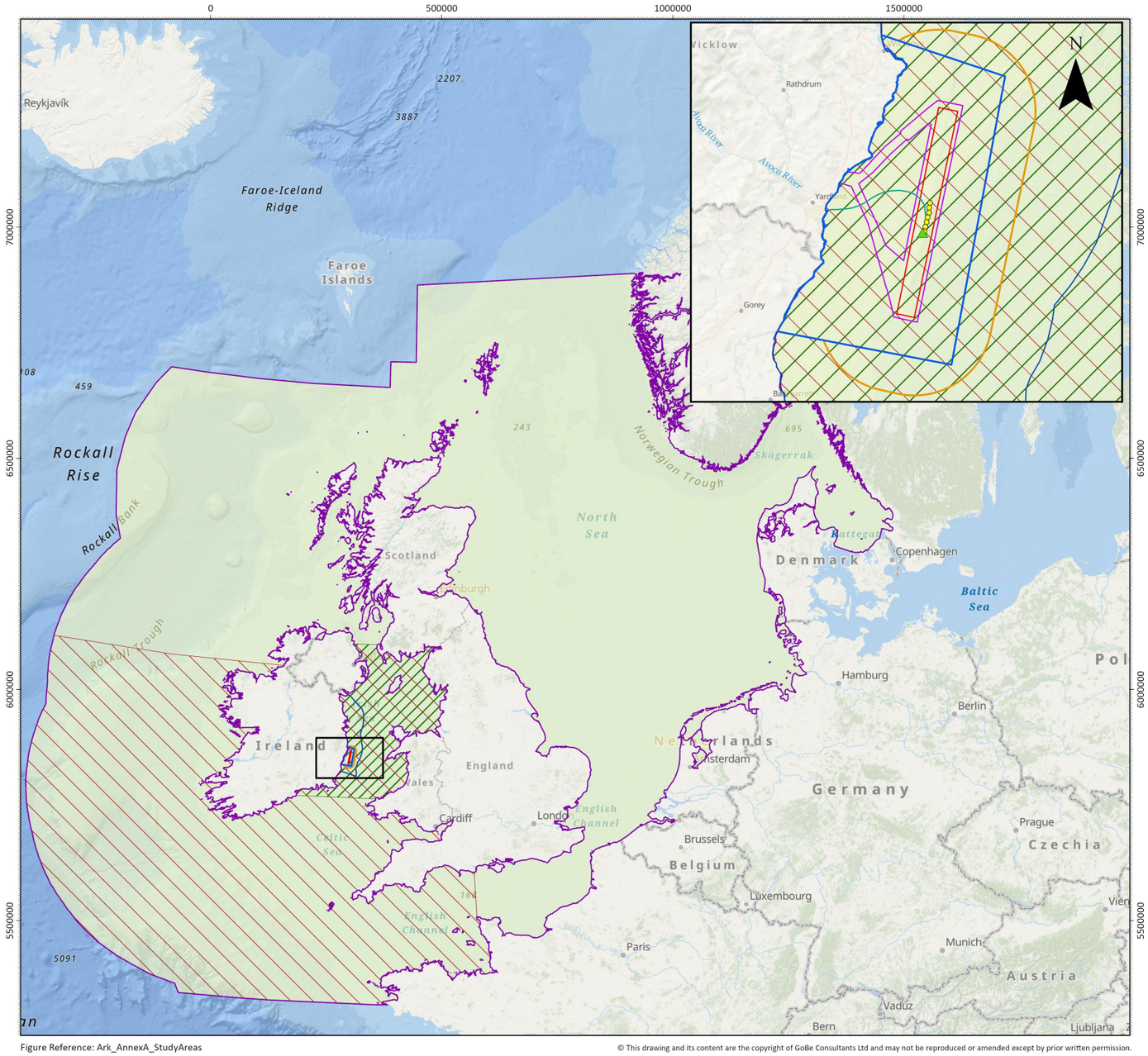
Annex G.2 Study Areas

Marine mammals are highly mobile and differ in their foraging distances and seasonal distribution based on their ecology and behaviour; therefore, for the purposes of this Annex IV cetacean species baseline characterisation, three marine mammal study areas were defined:

- **Marine Mammal Study Area** (Annex Figure A): This area encompasses the Array Area, and Cable Corridor and Working Area of the Proposed Development, plus a 4-kilometre (km) corridor. The 4 km corridor extends around the Array Area, covering the area west of the Array Area towards the coast. This combined area is covered by the site-specific DAS conducted in 2018-2020 and 2023-2024;
- **Extended Marine Mammal Study Area** (Annex Figure A): This area encompasses the Array Area, and Cable Corridor and Working Area of the Proposed Development, plus an extended 10 km buffer zone extending around the Array Area and covering west of the Array Area to the coast. This combined area is covered by the site-specific DAS conducted May 2025 – July 2025;
- **Marine Mammal MU Study Area** (Annex Figure A): The baseline characterisation considers marine mammal ecology, behaviour, abundance, and distribution within the appropriate species MU for cetaceans (IAMMWG, 2023). The marine mammal MU Study Area will enable consideration of the scale of movement and population structure for each species.

The Proposed Development is located within the following MUs for each species:

- Harbour porpoise (*Phocoena phocoena*) – Celtic and Irish Seas MU;
- Bottlenose dolphin (*Tursiops truncatus*) – Irish Sea MU;
- Risso's dolphin (*Grampus griseus*) – Celtic and Greater North Seas MU;
- Common dolphin (*Delphinus delphis*) – Celtic and Greater North Seas MU;
- Minke whale (*Balaenoptera acutorostrata*) – Celtic and Greater North Seas MU



sse Renewables

Arklow Bank Wind Park 2

Location of Marine Mammal Study Area and Marine Mammal Management Unit Study Area

Legend

- ABWP2 Array Area
- ABWP2 Cable Corridor and Working Area
- ABWP1 WTGs
- ABWP1 Existing Met Mast
- ABWP1 Existing Export Cable
- ABWP1 Lease Area
- Marine Mammal Study Area
- Extended Marine Mammal Study Area
- Marine Mammal Management Unit Study Area
- East Region MU
- Irish Sea MU
- Celtic & Irish Seas MU
- Celtic & Greater North Seas MU



Notes

Sources: Esri, TomTom, Garmin, GEBCO, National Geographic, NOAA, and the GIS User Community, GSI, OceanWise, Esri, Garmin, NaturalVue, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, GEBCO, Garmin, NaturalVue. Contains Ordnance Survey data © Crown copyright and database rights (2022). OS OpenData.

Coordinate System:
ETRS 1989 UTM Zone 30N

0 150 300 km

0 75 150 nm

Scale	Date	Drawn By	Checked By	Approved By
1:8,000,000 @ A3	27/03/2026	GB	JB	LK

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GoBe APEMGroup

Annex Figure A

Figure Reference: Ark_AnnexA_StudyAreas

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Annex Figure A: Location of the Marine Mammal Study Area and Marine Mammal Management Unit Study Area

Annex G.3 Designated Sites

Some Annex IV cetacean species are also listed on Annex II of the Habitats Directive, resulting in their protection through the designation of protected sites known as Special Areas of Conservation (SACs). These species are harbour porpoise and bottlenose dolphin. There are a number of designated sites for these species within the wider Irish Sea region such as the Marine Mammal MU Study Area, as detailed in the species-specific accounts. Harbour porpoise and bottlenose dolphin are highly mobile and tend to range outside the sites designated to protect them. There is therefore potential for these species that are features of designated sites, and Annex IV species, to be present within the Proposed Development.

The designated sites and relevant qualifying interests for Annex IV cetaceans considered are presented in Annex Table C.

Annex Table C: Designated sites and relevant qualifying interests for the Annex IV cetaceans considered

Designated site	Distance to Array Area (km)	Distance to Cable Corridor and Working Area (km)	Qualifying Interests
Blackwater Bank SAC	19.70	19.13	Harbour porpoise
Rockabill to Dalkey Island SAC	36.57	35.66	Harbour porpoise
Codling Fault Zone SAC	44.86	43.90	Harbour porpoise
West Wales Marine / Gorllewin Cymru Forol SAC	50.38	49.75	Harbour porpoise
Carnsore Point SAC	50.62	50.08	Harbour porpoise
North Anglesey Marine / Gogledd Môn Forol SAC	62.61	61.61	Harbour porpoise
Lambay Island SAC	62.80	61.89	Harbour porpoise
Lleyn Peninsula and the Sarnau / Pen Llŷn a'r Sarnau SAC	71.91	71.35	Bottlenose dolphin
Cardigan Bay/ Bae Ceredigion SAC	82.73	82.05	Bottlenose dolphin
Hook Head SAC	112.62	112.61	Harbour porpoise Bottlenose dolphin
North Channel SAC	143.22	142.32	Harbour porpoise
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC	214.68	216.09	Harbour porpoise

Annex G.4 Species-specific accounts

A review of the data available in Annex Table B (with further details outlined in the Volume III, Appendix 11.2, Marine Mammal Technical Report (Revised March 2026)) has confirmed the likely presence of the following Annex IV cetacean species in the vicinity of the Proposed Development:

- Harbour porpoise;
- Bottlenose dolphin;
- Risso's dolphin;
- Common dolphin; and
- Minke whale

Therefore, these species have been considered within the Annex IV Risk Assessment.

The reference populations for these cetacean species and their relevant MU has been identified by the IAMMWG (2023). The most robust and relevant density estimates within each MU were determined for each species with a justification of density estimates used included in the species accounts below. Density estimates and reference population size for the relevant cetacean species are presented in Annex Table D. These values provide a measure to quantify the scale of effect of given impacts within the risk assessment. Where possible, site-specific estimates from the DAS are provided for a species, where this was not possible, the reason for this is outlined in the relevant species-specific sections below.

Where appropriate, density estimates derived from site-specific DAS have been used, however it is important to note that the site-specific density estimates are not representative of animal densities across the wider scale for large-scale impacts such as disturbance from piling. For these large-scale impacts, alternative density estimates from regional surveys were also used to determine the number of animals potentially impacted, alongside the density estimates from the DAS.

Annex Table D: Marine mammal density (animals/km^2) and population estimates

Species	Density (animals/km^2)	Density source	Reference population	Reference population estimate	Reference population source
Harbour porpoise	0.38	Site-specific DAS (2018-2020)	Celtic and Irish Seas MU	62,517	IAMMWG (2023)
	0.2803	Gilles *et al.* (2023)			
	Grid-cell specific	Derived from SCANS-IV density surfaces (Gilles *et al.,* 2025)			
Bottlenose dolphin	0.0201	Rogan *et al.* (2018)	Irish Sea MU	293; 8,326	IAMMWG (2023); SCANS-IV Block CS-D (Gilles *et al.,* 2023)
	0.2352	Gilles *et al.* (2023)			
	Grid-cell specific	Derived from SCANS-IV density surfaces (Gilles *et al.,* 2025)			
Risso's dolphin	0.031	Hammond *et al.* (2021)	Celtic and Greater North Seas MU	12,262	IAMMWG (2023)
Common dolphin	0.0272	Gilles *et al.* (2023)	Celtic and Greater North Sea MU	102,656	IAMMWG (2023)
	Grid-cell specific	Derived from SCANS-IV density surfaces (Gilles *et al.,* 2025)			
Minke whale	0.045	Rogan *et al.* (2018a)	Celtic and Greater North Seas MU	20,118	IAMMWG (2023)
	0.017	Hammond *et al.* (2021)			
	Grid-cell specific	Derived from SCANS-IV density surfaces (Gilles *et al.,* 2025)			

Harbour porpoise

Ecology

Harbour porpoise have a varied diet, largely consisting of whiting (*Merlangius merlangus*), herring (*Clupea harengus*), and small cod (*Trisopterus* spp) (Hernandez-Milian *et al.,* 2011). Their high metabolic rate requires them to eat up to 10% of their body weight in food per day (Booth, 2019). Harbour porpoises give birth to one calf every year between May and August (with peaks in June and July), and mating occurs between April and September, with a gestation period of 10 - 11 months (Blanchet *et al.,* 2008).

Distribution and occurrence

Harbour porpoise are the most widespread and frequently recorded species off the east coast of the Republic of Ireland, sighted throughout the year with an increased presence in July and August (Ó Cadhla *et al.*, 2004; Berrow *et al.*, 2010; Wall *et al.*, 2013; Rogan *et al.* 2018a). The ObSERVE data from the aerial surveys highlighted the importance of the Irish Sea for harbour porpoise in the context of the waters around Ireland, as sightings were frequently recorded along the east coast of Ireland, particularly during the summer months (Rogan *et al.,* 2018a). Records from the NBDC further supports this pattern (NBDC, 2023). These peaks tend to coincide with key life-history periods. Modelled density outputs indicated eastern Ireland, particularly the coastal area from Co. Dublin south to Co. Waterford, is likely to be an important area for harbour porpoise (Evans and Waggitt, 2023).

Acoustic records for harbour porpoise in Dublin Bay found that porpoises were detected on all days and within most one-hour periods (81% of possible hours had porpoise detections) over a 46-day recording period (Berrow *et al.,* 2008). The mean porpoise positive minutes (PPM) per hour in Dublin Bay were on average 14.7 with peaks in August (15.6) and September (13.5) and lower values in July (8.9).

Acoustic monitoring of harbour porpoise conducted for ABWP1 in August 2002 found that harbour porpoises were present on 16 out of the 25 deployment days giving an estimated 64% occupancy in this area. Compared to inshore waters to the north in Dublin Bay, the occurrence of harbour porpoise at Arklow Bank is lower.

Harbour porpoises were recorded in all years during the historic site-specific boat-based surveys (Cork Ecology, 2009, 2008 and 2007; Coveney Wildlife Consulting Ltd., 2005). Sightings were noted throughout the ‘Bank’ and ‘Box’ survey areas during the surveys, and there were also sightings further inshore along the cable route.

The site-specific DAS also found that harbour porpoises were distributed throughout the Marine Mammal Study Area and Extended Marine Mammal Study Area, including the area between the Array Area and the coast (HiDef, 2020a) and the Array Area and 2 km buffer.

Sightings were noted in most survey months. In addition, harbour porpoise were the most abundant species recorded during the geophysical survey campaigns of the Proposed Development in 2019 and 2020 with a total of 24 sightings recorded in 2019 and a total of 51 sightings recorded in 2020 (IWDG, 2019; Gavin & Doherty Geosolutions Ltd, 2020). They were also recorded during the geotechnical survey campaign of the Proposed Development in 2023, with one sighting of three individuals (Gavin & Doherty Geosolutions Ltd, 2023b). There was also an additional harbour porpoise sighted during the hydrographic and seismic operations in 2024 (Mizen Archaeology, 2024). These data suggest that harbour porpoises occur regularly throughout the study areas.

Density/abundance

Harbour porpoises were the most frequently recorded marine mammal species during site-specific DAS. The highest mean corrected density estimate was from the 2018-2020 DAS, and comprised 0.38

animals/km^2. Site-specific DAS confirmed the presence of harbour porpoise within the Study Area year-round, although abundance and density was higher in summer months (HiDef, 2020a; Volume III, Appendix 11.2 Marine Mammals Technical Report (Revised March 2026)), which has been confirmed by several other studies in this region (Berrow *et al.,* 2008; Rogan *et al.*, 2018). The most recent large-scale surveys conducted were Small Cetacean Abundance in the North Sea IV (SCANS-IV) in 2022 which estimate an abundance of 9,773 animals and a density of 0.2803 animals/km^2 within block CS-D which encompasses the Irish Sea (Gilles *et al.*, 2023).

Seasonality

During the ObSERVE surveys, adult harbour porpoises were sighted with calves in many coastal areas around Ireland, including within the western Irish Sea (Rogan *et al.,* 2018a). Berrow *et al.* (2011) estimated that, of all individuals recorded, the proportion of calves recorded in inshore waters of the Irish Sea during July and August was 6%, which was similar to previous surveys in the same area (Berrow *et al.,* 2008). Therefore, inshore waters may be important as nursery habitats during summer months.

During the historic site-specific boat-based surveys, raw data showed that harbour porpoises were recorded in higher numbers during summer and autumn compared to the rest of the year (Cork Ecology, 2009, 2008 and 2007; Coveney Wildlife Consulting Ltd., 2005). These data suggest that harbour porpoise could be moving into inshore waters during the breeding season (summer) and mother-and-calf pairs may inhabit inshore waters during late summer and early autumn when calves are very young.

Similarly, the 2018 - 2020 site-specific DAS data found that the highest counts of harbour porpoises were recorded during the August surveys in 2018 and July surveys in 2019, therefore supporting the findings from the historic site-specific boat-based surveys.

For the 2023 - 2024 site-specific DAS, seasonal comparisons indicated higher abundance and densities during the summer months (April - September; mean: 121 individuals, mean: 0.18 animals per km²), compared to the winter months (October - March; mean: 91 individuals, 0.13 animals per km²). This seasonal pattern is consistent with the previous site-specific DAS. It is also consistent with known seasonal patterns of occurrence for small cetaceans in Irish waters, where summer conditions support higher presence and potential prey availability.

Conservation status

Harbour porpoise currently have an ‘inadequate’ conservation status in Ireland under Article 17 of the European Union (EU) Habitats Directive (NPWS, 2025). They are listed as Least Concern on the International Union for Conservation of Nature (IUCN) Red List. The current conservation status and short-term trends for harbour porpoise within UK waters is unfavourable-inadequate (JNCC *et al.*, 2026a).

As an Annex II species of the Habitats Directive, the designation of SACs is required as a component of their conservation. There are 36 SACs designated for harbour porpoise within the Marine Mammal MU Study Area, the closest of which is Blackwater Bank SAC, 19.8 km from the Array Area, followed by Lambay Island SAC, which is 62.9 km from the Array Area.

Bottlenose dolphin

ECOLOGY

Two different ecotypes of bottlenose dolphin occur commonly across Irish and UK waters: coastal ecotype and offshore ecotype (Berrow *et al.*, 2013; Wall *et al.*, 2013; Hague *et al.*, 2020). The coastal ecotype makes up resident populations in the Shannon Estuary, Republic of Ireland (Rogan *et al.*, 2018b), Cardigan Bay, Wales, and the Moray Firth, East Scotland year-round (Hague *et al.*, 2020). They have a varied diet consisting of whiting, blue whiting (*Micromesistius poutassou*), pollock (*Pollachius*), saithe (*Pollachius*

virens), haddock (*Melanogrammus aeglefinus*), poor cod, European hake (*Merluccius merluccius*), horse mackerel (*Trachurus trachurus*), flatfish (*Pleuronectiformes*), pelagic squid (*Loligo spp.*), and octopus (*Octopus spp.*) (Hernandez-Milian *et al.*, 2011; 2015). Female bottlenose dolphins reach sexual maturity from six to 13 years old (Robinson *et al.*, 2017) and males from their tenth year (Harrison and Ridgway, 1971). Peak season for births in the Irish Sea is observed between May and November (Berrow *et al.*, 2010). The gestation period lasts for 12 months and females' average calving intervals are around three to five years (Harrison and Ridgway, 1971; Robinson *et al.*, 2017).

Distribution and occurrence

In Ireland, there are thought to be at least three distinct populations of bottlenose dolphin, as determined by genetic studies (Mirimin *et al.*, 2011). One of these populations is highly mobile and the same individuals have been recorded off all Irish coasts (O'Brien *et al.*, 2009). Comparison of images within bottlenose dolphin photographic identification (hereafter 'photo-ID') catalogues confirmed movement of individuals through prospective corridors linking designated SACs in the Moray Firth, Cardigan Bay and Shannon Estuary (Robinson *et al.*, 2012). There is increasing evidence (from sightings and genetic analysis) to suggest that an offshore ecotype of bottlenose dolphin exists in Irish waters (Mirimin *et al.*, 2011; Berrow *et al.*, 2013). Due to dedicated studies on coastal populations of bottlenose dolphin, there is greater knowledge on the coastal ecotype than the offshore ecotype (Hague *et al.*, 2020). Most coastal sightings around Ireland fall within 10 km from shore (O'Brien *et al.*, 2010; Robinson *et al.*, 2012). Although they have been observed throughout Irish waters year-round, their presence is much less pronounced in the western Irish Sea (Ó Cadhla *et al.*, 2004; Berrow *et al.*, 2010; Wall *et al.*, 2013; Rogan *et al.*, 2018a).

During the ObSERVE aerial surveys, bottlenose dolphins were the most frequently sighted cetacean species in Irish EEZ waters, with more than twice as many sightings during winter compared to summer (Rogan *et al.*, 2018a). Bottlenose dolphins were recorded in oceanic, neritic and coastal waters, however, there were very few sightings in the western Irish Sea (stratum 5) compared to other regions within the Irish EEZ. This suggests that the west and southwest of Ireland are likely to be more important in terms of the distribution of this species. This is supported by findings of the historic site-specific boat-based surveys, as no bottlenose dolphin were recorded. Bottlenose dolphins were recorded once (November 2019) during the 2018 - 2020 site-specific DAS. No bottlenose dolphins were recorded during the 2023 - 2024 or 2025 site-specific DAS. Seasonal differences in distribution suggest that bottlenose dolphins disperse into the Irish Sea during the winter, between October and March (Rogan *et al.*, 2018a). There was one sighting of bottlenose dolphin during the hydrographic and seismic operations in 2024 (Mizen Archaeology, 2024).

Density/abundance

Bottlenose dolphins are widespread and abundant in Irish waters (Berrow *et al.*, 2010; Wall *et al.*, 2013). One group of bottlenose dolphins were recorded during the site-specific DAS, confirming their presence within the Marine Mammal Study Area (HiDef, 2020a; Volume III, Appendix 11.2 Marine Mammals Technical Report (Revised March 2026)). However, it was not possible to provide an abundance and/or density estimate for bottlenose dolphin from the site-specific DAS due to the low number of sightings across the survey period (only one sighting, in the 2018-2020 DAS; no further sightings in the 2023-2025 DAS; Volume III, Appendix 11.2 Marine Mammals Technical Report (Revised March 2026)). Recent large-scale surveys include ObSERVE and SCANS-IV which have provided contrasting abundance and density estimates, with the ObSERVE surveys providing an abundance of 223 animals and a density estimate of 0.0201 animals/km^2 within stratum 5 (Rogan *et al.*, 2018) and SCANS-IV providing an estimated abundance of 8,199 animals and a density of 0.2352 animals/km^2 within block CS-D (Gilles *et al.*, 2023).

Seasonality

The seasonal distribution of bottlenose dolphin in Irish waters based on the ObSERVE aerial survey data suggests that this species moves inshore, into shallow coastal waters during warmer months, and into offshore, deeper waters during the winter months (Rogan *et al.*, 2018a). However, this pattern could be as a result of both the coastal and offshore ecotypes using these areas.

Conservation status

Bottlenose dolphins currently have a 'favourable' conservation status in Ireland under Article 17 of the EU Habitats Directive (NPWS, 2025). They are listed as Least Concern by the IUCN Red List. Bottlenose dolphins are classified as a Priority Species under the UK Post-2010 Biodiversity Framework. The current conservation status and short-term trends for bottlenose dolphin within UK waters are also favourable (JNCC *et al.*, 2026b).

As bottlenose dolphins are also listed under Annex II of the EU Habitats Directive, SACs must be assigned to aid in the protection of this species. There are four SACs designated for bottlenose dolphin within the Marine Mammal MU Study Area, the closest of which is Lleyn Peninsula and the Sarnau / Pen Llŷn a'r Sarnau SAC, 73.3 km from the Array Area, followed by Cardigan Bay / Bae Ceredigion SAC, which is 82.7 km from the Array Area, both of which are in UK waters.

Risso's dolphin

ECOLOGY

Risso's dolphins predate on cephalopods, primarily squid and octopus (MacLeod *et al.*, 2014). Life history information is relatively limited for Risso's dolphins, but sexual maturity is thought to be reached at 8 to 10 years old for females and 10 to 12 years old for males (Baird, 2009). The gestation period is estimated at 13 to 14 months with a calving interval of 2.4 years. The calving season is unknown for Irish and UK waters, but the presence of young calves in some groups observed during cetacean surveys indicates that calving does occur in Irish waters (Wall *et al.*, 2013).

Distribution and occurrence

Risso's dolphin is frequently recorded in Irish waters, in all seasons, and in a variety of habitats. Around the coast of Ireland, sightings of this species are recorded in inshore waters but most are recorded in deeper waters over the continental shelf and slope (Rogan *et al.*, 2018a). In Irish waters, Risso's dolphin commonly occur in groups of between one and ten individuals (Rogan *et al.*, 2018a) which may benefit cooperative hunting through repeated associations between individuals, with some individuals staying together for long periods of time (Hartman *et al.*, 2008; Felce, 2013).

Within the Irish Sea, Risso's dolphin is the most commonly recorded dolphin species and there is an indication that presence in the Irish Sea has increased, which is likely a result of the increase in populations of several species of cephalopod (a key prey species, see Section 6.2.3.1) in the British Isles, attributed to climate change (Berrow *et al.*, 2010; Van der Kooij *et al.*, 2016). Coastal sightings are typical for this region, with the coastal waters off Wicklow and Wexford accounting for 41% of all inshore sightings of this species (Berrow *et al.*, 2010). Modelled density outputs also indicate the coastal waters off Wexford, in southeast Ireland contain high densities of Risso's dolphins, as compared to elsewhere in the Irish Sea (Evans and Waggitt, 2023). Calves are often recorded closer to the coast suggesting that calving occurs within the warmer inshore waters. In addition, repeated sightings of the same individuals suggest some degree of site fidelity may occur. For example, photo-ID studies of Risso's dolphins from the eastern Irish Sea showed indications of residency of identified individuals to a particular region (Felce, 2013). It is thought that coastal sightings in the western Irish Sea are likely to represent a frequently sighted community often sighted near the Saltee Islands off County Wexford (Rogan *et al.*, 2018a).

Small numbers of Risso's dolphin, ranging from one to eight individuals, were recorded during the site-specific historic boat-based surveys although none were identified during the site-specific DAS (noting, however, that a number of marine mammals could only be identified as 'cetacean species').

Density/abundance

Risso's dolphin were not recorded during site-specific DAS (HiDef, 2020a; Volume III, Appendix 11.2 Marine Mammals Technical Report (Revised March 2026)), although six sightings of between one and eight individuals have been previously recorded during historic site-specific boat-based surveys carried out from 2000 to 2008 (Cork Ecology, 2007; 2009; 2010; Coveney Wildlife Consulting Ltd, 2003; 2004; 2005; Fulmar Ecological Services, 2006), confirming their presence within the Study Area. Sightings of Risso's dolphins have also been recorded during the recent ObSERVE and SCANS-IV surveys of the wider area (Gilles *et al.*, 2023; Rogan *et al.*, 2018). However, only one individual was recorded in stratum 5 during the ObSERVE surveys (Rogan *et al.*, 2018). SCANS-IV estimated an abundance of 75 animals and a density of 0.0022 animals/km^2 in block CS-D which is lower than estimates from the previous SCANS-III survey which estimated an abundance of 1,090 animals and a density of 0.031 animals/km^2 in block E (Hammond *et al.*, 2021).

Seasonality

There is reported seasonality in the patterns of occurrence of Risso's dolphin, with animals being sighted more frequently further offshore in continental shelf waters during winter months (October - May) (Reid *et al.*, 2003). This is corroborated by sighting records for Irish waters where Risso's dolphin have been reported around the coast of Ireland in all months of the year, although peak sightings occur between May and July suggesting a late spring inshore movement (Berrow *et al.*, 2010). Reid *et al.* (2003) reports that in the Irish Sea (in offshore waters) most sighting records were between July and September, and near-shore records off southwest Ireland were obtained primarily between May and August.

During the historic site-specific boat-based surveys, all sightings of Risso's dolphin were during the months of May, June, and July supporting the evidence above, that this species more commonly occurs inshore in the Irish Sea during the spring/summer months (Cork Ecology, 2009; Coveney Wildlife Consulting Ltd., 2003).

Conservation status

Risso's dolphin currently have a 'favourable' conservation status in Ireland under Article 17 of the EU Habitats Directive, with a stable population trend (NPWS, 2025). In 2018, Risso's dolphins were updated from Data Deficient to Least Concern on the IUCN Red List. The current conservation status and short-term trends for Risso's dolphin within UK waters is also favourable (JNCC *et al.*, 2026c). As Risso's dolphin is not an Annex II species under the Habitats Directive, there are no SACs for Risso's dolphin within either study area. A Marine Protected Area (MPA) has been designated in North-east Lewis, Scotland due to the high numbers of Risso's dolphins that occur in these waters year-round. Consequently, it has been suggested that this MPA provides essential foraging grounds, as well as being important for breeding, nursing, and raising young (NatureScot, 2020a). The MPA does not overlap with the Marine Mammal Study Area but is within the MU Study Area.

Short-Beaked common dolphin

ECOLOGY

Short-beaked common dolphin (hereafter 'common dolphin') prey on a variety of fish and cephalopod species including poor cod, goby (*Caragobius urolepis*), blue whiting, whiting, cephalopods (*Cephalopoda*), Atlantic herring, European sprat (*Sprattus sprattus*), and haddock (Brophy *et al.*, 2009). Recordings from

bycaught individuals in the North East (NE) Atlantic show that the average age at sexual maturity was 8.2 years for females and 11.9 years for males (Murphy *et al.*, 2005; Murphy *et al.*, 2009; Murphy *et al.*, 2021). Considering common dolphins are reported to live up to 30 years in the Northeast Atlantic and have an extended calving interval period of approximately four years, it is thought females could have up to four to five calves throughout their lifetime (Murphy *et al.*, 2009).

Distribution and occurrence

Common dolphins are found throughout the Atlantic seaboard of Europe, in the Western Channel and Irish Sea and often travels in large groups. This species commonly inhabits continental shelf waters and occurs along the shelf edge and in deep water, and is the second most frequently reported cetacean, after harbour porpoise, within Irish waters (Berrow *et al.*, 2010). Common dolphin may occur in both inshore and offshore waters in the western Irish Sea, although the distribution of this species is primarily around the coast of southern and western Ireland (Berrow *et al.*, 2010). Modelled density outputs suggest that densities of common dolphin in the Irish Sea are higher in central regions further from shore (Evans and Waggitt, 2023).

There was one individual common dolphin recorded during the historic site-specific boat-based surveys, in 2002 - 2003 (Coveney Wildlife Consulting Ltd., 2003). There was one sighting of common dolphin in 2024 during the hydrographic and seismic operations (Mizen Archaeology, 2024).

Within the Marine Mammal Study Area, during the 2018 - 2020 site-specific DAS, common dolphins were observed on two occasions: a group of three animals in November 2019 and a group of 18 animals in January 2020 (HiDef, 2020a).

During the 2023 - 2024 site-specific DAS, common dolphins were observed on six occasions in the Marine Mammal Study Area; including two occasions in the Array Area and 2 km buffer, with a total of 32 animals recorded across the survey period. During the 2025 site-specific DAS, common dolphins were observed on only one occasion: a group of 26 animals in the Extended Marine Mammal Study Area in June 2025.

In addition, a small number of unidentified cetaceans were reported which may have been common dolphin. Due to limited number of common dolphin sightings during the 2018 - 2020 and 2025 site-specific DAS, mean abundance and density are not presented.

Density/abundance

Common dolphins were recorded during the site-specific DAS, confirming their presence within the Marine Mammal Study Area (HiDef, 2020a; Volume III, Appendix 11.2: Marine Mammals Technical Report (Revised March 2026)). No density estimate could be calculated for common dolphin from the 2018-2020 DAS, however a mean density estimate of 0.03 animals/km^2 was calculated from 2023-2024 DAS. SCANS-IV estimated an abundance of 949 animals and a density of 0.0272 animals/km^2 in block CS-D (Gilles *et al.*, 2023).

Seasonality

The IWDG cetaceans sighting review reports that records from ferries show a notable increase in numbers in the southern Irish Sea in the autumn and a peak in inshore records during the month of August (Berrow *et al.*, 2010), and suggests that there may be an eastward movement along the south coast during autumn and winter.

For the 2023-2024 site-specific DAS, seasonal comparisons indicated higher abundance, and density estimates during the winter months (October - March; mean: 39 individuals, 0.06 animals per km²), compared to the summer months (April - September; mean: four individuals, 0.01 animals per km²).

While previous studies (Berrow *et al.*, 2010) reported a peak in inshore sightings along the south coast of Ireland in August, the observed peak in March indicate that this seasonal pattern was not reflected for the 2023-2024 site-specific DAS.

Conservation status

Common dolphins currently have a 'favourable' conservation status in Ireland under Article 17 of the EU Habitats Directive with a stable population trend (NPWS, 2025). They are classed as Least Concern on the IUCN Red List. The current conservation status and short-term trends for common dolphin within UK waters is also favourable (JNCC *et al.*, 2026d). As common dolphin is not an Annex II species under the Habitats Directive, there are no SACs for common dolphin within either Study Area. There are also no other MPA designations for common dolphin within either Study Area.

Minke whale

ECOLOGY

Minke whales are the most abundant baleen whale within Irish and UK waters and are most commonly sighted in shallow, shelf habitat over the summer months, which are important foraging habitats. Key prey species for minke whales include sandeel (*Ammodytes*), herring, sprat, mackerel (*Scomber scombrus*), and poor cod (*Trisopterus minutus*). Some individuals remain in coastal waters year-round; however, most migrate south during winter months to temperate offshore waters for breeding grounds. Individuals from the Northeast Atlantic population of minke whale are thought to reach sexual maturity between three-to-six years old, but some can take up to 13 years to reach physical maturity (Olsen and Sunde, 2002). The gestation period lasts for 10 months, and the calving interval lasts at least one-to-two years (Christiansen *et al.*, 2014).

Distribution and occurrence

Minke whale mostly inhabit continental shelf waters, occurring in depths of less than 200 m and can often be seen close to land. In Irish waters, the minke whale is widely distributed but is most commonly seen along the south coast and in localised patches in the central Irish Sea (Reid *et al.*, 2003; Rogan *et al.*, 2018a), with modelled density outputs indicating a similar pattern in distribution (Evans and Waggitt, 2023). There is a distinct seasonal distribution of minke whale with animals moving inshore during the summer months and offshore during winter. A review of all cetacean sighting and stranding records made by the IWDG through ISCOPE suggest that minke whale may also be occasionally present within the Marine Mammal Study Area (Berrow *et al.*, 2010). Most records from the NBDC for the western Irish Sea also show sightings off the coast of Dublin and to the north, and also off southeast Wexford (NBDC, 2023).

Minke whale was the second most frequently recorded species (after harbour porpoise) during inshore boat-based surveys of the Irish Sea (Berrow *et al.*, 2011). Observations of minke whale were made in Dublin Bay and waters to the north. There were no observations of minke whale in the survey area within which the Proposed Development is located (Berrow *et al.*, 2011).

During the historic site-specific boat-based surveys, minke whale was observed to the west of the ABWP1 (i.e. inshore) in Year 4 (Coveney Wildlife Consulting Ltd., 2004). There was one additional sighting of minke whale in 2024 during the hydrographic and seismic operations (Mizen Archaeology, 2024).

No minke whales were recorded during the 2018 - 2020 or 2023 - 2024 site-specific DAS. There was one minke whale recorded (July 2025) in the Extended Marine Mammal Study Area during the 2025 site-specific DAS.

Density/abundance

Minke whales were not recorded during the 2018-2020 or 2023-2024 site-specific DAS (HiDef, 2020a) however, a single individual was recorded in the Marine Mammal Study Area, but outside of the Array Area and 2km buffer, on one occasion during the 2025 site-specific DAS in July 2025. Sightings have also been recorded during the recent ObSERVE and SCANS-IV surveys, which cover the wider area (Gilles *et al.*, 2023; Rogan *et al.*, 2018). Furthermore, the ObSERVE surveys confirmed a higher presence of minke whale during the spring and summer months, whilst the species is expected to be largely absent in autumn and winter due to offshore movements during these months (Rogan *et al.*, 2018). The ObSERVE surveys estimated an abundance of 495 animals and a density of 0.045 animals/km2 in stratum 5 (Rogan *et al.*, 2018). SCANS-IV estimated an abundance of 477 animals and a density of 0.0137 animals/km^2 in block CS-D, which is lower than estimates from the previous SCANS-III survey which estimated an abundance of 603 animals and a density of 0.017 animals/km^2 in block E (Hammond *et al.*, 2021).

Seasonality

Little is known about the seasonal movements of minke whales in the Atlantic although data for tagged individuals in the western Atlantic suggests southward movement from feeding areas in Iceland in the autumn months (Reid *et al.*, 2003). There is a distinct seasonal distribution of minke whale with animals moving inshore during the summer months and offshore during winter.

In UK waters, most sightings have been made between May and September. During July and September, feeding aggregations can be observed in inshore areas (Reid *et al.*, 2003). The IWDG cetacean sightings review found that the number of sightings around Irish waters started to increase in April and May, peaking in August, and tapering off in late autumn and early winter (Berrow *et al.*, 2010). This pattern is also reflected in the Irish Sea where animals appear in the eastern Irish Sea from April to June (Berrow *et al.*, 2010). The coastal distribution in summer months and lower or lack of coastal sightings in winter suggests a seasonal offshore to inshore movement. Data from the ObSERVE aerial surveys of Irish waters found a high use of coastal waters during the summer months, particularly in the southwest of Ireland and Irish Sea and the predicted distribution suggests that the Irish Sea appeared to be unsuitable for minke whale in winter (Rogan *et al.*, 2018a).

Conservation status

Minke whale currently have a ‘favourable’ conservation status in Ireland under Article 17 EU Habitats Directive, with a stable population trend (NPWS, 2025). They are listed as Least Concern on the IUCN Red List. The current conservation status for minke whale within UK waters is unfavourable-inadequate (JNCC *et al.*, 2026e). As minke whale is not an Annex II species under the Habitats Directive, there are no SACs for minke whale within either study area. There are two MPAs in Scotland that have minke whale as a feature: Sea of the Hebrides MPA, and Southern Trench MPA. Habitat modelling suggests that there are above-average densities of minke whale in the waters of both MPAs (NatureScot, 2020b; NatureScot, 2020c). The MPAs do not overlap with the Marine Mammal Study Area but are both within the MU Study Area.

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