

5 Article 12 Assessment for Relevant Annex IV species

- 5.1.1 All cetaceans are European Protected Species (EPS) listed under Annex IV of the Habitats Directive, which means that they are protected wherever they occur and it is an offence to deliberately capture, kill, injure or disturb animals classed as EPS. Article 12 of the Habitats Directive is aimed at the establishment and implementation of a strict protection regime for animal species listed in Annex IV of the Habitats Directive within the whole territory of Member States.
- 5.1.2 The Habitats Directive has been transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) and establishes a system of strict protection for animal species listed in Annex IV(a) to the Habitats Directive in their natural range pursuant to Article 12 of the Habitats Directive. These Regulations provide for the protection of cetacean and marine turtle fauna and as such it is an offence to:
- ▲ Deliberately capture or kill any specimen of these species in the wild;
 - ▲ Deliberately disturb these species particularly during the period of breeding, rearing, hibernation and migration;
 - ▲ Deliberately take or destroys eggs of those species from the wild;
 - ▲ Damage or destroy a breeding site or resting place of such an animal; or
 - ▲ Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.
- 5.1.3 Of the 24 cetacean species reported in Ireland, the species that have been recorded in the area and are considered in this assessment are harbour porpoise, bottlenose dolphin, minke whales (*Balaenoptera acutorostrata*), Risso's dolphins (*Grampus griseus*) and common dolphins (*Delphinus delphis*).
- 5.1.4 The harbour porpoise is the most widely distributed and most common cetacean species in the waters of Britain and Ireland (NPWS 2019). They occur in all parts of the British and Irish continental shelf and are recorded year-round within most of their range. Harbour porpoise was the most commonly sighted marine mammals during the site specific surveys conducted between June 2019 and April 2021. While sightings rates and resulting density estimates were high in November 2019 and September 2020, overall there was no evidence of a seasonal pattern in the sightings. Harbour porpoise is also listed under Annex II and are QI for a number of sites within the Foreshore Licence application area.

- 5.1.5 Bottlenose dolphins are described as being one of the most frequently recorded and familiar cetaceans occurring in Ireland, occurring in group sizes between three and 30 in coastal waters, and larger groups of hundreds of individuals in offshore waters (NPWS 2019). Bottlenose dolphin sightings during the ObSERVE surveys were mainly located in the west and the south of Ireland. Site specific surveys undertaken to support the construction of Dublin Array windfarm identified a total of four groups across the 13 surveys undertaken. As for harbour porpoise, bottlenose dolphins are also Annex II species.
- 5.1.6 Minke whales are observed throughout Irelands coastal and offshore waters, and both the continental slope and shelf. A total of 28 to 50 minke whales were sighted during the Dublin Array site specific surveys, all of which were sighted in the spring and summer months. Minke whales were also the most frequently sighted mysticete species during the ObSERVE surveys from 2015 to 2016.
- 5.1.7 Risso's dolphin occurrence is described as wide and frequent throughout Irish waters, sighted in both the continental shelf and slope as well as the margins of deeper ocean basins (NPWS 2019). No Risso's dolphins were sightings during the site specific surveys
- 5.1.8 Common dolphins are one of the most frequently recorded dolphin species in Irish waters, occurring in group sizes ranging from a few individuals to over a thousand individuals in the open sea (NPWS 2019). They have a wide distribution and occur in both coastal and offshore waters off Ireland. A total of five groups (21 individuals) of common dolphins were sighted during the site-specific surveys.
- 5.1.9 Five species of marine turtles have been recorded in Irish waters including leatherback turtle *Dermochelys coriacea*, loggerhead turtle (*Caretta caretta*) and Kemp's Ridley turtle (*Lepidochelys kempii*) (King and Berrow, 2009). Of these, leatherback turtle is the most regularly reported around the coast of Ireland, accounting for just over 80% of all records (King and Berrow, 2009). The majority of turtle sightings or stranding records are along the south and west coasts of Ireland, however, there are records of leatherback turtles along the east coast of Ireland suggesting that this species may occur within the Irish Sea (King & Berrow 2009).
- 5.1.10 No turtles were recorded during the site specific surveys. Given this, it is proposed that marine turtles not be considered further in this assessment. However, any mitigation proposed for cetacean species will also be applied to any turtles encountered.

5.2 Impact Assessment

The main impacts as a result of the site investigation and monitoring surveys proposed under the Foreshore Licence on EPS will be:

- ▲ Disturbance from underwater noise from geophysical and geotechnical surveys; and
- ▲ Vessel collision.

- 5.2.1 Underwater noise will be generated by a number of the surveys considered within the Foreshore Licence application (see Table 5). For the geophysical surveys, magnetometers are passive systems that do not emit any sound and will not be considered further. DAHG (2014) states that geophysical survey methods have the potential to produce significant levels of anthropogenic sound in water depending on the survey methods used, with large surveys utilising seismic airgun arrays resulting in the highest level of risk. For smaller surveys (similar to the proposed works), the level of impact from underwater noise is variable depending on a number of factors including the type of the equipment being used, its sound signal and propagation characteristics, and the depth in which it is operating.
- 5.2.2 Both cetaceans and pinnipeds have evolved to use sound as an important aid in navigation, communication and hunting (Richardson et al, 1995). Given that marine mammals are dependent upon using sound for a number of essential functions, exposure to noise created from anthropogenic sources can induce a range of effects. Such effects will depend upon the sound frequency, level and whether the noise created is impulsive or non-impulsive (Southall *et al.*, 2019). Consequent effects may include masking of biologically important noises (perceptual impacts), induced stress, and behavioural changes such as displacement from feeding, resting or breeding grounds (DAHG, 2014). The impacts of underwater sound on marine species can be broadly summarised as physical traumatic injury and fatality; auditory injury (either permanent or temporary), disturbance and indirect effects on prey.
- 5.2.3 The DAHG (2014) report 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' provides the most recent guidance for assessing the significance of noise disturbance to marine mammals and addresses several key potential sources of anthropogenic sound. The following auditory band widths for marine mammals which may be present in the vicinity of the proposed survey area are extracted from the DAHG (2014) guidelines and are shown in Table 8.
- 5.2.4 It is noted that the DAHG guidance uses criteria based upon Southall *et al* 2007; since this publication, an update from Southall et al 2019 proposed new marine mammal exposure criteria. This assessment will make reference to the DAHG guidance but also make use of the most up to date scientific information available in Southall et al 2019 where possible. The Southall *et al* 2007 guidance and thresholds for non impulsive sounds have been used for this assessment as the more recent Southall *et al*, 2019 report does not include SPL peak for non impulsive sounds, instead they detail SELcum thresholds and it is not possible to make comparisons of different metrics. The use of Southall *et al*, 2007 in in line with the DAHG, 2014 guidance.

Table 8 Marine mammal auditory band widths (Southall et al 2007 and 2019)

| Marine mammal Group | Marine mammal species | Estimated auditory band width (Hz) (2007) | Estimated auditory band width (Hz) (2019) |
|---|--|---|---|
| Low-Frequency Cetaceans | Baleen whales (Minke Whale) | 7 - 22,000 | 7 -35,000 |
| Mid-Frequency Cetaceans / *High frequency cetaceans | Most toothed whales and dolphins (including bottlenose, Risso’s and common dolphins) | 150 – 160,000 | 150 – 160, 000 |
| High Frequency Cetaceans / *very high frequency | Certain toothed whales, porpoises (including harbour porpoise) | 200 – 180,000 | 275 – 160, 000 |
| Pinnipeds (in water) | Grey Seal and Harbour Seal | 75 – 75,000 | 50 – 86,000 |

5.2.5 Drilling activity operates at a source level peak below that reported to result in either TTS or PTS for any of cetacean or pinniped species present, 145 dB re 1 Pa rms @ 1 m (Erbe and McPherson, 2017). Whilst not directly comparable, as an approximation, the SPLrms is typically between 3 – 7dB lower than the equivalent SPLpeak (e.g. Blackwell et al. (2004) and Guan (2020)). Therefore, assuming a 7dB uplift, the SPLpeak value for drilling may approximately be 152dB (based on Erbe and McPherson, 2017). This is below the TTS thresholds for continuous sounds as proposed by Southall et al. (2007) (224dB SPLpeak for cetaceans and 212dB peak for pinnipeds). As such, there is no risk of injury to marine mammals from the proposed drilling works.

5.2.6 The available noise data on SBPs such as those proposed for the UHRS survey are also determined primarily in SPLrms rather than SPLpeak. There is a wealth of data available from studies and assessments undertaken within the USA from surveys using the same equipment. These studies (e.g. Incidental Take Allowance applications (e.g. CSA Ocean Sciences Inc., 2020)) have used the modelling methodology published by the National Oceanographic Atmospheric Administration (NOAA) (Guan, 2020), which is based on monitoring data and considers the tight beam nature of the sound (from some SBP equipment). The type of SBP used for specific survey elements (e.g. pinger or sparker) and also the nature of the sound beam produced (i.e. parametric (tightly focused) or non-parametric (directional but not focused in the same way) has implications for the potential impact ranges expected. However, for all types of SBP proposed for use herein, the impact ranges for potential disturbance are expected to be very minor. The studies (reviewed and summarised in CSA, 2020) demonstrate that emitted sound levels from the SBP will attenuate to 120 dB SPLrms within 4 to 157 m from the source (which is the level used for behavioural disturbance in level B harassment assessments in the USA).

- 5.2.7 The noise associated with large shipping vessels is widely considered unlikely to cause physical trauma, but could make preferred habitats less attractive as a result of disturbance (habitat displacement, area avoidance) (Erbe *et al.*, 2019). A study by Beck *et al* (2013) notes that marine mammals frequenting the Dublin Port shipping channel will be well accustomed to shipping noise. Ambient underwater noise in Dublin Bay has been estimated at around 113 db by Beck *et al.* (2013) and by McKeown (2014).
- 5.2.8 The Foreshore Licence application area has a number of high density vessel routes passing to the west and north of the site, which are in the majority associated with transiting into and out of Dublin Bay (and associated ports and harbours). This includes regular passenger and freight ferry routes, fishing (actively fishing and in transit) and recreational traffic.
- 5.2.9 Survey vessels will be operated at slow speeds and also be stationary for a large portion of the time, the proposed works will not result in a significant increase in vessel traffic in the area. It can be determined that there will be no significant change to the existing level of collision risk to marine mammals.
- 5.2.10 Given the existing vessel levels within the site and that the noise associated with the survey vessels will short term, temporary and intermittent and that the proposed works will not result in a significant increase in vessel traffic in the area no significant disturbance or displacement effects are expected for any of the marine mammal species identified within the baseline.

Conclusions

- 5.2.11 Given the short duration and temporary nature of the survey works, the fact that the best practice measures in relation to geophysical acoustic surveys as specified in Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014) will be followed at all times, with pre-monitoring by a qualified and experienced MMO followed by the use of the 'soft-start' procedure, there will be minimal disturbance to EPS species. In addition, the survey vessels will be slow moving and therefore any risk due to collision is unlikely. These measures ensure that no marine mammals (non-qualifying interests), whose range overlap the survey area will be impacted by the proposed marine survey.