



# Hornsea Project Four

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## B2.2: Report to Inform Appropriate Assessment Part 12: Appendix I: Marine Mammals - Bottlenose dolphin RIAA Information

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## 1.1 Introduction

- 1.1.1.1 The purpose of this document is to provide context for the assessment of the potential for the Hornsea Four offshore wind farm project to impact bottlenose dolphins as a qualifying feature of the Moray Firth (SAC) which will be presented in the Report to Inform Appropriate Assessment (RIAA).

## 1.2 Management Unit

- 1.2.1.1 Bottlenose dolphins in the UK have been assessed as having an unknown conservation status (JNCC 2019). Previously, the IAMMWG (2015) have assigned bottlenose dolphins on the east coast of England as belonging to the greater North Sea MU (ICES Area IV, excluding coastal east Scotland; and ICES area IIIa), however they did not assign an abundance estimate for this MU. The IAMMWG (2015) did however note that bottlenose dolphins sighted along the east coast of England are thought to belong to the Coastal East Scotland MU. The recent update to the cetacean MU estimates (IAMMWG 2021) identifies a new MU for bottlenose dolphins: the Greater North Sea MU within which Hornsea Four is located. This Greater North Sea MU has an estimated abundance of 2,022 (CV: 0.75, 95% CI: 548 – 7,453).
- 1.2.1.2 Previous photo ID data have shown that the Coastal East Scotland population expanded its range to St Andrews Bay and the Tay estuary, and in 2015, 52.5% of the population was estimated to be using the St Andrews Bay and the Tay estuary area during the summer (Arso Civil et al. 2019). New photo ID data have confirmed that individuals from this population have been sighted in the Netherlands and in Ireland in 2019<sup>1</sup> which had never previously been recorded. Our knowledge of bottlenose dolphin movement along the east coast of Scotland beyond the Moray Firth SAC (which was considered to be their core area of distribution), further south and northeast England is currently developing, for example, the new Citizen Fins project<sup>2</sup> has received public photos from the east coast of England (off Scarborough, to the north of Flamborough Head) that have been identified by photo-ID as Coastal East Scotland bottlenose dolphins. This highlights the potential for the Coastal East Scotland population to have a much wider range than previously assumed, or that the population has continued to expand its range over time. Therefore, it is considered that the bottlenose dolphins present along the east coast of England and in relation to Hornsea Four are likely to be functionally linked to the Coastal East Scotland MU and as such, the Moray Firth SAC needs to be considered in the RIAA. The current abundance estimate for the Coastal East Scotland MU is 189 (155 – 216)<sup>3</sup> (IAMMWG 2021).
- 1.2.1.3 Therefore, the most appropriate MU against which to assess the impacts from Hornsea Four is the combined Greater North Sea and Coastal East Scotland MUs which results in a reference population size of 2,211 bottlenose dolphins.

## 1.3 Density Estimate

- 1.3.1.1 No reliable density estimate exists for bottlenose dolphins in the east of England, and therefore it is challenging to predict the number of animals that could potentially be

<sup>1</sup> <https://www.abdn.ac.uk/lighthouse/blog/international-sightings/>

<sup>2</sup> <https://synergy.st-andrews.ac.uk/citizenfins/>

<sup>3</sup> Estimate of the Scottish east coast bottlenose dolphin population based on CMR and calculated using a Bayesian model with 95% HPDI for 2015 (Cheney et al. 2018)

impacted by Hornsea Four. There are four density estimates that can be obtained from the literature: based on SCANS III, IAMMWG MU, JCP Phase III and MERP maps.

- SCANS III (Hammond et al. 2021) survey Block O (within which HOW4 is located) = **0.00 dolphins/km<sup>2</sup>**
- Assuming a uniform density throughout the Greater North Sea MU (2,022 dolphins in 639,886 km<sup>2</sup>) = **0.003 dolphins/km<sup>2</sup>**
- JCP Phase III (Paxton et al. 2016) South Dogger Bank commercial area of interest (30 dolphins in area of 14,265 km<sup>2</sup>) = **0.002 dolphins/km<sup>2</sup>**
- MERP (Waggitt et al. 2020) July maximum density within HOW4 order limits = **0.002 dolphins/km<sup>2</sup>**

1.3.1.2 Of these available density estimates, the most precautionary density estimate that has been taken forward to impact assessment is 0.003 dolphins/km<sup>2</sup>.

## 1.4 Coastal Distribution

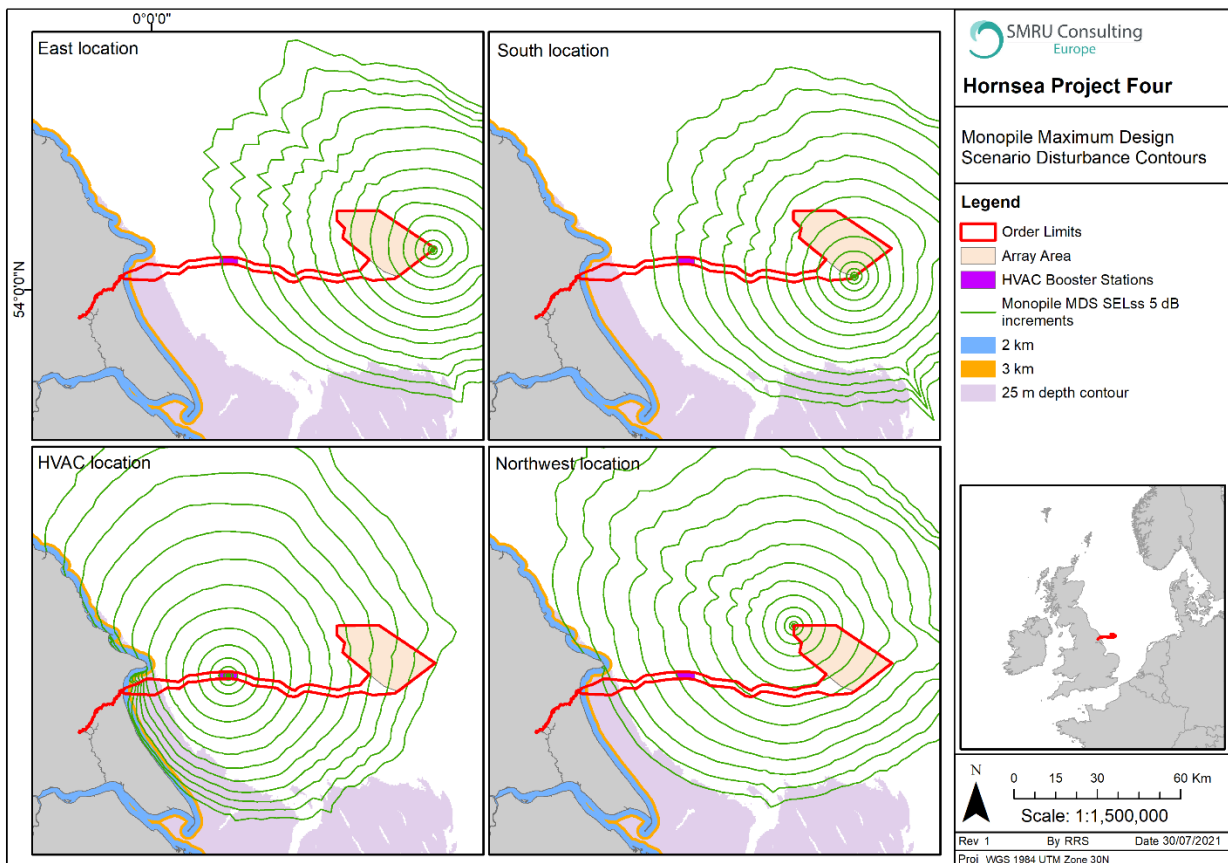
1.4.1.1 Within the Moray Firth SAC, bottlenose dolphins are generally found close to shore (within 3 km) and in shallow water (<20 m) (NatureScot 2021). Their distribution outside of the SAC, along the of the Tayside and Fife coast, is similar, with dolphins mainly encountered in waters less than 20 m deep and within 2 km from the coast (Quick et al. 2014). Assuming that the dolphins sighted in the east of England are connected to the Coastal East Scotland population, and assuming that they would display similar distributions throughout their range, it could be expected that any dolphins associated with the Moray Firth SAC population would be limited to the nearshore of the English coastline.

## 1.5 Apportioning Impact

1.5.1.1 Given the coastal distribution of the Moray Firth SAC bottlenose dolphins, it is extremely unlikely that all bottlenose dolphins disturbed by impact piling at Hornsea Project Four will be SAC dolphins. Therefore, an attempt was made to apportion part of the disturbance impact to the SAC, by calculating how many of the total number of disturbed dolphins were within certain distances from the coast (and are therefore more likely to be SAC dolphins). The worst case location in terms of apportioning impact to the SAC was the HVAC location since this is much closer to the coastal waters where SAC dolphins might be expected compared to the array area locations (Figure 1). At the HVAC site, assuming that SAC bottlenose dolphins are located within the 25 m depth contour, the piling of a monopile under the Maximum Design Scenario (MDS) would be expected to disturb up to 1 bottlenose dolphin that is potentially an SAC dolphin. Given the short term duration of piling at the HVAC sites (up to 3 HVACs each taking 1.2 days to install), this level of disturbance impact is considered to be of negligible magnitude.

**Table 1: Number of bottlenose dolphins predicted to be disturbed, and the number that is within the 25 m depth contour, the 3 or 2 km distance contours.**

Parameter Applied	Total number of dolphins disturbed per piling event			
	NW	E	S	HVAC
Total disturbance area	14 0.6% MU 7.4% SAC pop	12 0.5% MU 6.3% SAC pop	9 0.4% MU 4.8% SAC pop	12 0.5% MU 6.3% SAC pop
Within the 25 m depth contour	0	0	0	1 0.05% MU 0.53% SAC pop
Within 3 km of the coast	0	0	0	0
Within 2 km of the coast	0	0	0	0



**Figure 1: Monopile maximum design scenario disturbance impact contours overlain on the 2 km and 3 km distance contours and the 25 m depth contour.**

## 1.6 Conclusion

1.6.1.1 Given the distance from the Moray Firth SAC to Hornsea Four (at least 522km) and the extremely low level of impact from Hornsea Four expected to extend into the coastal waters, it is highly unlikely that disturbance resulting from pile driving at Hornsea Four would result in any change in the survival or reproductive rates of the Moray Firth SAC population. Therefore, any impact to the SAC is considered to be negligible.

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