

REPORT

Dundee Capital Dredge

EPS Risk Assessment

Client: Port of Dundee Limited

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1 Introduction

One of the primary uses of the Port of Dundee is the service and support of the offshore renewables industry. The port provides facilities for the transshipment and storage of components such as all wind turbine generator (WTGs) and other component parts associated with wind farm projects. Due to the increased water depth required by vessels used by the offshore renewables industry, Port of Dundee Limited is proposing to undertake a suite of works at the Port of Dundee and to the Lady Shoal approach channel.

A geophysical survey of the capital dredge footprint is proposed to provide information on the seabed characteristics to inform an environmental assessment of the proposed dredging. As underwater noise can cause disturbance to cetaceans, an application for a European Protected Species (EPS) licence may be required for the undertaking of geophysical surveys. Where there is the possibility for disturbance to EPS, an EPS Risk Assessment (RA) must be carried out.

1.1 Determining the need for a Marine EPS Licence

The purpose of the EPS RA presented in this report is to determine whether, following implementation of an appropriate mitigation strategy, there is potential for the proposed geophysical survey to cause deliberate harm or inadvertent disturbance to EPS. The need for a Marine EPS Licence will be determined by the Marine Directorate Licencing Operations Team (MD-LOT), in consultation with NatureScot (the Statutory Nature Conservation Body for Scotland), based on the findings of the EPS RA. Consideration of whether a Marine EPS Licence can be granted comprises three tests¹:

1. To ascertain whether the licence is to be granted for one of the purposes specified in Regulation 44(2) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) ('the Habitats Regulations');
2. To ascertain whether there are no satisfactory alternatives to the activity proposed (that would avoid the risk of offence); and
3. That the licencing of the activity will not be detrimental to the maintenance of the populations of the relevant species at Favourable Conservation Status (FCS)².

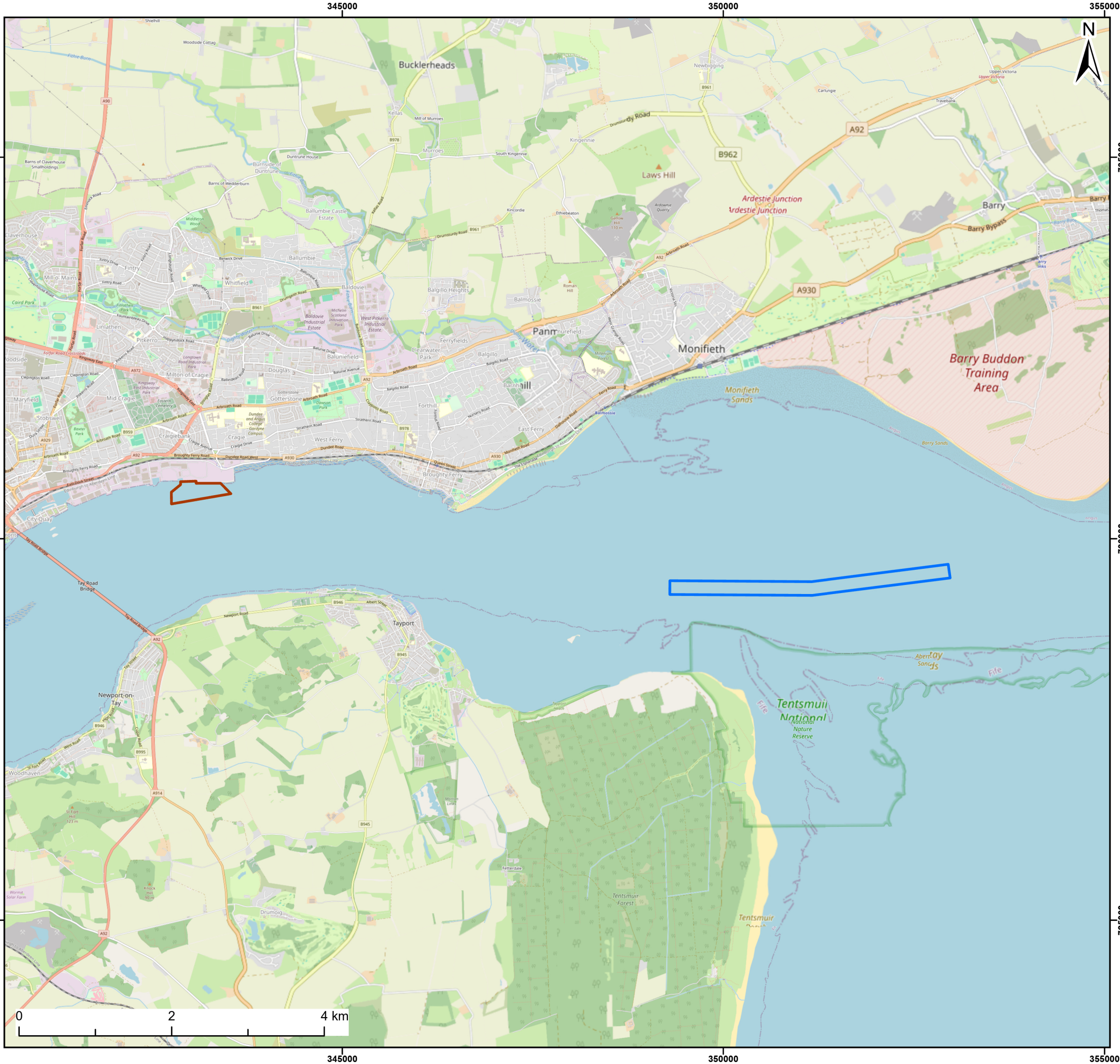
These tests are considered in **Section 5**.

1.2 Geophysical survey methodology

The geophysical survey would be undertaken in the areas shown in **Figure 1** between October and December; however, the geophysical survey will only be undertaken over a very short time period (likely no more than five days) within that overall period. At present, the exact nature of the geophysical survey equipment to be used is unknown; however, for the purpose of this EPS RA it has been assumed that the sub-bottom profiler (SBP) equipment used will have a frequency range of 400Hz to 22kHz. It has also been assumed that the SBP has the potential to cause sounds within cetacean hearing range (of less than 100kHz, as noted in the Joint Nature Conservation Committee (JNCC) 2017 Guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys).

¹ *European protected species licensing | NatureScot*

² *The Habitats Directive defines conservation status as 'favourable' when population data on a species indicate it is maintained on a long-term basis as a viable component of its natural habitats, when the natural range of the species will not be reduced for the foreseeable future and when there is sufficient habitat to maintain populations on a long-term basis.*



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Legend:

- Port of Dundee Survey Area
- Lady Shoal Survey Area

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Client:	Project:
Port of Dundee	Port of Dundee Capital Dredge and Quay Improvement Works

Title:

Location Plan showing both Port of Dundee and Lady Shoal Survey Areas

Figure:	1	Drawing No:	PC6550-RHD-XX-ZZ-DR-Z-0010			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:	
P01	25/09/2024	GC	RG	A3	1:50,000	

Co-ordinate system: British National Grid



1.3 EPS presence in the survey area

Annex IV of the Habitats Directive lists all cetacean species as EPS. These species are fully protected in Scottish territorial waters under the Habitats Regulations. Bottlenose dolphin *Tursiops truncatus* and harbour porpoise *Phocoena phocoena* are also listed in Annex II of the Habitats Directive and thus require Special Area of Conservation (SAC) designation.

A review of the SCANS-IV surveys (Gilles *et al.*, 2023) and a data review by Waggitt *et al.* (2019) indicates that there are five cetacean species known to occur near to the Firth of Tay, including: harbour porpoise, bottlenose dolphin, minke whale *Balaenoptera acutorostrata*, and white-beaked dolphin *Lagenorhynchus albirostris*. Reported sightings of marine mammal species to the Seawatch Foundation in 2024 (from January to August), near to the Port of Dundee, include mainly bottlenose dolphin, with lower numbers of sightings of minke whale, common dolphin *Delphinus delphis*, and harbour porpoise.

The geophysical survey will encompass an area next to the Port of Dundee and an area within the Lady Shoal approach channel, see **Figure 1**. These locations are in Block NS-D of the SCANS-IV survey (Gilles *et al.*, 2023). There are only density estimates for harbour porpoise, minke whale and white-beaked dolphin within block NS-D of the SCANS-IV survey. There were no sightings of bottlenose dolphin and common dolphin for the survey to gain density estimates for the species within the NS-D block; therefore, density estimates gained from Waggitt *et al.* (2019) have been used within this EPS RA. Species density estimates are as follows:

- Harbour porpoise – 0.5985 per km²
- Bottlenose dolphin – 0.0001 per km²
- White-beaked dolphin – 0.0799 per km²
- Common dolphin – 0.006 per km²
- Minke whale – 0.0419 per km²

2 Assessment of potential for impact

The Review of Consents Habitats Regulations Assessment for the Southern North Sea SAC (Department for Business, Energy and Industrial Strategy (BEIS), 2020) undertook underwater noise modelling to determine the potential impact ranges of site investigation surveys for harbour porpoise. For the BEIS (2020) assessment used the maximum source levels that could be expected from geophysical equipment: SBP with a maximum source noise level of 267 dB re 1 µPa-m. The noise modelling indicates that the permanent loss of hearing sensitivity (Permanent Threshold Shift (PTS)) in harbour porpoise could occur within a maximum of 23m (an area of 0.0017km²) from the source location (BEIS, 2020). This is based on the PTS cumulative threshold of 155 dB SEL weighted (Southall *et al.*, 2019).

Scottish and Southern Energy (2020) undertook underwater noise modelling results for injury impacts from impulsive noise sources including SBP. The worst-case operating peak sound pressure level (SPL_{peak}) was modelled as 445m for PTS in harbour porpoise (very high frequency cetaceans) when operating at 4kHz. The maximum predicted PTS range for dolphin species (high frequency cetaceans) was 98m and 178m for whale species (low frequency (LF) cetaceans). As a precautionary approach, the PTS ranges estimated by Scottish and Southern Energy (2020) have been used within this EPS RA.

Most of the sound energy generated by the SBP equipment will be directed towards the seabed and the pulse duration is extremely short, limiting the potential for injury. An animal would need to remain in the very small zone of ensonification for a prolonged period, which is highly unlikely (JNCC *et al.*, 2010); however, localised short-term behavioural impacts, such as avoidance and displacement, may occur as a result of disturbance.

The current guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (JNCC, Department of Agriculture, Environment and Rural Affairs (DAERA), & Natural England, 2020) recommends the use of an effective deterrence radius of 5km for geophysical surveys. This can be considered a conservative range; the modelling for BEIS (2020) predicted a maximum impact range of 3.77km for possible behavioural disturbance of harbour porpoise, based on a threshold of 140 dB re 1 μ Pa SPL unweighted (BEIS, 2020).

On a precautionary basis, it has been assumed that all cetaceans within 5km of the survey source (an impact area of 78.5km² around a point source) could be at risk of disturbance.

The total number of individuals that may be disturbed has been related to the overall population estimates for the relevant area, as defined by Inter-Agency Marine Mammal Working Group (IAMWWG) (2023).

2.1 Harbour porpoise

The estimated density of harbour porpoise in the SCANS-IV relevant survey Block NS-D is 0.5985/km² (Gilles *et al.*, 2023) and the reference population for the North Sea Assessment Unit (AU) is 338,918, as the most recent estimate reported in the SCANS-IV report (Gilles *et al.*, 2023).

The number of harbour porpoise that could potentially be at risk of the onset of PTS from the geophysical survey is approximately 0.37 individuals, representing 0.0001% of the North Sea AU reference population, based on the potential impact range of 445m (0.062km²). The number of harbour porpoise that could be disturbed due to the geophysical survey, based on the precautionary disturbance distance of 5km (78.54km²), is up to 47 individuals, or 0.01% of the North Sea AU. There is, therefore, a negligible risk of injury or disturbance to the harbour porpoise population.

2.2 Bottlenose dolphin

The estimated density of bottlenose dolphin for the relevant survey area is 0.0001/km² and the reference population for the Coastal East Scotland (CES) MU is 226 (Waggitt *et al.*, 2019; Cheney *et al.*, 2024).

The number of bottlenose dolphins that could potentially be at risk of the onset of PTS from the geophysical survey is approximately 0.000003 individuals, which represents 0.000001% of the CES MU population (based on the precautionary impact range of 98m (0.03km²)). The number of bottlenose dolphins that could be disturbed due to the geophysical survey, based on the precautionary disturbance range of 5km (78.54km²), is up to 0.008 individuals, which represents 0.004% of the CES MU population. There is, therefore, a negligible risk of injury or disturbance to the bottlenose dolphin population.

2.3 White-beaked dolphin

The estimated density of white-beaked dolphin in the SCANS-IV relevant survey Block NS-D is 0.0799/km² (Gilles *et al.*, 2023). The reference population for the Celtic and Greater North Sea (CGNS) MU is 43,951 (IAMWWG, 2023).

The number of white-beaked dolphin that could potentially be at risk of the onset of PTS from the geophysical survey is approximately 0.002 individuals, representing 0.000006% of the CGNS MU (based on the precautionary impact range of 98m (0.03km²)). The number of white-beaked dolphin that could potentially be disturbed due to the geophysical survey, based on the precautionary disturbance range of 5km, is up to 7 individuals, representing 0.01% of the CGNS MU based on the precautionary disturbance range of 5km (78.54km²). There is, therefore, a negligible risk of injury or disturbance to the white-beaked dolphin population.

2.4 Common dolphin

The estimated density of common dolphin in the relevant survey area is 0.006/km² (Waggitt *et al.*, 2019) and the reference population for the CGNS MU is 102,656 (IAMMWG, 2023).

The number of common dolphin that could potentially be at risk of the onset of PTS from the geophysical survey is approximately 0.0002 individuals, representing 0.0000002% of the CGNS MU (based on the precautionary impact range of 98m (0.03km²)). The number of common dolphin that could potentially be disturbed due to the geophysical survey, based on the precautionary disturbance range of 5km (78.54km²), is up to 0.4 individuals, representing 0.0005% of the CGNS MU. There is, therefore, a negligible risk of injury or disturbance to the common dolphin population.

2.5 Minke Whale

The estimated density of minke whale in the SCANS-IV relevant survey Block NS-D is 0.0419/km² (Gilles *et al.*, 2023). The reference population for the CGNS MU is 20,118 (IAMMWG, 2023).

The number of minke whale that could potentially be at risk of the onset of PTS from the geophysical survey is approximately 0.004 individuals, which represents 0.00002% of the CGNS MU (based on the precautionary impact range of 178m (0.1km²)). The number of minke whale that could potentially be disturbed due to the geophysical survey, based on the precautionary disturbance range of 5km (78.54km²), is up to 4 individuals, representing 0.02% of the CGNS MU. There is, therefore, a negligible risk of injury or disturbance to the minke whale population.

3 Mitigation Strategy

If the survey equipment to be used has a frequency of 100kHz or below, then the following mitigation measures, as outlined in the JNCC guidelines (JNCC, 2017), will be implemented:

- The survey equipment used will use the lowest practical noise levels.
- As the geophysical survey will be carried out over a very short period of time (likely no more than five days) and will use low energy sources (such as SBP), a non-dedicated Marine Mammal Observer (MMO) will be employed. A non-dedicated MMO refers to a trained MMO who may undertake other roles on the vessel when not conducting their mitigation role. This person can be a member of the vessel's crew provided that, during the mitigation period, does not undertake any other roles on the vessel.
- A pre-survey search of the mitigation zone (of 500m from the acoustic source) will be undertaken prior to the geophysical survey commencement, for a period of at least 30 minutes, by an MMO (pre-survey searches only to be undertaken in daylight and in good visibility).

- If a marine mammal is sighted within the 500m mitigation zone during the pre-survey search, the survey commencement will be delayed until the mitigation zone has been clear of marine mammals for a period of at least 20 minutes, and the pre-survey search has been completed.
- A soft-start procedure will be undertaken (wherever practical) once the mitigation zone has been clear for 20 minutes, and the pre-survey search has been completed, with a gradual and consistent ramp-up of power over a minimum 15-minute period, and the line must be commenced within 25 minutes of the start of the soft-start procedure. Once soft-start has commenced, there is no requirement to stop or delay the acoustic survey.
- If a line change is expected to take more than 40 minutes, the geophysical survey will be halted at the end of the survey line, and a full pre-survey search and soft-start procedure will begin prior to the next line.
- If a line change is expected to take less than 40 minutes, surveys can continue if the shot point interval is increased to a maximum of five minutes and is decreased gradually in the final 10 minutes of the line change.
- If several survey equipment are to be started sequentially, or interchanged during the operation, only one pre-shooting search is required prior to commencement of the first acoustic output, and only if there are no gaps in data acquisition of more than 10 minutes.

4 Consideration of cumulative impacts

The activities and projects presented in **Table 1** have been identified and considered for potential cumulative impacts with the proposed geophysical survey. For wide ranging species, it is important to consider projects over a wide area. For cetaceans, projects are considered if they are located within the Firth of Tay or elsewhere around the southeast coast of Scotland.

Table 1 Potential for cumulative impacts

Project	Location (approx. distance from the geophysical survey)	Activity type	Date of Activity
Inch Cape OWF	24.5km	UXO clearance	17/07/2024 – 30/06/2025
Near na Gaoithe Offshore Wind Farm (OWF)	27.8km	Geophysical surveys; cable installation; USBL use; vessels	01/04/2024 – 31/07/2025
Inch Cape OWF	57km	Cofferdam	23/05/2024 – 02/12/2026
Leith Outer Berth Development	69km	Dredging	15/06/2024 – 31/12/2026
Bellrock OWF	160km	Geophysical surveys	2024

The Review of Consents document (BEIS, 2020) considered the potential for in-combination effects for geophysical surveys and concluded that, due to the very low PTS onset impact range, there is no potential for a cumulative effect of geophysical surveys being undertaken at the same time as OWF construction (BEIS, 2020).

Similarly, while the potential disturbance range of geophysical surveys are larger than the PTS range, the use of geophysical survey equipment during OWF piling (either a single event or concurrent) was not considered to significantly increase the area of potential disturbance, and the area disturbed would be temporary due to the continual movement of the survey vessel. Therefore, it was concluded that there would be no adverse effect from the cumulative effects of geophysical surveys being undertaken at the same time as an offshore wind farm piling event (BEIS, 2020).

Due to the distance of the other construction activities at other projects and small impact ranges from the proposed geophysical survey, no cumulative impacts are expected to arise. For the potential UXO clearance at Inch Cape OWF, low order clearance methods will be used in the first instance and the project have their own full mitigation procedures in place (Inch Cape Offshore Limited, 2024); therefore, as the proposed geophysical survey impacts are limited to the local vicinity and Inch Cape OWF have their own mitigation procedures, there is no anticipated adverse cumulative impact.

Given the very short and temporary nature of the geophysical survey and the adherence to the recommended mitigation measures, no cumulative impacts are expected to arise that would affect the conservation status of any EPS.

5 Assessment of potential offence

Following the Marine Scotland guidance (2020), it can be concluded that, with the mitigation measures set out in **Section 2.5** in place, and with functioning positioning equipment, potential impacts of the proposed geophysical survey are unlikely to result in the harassment, disturbance, injury or killing of an EPS.

In relation to regulation 39(2) of the Habitats Regulations, the percentage of the reference population of EPS that may be disturbed by during the survey is considered to be negligible (less than 1% for all EPS which occur in the area) and therefore not detrimental to the maintenance of the population of the species concerned. Any disturbance would be localised and short-term, and with mitigation is considered to be negligible. Disturbance will not be sufficient to cause population level effects, and thus it is proposed that a Marine EPS licence (to disturb) can be issued under regulation 39 of the Habitats Regulations.

5.1 EPS tests

The purpose of this EPS RA is to determine whether, when considering appropriate mitigation as presented in **Section 2.5**, there is still potential for the survey activities to cause deliberate harm, or inadvertently cause disturbance to EPS. The need for a Marine EPS Licence will be determined by MD-LOT, with advice from NatureScot, based on findings from this EPS RA. MD-LOT's consideration of whether an EPS Licence can be granted will comprise the following three tests.

Test 1: The licence must relate to one of the purposes referred to in Regulation 44(2).

The Scottish Government can only issue licenses under Regulation 44(2) of the Regulations (as amended) for specific purposes. These purposes include:

- 44(2)(e) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

Offshore wind is a key growth sector in Scotland, and the generation and development of offshore wind infrastructure is a key component for reaching Scotland's target to reduce greenhouse gas emissions (by 75% by 2030), and for being net-zero by 2045. Part of the next round of offshore wind development in



Scotland (currently being bid for through the ScotWind process) is to ensure that 25% of the offshore wind industry is provided by local business.

One of the primary uses for the Port of Dundee is the service and support of the offshore renewables industry. The Port of Dundee is improving various aspects of the Port of Dundee to support the industry. The port provides facilities for the transshipment and storage of components such as all WTGs and other parts associated with wind farm projects. Due to the increasing size water depth required by vessels used by the offshore renewables industry, the Port of Dundee Limited is proposing to undertake a suite of works at the Port of Dundee and to the Lady Shoal approach channel.

Test 2: There must be no satisfactory alternative (Regulation 44(3a)).

A geophysical survey of the capital dredge footprint is required to provide information on the seabed characteristics to inform an environmental assessment of the proposed dredging. Although there might be different types of survey equipment that could be used, this is often constrained by the specific purpose of the geophysical survey and the alternative equipment may not be effective; however, it is important to note:

- Survey Location, Duration and Extent: the smallest survey area possible has been proposed. The smallest number of survey lines within this area and minimum survey duration possible has been determined. Reducing the size of the survey area and / or the number of survey lines any further would provide insufficient data.
- Survey Equipment / Methodology: the geophysical survey will provide the most efficient dataset that can be used to assess potential environmental impacts. The design of the survey considers the provision of the required data but without survey techniques which may be superfluous for the current objectives. Overall, the methodology will meet the objectives of the survey with the minimal practicable impact to EPS.

As it is not possible to undertake surveys without some potential disturbance to EPS, measures that will be taken to reduce potential risks include the mitigation strategies as set out in **Section 3**. Thus, the Port of Dundee considers that the 'no satisfactory alternative test' has been met.

Test 3: The action authorised must not be detrimental to the maintenance of the population of the species concerned at FCS in their natural range (Regulation 44(3b)).

The percentage of the reference population of EPS that may experience injury or disturbance would be negligible for in all cases (i.e. less than 1% of the reference population impacted). As such, injury or disturbance during the survey is not considered detrimental to the maintenance of the populations or achievement of FCS.

6 Conclusions

The proposed dredging is an important part of the Port of Dundee Limited's aspirations to continue supporting Scotland's growing contributions to the UK's renewable energy sector. A geophysical survey of the capital dredge footprint is required to provide information on the seabed characteristics to inform an environmental assessment of the proposed dredging.

It is possible that a small number of individuals may experience minor disturbance for during the period in which they may encounter noise emissions from survey operations. Given the very short-term impacts (likely no more than five days), it is considered that there is no potential for significant impact on the wider



populations of EPS, including harbour porpoise, bottlenose dolphin, white-beaked dolphin, common dolphin and minke whale.

Based on other current and future activities, along with the potential mitigation that will be in place during the proposed survey, the level of cumulative disturbance is predicted to be low. As the potential impacts arising from disturbance from each activity will be temporary, there will be no impact on the FCS of any EPS.

Therefore, disturbance will not be sufficient to cause any population level effects, and thus it is considered that a Marine EPS Licence to disturb can be issued.

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