



FIVE ESTUARIES OFFSHORE WIND FARM

10.48 RED THROATED DIVER NOTE

Applicaton Reference	EN010115
Application Document Number	10.48
Revision	A
Pursuant to	Deadline 6
EcoDoc Number	005644366-01
Date	February 2025



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Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Feb - 25	Deadline 6	GoBe	GoBe	VE OWF



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DEFINITION OF ACRONYMS

Term	Definition
AEoI	Adverse Effect on Integrity
C&D	Construction and decommissioning
CTV	Crew transfer vessel
DWR	Deep water routes
ECC	Export cable corridor
ES	Environmental Statement
ETG	Expert Topic Group
HPAI	Highly Pathogenic Avian Influenza
JNCC	Joint Nature Conservation Committee
O&M	Operational and maintenance
OTE	Outer Thames Estuary
OWF	Offshore Wind Farm
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
RTD	Red-throated diver
SeaMaST	Seabird Mapping and Sensitivity Tool
SPA	Special Protection Area
VE	Five Estuaries Offshore Wind Farm



1 INTRODUCTION

- 1.1.1 This document outlines the Applicants position with regards to the potential impacts on red-throated divers and any proposed mitigation required during the construction period along the export cable corridor (ECC) for Five Estuaries Offshore Wind Farm (VE). This report also provides an overview of consultation with Natural England through the Expert Topic Groups (ETGs), relevant representations and specific meetings with Natural England during the examination phase.

1.2 OVERVIEW OF THE PREDICTED IMPACTS

- 1.2.1 Red-throated divers were screened in for the construction and decommissioning (C&D) phase to assess the potential for an Adverse Effect on Integrity (AEoI) from displacement within the ECC from VE alone and in-combination in relation to the following conservation objectives for this species, as a feature of the Outer Thames Estuary (OTE) SPA:
- > Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;
 - > The extent and distribution of the habitats of the qualifying features;
 - > The structure and function of the habitats of the qualifying features;
 - > The supporting processes on which the habitats of the qualifying features rely;
 - > The population of each of the qualifying features, and; The distribution of the qualifying features within the site.
- 1.2.2 The process to calculate the impacts on red-throated diver during construction and decommissioning works in the ECC can be found in detail in paragraphs 11.4.50 to 11.4.69 in 5.4 Report to Inform Appropriate Assessment – Revision B [REP1-016].
- 1.2.3 Based on a 100% displacement rate and 1% mortality rate the predicted impacts range from 0.42 (mean density) and 1.10 (maximum density) birds.
- 1.2.4 It was concluded that there was no potential for an AEoI to the conservation objective to maintain the population levels of the red-throated diver feature of OTE SPA in relation to disturbance and displacement effects in the C&D phase from VE alone and red-throated diver will be maintained as a feature in the long-term with respect to the potential for adverse effects from disturbance and displacement, including changes to their supporting habitats.

1.3 NATURAL ENGLAND CONSULTATION

- 1.3.1 Consultation with Natural England was carried out throughout the process and Table 1.1 outlines the key issues raised with regards to red-throated diver up to submission, including Section 42 comments.
- 1.3.2 These key issues have been addressed in the 5.4 Report to Inform Appropriate Assessment – Revision B [REP1-016] and/or 9.18.1: Working in Proximity to Wildlife in the Marine Environment [APP-250].



- 1.3.3 Natural England highlighted in their Relevant Representations [RR-081: NE Ref: C9] that the conservation objective of concern was not red-throated diver abundance but the availability of unimpacted habitat in the SPA and maintenance of the birds' distribution.

Table 1.1 Summary of Natural England comments up to Section 42

Date and consultation phase/type	Consultation and key issues raised	Applicants comment
November 2021 NE, Scoping Opinion	NE advised the assessment to include impacts on SPA designations where the benthic habitats serve as supporting habitats for SPA bird features, including the Outer Thames Estuary SPA as several of the supporting habitats for Red-throated diver are present within the Area of Search (AoS).	An assessment of SPA designations with regards to the benthic habitats acting as supporting habitats for bird features has been included in 6.2.5 Benthic and Intertidal Ecology [APP-074], Section 5.10 and 5.11. The Outer Thames Estuary (OTE) SPA is assessed within Section 11.4.
Section 42 Comments Natural England 28/08/2023	11.4.32 - 40 It will be necessary for the RIAA to consider whether the impacts of Highly Pathogenic Avian Influenza (HPAI) have increased the sensitivity of particular SPA/species combinations to additional impacts from e.g. OWF. This was raised during the Examination of the Sheringham and Dudgeon Extensions OWF, where the Applicant produced a note assessing this based on the information on HPAI available at that time. The assessment of impacts on Outer Thames Estuary SPA RTD from construction and operational effects is focussed on potential mortality. Natural England considers the potential for construction phase disturbance during cable installation and construction/O&M vessel movements warrants consideration in terms of disturbance levels in the SPA and the loss of supporting habitat within the site within a given winter period. Several OWF have adopted Natural England's advised	A more comprehensive assessment of red-throated diver impacts within the OTE SPA has been undertaken, considering the Supporting Advice on Conservation Objectives. The Project would also be committing Natural England's advised best practice protocol for vessel movements within diver SPAs, after which the residual effects will be minimal, see Section 11.4.71 and 9.18.1 Working in Proximity to Wildlife in the Marine Environment [APP-250].

Date and consultation phase/type	Consultation and key issues raised	Applicants comment
	<p>best practice protocol for vessel movements within diver SPAs and Natural England consider this a minimum requirement. Depending on the analysis of the duration and extent of supporting habitat loss, Natural England may seek a seasonal restriction (or other mitigation measures) to cable-installation activities within the SPA. Review the Sheringham and Dudgeon Extensions submissions regarding HPAI and consider taking a similar approach and drawing on any additional information on HPAI that emerges. Update the RIAA assessment to include consideration of the OTE SPA SACO attributes relating to disturbance and availability of supporting habitat, adopt the Natural England best practice protocol and consider the need for mitigation measures for cable installation within the SPA.</p>	
<p>Section 42 Comments Natural England 28/08/2023</p>	<p>11.4.35 It is stated that RTD displacement mortality of >1% is unrealistic, citing the MacArthur Green (2019) review. However, empirical evidence regarding the energetic consequences of displacement for seabirds and wintering waterbirds using the marine environment are very limited. Furthermore, the role of overwinter survival on seabird population dynamics is poorly understood. Considering the paucity of evidence Natural England consider it appropriate, as a matter of best practice, to assess a range of mortality impact scenarios. Mortality rates of 1-10% should be considered to identify if</p>	<p>Noted, a range of mortality estimates, following Natural England guidance (Parker <i>et al.</i>, 2022c) have been presented. See Section 11.4.</p> <p>The citation population for red-throated divers at the OTE SPA was 6,466 individuals (1989-2006/07) and the most recent count in 2019 found the population to be 22,280 individuals. This is a 344% increase in population size, therefore displacement does not seem to be impacting at a population level.</p>



Date and consultation phase/type	Consultation and key issues raised	Applicants comment
	<p>further investigation is warranted, accepting that 10% represents a highly precautionary scenario. However, Natural England highlight that the mortality rates are essentially a crude method of also capturing a range of potentially deleterious effects and in-direct effects that could conceivably arise from displacement. As definitive mortality rates for seabirds (including RTD and auks) are unknown, Natural England advises consideration of a range between 1% and 10% for project alone and in-combination impacts from array, construction and cable laying vessels for RTD and auks (i.e. species for which the cost of displacement could be significant). If significant impacts are predicted under these scenarios further investigation of those impacts may be required.</p>	



2 REPORT TO INFORM APPROPRIATE ASSESSMENT

2.1 ASSESSMENT RESULTS

- 2.1.1 This section is an overview of the results presented in 5.4 Report to Inform Appropriate Assessment – Revision B [REP1-016].

STATUS AND ECOLOGY

- 2.1.2 The red-throated divers wintering habitats in the UK and Europe are generally shallow inshore waters up to 20m in depth (Natural England, 2010). The bulk of the UK distribution is found in coastal areas of east England with 38% of the UK wintering population found in the OTE SPA at the time of designation (JNCC and Natural England, 2013). The distribution and abundance of red-throated divers is primarily determined by the presence and availability of their food source (Poot, 2009), in particular sprats and young herring.

POTENTIAL EFFECTS OF THE PROPOSED FIVE ESTUARIES OWF ON THE SPA FEATURE

- 2.1.3 Based on the above the conservation objective for the OTE SPA the specific target for the red-throated diver feature is as follows based on JNCC and Natural England's case-specific advice (JNCC and Natural England, 2013).
- 2.1.4 To maintain the size of the wintering population at a level which is above 6,466 individuals whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent. The latest mean count is 22,280 adults based on the 2019 count provided by Irwin *et al.* (2019). This would be achieved by maintaining or restoring:
- > The extent and distribution of the habitats of the qualifying features;
 - > The structure and function of the habitats of the qualifying features;
 - > The supporting processes on which the habitats of the qualifying features rely;
 - > The population of each of the qualifying features, and; The distribution of the qualifying features within the site.
- 2.1.5 Red-throated divers have shown sensitivity and strong avoidance behaviour to shipping activity and other anthropogenic activities associated with the development of OWFs through both noise and visual cues (Schwemmer *et al.*, 2011). They show a preference for shallow shelf areas and for sandy substrates, which coincides with ideal areas for the development of OWFs (Kleinschmidt *et al.*, 2019). The literature indicates that the majority of red-throated divers present will flush from approaching vessels at a distance of 1 km or less (Bellebaum *et al.*, 2006; Jarrett *et al.*, 2018; Topping and Petersen, 2011) which makes them susceptible to impacts during the C&D of the windfarm and in the O&M phase due to vessel presence (Garthe and Hüppop, 2004; Schwemmer *et al.*, 2011; Furness *et al.*, 2013; Bradbury *et al.*, 2014; Dierschke *et al.*, 2017; Mendel *et al.*, 2019).
- 2.1.6 They rank highly for displacement impact sensitivity in different indexes including one developed by Furness and Wade (2012) and the SeaMaST (Seabird Mapping and Sensitivity Tool) (Bradbury *et al.*, 2014) but have a moderately low collision risk due to their lower flight altitude. Collision is also less of a concern because red-throated diver showed a very low abundances within the VE array area and 4 km buffer.



- 2.1.7 There is no evidence that birds displaced from wind farms or by vessels suffer any mortality as a consequence of displacement (Dierschke, 2017). MacArthur Green (2019) undertook a review of available evidence for red-throated diver displacement as part of the Norfolk Vanguard OWF assessment submission, concluding little or no effect of displacement on red-throated diver survival. Additionally, displacement impacts throughout the cable construction are temporary, and so mortality rates of red-throated diver are expected to be less than mortality rates of individuals displaced from the array area plus buffer zone as individuals displaced from the cable corridor can return intermittently.
- 2.1.8 Evidence suggests that red-throated diver displacement by operational OWFs has little or no impact on adult survival, with undetectable population-level effects. No evidence has been provided (and the Applicant is not aware of any) that supports Natural England's upper mortality estimate (up to 10%), and a 1% rate is considered appropriately precautionary (MacArthur Green, 2019). As vessel disturbance is more localised, temporary and ephemeral than OWF disturbance, these conclusions are equally likely to apply to birds displaced by the cable-laying vessel in the ECC.
- 2.1.9 The proposed ECC route will overlap with the OTE SPA and therefore has been identified as having a potential impact on red-throated divers. Preparatory works for cable installation (including geophysical and geotechnical surveys, and route clearance) and cable laying and burial will take place over a five-year period, as a worst case. However, to be clear each element of works in the SPA, which is crossed by the ECC for approximately 16 km, will be very limited in duration with each activity (e.g. route surveys, route clearance, cable laying and cable burial) taking around 5 to 15 days to complete and therefore it is not continuous activity over the five years.
- 2.1.10 As a worst-case scenario there will be one cable-laying vessel or vessel cluster (one cable laying vessel and several auxiliary vessels working in proximity to each other) working on the ECC within the SPA at any one time during the restricted period. From survey data within 6.2.9 Shipping and Navigation [APP-078], during the winter season, there were 102 unique vessels recorded over a 14-day period, along with 116 in the summer season, it is therefore considered that the addition of one vessel or vessel cluster for cable-laying within the ECC will not cause a significant change from the baseline.
- 2.1.11 Displacement of red-throated diver was estimated within the ECC during the migration-free winter bio-season, defined as December to January by Furness (2015), presented in 6.5.4.15: Apportioning Note [APP-117]. Both the mean and maximum density of red-throated diver within the ECC corridor was estimated using data from Irwin *et al.* (2019). This was achieved by clipping the RTD Irwin density data to the relevant area (ECC, ECC with buffer) and calculating an average density. The displacement of both species was scaled up to a 2 km buffer surrounding the cable laying vessel to provide a range of impacts from the average to the maximum abundance of birds that are displaced at any moment in time during the migration-free winter bio-season. Vessels can be considered stationary relative to birds, as tidal flows (3.6 km/h) far exceed vessel speeds (0.3–0.4 km/h). Thus, the estimated number of displaced birds likely represents the total displaced over a single winter, since the zone of exclusion can be treated as fixed.



2.1.12 The predicted mortalities due to displacement, found in 5.4 Report to Inform Appropriate Assessment – Revision B [REP1-016], range from 0.42 birds to 1.10 birds based on 100% displacement and 1% mortalities (Table 2.1). This would result in an increase in baseline mortality for the citation population of 0.040% to 0.106% and for more recent counts 0.012% to 0.031%.

2.1.13 It was therefore concluded that no potential for an AEoI to the conservation objective to maintain the population levels of the red-throated diver feature of OTE SPA in relation to disturbance and displacement effects in the C&D phase from VE alone.

Table 2.1 Red-throated diver predicted mortalities based on the full range of potential displacement impacts at the OTE SPA.

Season	100% displacement, 1% mortality			90% to 100% displacement, 1% to 10% mortality		
	Estimated mortalities	Increase in baseline mortality citation (%)	Increase in baseline mortality recent (%)	Estimated mortalities	Increase in baseline mortality citation (%)	Increase in baseline mortality recent (%)
Non-breeding season (mean density)	0.42	0.040	0.012	0.37-4.16	0.036-0.402	0.011-0.117
Non-breeding season (max density)	1.10	0.106	0.031	0.99-11.00	0.096-1.063	0.028-0.309

2.1.14 In their Section 42 comments (Table 1.1), regarding the impacts on red-throated divers, Natural England recommended assessing the impacts of habitat loss to the red-throated diver OTE SPA population.

2.1.15 Densities of red-throated divers are similar across three areas: the ECC-OTE SPA overlap, the ECC plus 2 km buffer, and the southern OTE SPA (Table 2.2). The lowest mean density is in the overlap area. Given higher densities in adjacent areas and ample similar habitat, any habitat loss is unlikely to have a significant long-term impact on the OTE SPA population. If displaced birds remain within the OTE SPA, diver density would increase by 0.9%–1.5% in other areas.



Table 2.2 Red-throated diver densities (km⁻²) for the ECC overlap of the OTE SPA, the whole ECC plus a 2 km buffer and the southern part of the OTE SPA.

Region	Mean Density	Min density	Max density	SD
ECC Overlap with the OTE SPA	3.314	0.565	8.754	2.097
ECC+ 2 km buffer	3.715	0.001	15.945	2.818
Southern part of OTE SPA	3.837	0.0001	102.134	8.174

2.1.16 Red-throated diver have adaptable foraging behaviours, changes to prey species and abundance and availability is likely to cause minimal impact to foraging habitat use.

2.1.17 Potential impacts on key prey species (sandeels, herring, sprat) and their habitats are assessed in the ES (6. 2.6 Fish and Shellfish Ecology [APP-075] and 6.2.5 Benthic and Intertidal Ecology [APP-074] respectively) and found to be non-significant. Thus, any indirect effects on red-throated divers are expected to be extremely low, and with the adoption of mitigation in the form of 9.18.1 Working in Proximity to Wildlife in the Marine Environment [APP-250] plan the impacts will be further reduced. Some of the following best practice examples have been included from the Working In Proximity document below:

- > Export cable installation will not be carried out within the OTE SPA between 1st November to 31st March inclusive to mitigate disturbance impacts on red-throated diver;
- > Where vessels transit the OTE SPA between 1st November to 31st March the following measures will be adopted:
 - > Selecting routes that avoid known aggregations of birds;
 - > Restricting vessel movements to existing navigation routes where possible;
 - > Maintaining direct transit routes to minimise distances through areas used by red-throated divers;
 - > Considering the potential for crew transfer vessels (CTV) to travel in convoy en route to the wind farm sites;
 - > Maintain a steady speed and avoid course changes;
 - > Avoiding rafting birds either in-route to the array and within the array, where possible, and avoiding disturbance to areas with consistently high diver density; and
 - > Maintenance vessel operators being made aware of the importance of this species and the associated mitigation measure through toolbox talks.



- 2.1.18 With these mitigation measures in place, which aim to avoid disturbance during peak months of red-throated diver presence, the impacts presented above are highly unlikely to occur. The displacement impacts on red-throated diver that will occur due to the installation of the VE OWF export cable within the Outer Thames SPA are low in magnitude and temporary in nature.
- 2.1.19 Predicted red-throated diver mortality and distribution changes from VE vessel traffic in the C&D phase will not affect OTE SPA integrity. The species will remain a long-term feature despite potential disturbance and including changes to their supporting habitats.

RED-THROATED DIVER DENSITIES AND DISTRIBUTION IN RELATION TO VESSEL TRAFFIC

- 2.1.20 The red-throated diver densities and distributions are presented in Figure 2.1 using the data from Irwin *et al* (2019). The data from Irwin shows that the RTD densities within the ECC are not high and shipping data overlain onto the ECC (Figure 2.1) from within the ECC show medium to high vessel traffic.
- 2.1.21 Therefore, the ECC does not cover areas of unimpacted habitat and densities of red-throated diver are low in the shipping lanes in the area. It should be noted that there are high density areas immediately outside of the shipping lanes suggesting that a 2 km buffer is overly precautionary in this area.
- 2.1.22 Figure 2.2 highlights this further, with vessel tracks distinctly showing key shipping routes in this area, primarily the deep water routes (DWR), the Sunk DWR in particular, running south right through the OTE SPA eventually joining the Black Deep water Route which runs into the Thames River. It should be noted that the Precautionary Areas (shown by the pink hatched area in Figure 2.2) overlaps with the VE ECC. These are in place due to the high density of vessel traffic and is deemed a “high risk traffic area” where vessels often wait and/ or anchor until pilotage is available into the various large ports situated along the coast.
- 2.1.23 As highlighted above RTD densities are low in these areas, and therefore the addition of a small number of project vessels during cable laying activities over a small time period would not be additive to the levels of disturbance already within this area.

2.2 APPLICANTS POSITION

- 2.2.1 Overall, our conclusions conclude there is no potential adverse effects on the integrity of the OTE SPA. Recognising that the area of where the ECC overlaps the OTE SPA is an area of lower density shipping and therefore reduced disturbance, the Applicant has committed to a seasonal restriction for cable laying activities and will follow Natural England’s best practice guidelines on other vessel movements during all phases of the development for both the ECC and array area. The Applicant strongly considers this mitigates against impacts in the non-breeding season for the wintering red-throated divers at the OTE SPA and should result in almost a complete reduction in the impacts associated with vessel traffic.



- 2.2.2 Natural England updated their advice given during Section 42 consultation in their Relevant Representations (Table 2.3, C9), requesting that vessel activities within the SPA *plus* a 2km buffer be undertaken outside the seasonal restricted period during the Construction and Decommissioning of the export cable. The Applicant does not believe that the 2km buffer is appropriate. As discussed above, the ECC lies in a high traffic shipping lane and is therefore already highly disturbed. Any additional vessels from the Project within this area outside the OTE SPA would therefore not increase the amount of disturbance nor reduce the distribution of RTD. The red-throated diver densities are not overly affected immediately outside of this area.
- 2.2.3 Natural England have stated that 'Burger et al. 2019 also show effects from shipping up to 3km distance and slower reoccupation rates to areas passed by fast moving vessels' as evidence for using the 2km buffer, however the construction and decommissioning vessels will be following the Natural England best practice guidelines in the SPA therefore the vessels will not be fast moving and will be avoiding an aggregations of red-throated diver in the area so the effects will not be comparable with Burger *et al's* findings. Therefore, following the onsite evidence the Applicant does not agree that a 2km buffer is necessary to maintain the SPA objectives.
- 2.2.4 For completeness and ease of reference, the relevant representations from Natural England and the Applicants responses regarding red-throated diver can be found in Table 2.3.

2.3 POTENTIAL FUTURE STUDIES

- 2.3.1 The Applicant recognises there may be opportunities to fill in knowledge gaps when it comes to the impacts on red-throated divers from vessel traffic.
- 2.3.2 For example, a GPS tagging project focused on red-throated divers, with individuals caught and tagged on-site, could provide valuable insights into several key knowledge gaps related to their ecology and interactions with marine developments. Such a study could contribute to a better understanding of:
- > Movement Patterns – Tracking individual birds would help determine avoidance distances and behaviours in response to vessels and established vessel routes. This could provide important data on how red-throated divers navigate areas with high marine traffic and potential displacement effects.
 - > Diving and Foraging Behaviours – By analysing GPS data alongside dive depth and duration, insights could be gained into feeding strategies, preferred foraging locations, and habitat use, helping to assess the potential impacts of offshore activities on their feeding efficiency.
 - > Flight Height – Understanding the typical flight heights of red-throated divers would be crucial for assessing collision risks with offshore wind turbines. This data could inform migratory assessments and mitigation strategies to reduce potential impacts.
 - > Migration Routes and Timings – Tracking the birds throughout their migratory cycle would provide detailed information on their seasonal movements, key stopover sites, and overall migration patterns.



- 2.3.3 By addressing these gaps, a GPS tagging study could contribute to more effective management strategies and mitigation measures for red-throated divers in offshore environments. Presently, there is a similar study is being conducted in Germany for offshore wind projects (divertracking.com).



Table 2.3 Natural England Relevant Representations and Applicant Responses

Ref	Relevant Representation comment	Natural England's Recommendations to resolve issues	Applicants Response
C9	<p>6.2.4 sec 4.4.3, Table 4.2; 5.4, sec 11.4.60 -61; 9.18.1, sec 3.3.2</p> <p>To mitigate the risk to red-throated diver (RTD), commitment to the management of vessel movements within the OTE SPA +2km buffer (outlined in the DCO) should extend across all phases of the development for both the export cable (EC) and array.</p> <p>Whilst the applicant downplays the amount of additional vessel activity on top of baseline movements within the OTE SPA and asserts impacts on RTD from displacement are minimal, Natural England considers that the conservation objective of concern in this context is not RTD abundance but the availability of unimpacted habitat in the SPA and maintenance of the birds' distribution.</p>	<p>Natural England is increasingly concerned that disturbance and/or displacement of red-throated divers from the more persistent presence of OWF-related vessels could make a meaningful contribution to in-combination impacts in the OTE SPA. As a result of this we advise that there is a likely significant effect which should be considered in more detail in the Appropriate Assessment (AA).</p> <p>Due to the risk posed by vessel movements Natural England strongly recommends all vessel activity within the SPA +2km buffer be undertaken outside the seasonal restricted period during the Construction and Decommissioning (C&D) of the export cable (EC) and follow Natural England best practice guidelines on vessel movements during all other phases of the development for both the EC and array.</p>	<p>The Applicant has committed to a seasonal restriction within the SPA during cable laying and follow Natural England best practice guidelines on vessel movements during all other phases of the development for both the ECC and array.</p> <p>The data from Irwin <i>et al</i> shows that the RTD densities within the ECC are not high and shipping data from within the ECC show low to medium vessel traffic. The ECC therefore does not cover areas of unimpacted habitat. Densities of RTD are low in the shipping lanes in the area, however there are high density areas immediately outside of the shipping lanes suggesting that a 2km buffer is overly precautionary in this area.</p>
C18	<p>6.2.4, secs. 4.10.36 and 4.10.46</p> <p>The impacts on red-throated diver (RTD) during construction of the EC are stated to be 15 birds per annum</p>	<p>Clarity should be provided on if the combined impacts on RTD during the construction phases of the EC and turbine array.</p>	<p>The estimated number of red-throated divers displaced within the offshore export cable corridor was up to 142, and at a worst-case mortality rate of 10%, the mean annual mortality would</p>



Ref	Relevant Representation comment	Natural England's Recommendations to resolve issues	Applicants Response
	(at 100% displacement and 10% mortality) but the impacts from both the array and EC construction is stated as less at 14 birds. The combined impacts must be more or the same but not less than stated for one phase of the work.		be 14.2 individuals. For the Array Areas, the similar worst-case mortality was 0.2 individuals, leading to a mean annual total of 14.4 individuals. This was rounded down to 14 individuals; however, it should be noted the resultant increase in mortality rate would still be 0.5% for both 14 or 15 individuals. Overall, our conclusions conclude there is no potential adverse effect on integrity to the conservation objective to maintain the population levels of the red-throated diver feature of OTE SPA in relation to disturbance and displacement effects in the C&D phase from VE alone and in-combination.
C19	9.18.1, secs 3.3 Procedures to minimise disturbance to red throated diver during construction, operation, and maintenance activities are in accordance with Condition 12 of the Generation Assets deemed Marine License (dML) in Schedule 10 of the draft Development Consent Order (DCO), and Condition 12 of the Transmission Assets dML in	Natural England welcome the seasonal restriction for the export cable but emphasise that it will be essential to mitigate impacts from other aspects of the proposal that could contribute to AEol at the OTE SPA (see Natural England Ref. C9 above and C21 below). We also highlight the seasonal restriction should be applied to the OTE SPA and a 2km buffer to ensure risk to RTD are minimised according to best practice.	The Applicant has committed to seasonal restrictions for vessel movements in the SPA during the construction for cable laying activities and will follow the Natural England best practice guidance to ensure that all suitable habitat contained in the SPA will remain undisturbed for red-throated divers in the area.



Ref	Relevant Representation comment	Natural England's Recommendations to resolve issues	Applicants Response
	Schedule 11 of the draft DCO. They include a seasonal restriction, 'Export cable installation will not be carried out within the Outer Thames Estuary SPA between 1st November to 31st March inclusive to mitigate disturbance impacts on red throated diver'.		
C21	<p>6.2.4, sec 4.10.17</p> <p>The sensitivity of red-throated divers to disturbance effects from offshore developments are described in this section but using examples of research that do not illustrate the full scale of the impact. Garthe et al. 2023 review the evidence well and more clearly detail the large-scale effects of OWF on this species e.g. reduction in bird densities up to 9-12km for the OWF footprints. Burger et al. 2019 also show effects from shipping up to 3km distance and slower reoccupation rates to areas passed by fast moving vessels.</p>	<p>A more representative description of the scale of impacts likely on RTD (reflecting the Applicant's own review of RTD sensitivity presented in doc. 6.2.4 secs. 4.11.25-4.11.34) would be better to allow the examiners to fully appreciate the mitigation necessary to maintain the integrity of the OTE SPA qualifying feature. The conservation objective of key concern here is "the distribution of the qualifying features within the site", not RTD mortality. Consequently, if RTD are displaced from an area of the SPA, then the conservation objective is hindered. Appropriate mitigation such as the planned seasonal restriction on cable installation and adoption of the best practice protocol for other construction and O&M vessels in the OTE SPA +2km buffer will be essential to guarantee no AEol.</p>	<p>The Applicant has already committed to seasonal restrictions (1 November to 31 March inclusive) for cable laying vessel movements in the SPA during the construction and decommissioning phases and will follow the Natural England's Red Throated Diver best practice guidance. The Applicant strongly considers this mitigates against impacts in the non-breeding season for the wintering red-throated divers at the OTE SPA and should result in almost a complete reduction in the impacts associated with vessel traffic.</p>



Ref	Relevant Representation comment	Natural England's Recommendations to resolve issues	Applicants Response
			<p>The Applicant will also update the description of the scale of impacts, referencing Garthe et al 2023, although it should be noted that the array area is over 17 km from the OTE SPA boundary, thus beyond the disturbance footprints of 9-12 km found in Garthe et al.</p> <p>The Applicant has also provided further evidence in response C9 above, which strongly demonstrates that a +2km buffer is overly precautionary within this area.</p>

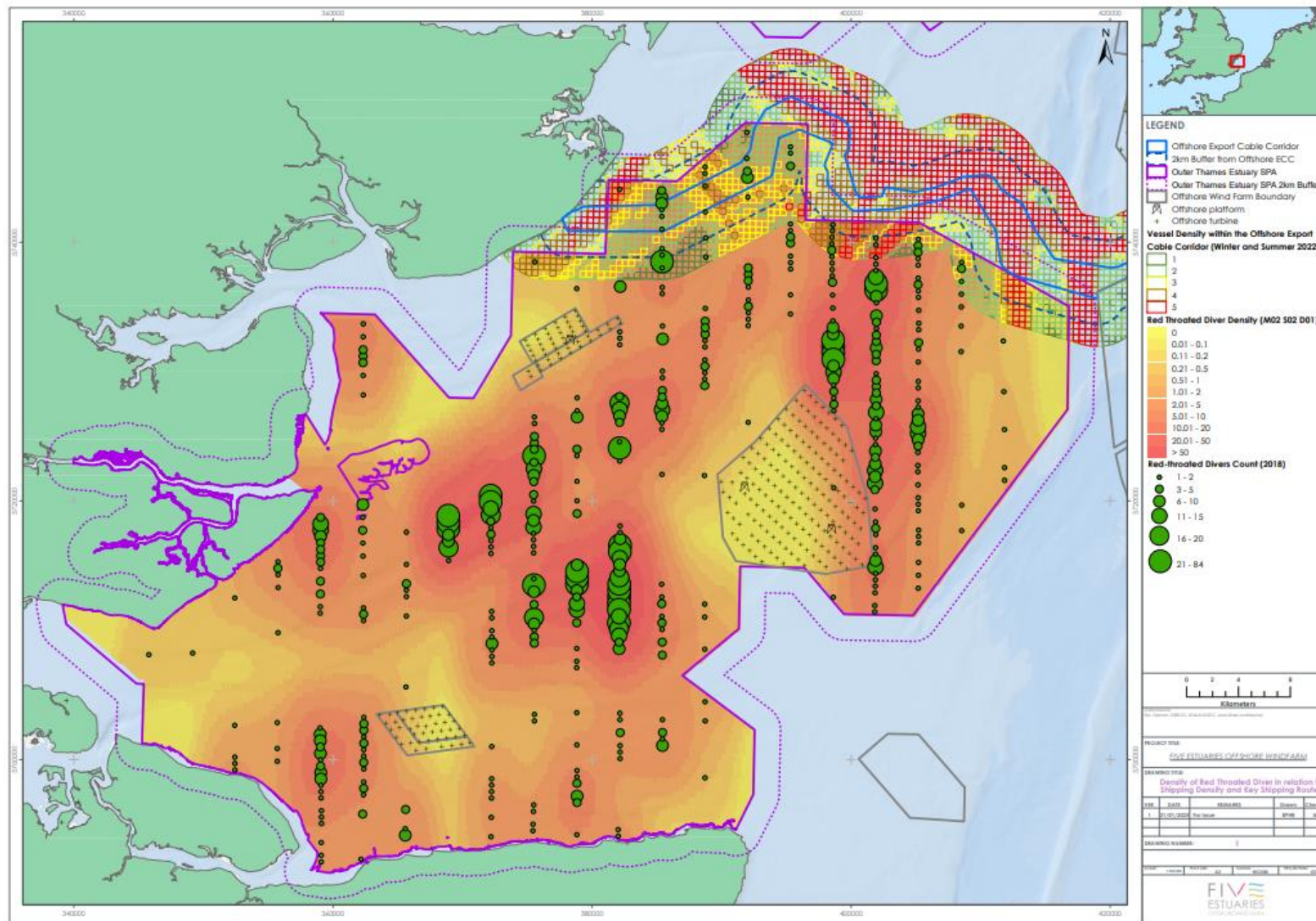


Figure 2.1. Red-throated diver densities (Irwin *et al*, 2019) and the shipping densities along the ECC

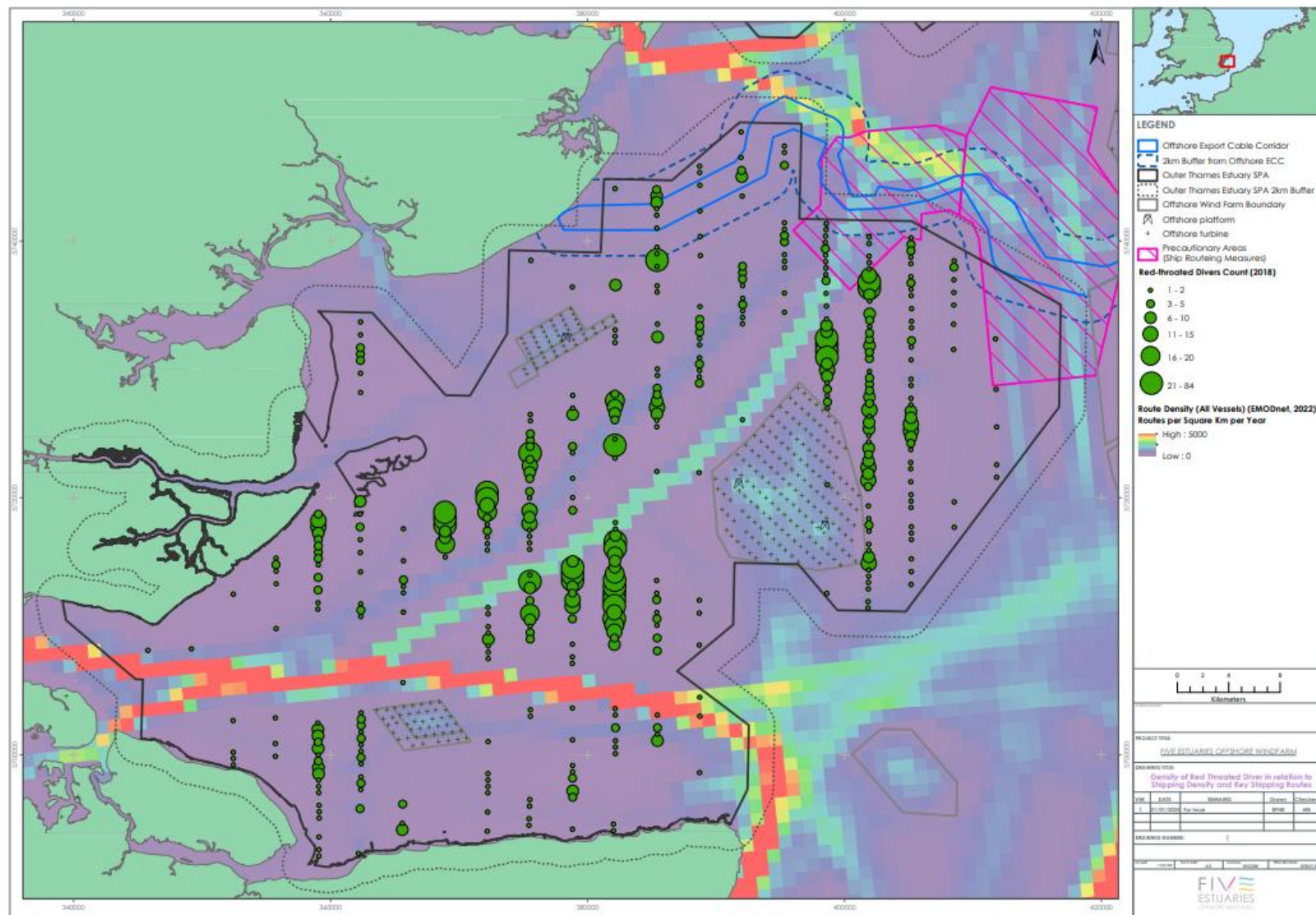


Figure 2.2. Map presenting the shipping densities and the red-throated diver counts from Irwin *et al.* (2019).



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