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Date: 13/12/2019
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Application for a Development Consent Order for the Thanet Extension Offshore Wind Farm (EN010084).

Dear Ms Mignano,

We write in response to the letter dated 21 November 2019 from the Department for Business, Energy and Industrial Strategy ('the Secretary of State').

Marine Navigation, Shipping and Ports Infrastructure

Collision Risk Model

The Applicant submitted a new Collision Risk Model (CRM) at Deadline 6 which took into account the Structures Exclusion Zone (SEZ) and responded to Interested Parties' (IPs) concerns regarding the use of December data for the CRM submitted with the Application (e.g. PLA / ESL comments on Deadline 4, 4B and 4C submissions, REP5-069). This CRM was a standalone study which was submitted to provide further context, confidence and evidence of precaution in relation to the Navigation Risk Assessment (NRA) and the NRA Addendum. In response to the Rule 17 request of 30 May 2019 (PD-020) the Applicant also provided a tabulated comparison between the two CRMs (REP6A-003) to aid IPs' reviews of the submitted information.

The Examining Authority in their Rule 8 letter requested comments on material submitted at Deadline 6 and comments on responses to the Rule 17 request at Deadline 7. Responses on the CRM were submitted by the PLA / ESL and Port of Tilbury / London Gateway. Notwithstanding that IPs have previously had an opportunity to respond to this information in accordance with the Rule 8 examination timetable, we note that the IPs' further views are sought on this submission. Accordingly, we reserve the right to comment on the IPs' responses in due course.

Pilot Transfer Bridge Simulation (PTBS)

Throughout the examination, further simulation was requested by the PLA / ESL and Port of Tilbury / London Gateway as a pre-requisite to determining the impact on safety of navigation. Whilst the Examining Authority explored the potential of a post-examination simulation at Issue Specific Hearing 8, requesting consideration of the scope and benefits of a further PTBS as an

action point, no procedural decision was made which required a post-examination simulation (PD-022), the ExA noting that '…the conduct of any such work must be a voluntary matter for the Applicant…'.

The Applicant maintains that the results of the 2017 PTBS (APP-090), being based on the worst-case parameters, are robust. However, following the close of the examination and in order to provide further clarification for the Secretary of State, the Applicant voluntarily undertook the 2019 PTBS between July and October 2019. The results of the 2019 PTBS fully support the results of the 2017 PTBS. The preparation, set-up, execution and reporting of the 2019 PTBS involved considerable effort and resource by the Applicant, over a period of 3 months, to ensure that there was sufficient simulation time to explore a wide range of scenarios using experienced, independent mariners. This period also allowed for consultation with IPs on the specification, the outcomes of the set-up day and the final report. This has resulted in a considered, consultative and robust PTBS which could not have been undertaken within the time and resource constraints of the examination.

Whilst the Applicant fully consulted IPs on the 2019 PTBS process and outcomes, the Applicant notes that additional comments from IPs have been sought on the 2019 PTBS and reserves the right to comment on the IPs' responses in due course.

Agreement for Lease

The Agreement for Leases (AfL) for both the Transmission Assets and the Generation Assets (the Offshore Wind Farm) have been agreed and signed by The Crown Estate and the Applicant. The definition of 'Maximum Installed Capacity' contained within the Generation Assets AfL reads as follows: *'"Maximum Installed Capacity" means a maximum aggregate name plate capacity of 300 megawatts of the wind turbines to be installed on the Development Site by the Project Company or a Proposed Tenant or such greater capacity as agreed in writing between the parties expressed in MW"*. There is, therefore, sufficient flexibility in this definition to allow the parties to agree to increase the installed capacity to 340 MW. The Applicant can also confirm that a grid connection agreement has been entered into with National Grid for transmission entry capacity of up to 340 MW.

The Applicant set out its position on matters raised in connection with the Agreement for Lease with The Crown Estate during the examination. In particular, question 2.3.1 of the Examining Authority's second written questions (PD-016) was addressed by the Applicant (REP5-002) in detail. The Applicant explained why it would not be appropriate to limit the project's maximum installed capacity to 300 MW and made provision under Article 17(3) of the dDCO to restrict the exercise of compulsory powers until an Agreement for Lease with The Crown Estate had been entered into and evidence of this provided to the Secretary of State.

The Applicant intends, in due course and upon serving the AfL option notice to The Crown Estate, to enter into a Lease with a maximum installed capacity that would allow for optimal use of both this grid connection and the overall project site. As no Lease has yet been entered into, no maximum installed generating capacity allowed by the Lease has been defined.

Late changes to the DCO

Changes to the dDCO were made at Deadline 6 in response to the ExA's proposed amendments to the dDCO. This was in accordance with the timetable for examination set out in the Rule 8 letter. The amended dDCO was commented on by IPs at Deadline 7.

The Applicant made further changes to the dDCO at Deadline 7, only in response to the ExA's Rule 17 request, responses from IPs to the Rule 17 request and, in one case, to include a condition which had been previously agreed with Natural England. This was also in line with the examination timetable for the final dDCO to be submitted at Deadline 7.

At Deadline 8 the Applicant made very minor updates to the dDCO, to address the points of clarification requested by IPs at Deadline 7.

Therefore, the amendments to the dDCO submitted later in the examination were in line with the deadlines for submissions in the Rule 8 examination timetable (with minor drafting clarifications included at the request of IPs at Deadline 8) and IPs had opportunities to respond on these amendments in accordance with the examination timetable. Nonetheless, the Applicant notes that further comments on the dDCO are sought and reserves the right to respond to IPs' further comments in due course.

Compulsory acquisition

National Trust

An option agreement has now been signed with the National Trust and it is understood that they have written to the Secretary of State to withdraw their objection.

National Grid

The Applicant has received a copy of an email dated 2 December 2019 from a representative of National Grid to the Planning Inspectorate confirming that National Grid Gas Transmission (NGG) has no assets affected by the project and accordingly the withdrawal of the relevant representation by National Grid includes the withdrawal of any representation on behalf of NGG.

RAMAC Holdings (Trading) Limited

Since the close of examination, the Applicant and RAMAC Holdings (Trading) Limited ('Ramac') have continued to engage on a voluntary agreement for the proposed site with significant progress made. Annex A to the letter contains an extensive log of the correspondence and engagement with Ramac to date, demonstrating the efforts made by the Applicant to secure a voluntary agreement. This annex also highlights that Ramac continue to be open to an agreement for a substation on the proposed site, contrary to their position made in representations.

Notwithstanding the positive progress made, as Ramac's objection currently remains, the Applicant has provided further details to demonstrate that the proposed substation site is the most appropriate site within Ramac's landholding and, in accordance with section 122 of the Planning Act 2008, that there is a compelling case in the public interest for powers of compulsory acquisition to be granted for this site. These details are set out in Annex B to this letter.

NPS EN-1, the Overarching National Policy Statement for Energy, sets out the Government's policy on considering alternatives for nationally significant energy infrastructure projects. At paragraph 4.4.1, EN1 states:

"From a policy perspective this NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option."

Where there is a legal or policy requirement to consider alternatives, paragraph 4.4.3 of EN1 goes on to set out the guiding principles when deciding what weight should be given to alternatives. In summary these include:

- That consideration of alternatives should be proportionate;
- That consideration should be given to whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescales;
- That an application for development on one site should not be rejected simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site;
- Alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that they are considered to be both important and relevant to the decision;
- If a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in the relevant NPS, the existence of that alternative is unlikely to be important and relevant to the decision;
- Alternatives which are not commercially viable, or which would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the decision;
- Alternatives which are vague or inchoate can be excluded as not important and relevant to the decision; and
- For alternatives first put forward after an application has been made, the onus is on the person proposing the alternative to provide the evidence for its suitability and the Applicant should not be expected to have assessed it.

In summary, Annex B shows that the consideration of alternatives was proportionate given that there was no realistic prospect of either of the sites referred to being suitable for the proposed infrastructure.

Further, Ramac has not submitted evidence to justify why alternative sites within its landholding are preferred to the proposed site in the Application. The Applicant has however demonstrated (in Annex B and previous submissions) that the proposed site is the best site within Ramac's landholding for the proposed substation, and the Applicant's position is supported by other IPs including Dover District Council and Kent Wildlife Trust.

In any event, the principle of siting the substation on Ramac's landholding has evidently been established, with Ramac's concerns (as set out in the conclusions of their final submissions at Deadline 6 (REP6-080)) being focused only on the precise location for siting within its landholding. In its concluding sentence, Ramac state that they request refusal of compulsory acquisition rights over their land '*to require the Applicant to enter into a voluntary agreement with Ramac as to the location of the substation, which Ramac would be willing to accommodate on other parts of its landholding.*' Whilst negotiations to acquire by agreement have not yet concluded, it should be noted that the parties have focused the discussion solely on the proposed substation site within the Application and not any alternative.

In short, given Ramac's acceptance that the proposed substation can be accommodated within its landholding, any objection to the specific location must principally be treated as a matter which can be resolved through the payment of compensation, and not a question of the need or public interest in locating the substation on Ramac's landholding. The Applicant has taken a highly precautionary approach to calculating possible compensation claims due to compulsory acquisition (as set out below) and as such this matter is adequately secured in the DCO and the Secretary of State can be satisfied that the landowner would not be adversely impacted.

Transfer of Benefits and Compulsory Acquisition Compensation

The Applicant notes the Secretary of State's proposed changes to the Order as well as the Secretary of State's request to outline the reasons why the cap on compensation is necessary.

Changes to the Order

The Applicant is a not a special purpose vehicle (SPV) specifically set up for the purpose of the project. However, in light of the potential to transfer the benefit of the project to an SPV, the Examining Authority asked the Applicant to review Article 5 – see ISH7 Action Points (EV-023). The revised Article 5 which formed the basis of the Applicant's final dDCO submitted at Deadline 8 was introduced at Deadline 3, on 5 March 2019 (REP3-049), with tracked changes.

From a structural perspective the Applicant is content with the proposed changes to Article 5 and the introduction of a new Article 42. In the event that the maximum liability cap is accepted then the Applicant would agree to this being subject to the proposed inflationary uplift. The Applicant believes there may be an incomplete list of the articles which would be relocated as listed in the Secretary of State's letter and that it should include Article 5(5) as well as Article 5(7), and not Article 7.

A proposed updated draft of Article 5 is set out in Annex D to this letter.

Requirement for funding limit

When making a Financial Investment Decision (FID) for a project, all potential costs and liabilities must be quantified in order to enable financial risk to be calculated and a positive investment decision to be made. Vattenfall generally self-insure projects and therefore must ensure that liability levels are quantified to be certain that they can be met. A funding limit is therefore required to ensure that the project can proceed to FID and thereafter progress to construction. Removing the limit would introduce a significant risk to the financial viability of the project.

The funding limit was discussed in Compulsory Acquisition Hearing 1 (CAH1). In section 7 of the Written Summary of CAH1 (REP3-021), Mr Gettingby confirmed that the funding limit was based on the Applicant's professional advice from appointed agents Blackhall Powis. This is further explained in the updated Funding Statement Revision B (REP3-011). That document details at paragraph 3 that the £8.5m value represents (i) costs that are required to secure options and other land agreements by agreement and (ii) costs that are required to exercise these options and other land agreements following positive FID. The funding limit exceeds what the Applicant was advised would be payable in the event of compulsory acquisition being required and, in any event, any acquisitions by agreement would fall outside of the limit.

The recent decision for The Abergelli Power Gas Fired Generating Station Order 2019 contains a provision in Article 33 requiring the consent from the Secretary of State for the form and amount of any guarantee. Similar wording was also applied in The Drax Power (Generating Stations) Order 2019. Therefore, the principle of a funding limit is accepted for Nationally Significant Infrastructure Projects. The Applicant submits that the proposed limit of the guarantee in this Application has been set at an appropriate level, taking into account the anticipated compensation which would be payable in the event that compulsory acquisition powers are required for all remaining interests. The principle of including a limit, and at the level proposed, has also been subject to examination and accordingly it is not considered necessary for the level of the limit to be reserved for future approval by the Secretary of State

Fish spawning

The Applicant acknowledges and, at this time, accepts the principle of the restriction set out within subparagraph 1a of the Secretary of State's proposed wording with regards to the Downs herring spawning stock on the basis that the final layout is yet to be defined and discussions on spatial restrictions may be relevant post-consent. However, following discussions with the MMO and the presentation of additional information in Annex C to the letter, the Applicant considers that there is a robust case to reduce this timing restriction to 1st December – 31st January.

In respect to subparagraph 1b, the Applicant considers that this should be removed on the basis that there is no effect-receptor pathway between the proposed project and the Thames herring spawning stock (as set out in Annex C to this letter).

With regards subparagraph 1c and the Dover sole spawning stock the Applicant considers that, with the submission of the information in Annex C, presented in the format requested by

the MMO, it should be concluded that the noise levels predicted to occur will not result in a significant effect on a healthy spawning stock. This conclusion is based on the revised stationary receptor noise contours overlain on the spawning ground data, considered in the context of a receptor that is likely habituated to existing noise levels, and that the sole stock is at a recognised increasing level of stock biomass. In the absence of a significant effect on the sole spawning grounds the Applicant considers that paragraph 1c should be removed.

The Applicant therefore proposes the following revised DML wording –

- *(1) Subject to paragraph 2 percussive pile driving works must not be carried out by or on behalf of the undertaker as part of or in relation to the construction of the authorised scheme between 1st December and 31st January (inclusive) in any year (the 'seasonal restriction');*
- *(2) The MMO may approve a variation to the dates or the location of the seasonal restriction under paragraph (1) provided it does not give rise to any materially new or materially different environmental effects to those assessed in the Environmental Statement.*

Without prejudice to the Applicant's position on their inclusion, should the Secretary of State be minded to retain paragraphs 1b or 1c, the Applicant requests that paragraph 2 includes the ability for the MMO to *remove* any seasonal restriction in addition to varying dates or locations. This would allow a future removal of the relevant restrictions in the event that the MMO is satisfied that it is not necessary to retain the restrictions.

In addition, and if the Secretary of State's proposed wording is preferred, the Applicant also considers that the definitions are unnecessary given that the terms defined are not subsequently used. To the extent that it is, nonetheless, considered appropriate to include definitions, these should be formulated to refer to a restriction on percussive pile driving, as opposed to a restriction on 'works', and expressed to be in order to reduce impacts on spawning, rather than 'to enable' spawning. For example, *"....means a seasonal restriction on percussive pile driving to reduce impacts on spawning by....."*.

Saltmarsh Mitigation

The Saltmarsh Mitigation, Reinstatement and Monitoring Plan (SMRMP) was submitted as a certified document and sets out the approach to be taken to monitoring and reinstatement of the saltmarsh. The SMRMP (REP4-020) was prepared on the worst-case basis that an open cut installation would be required. Therefore, the contents of the SMRMP are not dependant on the final installation method chosen and should a trenchless installation technique be chosen, the SMRMP will still apply although the effects on saltmarsh would be considerably reduced. The requirement to notify the relevant authority with regards the final landfall option, and timing of proposed works, is secured in Requirement 12 of the DCO and resubmission of the SMRMP is not therefore required to fulfil the objective in paragraph 2 of the proposed wording.

Furthermore, Natural England agreed in their Statement of Common Ground that the SMRMP provides certainty as to how interactions with saltmarsh will be monitored and recovery assumed (REP6-019). The SMRMP is therefore appropriately secured as a certified document and through the requirement for surveys secured in both the dDCO and the deemed Marine Licence.

The intention of the SMRMP is to provide the aforementioned certainty with regard to saltmarsh recovery post-construction, and it was therefore appropriate that this plan was advanced as a final plan, rather than an outline plan which required subsequent development. The Applicant does not therefore consider that the new paragraph 2 to Requirement 13, as proposed by the Secretary of State, is required.

Paragraph 3 of Requirement 13, as proposed by the Secretary of State, duplicates condition 11(m) of Schedule 12 (Export Cable System dML) which already secures a Ringed Plover Mitigation Plan (should Ringed Plover be found during surveys). The Applicant does not consider it necessary to duplicate the approval of this plan in the Requirements, however if the Secretary of State is minded to include it within Requirement 13 it should be amended to remove reference to the SMRMP and replaced with reference to a 'Ringed Plover Mitigation Plan'.

We trust that this response and the enclosed annexes are of assistance to the Secretary of State and would be grateful if this letter and enclosures could be passed to BEIS.

Yours sincerely

[redacted]

Daniel Bates
Consents Manager – Thanet Extension Offshore Wind Farm
Vattenfall Wind Power Ltd

Enclosed:

Annex A – Contact Log between the Applicant and Ramac
Annex B – Substation site review
Annex C – Fish spawning note
Annex D – Article 5 revised drafting

Annex A – Summary Contact Log Between the Applicant and Ramac

Date	Activity	Type
06-Jun-17	Applicant meets with Ramac Director and Ramac Agent	Meeting
14-Jun-17	Ramac agent email Applicant's agent re Richborough - confirmation of site visit	Email
16-Jun-17	Applicant's agents email to Ramacs Agent - Follow up on site visit	Email
22-Jun-17	Applicant's agents meet with Ramac Director and Ramac Agent	Meeting
23-Jun-17	Ramac's agent email to Applicant's agent re Ramac - Richborough Port - Proposed Cable Route Substation	Email
06-Jul-17	Applicant's agents email to Ramacs Agents - Thanet Offshore Wind farm Extension - Richborough Port - Confidential	Email
10-Jul-17	Ramac's Agent email to Applicant's Agents RE Thanet Offshore Wind farm Extension - Richborough Port - Confidential	Email
16-Aug-17	Applicant's agents meeting with Ramacs agents	Meeting
17-Aug-17	Applicant's agent email to Ramac agent re Thanet - RFI's	Email
06-Sep-17	Applicant's agent email to Ramac agent - Ramac meeting	Email
07-Sep-17	Ramac's agent email to Applicant's agent - Thanet Offshore Wind Farm Extension - Ramac meeting	Email
25-Sep-17	Ramac's new agent emails Applicant's Agent re Richborough Port Sandwich	Email
27-Sep-17	Applicant's agent has initial call with Ramacs new agent	Call
28-Sep-17	Applicant's agents meet with RAMAC's agent new agent	Meeting
29-Sep-17	Ramac's agent email to Applicant's agent with lease info	Email
03-Oct-17	Applicant's agent call with Ramac agent to arrange client meeting for Weds	Call
03-Oct-17	Applicant's agent exchanged emails to Ramac's agent to arrange a meeting	Email
04-Oct-17	Applicant's agent and Ramac agent exchanged further emails	Email
05-Oct-17	Applicant's agent and Ramac agent emails to confirm 10.10.17 date for meeting	Email
10-Oct-17	Applicant's agent attended meeting with Ramac agent	Meeting
17-Oct-17	Applicant's agent emails plan	Email
18-Oct-17	Ramac agent email confirmation	Email
03-Nov-17	Applicant's agent emailed meeting notes to Ramac agent	Email
02-Feb-18	The Applicant's agent meets Ramac agent to discuss proposals and possible structure of voluntary agreement	Meeting
10-Apr-18	The Applicant's agent meets Ramac agent to progress discussions on a voluntary agreement	Meeting

Date	Activity	Type
06-Jul-18	The Applicant makes its an initial offer for an Option Agreement to Ramac	Email
01-Aug-18	The Applicant meets Ramac to discuss the proposed heads of terms for an option agreement	Email
06-Sep-18	The Applicant makes a further improvement to their offer and submits it to Ramac	Email
12-Oct-18	The Applicant makes a further improvement to their offer and submits that to Ramac	Email
19-Dec-18	Ramac confirm to Applicant heads of terms agreed in principle for proposed substation site	Email
09-Jan-19	Applicant meets with Ramac and representatives of the Ministry of Justice for a round table discussion	Meeting
17-Jan-19	JH sent updated heads of terms to RAMAC	Email
25-Jan-19	Applicant received comments on the heads of terms from MoJ	Email
06-Feb-19	The Applicant meets again with Ramac and the MoJ to progress the drafting of contracts	Meeting
06-Feb-19	Ongoing Hots discussions	Email
07-Mar-19	Applicant circulated draft option agreements to RAMAC and MoJ	Email
29-Mar-19	Applicant circulated remaining draft agreements to RAMAC and MoJ	Email
04-Apr-19	Call between Applicant's solicitors WBD and Ramac's solicitors CRS on key commercial points	Call
05-Apr-19	CRS issued list of red flag comments	Email
08-Apr-19	CRS issued amended list of red flag comments	Email
08-Apr-19	Cripps issued amended tripartite option agreement	Email
11-Apr-19	CRS issued amended list of red flag comments	Email
15-Apr-19	CRS issued additional comments on the documents	Email
26-Apr-19	Applicant (via WBD) reverted to RAMAC (via CRS) on all comments on documents	Email
29-Apr-19	Applicant (via WBD) issued revised tripartite option agreement to MoJ (via Cripps)	Email
01-May-19	Meeting between applicant and RAMAC's agent and legal adviser to discuss terms	Meeting
08-May-19	Applicant (via WBD) circulated revised option agreement and ancillary documents to RAMAC (via CRS)	Email
15-May-19	CRS issued list of red flag comments	Email
15-May-19	call between applicant and RAMAC to discuss terms	Call
25-May-19	CRS issued amended substation lease	Email
31-May-19	CRS issued amended Deed of grant	Email
06-Jun-19	applicant (via WBD) issued list of red flag comments on CRS revised documents	Email
12-Jun-19	RAMAC (via CRS) issued responses to Applicant's list of red flag comments on CRS revised Deed of Grant	Email
21-Jun-19	RAMAC (via CRS) issued responses to Applicant's list of red flag comments on CRS revised Lease	Email

Date	Activity	Type
13-Aug-19	RAMAC (via CRS) issued amended option agreement with comments in response to points discussed in call of 15 May 2019	Email
28-Aug-19	Applicant (via WBD) circulated revised option agreement and ancillary documents to RAMAC (via CRS)	Email
02-Sep-19	meeting between applicant and RAMAC to discuss terms	Meeting
06-Sep-19	RAMAC (via CRS) issued amended substation lease and deed of grant	Email
08-Sep-19	RAMAC (via CRS) issued amended option agreement	Email
19-Sep-19	Applicant (via WBD) circulated revised option agreement and ancillary documents to RAMAC (via CRS)	Email
26-Sep-19	RAMAC (via CRS) issued amended substation lease and deed of grant	Email
01-Oct-19	call between WBD and CRS to discuss substation lease and deed of grant	Call
03-Oct-19	CRS issued list of further comments on key commercial terms of substation lease and deed of grant	Email
03-Oct-19	RAMAC (via CRS) issued amended option agreement	Email
16-Oct-19	call between WBD and CRS to discuss option agreement	Call
18-Oct-19	RAMAC (via CRS) issued amended option agreement	Email
24-Oct-19	Applicant (via WBD) circulated list to RAMAC (via CRS) of key commercial concerns based on latest documents	Email
29-Oct-19	RAMAC (via CRS) replied to Applicant (via WBD) on list of key commercial concerns based on latest documents	Email
01-Nov-19	Applicant (via WBD) circulated further comments and replies to RAMAC (via CRS) on list of key commercial concerns based on drafts	Email
10-Nov-19	RAMAC (via CRS) issued amended option agreement	Email
11-Nov-19	RAMAC (via CRS) issued further amended option agreement	Email
15-Nov-19	RAMAC (via CRS) issued amended substation lease and deed of grant	Email
11-Dec-19	revised RAMAC documents circulated by Applicant	Email

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Annex B - Substation site review

Drafted By:	Vattenfall Wind Power Ltd
Approved By:	Daniel Bates
Date of Approval:	13 December 2019
Revision:	A

Revision A	Final for submission to Secretary of State
N/A	
N/A	
N/A	

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B	Letter to BEIS from Kent Wildlife Trust

1 Introduction

1.1 Secretary of State's letter

1 On 21 November 2019 the Secretary of State issued a letter requesting further information on the Application. Paragraph 8 referred to the compulsory acquisition of land in the ownership of Ramac Holdings (Trading) Limited ("Ramac") requesting an update on the progress of negotiations, and noting that should these negotiations not be complete, further details should be provided to 'demonstrate that the proposed substation site is the best location for the substation' and to 'demonstrate why the alternative Baypoint Club and MCA Fleet Solutions land can and should be excluded'.

2 As negotiations have not completed, this document provides the further information requested by the Secretary of State.

1.2 Assessment of alternatives

3 The Applicant described the identification of the proposed substation site in the Site Selection and Alternatives Environmental Statement (ES) chapter (APP-040) and further supplemented this with a Report Addressing Oral Submissions by Ramac (REP3-012) and Technical Note on the land requirement for the substation (REP5-004).

4 The National Policy Statement (NPS) NPS EN-1 does not contain any general requirement to consider alternatives or to establish whether the proposed project represents *the best option*. However other relevant legislation (in this case, The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, 'the 2017 EIA regulations') does require consideration of reasonable alternatives, which the Applicant duly did through the initial consideration of the site on Richborough Energy Park, and subsequently a review of potential sites surrounding the cable route, which did not identify any other suitable sites.

5 Further, NPS EN-1 (paragraph 4.4.3) states:

- alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the [SoS] thinks they are both important and relevant to its decision; […]
- alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the [SoS's] decision; and

- it is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the [SoS] (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore where an alternative is first put forward by a third party after an application has been made, the [SoS] may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the [SoS] should not necessarily expect the applicant to have assessed it."

6 Neither the MHCLG Guidance on CPOs (July 2019) nor the Planning Act 2008 (PA2008) Guidance on compulsory acquisition contains any test relating to the best option. It is incumbent upon the Applicant to demonstrate why the land is required as part of the s.122 PA 2008 tests and is no more than is reasonably necessary, and this has been demonstrated in the Statement of Reasons (REP7-027). The considerations relate to the land in the Order not any other land and the Applicant has not sought powers to acquire any land outside of the Order Limits.

BCA Fleet Solutions land

7 Of the two alternative sites referred to by the Secretary of State, only the Baypoint Club site was referred to by Ramac prior to the Application, in their Section 44 consultation response (p735 of APP-029). It is clear from the Ramac responses during examination that a substation on British Car Auctions (BCA) Fleet Solutions land ("BCA land") is not an alternative that has been proposed. At Deadline 1 (REP1-089) Ramac state (when discussing alternative sites) 'it is accepted that BCA would be directly affected by a development here, however a development on the Baypoint Club cannot be ruled out" which clearly sets out their view that the BCA Land is not a potential substation site (as opposed to their view on the Baypoint Club). Subsequent responses make reference to this site in terms of the Applicant's 'rejection' of it but do not present it as a relevant alternative.

8 To the extent that a substation site on BCA land has not been proposed by Ramac or any other party, and certainly no evidence for its suitability has been provided, the Applicant considers that this is not a relevant consideration for the Secretary of State. Nonetheless a clear explanation as to why it should be further excluded from consideration is set out in Section 3 of this report.

Baypoint Club

9 The Baypoint Club site (and specifically the playing fields north of the Baypoint Club) has been proposed by Ramac as an alternative location for the substation. This site was part of the 1km search area referred to in the Environmental Statement and was discounted for the reasons set out in the Applicant's response to Deadline 3 (REP3-012) and expanded upon in Section 3 of this report.

10 The 2017 EIA regulations require consideration of 'reasonable alternatives' whilst NPS EN-1 paragraph 4.4.3 states that 'the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner'. The Applicant considered that the Baypoint Club playing fields were not a reasonable alternative (in EIA terms) to the proposed substation site given the clear environmental and socio-economic disadvantages of that site. It would not have been proportionate (as suggested by Ramac (REP5-055) in response to the Applicant's Deadline 3 submission (REP3-012)) to carry out specific environmental assessment of the Baypoint Club to determine these characteristics. The Applicant nonetheless has provided further explanation of these considerations to allow the Secretary of State to consider the merits of this site.

2 Description of the sites

11 The three sites identified by the Secretary of State vary significantly in terms of their occupation, use and condition. The following sets out the defining characteristics of these different land parcels.

2.2 Baypoint Club

12 The Baypoint Club is a leisure facility which hosts weddings and functions and also has an on-site children's nursery. It describes itself on its website as '… the go-to destination in East Kent for sports, fitness & health and socialising, offering fantastic hospitality facilities for both private and corporate events'.

13 The sports pitches which Ramac have suggested as a preferred location for the substation (REP1-089) are located adjacent to the sports club buildings and are promoted on its website as 'excellent grass football pitches' which are home to a number of local teams. They also advertise the use of their outside space for team building, corporate exercises and other activities. In addition, there is a restaurant and terrace overlooking the spots pitches.

14 The site is accessed off Sandwich Road along a private track into the main car park. The access road is used frequently by club members and staff.

15 Baypoint Club is managed by Princes Leisure Group a subsidiary of the Ramac Group.

Figure 1: Baypoint Club football pitches, looking north west

2.3 BCA Fleet Solutions Land

16 BCA Fleet Solutions operate motor vehicle processing, logistics and distribution of vehicles. Whilst Ramac have not, in correspondence to date, suggested this land as a preferred location for the substation, the largest area of space is to the north of what Ramac describe as 'a large, relatively modern commercial building that provides offices, workshops and storage accommodation' (RR-056).

17 Other than the aforementioned building, the site is predominantly a secured yard used for the storage of motor vehicles. The secured yard services and wraps around the modern office, workshops and storage building and can be considered as inextricably linked to it. Each area cannot operate without the other as the yard provides an onsite location for the transfer, storage and marshalling of vehicles. BCA Fleet Solutions typically manage contracts from operators of large fleets of leased company cars. This means they typically have large numbers of vehicles arriving on site each year at the end of their lease term. The cars are then repaired, refurbished and put out to the second-hand car market through the dealer network and auction houses. The amount of yard space available immediately adjacent to the offices directly affects both the size and the financial viability of the business that can operate from the building. It is necessary for the tenant to have a large amount of secured yard storage so that they can hold a stock of vehicles and release them to the market when prices are at levels that allow them to be sold onwards profitably.

18 Cutting through the site is the Minster Stream, a river which runs predominantly open in a deep, well vegetated gully from west to east as illustrated in Figure 2. In two places the stream has been culverted allowing vehicular access between the south and north parts of the BCA Fleet Solutions Land using a one-way system. The site is active with vehicle movements occurring at all times throughout the site, and with on-site workforce present at all times during business hours.

Figure 2: Minster Stream

19 The BCA Fleet Solutions lease from Ramac expires February 2021 although through discussions with the tenant the Applicant understands that BCA anticipates maintaining an interest in the site beyond February 2021.

2.4 Proposed substation site

20 The proposed substation site is currently occupied by Ministry of Justice (Border Force) for the long-term storage of heavy goods vehicles. This brownfield site comprises predominantly of areas of hardstanding broken up by grass with no permanent buildings. The site is accessed from an access point to the south, off the A256.

Figure 3: Within the Ministry of Justice compound, southern boundary looking east

Figure 4: View from the temporary construction area into the proposed site showing temporary buildings

21 To the south of the proposed substation site lies further hardstanding in a state of disrepair, currently utilised for occasional HGV storage by Crostline Limited. This area is proposed as a temporary construction compound.

Figure 5: Temporary construction area looking east


Baypoint Club playing fields
Baypoint Club access
Kent Golf Academy
Baypoint Sports Club
Pegwell Bay Seal Colony
River Stour
Nursery
BCA Fleet Solutions 'substation site'
Minster Stream
BCA Fleet Solutions offices / warehouse
Richborough Energy Park
Proposed substation site
GB

VATTENFALL

3 Site comparison

22 The table below considers multiple factors that determine whether it is in the public interest to acquire the proposed substation site over the other sites within Ramac's ownership identified by the Secretary of State. The information below compares the alternative sites to the proposed site to set out clearly why the proposed site is 'the best location for the substation'.

Table 1: Site comparison

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
Land interest affected	The site is occupied by Ministry of Justice (MoJ) who have signed a Section 135 letter consenting to the inclusion of compulsory acquisition powers within the DCO. This is based on the agreement and understanding between the occupier and the Applicant that the land to the south of the proposed site is acceptable for relocating their operations. This guarantees that Ramac will retain the rental income provided by this occupier should they so wish because the Applicant has offered to sell back the replacement MoJ land once the relocation of the	This site is leased to BCA Fleet Solutions Limited on a five year lease, due to expire in 2021. It is clear from the concerns raised by Ramac regarding possible impacts on BCA wishing to extend their lease, that Ramac will ideally look to extend that lease. The Applicant understands that these discussions have been progressing between Ramac and the occupier and BCA have intimated to the landowner that they plan on having an interest on site beyond 2021. Whilst not identified as an alternative by Ramac, use of the BCA land would directly	The Baypoint Club is owned by a subsidiary of Ramac (Princes Leisure Ltd) and there would be an effect on the Ramac Group as landowner with associated loss in trading income due to construction activity (albeit they would be compensated for the acquisition by the Applicant). As Ramac have proposed this site as an alternative location it is assumed that any such effect would be accepted.	The proposed site and the Baypoint Club site would have little impact on the land interest. In the case of the Baypoint Club, it is accepted by the landowner and, in the case of the proposed site, the tenant can be moved (and has agreed to such a move) ensuring continuation of the land interest, albeit elsewhere within Ramac's ownership. However, the BCA lease would be affected as it would significantly reduce their leased area, reducing rental income accordingly and would impact on BCA's operation.

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
	MoJ interest is complete and construction is complete.	impact their lease and business.		**The proposed site and the Baypoint Club are the best sites with respect to minimising effects on land interests.**
Land use	As part of the formal industrial port of Richborough, the use of this land would not substantially change from its current or former use.	As part of the formal industrial port of Richborough, the use of this land would not substantially change from its current or former use.	The playing fields at the Baypoint Club are a greenfield site and as such the construction of a substation would substantially change the use of the land to an industrial use.	The land use at the proposed site and the BCA land is largely commensurate with an industrial substation, however there is clearly a significant change required at the Baypoint Club. The use of brownfield land in preference to greenfield land is a well-established planning practice seen through the use of Brownfield site registers and enshrined as a key land use consideration in paragraphs 117 of the NPPF and 118(g) which states that decisions should '*give substantial weight to the value of using suitable brownfield land within*

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
				settlements for homes and other identified needs…'. **The proposed site and the BCA land are the best sites with respect to impact on land use.**
Operational use of the land	The site is infrequently accessed with no permanent buildings. The relocation of this facility would cause minimal disruption to the operation and this would be managed with the Ministry of Justice to ensure that the replacement HGV storage site was operational prior to decommissioning this site.	The BCA land is a busy operational site with offices, warehouses and permanent members of staff on site and constant movement of vehicles. In response to Deadline 1 (REP1-089) Ramac stated that 'it is accepted that BCA would be directly affected by a development here'. The area to the north of the Minster Stream is integral to the BCA operation and accounts for approximately 70% of BCA's total area for car storage. It is therefore highly likely that the loss of this area would irrevocably limit their operation such that it would	As set out in Section 2.2, the outdoor sports pitches are integral to the Baypoint Club's offer as a sports centre. The total loss of these pitches would significantly affect the use of the sports centre. The impacts of construction would be significant not only due to the physical loss of the sports pitches, but also on the use of the nursery and on the club's hospitality and events business. The socioeconomic impacts of this are discussed below, however it is reasonable to consider that the operation of the Baypoint Club as a going concern would be	The ability to relocate wholesale the Ministry of Justice HGV storage area means that their operational use of the land differs only in a change of location, whereas for the other sites it is clear there would be significant operational impacts on those businesses as a result of a substation being located on those parcels of land. Whilst the socioeconomic impacts are discussed below, it is clear that those business would not be able to operate in the way they do today, if at all.

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
		no longer be a viable site for their business. It is not considered possible to relocate the car storage area of BCA's operations (in the way that the Ministry of Justice can be relocated) because the operations of these two enterprises are very different. Whilst it is possible to move the HGV storage area wholesale, BCA have indicated that splitting the car storage would significantly constrain business operations and result in an unmanageable operational burden due to the frequency within which vehicles need to be moved.	detrimentally impacted by the construction and operation of a substation on this land, to the extent it may not be a viable business thereafter.	**The proposed site is the best site in terms of limiting the impact on the operational use of the land.**

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
Impact on future use or development potential	Whilst reference to private loss has been made by Ramac, the Applicant has not seen any evidence to substantiate any claim about 'future development' in plans, pre-application consultation or any other correspondence to suggest something other than the ongoing use of this land in its current form would continue. Ramac has not demonstrated that the use of this site would incur greater private loss than the other sites and in fact, when considering Ramac's own concerns regarding the 'more than 60 jobs' (REP1-089) on BCA / Baypoint Club and the associated income from these operations, it would appear that locating the substation on the proposed site in fact limits Ramac's private loss (other than the unsubstantiated future development potential)	As with the proposed site, the landowner has made reference in discussions, to a long-term desire for residential use. However, the Applicant has seen neither plans, pre-application consultation nor any other correspondence to suggest that this is a realistic proposal. BCA Fleet Solutions have expressed a desire to continue in occupation on the site in the future and RAMAC have expressed concerns about the impact of any loss of land on the potential for a lease extension	As with the proposed site the landowner has made reference in discussions, to a long-term desire for residential use. However, the Applicant has seen neither plans, pre-application consultation nor any other correspondence to suggest that this is a realistic proposal.	The predominant land use in and around Richborough Port is industrial land use. The focus of recent development activity in the immediate vicinity has been the redevelopment of the former Richborough A Power Station, adjacent to the proposed site, into the Richborough Energy Park. The Applicant's proposals on the proposed site are considered to be in line with the pattern of surrounding development. **The proposed site is therefore the best in terms of minimising impacts on future use or development potential.**

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
	to an absolute minimum. Ramac's private loss in terms of land value would be compensated through the compensation code along with any other evidenced loss.			
Landowner preference	Whilst Ramac have stated their preference for alternative locations for the onshore substation, extensive negotiation has been undertaken over two years on the basis of a substation on the proposed site (as documented in Annex A).	As stated in Section 1.2, Ramac have not proposed the BCA land as an alternative location. No discussions have taken place with the occupational tenant about locating a substation on that land.	Of the sites referred to by the Secretary of State, the Baypoint Club playing fields have been identified as the preferred location by Ramac in multiple submissions. No discussions have taken place with the occupational tenant.	From a landowner perspective Ramac have made it clear that, of the three sites, they would prefer to locate the substation on the Baypoint Club playing fields, however they have also entered detailed discussions with the Applicant for a voluntary agreement on the proposed site. **Baypoint Club is the best site for landowner preference**.
Planning	The proposed site is not designated in the Dover District Council (DCC) 2010 Core Strategy although development of brownfield sites over other land is expressly supported in the NPPF (paragraphs 117 – 118).	The BCA land is not designated in the Dover District Council (DCC) 2010 Core Strategy although development of brownfield sites over other land is expressly supported in the NPPF (paragraphs 117 – 118).	The Baypoint Club is designated in the DDC 2010 Core Strategy as Open Space. DDC's Parks and Amenity Open Space Strategy 2013 does not cover the site as it is not publicly accessible, however it sets out that *'non-accessible*	There is strong planning policy support for the redevelopment of brownfield sites over greenfield. The Baypoint Club has been identified by DDC as an important piece of open space for the area, likely due to the use of these facilities by

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
			open space that contributes to the character or amenity of an area is protected by Policy DM25 in the Core Strategy'. Therefore, whilst not publicly accessible, it is clear this designation identifies the site as having value as a recreational space for the local community. NPS EN-1 requires consideration of impact of health and wellbeing, identifying that new energy infrastructure may affect use of an area for recreation (para 4.13.4) and there is a presumption against the loss of playing fields (para 5.10.14). Whilst this loss may be accepted with provision of replacement land of suitable quality and proximity, there is a clear public interest in avoiding the loss of important	local groups and clubs, and due to the paucity of other similar areas nearby (the closest alternative playing fields are located in Sandwich, 3.5km away or in Ramsgate, approximately 4km away). **The proposed site and the BCA site are the best sites in terms of planning with fewer restrictions and active policy support for development on these sites over the Baypoint Club.**

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
			local recreational facilities in the first instance where other less impactful options are available. Dover District Council were asked to comment on the potential to locate the substation on the Baypoint Club land and responded '*DDC have been asked to comment on the potential to locate the Thanet Extension onshore substation on the Baypoint Club playing fields. Development on sports pitches or recreational facilities goes against national planning policy (NPPF 2019) and the DDC core strategy (2010) which identified the site as protected open space. In line with national and local planning policy we would advise against developing the playing fields over the proposed brownfield site put forward in the DCO application'.*	

Environment There are three primary areas of focus used in this evaluation of the environmental implications for each of the Ramac sites, these are '*ecological sensitivities and designated sites*', '*human environment*', and '*wider environment*'; the latter incorporating issues such as flood risk and archaeology. The evaluation should also be read in line with Figure 6 and Figure 7 which present information from	As identified within the Applicant's Deadline 3 submission (REP3-012) it is considered that the proposed site has, by comparison, minimal interaction with designated sites as the site is it is separated from them by a buffer and vegetative screening. The distance to noise sensitive receptors is at its greatest possible extent and impacts are therefore minimised. Interference with the Baypoint Club recreational facility and nursery is minimised. There is minimal interaction with flood risk zones or other features such as main rivers as the site avoids these altogether.	Demolition of buildings in close proximity to potential bat roosts between the BCA land and Baypoint Club is considered to be a hindrance to development of this land parcel. Construction on the site would lead to significant disturbance to the ecology of the Minster Stream which was identified as having positive field signs for voles in the technical characterisation annex (APP-098). This location has been highlighted by Kent Wildlife Trust as being in proximity to important seal haul out sites (Appendix B). Proximity to the Baypoint Club as a potential noise sensitive receptor. There is minimal interaction with flood risk zones as the site avoids these altogether, however there is interaction with the Minster Stream,	With regards designated sites this option has the greatest interaction with designated sites, being flanked on two sides with multiple national and international designations (Figure 6) and is in closest proximity to important seal haul outs as identified by Kent Wildlife Trust. Proximity to Noise Sensitive Receptors at the south end of Ebbsfleet Lane. The small settlement present at the south of Ebbsfleet Lane would be subject to long term effects for the operational lifetime of the project. Baypoint Club playing fields are in a flood zone (Zone 3 and Zone 2) (See Figure 7). Any substation development (assuming it passed the relevant flood risk tests) would require mitigation which could in terms of raising land, increased drainage or	The proposed site is considered to be preferential when considered in the context of environmental constraints. It is evident that the ecological and designated site constraints are minimised at the proposed site, as is confirmed by the letter provided by Kent Wildlife Trust. It is also evident that the proposed site has the lowest interaction with sensitive noise receptors for the operational phase of the development. With regards wider environmental concerns, the Baypoint Club is heavily constrained by being situated within Flood Zone 3 and 2; covering over a third of this site and development within the zones would require an Exception Test. Development of adequate flood protection e.g. 'raising ground' would

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
the government Magic data portal and Environment Agency flood risk analysis.		termed a 'main river' by the Environment Agency.	attenuation ponds, increasing traffic movements associated with construction.	result in likely increased landscape and noise effects in addition to the wider impacts during construction. **The proposed site is the best location in terms of minimising environmental impacts.**
Socio-economic impact	The proposed site is not occupied by a commercial business and there are no jobs directly employed on the site. The only economic issue relating to the site is the rental income received by Ramac. As the tenant would be relocated this income would not change so no other socio-economic effects could be anticipated.	The land is occupied by the BCA Fleet Solutions business and employs approximately 30 people on site. The acquisition of the BCA land would significantly hamper their operation and use of the site, as set out above. Ramac themselves have expressed concern regarding the impact of the development on employment on their land. Use of this site would lead to a direct physical impact on this business, inevitably impacting on its ability to continue to operate on this site and the	It has already been established that the playing fields of the Baypoint Club fulfil and important social function for the local area, which would be lost were it to be used for the substation. The ongoing viability of the Baypoint Club itself would be severely impacted and it is hard to imagine the services the site offers including the nursery, wedding venue and events being able to continue in this situation. In all likelihood the impact would lead to the closure of the Baypoint Club	Ramac have previously expressed concern regarding the current proposals leading to the loss of more than 60 jobs currently supported by BCA Fleet Solutions and the Baypoint Club. The Applicant disputes this position, however it is clear that Ramac's statement runs contrary to the much more likely significant impact on those jobs of locating the substation on either alternative site.

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
		continuation of the jobs associated with the business.	and the loss of the jobs associated with it.	**The proposed site is the best location in terms of minimise socio-economic impact.**
Flood Risk	The site is in Flood Zone 1 and therefore passes the Sequential Test set out NPS EN-1 (paragraph 5.7.13) which states the 'preference should be given to locating projects in Flood Zone 1'.	The site is in Flood Zone 1 and therefore passes the Sequential Test set out NPS EN-1 (paragraph 5.7.13) which states the 'preference should be given to locating projects in Flood Zone 1'. It is however noted that a 'main river' passes through the BCA site.	The site is located partially within Flood Zone 3 and over a third of the site is within Flood Zone 2. NPS EN-1 states that 'if there is no reasonably available site in Flood Zone 1… then projects can be located in Flood Zone 2'. In this case there is a 'reasonably available' site (the proposed site) that is entirely in Flood Zone 1 and therefore the Sequential Test is not passed. There was therefore no reason to undertake a Flood Risk Assessment on Baypoint Club as suggested by Ramac (REP6-080), although Figure 7 presents the Environment Agency outputs which clearly identify the playing fields to be in Zone 3 and 2.	The Sequential Test in NPS EN-1 expresses clear preference for locating projects in Flood Zone 1. It cannot be said that 'there is no reasonably available site in Flood Zone 1' as both the proposed site and BCA land fall into that category. **The proposed site and BCA land are the best locations in terms of minimising flood risk.**
Site area	The need for the area afforded by the proposed site is set out in the Technical Note on the land requirement for the	The BCA land north of Minster Stream is approximately 3ha which is insufficient for the permanent works including	The Baypoint Club playing fields occupy approximately 3.8ha however around 1.6ha of this is within flood zone 2 or 3	The land sought for the proposed site (both temporary and permanent) is modest compared to similar projects,

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
	substation (REP5-004). The site is approximate 4haand will include the electrical infrastructure, landscaping, access roads and drainage. The temporary construction area amounts to an additional 2ha. For comparison the Rampion onshore substation site identified in the application was 23.3ha including landscaping and temporary construction areas, whilst the permanent land required for Galloper was 11.7ha inclusive of electrical infrastructure, landscaping and access roads with an additional 8.2ha for substation construction areas	access, landscaping and drainage, and there is no ability to locate a temporary works area on the site (the consequences of which are discussed below).	which would require additional mitigation (e.g. land raising, attenuation ponds etc), increasing the permanent area required (notwithstanding the fact that the site does not pass the Sequential Test, as discussed above). There is insufficient land outside flood zone 2 and 3 to accommodate the permanent works and no space for a temporary construction area (the consequences of which are discussed below).	principally because in selecting this site, the Applicant has avoided the need for additional land (e.g. for landscaping, access roads, flood mitigation etc.). Neither of the alternative sites offer the necessary area for the permanent infrastructure and do not allow for an adjacent temporary works area. **The proposed site is the best site as it is the only one which provides the necessary area required for the permanent and temporary substation works.**

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
	The area required for the proposed site is much smaller because of the limited requirement for landscaping, screening or lengthy access roads due to it being a brownfield site with good, direct, highways access and no requirement for flood prevention measures.			
Access	There is good access to/from the A256 into the temporary construction areas and into the proposed site, as well as direct access between the two.	There is good access to/from the A256 into the BCA land, although there is no direct access to the temporary construction area.	Construction access via the existing Baypoint Club access road would not be possible without widening and would lead to direct interaction between construction traffic and the users of the site. Access could be made possible off Ramsgate Road in line with the current Access to Works plan, however this has been identified to support much lower levels of traffic associated with cable route construction. There would be a significant increase in traffic	The access off the A256 into the proposed site and the BCA land is good and is frequently accessed by HGVs. Abnormal Indivisible Loads (AILs - required for the onshore substation) have been delivered to this area along the dual carriage way to Richborough Energy Park, therefore there is confidence that this access is suitable for all substation components.

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
			noise and disturbance to the residences on Ebbsfleet Lane.	A temporary construction access into Baypoint Club has been identified for the purpose of cable route construction, however the use of this access which is off the main dual carriageway, for AILs has not been confirmed and the increased vehicle numbers associated with substation construction would lead to increased local impacts. The impact of these accesses on the temporary construction area is discussed below. **The proposed site and BCA land are the best sites in terms of access to the substation.**
Temporary construction	Temporary construction area being adjacent to construction site will significantly limit traffic movements on external roads between sites and will ensure an efficient construction programme,	There is limited scope for temporary construction areas to be located adjacent to site without significantly impacting on access to and use of the BCA offices.	There is insufficient space available for an adjacent temporary construction compound which would result in significant traffic	The Applicant set out the space requirements for the substation in response to Deadline 5 (REP5-004) and on that basis there is insufficient space on either BCA land or Baypoint Club playing fields for

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club	Conclusion
	limiting impacts as far as practicable.	It is therefore assumed that the temporary construction area would need to be in the proposed location, south of the current Ministry of Justice land. Traffic travelling from the temporary construction area to the BCA land would be required to travel southward on the A256 before turning 180° around the roundabout and heading back north to the BCA land, creating significant additional vehicle movements on the highway with the associate impacts on driver delay and safety.	movements between site. Traffic travelling from the temporary construction area to the Baypoint Club would be required to travel southward on the A256 before turning 180° around the roundabout and heading back north to the BCA land, creating significant additional vehicle movements on the highway with the associate impacts on driver delay and safety.	a temporary construction area adjacent to the substation site. This area is required to facilitate construction incorporating laydown areas, plant storage and site offices. Both of these sites would therefore be serviced from a temporary construction area remote from the main construction site, leading greatly to an increase in vehicle movements and less efficient construction. **The proposed site is the only site that provides for an adjacent temporary works area and is therefore the best in this regard.**

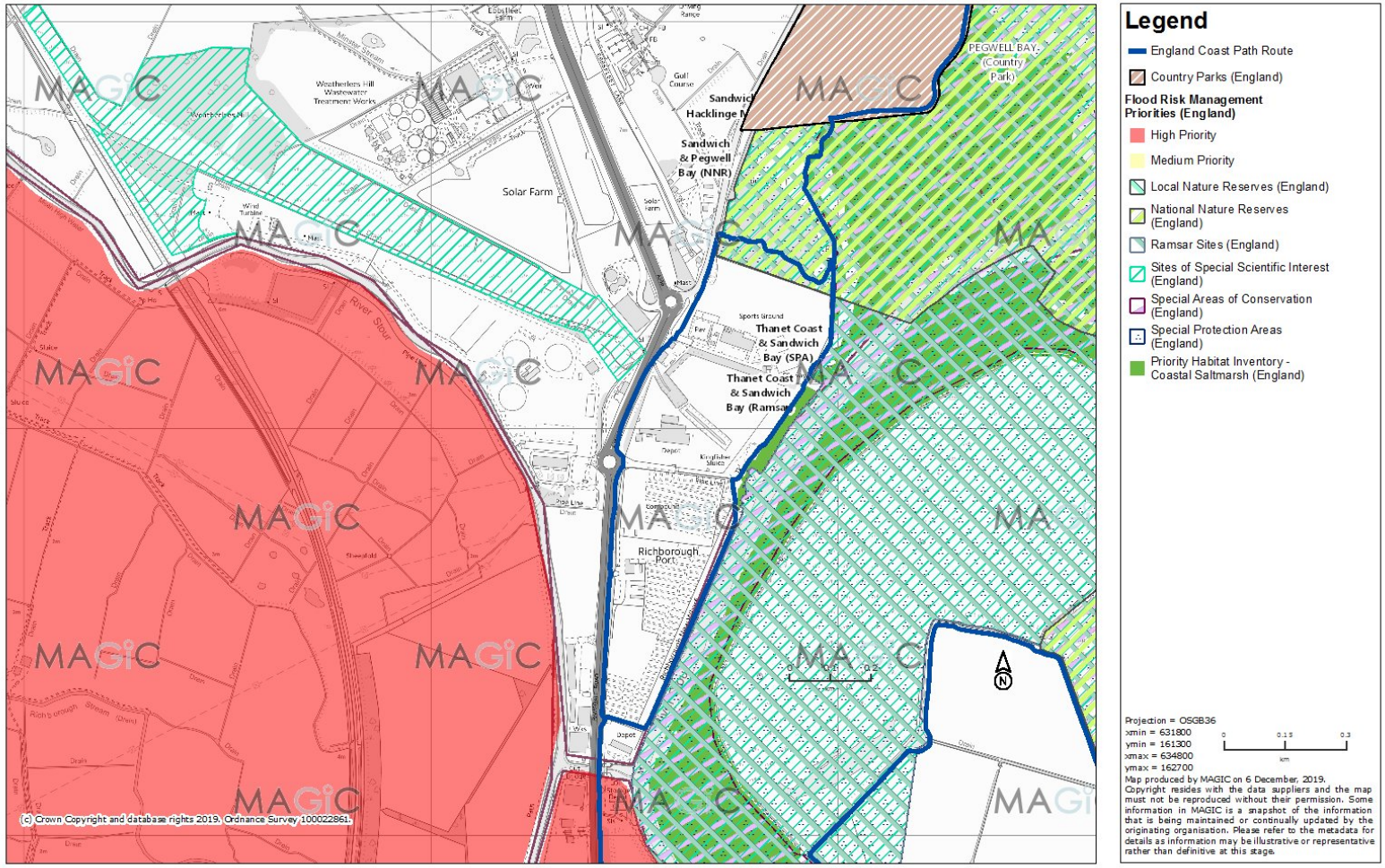

Figure 6: Environmental constraints as defined through reference to the Magic data portal

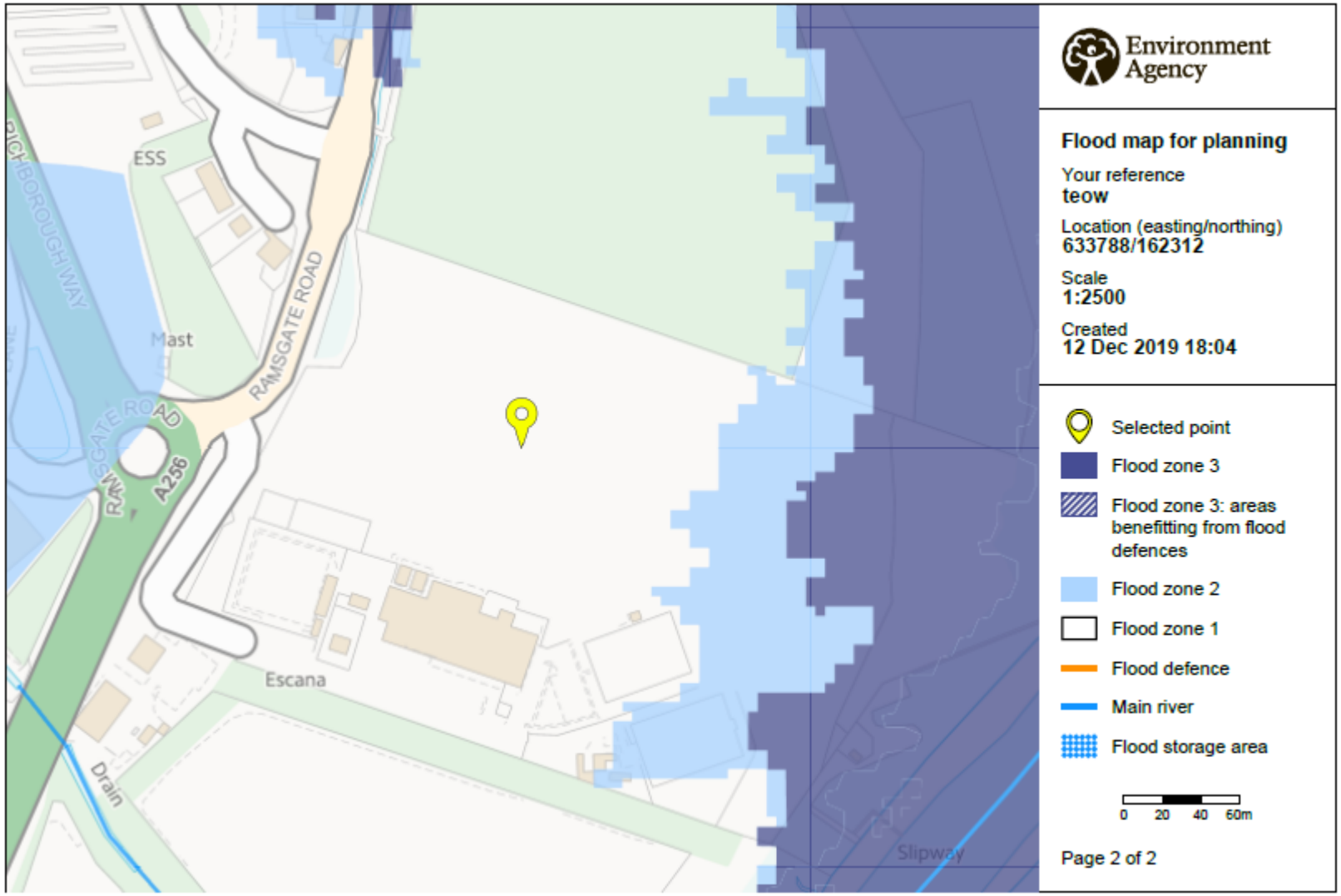

Figure 7: Environment Agency Flood Map for Planning

4 Summary of site comparison

23 The table below summarises the review of the sites in Section 3. Where sites are considered to have the same level of impact on a particular topic, they are coloured the same (either green – 'the best' or red). Where all three sites would result in different levels of impact, orange is used to identify the middle-ranked site.

24 Whilst the exact scoring is subjective, it is clear from Section 3 that for all topics other than landowner preference, the proposed site is 'the best' or joint best location.

Table 2: Summary of site comparison

Topic	Proposed site	BCA Fleet Solutions Land	Baypoint Club
Land interest affected			
Land use			
Operational use of the land			
Impact on future use or development potential			
Landowner preference			
Planning			
Environment			
Socio-economic			
Flood Risk			
Site area			
Access			
Temporary construction area			

4.2 Summary of case in the public interest

Balancing public interest against private loss

25 The Applicant has already set out in the Statement of Reasons (Sections 7 and 8, REP7-027) the tests for compulsory acquisition. This was supplemented in responses given at the Compulsory Acquisition Hearings (REP3-021 and REP5-020). The Applicant submits that its assessment of the land required has not changed and its justification to acquire the land for the proposed substation in the Application remains unchanged.

26 The land required is necessary and the Applicant has justified the extent of land required. It is no more than is reasonably necessary. The overall benefits of the development as well as specifically positioning the substation on the land in the application relative to alternatives has been examined and this document further demonstrates that the public benefits of the scheme would outweigh the private loss. That assessment of the public benefits of a scheme are to be taken as a whole.

5 Conclusions

5.1 Identifying 'the best' site

27 The Secretary of State refers to the need for the Applicant to demonstrate that the proposed substation is the best location for the substation. Whilst, as stated in Section 1, this is not a test required by NPS EN-1 or Section 122 of the Planning Act 2008, the Applicant has set out in Section 3 why, in comparison with the other locations referenced by the Secretary of State, the proposed site is 'the best'.

28 In all topic areas the proposed site is the location with the least (or joint least) impact, other than for landowner preference. This is entirely consistent with the representations (or general lack of representations) on the substation location made by Interested Parties during the examination. The fact that the local planning authority, highways authority, statutory and non-statutory nature conservation bodies and members of the public all considered that the proposed site warranted so little (or no) comment during the examination should provide a great deal of confidence to the Secretary of State that this location is entirely appropriate for this infrastructure.

5.2 Excluding Baypoint Club and BCA land

29 The Applicant has also been requested to demonstrate why the alternative sites of Baypoint Club and BCA Fleet Solutions land can and should be excluded from consideration. This has been considered in terms of why these sites are not 'reasonable alternatives' in respect of either NPS EN-1 or the alternatives test in the 2017 EIA regulations.

BCA land

30 This was not a site proposed by Ramac prior to examination and only tentatively referred to in submissions. No case has been made by Ramac to demonstrate why this location should be considered a reasonable alternative and without this evidence base this proposal is 'vague or inchoate' and should be excluded on the grounds that it is not important or relevant to the Secretary of State's decision (NPS EN-1 paragraph 4.4.3).

31 Notwithstanding this, the impacts on this site have been demonstrated to be significantly greater than those at the proposed site. These include:

- Significant direct impact on the operational use of the land by BCA Fleet Solutions Limited (referred to by Ramac in REP1-089) and associated socio-economic impacts.

- Environment impacts on Minister stream and the adjacent seal haul out areas on the River Stour (see KWT letter to BEIS, appendix B).
- Lack of temporary construction area leading to increase in traffic and less efficient construction.

Baypoint Club

32 The proposal to locate the substation on the Baypoint Club playing fields was not considered a reasonable alternative on the basis of clear and obvious impacts that the construction and operation of a substation would have on this site.

33 These impacts were set out in the Applicant's response to Deadline 3 (REP3-012) and are expanded upon in this report. These include:

- Direct loss of recreational playing fields against planning policy. This has been confirmed by Dover District Council (appendix A).
- Environmental impact on adjacent European designated sites, as confirmed in the letter from Kent Wildlife Trust to BEIS (appendix B).
- Failure of the Sequential Test in terms of flood risk (NPS EN-1 paragraph 5.7.13).

34 Ramac, in proposing this site, have provided no justification on why this site is a reasonable alternative other than the unspecified effect on future development of their land. The substantial impacts identified and supported by stakeholder correspondence significantly outweigh any private loss on the proposed site and demonstrate why this location should be excluded from consideration by the Secretary of State.

Appendix A – Email from Dover District Council

From: Lucinda Roach
To: Bates Daniel (WO-MC)
Subject: Vattenfall proposals for sub-station site
Date: 06 December 2019 10:25:54

Dear Daniel,

DDC have been asked to comment on the potential to locate the Thanet Extension onshore substation on the Baypoint Club playing fields. Development on sports pitches or recreational facilities goes against national planning policy (NPPF 2019) and the DDC core strategy (2010) which identified the site as protected open space. In line with national and local planning policy we would advise against developing the playing fields over the proposed brownfield site put forward in the DCO application.

I hope this is of assistance.

Kind regards

Lucinda Roach
Principal Planner
Dover District Council
Council Offices, White Cliffs Business Park, Whitfield, Dover CT16 3PJ
Tel: [redacted]
Email: [redacted]
Web: www.dover.gov.uk

Please consider the Environment before printing this email

Appendix B – Letter from Kent Wildlife Trust

Tuesday 10th December 2019

To: ThanetExtension@planninginspectorate.gov.uk

Cc: Daniel Bates, Vattenfall Consents Manager - daniel.bates@vattenfall.com

Response to the request for information and comments on the Thanet Extension Offshore Wind Farm application - EN010084

(Substation location)

Dear Mr Gareth Leigh,

In response to the 'Request for Information and comments on the application – EN010084', Kent Wildlife Trust would not support the substation being built on the Bay Point Club due to the proximity of this site to the Kent Wildlife Trust Stonelees Nature Reserve. The Stonelees Nature Reserve is located directly north of the Bay Point Club and therefore Kent Wildlife Trust would have concerns about the impacts of substation construction and maintenance operations on the wildlife of the area, particularly during the construction phase due to increased noise levels and activity over the predicted 24 month construction period. We believe that the potential for environmental disturbance is likely to be higher if the substation is constructed at the Bay Point Club compared to the proposed substation site location.

We would also like to voice our concerns regarding the BCA Fleet Solutions 'substation site' which has also been suggested (paragraph 8). Although situated at a further distance from the Stonelees Nature Reserve, it is likely that the BCA Fleet Solution substation site has the potential to cause more disturbance to seals when compared to the originally proposed substation site. The River Stour is an important foraging and breeding area for seals and all of the three proposed substation sites are located close to the Pegwell Bay seal colony. Therefore it is important that for whichever substation site is selected, if consent for the project is given, the impacts to the seals and seal colony area are minimised and commitments made to ensure work is carried out in this area at times when the seals are least sensitive to disturbances (e.g. during non-breeding season). The seals are thought to use most of the River Stour and can travel relatively far inland along the river, however, they are most commonly observed at the mouth of the river and the more northerly reaches of the river. Therefore as the proposed substation site is located furthest south of the three presented possible options, we believe that there would be fewer direct and indirect impacts to the seal colony and to the Stonelees Nature Reserve if this site is selected.

With this in mind, Kent Wildlife Trust believe that the proposed substation site (currently owned by Ramac Holdings (Trading) Limited ("Ramac")) would be the least damaging and disturbing option in terms of environmental impacts.

These comments are made without prejudice to Kent Wildlife Trust's long-standing objection to the offshore cables for the Thanet Extension making landfall at Pegwell Bay due to the environmental designations at this landfall site. (Full details of the Kent Wildlife Trust objection to this landfall site can be found in the Kent Wildlife Trust Response to the Preliminary Environmental Information Report (PEIR) (Jan 2018); Relevant Representation (Sept 2018); Written Representation (Jan 2019); verbal and written cases made at the Environmental Issue Specific Hearing (Feb 2019); and Statement of Common Ground (May 2019) submitted as part of the planning and consultation process).

Yours sincerely,

Ms Alice Morley,
Marine Conservation Officer, Kent Wildlife Trust

Vattenfall Wind Power Ltd

Thanet Extension Offshore Wind Farm

Annex C - Response to Secretary of State Consultation – Issue 10: Fish Spawning

Submitted by Vattenfall Wind Power Ltd

Date: December 2019

Revision A

Drafted By:	Vattenfall Wind Power Ltd
Approved By:	Daniel Bates
Date of Approval:	December 2019
Revision:	A

Revision A	Original Document submitted to the Department for Business, Energy and Industrial Strategy
N/A	
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1 Issue 10 – Fish Spawning

1.1 Introduction

1 This document has been drafted in response to the Request for Information and Comments on the Application – EN010084 (hereafter referred to as 'the request') as issued by the Department for Business, Energy and Industrial Strategy on the 21st November 2019 to Vattenfall Wind Power Ltd (The Applicant) in relation to the application made for an order granting development consent for the proposed Thanet Extension Offshore Wind Farm (Thanet Extension) off the coast of Thanet, Kent.

2 The request raised a number of issues on which the Secretary of State would like further information. This document relates to 'issue 10: fish spawning', specifically the suggestion made by the Secretary of State to address issues raised during examination with regards the potential impact on herring (*Clupea harengus*) and sole (*Solea solea*) spawning as a result of piling noise through the inclusion of a new consent condition. For ease of reference the proposed condition is as follows (spawning stocks are defined within the request but not repeated here).

- *(1) Subject to paragraph 2 no percussive pile driving works shall be carried out by or on behalf of the undertaker as part of or in relation to the construction of the authorised scheme between the following dates in any year—*
    - *(a) 1st November and 31st January (inclusive) (the 'Downs herring stock restriction');*
    - *(b) 1st February and 30th April (inclusive) (the 'Thames herring stock restriction'); and*
    - *(c) 1st March and 30th April (inclusive) (the 'Dover sole stock restriction').*
- *(2) The MMO may approve a variation to the dates or the locations of the seasonal restrictions under paragraph (1) provided such approval does not give rise to any materially new or materially different environmental effects to those assessed in the Environmental Statement.*

3 This document seeks to provide brief commentary on each of the proposed sub-paragraphs of the condition and present the Applicant's position. The remainder of this document presents a summary of the background to the issue, consultation undertaken by the Applicant subsequent to the close of examination, followed by the Applicant's current position as informed by consultation and a review of further data.

1.2 Existing reference material

4 The following submissions (and associated PINS References) are referred to within this document. For the sake of brevity, the submissions are taken as read and summarised, with PINS Examination Library references relied upon where appropriate. Where relevant, hyperlinks to the original submissions are also provided to aid in review.

Table 1 Documents referred to within this submission

Document title	PINS REF
Fish and Shellfish chapter of the Environmental Statement	APP-047
Appendix 11 to Deadline 6 Submission: Statement of Common Ground – Marine Management Organisation	REP6-011
EIA Evidence Plan	APP-137
Appendix 7 to Deadline 4C Submission: Fish Clarification Note	REP4C-010
Annex A to Appendix 7 to Deadline 4C Submission: Herring and sole spawning potential calculations	REP4C-011
MMO Deadline 5a submission	REP5A-003
MMO Deadline 6 submission	REP6-088
MMO Deadline 7 submission	REP7-035
Appendix 7 to Deadline 8 Submission: Response to Deadline 7 submissions on Fish Ecology	REP8-012

1.3 New reference material

5 The Applicant's preferred position is to minimise the introduction of new information wherever possible and to rely on the comprehensive information submitted before the Examining Authority and Secretary of State. New information, either not previously referred to during examination or only mentioned in brief, has been drawn on in a recent literature review and is limited to the following sources:

- ICES Advice on fishing opportunities, catch, and effort Greater North Sea Ecoregion; Sole (*Solea solea*) in Subarea 4 (North Sea); 14th November 2018.
- Merchant, N. Towards Good Environmental Status for underwater noise ICES CM 2015/P:12 and Merchant et al 2016[1]. Underwater noise levels in UK waters.

[1] Merchant, N., Brookes, K., Faulkner, R. *et al*. Underwater noise levels in UK waters. Sci Rep 6, 36942 (2016) doi:10.1038/srep36942

1.4 Condition 1(a) – the 'Downs herring stock restriction' and Condition 1(b) the 'Thames herring stock restriction'

6 The following text provides a background to the Downs and Thames herring spawning grounds in combination.

Background

7 The Thanet Extension Environmental Impact Assessment (EIA) as submitted with the final application considered impacts on fish and shellfish receptors within the Fish and Shellfish chapter of the Environmental Statement (ES) (PINS REF APP-047). The EIA for fish and shellfish receptors, inclusive of sole and herring, considered potential impacts arising from piling noise on *inter alia* the herring and sole spawning grounds.

8 The herring grounds were defined according to established precedent (Ellis *et al*., 2012; Coull *et al*., 1998) and in the case of the Downs herring through additional reference to more contemporary analysis of the International Herring Larval Survey data undertaken as part of an industry wide ORJIP project[2] as agreed through the EIA Evidence Plan (PINS REF APP-137) and Statement of Common Ground (SoCG). The characterisation of the receiving environment (inclusive of spawning ground definition) was confirmed as appropriate within the (SoCG) with the Marine Management Organisation (MMO) as submitted at Deadline 6 (PINS REF REP6-011).

9 The predicted impacts were modelled through reference to threshold metrics and locations previously agreed within the project EIA Evidence Plan. Critically this included reference to modelling of cumulative sound exposure levels (SELcum) within which a 'fleeing speed' is assumed which allows for a given receptor to flee at an agreed speed; this approach was based in well-established precedents, however the Applicant recognises that the MMO position changed as a result of concerns raised by other projects. The chapter concluded that there were no significant effects predicted as a result of the proposed project on the Downs herring stock.

10 The threshold metrics were the subject of discussion during Examination with the MMO requesting that the relevant thresholds be remodelled using a 'stationary receptor', i.e. removing the model assumption that the receptor moves away from the noise immission (fleeing speed).

[2]Boyle, G., New, P., 2018. ORJIP Impacts from Piling on Fish at Offshore Wind Sites: Collating Population Information, Gap Analysis and Appraisal of Mitigation Options. Final report – June 2018. The Carbon Trust. United Kingdom. 247 pp

11 Following discussion with the MMO and receipt of representations during the examination phase the Applicant undertook revised modelling, assuming a stationary receptor, and submitted the results at Deadline 4c within a 'Fish clarification note' (PINS REF REP4C-010) and an associated annex (PINS REF REP4C-011) within which the potential impacts were considered through reference to a 'spawning potential' calculation.

12 Following submission of the above documents the MMO made a further representation at Deadline 5a (PINS REF REP5A-003), and Deadline 6 (PINS REF REP6-088). The former noted, with regards the Thames Herring Stock, "*It is not known if, and how, anthropogenic noise from the piling operations may affect the behaviour of the East Channel and Thames Estuary herring during this critical life stage. The applicant was previously asked to model the received levels of single pulse Sound Exposure Level at the spawning grounds, however, this information has not been provided.*". Additionally, the MMO noted that as a precautionary approach piling operations be restricted between November and January for the Downs Stock, February-April for the Thames sub-stock, the latter recommendation being made on the basis of a similar restriction being applied to the Thanet OWF.

13 Subsequent to this, the MMO acknowledged that the seasonal restriction for the existing Thanet OWF had been removed following submission of monitoring data, which confirmed the key Thames herring spawning ground to be concentrated in a discrete small area towards the western section of the broader spawning grounds described by Coull *et al*, in conjunction with additional modelling outputs, which demonstrated an absence of meaningful effect-receptor pathway between the project and the Thames herring spawning ground. The MMO then provided a further submission at Deadline 7 (PINS REF REP7-035) within which requests for further information (noise contours overlain with spawning grounds), inclusive of specified formats for the presentation of the information, were made.

14 The Applicant submitted a final position paper at Deadline 8 (PINS REF REP8-012) which sought to draw the various responses together and provide further graphical outputs derived from the ES and revised modelling. The submission highlighted limited interaction with the Downs stock and a lack of effect-receptor pathway in the case of the Thames stock. With regards to the Thames herring, this submission provided the same information as had been provided for the existing Thanet OWF in order to (successfully) remove the piling restriction for that project.

15 The Applicant was unable at that stage to present the MMO's requested noise modelling outputs as transparently as requested in the MMO's Deadline 7 submission, and instead re-presented outputs already before the Examining Authority with further reference to the existing scientific literature. The Applicant has since drawn together the MMO requested modelling outputs and existing baseline data and presents them below in Figure 1 and Figure 2 in line with the MMO's Deadline 7 submission. Appendix A to this document also presents the full modelling outputs at 5dB isopleths in the context of the spawning grounds, though it should be noted that the presentation of these outputs does not infer that there would be an effect associated with the contours as the noise levels are below accepted thresholds; instead reference should be made to the evidence base supporting noise levels recognised as producing temporary threshold shift.

The Applicant's position

16 The Applicant has consulted with the MMO regarding the call for information made by the Secretary of State and received a request via email and clarified via teleconference requesting to ensure that the requests made in the MMO's Deadline 7 submission are carried out prior to a teleconference. The Applicant agreed to provide these additional plans during a teleconference with MMO and Cefas on the 11th December 2019.

Thames herring

17 As shown in Figure 1, the outputs of the noise modelling undertaken under the stationary receptor approach, clearly illustrate that noise levels at which TTS, injury and/or impacts on eggs and larvae may occur would not reach the immediate proximity of the broad spawning ground identified in Coull et al. (1998) around Herne Bay.

18 Figure 2 (and Figure 3 in a regional context) illustrates a 135dB SELss and 160dB SPLpeak threshold contour alongside the Thames stock spawning grounds (as defined by Coull et al. 1998) on an Admiralty chart base layer. These SELss and SPLpeak values reflect a highly precautionary threshold for disturbance as recorded following schools of sprat being subjected to piling noise (Hawkins *et al*., 2014)[3]. The Hawkins study identified behavioural responses in sprat to simulated piling between 135dB and 142dB SELss and 163dB SPLpeak, although it should be noted that the study was undertaken in a loch (Loch Hyne) with low background noise (55-70dB SPL) which is not comparable with the approaches to the Thames Estuary, which is in excess of 130dB SPLpeak[1] and discussed further in Section 1.5.

19 It is evident that even at the highly precautionary threshold levels illustrated in Figure 2, the Margate Sands and associated sandbanks act as a barrier to sound propagation in the direction of the Thames spawning ground; the same is also true for regional bedforms more broadly which have a distinct interaction with the propagation of noise. The presence of the bedforms and sandbanks within the Thames Estuary formed a critical feature in the modelling and monitoring of noise levels at the Thames herring spawning grounds off Herne Bay for the existing Thanet OWF. The monitoring concluded that during piling activities, piling noise was not detected at the Thames herring spawning grounds (Subacoustech, 2010)[4], and as a result the Thanet OWF seasonal restriction for Thames herring was removed. It is clear therefore that even at noise levels known to only illicit a behavioural response in very quiet enclosed areas there is no meaningful effect-receptor pathway between the proposed project and the Thames herring spawning stock as a result of the presence of the Margate Sands sandbank complex.

20 In order to provide the Secretary of State and the MMO with greater confidence in this position, and conclusion, the Applicant has presented further (unweighted) modelling results in Appendix A. Figures A1 and A2 illustrate the SPLpeak 5dB incremental isopleths for the 5000kJ hammer energy at both the south west and easterly modelling locations in the context of the herring spawning data and Admiralty chart, demonstrating the noise contours do not interact with areas of the Thames Estuary inshore of the Margate Sands sandbank complex. Figures A3 and A4 present the same information in the context of the regional bathymetry data, again illustrating that the noise contours are attenuated by the sandbank features. The modelled outputs clearly illustrate that there is no interaction with the Thames herring spawning grounds and no barrier to migration of the herring to the grounds. I

[3] Hawkins, A. D., Roberts, L., & Cheesman, S. (2014). Responses of free-living coastal pelagic fish to impulsive sounds. The Journal of the Acoustical Society of America, 135(5), 3101–3116.

[4] Subacoustech (2010) Thanet Offshore Wind Farm. Measurement and assessment of underwater noise during impact piling operations to install monopile foundations: additional monitoring report; Version 2.

21 In addition to the mitigating effect of the presence of Margate Sands, it is important to highlight that the implementation of the Structures Exclusion Zone (SEZ) proposed during the Examination phase, would mean that piling would not be undertaken over a wide area within the western section of the Thanet Extension. As such, overall, the distance between piling activities and the Thames herring spawning grounds would be increased. The location of the SEZ is outlined in Figure 1.

22 In view of the above it is evident that even at the most highly precautionary, and unrealistic given the background receiving environment, noise levels there is no barrier to herring spawning and migration in the Thames Estuary region and as such it remains the Applicant's position that there is no meaningful effect-receptor pathway between the proposed project and the Thames stock spawning ground.

Downs herring

23 In the case of the Downs herring, the Applicant acknowledges that modelled data for TTS, injury and impacts on eggs and larvae (Figure 1) indicates potential overlap with the spawning ground to the north east. The level of overlap with this ground is however limited to the 186dB SELcum (temporary threshold – stationary receptor) contour from piling at both modelled locations, and marginal overlaps with the 207 and 203dB SELcum contours (injury and damage to eggs and larvae – stationary receptor) associated with the eastern piling location.

24 Figure 3 illustrates a 135dB SELss and 160dB SPLpeak threshold contour alongside the Downs stock spawning grounds (as defined by Coull et al. 1998). As previously mentioned with regards to the Thames herring, these SELss and SPLpeak values reflect a highly precautionary threshold for disturbance as recorded following schools of sprat being subjected to piling noise (50% response threshold; Hawkins *et al*., 2014) and are not considered likely to reflect the response in the Thames Estuary which is recognised as having a baseline background noise level in the region of 125 - 130dB SPL (Figure 6) which is in contrast to the 55-70dB SPL background noise within Loch Fyne (Hawkins et al ., *ibid*).

25 The Applicant notes that from the information provided by the MMO in their Deadline 7 Submission (REP7-035), which included results of the IHLS for the Downs herring for individual year and individual survey (late December, early January and late January survey periods), in line with the information previously provided by the Applicant, it is apparent that areas in the proximity of the proposed project consistently support spawning at very low levels. Following consultation with MMO and Cefas (11th December 2019) the Applicant agreed to present the 10 year IHLS dataset by month in order to explore the critical spawning phase within the overall spawning season. Appendix B provides the IHLS data by 'survey month', i.e. by the December survey and consolidated January surveys, and clearly illustrates that spawning activity around this area generally only occurs towards the latter stage of the spawning season; herring larvae are not generally recorded until January in areas in the proximity of the proposed project. It is evident from the figures in Appendix B that the areas of high larval density in December are limited to the English Channel, with larval density then spreading into the vicinity of the proposed project in January.

26 The Applicant considers that given the results of the noise modelling and location of key grounds in relation to the proposed project there may be an opportunity to refine the seasonal restriction to allow for piling at westerly locations. In addition, taking account of the analysis of IHLS data presented by the MMO at Deadline 7, the potential for a refinement in the duration of the proposed piling restriction with regards to this stock has been further discussed with the MMO. As previously noted, the period currently proposed (1st November to 31st January inclusive) does not reflect the key spawning period of herring in the grounds located in the proximity of the proposed project.

27 The Applicant is, at this time, willing to accept the principle of a seasonal restriction for the Downs stock until there is greater certainty on the layout but considers that the IHLS data gives sufficient certainty to refine this to 1st December to 31st January inclusive on the basis of Appendix B which presents data as requested by MMO and Cefas.

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THANET EXTENSION OFFSHORE WIND FARM

Regional herring grounds with SEL_{cum} noise contours (stationary receptor) and Structures Exclusion Zone

Legend

- Structures Exclusion Zone
- Offshore Red Line Boundary
- 186 dB re 1 µPa²s Impact Range
- 203 dB re 1 µPa²s Impact Range
- 207 dB re 1 µPa²s Impact Range
- Herring Spawning Grounds (Coull et al., 1998)

IHLS 2007/2008-2016/17 Downs Data - Total Larval Abundance Per m²

- 0
- 0.1 - 9,400
- 9,400.1 - 27,700
- 27,700.1 - 50,100
- 50,100.1 - 76,200
- 76,200.1 - 106,100
- 106,100.1 - 139,500
- 139,500.1 - 177,900
- 177,900.1 - 221,100
- 221,100.1 - 266,700
- 266,700.1 - 314,600

Datum: ETRS 1989
Projection: UTM31N

1:750,000 0 8 16 km 0 4.5 9 nm

Drg No	Fig. 1 (Herring spawning with stationary receptor)		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure 1

THANET EXTENSION OFFSHORE WIND FARM

Thames herring ground with 135dB SELss noise contour and 160dB SPL_{peak}

Legend

- Offshore Red Line Boundary
- Unweighted 160 dB SPL_{Peak}
- Unwieghted SELss 135 dB
- Herring Spawning Grounds (Coull et al., 1998)

Datum: ETRS 1989
Projection: UTM31N

1:250,000 0 2.5 5 km 0 1.5 3 nm

Drg No	Fig. 2.1 (Thames herring spawning grounds)			Figure 2
Rev	A	Date	13/12/2019	
By	FB	Layout	N/A	

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THANET EXTENSION OFFSHORE WIND FARM

Thames herring ground with 135dB SELss noise contour and 160dB SPL_{peak}

Legend

- Offshore Red Line Boundary
- Herring Spawning Grounds (Coull et al., 1998)
- Unweighted 160 dB SPL_{Peak}
- Unwieghted SELss 135 dB

Datum: ETRS 1989
Projection: UTM31N

1:400,000 0 4.5 9 km 0 2 4 nm

Drg No	Fig. 2.1 (Thames herring spawning grounds)		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure 3

Conclusion

28 It is the Applicant's request that the Secretary of State's proposed wording of Condition 1(b) be amended to reflect the core spawning period (1st December – 31st January inclusive) with regards the Downs stock herring until such time as a detailed layout plan is available It is also the Applicant's request that in the absence of a meaningful effect-receptor pathway a seasonal restriction is not applied in relation to the Thames herring spawning ground. As such the Applicant requests that Condition 1(b) be removed from the Secretary of State's proposed wording.

1.5 Condition 1(c) – the 'Dover sole stock restriction'

Background

29 As noted previously, the Thanet Extension EIA as submitted with the final application considered impacts on fish and shellfish receptors (PINS REF APP-047). The EIA for fish and shellfish receptors, inclusive of sole and herring, considered potential impacts arising from piling noise on *inter alia* the herring and sole spawning grounds.

30 The sole spawning (and nursery) grounds were defined according to established precedent (Ellis *et al*., 2012; Coull *et al*., 1998). The characterisation of the receiving environment, inclusive of spawning and nursery grounds was confirmed as appropriate within the SoCG with the Marine Management Organisation (MMO) as submitted at Deadline 6 (PINS REF REP6-011).

31 In line with the approach taken for herring the predicted impacts were modelled through reference to threshold metrics and locations agreed within the project EIA Evidence Plan (PINS REF APP-137). Again, this included reference to modelling of cumulative sound exposure levels (SELcum) within which a 'fleeing speed' is assumed which allows for a given receptor, in this case sole that are recognised as not being a hearing specialist, to flee at an agreed speed. The chapter concluded that there were no significant effects predicted as a result of the proposed project on the sole spawning stock.

32 In response to the request made during examination by the MMO and Cefas, the Applicant undertook revised modelling, assuming a stationary receptor, and submitted the results at Deadline 4c within a 'Fish clarification note' (PINS REF REP4C-010) and an associated annex (PINS REF REP4C-011) within which the potential impacts were considered through reference to a 'spawning potential' calculation. For sole, this assessment concluded that under a maximum design scenario (assuming all piling events to be located at the worst case location) piling may result in an interaction with 0.01% of spawning potential for an individual piling event and 0.56% for all piling events combined (36 monopile foundations, assumed to be in the worst case location).

33 The Applicant also notes that the approach taken during examination in undertaking a spawning potential calculation was not endorsed at that stage by MMO. The Applicant recognises that the methodology adopted, whilst applied to and accepted at other projects also within high intensity spawning grounds (Gwynt Y Mor and Walney Extension), was not previously agreed with the MMO. The Applicant fully acknowledges that the approach assumes an equal distribution of spawning within the broad spawning ground, and that it has not been endorsed by MMO for use in all OWFs, but noting that the approach has been used at comparable projects (for projects larger in scale, but located within spawning grounds), in the absence of alternative methods of assessment the Applicant suggests that spawning potential can be considered as a useful indicator of potential population consequence and implications for spawning biomass. As MMO recognise in their Deadline 7 submission this methodology can in some circumstances either over or under estimate the effect due to spawning not being homogenously spread across spawning areas. In the case of Thanet Extension this is likely to be an over estimate as the primary spawning grounds are further inshore, in areas where much of the nose is attenuated by the outer Thames Estuary bedforms and sandbanks.

34 Following submission of the Applicant's Deadline 4C submissions the MMO provided further feedback at Deadlines 5A and 7 noting that "*based on the current evidence using best judgement and existing knowledge of the extent of high intensity sole spawning grounds within the Thames Estuary, the MMO is inclined to believe that as noise propagation is travelling away from the estuary, a piling restriction* ***may*** *not be necessary for sole*"(PINS REF REP7-035).

35 In order to draw this conclusion, the MMO sought further illustration of the modelled outputs. Noting previous Applicant submissions, the MMO observed that the potential overlap of modelled noise exposure criteria for fish hearing group 1 (sole) upon sole spawning grounds had not been presented, rather the Applicant presented potential impacted area (total calculated habitat) was considered instead. The MMO considered that whilst the spawning potential/total calculated habitat is useful, the potential overlap (modelled noise contours) should be overlaid onto identified sole spawning grounds. The MMO requested that the Applicant provide a figure with the TTS threshold (modelled based on a stationary receptor) to show the potential impact range for injury to sole (PINS REF REP5A-003). Although the Applicant had presented the noise contours for a temporary threshold shift (evidence shows that fish recover quickly from this temporary loss/threshold shift) in the context of the spawning grounds the MMO request is understood to have been for a single composite figure to be provided.

36 The Applicant considered at that stage in examination that all requested information had been provided, and all modelling undertaken in an agreed format (inclusive of stationary receptors) however it acknowledges that not all of the illustrative figures requested have been presented in the format requested.

Applicant current position

37 Since the close of examination, the Applicant has undertaken to present the information as requested by the MMO (i.e. TTS and other relevant contours presented with the spawning grounds) assuming a stationary receptor; these are presented in Figure 4 and Figure 4. In line with the MMO's Deadline 7 request the SPLpeak 5dB incremental isopleths presented in the Underwater Noise Technical Annex (APP-086) are overlain on the spawning grounds and illustrated in Appendix C (Figures A1 and A2 (isopleths at easterly and westerly piling locations with sole spawning grounds)). The Applicant has also undertaken a review of available information on the sole spawning stock within the North Sea and concluded the stock to be progressively increasing since 2007, above biomass caution responses since 2012 and at or above sustainable yield levels since 2017 (ICES, 2018). As recognised in the MMO's Deadline 7 response the spawning biomass is therefore understood to be in good health and above the long term (60 year) average, with most recent data showing a strong positive trend in population size and health.

38 Figure 4 identifies the spawning grounds at a national level and presents the requested threshold metric contours, whilst Figure 5 focuses more specifically on the Thames Estuary region and illustrate that the noise levels are attenuated by the Margate Sands sandbank complex and do not interact with the inshore Thames Estuary region. The national distribution of spawning grounds is considered relevant in contextualising the application of the spawning potential calculations to Thanet Extension. Thanet Extension is situated in an area of high intensity spawning, which is also the case for the Gwynt Y Mor project located on the north coast of Wales. It is also of note that the Gwynt Y Mor project is located within a discrete area of spawning area defined by Coull *et al* (1998), whilst Thanet extension is located in a far more extensive high-intensity spawning ground within the Southern North Sea region. It is also of note that the 'per piling event' impact on sole spawning potential is directly comparable between Gwynt Y Mor and Thanet Extension. Furthermore, the target threshold for significant effect when using the spawning potential methodology for cod and herring at the Walney Extension project was agreed to be 1%.

39 In the context of the assessment of the potential impacts of noise on spawning sole, it is important to note that the area of the proposed project itself, whilst located within the broad high intensity spawning grounds defined in Ellis et al. (2012), does not constitute a key spawning area for sole in the context of the Greater Thames. As indicated by research carried out by Cefas (Burt and Millner, 2008)[5], during the spring period mature sole is known to move to shallow inshore areas within the Thames Estuary, in waters often associated with reduced salinity. This is consistent with the distribution of sole stage 1 eggs around the Thames as reported by ICES (ICES FishMap, 2006)[6], which also indicates that key sole spawning in the area takes place in shallow waters inshore with the area of the proposed project and its immediate vicinity being of comparatively low importance for sole spawning in the region.

[5] Burt, G.J. and Millner, R.S. (2008) Movements of sole in the southern North Sea and eastern English Channel from tagging studies (1995 – 2004). Sci. Ser. Tech. Rep., Cefas Lowestoft, 144: 44pp.

[6] ICES FishMap. North Sea Species fact sheets. Sole (2006). Available on line at: https://www.ices.dk/marine-data/maps/Pages/ICES-FishMap.aspx .Accessed 09.12.2019.

40 Further context that was not considered in detail during the examination includes the outputs identified by the MMO within the Deadline 6 response (PINS REF REP6-088) for disturbance of sole. In its submission, the MMO recognise the paucity of available information with regards behavioural effects on sole and refer to one of the few studies which identify behavioural effects in sole (Mueller-Blenkle *et al*., 2010[7]; also in Thomsen *et al*., 2012[8])). The study identified a significant movement response was detected at relatively low received sound pressure levels (144 – 156 dB re 1µPa SPL Peak) when pile driving noise was played back to sole held in large net pens (40 m) in a quiet bay in west Scotland. The Applicant fully acknowledges the appropriateness of referring to the limited number of studies available, but would highlight that the same paper refers to evident habituation to these noise levels (144-156dB re 1µPa SPL Peak), which initially triggered a behavioural response. The paper notes habituation in latter trials, and no response when sole were exposed for the first time, peak response was limited to sole exposed to sound 2-5 times. This is of particular importance when considered in the context of the background noise levels that characterise the area in the vicinity of Thanet Extension and the approaches to the Thames Estuary.

41 It is acknowledged that when considering background noise levels, there is a difference between impulsive noise such as that generated by percussive piling and non-impulsive noise from sources such as vessels. Although it is also noted that whilst Southall (2007) defined sound to be impulsive or non-impulsive based on its characteristics at the sound source Southall more recently has considered that sound from impulsive sources might lose its impulsive characteristics at greater ranges due to propagation effects and eventually become non-impulsive; additionally Southall (2007) notes that in the event of multiple pulse and non-pulse noise sources, the combination could be considered to be pulse or a multiple pulse exposure to best characterise the sound. Notwithstanding this consideration, it is relevant to provide some context on the Mueller-Blenkle *et al*., (2010) and Thomsen *et al* (paper presented in Popper and Hawkins (eds) (2012)) study through reference to the existing background noise levels of the receiving environment around TEOWF. The background environment within the study reported in the Mueller-Blenkle (2010) paper has been characterised by the MMO as a 'quiet bay in west Scotland, which strongly contrasts with the conditions in the vicinity of TEOWF. There are some useful data presented by Cefas from a number of studies, including a recently released publication by Cefas[1] presenting an assessment of the background noise due to shipping within UK waters; Figures 5 and 6 show outputs of the study at the national and regional scale.

[7] Mueller-Blenkle, C., McGregor, P.K., Gill, A.B., Andersson, M.H., Metcalfe, J., Bendall, V., Sigray, P., Wood, D.T. & Thomsen, F. (2010) Effects of Pile-driving Noise on the Behaviour of Marine Fish. COWRIE Ref: Fish 06-08, Technical Report 31st March 2010

[8] In Popper and Hawkins, 2012. The Effects of Noise on Aquatic Life.

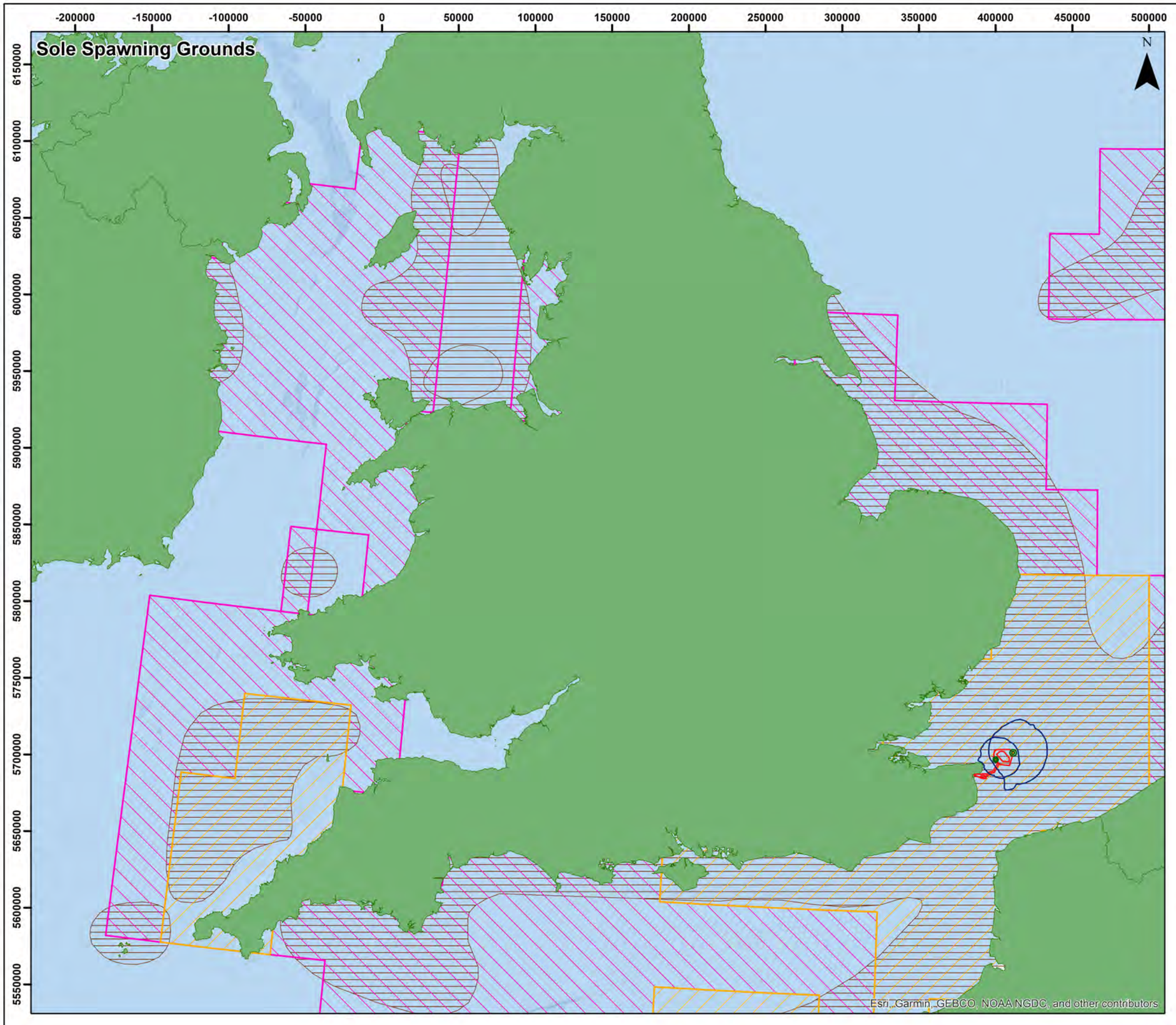
42 Whilst it is important to recognise the difference and lack of direct comparability between impulsive and non-impulsive noise, the 'ambient' water column noise conditions shown in Figure 5 and Figure 6 provide an important context to the underlying receiving environment; that is that the noise levels in approaches to the Thames are in excess of 130dB SPLpeak. This is notably noisier than both the receiving environment around Gwynt Y Môr, where a spawning potential calculation was accepted by the MMO and Cefas, allowing the removal of seasonal restrictions on piling in relation to sole spawning and the study undertaken by Mueller-Blenkle, noted as being a quiet bay and ranged between 110 and 119dB re 1µPa (rms) depending on metocean conditions. The background noise levels present at Thanet Extension do not exceed those levels which elicited a response from sole within the Mueller-Blinkle study but, given sole habituated to the noise levels in a quiet (pulse only) environment it is reasonable to suggest that habituation would also occur in an environment with markedly noisier background levels characterised by multiple pulse exposure.

43 This underlying context is important for the Thanet Extension project with regards the proposed restriction on piling during the sole spawning period. The MMO stated in its Deadline 7 submission (PINS REF REP7-035) that '*a precautionary restriction **may** be required in the absence of further information regarding the SELcum stationary receptor scenarios for TTS*.'. The information presented within Figure 4and Figure 5 meet the requests made by MMO in its Deadline 5A and 7 submissions with regards SELcum threshold metrics for stationary receptors. This information confirms the Applicant's position regarding the level of impact on sole. Following this there is no absence of information that should preclude the MMO from agreeing to not including the precautionary restriction referred to above.

44 In addition, the information presented in Figure 6 and Figure 7 provide context with regards the background noise levels and the likelihood that sole present around Thanet Extension will be habituated to a comparatively noisy environment and have the capacity to habituate to levels of noise that may illicit a behavioural response elsewhere. Furthermore, as identified by the MMO the noise propagation is clearly and evidently moving away from the shallower areas of the Thames Estuary in which sole are recognised to spawn, with noise attenuating as a result of the Margate Sands sandbank complex immediately to the west and to the north-west.

45 The Applicant agrees with the MMO's position that considers that the use of the 186dB SELcum (stationary receptor) is the key parameter of relevance and has illustrated this in Figure 4 and Figure 5. The Figures clearly demonstrate, as observed by the MMO in its Deadline 7 response, that the noise contours illustrate noise propagation to be away from the coast and therefore away from the key inshore spawning grounds of sole in the Greater Thames which extend over inshore areas to the west of the proposed project. Figure 5 also demonstrates the effect of the regional sandbanks in attenuating the received noise levels. The figures presented in Appendix C, notably Figure C1 and Figure C2 with regards sole spawning, present the SPLpeak 5dB incremental isopleths and it is clearly evident that the contours are limited to the deeper more easterly areas of the Thames Estuary which are recognised as being less important to spawning sole.

46 With regards to spawning sole, as previously noted in relation to the Thames herring, it is also important to highlight that the implementation of the SEZ proposed during the Examination phase would mean that piling would not be undertaken over a wide area within the western section of the Thanet Extension. As such whilst the regional bathymetry attenuates the anticipated underwater noise levels, overall, the distance between piling activities and the key inshore spawning grounds of sole in the Thames Estuary (located to the west of the proposed project) would be increased. The location of the SEZ is outlined in Figure 3 and Figure 4 for reference.



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THANET EXTENSION OFFSHORE WIND FARM

National Sole spawning grounds with stationary receptor contours (TTS, eggs and larvae, injury, mortality - 186, 210, 216 and 219 SEL_{cum} respectively)

Legend

- Offshore Red Line Boundary
- 186 dB re 1 μPa^2s Impact Range
- 210 dB re 1 μPa^2s Impact Range
- 216 dB re 1 μPa^2s Impact Range
- 219 dB re 1 μPa^2s Impact Range

Spawning/Nursery Ground Data

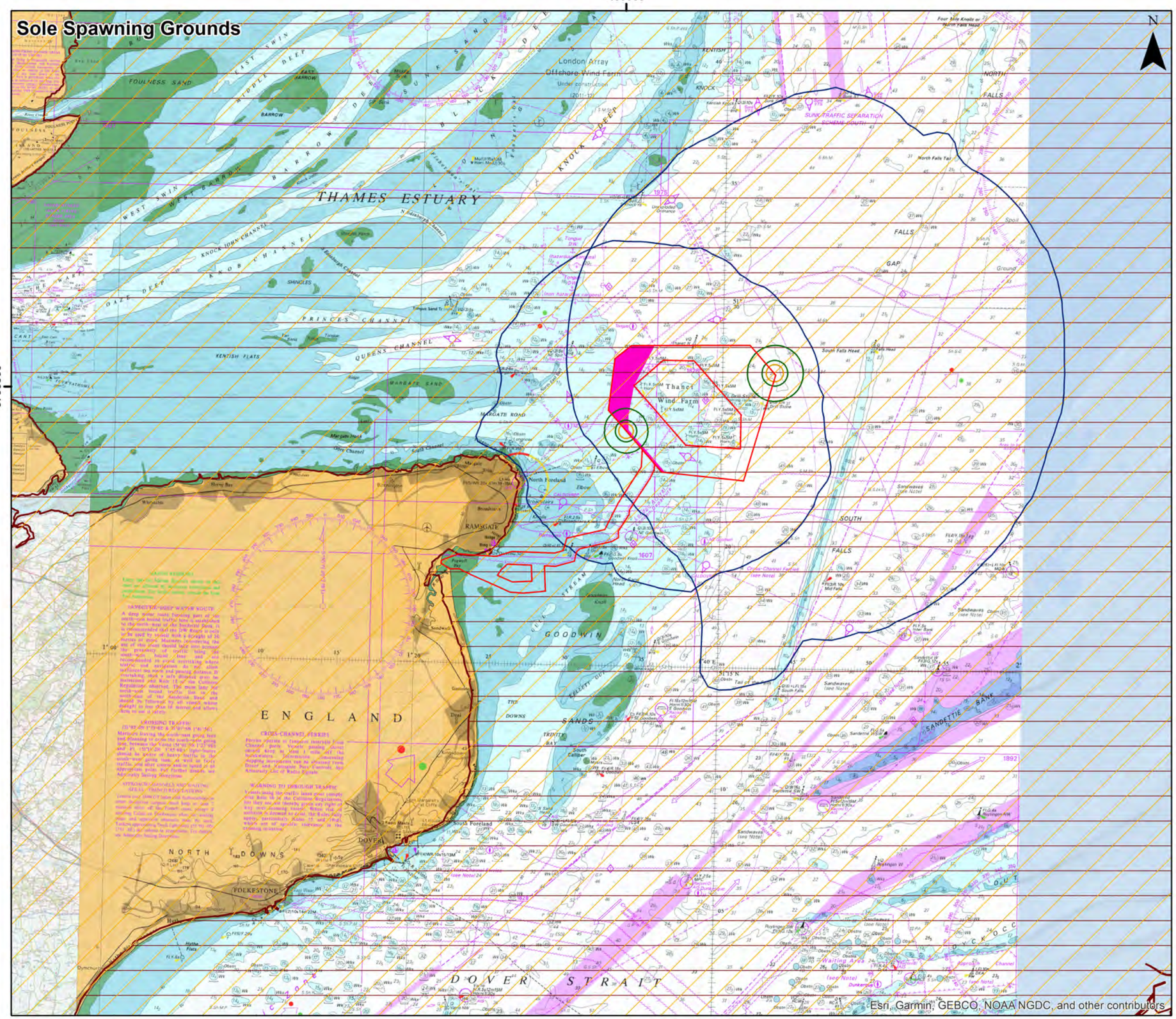
- High Intensity (Ellis et al., 2012)
- Low Intensity (Ellis et al., 2012)
- Coull et al., 1998

Datum: ETRS 1989
Projection: UTM31N

1:2,500,000 0 25 50 km 0 10 20 nm

Drg No	Fig. 3 (National Sole Spawning)		
Rev	0.1	Date	12/12/2019
By	FB	Layout	N/A

Figure 4



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THANET EXTENSION OFFSHORE WIND FARM

Regional sole spawning grounds with stationary receptor SEL_{cum} noise contours

Legend

- Offshore Red Line Boundary
- 186 dB re 1 μPa^2s Impact Range
- 210 dB re 1 μPa^2s Impact Range
- 216 dB re 1 μPa^2s Impact Range
- 219 dB re 1 μPa^2s Impact Range

Spawning/Nursery Ground Data

- High Intensity (Ellis et al., 2012)
- Low Intensity (Ellis et al., 2012)
- Coull et al., 1998
- Structures Exclusion Zone

Datum: ETRS 1989
Projection: UTM31N

1:300,000 0 3 6 km 0 1.5 3 nm

Drg No	Fig. 5		
Rev	0.1	Date	12/12/2019
By	FB	Layout	N/A

Figure 5

Figure 6 UK shipping noise levels (SPLpeak)

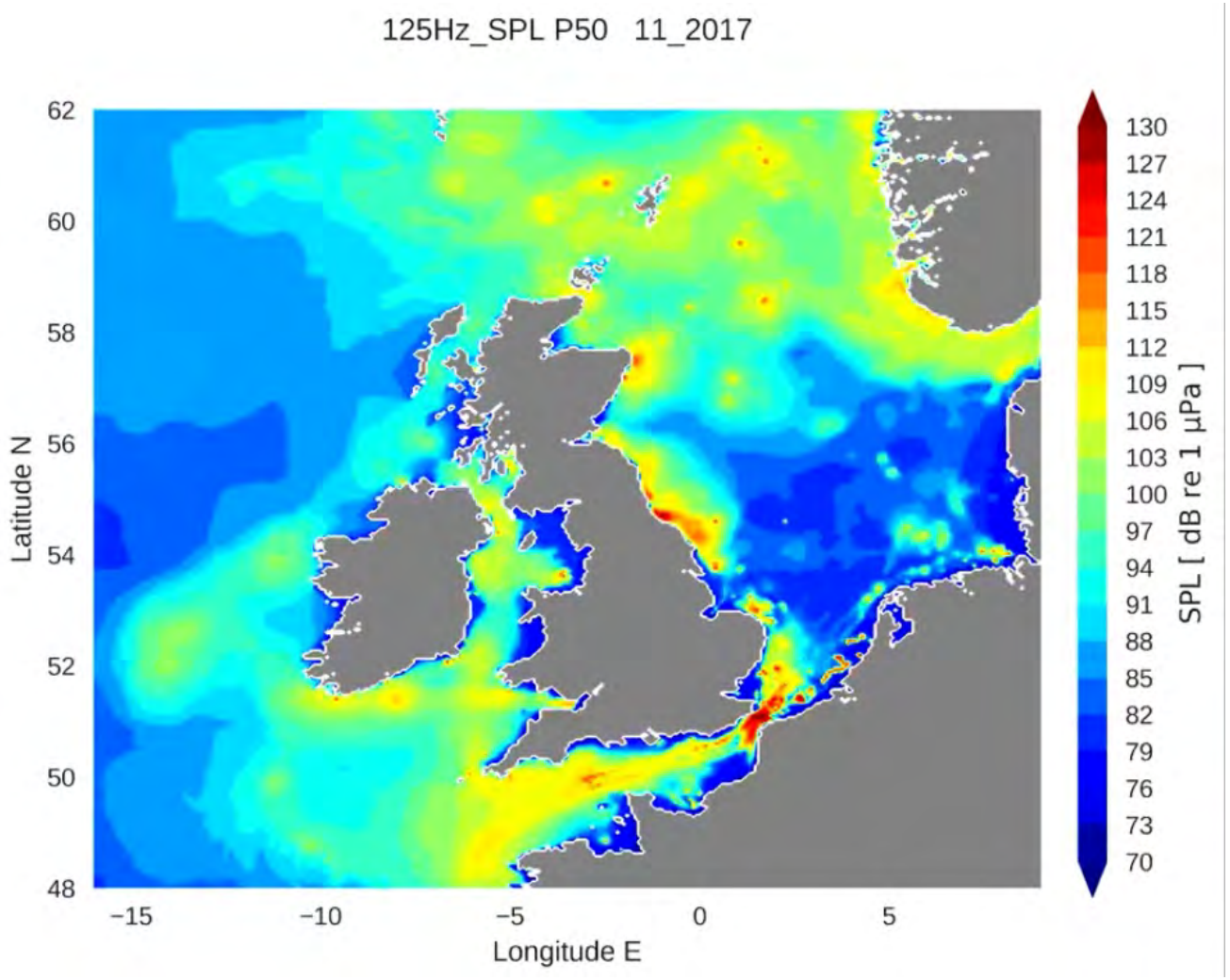
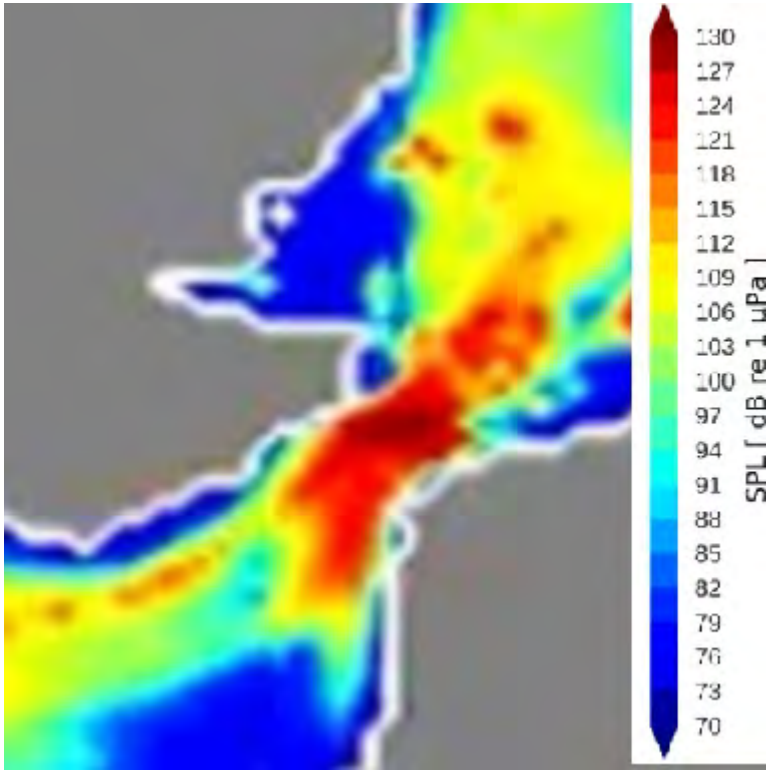


Figure 7 Regional shipping noise levels (SPLpeak)



Conclusion

47 The Applicant has provided the information requested by the MMO with regards modelling received cumulative sound exposure levels for stationary receptor and plotted this information in the format requested.

Thames herring stock

48 The Applicant has provided the information which was requested by the MMO in order to conclude there would be no source-receptor pathway between the piling noise and the Thames stock. This information corroborates previously submitted data and conclusions and therefore the Applicant does not consider that a timing restriction for this stock is required.

Downs herring stock

49 The Applicant accepts that there is overlap between the noise contours presented and the Downs stock. Following discussions with MMO and the representation of IHLS data the Applicant considers that the area of effect does not overlap significantly with any larvae present during November, and requests that the timing restriction is reduced accordingly. Further discussions on this stock could continue post-consent and this could consider spatial restrictions.

Sole

50 The information, as presented, correlates with the information presented within submissions made during the examination by both the Applicant and the MMO in that it demonstrates noise levels to be progressing in a west to east direction. The information presented demonstrates that the area of the proposed project itself is of comparatively low importance for sole spawning in the context of the Greater Thames area and as such the level of interaction is small, and when considered in the context of the spawning potential calculation methods used elsewhere for projects in high spawning intensity the effect is at levels that would not constitute a significant effect with regards the EIA Regulations and key spawning areas would not be significantly affected. For these reasons the Applicant does not consider that a timing restriction for Sole is required.

1.6 Concluding Statements

51 The Applicant acknowledges and agrees with the proposed Licence Condition set out within subparagraph 1a of the Secretary of State's proposed wording with regards to the Downs herring spawning stock on the basis that the final layout is yet to be defined and discussions on spatial restrictions may be relevant post-consent, but requests that subparagraph 1b be removed on the basis that there is no effect-receptor pathway between the proposed project and the Thames herring spawning stock.

52 With regards subparagraph 1c and the Dover sole spawning stock the Applicant suggests that, with the submission of the requested information, it can be concluded that the noise levels predicted to occur will not result in a significant effect on a healthy spawning stock. This suggestion is based on the revised stationary receptor noise contours overlain on the spawning ground data, considered in the context of a receptor that is likely habituated to existing noise levels, and that the sole stock at a recognised increasing level of stock biomass. In the absence of a significant effect on the sole spawning grounds the Applicant requests that consideration be given to not applying the proposed condition.

53 The Applicant therefore proposes that the condition be worded as follows:

- *(1) Subject to paragraph 2 percussive pile driving works must not be carried out by or on behalf of the undertaker as part of or in relation to the construction of the authorised scheme between 1st December and 31st January (inclusive) in any year (the 'seasonal restriction');*
- *(2) The MMO may approve a variation to the dates or the location of the seasonal restriction under paragraph (1) provided it does not give rise to any materially new or materially different environmental effects to those assessed in the Environmental Statement.*

2 Appendix A – 5dB incremental SPLpeak isopleths – Herring

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THANET EXTENSION OFFSHORE WIND FARM

Figure A1
Thanet Extension 5dB isopleths - admiralty chart (westerly piling location) with herring grounds (Coull)

Legend

- Herring Spawning Grounds (Coull et al., 1998)
- Offshore Red Line Boundary
- Unweighted SPL_{Peak} 150
- Unweighted SPL_{Peak} 155
- Unweighted SPL_{Peak} 160
- Unweighted SPL_{Peak} 165
- Unweighted SPL_{Peak} 170
- Unweighted SPL_{Peak} 175
- Unweighted SPL_{Peak} 180
- Unweighted SPL_{Peak} 185
- Unweighted SPL_{Peak} 190
- Unweighted SPL_{Peak} 195
- Unweighted SPL_{Peak} 200

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Drg No	Figure_A1_5dB_Isopleths_Admirality		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure A1

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THANET EXTENSION OFFSHORE WIND FARM

Figure A2
Thanet Extension 5dB isopleths admiralty chart (easterly piling location)with herring grounds (Coull)

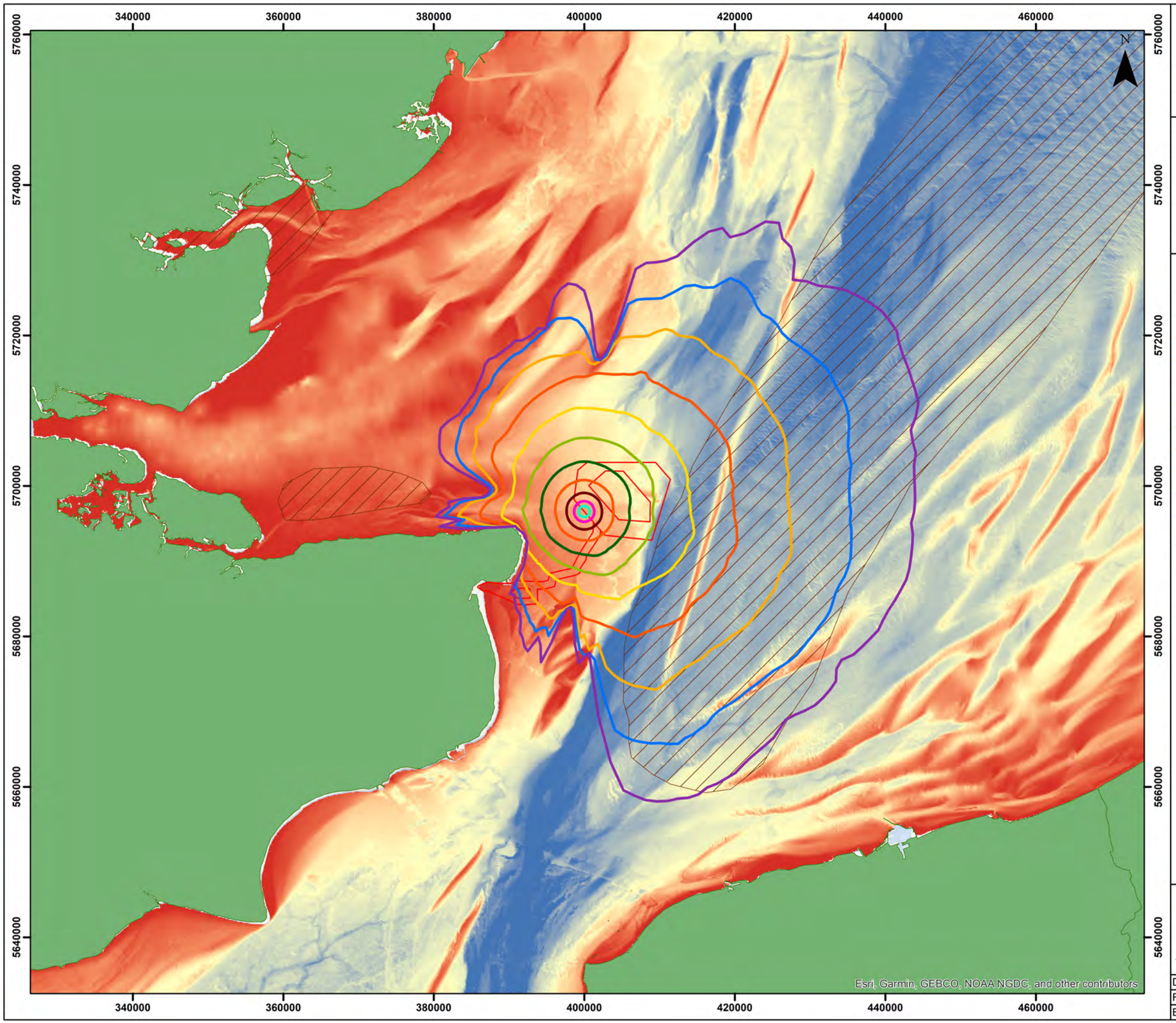
Legend

- Offshore Red Line Boundary
- Unweighted SPL_{Peak} 150 dB
- Unweighted SPL_{Peak} 155 dB
- Unweighted SPL_{Peak} 160 dB
- Unweighted SPL_{Peak} 165 dB
- Unweighted SPL_{Peak} 170 dB
- Unweighted SPL_{Peak} 175 dB
- Unweighted SPL_{Peak} 180 dB
- Unweighted SPL_{Peak} 185 dB
- Unweighted SPL_{Peak} 190 dB
- Unweighted SPL_{Peak} 195 dB
- Unweighted SPL_{Peak} 200 dB
- Herring Spawning Grounds (Coull et al., 1998)

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Drg No	Figure_A2_5dB_Isopleths_Thames_and_Downs_Herring_V2			**Figure A2**
Rev	A	Date	12/12/2019	
By	FB	Layout	N/A	



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THANET EXTENSION OFFSHORE WIND FARM

Figure A3
Thanet Extension 5dB isopleths - regional bathymetry (westerly piling location) with herring grounds (Coull)

Legend

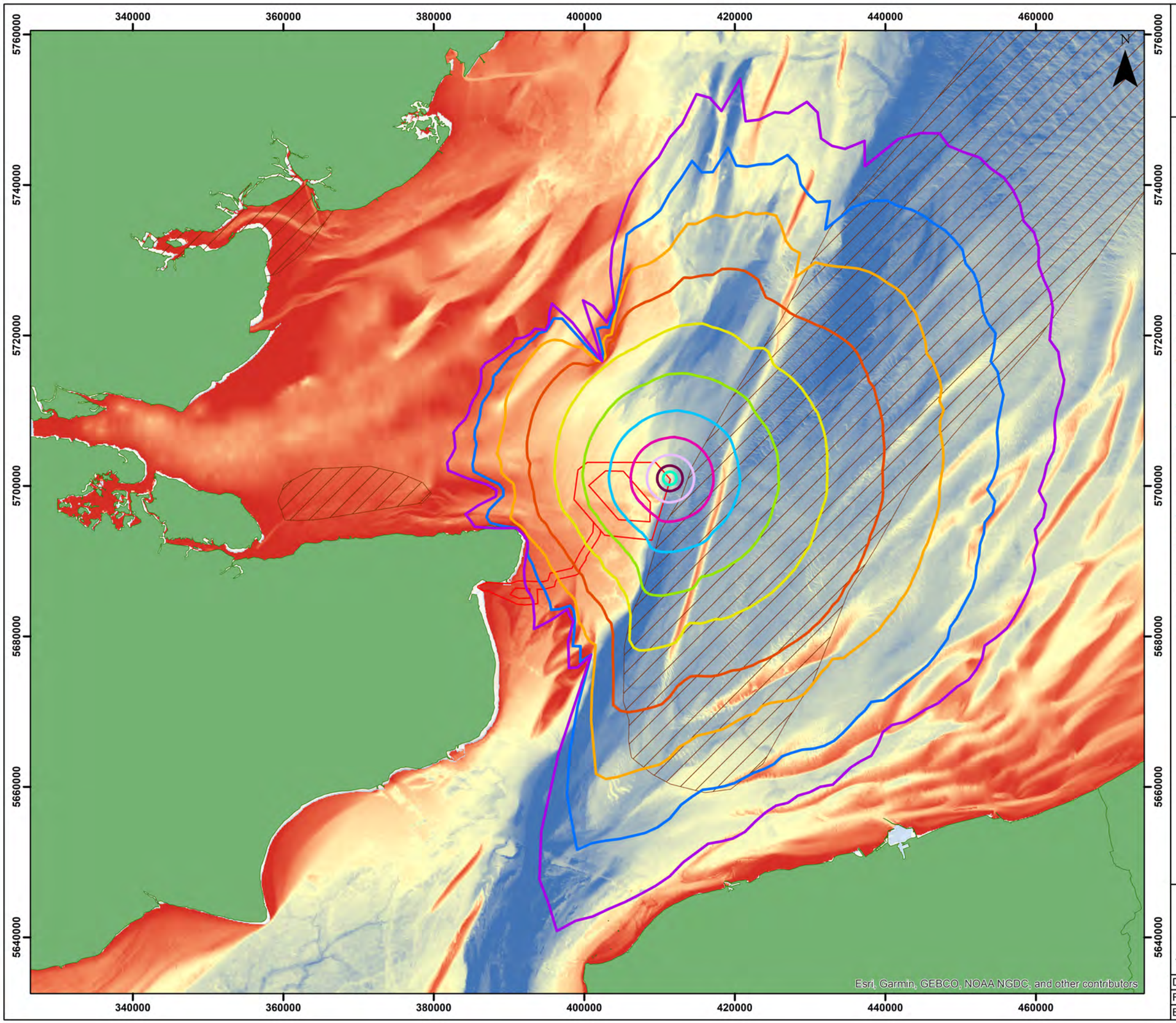
- Unweighted SPL_{Peak} 150
- Unweighted SPL_{Peak} 155
- Unweighted SPL_{Peak} 160
- Unweighted SPL_{Peak} 165
- Unweighted SPL_{Peak} 170
- Unweighted SPL_{Peak} 175
- Unweighted SPL_{Peak} 180
- Unweighted SPL_{Peak} 185
- Unweighted SPL_{Peak} 190
- Unweighted SPL_{Peak} 195
- Unweighted SPL_{Peak} 200
- Offshore Red Line Boundary
- Herring Spawning Grounds (Coull et al., 1998)

Bathymetry (mbsl)
High : 0
Low : -50

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Drg No	Figure_A3_Sole_Grounds_(High_Int)_bathy			**Figure A3**
Rev	A	Date	12/12/2019	
By	FB	Layout	N/A	



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THANET EXTENSION OFFSHORE WIND FARM

Figure A4
Thanet Extension 5dB isopleths - regional bathymetry (easterly piling location) with herring grounds (Coull)

Legend

- Unweighted SPL_{Peak} 150
- Unweighted SPL_{Peak} 155
- Unweighted SPL_{Peak} 160
- Unweighted SPL_{Peak} 165
- Unweighted SPL_{Peak} 170
- Unweighted SPL_{Peak} 175
- Unweighted SPL_{Peak} 180
- Unweighted SPL_{Peak} 185
- Unweighted SPL_{Peak} 190
- Unweighted SPL_{Peak} 195
- Unweighted SPL_{Peak} 200
- Offshore Red Line Boundary
- Herring Spawning Grounds (Coull et al., 1998)

Bathymetry (mbsl)
High : 0
Low : -50

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Drg No	Figure_A3_Sole_Grounds_(High_Int)_bathy		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure A4

3 Appendix B – International Herring Larval Survey 2006/7 – 2016/17

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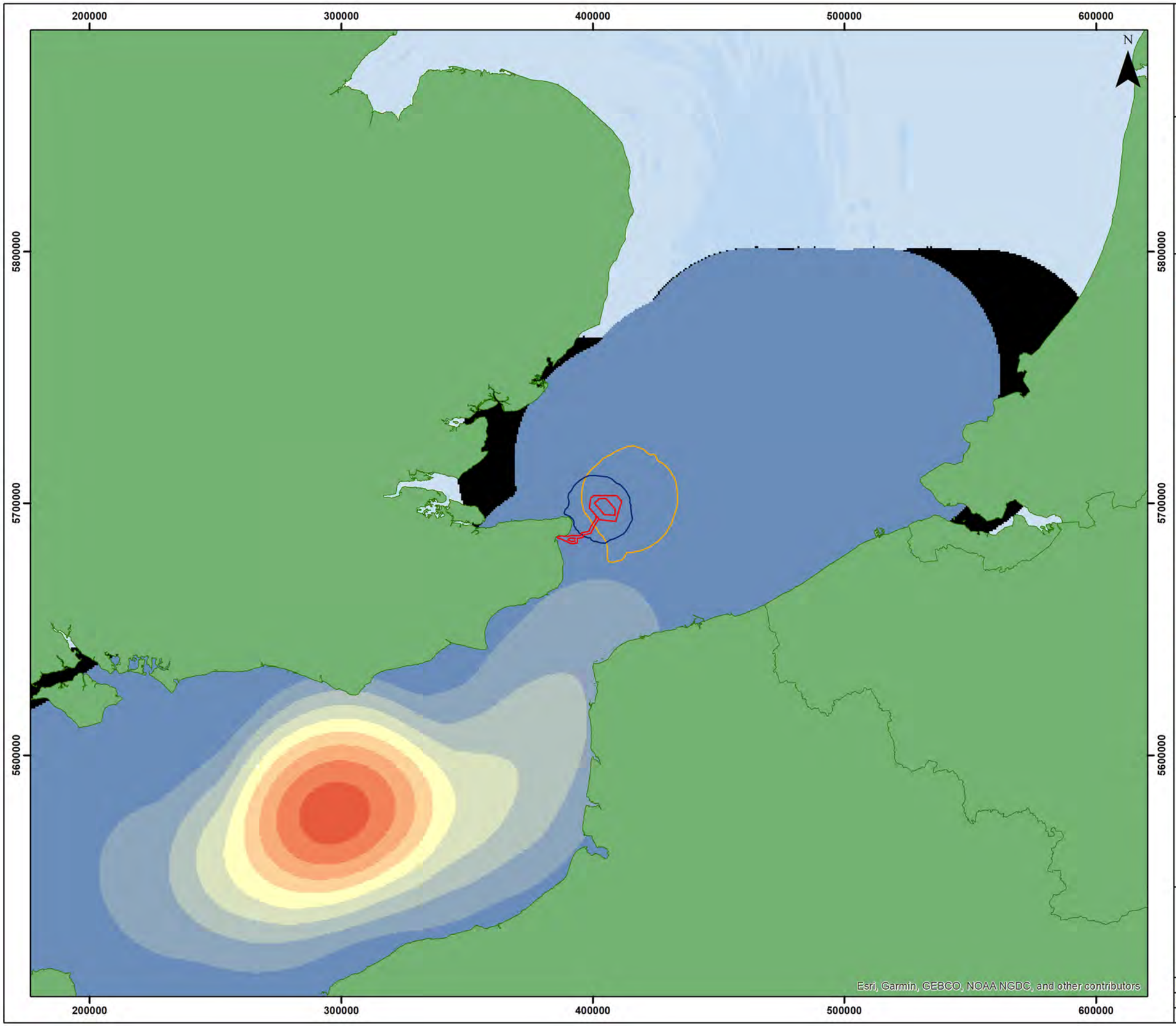
THANET EXTENSION OFFSHORE WIND FARM

Figure B1
IHLS data but with only December data illustrated and TTS (stationary)



Legend

- Offshore Red Line Boundary
- 186 dB re 1 µPa²s Impact Range (South West Monopile)
- 186 dB re 1 µPa²s Impact Range (East Monopile)

IHLS 2007/2008-2016/17 Downs Data DECEMBER ONLY - Total Larval Abundance Per m²

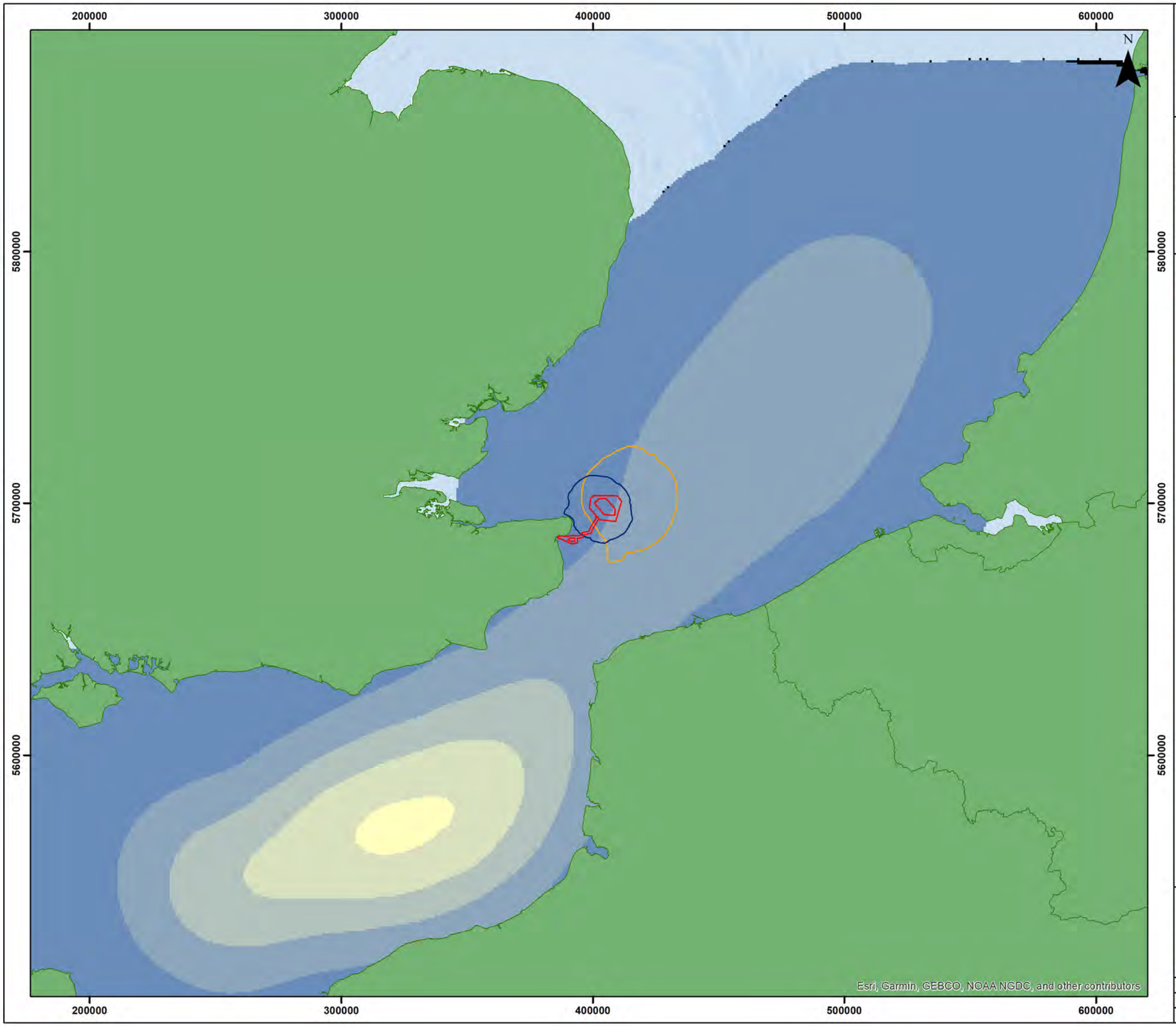
- 0
- 0.1 - 9,400
- 9,400.1 - 27,700
- 27,700.1 - 50,100
- 50,100.1 - 76,200
- 76,200.1 - 106,100
- 106,100.1 - 139,500
- 139,500.1 - 177,900
- 177,900.1 - 221,100
- 221,100.1 - 266,700
- 266,700.1 - 314,600

Datum: ETRS 1989
Projection: UTM31N

1:1,500,000 0 10 20 km 0 8.5 17 nm

Drg No	Figure_B1_IHLS_Dec_TTS		
Rev	A	Date	12/12/2019
By	PN	Layout	N/A

Figure B1



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THANET EXTENSION OFFSHORE WIND FARM

Figure B2
IHLS data but with only January data illustrated and TTS (stationary)

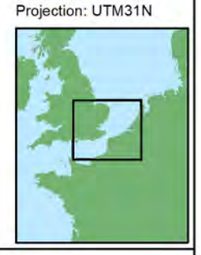
Legend

- Offshore Red Line Boundary
- 186 dB re 1 µPa²s Impact Range (South West Monopile)
- 186 dB re 1 µPa²s Impact Range (East Monopile)

IHLS 2007/2008-2016/17 Downs Data
JANUARY ONLY - Total Larval Abundance Per m²

- 0
- 0.1 - 9,400
- 9,400.1 - 27,700
- 27,700.1 - 50,100
- 50,100.1 - 76,200
- 76,200.1 - 106,100
- 106,100.1 - 139,500
- 139,500.1 - 177,900
- 177,900.1 - 221,100
- 221,100.1 - 266,700
- 266,700.1 - 314,600

Datum: ETRS 1989
Projection: UTM31N

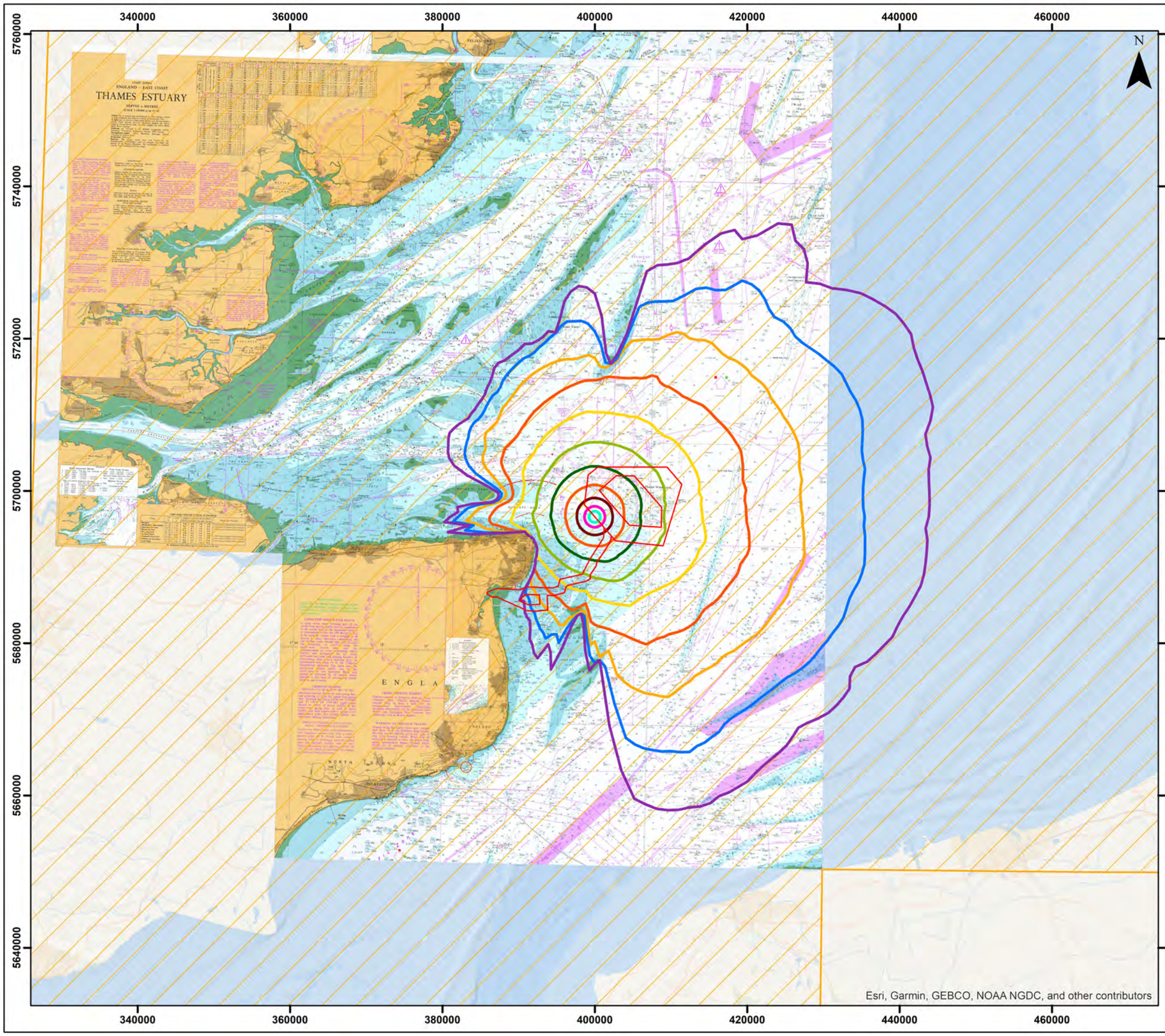


1:1,500,000
0 10 20 km
0 8.5 17 nm

Drg No	Figure_B2_IHLS_Jan_TTS		
Rev	A	Date	12/12/2019
By	PN	Layout	N/A

Figure B2

4 Appendix C – 5dB incremental SPLpeak isopleths - sole



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THANET EXTENSION OFFSHORE WIND FARM

Figure C1
Thanet Extension 5dB isopleths - admiralty chart (westerly piling location) with sole grounds (Ellis and Coull)

Legend

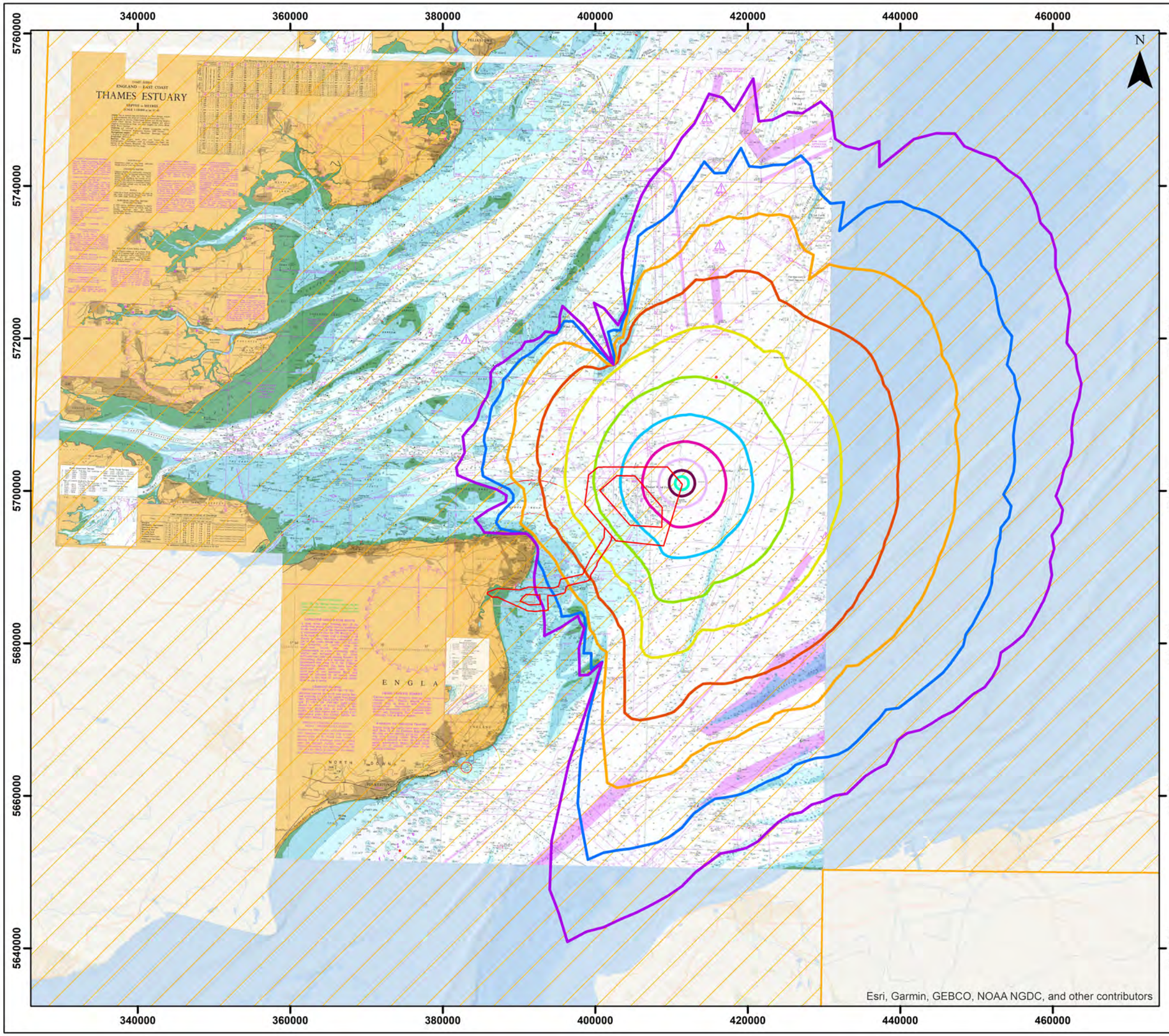
- Offshore Red Line Boundary
- Unweighted SPL_{Peak} 150
- Unweighted SPL_{Peak} 155
- Unweighted SPL_{Peak} 160
- Unweighted SPL_{Peak} 165
- Unweighted SPL_{Peak} 170
- Unweighted SPL_{Peak} 175
- Unweighted SPL_{Peak} 180
- Unweighted SPL_{Peak} 185
- Unweighted SPL_{Peak} 190
- Unweighted SPL_{Peak} 195
- Unweighted SPL_{Peak} 200
- Sole spawning grounds (High Intensity, Ellis et al. 2012)

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Drg No	Figure_C1_5dB_IsoplethsV1		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure C1



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THANET EXTENSION OFFSHORE WIND FARM

Figure C2
Thanet Extension 5dB isopleths - admiralty chart (easterly piling location) with sole grounds (Ellis and Coull)

Legend

- Offshore Red Line Boundary
- Unweighted SPL_{Peak} 150
- Unweighted SPL_{Peak} 155
- Unweighted SPL_{Peak} 160
- Unweighted SPL_{Peak} 165
- Unweighted SPL_{Peak} 170
- Unweighted SPL_{Peak} 175
- Unweighted SPL_{Peak} 180
- Unweighted SPL_{Peak} 185
- Unweighted SPL_{Peak} 190
- Unweighted SPL_{Peak} 195
- Unweighted SPL_{Peak} 200
- Sole spawning grounds (High Intensity, Ellis et al. 2012)

Datum: ETRS 1989
Projection: UTM31N

1:500,000 0 5.5 11 km 0 3 6 nm

Drg No	Figure_C2_5dB_Isopleths		
Rev	A	Date	12/12/2019
By	FB	Layout	N/A

Figure C2

Annex D - Revised Article 5

Benefit of the Order

5.—(1) Subject to paragraphs (2), (3) and (~~3~~4), the undertaker may with the written consent of the Secretary of State—

(a) transfer to another person ("the transferee") any or all of the benefit of the provisions of this Order (excluding the deemed marine licences referred to in paragraph (2) below) and such related statutory rights as may be agreed between the undertaker and the transferee, subject to the paragraphs 0 to 5(5) below;

(b) grant to another person ("the lessee") for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order (excluding the deemed marine licences referred to in paragraph (2) below) and such related statutory rights as may be so agreed.

(2) Subject to paragraph (3), the undertaker may with the written consent of the Secretary of State—

(a) where an agreement has been made in accordance with paragraph (1)(a), transfer to the transferee the whole of the deemed generation assets marine licence or the deemed export cable system marine licence, or both, and such related statutory rights as may be agreed between the undertaker and the transferee; or

(b) where an agreement has been made in accordance with paragraph (1)(b), grant to the lessee, for the duration of the period mentioned in paragraph (1)(b), the whole of the deemed generation assets marine licence, or the whole of the deemed export cable system marine licence and such related statutory rights as may be so agreed.

(3) The undertaker must consult the Secretary of State before making an application for consent under this article by giving notice in writing of the proposed application and the Secretary of State must provide a response within eight weeks of receipt of the notice.

~~(4) If the undertaker transfers any or all of the benefit of the provisions of this Order pursuant to paragraph (1) the transferee must not begin to exercise the powers provided within Parts 3, 4, 5 and 6 of this Order in relation to any land unless it has first put in place either—~~

~~(a) a guarantee, which may be given by the transferring undertaker, in respect of the liabilities of the undertaker to pay compensation under this Order in respect of the exercise of the relevant power of compulsory acquisition or temporary possession in relation to that land; or~~

~~(b) an alternative form of security, including a funding agreement between the transferring undertaker and the transferee or the transferee and a third party, for that purpose which has been approved by the Secretary of State.~~

~~(5) Such guarantee or alternative form of security given in respect of any liability of the undertaker to pay compensation under the Order is to be treated as enforceable against the guarantor by any person to whom such compensation is payable and must be in such form as to be capable of enforcement by such a person.~~

~~(6) Such guarantee or alternative form of security will have a maximum liability cap of £8,500,000.~~

~~(7) Such guarantee or alternative form of security is to be in place until no later than the date on which, if a referral is made to the Tribunal, it could be defended by the undertaker or transferee on the ground that the relevant period for such any claims has expired and the Limitation Act 1980 applies so as to time-bar such claims or such later date as when all such claims validly made have either been settled or determined by the Tribunal.~~

(4) ~~(8)~~The Secretary of State must consult the MMO before giving consent to the transfer or grant to another person the whole of the benefit of the provisions of the deemed marine licences.

(5) ~~(9)~~The Secretary of State must consult National Grid before giving consent to the transfer or grant to a person of any or all of the benefit of the provisions of this Order (excluding the deemed marine licences referred to in paragraph (2) above).

(6) ~~(10)~~The Secretary of State must determine an application for consent made under this article within a period of eight weeks commencing on the date the application is received by the Secretary of State, unless otherwise agreed in writing with the undertaker.

(7) ~~(11)~~Where the Secretary of State is minded to refuse an application for consent made under this article and notifies the undertaker accordingly, or the Secretary of State fails to determine the application for consent under this article within the period prescribed in paragraph (6~~10~~), the undertaker may refer the matter for determination in accordance with **article 36** (arbitration) [appeal the decision in accordance with **Schedule 14** (procedure for appeals)].

(8) ~~(12)~~Where paragraph ~~(16~~(12) applies no consent of the Secretary of State is required under paragraph (1) or paragraph (2).

(9) ~~(13)~~Where an agreement has been made in accordance with paragraph (1) or (2) references in this Order to the undertaker, except in paragraph (10), (11) or (15), include references to the transferee or lessee.

(10) ~~(14)~~The exercise by a person of any benefits or rights conferred in accordance with any transfer or grant under paragraph (1) or (2) are subject to the same restrictions, liabilities and obligations as would apply under this Order if those benefits or rights were exercised by the undertaker.

(11) ~~(15)~~Where an agreement has been made in accordance with paragraph (1) or (2)—

(a) the benefit ("the transferred benefit") includes any rights that are conferred, and any obligations that are imposed by virtue of the provisions to which the benefit relates;

(b) the transferred benefit resides exclusively with the transferee or, as the case may be, the lessee and the transferred benefit is not enforceable against the undertaker save in the case of a deemed marine licence transferred or granted in respect of any breach of an obligation by the undertaker which occurs prior to such transfer or grant or which occurs as a result of any activity carried out by the undertaker on behalf of the transferee.

(12) ~~(16)~~This paragraph applies where—

(a) the transferee or lessee is a person who holds a transmission licence under the Electricity Act 1989; or

(b) the time limits for claims for compensation in respect of the acquisition of land or effects upon land under this Order have elapsed and—

(i) no such claims have been made;

(ii) any such claim has been made and has been compromised or withdrawn;

(iii) compensation has been paid in final settlement of any such claim;

(iv) payment of compensation into court has taken place in lieu of settlement of any such claim;

(v) it has been determined by a tribunal or court of competent jurisdiction in respect of any such claim that no compensation is payable; or

(vi) the transferee or lessee is a person within the same group as Vattenfall AB (publ) (a company incorporated in Sweden with Reg. No. 556036-2138, whose registered office is SE-169 92 Stockholm Sweden) under Section 1261 of the Companies Act 2006(**1**).

(13) ~~(17)~~In respect of any transfer or grant of a leasehold interest to a company within the same group as Vattenfall AB (publ) in accordance with paragraph (12~~16~~)(b)(vi), the undertaker must obtain National Grid's approval in writing before any such transfer or grant occurs (such approval not to be unreasonably withheld or delayed), and such approval must be given provided that prior to the transfer or grant, the transferee or lessee provides a direct covenant to National Grid to comply with any contractual obligations of the undertaker given to National Grid in respect of that part of the authorised project to be transferred or subject to the grant of a lease.

(14) ~~(18)~~The provisions of **article 8** (street works), **article 10** (temporary stopping up of streets), **article 17** (compulsory acquisition of land), **article 19** (compulsory acquisition of rights), **article 25** (temporary use of land for carrying out the authorised project) and **article 26** (temporary use of land for maintaining the authorised project) have effect only for the benefit of the named undertaker and a person who is a transferee or lessee and is also—

(a) in respect of Works Nos. 3A to 16 a person who holds a licence under the Electricity Act 1989; or

(**1**) 2006 c.46.

(b) in respect of functions under **article 8** (street works) relating to a street, a street authority.

(15) ~~(19)~~Prior to any transfer or grant under this article taking effect the undertaker must give notice in writing to the Secretary of State, and if such transfer or grant relates to work or utilisation of powers in the vicinity or the exercise of powers in their area, to the MMO and the relevant planning authority, and if such transfer or grant relates to works or utilisation of powers within 15 metres measured in any direction of apparatus of National Grid, to National Grid.

(16) ~~(20)~~The notices required under paragraphs (3) and ~~(19~~(15) must—

(a) state—

(i) the name and contact details of the person to whom the benefit of the provisions will be transferred or granted;

(ii) subject to paragraph (17~~21~~), the date on which the transfer will take effect;

(iii) the provisions to be transferred or granted; and

(iv) the restrictions, liabilities and obligations that, in accordance with paragraph ~~(14~~(10), will apply to the person exercising the powers transferred or granted; and

(v) except where paragraph (~~16~~12)(a) or (~~16~~12)(b) applies confirmation of the availability and adequacy of funds for compensation associated with the compulsory acquisition of the Order land.

(b) be accompanied by—

(i) where relevant, a plan showing the works or areas to which the transfer or grant relates; and

(ii) a copy of the document effecting the transfer or grant signed by the undertaker and the person to whom the benefit of the powers will be transferred or granted.

The date specified under paragraph (~~20~~16)(a)(ii) must not be earlier than the expiry of five days from the date of the receipt of the notice.

(17) ~~(21)~~The notice given under paragraph ~~(19~~(15) must be signed by the undertaker and the person to whom the benefit of the powers will be transferred or granted as specified in that notice.