



Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan

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Prepared by:	
Royal HaskoningDHV	
Approved by:	Date:
Sarah Chandler, Equinor	August 2022

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Glossary of Acronyms

AONB	Area of Outstanding National Beauty
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
EIFCA	Eastern Inshore Fisheries and Conservation Authority
EIR	Environmental Information Requests
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
FFC	Flamborough and Filey Coast
HRA	Habitats Regulations Assessment
HVAC	High-Voltage Alternating Current
JNCC	Joint Nature Conservation Committee's
km	Kilometre
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
MCZ	Marine Conservation Zone
MEEB	Measures of Equivalent Environmental Benefit
MIEU	Major Infrastructure and Environment Unit
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MW	Megawatts
NSIP	Nationally Significant Infrastructure Project
OSP	Offshore substation platform
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
RSPB	Royal Society for the Protection of Birds
SEP	Sheringham Offshore Wind Farm Extension Project
SG	Steering Group

SIP	Site Integrity Plan
SLVIA	Seascape, Landscape and Visual Impact Assessment
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
ToR	Terms of Reference
UK	United Kingdom
UXO	Unexploded Ordnance
WSI	Written Scheme of Investigation

Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension project consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm (DOW)
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing DOW
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the environmental impact assessment (EIA) and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable corridor which would house HDD entry or exit points.
Infield cables	Cables which link the wind turbines to the offshore substation platform(s).
Interlink cables	<p>Cables linking two separate project areas. This can be cables linking:</p> <ul style="list-style-type: none"> DEP South array area and DEP North array area DEP South array area and SEP DEP North array area and SEP <p>1 is relevant if DEP is constructed in isolation or first in a phased development.</p>

	2 and 3 are relevant where both SEP and DEP are built.
Interlink cable corridor	This is the area which will contain the interlink cables between offshore substation platform/s and the adjacent Offshore Temporary Works Area.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation

	platform/s will be located and the adjacent Offshore Temporary Works Area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited. As the owners of SEP and DEP, Scira Extension Limited (SEL) and Dudgeon Extension Limited (DEL) are the named undertakers that have the benefit of the Development Consent Order. References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

1 EVIDENCE PLAN

1.1 Introduction

1. This document reports on the Evidence Plan and Evidence Plan Process (EPP) associated with the Development Consent Order (DCO) application by Equinor New Energy Limited ('the Applicant') for consent to develop the Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects.
2. As owners of Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP), Scira Extension Limited (SEL) and Dudgeon Extension Limited (DEL) are the named undertakers that have the benefit of the DCO. References throughout the DCO application documents to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.
3. This Report documents the Applicant's approach to the EPP including timeframes, process and expectations. This Report is submitted as a summary of the EPP alongside the **Consultation Report** (document reference 5.1) as part of the application documents. Records of discussions and agreements are also included within this Report (**Annex 5.2.1.1 Expert Topic Group Meeting Minutes** and **Annex 5.2.1.2 Expert Topic Group Agreement Logs**).
4. For clarity, the overall document remains largely as it was written and issued for use at the start of the EPP. However, key content describing activities undertaken, for example details of all of the ETG meetings, has been updated where appropriate (**Section 1.5.1.3**). In this manner, when read as intended in conjunction with its annexes (**Annex 5.2.1.1** and **Annex 5.2.1.2**) as well as the other relevant submissions made with the DCO application, the document addresses the requirements described in Planning Inspectorate Advice Note Eleven, Annex H.

1.2 Purpose of the Evidence Plan

5. The Evidence Plan provides a framework for and documents a non-statutory, voluntary process that aims to encourage upfront agreement on what information an applicant needs to supply to the Planning Inspectorate (PINS) as the Examining Authority as part of a DCO application. It aims to ensure Environmental Impact Assessment (EIA), Marine Conservation Zone Assessment (MCZA) and Habitats Regulations Assessment (HRA) requirements are met and to reduce the risk of major infrastructure projects being delayed at (or before) the examination phase.
6. It also provides clarity on complex issues for the Examining Authority and decision-makers by:
 - Addressing evidence requirements systematically at the pre-application stage to reduce the likelihood of unexpected issues or disagreements arising during the examination; and
 - Providing an audit trail of areas of agreement/disagreement.
7. This should lead to more robust and streamlined decision-making. The Evidence Plan offers benefits to all those engaged in the process by providing:

- Greater confidence on the suitability of existing information, any additional evidence requirements and suitable survey methodologies to fill data gaps;
 - An opportunity to make good use of time and resources by focussing on key matters early on, avoiding unnecessarily revisiting ‘old ground’ at a later stage;
 - Clarity and direction for survey work, analysis and interpretation of findings; and
 - A record of discussions and an audit trail.
8. The EPP is a non-statutory, voluntary process and therefore there are no legal obligations associated with it. It is not part of formal consultation, but is formulated to fit within the DCO application process.

1.3 Evidence Plan Process

9. Guidance on Evidence Plans (‘Evidence plans for Nationally Significant Infrastructure Projects’) was first produced by Defra in 2012. That guidance has since been withdrawn and replaced by PINS Advice Note 11 – Annex H: Evidence Plans for Habitats Regulations Assessments of Nationally Significant Infrastructure Projects (v1, 2021). The guidance provides an overview of the process and roles of the parties. Its focus is on compliance with EC Directive 92/43/EEC (the Habitats Directive) and the corresponding PINS Advice Note 10: HRA relevant to Nationally Significant Infrastructure Projects (v9, 2022). However, since this time, many applicants have chosen to broaden the Evidence Plan Process to incorporate other topics of relevance to the wider EIA. It should be noted that since the publication of the Guidance, Defra’s Major Infrastructure and Environment Unit (MIEU) no longer take a role as chair of the Evidence Plan Steering Group (and nor do PINS).
10. There are four stages to the Evidence Plan Process, which have been followed by the Applicant:

Table 1-1: Evidence of compliance with the four stages of the EPP

Stage	Description	Comment
1	The applicant notifies PINS and the relevant Statutory Consultees of the intention to submit a DCO application(s) and that the Evidence Plan Process will be followed.	Inception meeting held with PINS on 18 th March 2019 whereby the Applicant informed the Inspectorate that it had drafted the Terms of Reference (ToR) for the EPP. The Applicant subsequently confirmed (meeting with PINS 19 th September 2019) that it had commenced the EPP in July 2019. Section 46 notification made 28 th April 2021.
2	The applicant and relevant consultees agree the Evidence Plan Terms of Reference (ToR). The Evidence Plan, which will evolve as the project develops, will identify what topics the evidence gathering aims to address and how the evidence will be collected and analysed, and how and when evidence will be shared and presented. This process will also help to inform the Scoping stage of the EIA process. Typically, the consultees will agree the	The Applicant held a meeting with the EPP Steering Group on 16 th July 2019 in order to agree the ToR. The ToR was subsequently updated and redistributed to the Steering Group and ETG members.

	<p>Evidence Plan ToR within 3 months, but this can be to a longer timescale with the applicant's agreement. Where there is more than one consultee involved for a given topic, one will act as the lead in negotiating the Evidence Plan with the applicant (to be agreed between the applicant and the consultees).</p>	
3	<p>The applicant gathers and analyses the evidence and the relevant consultees assess the evidence. This stage is an iterative process which will involve the Evidence Plan being reviewed as evidence is collected and analysed. Communication will be planned and scheduled regularly throughout the pre-application period, in particular to align with key stages of the EIA process, or to coincide with new information becoming available, e.g. when results emerge from surveys. This approach will help the applicant and relevant consultees to:</p> <ul style="list-style-type: none"> • Identify if there is sufficient information to inform the DCO application; • Identify any potentially adverse effects and agree steps to assess the potential efficacy of potential mitigation measures; and • Formally agree that specific matters have been resolved for inclusion in the Statement(s) of Common Ground (e.g. refinement of the Rochdale envelope to allow design features and techniques to be removed; impacts can be scoped out; agreed mitigation measures mean that residual impacts are not considered significant). 	<p>Demonstrated throughout the schedule of ETG meetings (Section 1.5.1.3), Annex 5.2.1.1 ETG Meeting Minutes and Annex 5.2.1.2 ETG Agreement Logs.</p>
4	<p>The Evidence Plan Process is finalised. At this point, all evidence agreed in the plan should have been collected, analysed using agreed methodologies, reviewed and agreed by the applicant and the relevant consultees, before the end of DCO pre-application stage and submission of the Environmental Statement (ES) and HRA report (as applicable) to PINS. The Statement(s) of Common Ground will document agreements on the likely significant effects, which matters are insignificant or have been resolved, and agreed approaches to dealing with any remaining uncertainties and / or gaps.</p>	<p>This Evidence Plan document and associated annexes (Annex 5.2.1.1 ETG Meeting Minutes and Annex 5.2.1.2 ETG Agreement Logs) is submitted alongside the DCO application. Annex 5.2.1.2 ETG Agreement Logs provides records of key decisions and agreements. This will enable an iterative approach to be taken to developing and agreeing the Statements of Common Ground.</p>

1.3.1. Steering Group

11. The evidence requirements and processes for reaching agreement have been monitored by a Steering Group. The role of the Steering Group was to:
- Oversee progress of the Evidence Plan and processes and ensure that schedules are met;

- Resolve all issues that emerge from the Expert Topic Groups (ETGs) and where resolution cannot be reached agree approaches that will be taken – see [Section 1.5.1](#) for further details;
- Provide ‘sign-off’ for decisions made by the ETGs. ‘Sign off’ being defined as reaching a clear position, stated in writing, on behalf of the representative party; and
- Clarify and agree how to address key HRA, MCZA and EIA matters, on receipt of advice from the ETGs.

1.3.2. Expert Topic Groups

12. ETGs have been convened to discuss the detail of the information requirements and reported to the Steering Group (see [Section 1.5.1](#) for further details). These comprised experts from relevant bodies and had the following functions:

- Agree the relevance, appropriateness and sufficiency of baseline data for the specific assessment(s), including both site specific and contextual data, and agreeing the scope of any project-specific surveys;
- Agree the methods for data analysis;
- Agree worst-case parameters for the assessment(s);
- Agree methods for assessment (including where possible interpretation of impact and levels of significance);
- Agree the in-combination / cumulative impact assessment details, which projects to scope in and which evidence can be used;
- Agree key focus areas for post consent monitoring and mitigation;
- Agree how to deal with new emerging evidence (e.g. whether and when to change the evidence requirements, updating the plan and timetable as necessary);
- Record discussions in [Annex 5.2.1.1 ETG Meeting Minutes](#) and outcomes in an [Annex 5.2.1.2 ETG Agreement Logs](#) which will be used to generate the Statement(s) of Common Ground; and
- Identify and prioritise key HRA, MCZA and EIA matters and communicate these to the Steering Group. If matters cannot be agreed, then reasons for differences will be clearly documented in [Annex 5.2.1.2 ETG Agreement Logs](#).

1.3.3. Review and Updates

13. The Evidence Plan ToR were kept under review and updated by the Applicant at a frequency agreed by the Steering Group. Steering Group and ETG meeting minutes and agreement logs have been updated and recorded in the form of annexes to this document after each meeting. Together these form the Evidence Plan which is being submitted to PINS alongside the Consultation Report as part of the formal application.

14. **Annex 5.2.1.2 ETG Agreement Logs** provide records of key decisions and agreements. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.

1.4 Overview of the Project

1.4.1. Current Status

15. The existing Sheringham Shoal and Dudgeon Offshore Wind Farms (SOW and DOW) are operated by different partners, with Equinor New Energy Limited being the only partner with ownership in both projects. In 2018, The Crown Estate invited developers to bid for extensions to operational offshore wind farms.
16. The Applicant applied, on behalf of the partners in the operational SOW and DOW, for an Agreement for Lease (AfL) for the extension of these two wind farms. An acceptance letter from The Crown Estate was received in September 2019 and AfLs were signed in April 2020 for the DEP and August 2020 for SEP.

1.4.2. Project Description

17. SEP and DEP are located in the Greater Wash region of the southern North Sea. SEP and DEP are 15.8km and 26.5km from the coast at its closest point, respectively.
18. When operational, SEP and DEP combined would have the potential to generate renewable power for around 785,000 United Kingdom (UK) homes from up to 23 wind turbines at SEP and up to 30 wind turbines at DEP.
19. Electricity will flow from the wind turbines via infield cables to offshore substation platform(s). There will be up to two offshore substations with one in SEP and one in DEP North array area, located to optimise the length of the offshore cables. Interlink cables will link the separate project areas. At the offshore substation(s), the generated power will be transformed to a higher alternating current (AC) voltage. The power will be exported through up to two export cables, in two separate trenches, to a landfall in Weybourne on the North Norfolk coast. At the landfall location the offshore export cables will meet and be joined up with the onshore export cables in transition joint bays.
20. From there, the onshore export cables travel approximately 60km inland to a high voltage alternating current (HVAC) onshore substation near to the existing Norwich Main substation. The onshore substation will be constructed to accommodate the connection of both SEP and DEP to the national transmission grid.
21. A summary of the offshore and onshore components is provided in **Section 1.4.2.1** and a full description of SEP and DEP is provided in **ES Chapter 4 Project Description** (document reference 6.1.4).

1.4.2.1. Anticipated Infrastructure

22. The key offshore components comprise:

- 13 to 23 offshore wind turbines for SEP;
- 17 to 30 offshore wind turbines from DEP;
- Wind turbines with a maximum tip height of 330m;
- Two offshore substation platforms (one for SEP and one for DEP) and their associated foundations; and
- Offshore cables.

23. The key onshore components comprise:

- Landfall at Weybourne and associated transition joint bay/s;
- 60km of onshore export cables installed underground from the landfall to the onshore substation and associated joint bays and link boxes;
- A new onshore substation next to the existing Norwich Main substation;
 - Substation will be 3.25ha in size for SEP or DEP alone, or 6ha for SEP and DEP together;
 - Substation buildings and electrical equipment up to 15m tall/
- Trenchless crossing zones (e.g. Horizontal Directional Drilling (HDD));
- Construction and operational accesses; and
- Temporary construction compounds.

1.4.2.2. Project Development Scenarios

24. Whilst SEP and DEP are each Nationally Significant Infrastructure Projects in their own right, a single application for development consent will be made covering both wind farms, and the infrastructure required to connect SEP and DEP to the grid. A single planning process is intended to provide for consistency in the approach to the assessment, consultation and examination.

25. For the purpose of the EIA, the project development scenarios for SEP and DEP have been broadly categorised as:

- In isolation – where only SEP or DEP is constructed;
- Sequential – where SEP and SEP are both constructed in a phased approach with either SEP or DEP being constructed first; or
- Concurrent – where SEP and DEP are both constructed at the same time.

26. The Applicant is seeking to coordinate the development of SEP and DEP as far as possible. The preferred option is a development scenario with an integrated transmission system, providing transmission infrastructure which serves both of the wind farms, where both Projects are built concurrently. However, given the different commercial ownerships of each Project, alternative development scenarios such as a separated grid option (i.e. transmission infrastructure which allows each Project to transmit electricity entirely separately) will allow SEP and DEP to be constructed in a phased approach, if necessary. Therefore, the DCO application seeks to consent a range of development scenarios in the same overall corridors to allow for separate development if required, and to accommodate either sequential or concurrent build of the two Projects.

1.4.3. Timeframes

27. Offshore construction works will require up to two years per Project (excluding pre-construction activities such as surveys), assuming SEP and DEP are built at different times. There could be a gap of up to three years between the completion of offshore construction works on the first Project and the start of offshore construction works on the second Project. However, if built at the same time, offshore construction could be completed in two years.
28. The installation of the onshore cables is expected to take up to 24 months in total if either SEP and DEP is constructed in isolation or up to 26 months if both SEP and DEP are constructed at the same time. If SEP and DEP are built one after the other, there will be two separate onshore construction periods of up to 24 months each.

1.5 Scope of the Evidence Plan

29. The Evidence Plan Process has focused on core topics where, from previous experience, the Applicant considered that:
 - There were potential environmental impacts (including HRA and MCZA related matters) associated with offshore wind farm development which may have required additional consultation over and above that undertaken as part of wider stakeholder consultation arrangements;
 - It was important for the Projects to gain consensus on the robustness of data and requirements for new data; and/or
 - There may have been differences of expert opinion regarding data requirements, methodologies, survey design and assessment.

1.5.1. Evidence Plan Stakeholders

30. **Table 1-2** provides a list of parties involved in the Evidence Plan Process. Organisational representative(s) on the Steering Group or ETG were intended to have sufficient authority that, so far as possible, their agreed positions within the Evidence Plan Process represented the position of the organisation they represented and not the advice of the representative only. Changes to organisational representatives during the Evidence Plan Process were avoided where possible. Roles and responsibilities of stakeholder organisations are set out in **Section 1.6.6.1**.

Table 1-2: Organisations Participating in the Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects Evidence Plan Process

Organisation
Applicant
Equinor and its technical advisors
Royal HaskoningDHV

Public Bodies
Natural England
Marine Management Organisation (MMO)
Cefas (providing advice as requested by the MMO)
Eastern Inshore Fisheries and Conservation Authority (EIFCA)
Environment Agency
National Highways
Local Planning Authority (Norfolk County Council) (where applicable for onshore matters)
County Archaeologist (Norfolk)
Highway Authority
Lead Local Flood Authority
Public Health
Norwich City Council
Historic England
South Norfolk and Broadland District Council
North Norfolk Broadland District Council
Non-Governmental Organisations
The RSPB
The Wildlife Trust
Norfolk Coast Partnership (AONB)
Norfolk Wildlife Trust

1.5.1.1. The Steering Group

31. As discussed in **Section 1.5**, the development and monitoring of the Evidence Plan and its subsequent progress was undertaken by the Steering Group. The Steering Group consisted of:
- The Applicant, supported by its Lead EIA consultant (Royal HaskoningDHV), who chaired the group to ensure clarity and common understanding on issues, and led on reporting matters arising from the Steering Group and ETG meetings;
 - Natural England, who are the lead Statutory Nature Conservation Body (SNCB) and are authorised to exercise the Joint Nature Conservation Committee’s (JNCC) functions as a statutory consultee in this respect – see **Table 1-7**;
 - The Marine Management Organisation (MMO) provided advice and input; and

- The Local Planning Authority (LPA), in this case Norfolk County Council, authorised as a statutory consultee, where their involvement was required for onshore matters.

32. The Steering Group met as necessary to ensure progress was maintained. Meeting dates were suggested to tie in with key programme dates as set out in **Table 1-4**. This was intended to be a guideline and was sufficiently flexible to align with availability of members and emerging issues.

1.5.1.2. Expert Topic Groups

33. The Applicant focused its time and resources through the Evidence Plan Process on the ETGs listed in **Table 1-3**. These topic groups were identified based on the experience of the Applicant. Additional topic groups were added if a benefit was identified during the consultation process. The Applicant, its technical advisors and its Lead EIA Consultants, Royal HaskoningDHV, led and supported ETG engagement and meetings. NGOs were also invited to participate in the groups including the RSPB, the Wildlife Trusts and Whale and Dolphin Conservation.

Table 1-3: ETG Members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, the Wildlife Trusts
Sea bed (including benthic and fish ecology, and marine physical processes)	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern IFCA, the Wildlife Trusts
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, North Norfolk District Council, South Norfolk and Broadland District Council, Norwich City Council.
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, North Norfolk District Council, South Norfolk and Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk AONB/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, National Highways
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council, Broadland District Council

Water Resources and Flood Risk	Equinor, Royal HaskoningDHV, Environment Agency, Internal Drainage Board, Norfolk County Council, (Lead Local Flood Authority)
Measures of Equivalent Environmental Benefit (MEEB)	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, EIFCA, The Wildlife Trust, PINS
HRA Compensation	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB, PINS

1.5.1.3. Evidence Plan Timetable

34. A programme of Evidence Plan meetings held is provided in **Table 1-4**. The number and frequency of meetings were open to review, with the option to include additional meetings in response to difficult issues, or to have fewer meetings as appropriate. There was an understanding that flexibility was required to respond to any technical matters which emerged, or delays in data provision.

Table 1-4: Programme of Meetings

Group	Meeting Dates	Purpose
Establish Groups and Scope Issues		
Steering Group (Meeting 1)	16th July 2019	Kick-off meeting. Remit and quarterly programme of meetings agreed.
Sea bed ETG (Meeting 1)	30th October 2019	Provide a project update, provide an update on the proposed approach to marine physical processes, benthic and fish ecology impact assessment, discuss date requirements for Marine Conservation Zone (MCZ). Agree the way forward – how to run this ETG to application.
Marine Mammal Ecology ETG (Meeting 1)	3rd December 2019	Provide a project update, provide an update on the proposed approach to marine mammal ecology impact assessment. Agree the way forward – how to run this ETG to application.
Offshore Ornithology ETG (Meeting 1)	9th January 2020	Provide a project update, provide an update on the proposed approach to offshore ornithology impact assessment and ‘as-built’ versus ‘consented’ parameters. Agree the way forward – how to run this ETG to application.

Terrestrial Ecology and Ornithology ETG (Meeting 1)	10th December 2020	Provide an update on the project and site selection process, provide information with regards to the approach to the data collection and assessment. Agree the way forward – how to run this ETG to application.
Onshore and Offshore Archaeology (Meeting 1)	14th January 2020	Provide a project update, provide an update on the proposed approach to archaeology and cultural heritage impact assessment. Agree the way forward – how to run this ETG to application.
Traffic ETG (Meeting 1)	17th January 2020	Provide a project update, provide an update on the proposed approach to the traffic and transport impact assessment. Agree the way forward – how to run this ETG to application.
Seascape, Landscape and Visual ETG (Meeting 1)	23rd March 2020	Provide a project update, provide an update on the proposed approach to landscape, seascape and visual impact assessment. Agree the way forward – how to run this ETG to application.
Noise and Vibration ETG (Meeting 1)	4th November 2020	Provide a project update and an update on the proposed approach to assessment and survey methodology.
Agree Receptors, Surveys and Survey Methodologies, and Impacts to Assess		
Terrestrial Ecology and Ornithology ETG (Meeting 2)	28th January 2020	Provide a project update, present summary of terrestrial ecology surveys undertaken since last meeting and their key results, discuss future survey requirements, approach to impact assessment and biodiversity net gain calculations.
Water Resource and Flood Risk (Meeting 1)	28th May 2020	Agree on the approach to baseline and assessment methodology, study area and data sources.

Sea bed ETG (Meeting 2)	2nd June 2020	Discuss and agree export cable corridors geophysical survey characterisation, baseline dynamics of the surface sediment layers in the Cromer Shoal MCZ, requirement for geotechnical investigations of the cable corridor, Marine Geology, Sediment Quality and Physical Processes Method Statement, export cable corridors sea bed habitat interpretation, scope of planned benthic surveys and approach to MCZ Assessment Screening and draft outcomes.
Offshore Ornithology ETG (Meeting 2)	4th June 2020	Discuss defining the baseline environment, sCRM input parameters (Sandwich tern), approach to investigating population level effects (Sandwich tern), impact assessment methodology and HRA screening.
Marine Mammal Ecology ETG (Meeting 2)	18th June 2020	Provide a project update, provide an update on the Method Statement, HRA screening and survey results.
Traffic ETG (Meeting 2)	18th September 2020	Present an overview of the Method Statement (issued on the 21 July 2020), discuss any feedback on the Method Statement and agree the proposed approach to the impact assessment, update the agreement log.
Onshore and Offshore Archaeology (Meeting 2)	21st October 2020	Provide a project update, provide an update on onshore baseline data collection and initial findings, provide an update on offshore and intertidal baseline data and initial findings.
Seascape, Landscape and Visual ETG (Meeting 2)	18th and 21st July 2021	Confirm areas of agreement with regards to the Seascape, Landscape and Visual Impact Assessment (SLVIA) and LVIA PEIR chapters approaches (post PEIR review), discuss consultee comments on the SLVIA and LVIA PEIR chapters, discuss key topics in relation to assessment, design and surveys.
Discuss Survey Findings and Confirm Adequacy of Surveys		
Steering Group (Meeting 2)	Q4 2020	Evidence Plan progress and ETG updates (agreed to inform the group via email).

Offshore Ornithology ETG (Meeting 3)	9th December 2020	Provide a project update, EIA update (overview of density estimation, CRM, Sandwich tern PVA and displacement assessment) and HRA update (updated screening outcomes based on NE feedback).
Sea bed ETG (Meeting 3)	3rd February 2021	Discuss and agree the draft Marine Geology, Sediment Quality and Physical Processes assessment conclusions, baseline sediment quality, draft Marine Water and Sediment Quality assessment conclusions, benthic survey results, sea bed habitat interpretation, fish and shellfish ecology baseline. Discuss way forward including implications for cable installation.
Seascape, Landscape and Visual ETG (Meeting 2)	18 th February 2022	Provide update on the progress of the LVIA, update on the tree survey and design process. Discuss the Outline Landscape Management Plan (document reference 9,18) and draft illustrative landscape proposals.
Input to Impact Assessment (post Preliminary Environmental Information (PEI) review)		
Steering Group (Meeting 3)	Q1 2021	Evidence Plan progress and ETG updates (agreed to inform the group via email).
Terrestrial Ecology and Ornithology ETG (Meeting 3)	1st July 2021	Provide project update, review of the 2021 onshore ecology survey programme, review PEIR comments and proposed responses.
Traffic ETG (Meeting 3)	13th July 2021	Provide a project update, review and update the agreement log, discuss proposed changes between PEIR and DCO submission, and receive feedback. Discuss any comments and feedback on the PEIR and agree the proposed approach to the DCO submission.
Onshore and Offshore Archaeology (Meeting 3)	14th July 2021	Provide an update on the offshore geophysical survey results, definitions for worst-case scenario, mitigation and the Written Scheme of Investigation (WSI), avoiding impacts through HDD at landfall, review of residual impacts and cumulative impact assessment (CIA). Provide an update on the onshore route refinements and

		micrositing, identification of potential, priority geophysics, geoarchaeological monitoring and assessment, trial trenching, settings and viewpoints.
Marine Mammal Ecology ETG (Meeting 3)	20th July 2021	Provide a project update, discuss the main comments on the PEIR chapter and how these will be addressed, discuss the main comments on the draft HRA and how these will be addressed, discuss the proposed approach for the draft MMMP (for UXO and piling) and the In Principle Site Integrity Plan (SIP) (document reference 9.6).
Offshore Ornithology ETG (Meeting 4)	10th August 2021	Provide a project update, discuss PEIR responses with focus on baseline surveys, non-breeding season impacts, Sandwich tern PVA, Sandwich tern flight speed, Sandwich tern avoidance rate, Sandwich tern flight height, Sandwich tern population trends, Sandwich tern displacement and mortality rates, Sandwich tern nocturnal activity, FFC SPA PVA, FFC SPA age class, GW SPA red-throated diver, GW SPA little gull.
Sea bed ETG (Meeting 4)	16th August 2021	Review stakeholder comments on the Sea bed PEIR chapters (Marine Geology, Oceanography and Physical Processes, Marine Water and Sediment Quality, Benthic Ecology, Fish Ecology). Review stakeholder comments on the Cromer Shoal Chalk Beds MCZ assessment.
Onshore and Offshore Archaeology (Meeting 4)	16th August 2021	Provide an update on route refinement and micrositing, identification of potential, priority geophysics, geoarchaeological monitoring and assessment, trial trenching, settings and viewpoints.
Terrestrial Ecology and Ornithology ETG (Meeting 4)	17th August 2021	Provide project update, provide update on ecological surveys and key ecological receptors, discuss protected species and LoNI requirements (great crested newt, bat, badger, otter, white clawed crayfish and water vole).

Water Resource and Flood Risk (Meeting 2)	6th September 2021	Provide project update, provide update to assessment findings and discuss approach to surface water attenuation at the onshore substation.
Water Resource and Flood Risk (Supplementary meeting)	30th September 2021	Stakeholder specific meeting with Environment Agency.
Water Resource and Flood Risk (Meeting 3)	10th February 2022	Stakeholder specific meeting with Lead Local Flood Authority on surface water modelling at the onshore substation.
Water Resource and Flood Risk (Meeting 4)	7th April 2022	Discuss surface water flood risk, draining options and site layout at the onshore substation and possible options for deep infiltration.
Water Resource and Flood Risk (Meeting 5)	23rd June and 24th June 2022	Provide update on site layout at the onshore substation and on surveys and site investigation.
Marine Mammal Ecology ETG (Meeting 4)	14th February 2022	Provide a project update, provide an overview of the main marine mammal PEIR comments, the ES and RIAA updates, summary of CIA screening, overview of draft Marine Mammal Mitigation Protocol (MMMP), overview of draft In Principle SIP (document reference 9.6).
Noise and Vibration ETG (Meeting 2)	24th February 2022	Provide a project update, review of site selection process/approach, 2021 baseline noise survey, update on 3D noise modelling, consideration of requirements related to noise from onshore substation site, identification of noise parameters.
Traffic ETG (Meeting 4)	31st March 2022	Provide a project update, review the agreement log (Statement of Common Ground precursor), discuss any areas where there is no agreement, provide an overview of the assessment findings.
Traffic ETG (Meeting 5)	5th April 2022	Provide a project update, review the agreement log (Statement of Common Ground precursor); review of National Highways TN03 Comments on the main compound targeted consultation; provide an overview of the assessment findings and discuss any areas where agreements can be updated.

<p>Archaeology (Meeting 5, Onshore)</p>	<p>6th April 2022</p>	<p>Provide a project update, review the agreement log (Statement of Common Ground precursor), provide an update on the findings of the geophysical survey and monitoring of GI works, provide an overview of the Outline WSI for onshore archaeology (document reference 9.21).</p>
<p>Archaeology (Meeting 6, Offshore)</p>	<p>8th April 2022</p>	<p>Provide a project update, review the agreement log (Statement of Common Ground precursor), provide an update on historic seascape characterisation, provide an update on geoarchaeological assessment, provide an overview of the Outline WSI for offshore archaeology (document reference 9.11).</p>
<p>Terrestrial Ecology and Ornithology ETG (Meeting 5)</p>	<p>30th June 2022</p>	<p>Provide update on the preliminary biodiversity net gain calculations.</p>
<p>Offshore Ornithology ETG (Meeting 5)</p>	<p>9th February 2022</p>	<p>Discussion of ongoing final assessment, with focus on baseline survey data (increased survey coverage during breeding season), revised design-based density estimates (all species), model-based density estimates (Sandwich tern), Sandwich tern design-based vs. model-based density estimates comparisons, Sandwich tern displacement during the operational phase, approach to Sandwich tern CRM, Sandwich tern PVA, FFC SPA collision risk update (gannet and kittiwake), GW SPA displacement update (red-throated diver).</p>
<p>Sea bed ETG (Meeting 5)</p>	<p>14th March 2022</p>	<p>Discuss CSIMP and review of comments, review updates and pending agreements on sea bed ETG topics, review MCZ Assessment Stage 1 Cromer Shoal Chalk Beds (CSCB) Marine Conservation Zone Assessment (MCZA) (document reference 5.6). report.</p>

MEEB ETG (Meeting 1)	1st October 2021	Discuss key stakeholder comments received on the draft outline In-Principle MEEB Plan (document reference 5.7.1) and how these have been taken account of in the updated document. Discuss the measures retained (their benefits/constraints) and understand / discuss stakeholder views on the updated document provided for review.
MEEB ETG (Meeting 2)	21st February 2022	Provide an overview of updates to the draft In-Principle MEEB Plan (document reference 5.7.1) and the proposed approach to delivering the MEEB post consent, if required. Receive feedback from stakeholders on this to feed into further maturation of the MEEB proposals.
Ornithology HRA Compensation ETG (Meeting 1)	26th January 2022	Provide summary of process followed to date: Sandwich tern, kittiwake, other species (guillemot, razorbill and gannet).
Ornithology HRA Compensation ETG (Meeting 2)	25th April 2022	Provide derogation update, compensation proposal overview, progress since last ETG and discussion of compensation proposals (Sandwich tern, guillemot and razorbill, gannet, kittiwake).
Ornithology HRA Compensation ETG (Meeting 3)	29th June 2022	Provide overview of compensation proposal, discuss compensation proposals, provide overview of application documents.

1.5.2. Wider Stakeholder Engagement

35. Thorough and effective stakeholder engagement has been a key element of the Applicant’s approach to project development. The Applicant recognises that building long-term relationships with local communities and other key stakeholders is critical to successfully developing the Projects. The Applicant intends to build on existing relationships developed through the original Dudgeon and Sheringham Shoal projects and, where possible, learn from the experience of other relevant projects in the same region.
36. The Applicant has also engaged regularly with stakeholders, where necessary in addition to the scheduled Evidence Plan meetings.
37. The Applicant has sought to ensure that consultation processes taking place outside of the formal Evidence Plan Process have been transparent, and that consultation outcomes have been recorded systematically and responded to.

38. In addition to consultation through the Evidence Plan Process, the Applicant has conducted wider stakeholder engagement and consultation through the DCO pre-application process in accordance with the requirements of the Planning Act 2008 and the Infrastructure Planning (EIA) Regulations 2017 (EIA Regulations) . These consultations have included:
- Issuing a Scoping Report (under Regulation 10(1) of the EIA regulations). The Scoping Report described the proposed development, including its proposed location, and an explanation of the likely significant effects of the development on the environment. PINS distributed the Scoping Report to Consultation Bodies (defined under Sections 42 and 43 of the Planning Act) for their consideration before providing a Scoping Opinion (as to the scope and level of detail of the information to be provided in the ES);
 - Consultation with the local community (required under Section 47 of the Planning Act). The Applicant set out how people living in the vicinity of the proposed development would be consulted in a Statement of Community Consultation (SoCC) issued to the local authorities and MMO. The local authorities and MMO reviewed the SoCC and advised on local community engagement and consultation;
 - Publicising the proposed application, including in local newspapers, at the beginning of consultation with the local community as required under Section 48 of the Planning Act, and
 - Providing Preliminary Environmental Information (PEI) to the Consultation Bodies and the local community (as described in the SoCC) for consultation. The PEI described the likely environmental effects of the Projects to help inform consultation responses during the pre-application stage.
39. The Applicant has prepared a **Consultation Report** (document reference 5.1) as part of the formal DCO application. This document summarises the consultations undertaken at the pre-application stage under Sections 42, 47 and 48, sets out responses from the separate strands of consultation, and describes how responses have been taken into account when developing the application. This document, (including the Steering Group and ETG meeting minutes and agreement logs, which are included as annexes to this document) are included to support the **Consultation Report** (document reference 5.1).
40. Each chapter of the Environmental Statement (ES) includes a table of the comments received on the Preliminary Environmental Information Report (PEIR) and where / how they have been addressed. This shows the consultation advice and responses received, demonstrates where and how they have been addressed, and also facilitates stakeholders in providing responses on the final application.
- ## 1.6 Working Principles
41. The Evidence Plan members supported the following set of working principles, which were agreed at the start of the Evidence Plan Process.

1.6.1. Principles of the Assessment Approach

42. Each topic covered by the Evidence Plan required the agreement of detailed method statements to underpin the analysis of the data available. However, it was considered useful to set out high level generic positions applicable across all topics. If more data for a particular topic was requested, beyond that agreed within the Evidence Plan, consideration was given to any cost and/or time considerations and the overall benefit to the assessment (i.e. would extra data significantly change an assessment?).

1.6.1.1. Characterisation data

43. The Applicant was required to provide ‘information as may reasonably be required for the purposes of the assessment’. Data needed to be sufficient to enable an assessment of likely effect to be undertaken, which included not only site-specific data, but also any other information used to characterise an area/population.

44. In some instances, highly detailed/precise data was necessary to develop a baseline for compliance monitoring post-consent, but this is separate from the data requirements for HRA or EIA i.e. to characterise the environment.

1.6.1.2. Data analysis and impact assessment

45. As part of the Plan detailed discussions took place to agree the following:

- Definition of terminology and approach (magnitude, sensitivity, uncertainty);
- Study areas (spatial and temporal);
- Reference populations;
- Methodologies, analysis techniques and statistical analysis tools to be used; and
- Apportionment of impact from receptors to designated sites.

46. In addition, effort was made during the pre-application process to agree, through an iterative process:

- Thresholds for screening (in/out); and
- Thresholds for likely significant effect.

47. Method statements have been produced and agreed for each topic/element of a topic, in this way each assessment has a clear audit trail and these steps can be referred to for the purpose of developing the Statement(s) of Common Ground.

1.6.1.3. Cumulative Impact Assessment (CIA) principles

48. Clear and transparent requirements for CIA (including in-combination assessments) have been provided by regulators and their advisers to give the Applicant comfort that there is consistency of approach between the projects and other NSIPs.

49. The Applicant has ensured that assessments include clear audit trails so that the basis for judgements on impacts is transparent. The development of the list of plans/projects for the cumulative assessment has been led by the Applicant and has been iterative, up to the proposed assessment cut off point (see below).

50. Spatial boundaries have taken account, both of the relevant spatial scales for individual receptors (foraging distances, migratory routes) and the spatial extent of environmental changes introduced by developments. Temporal boundaries have taken account of the project life cycle and the receptor life cycles and recovery times.
51. For an assessment to be meaningful it must be based on evidence. Where there is insufficient evidence this has necessarily precluded a meaningful quantitative assessment, as it has not been appropriate for the Applicant to make assumptions about the detail of future projects in such circumstances. Inclusion of projects as been agreed where possible within the Expert Topic Groups.

1.6.1.4. Transboundary

52. Transboundary impacts/plans or projects have been approached in the same way as any other cumulative impact and the steps above have been undertaken to ensure a transparent, auditable and proportionate assessment. The Applicant has approached transboundary stakeholders in accordance with best practice and current guidance.

1.6.1.5. Assessment 'cut-off' point

53. In order to finalise an assessment, it has been necessary to have a cut-off period after which no more projects have been included in the cumulative assessment. It was agreed that a reasonable cut-off point would be the date of receipt of comments upon the draft ES (PEI) (i.e. at the conclusion of the Section 42 consultation period) unless information (e.g. on cumulative projects or new ecological research) has become available which would significantly alter the assessment(s), which may require assessment during examination.

1.6.1.6. Review of previous decisions within the Evidence Plan Process

54. In order to move forward, the Evidence Plan Process has only revisited previous decisions when:
- There were significant changes to the Project Design (e.g. project boundary, significant change in infrastructure required (foundation size, wind turbine height, introduction of new technology or technique);
 - Fundamental errors were detected in data or a previous stage of analysis;
 - Additional evidence (e.g. from the interim results of evidence collected) such as additional species and / or habitats found to be present on the site;
 - Considerable new evidence (e.g. of an effect/behaviour etc.) was produced about which there was general consensus;
 - The change suggested would alter the conclusions; or
 - Any change could be agreed in a timescale that did not significantly affect the proposed DCO application submission date.

1.6.1.7. Approach to mitigation

55. It was important that the expectation of what has been agreed reflected the timeline for actual construction and operation and was sufficiently flexible to allow for changes in understanding over time. Final mitigation options will be chosen pre-construction. However, the potential range of mitigation has been provided in the **ES** (document reference 6.1), and it has been demonstrated that any impacts of SEP and DEP can be appropriately mitigated.

1.6.1.8. Approach to monitoring

56. As with mitigation, it was important that expectations around definition of future monitoring reflected the timeline for actual construction and operation and was sufficiently flexible to allow for changes in understanding over time.

1.6.2. Effective Ways of Working

57. It was considered helpful to adopt the use of project management tools, including agreement logs, to focus discussion on key issues, to track progress in reaching agreement and to escalate concerns from the ETGs to the Steering Group.
58. **Annex 5.2.1.2 ETG Agreement Logs** provides the agreement logs which were used by the ETGs. To assist in focussed group working and transparent decision making, the following suggestions were made for inclusion in ETG meetings:
- ETG meetings open and close with agreement log updates;
 - Each update to the agreement logs should be shared via email. A response confirming agreement should be received, confirming acceptance before any issue can be marked as agreed; and
 - The Steering Group's role is to review agreement logs and prioritise key issues for action.

1.6.3. Ground Rules

59. The following set of ground rules were developed to help ensure that best use was made of time spent in meetings:
- All documents are to be circulated a minimum of one week prior to meetings and large documents should be provided a minimum of 3 weeks prior to meetings (unless otherwise agreed) to allow sufficient time to review and seek feedback on organisational positions;
 - Steering Group agendas and documents to be shared with members a minimum of two weeks prior to meetings (unless otherwise agreed);
 - Where adequate time has been given to prepare it may be necessary to reschedule a meeting to ensure participants are able to provide useful, informed feedback;
 - Agreed deadlines for comments will be adhered to;

- Preparation for meetings should include review of documents provided and any requirement to secure views on organisational positions;
- If there is a change of organisational representation at a Steering Group or an ETG meeting, the new representative shall review previous information and organisational positions and use these as a starting point for continued discussions; and
- Participants to log time spent on the Evidence Plan.

1.6.4. Change in Evidence Requirements

60. Evidence requirements only changed following:

- The assessment of evidence provided by the Applicant identifying new areas of concern;
- Relevant evidence, information or research coming to light that would have an impact on what information is required; or
- A change to the NSIP proposal that is likely to change the potential impacts and therefore the evidence requirements to address these.

1.6.4.1. Project Data and Confidentiality

61. The Applicant published a high-level note of Steering Group meetings. Minutes from the meetings were circulated by the Applicant to Steering Group members and others on request. Records of the ETG meetings – minutes and agreement logs – were circulated by the Applicant to relevant parties in draft form for comment prior to finalisation.

62. Parties were made aware that all communications and documents may be subject to Freedom of Information (FoI) and Environmental Information Requests (EIR) as information held by public bodies which it may be judged to be in the public interest to disclose. The Information Commissioner’s Office has produced guidance for organisations on how to apply the FoI Act 2000 and EIR Regulations 2004. Documents were marked appropriately in line with guidance and legislation.

63. It was recognised that statements by participants reflect an organisational view at that time which will have been expressed on the basis of available information. They do not reflect statutory advice on an application nor a final position.

1.6.5. Roles and Responsibilities

64. Roles and responsibilities in general terms are set out in PINS Advice Note 11 – Annex H, except for the Chair of the Steering Group which was the Applicant, supported by their Lead EIA consultants. More detail was provided for the Evidence Plan participants in the following tables.

65. **Table 1-5, Table 1-6, Table 1-7, Table 1-8 and Table 1-9** outline the responsibilities of key functions in the Evidence Plan Process.

1.6.6.1. The Applicant

Table 1-5: The Applicant's Roles and Responsibilities

The Applicant:
Decides whether it needs an Evidence Plan
Discusses the need for the plan with the SNCB or SNCBs and the potential impacts on European sites in light of their conservation objectives.
Drafts and maintains the plan on an ongoing basis until it is considered complete.
Collects, analyses, reviews and shares evidence at regular intervals. Updates the relevant SNCB or SNCBs, the Inspectorate and other consenting bodies of modifications to the NSIP.
Meets with the relevant SNCB or SNCBs and others such as other consenting bodies and environmental NGOs to discuss progress and, if necessary, agree any changes to evidence requirements.
Works with the relevant SNCB or SNCBs to resolve as many issues as possible at the Pre-application stage and sets out the issues agreed, or not agreed, in the Statement or Statements of Common Ground, using the Evidence Plan as a mechanism to do this.
Finalises the Evidence Plan and uses it to inform its DCO application and any HRA report.
Emails the finalised Evidence Plan to the Inspectorate copying in all parties involved.

1.6.6.2. Statutory Nature Conservation Bodies

Table 1-6: The Statutory Nature Conservation Body Roles and Responsibilities

The Statutory Nature Conservation Body:
Engages with an Applicant at the start of the Pre-application stage to discuss the project, any charged services and potential likely impacts on a European site or European sites and their conservation objectives.
Negotiates and agrees an Evidence Plan within an agreed time period (three months or longer) ensuring that evidence demands are proportionate to the potential impacts of the proposed NSIP.
Assesses and reviews evidence provided by the Applicant, giving feedback on progress.
Proposes changes to the evidence requirements which remain proportionate and are based on findings of the evidence assessed.
Works with the Applicant to resolve as many issues as possible during pre-application, including through the Statement or Statements of Common Ground.

1.6.6.3. The Planning Inspectorate

66. The Planning Inspectorate will not attend the Steering Group meetings. However, where necessary in cases where difficult issues and discussions arise, PINS will attend Steering Group meetings, review and comment on an Evidence Plan on a case-by-case basis.

Table 1-7: The Planning Inspectorate Roles and Responsibilities

The Planning Inspectorate:
Where possible, review and comment on an Evidence Plan on a case-by-case basis.
If necessary, and when requested will seek to facilitate agreement of an Evidence Plan.

1.6.6.4. Other Consenting Bodies

Table 1-8: Other Consenting Bodies (which may also be Competent Authorities) Roles and Responsibilities

Other Consenting Bodies:
Review and comment on Evidence Plans throughout the Pre-application stage. They can become formal parties to the Evidence Plan though this is at the competent authorities' discretion.

1.6.6.5. Environmental NGOs

67. The Applicant wishes to ensure positive working relations with NGOs, but recognises that NGOs may wish to reserve their positions on matters for submission at examination and that input at an early stage may be restricted by resource constraints. The RSPB, the Wildlife Trust and Whale and Dolphin Conservation Society have been invited to participate in ETGs, as appropriate and notes from the SG meetings shared with them where requested. Other mechanisms have been sought to engage with NGOs as appropriate e.g. by consultation on agreement logs.

Table 1-9: Environmental NGOs Roles and Responsibilities

Environmental NGOs
Environmental NGOs may hold data and evidence that may be relevant to the assessment of an NSIP under the Habitats Regulations. It is, therefore, good practice for the Applicant to involve environmental NGOs at an early stage of pre-application, including by seeking their views on an Evidence Plan. Applicants are not obliged to consult environmental NGOs on the Evidence Plan and do so at their discretion.

Annex 5.2.1.1 Expert Topic Group Meeting Minutes

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Annex 5.2.1.1: Expert Topic Group Meeting Minutes

Title:	
Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects Environmental Statement Annex 5.2.1.1: Expert Topic Group Meeting Minutes	
PINS Document no.: 5.2.1.1	
Document no.: C282-RH-Z-GA-00138	
Date:	Classification
August 2022	Final
Prepared by:	
Royal HaskoningDHV	
Approved by:	Date:
Sarah Chandler, Equinor	August 2022

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1.1 Sea Bed Expert Topic Group Meeting Minutes

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (LB) - NE, [REDACTED] (WH) - NE; [REDACTED] (AP) - RHDHV; [REDACTED] (MW) - RHDHV; [REDACTED] (RS) - RHDHV; [REDACTED] Brew (DB) - RHDHV; Magnus Eriksen (ME) - Equinor, Ove Vold (OV) - Equinor; [REDACTED] (DS) - Cefas, [REDACTED] (GE) - Cefas; [REDACTED] (JS) - EIFCA; [REDACTED] (AS) - MMO, [REDACTED] (RW) - MMO; [REDACTED] - The Wildlife Trusts

Apologies: [REDACTED] (AG) - NE

From: Royal HaskoningDHV

Date: 30/10/2019

Location: Equinor, 1 Kingdom Street, London, W2 6BD

Copy:

Our reference: PB8164-RHD-ZZ-ZZ-MI-PM-0005

Classification: Project related

Enclosures: ETG meeting slides

Subject: DEP and SEP Seabed Expert Topic Group meeting 1

Number Details

Action

Introductions, purpose of the meeting and project description

- | | | |
|---|---|--|
| 1 | The scoping report for the Sheringham and Dudgeon Extension Projects was submitted to the Planning Inspectorate on 8 th October 2019. ME summarised the project, consenting approach and progress of the ongoing geophysical survey of the offshore cable corridor options. Please refer to ETG meeting slides. | Issue Seabed ETG meeting slides:
Equinor |
| 2 | RW asked why Equinor has chosen not to route the export cable corridor through the Wash and North Norfolk Coast SAC. ME stated that early discussions had suggested that routing through the SAC would be difficult (on account of the designated seabed habitat subfeatures of the site, including mixed sediments; as well as the experience from the ongoing Hornsea Project Three consenting process) and that a route through the MCZ might be preferable/acceptable depending on the outcome of the site specific survey work and studies. LB stated that NE is not opposed in principle to a route through the SAC, but noted that there is a lack of seabed habitat data in the SAC (east). TD stated that the SAC is designated for geogenic reef. JS stated that there are fisheries closures in the MCZ to protect chalk reef, and fisheries closures in the SAC to protect boulder/cobble reef. | Provide Equinor with any information showing the location and extent of geogenic reefs in the Wash and North Norfolk Coast SAC (e.g. GIS shapefiles): TWT and EIFCA |
| 3 | TD asked if the SNCBs were consulted on the (Norwich Main) grid connection decision and, given the issues with bringing a cable through the North Norfolk coast, whether it is worth considering an alternative. ME explained that several grid connection options were considered as far north as Lincolnshire and further south of Norwich. However, these would require a significantly longer cable route that would require a DC rather than AC solution, which would not be economically viable. Bringing the cables through the Wash would also be challenging. | |

Number Details

Action

Summary of the baseline environment, planned surveys and studies, and key issues

4	DB described the existing evidence to be used in the assessment of Marine Geology, Oceanography and Physical Processes. Please refer to ETG meeting slides.	
5	RS described the existing evidence of seabed habitats. Regional datasets suggest the dominance of coarse sediment habitats with areas of subtidal chalk in the nearshore area within the MCZ. Relevant detailed surveys include those completed for Dudgeon and Sheringham Shoal arrays and cable routes, Hornsea Three seabed surveys where they cross the project export cable route options, and existing surveys within the MCZ. Current information gaps are a more detailed understanding of seabed habitats within the proposed project areas.	
6	RS summarised fish and shellfish ecology information, available from the past projects including Sheringham Shoal and Dudgeon targeted surveys. Potential spawning and nursery areas have been identified in the scoping study area (including herring and sand eel). Please refer to ETG meeting slides.	
7	DB - It is proposed that coastal processes will be assessed via conceptual model using existing resources, including the data collected for the Sheringham and Dudgeon projects. No numeral modelling required. Please refer to ETG meeting slides.	
8	RS - Geophysical surveys to characterise the seabed are under way and ground-truthing surveys are planned for next year with the standard suite of methods including benthic grabs (PSA, chemical analysis, infauna analysis) and camera/video transects. The locations of ground-truthing stations will be informed by geophysical survey results. On the basis of the surveys offshore seabed habitats will be characterised.	
9	RS - Fish and shellfish ecology will be characterised using the Dudgeon and Sheringham Shoal survey data, benthic surveys, commercial fisheries landings data and any information that comes through the consultations. Potential herring spawning areas will be identified using benthic survey results and other sources (e.g. larval surveys). Where acoustically sensitive fish and shellfish receptors are identified (e.g. herring/herring spawning), underwater noise modelling will be undertaken to inform the assessments. RS stated that drop down camera surveys could provide information, albeit limited, about the less mobile fish / shellfish species in the area. GE stated that grab sampling PSA results could provide information with regards to the herring spawning habitat potential and sand eel habitat.	
10	AS queried whether the fish survey information from Sheringham Shoal (primarily 2005) and Dudgeon (2008) were recent enough to use to inform current fish and shellfish ecology. RS stated that their proximity was probably sufficient and that significant changes to the community since the surveys would not be expected. Cefas (GE) stated that they agree that they would not expect the community to have changed significantly (bearing in mind that species	Ensure historical fish survey data limitations are included in the EIA: Equinor

Number Details

Action

	abundance will vary over time) and that additional fish surveys will not be required to support the assessment. However, Cefas stated that the assessment has to acknowledge limitations of the existing data. GE also stated that fish surveys from previous projects encountered access problems on cable routes due to fishing activity, resulting in some stations being missed. This limitation should also be acknowledged.	
11	AP stated that the scope for the benthic surveys is being prepared and will be consulted on with the stakeholders.	Prepare benthic survey scope for consultation prior to survey mobilisation in 2020: Equinor
12	<p>LB stated that as part of their scoping opinion NE will request that trenching / cable installation assessment is undertaken to identify where cable protection is required.</p> <p>LB stated that based on the recent experience with the Hornsea Three Project, NE would expect that geotechnical investigations (boreholes) will be required inside the designated sites to inform a cable installation assessment.</p> <p>In order to undertake such a survey a marine licence will be required (including seabed impact of jack-up barge used to take borehole samples). RW stated that the application would need to show that the jack-up would not be on areas of chalk reef.</p> <p>LB stated that it is important that the geotechnical survey design is targeted using geophysical and benthic survey data to determine the depth of sediment where the applicant intends to trench and bury cable. Hornsea Three had insufficient geotechnical data in the designated sites, arbitrarily located / regularly spaced.</p> <p>LB advised that the project team should familiarise themselves with NE's response to the cable assessment provided for the Hornsea Three Project where NE were of the view that not enough data was collected nearshore and the boreholes were too far apart. If existing information is used to inform the assessment (i.e. boreholes are not undertaken to inform the EIA) this will need a robust justification.</p>	<p>Review NE's response to the cable installation assessment provided for the Hornsea Three Project: Equinor</p> <p>Review all available geophysical and other relevant data in the MCZ with regard to understanding the dynamics of the surface sediment layers, and to inform the requirement for geotechnical investigations of the cable route (see also minute No.17): Equinor</p>
13	DB stated that geophysical surveys can provide different resolution data depending in particular on the sub-bottom profiler used, survey results might not identify/resolve areas with thin veneer overlying shallow geology / bedrock.	
14	ME stated that a post-construction cable assessment of the Dudgeon export cable (depth of burial) could be used to provide better understanding of the seabed in the area. This data shows that the Dudgeon cables are buried <0.3m at only three locations i.e. the Dudgeon export cables were installed without any significant burial issues.	Share cable depth of burial survey with the ETG: Equinor
15	ME suggested that trenching or use of rock protection might not be required and that surface lay could be an option, due to limited potential	

Number Details

Action

	for interaction with trawling gear or anchors. LB stated that in principle NE is not against a 'no cable protection solution' but stated that they would be concerned of the risk of the OfTO requiring burial post-consent and subsequent risk to the designated site conservation objectives. NE would also be concerned about later exposure of buried cable requiring protection post-consent.	
16	JT – EIFCA have closure to trawling agreements in place within the MCZ. These are being extended offshore from the existing closure to cover ~90% of the MCZ area and also parts of the Wash and North Norfolk Coast SAC, to protect seabed habitats. EIFCA will provide shapefiles for these closures to Equinor.	EIFCA to send trawling closure shapefiles to Equinor.
17	AP stated that no significant problems were encountered during installation of the Dudgeon offshore export cables and that the current monitoring results are favourable and provide good understanding of the seabed in this area (see also minute No.12). AP recognised that it is good practice to base assessment on the worst case but lessons learnt from the Dudgeon Project should not be ignored. Based on the existing results it can be assumed that exposed chalk is not present in this area. AP also stated that historic geophysical datasets (starting from 2005) are available. RHDHV will look at the data timeseries as part of the assessment to assess changes over time, as an indication of sediment mobility/stability on the area. AP confirmed less information is available in the Bacton area.	
18	Cefas (DS) stated that for the coastal processes assessment, data sets validation will be needed and climate change should also be taken into account. Further justification is needed in order to scope out impacts associated with wave propagation during the construction, transboundary impacts and CIA. These points will be made in Cefas' scoping opinion.	
19	RS asked whether NE could clarify the status of planned condition monitoring surveys of the MCZ in 2020. LB stated that NE is not able to share details of planned surveys as the funding is not fully agreed with the partners. In fact it should not be assumed that extensive MCZ surveys will be completed in 2020.	
20	ME stated that Equinor could provide funding and support to NE but they would like to be part of the survey planning process in order to understand what benefit their contribution might be to the project consenting process. This would require more cooperation between Equinor and NE.	
21	RS summarised the extent of geophysical survey coverage of the MCZ as of 2015 with reference to ETG meeting slide 24. Cefas (JE) agreed to provide more information on the MCZ surveys.	Cefas (GE) to provide more information on historical MCZ surveys to Equinor.
22	LB stated that several surveys are under way in the MCZ but NE is not able to provide timeframes for when the survey results are available. However, the MCZ condition assessment is due to be completed at the back end of the next year but the surveys might not be published.	LB provide advice to Equinor (ME) on the planned surveys (in confidence).

Number Details

Action

	LB committed to provide advice to Equinor (ME) on the planned surveys in confidence.	
	LB stated that NE “know where the chalk is located in the western area”.	
23	JS stated that EIFCA have completed a sidescan sonar survey of the inshore third of the MCZ and would be happy to share the results when available. JS requested RHDHV to send the offshore scoping area shapefile to determine if the survey area covers the cable corridor options. ME agreed but noted that the shapefile should not be shared widely and sharing with any third parties would require approval from Equinor.	Send Cefas the offshore scoping area shapefile: Equinor Share the results of the survey with Equinor when available: EIFCA
24	TD stated that the Wildlife Trust would like: <ul style="list-style-type: none"> To see the Dudgeon cable route pre and post-installation survey results for review A staged approach to surveys starting with geophysical survey, which will inform benthic survey requirements. These surveys should be combined to assess seabed habitats and an understanding of sediment veneers over chalk. Survey scopes / method statements should be made available for review. To understand the grid connection selection process and whether alternative options were considered to avoid routing through the MCZ. 	Equinor to provide (as described) to The Wildlife Trust
25	RW requested that details of the project cable route geophysical survey results be shared with the consultees in advance of the next Seabed ETG.	Distribute survey results to ETG members before next ETG: Equinor
26	JT requested that potential impacts from electromagnetic fields be included in the assessment.	Equinor to include EMF impact assessment in PEI / ES.

Arrangements for future meetings

27	ME suggested that the next meeting should be after the results of the export cable geophysical surveys are available and interpreted. Although we cannot be sure when results will be available, it is likely that they will be ready for a meeting in March 2020. ME proposed to invite group members to a follow on meeting in March but subject to change if required due to other commitments. This approach was agreed.	ME to schedule a meeting provisionally in March 2020.
28	TD / RW suggested that relevant papers and studies that will be referenced in the subsequent ETGs (in addition to survey results) should be circulated in advance for pre-read, along with a list of any specific questions the applicant would like to be answered at the meeting.	Equinor to provide reference material and any specific questions in advance of subsequent ETGs.

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (LB) – Natural England; [REDACTED] (JT) – Natural England;
[REDACTED] (TD) – The Wildlife Trusts; [REDACTED] (JS) – EIFCA; [REDACTED]
(SC) – EIFCA; Sarah Errington (SE) – MMO; Hope Armstrong (HA) – MMO;
[REDACTED] (LC) – Cefas; [REDACTED] (CR) – Cefas; [REDACTED] (JE) –
Cefas; [REDACTED] (DS) – Cefas; [REDACTED] (ME) – Equinor; [REDACTED] (OV) –
Equinor; [REDACTED] (EO) – Equinor; [REDACTED] (AP) – RHDHV; [REDACTED]
[REDACTED] (RS) – RHDHV; [REDACTED] (DB) – RHDHV; [REDACTED] (MW) – RHDHV

Apologies: [REDACTED] (RP) – Natural England; [REDACTED] (FL) – Natural England; [REDACTED]
[REDACTED] (GE) – Cefas; [REDACTED] (MG) – Cefas

From: Royal HaskoningDHV
Date: Tuesday, 02 June 2020
Location: Skype meeting
Copy:
Our reference: PB8164-RHD-ZZ-OF-MI-PM-0012
Classification: Project related
Enclosures: ETG meeting slides

Subject: DEP and SEP Seabed ETG2

Number	Details	Action
Project Update		
1	<p>ME presented project update. The landfall decision was announced in May with Weybourne chosen as the preferred location. The landfall selection was the result of a technical feasibility study and analysis of the geophysical survey campaign results. Chalk outcrops were identified along both export cable corridors. The outcrop along the Bacton route is located 2-3km offshore and within 1km from shore in the Weybourne corridor. Avoiding the chalk outcrop, by using HDD, is considered to be more achievable along the Weybourne route.</p> <p>Equinor has submitted a Statement of Community Consultation (SoCC) to major stakeholders for review. Community consultation planned to be undertaken in late June via a series of virtual webinars.</p>	RHDHV to issue ETG meeting slides with these minutes.
2	<p>A geophysical survey of the extension array areas and interlink cable corridors was completed 27th May and reporting is currently being progressed with a target date of end June/early July. Fishing gear was encountered in the survey area which made surveys more difficult and caused some delays.</p> <p>Minor changes were made to the routing of interlink cables survey to avoid the shallowest area of Cromer Shoal.</p> <p>Equinor and RHDHV are currently working on finalising the Project Description envelope, which will inform the preparation of the PEIR.</p>	
Actions from the last meeting		

Number	Details	Action
3	<p>RS stated that the majority of actions from last meeting were completed and most of the documents were issued as agreed (please see slides for further details).</p> <p>RS confirmed that a detailed benthic survey scope will be provided to the ETG for review once array and interlink cable geophysical data is analysed. For now only the outline scope has been shared.</p> <p>JE stated that the requested 2019 dropdown camera survey of the Cromer Shoal MCZ will be available soon and asked Natural England to provide an update.</p> <p>SC agreed to share existing closure areas following the meeting (having already provided areas 34 and 35).</p> <p>ME confirmed that he will share updated offshore scoping area with Cefas.</p> <p>ME still waiting for agreement to share details of the grid connection selection with the ETG.</p>	<p>Cefas/Natural England to provide drop down camera survey results when available.</p> <p>SC agreed to share existing closure area shp file following the meeting.</p> <p>ME to share offshore scoping area with Cefas.</p>
Cable corridors geophysical survey characterisation		
4	<p>RS explained that two landfall options were still being considered for the project when this presentation was prepared in April. Therefore assessment results for both options are included in the presentation (please see slides for further details). The ETG was asked if they wanted to review the Bacton corridor.</p> <p>LB stated that Natural England is happy that only Weybourne is discussed in detail during the meeting, however Natural England is expecting that Equinor will submit a full report concerning landfall selection with PEIR to explain why this route was chosen. Equinor confirmed that this would be the case.</p>	
5	<p>DB explained data collection methods employed during the surveys and presented details of seabed characteristics along the Weybourne corridor (please see slides for further details).</p>	
Dynamics of the surface sediment		
6	<p>DB presented the results and findings of an investigation of surface sediment dynamics along the export cable corridor (please see slides for further details).</p> <p>The investigation concluded that the lag of coarse sand and gravel present along much of the corridor is not mobile. Areas of Holocene sand are mobile with sediment transport by tidal currents. Sheringham Shoal post-installation surveys of the export cable route are evidence of the static nature of the lag because the cable trench is preserved and remains unfilled with sediment in the sand and gravel lag areas. In mobile sand areas the cable trench has filled in. Comparison of Dudgeon 2013 and</p>	

Number	Details	Action
	<p>2018 bathymetry data also shows a static seabed except in areas with Holocene sand.</p> <p>DB asked the ETG if they agree that the coarse lag is effectively static and not subject to sediment transport.</p> <p>LB agreed that the lag is likely static but the impact assessment will need to take in to account the potential for recovery of this seabed habitat after disturbance, including seabed morphology / potential scarring, and benthic communities. ME stated that the feasibility of using different installation techniques along the cable corridor will be assessed to find most suitable ones.</p>	
Geotechnical survey requirement		
7	<p>DB proposed that the collection of pre-application geotechnical data should not be undertaken because it would only marginally improve the evidence base short of sampling every few metres along the cable corridor.</p> <p>DB stated that the resolution of the sub-bottom profiler is insufficient to provide reliable information about the thickness of lag along most of the cable route, but that based on existing boreholes and vibrocores it is 0.3m to 1.25m thick resting directly on chalk. A degree of expert judgement would be required to define the stratigraphy across wider areas using all the available evidence, including the Dudgeon cable burial, which runs parallel and close to the Weybourne corridor (presented).</p> <p>DS suggested that additional cores could be collected nearshore where existing data is missing. DB responded that that would only marginally improve the evidence base. RS suggested that at least some of this area is recognised as outcropping chalk and therefore would not need to be further investigated.</p> <p>LB stressed that Natural England will require a cable installation assessment to be delivered as part of the DCO application and any data gaps will be considered during the examination process. LB stated that while she would not say that further geotechnical investigations are required, it is up to the applicant to satisfy themselves that they have sufficient certainty about cable burial success and a realistic worst-case amount of cable protection required. LB suggested reviewing the cable installation assessments and comments made for Norfolk Vanguard and Hornsea Project Three. ME asked if Natural England would accept the project stating total length of the cable requiring protection with the percentage of the cable in the MCZ. LB stated that the project must provide sufficient information to support the assessment. This approach might be acceptable, however the stakeholders will need to be comfortable with the level of the information provided.</p> <p>TD stated that the Dudgeon post-installation cable depth of burial survey data presented was collected shortly after installation, and that further protection may be required over the project lifetime in mobile sand areas.</p>	<p>Equinor / RHDHV to consider their approach to preparing cable installation assessments with reference to other relevant project examples.</p> <p>DB (as part of the above) to check if there is sufficient information to establish thickness of the mobile bedforms (and any thicker areas of coarse sediment lag).</p>

Number	Details	Action
	<p>Are these areas where geotechnical investigations could be useful? ME stated that the latest survey data collected for Dudgeon suggested there are no exposed cable areas. DB suggested that the depth of most of the mobile sand areas can be mapped and agreed to check if there is sufficient information to establish thickness of the mobile bedforms. RS confirmed that this would be considered as part of the cable installation assessment. AP questioned whether although mobile, can we say that the entire sand unit moves? DB stated that mapping the migration rate is very difficult as individual bedform features are difficult to identify and trace through time.</p>	
Method Statement		
8	<p>DB presented main points on the data collection (please see slides for further details).</p> <p>RS confirmed that benthic survey will take place over the summer and will include seabed sediment sampling and seabed imagery. DB stated that all data collected for existing sites will be utilised for the assessment including hydrodynamic and sediment plume modelling.</p> <p>DS enquired if the metocean data will be used. DB stated the assessment will consider the most recent data we can obtain.</p> <p>LB stated that Dudgeon and Sheringham Shoal OWF post-construction data seems to be missing from the list of documents to be reviewed. DB explained that this data will be used. DB to ensure that the post-construction data and metocean data will be included in Method Statement.</p> <p>DB asked if the ETG agrees with the proposed baseline data to be used for the assessment.</p> <p>JE stated she would want to see and approve the benthic survey design. RS stated that preliminary proposed sampling locations are available for the cable corridor based on the analysis of the geophysical data (Envision report provided). The project is still waiting for the cable array data to finalise the design of the survey which will be shared for review with the ETG once ready. This information should be available in July. JE and LB agreed that they will require two weeks to review this document.</p>	<p>DB to ensure that the post-construction data and metocean data is included in Method Statement.</p> <p>Project to share benthic survey design document in July.</p>
9	<p>DB presented the worst case scenarios for the assessment and stated that the impact assessment methodology will use a source-pathway-receptor conceptual model (please see slides for further details). DB stated that numerical modelling will not be required as part of the assessment and that modelling completed for the Dudgeon and Sheringham Shoal projects will be used. TD stated that the levels of assessment should be more detailed as the MCZ is now designated. DB stated that the existing modelling and assessments are in close proximity and were very conservative, and therefore are still considered to be appropriate.</p>	

Number	Details	Action
	DC asked about the cumulative impact assessment (CIA) methodology and if it will include the existing Dudgeon and Sheringham Shoal wind farms. DB confirmed it will.	
10	<p>LB stated that the existing modelling was developed based on site pre-construction data and Natural England would like to understand if the modelling was fit for purpose and the modelling results are supported by results of the post-construction surveys. DB stated that this will have to be investigated. Post-construction monitoring collects seabed not metocean data, and therefore it will be difficult to establish a link to metocean changes. AP added that sediment transport and scour extent information should be available.</p> <p>DS questioned the extent of the zone of influence and DB responded that zone of influence is yet to be defined based on metocean data. DB confirmed that CIA will use expert judgment and no modelling will be undertaken.</p>	DB to investigate if the existing model results are confirmed by the data collected during post-construction surveys and to evidence this in the assessments.
11	DB presented the list of impacts identified in the Method Statement that will be assessed and asked for clarification on the Scoping Opinion as to whether an assessment of impacts on the hydrodynamic regime during construction is required, since the worst case will be operational impacts. AP stated that the worst case effects during the construction period will be clearly defined, but the magnitude of effect would be incremental up to the end of construction and operation. DS stated that hydrodynamic impacts should be covered during the impact assessment but she will provide more information following the meeting.	DS to provide rationale why hydrodynamics should be scoped into the assessment.
12	<p>DB presented the approach to the CIA. LB stated that she noticed that the 5 Tier approach provided by Natural England and the JNCC is being used as part of the assessment, stating that this will be updated to include some Tier 5 projects if PEIR has been submitted with sufficient information to make an assessment. Natural England will provide the project team with an update on the approach.</p> <p>DS asked what the zone of influence is for the CIA. DB responded that this will be determined using expert based assessment.</p>	LB to provide update to 5 Tier CIA methodology.
Benthic Survey		
13	RS presented a comparison between the cable corridor geophysical survey interpreted seabed and the Cromer Shoal MCZ protected features map, showing that there is a good level of agreement, although the geophysical survey could not distinguish between areas of subtidal coarse sediment and a possible area of subtidal mixed sediments suggested by the MCZ feature map.	
14	RS presented the Cromer Shoal MCZ feature maps based on the Site Assessment Document submitted as part of Net Gain's final	Natural England to provide additional

Number	Details	Action
	<p>recommendations for a suite of MCZs in August 2011 (Net Gain, 2011), and compared them to more detailed feature maps published in the Cromer Shoal Chalk Beds rMCZ Post-survey Site Report (Defra, 2015). Both sets are included on the Defra MAGIC website. RS asked if the later feature map takes precedence, since the maps do not agree with each other.</p> <p>LB responded that the data sets were based on surveys undertaken for MCZ designation and therefore are high level. LB stressed identifying of the habitats should be based on the site specific information not existing information, although site qualification and 2013 survey information can be used as context in the assessment. Natural England is in process of undertaking evidence gathering exercises and further information might be available by the end of this financial year and should be used in the assessment. TD stated that subtidal chalk feature does not have to be at the surface to be a feature of the site and therefore she disagrees the chalk feature was only identified near the shore and extends further and covers most of the area – this position is considered necessary so as to be consistent with advice given to fisheries. LB stated that the assessment needs to make a distinction between outcropping and subcropping chalk features.</p>	<p>information regarding chalk distribution when available (by the end of this financial year).</p>
15	<p>RS summarised the method that has been used to classify seabed types in the export cable corridor based on geophysical bathymetry and side scan sonar data, and the preliminary classification of export cable corridor benthic habitats (subject to ground truthing), and presented summary maps. RS confirmed that no biogenic reefs have been identified in the export cable corridor. Following a question from TD about the presence of clay outcrop areas, RS stated that these have been identified by historical surveys outside and to the west of the export cable corridor. These features were not identified in the cable corridor inside the MCZ but two areas have been identified in the corridor close to the SEP array area. These will be investigated by the benthic survey later this year if they remain in the cable corridor now the Bacton route is not being pursued.</p>	
16	<p>The high level benthic survey scope provided to the ETG was presented (see slides for further details).</p> <p>RS presented a slide summarising the draft benthic survey sampling strategy. Following the landfall decision the survey will cover Weybourne corridor only. RS confirmed that the Project will share the final benthic survey design with the ETG for approval once the extension array areas and interconnector cable sampling design has been determined. JE requested that the survey targets the possible area of subtidal mixed sediment, including enough benthic survey stations to enable a characterisation of this habitat. RS confirmed that this will be the case. JE and LB agreed that they will need to see a final scope to confirm if they are happy with the investigations.</p>	<p>Project to share benthic survey design document in July.</p> <p>Natural England and Cefas (via MMO) to sign off benthic survey plan within 2 weeks if sufficiently advanced</p>

Number	Details	Action
		notification is provided.
17	<p>RS presented details of the proposed sample analysis scope. JE suggested that using Hamon grab might disturb sediment surface and therefore impact the accuracy of chemical contaminant analysis. JE suggested that Day grab be used, although it might make more difficult to take gravel sediment samples. RS stated that use of a Day grab at a subset of stations for chemical analysis is being proposed. This will be described in the final survey design document.</p> <p>RS pointed out that the proposal is not to undertake chemical analysis for organotins or polychlorinated biphenyls (PCBs) because given the distance of the project from any current and historical sources, they are highly unlikely to be present. JS and JE stated that there might be whelk fishery present in the area. JS stated that she has anecdotal information from members of fishing community that the whelk community was affected by installation of pipelines and that organotins could be present at depth. JE stated that organotins should not be excluded from the suite.</p> <p>JS checked the location of the whelk fishery and stated that it is partly within the MCZ but not within the cable corridor. It was agreed that issues of organotins will be investigated further.</p> <p>RS presented to benthic reporting scope a (see slides for further details) and asked if the ETG agrees with the proposed sample analysis and reporting. The ETG agrees with the proposal (subject to clarification on organotins) but LB stated this subject to change if new information comes to light.</p>	<p>RS/ME to investigate issue of organotins.</p> <p>JE to share available whelk fishery data</p>
MCZ Screening		
18	<p>RS presented and explained MCZ Assessment Screening results (see slides for further details), concluding that only the Cromer Shoals Chalk Beds MCZ has been screened in for further assessment, and the habitat features and pressures that will be screened in.</p> <p>LB stated it is not clear why bedload sediment transport was screened out. JE stated that in order to screen out re-mobilisation of the contaminated sediment more information with regard to the features present in the designated sites will need to be provided.</p> <p>DB agreed that bedload sediment transport should be scoped in for further assessment.</p> <p>It was agreed that a written response on the MCZA Screening Report will be provided by Cefas, The Wildlife Trusts, Natural England and the MMO. ME to follow up on timescales for comments following the meeting.</p>	<p>ETG consultees to provide written response on MCZA screening.</p> <p>Project to review and revise the MCZA Screening Report.</p> <p>ME to confirm the timescales for receipt of comments.</p>
19	<p>RS presented and explained provisional HRA Screening results (see slides for further details), noting that the report has not been finalised and shared</p>	<p>Project to issue the HRA Screening</p>

Number	Details	Action
	<p>with the ETG. The draft report concludes that no sites are screened in for Likely Significant Effects.</p> <p>TD stated that small seagrass areas in the Wash and North Norfolk Coast SAC should be taken into consideration, however she agreed sediment the dispersion rate wouldn't be significant.</p> <p>There were no other specific comments on the draft outcomes, but the ETG will review the report and provide comments.</p>	<p>Report to the ETG for comment.</p>
20	<p>RS presented a draft MCZ cable installation constraints matrix intended to inform cable installation engineers of the relative sensitivity of MCZ habitat features to different installation techniques (see slides for further details).</p> <p>LB stated that all features should be classified as being of 'higher sensitivity' to cable protection.</p> <p>She also stated that subtidal coarse sediment and subtidal mixed sediment habitats should be reclassified as of higher sensitivity to ploughing. RS suggested that the Dudgeon cable was installed with a non-displacement plough which has not left a trench. LB agreed but stated she would need to see evidence of recovery of the benthic community following this installation technique.</p> <p>RS asked if Natural England makes any distinction between the relative importance of designated Features of Conservation Interest (FOCI) and designated Broadscale Marine Habitats. LB stated that there is no distinction in terms of relative importance, and that at the moment Natural England is not ready to provide more feedback to this assessment.</p> <p>TD stated that the matrix presented is a useful initial tool to facilitate an honest discussion and agreed with Natural England's initial feedback.</p>	<p>MMO, Cefas and EIFCA to provide comments on the MCZ Screening report (Natural England have provided their comments)</p>
Further meetings		
21	<p>ME stated that the project timeline is under revision, however the current position is that PEI will be submitted in Q1 2021.</p> <p>It was agreed that another meeting would be useful in advance of PEI submission to run through the outcomes of the benthic survey and updates of some of the engineering aspects of the project, particularly cable installation. TD stated that it is important to advance the conversation about the impacts on the MCZ.</p>	<p>Project to propose the content and timing of the next ETG.</p>
AOB		
22	<p>MMO, Cefas and EIFCA to provide comments on submitted documents (Natural England have provided formal comments).</p>	<p>MMO, Cefas and EIFCA to provide comments on submitted documents</p>

Note / Memo

**HaskoningDHV UK Ltd.
Industry & Buildings**

To: Jessica Taylor
 From: Richard Stocks
 Date: 17/07/2020
 Copy: Louise Burton
 Our reference: PB8164-RHD-ZZ-OF-NT-Z-0007
 Classification: Restricted
 Checked by: Adam Pharaoh, David Brew, Magnus Eriksen

**Subject: Dudgeon and Sheringham Shoal Extension Seabed ETG2 (2 June 2020) -
Response to Natural England's Advice**

Natural England Reference: 317511

Dear Jessica,

Thank you for providing your written advice on the Dudgeon and Sheringham Shoal Extension Projects Second Seabed Expert Topic Group Meeting and accompanying documents under Natural England's Discretionary Advice Service (DAS). This note sets out the response of the project team to that advice.

Responses to Questions Posed to the Second Seabed ETG meeting, 02 June 2020

Ref.	Question	NE Response
2.1	Does the ETG agree that the coarse lag is effectively static and not subject to sediment transport?	Natural England agrees with this statement. However, this will need to be taken forward in terms of potential recoverability and infilling of any trenches that may be done during cable installation, as well as considering impacts to benthic communities and recoverability.
	Project Response: The assessment will consider evidence of recovery of the physical seabed and benthic communities following Sheringham Shoal and particularly Dudgeon wind farm cable installation, as well as referencing other available literature and case studies.	
2.2	Does the ETG agree with the proposal not to acquire further geotechnical data?	Natural England will be requesting that a cable installation/trenching document is produced and provided as part of the application. This will need to consider the available cable installation tools and the ability to bury the cables to the optimum depth and remain buried over the lifetime of the project so as to ensure that cable protection is not required/minimised as much as possible within the Cromer Shoal MCZ. The onus is therefore on you as the Applicant to determine whether or not there is enough evidence to provide a realistic figure for the amount of cable protection that may be required within MCZ. This has been done by both Hornsea Project Three and Norfolk Vanguard so looking at these documents would be helpful in deciding if you will need further information. Please note, however, that there is a risk if you do not collect enough data now and it is subsequently identified during examination that insufficient information was collected, for example, to inform any stage 2 MCZ assessment. Natural England will be able to provide further advice once the cable installation document has been provided.

Ref.	Question	NE Response
		Project Response: A cable installation/trenching document (i.e. a CSCB MCZ Cable Specification, Installation and Monitoring Plan / CSIMP) will be produced with reference to the Hornsea Project Three and Norfolk Vanguard examples, and provided as part of the application (noting that NE prefer the NV approach to the documentation, see 4.2 below). As part of the assessment the applicant will assess the adequacy of existing data. The assessment and documentation will be shared with the Seabed ETG members for comment.
2.3	Does the ETG agree that the proposed baseline data collection is adequate?	<p>Natural England will provide comment on this once we have had the opportunity to review the survey design for the summer 2020 program.</p> <p>Natural England would expect post-construction surveys for Dudgeon and Sheringham Shoal OWFs and existing MetOcean data will also be used in this analysis.</p> <p>Please let us know as soon as possible when we are likely to receive the survey design, including sampling points, to enable us to ensure that we have sufficient resource and ability to turn our response around within 2 weeks. If advance notice is not provided we cannot guarantee we will be able to respond within 2 weeks.</p>
		Project Response: We will share the benthic survey design with the Seabed ETG for comment before mobilisation. It is currently anticipated that a draft will be made available for review on 22 nd July 2020. In addition, post-construction surveys for Dudgeon and Sheringham Shoal OWFs and existing MetOcean data will also be used to inform the assessment.
2.4	Does the ETG agree on the adequacy of using a conceptual approach supported by existing numerical modelling at Dudgeon and Sheringham Shoal to assess impacts?	<p>Natural England notes that the modelling that is being proposed to be used is that conducted prior to construction but as both projects are now constructed we question whether this modelling is fit for purpose.</p> <p>Natural England notes from the call on 02 June 2020 that you will incorporate information to show that the modelling is supported by post construction surveys and welcome this step. However, we will provide further comment on the adequacy of this approach once the method statement has been updated to reflect this.</p>
		Project Response: Noted. The method statement will be updated and shared for further comment.
2.5	Does the ETG agree on the initial list of scoped in activities for cumulative impact assessment?	Natural England would recommend that TIER 5 projects should be included if a PEIR has been undertaken. This has been done for Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three.
		Project Response: Noted. It is understood from the ETG meeting that Natural England will provide the project team with an update on the approach.
2.6	Does the ETG agree that the Cromer Shoal Chalk Beds MCZ Subtidal Chalk FOCI is restricted to the areas identified by the geophysical survey?	Natural England does not agree with this statement. We would agree that areas of current outcropping chalk are likely to have been identified. However, across much of the site there are areas of subtidal chalk lying underneath a thin veneer of sand/sediment which we also consider should be protected as outcropping chalk. This is in accordance with our advice on fishing activities.

Ref.	Question	NE Response
	<p>Project Response:</p> <p>It is the applicant's understanding that a precautionary approach is being taken where subcropping chalk could become outcropping chalk (and therefore the subtidal chalk FOCI habitat) as a result of the movement of the sediment veneer. NE agrees that the coarse lag covering most of the export cable corridor is effectively static and not subject to sediment transport (Ref 2.1). Therefore this would apply to areas of Holocene sand which is mobile under existing tidal conditions, where there is potential for subcropping chalk to be exposed.</p> <p>Parts of the Holocene sand in the export cable corridor are up to 3m thick, thinning towards its edge. Where historic vibrocores have been recovered in Holocene sand areas they show that the sand lies directly on top of immobile coarse lag (subcropping chalk). It is expected that this is the case for most of the Holocene sand seabed in the cable corridor, but geophysical data does not prove this because the thin coarse veneer beneath the Holocene sand cannot be resolved by the sub-bottom profiler. Hence it is possible that in some areas beneath the Holocene sand that chalk exists without an overlying coarse lag. Therefore, there is a low risk that in some areas movement of the sand at its edges could expose previously outcropping chalk and this will be considered appropriately in the assessment.</p> <p>We note that NE stated in the ETG meeting that the assessment needs to make a distinction between outcropping and subcropping chalk features. We agree with this advice.</p>	
2.7	Does the ETG agree with the proposed approach to benthic survey sample analysis?	Natural England broadly agrees with the proposed approach to benthic surveys, however, we will provide final comment once we have received and reviewed the final survey design.
	Project Response: Noted. It is currently anticipated that a draft will be made available on 22 nd July 2020.	
2.8	Does the ETG agree with the proposed approach to benthic survey reporting?	Natural England agrees with the proposed approach to benthic survey reporting. However, we have the right to change our position on this if new evidence comes to light.
	Project Response: Noted.	
2.9	Does the ETG agree with the approach to MCZ Assessment Screening and draft outcomes / effects to be assessed?	Natural England does not agree that the following impacts should be screened out: <ul style="list-style-type: none"> • Effects on bedload sediment transport
	Project Response: Noted. The MCZ Assessment Screening Report will be revised and resubmitted.	
2.10	Does the ETG agree with the HRA Screening draft outcomes (report to follow)?	Natural England will comment on this once the report has been provided.
	Project Response: Noted. The HRA Screening Report will be submitted for comment.	

Detailed Comments on Benthic Survey Scope of Work Summary. Ref: PB8164-RHD-ZZ-OF-NT-Z-0001

Ref	NE Comment	Project Response
3.1	Particular note should also be made to records of non-native species.	Records of non-native species will be reported.
3.2	<p><u>Project Geophysical Surveys</u></p> <p>How will calibration between the vessel and equipment be achieved?</p> <p>How will bad weather conditions be taken into consideration?</p>	The geophysical surveys have been undertaken by Fugro with all of the expected quality assurance, accuracy and calibration processes and protocols in place for undertaking a survey of this nature. Full details will be provided in the Fugro survey report which will be made available as part of the assessment documentation (most likely an Appendix to the benthic ecology chapter).
3.3	Whilst Natural England agrees that there is no need for polychlorinated biphenyls (PCBs) or organotins to be analysed at this time it should be noted that this will need to be done as part of any Particle Size Analysis testing.	<p>Particle Size Analysis testing will be completed at all stations. Analysis for PCBs and organotins is a separate process.</p> <p>Advice from Cefas and EIFCA at the second Seabed ETG meeting was that PCB analysis is not required but that organotin analysis may be required due to concerns about possible impacts on a whelk fishery in the MCZ. However, EIFCA then confirmed that the whelk fishery is not in the export cable corridor.</p> <p>The applicant proposes to...</p>
3.4	Reference should also be made to marine litter.	Any marine litter observed in the samples will be recorded.

Detailed Comments on Sedimentary Processes in the Cromer Shoal Chalk Beds MCZ Ref: PB8164-RHD-ZZ-OF-RP-Z-0001

Ref	NE Comment	Project Response
4.1	Natural England welcomes this document.	Noted.
4.2	<p>Natural England believes that in order to support the application it would be advisable to undertake a cable installation/trenching assessment using the geophysical and geotechnical information to determine installation tools that may be used and the likelihood of cable protection being required immediately after installation and over the lifetime of the project. Please see documents produced for Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three.</p> <p>Please note that the approach taken by Norfolk Vanguard and Norfolk Boreas is the approach advocated by Natural England.</p>	Noted. Please see response to comment 2.2.
4.3	<p><u>Geology and Sea Bed Sediment</u></p> <p>Natural England notes that as part of the Cefas sampling in 2014 no samples were collected within the eastern cable corridor and only a maximum of 5 samples were collected in</p>	<p>Noted. Sediment sampling in the project areas will be acquired by a project specific benthic survey.</p> <p>The western cable corridor (Bacton landfall) is no longer being considered.</p>

Ref	NE Comment	Project Response
	the western cable corridor. Therefore, project specific data sets are required.	
4.4	<p><u>Benthic Surveys</u></p> <p>Natural England is concerned about this comparison as there are definite limitations of the Sheringham preconstruction data sets, especially in relation to the drop down video data as the stills were too turbid to differentiate the benthic habitats. This was set out in the joint Natural England and Cefas pre-construction response to the MMO.</p>	For clarity, the comparison here is based on PSA of sediment samples and not on any drop down video data or other seabed imagery.
4.5	<p><u>Requirement for Geotechnical Survey</u></p> <p>Natural England notes that more ground-truthing could be done, but how would this additional data set improve the certainty on the requirement for cable protection?</p> <p>Natural England also notes that geotechnical surveys within the MCZ would likely require a full marine licence and would be exempt from the self-service licence due to potential impacts to the interest features of the site as per the Hornsea Project Three geotechnical surveys.</p>	Noted. Should geotechnical surveys be undertaken within the MCZ the Applicant will apply for a full marine licence if there are potential impacts to the interest features of the site. However, as noted under 2.2 above, the proposal is not to collect any further geotechnical data to inform the consent application.

Detailed Comments on Predicted Benthic Habitats and Sample Planning: Cable Corridors. Ref: 2020-1009-002

Ref	NE Comment	Project Response
5.1	From the text it is unclear whether or not all of the surveys have been undertaken. However, our understanding from the Seabed ETG meeting on 02 June 2020 is that surveys are yet to be undertaken and we will be further consulted on the survey design.	The geophysical survey presented in the report has been undertaken. The proposed benthic survey design outlined in the report has not and is currently planned for August 2020. As described in comment 2.3 the Applicant will share the benthic survey design with the Seabed ETG for comment before survey mobilisation.
5.2	<p><u>Sample Planning</u></p> <p>It would be helpful to list which geophysical data sets are being referred to here. Please note that post construction survey datasets should also be used.</p>	Noted. This will be addressed in the final report on Predicted Benthic Habitats and Sample Planning covering the cable corridors, array extensions and interconnector cables.
5.3	<p><u>Translated and existing habitat maps</u></p> <p>The text states <i>The western cable corridor alternates subtidal mixed and subtidal coarse sediments in the offshore area with an area of sand where the corridor crosses the 'Sheringham Shoal' seabed feature.</i> However, Figure 6 appears to disagree with this statement showing mainly areas of coarse sediment and sand with perhaps one small area of mixed sediment. Please could this be clarified or the figures made clearer.</p>	Noted. This will be addressed in the final report on Predicted Benthic Habitats and Sample Planning covering the cable corridors, array extensions and interconnector cables.

Ref	NE Comment	Project Response
5.4	<p>This figure (Figure 12) is not clear, so it is not possible to determine where the grab samples will be collected, however, please be advised that all physically intrusive sampling should avoid areas of elevated chalk.</p> <p>In other areas of the MCZ the type of grab that is used should enable a successful sample to be taken first time as repeated attempts would damage interest features of the Cromer Shoal MCZ.</p>	<p>Noted. This will be addressed in the final report on Predicted Benthic Habitats and Sample Planning covering the cable corridors, array extensions and interconnector cables.</p> <p>In the ETG meeting Cefas requested a Day grab be used at stations where there will be an analysis for sediment contaminants. As acknowledged by Cefas at the meeting, the success rate of the Day grab is lower than the Hamon grab in coarse sediment so it is possible that repeat attempt(s) with a Day grab could be required. We would appreciate clarification on this point against the comment that the type of grab used should enable a successful sample to be taken first time.</p>

Detailed Comments on Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions Marine Conservation Zone Assessment Screening Report. Ref: PB8164-RHD-ZZ-OF-RP-Z-0002

Ref	NE Comment	Project Response
6.1	<p>The requirement for a stage 2 assessment will be very much dependent on the project design and requirement for cable protection. Therefore, Natural England is unable to provide comments on any conclusions until more information is provided. Natural England welcome that most impacts have remain screened in at this stage, however, as per our advice on the ETG call on 02 June 2020 Natural England does not agree that effects on bedload sediment transport have been screened out.</p> <p>We would also anticipate having any upfront discussions on avoiding, reducing and mitigating impacts as soon as possible so that should a stage two assessment be required Measures of Equivalent Environmental Benefit (MEEB) can be explored prior to the start of examination.</p> <p>Please note, we expect that the final MCZ assessment, as a minimum, will follow the Hornsea Project Three MCZ assessment submitted to the Secretary of State on 14th February 2020.</p>	<p>Noted.</p> <p>As per our response to comment 2.9 the MCZ Assessment Screening Report will be revised and resubmitted.</p> <p>Discussions on avoiding, reducing and mitigating impacts in respect of the possible requirement for MEEB will be included in regular monthly meetings with Natural England as well as at the Seabed ETG meetings. We will consider scheduling a meeting to discuss this issue specifically once survey information is available, probably post-PEIR and before DCO submission.</p>

Ref	NE Comment	Project Response
6.2	<p>Natural England believe that in order to support this document it would be helpful to undertake a cable installation/trenching assessment using the geophysical and geotechnical information to determine installation tools that may be used and the likelihood of cable protection being required post installation and over the lifetime of the project.</p> <p>Please see documents produced for Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three offshore windfarms for further information, however it should be noted that the NVG/Boreas approach is advocated by Natural England.</p>	Noted. See response to comment 2.2.
6.3	<p><u>Wind Farm Extensions</u></p> <p>Natural England welcomes the consideration of array and offshore cable impacts.</p>	Noted.
6.4	<p><u>Wind Farm Extensions</u></p> <p>Natural England queries why floating turbines are not being considered as an alternative foundation option?</p> <p>Natural England also note that there is confusion about which foundations are and aren't included in the Rochdale envelope between the different documents.</p>	<p>Floating foundations are not considered a viable solution for this project given the water depth.</p> <p>When the MCZ Assessment Screening Report was drafted Gravity Based Structure (GBS) foundations had been removed from the Rochdale envelope by the Equinor engineering team and were therefore not included in the report. However, this decision has recently been reviewed and it has been decided to reinstate GBS foundations as an option because they may be necessary for larger turbines that are not currently available but may be at the time that the wind farm is constructed.</p>
6.5	<p><u>Offshore substation(s)</u></p> <p>Paragraph 13 states <i>There will be up to two offshore substations. In the case that two substations are constructed, there will be one substation located in the SEP extension area and one in the DEP extension areas. The offshore substation foundation type will likely be a jacket or a GBS.</i> However, in section 1.1.2 of the scoping report an integrated approach to electrical infrastructure was proposed, which would result in one offshore substation, onshore cables within the same trench and single onshore substation. Natural England welcomed this proposal and would prefer this option to reduce the overall amount of infrastructure, in particular the impacts caused by two distinct cable routes.</p>	<p>Noted.</p> <p>The integrated approach is the preferred option but separate offshore substations have not been ruled out at this stage.</p>

Ref	NE Comment	Project Response
6.6	<p><u>Offshore Export Cables</u></p> <p>Natural England notes that cable protection is mentioned in this paragraph, but that no information is provided here.</p> <p>In addition it needs to be clearer if 'protection' means burial or placement of additional physical infrastructure.</p>	<p>Cable protection is not mentioned in paragraph 15. Please clarify.</p> <p>Paragraph 16 states <i>Typical burial depth is between 0.5 to 1.5m, but no protection will also be considered. The appropriate level of protection will be determined based on an assessment of the risks posed to the project in specific areas.</i></p> <p>The term cable protection includes different measures for protecting the cable, including but not limited to</p> <ul style="list-style-type: none"> • Cable burial in sediment • Additional physical infrastructure such as rock/gravel protection/mattresses etc. <p>In this case, no protection means surface or near surface lay without additional physical infrastructure. However, additional physical infrastructure including rock or gravel protection, mattresses, protective aprons or coverings, or bagged solutions (e.g. grout bags) has not been ruled out at this stage.</p>
6.7	<p><u>Landfall</u></p> <p>Depending on timing of proposed works Horizontal Directional Drilling may be the only available option due to nesting birds (grey plover) on the beach.</p> <p>Please note it may also be the only viable option due to the presence of intertidal chalk.</p>	Noted.
6.8	<p><u>Landfall</u></p> <p>It would be good to have some clarity on any possible exit pit locations and what would be required to undertake the HDD duct and pull through works and then jointing.</p>	This will be described in more detail in PEI/ES project description.
6.9	<p><u>Landfall</u></p> <p>Again more information on cable protection is required.</p>	<p>The report states <i>a section between the HDD exit pit and the cable trench of up to 50m where the export cables are not naturally protected. This stretch may require additional permanent protection measures in the form of rock protection.</i> Please clarify what additional information is required.</p>

Ref	NE Comment	Project Response
6.10	<p><u>Guidance</u></p> <p>Natural England advises the Applicant to continue to making use of the Advice on Operations within the Conservation Advice to inform this assessment. This advice identifies pressures associated with the most commonly occurring marine activities, and provides a detailed assessment of the feature/sub feature or supporting habitat sensitivity to these pressures. Advice on Operations should be used in conjunction with the specific details of a proposed plan or project (e.g. indirect and/or additive impacts, activity duration, time of year, scale etc.) and the site-specific Supplementary Advice on Conservation Objectives (SACO) in order to develop assessments of impacts to features within the site.</p>	Noted.
6.11	Is a transition bay the same thing as the exit pit -otherwise this text is very confused between terrestrial and marine?	No. The transition bay is at the onshore end of the HDD section of the export cable, while the exit pit is at the offshore end. This will be clarified.
6.12	Please note that this table doesn't reflect our most recent thinking. Please note that TIER 5 projects should be included if a PEIR has been undertaken.	Noted, with reference to our response to comment 2.5.
6.13	<p><u>Cumulative Effects</u></p> <p>Please be advised that fisheries management areas specifically will need to be considered as a plan or project.</p>	Noted. The fisheries management areas provided by EIFCA will be included in the list of other plans or projects for consideration.
6.14	<p><u>Feature Maps</u></p> <p>Please note that features maps are likely to be updated over the next 18 months and will be available on MAGIC map application.</p>	Noted.
6.15	<p><u>Feature Maps</u></p> <p>Please note that broadscale surveys for the designation of new sites and/or to help determine favourable condition status are not sufficiently detailed for the purposes of sustainable development and will not help with reducing, avoiding and mitigating impacts.</p>	Noted. Project specific surveys will be used as the primary source for the assessment. However, survey information from outside the export cable corridor will be referenced for context.
6.16	<p><u>Feature Maps</u></p> <p>To clarify have these surveys been undertaken? Please see point 5.1 above for further detail.</p>	See response to point 5.1.
6.17	<p><u>Conservation Objectives</u></p> <p>Please be advised that we are undertaking evidence gathering on the condition of the Cromer Shoal MCZ features, which is expected to be publically available in early 2021.</p>	Noted.

Ref	NE Comment	Project Response
6.1 8	<p><u>Construction</u></p> <p>Within section 2.2.2 of the Geophysical survey document it is stated that <i>the disused Stratos telecommunications cable is charted as intersecting the Bacton Export Cable Route at KP6.08 and that An unknown pipeline or cable is identified from magnetic data only running northeast/southwest immediately southeast of the dredged area, intersecting the Bacton Export Cable Route at KP27.74.</i> Again in section 2.3.2 reference is made to <i>The disused Stratos telecommunications cable can be seen clearly in magnetic data between KP14.43 and the extent of the surveyed area.</i> Further references to cables are also made in section 2.3.2, including <i>An interpreted cable intersects the Weybourne Export Cable Route at KP16.75 with a NE/SW orientation.</i> However in Section 5.1.1, para 67 of the Marine Conservation Zone Assessment Screening Report it states: <i>The export cables will not cross any other cables or pipelines inside the MCZ. Could this discrepancy please be clarified?</i></p> <p>Natural England notes that this may no longer be required, at least in part, given the chosen export cable route.</p>	<p>Noted. The disused Stratos telecommunications cable crosses the Weybourne export cable route. This is an omission from the Marine Conservation Zone Assessment Screening Report which will be addressed in the revised version.</p>
6.1 9	<p><u>Construction</u></p> <p>Please be advised that the following site preparations works need to be included in any MCZ assessment: Sandwave levelling/clearance, UXO seabed impacts, boulder clearance and grapnel run.</p> <p>Also the creation of exit pits are not mentioned.</p>	<p>Noted. These activities will be included in the revised version where they apply.</p>
6.2 0	<p><u>Construction</u></p> <p>Natural England notes that since the installation of Dudgeon and Sheringham OWF there has been a change in the sediment within the arrays to include more clay. Natural England is concerned about this and would welcome further consideration within the EIA.</p> <p>Changes to the array and export cable routes may have also occurred due to recent increases in 1/100yr storm events along the North Sea coast including the December 2013 tidal surge that won't have been picked up in the data sets from 2013 and before.</p>	<p>Noted. We will assess this as part of the EIA in combination with our assessment of post-construction surveys and existing MetOcean data.</p>
6.2 1	<p><u>Operation</u></p> <p>Please note under the conservation objectives there would be a 'lasting change' in the habitat.</p>	<p>Noted. This terminology will be included.</p>

Ref	NE Comment	Project Response
6.2 2	<p><u>Decommissioning</u></p> <p>Natural England welcomes consideration of remove of cable protection at the time of decommissioning and if removal could be achieved, then whilst the impacts would no longer be permanent, they would still last for the lifetime of the infrastructure (25 years) and potentially longer as a residual impact. Therefore, because this impact is lasting/long term and site recovery wouldn't be assured, Natural England's view is that reasonable scientific doubt would likely remain regarding the impact of the proposals on the conservation objectives for the site. Accordingly a precautionary approach is required. Please also be advised that if it is considered that certain types of cable protection could be modified to enable a greater success of recovery/removal at decommissioning, whilst reducing wider designated site impact, then we advise that this would need to be reflected in the DCO/DML to ensure this mitigation is secured.</p>	Noted.
6.2 3	<p><u>Screening of Activities and Pressures</u></p> <p>Grapnel run, boulder clearance and UXO detonation impacts should be included in this list.</p>	This list of activities is taken from Natural England's Advice on Operations. However, the examples given under the 'power cable laying, burial and protection' category (taken from AoO) will be amended to show those within the Rochdale Envelope for the Projects.
6.2 4	<p><u>Cumulative Effects</u></p> <p>If cumulative effects are still having an impact i.e. not recovered then this cannot be screened out.</p>	Noted. The assessment will take into account the fact that the Sheringham Shoal export cables were installed before designation of the MCZ. However, it will also consider the latest available monitoring data for all existing projects including Dudgeon and Sheringham Shoal, regardless of whether or not these are considered to be part of the baseline.
6.2 5	<p><u>Cumulative Effects</u></p> <p>Again favourable condition status will be key to providing context for the site and interest features capacity/resilience for further sustainable development.</p>	Noted.
6.2 6	<p><u>Cumulative Effects - Dudgeon and Sheringham Shoal Offshore Wind Farms</u></p> <p>Please note, Natural England does not agree with the conclusion undertaken for the assessments for Dudgeon and Sheringham Shoal OWFs activities would not have an adverse effect alone or cumulatively with other projects, plans and activities.</p>	Noted.

Ref	NE Comment	Project Response
6.27	<p><u>Cumulative Effects - Bacton Gas Terminal Coastal Defence Scheme</u></p> <p>Please note you will also need to consider how Dudgeon and Sheringham Shoal Extension Projects would impact on the effectiveness of the sand engine.</p>	Noted. Impacts of sediment transport will be assessed as part of the assessment.
6.28	<p><u>Cumulative Effects - Hornsea Project Three Offshore Wind Farm</u></p> <p>Please note that the determination for Hornsea Protect 3 will be early July and we are expecting, no matter what the decision, that this will have implications for Natural England's advice on Cromer Shoal MCZ going forwards.</p>	Noted.
6.29	<p><u>Cumulative Effects - Hornsea Project Three Offshore Wind Farm</u></p> <p>Natural England advises that the impacts are 'lasting' and not long term.</p>	Noted. This terminology will be included.
6.30	<p><u>Cumulative Effects - Hornsea Project Three Offshore Wind Farm</u></p> <p>Please note that Natural England didn't agree with elements of Hornsea Project Three assessment so please do not assume that we would support the conclusions.</p>	Noted.
6.31	<p><u>Cumulative Effects - Hornsea Project Three Offshore Wind Farm</u></p> <p>Table 6-1 Natural England welcomes that the impacts still remain screened in for now</p>	Noted.

Detailed comments on Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions Physical Processes Method Statement. Ref: PB8164-RHD-ZZ-OF- MS-Z-0002

Ref	NE Comment	Project Response
7.1	<p><u>Project Description - Wind Turbine Generator Foundations</u></p> <p>This is contradictory as the various documents provided include different foundation types.</p>	When the method statement was drafted GBS foundations had been removed from the Rochdale envelope by the Equinor engineering team and were therefore not included. However, this decision has recently been reviewed and it has been decided to reinstate GBS foundations as an option because they may be necessary for larger turbines that are not currently available but may be by wind farm construction. The method statement will be revised.
7.2	<p><u>Project Description - Wind Turbine Generator Foundations</u></p> <p>Natural England would expect volume and area of scour protection per turbine to be included in ES.</p>	Noted.

Ref	NE Comment	Project Response
7.3	<p><u>Operation and Maintenance Strategy</u></p> <p>It is not clear what the operation life span is, i.e. 25 or 30 years</p>	<p>The operational lifetime of the projects is assumed to be a minimum of 30 years.</p>
7.4	<p><u>Impact Assessment Methodology - Using the Previous Modelling Results to Support the Conceptual Approach</u></p> <p>Considering both Dudgeon and Sheringham Shoal OWF are now built, how will the potential impacts on hydrodynamics caused by these projects be taken into consideration given the modelling undertaken for these projects (i.e. before they were built) is suggested to be used?</p>	<p>The existing modelling and assessments are in close proximity to the extensions projects and were very conservative given the larger number of turbines modelled in the existing wind farms compared to the number of turbines in the extensions. Therefore, the modelling results are still considered to be appropriate. The method statement will be revised to incorporate further justification for use of the previous modelling.</p>
7.5	<p><u>Potential Impacts - Impact on Sea Bed Features due to Cable Installation and during decommissioning</u></p> <p>Natural England welcomes consideration of remove of cable protection at the time of decommissioning and if removal could be achieved, then whilst the impacts would no longer be permanent, they would still last for the lifetime of the infrastructure (25 years) and potentially longer as a residual impact. Therefore, because this impact is lasting/long term and site recovery wouldn't be assured, Natural England's view is that reasonable scientific doubt would likely remain regarding the impact of the proposals on the conservation objectives for the site. Accordingly a precautionary approach is required. Please also be advised that if it is considered that certain types of cable protection could be modified to enable a greater success of recovery/removal at decommissioning, whilst reducing wider designated site impact, then we advise that this would need to be reflected in the DCO/DML to ensure this mitigation is secured.</p>	<p>Noted.</p>
7.6	<p><u>Potential Impacts - Indentations on the Sea Bed due to Installation Vessels</u></p> <p>Please note that several windfarms (including Norfolk Vanguard and Norfolk Boreas) have recently committed to not using jack-up barges for installation due to the impact that this method has on the seabed. Natural England would therefore recommend re-considering their use at an early stage for all projects.</p>	<p>We understand that Norfolk Boreas and Norfolk Vanguard have made the commitment not to use jack-up vessels within an SAC and will use alternative work vessels in the SAC during the construction and operation of the projects. This commitment only applies to the export cables, and only within the SAC. The Applicant will consider this mitigation option for the portion of the export cable route that passes through the CSCB MCZ.</p>

Ref	NE Comment	Project Response
7.7	<p><u>Potential impacts during O&M - Approach to assessment</u></p> <p>Please note that existing data should only be used to support site specific data sets.</p>	Noted.
7.8	<p><u>Potential impacts during O&M - Changes to Sediment Transport due to Cable Protection Measures</u></p> <p>For any proposed cable protection Natural England expects a reasonable estimate of the amount, area impacted and pressure exerted on any designated features within MPAs. Cable protection should be considered as a last resort.</p>	Noted and will be assessed.

Detailed Comments on Geophysical Survey September to December 2019

Ref	NE Comment	Project Response
8.1	The figures are really hard to review and when zoomed in the legend is lost. Could paper copies be provided please?	Paper copies can be provided, but it would be helpful to know if there are any figures in particular that you are referring to.
8.2	Natural England looks forward to gaining a better understanding of what the outcome of the surveys mean for the project design.	Noted.
8.3	<p><u>Export Cable Route Results</u></p> <p>Within section 2.2.2 of the Geophysical survey document it is stated that <i>the disused Stratos telecommunications cable is charted as intersecting the Bacton Export Cable Route at KP6.08 and that An unknown pipeline or cable is identified from magnetic data only running northeast/southwest immediately southeast of the dredged area, intersecting the Bacton Export Cable Route at KP27.74.</i> Again in section 2.3.2 reference is made to <i>The disused Stratos telecommunications cable can be seen clearly in magnetic data between KP14.43 and the extent of the surveyed area.</i> Further references to cables are also made in section 2.3.2, including <i>An interpreted cable intersects the Weybourne Export Cable Route at KP16.75 with a NE/SW orientation.</i> However in Section 5.1.1, para 67 of the Marine Conservation Zone Assessment Screening Report it states: <i>The export cables will not cross any other cables or pipelines inside the MCZ. Could this discrepancy please be clarified?</i></p> <p>Natural England notes that this may no longer be required, at least in part, given the chosen export cable route.</p>	Noted. The disused Stratos telecommunications cable crosses the Weybourne export cable route. This is an omission from the Marine Conservation Zone Assessment Screening Report which will be addressed in the revised version.

Note / Memo

**HaskoningDHV Nederland B.V.
Industry & Buildings**

To: Hope Armstrong
 From: Richard Stocks
 Date: 20/07/2020
 Copy: Sarah Errington
 Our reference: PB8164-RHD-ZZ-OF-NT-Z-0008
 Classification: Restricted
 Checked by Adam Pharaoh, David Brew, Magnus Eriksen

**Subject: Dudgeon and Sheringham Shoal Extension Seabed ETG2 (2 June 2020) -
Response to MMO's Comments**

MMO Reference: DCO/2019/00004

Dear Hope,

Thank you for providing your written comments on the Dudgeon and Sheringham Shoal Extension Projects Second Seabed Expert Topic Group Meeting and accompanying documents, received on 15 July 2020. This note sets out the response of the Project Team to your comments. We hope this is helpful and look forward to continued positive engagement at the pre-application stage.

Responses to Questions Raised at the Second Seabed ETG meeting, 02 June 2020

Ref.	MMO Comment	Project Response
1.1	Question: Does the ETG agree that the coarse lag is effectively static and not subject to sediment transport?	
	<i>According to the information presented in the ETG presentation on the 02 June 2020, the MMO agree that the coarse lag is effectively static.</i>	Noted.
1.2	Question: Does the ETG agree with the proposal not to collect/acquire further geotechnical data?	
	<i>The MMO confirm that data from planned and past surveys should cover the geological description of the cable corridors adequately.</i>	Noted.
1.3	Question: Does the ETG agree that the proposed baseline data collection is adequate?	
	<i>The MMO agree that the proposed baseline data collection is adequate in relation to geophysical survey. No baseline data has been provided in relation to shellfish, shellfisheries, fish ecology or commercial fisheries in these documents or during the ETG meeting on 30 October 2019. The MMO expect that this will be discussed as part of the evidence plan process (EPP) and Environmental Impact Assessment (EIA) in the future.</i>	Noted in relation to the geophysical survey. This question is about the adequacy of the proposed baseline data collection, not the data itself. The fish and shellfish ecology baseline data and the commercial fisheries baseline data (including shellfisheries) will be presented in their respective Preliminary Environmental Information Report (PEIR) chapters and discussed at the next Seabed ETG meeting after PEIR submission as part of the EPP. Commercial fisheries are outside the scope of the Seabed ETG. It was agreed at the first Seabed ETG meeting that physical sampling of the fish and

Ref.	MMO Comment	Project Response
		shellfish baseline environment is not required (see 1.4)
1.4	<p>Question: Does the ETG agree on the adequacy of using a conceptual approach supported by existing numerical modelling at Dudgeon and Sheringham Shoal to assess impacts?</p> <p><i>The existing models described refer to OWFs with approximately three times more turbines than the SEP/DEP (so that would cover the worst-case scenario) and the sites have similar characteristics. Furthermore, the expert assessment should identify potential impacts and propose any mitigation measures accordingly. However, the MMO note for future documents that numerical modelling is not appropriate for assessing the potential impacts on shellfish in this project. Shellfish populations have the potential to change dramatically over a short timescale (5 years), therefore physical sampling evidence is required at the proposed site close to the assessment being conducted.</i></p>	<p>Noted regarding the use of existing models and an expert assessment.</p> <p>The question about the adequacy of the conceptual approach supported by existing numerical modelling refers specifically to the assessment of impacts on marine geology, oceanography and physical processes (e.g. waves, currents, sediment transport). Clearly changes to these can have indirect impacts on other receptors including shellfish. It was agreed at the first Seabed ETG meeting that physical sampling of the fish and shellfish baseline environment is not required beyond evidence that will be obtained from the benthic survey grabs and images. Please clarify what is meant by “physical sampling evidence is required...close to the assessment being conducted”.</p>
1.5	<p>Clarification: conflicting scoping opinions with respect to scoping in or scoping out assessment of impacts on the hydrodynamic regime during construction.</p> <p><i>As discussed during the ETG, it was identified that the MMO held a conflicting scoping opinion in respect of scoping in or out assessment of impacts on the hydrodynamic regime during construction. Following consultation with our advisers, the MMO can confirm that the impact on the hydrodynamic regime during construction can be scoped out, as the impact of the monopile(s) presence will be assessed in the operational phase of the project.</i></p>	<p>Noted and updated in the Method Statement in the consultation table.</p>
1.6	<p>Does the ETG agree on the initial list of scoped in activities and the activities for cumulative impact assessment?</p> <p><i>The potential projects scoped in for the cumulative impact assessment appear to be appropriate. The MMO note that cumulative impacts have been considered in relation changes to Marine Geology, Oceanography and Physical Processes arising from the proposed project alone and those arising from the proposed project cumulatively or in combination with other offshore wind farm developments and other nearby sea bed activities, including marine aggregate extraction, marine disposal, proposed seaweed farm and construction of Oil and Gas platforms. The full list of ongoing plans or projects to be included in the Environmental Statement (ES) will be developed as part of on-going consultation with technical consultees. The MMO will be able to provide further comments once this is finalised.</i></p> <p><i>The MMO recommend and anticipate that fish ecology, commercial fisheries, shellfish and potential impacts/cumulative impacts upon them will be identified later as part of the EPP and EIA.</i></p>	<p>Noted.</p>
1.7	<p>Does the ETG agree that the Cromer Shoal Chalk Beds MCZ Subtidal Chalk FOCI is restricted to the areas identified by the geophysical survey?</p>	

Ref.	MMO Comment	Project Response
	<p><i>The MMO defer to Natural England (NE) on this matter as the Statutory Nature Conservation Body (SNCB) responsible for the site.</i></p>	<p>Noted. It is the applicant's understanding that a precautionary approach is being taken where subcropping chalk could become outcropping chalk (and therefore the subtidal chalk FOCI habitat) as a result of the potential movement of the sediment veneer. NE agrees that the coarse lag covering most of the export cable corridor is effectively static (NE Seabed ETG response letter, dated 4 June 2020, Response Ref 2.1). Therefore this would apply to areas of Holocene sand, which is mobile under existing tidal conditions, where there is potential for subcropping chalk to be exposed.</p>
1.8	<p>Does the ETG agree with the proposed approach to benthic survey sample analysis?</p> <p><i>All appropriate data sources for benthic ecology and seabed habitats have been used in the assessment at this stage. Standard practices have been used thus far, and the evidence provided is consistent with operations of a similar nature.</i></p> <p><i>The MMO understand that geophysical data has been used to plan benthic sampling locations. These locations will be sampled using drop down video (DDV) and/or grab. Single grab samples will be taken from areas deemed as low variability (homogenous), while areas of higher variability (heterogeneous) will be sampled in triplicate. DDV will be employed at all benthic sampling locations to collect seabed imagery (sill images and video). This is standard practice and is therefore an acceptable approach.</i></p> <p><i>Primary and secondary sampling locations had been proposed for the two routes, to allow for a range of habitats to be sampled. As one route (Weybourne) has been selected, both primary and secondary stations along this route will be sampled.</i></p> <p><i>The Benthic sample planning report states the following (regarding sample selection):</i></p> <p><i>'4.1.1. The samples are representative of the full range of potential habitats and acoustic ground types in the area of interest identified from the segmentation approach'.</i></p> <p><i>'4.1.2. Samples have been focused on potentially important habitats or features'.</i></p> <p><i>'4.1.3. There is replication within each ground type to ensure that the final interpretation is statistically robust to an agreed measure of confidence'.</i></p> <p><i>'4.1.4. The samples are geographically spread to be representative'.</i></p> <p><i>'4.1.5. Samples have been located to assess the level of spatial heterogeneity of a habitat'.</i></p> <p><i>It is not clear from Table 3 in the report whether sample points representing specific habitats are also spatially replicated as well as triplicate samples being taken from a single station location. Each sample point has very specific information on why it was selected, which is in line with selection point 4.1.2, but does not fulfil 4.1.3. The Applicant should provide clarify on this. In relation to point 4.1.3 copied above, to be statistically robust, the MMO would expect spatial replication of the same habitat in addition to point replication. Although this is not normally required at the characterisation stage. Whilst the MMO</i></p>	<p>The benthic survey design samples each 'seabed category' (i.e. depth zone or rugosity categories) or acoustic ground type more than once with stations at different locations, except for some of the 'shallow' categories which are of very limited extent within the survey area. Habitats identified in MCZ feature maps have also been sampled more than once. Sample planning is constrained by and is designed not to conflict with existing infrastructure such as pipelines and cables.</p> <p>A full benthic survey design to characterise the whole project area (PB8164-RHD-ZZ-OF-NT-Z-0009 DEP and SEP Benthic Survey Design) was submitted to the MMO for review as agreed on the 22nd July 2020. This supersedes the Benthic Habitats and Sample Planning – Cable Corridors report (2020-1009-002) shared on 21st April 2020. We are confident that the sampling plan is sufficient to characterise the seabed, benthic habitats and communities present.</p> <p>A subset of stations (10) will be sampled using a Day grab and these samples will be analysed for chemical contamination, including the presence of organotins (e.g. TBT). The locations of these samples are</p>

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	<p><i>agree with targeting features as well as a range of habitats, there appears to be more of a focus on sampling only once within a particular habitat (as stated in previous comment). For those habitats which are more widespread, the MMO would expect to see more spatial coverage e.g. within the area between sampling location 34 and 32, and between sampling point 9 and 38 along the Weybourne route (see Annex 1 for map). This is particularly important for determining habitat suitability for herring. Only one sample within a specific sedimentary habitat is not sufficient.</i></p> <p><i>Please provide further information regarding the confidence expected from this sampling plan (4.1.3 in point 2.3.1 above).</i></p> <p><i>Tributyltin (TBT) contamination (mobilisation of contaminated sediments) has been screened out of assessment. In the ETG meeting there was a request to screen this pressure back in due to the potential presence of a whelk fishery within the MCZ. TBT has the potential to cause imposex in gastropod molluscs. If organotins (TBT/dibutyltin (DBT)) were present in the sediment and resuspended, they could become bioavailable to fauna and have detrimental impacts on the viability of the fishery.</i></p>	<p>also included in the submitted benthic survey design.</p> <p>The applicant awaits the MMO's comments on this design.</p>
1.9	<p>Does the ETG agree with the proposed approach to benthic survey reporting?</p> <p><i>The Predicted Benthic Habitats and Sample data collection plan will be used to inform the assessments identifying potential herring spawning and sandeel spawning habitats, which follows previous advice and is therefore considered appropriate. During consultation the MMO recommended that an assessment of herring potential spawning habitat and characterisation of sandeel habitat should be undertaken as part of the EIA following the methods described in the MarineSpace, 2013a and 2013b, which the Applicant has indicated they will comply with.</i></p> <p><i>The MarineSpace et al., 2013b methodology incorporates sandeel sediment habitat preference references (Greenstreet et al.,2010; Holland et al., 2005; Macer 1966; Reay 1970; Van der Kooij et al., 2008; Wright et al., 1998 and Wright et al.,2000), as well as British Geological Survey sediment data, Vessel Monitoring Systems (VMS) data, spawning habitat references (Coull et al,1998 and Ellis et al.,2012) and used the Folk classification (Folk, 1954) to determine whether habitat may be 'preferred 3' or 'marginal 4' to support sandeels.</i></p> <p><i>It should be noted that when using the MarineSpace method the influence of the individual data layers and associated heat score can be observed when each layer is viewed separately. Additionally, the MMO would recommend that when the benthic survey results are interpreted to inform the herring and sandeel habitat assessments, that the raw sediment data used to support the assessment are presented using all the classifications together to help aid the data review i.e. Folk (1954), British Geological Survey (BGS) and the MarineSpace habitat preference (MMO included example table in their letter).</i></p> <p><i>The MMO note that a detailed benthic survey scope and specification based on geophysical surveys, interpreted geophysical surveys and interpreted seabed types will be made available for comment early quarter 3 of 2020 in advance of survey mobilisation. The MMO will be able to review this in consultation with Cefas to help determine the suitability to inform the EIA herring and sandeel spawning habitat assessments.</i></p> <p><i>While the ETG meeting focused discussions on geophysical and benthic sampling within the export cable corridor and Cromer Shoal Chalk Beds MCZ, it is the MMO's understanding that this sampling is proposed across the DEP and SEP windfarm areas to characterise the seabed. The Predicted Benthic Habitats and Sample Planning document states that sediment types and sample data will be reviewed to indicate areas of potential herring spawning or potential sandeel habitat, which will be conducted for the whole proposed</i></p>	<p>A full benthic survey design to characterise the whole project area (PB8164-RHD-ZZ-OF-NT-Z-0009 DEP and SEP Benthic Survey Design) was submitted to the MMO for review as agreed on the 22nd July 2020.</p> <p>As recommended, the raw sediment data used to support the assessments of herring and sandeel habitat will be presented showing the Folk (1954), BGS and the MarineSpace habitat preference classifications together to help aid the data review (similar to the example table provided).</p>

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	<p><i>development area once all data have been collected. The MMO appreciate that the Applicant has confirmed that they intend to follow the MarineSpace methodologies for habitat assessment for these species and characterise the whole development area.</i></p>	
1.10	<p>Does the ETG agree with the proposed approach to MCZ assessment screening and draft outcomes/ effects to be assessed?</p>	
	<p><i>While the MCZ screening approach seems appropriate, the MMO have some specific comments on both the Advice on Operations (AoO) sensitivity assessment (Table 5-4 of report in paragraph 4), and the pressures scoped in/out of the assessment;</i></p> <ul style="list-style-type: none"> <i>Please provide further information on the reason for including subtidal sand as sensitive to changes in suspended solids (water clarity). This type of habitat/associated species would be used to increased suspended sediment.</i> 	<p>Natural England's Advice on Operations (AoO) classifies subtidal sand as potentially sensitive to changes in suspended solids (water clarity) and therefore it has been screened in for further assessment. We agree that this type of habitat / associated species would be used to increased suspended sediment and anticipate that the Stage 1 assessment will conclude this.</p>
	<ul style="list-style-type: none"> <i>Please provide further information on why moderate energy infralittoral rock was assessed as sensitive to three of the pressures associated with direct impact when the habitat does not coincide with either of the cable corridors according to Table 4-2.</i> 	<p>Moderate energy infralittoral rock is a protected feature of the Cromer Shoal Chalk Beds MCZ. Although the MCZ feature map does not indicate the presence of this habitat in the export cable corridors, its presence cannot be ruled out until more detailed geophysical and benthic surveys of the cable corridors have been completed and interpreted. This is in accordance with the advice of the Seabed ETG.</p>
	<ul style="list-style-type: none"> <i>Please provide further information on why high energy infralittoral rock was assessed as 'not relevant' to the pressure 'habitat structure changes' and 'penetration and physical change' as this habitat is present within the Weybourne cable corridor according to Table 4-2.</i> 	<p>Natural England's AoO assesses the sensitivity of high energy infralittoral rock to these pressures as 'Not relevant'. This is defined as "The evidence base suggests that there is no interaction of concern between the pressure and the feature OR the activity and the feature could not interact" (see Table 5-3). This may not be true for 'soft' rock such as chalk. However, the assessment screens these potential impacts in for subtidal chalk.</p>
<ul style="list-style-type: none"> <i>Please provide further information on why high energy infralittoral rock and subtidal chalk were assessed as not sensitive to 'smothering and siltation rate changes'.</i> 	<p>This follows Natural England's AoO for 'light' smothering and siltation rate changes, defined as deposition of up to 5 cm of fine material added to the habitat in a single, discrete event. As described in the report, light smothering is identified by AoO as the pressure commonly induced by the project activities at a level that needs to be considered further as part of an assessment (whereas 'heavier' smothering is not). AoO</p>	

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	<ul style="list-style-type: none"> <li><i>As noted in point 1.8 TBT contamination (mobilisation of contaminated sediments) has been screened out. It is the MMO's recommendation that TBT contamination should be screened in due to nearby shellfisheries sensitivity.</i> <li><i>Potential herring spawning habitat and potential sandeel habitat could be environmentally significant habitats found within the proposed DEP and SEP boundaries. During consultation 1 the MMO highlighted that, as the Applicant intended to undertake a geophysical and benthic sampling across the proposed windfarm areas and export cable corridors to characterise the seabed, any particle size analysis (PSA) data collected from these surveys could be used to inform the potential herring and sandeel spawning habitat assessments. The ETG meeting included a brief discussion of this proposal.</i> 	<p>states that high energy infralittoral rock and subtidal chalk (as well as moderate energy infralittoral rock) are not sensitive to light smothering and siltation rate changes.</p> <p>Natural England's AoO states that mobilisation of organo-metal contaminated sediments is a low risk pressure from offshore wind and cable activities, and that the sensitivity of MCZ features to contamination has not been assessed. However, TBT contamination will be screened in as requested. Selected sediment samples will be analysed for organotins to inform the MCZ assessment.</p> <p>Noted. However this is not directly relevant to the MCZ assessment screening and draft outcomes/effects to be assessed.</p>
Additional comments		
2.1	<p><i>It appears that sediment contamination sampling will be conducted in support of a Stage 1 MCZ assessment. There is mention of trenching and/or horizontal direction drilling (HDD), but the sampling proposed does not relate to this and the information provided does not state whether any at sea disposal will be required. The MMO cannot provide further opinion of the proposed sampling as it is not clear what it is designed to support. The MMO have confirmed that Cefas do not hold sedimentation contamination sampling data for the area of the proposed works. Further clarification on dredging and disposal aspects should be given for the Project.</i></p>	<p>The proposed benthic sampling is designed to characterise the baseline seabed environment for the purpose of the impact assessment, in terms of geology, habitats, benthic communities and any existing sediment contamination. It will be used as a reference for any further pre- and post-construction monitoring surveys, but given that the precise locations of trenching and HDD exit pits are not known at this stage, it is not possible to design the survey to sample locations that will be directly affected by the works. Further clarification on dredging and disposal aspects will be provided with the PEIR and Stage 1 MCA assessment.</p>
2.2	<p><i>The MMO recommend that the potential effects of electromagnetic fields (EMF) upon elasmobranchs and electro-sensitive fish receptors is considered in the EIA (with regard to the export cable but also in respect of the array cables and link between DEP and SEP). There is a currently a lack of evidence surrounding the impacts of anthropogenic magnetic and induced electrical fields on elasmobranchs and electro-sensitive fish receptors. Elasmobranchs are able to detect EMF emitted from cables and behavioural responses such as attraction and avoidance measures have been observed.</i></p>	<p>Noted. Potential effects of EMF upon elasmobranchs and electro-sensitive fish receptors will be considered in the EIA as agreed through the scoping and evidence plan processes.</p>

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	<p><i>However, whilst a number of studies have identified behavioural responses, such reactions are likely to vary depending on the strength of field being emitted, and the species and life stage being exposed and there are limitations with many of the studies carried out. Whilst there is no evidence of significant adverse effects on elasmobranchs (or other marine fauna) resulting from EMF recorded to date, conversely, there is no evidence to the contrary and there are currently insufficient studies and data on this subject.</i></p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: ██████████ (LB) – Natural England; ██████████ (YF) – Natural England;
 ██████████ (TD) – The Wildlife Trusts; ██████████ (CP) – The Wildlife Trusts;
 ██████████ (SE) – MMO; ██████████ (HA) – MMO;
 ██████████ (SW) – Cefas; ██████████ (JE) – Cefas; ██████████ (KM) –
 Cefas; ██████████ (SS) – Cefas; ██████████ (GE) – Cefas; ██████████
 (CR) – Cefas; ██████████ (ME) – Equinor; ██████████ (EO) – Equinor; ██████████
 ██████████ (AP) – RHDHV; ██████████ (RS) – RHDHV; ██████████ (DB) – RHDHV;
 ██████████ (MW) – RHDHV

Apologies: ██████████ (JT) – Natural England; ██████████ (RP) – Natural England; ██████████
 ██████████ (FL) – Natural England; EIFCA

From: Royal HaskoningDHV
 Date: Wednesday, 03 February 2021
 Location: Skype meeting
 Copy:
 Our reference: PB8164-RHD-ZZ-OF-MI-Z-0011
 Classification: Project related
 Enclosures: ETG meeting slides

Subject: DEP and SEP Seabed ETG3

Number	Details	Action
Project Update		
1	<p>ME presented a project update. Cable corridor connecting Dudgeon Extension Project (DEP) is now included in the envelope to connect the two Dudgeon Extension areas. The project will also include a cable corridor outside of the eastern corner of SEP to cover the possibility that DEP is constructed before SEP.</p> <p>The onshore landfall area is now narrowed down to the area of Muckleburgh Estate.</p> <p>ME also discussed requirements for cable protection within the Marine Conservation Zone (MCZ) (please see presentation slides).</p> <p>ME stated that Equinor has appointed BGS to undertake analysis of geophysical survey data to understand the extent of the chalk and seabed sediments within the MCZ.</p>	<p>RHDHV to issue ETG meeting slides with these minutes.</p>
2	<p>RS provided update on the actions from previous meetings (please see slides for further information).</p> <p>KM confirmed that Cefas agreed that hydrodynamics during construction can be scoped out from further assessment as these effects will be considered as part of the operational phase assessment.</p> <p>LB offered to provide an update on the recommended tiers for CIA following discussion with colleagues within Natural England.</p>	<p>LB to clarify CIA methodology.</p> <p>Judith Stoutt (EIFCA) to provide a response with regard to organotins.</p>

Number	Details	Action
	<p>LB confirmed that more information from Natural England with regard to the chalk habitat distribution is not going to be available in time to inform the Preliminary Environmental Information Report (PEIR).</p> <p>JE stated that with regard to organotins Judith Stoutt is the person to provide response the information (information still to be provided).</p> <p>CR confirmed that no further information with regard to whelk fishery data is available.</p> <p>RS stated that the draft MCZA will be submitted with the PEIR.</p>	
Marine Geology, Oceanography and Physical Processes Impact Assessment		
3	<p>DB confirmed that the coastal processes assessment is now drafted (list of impacts considered is provided within the slides). The two main impact receptor groups identified are Cromer Shoal Chalk Beds MCZ and East Anglian coast, as the cable corridor passes through the MCZ and lands in the Weybourne area on the north Norfolk coast. Otherwise, the assessment is focussed on defining the magnitude of effects, which will then be taken forward as part of the impact assessment for specific receptors e.g. benthic ecology.</p> <p>DB presented summary of the assumptions for the assessment including worst case scenario and described methodology used (please see slides for more information).</p> <p>DB stated that no new numerical models were used to inform the assessment but results of the models used for original Dudgeon and Sheringham Shoal projects were utilised as part of the conceptual and evidence based approach that has been agreed previously.</p> <p>DB informed the ETG that a study utilising existing geophysical and sedimentary data to better understand baseline geological and geomorphological processes operating in the MCZ (specifically along the cable corridor) is being undertaken. DB stated that BGS will undertake this additional assessment which will help to verify assessment results. Given timeframes for delivery, this will not be presented within the PEIR but will be included in the ES.</p> <p>DB stated that Dudgeon and Sheringham Shoal offshore wind farm post-construction data is being used to ground-truth and verify the results of the existing numerical modelling and to support the assessment more widely.</p>	
4	<p>DB presented summary of the impacts assessed within the PEI (please see slides for more information).</p> <p><u>Construction: Changes in seabed level due to SSC created during foundation installation</u></p> <p>KM asked if predicted thickness of sediment resting on the seabed of a maximum of 1mm came from the modelling. DB stated the value used</p>	-

Number	Details	Action
	<p>did not come from the model specifically but from experience across a range of similar projects and based on literature review.</p> <p>KM queried whether the cumulative assessment considered the presence of the existing Dudgeon and Sheringham Shoal wind farms. DB indicated that this would be considered where relevant, although that the evidence indicates (and KM agreed) that there is no interaction between individual turbines/structures and therefore this would limit any potential for cumulative effects.</p>	
5	<p><u>Construction: Changes in seabed level due to coarse sediment deposition during GBS foundation installation.</u></p> <p>LB asked how the project will ensure that seabed sediments moved as a result of the works will be deposited in an environment of a similar nature and will avoid sensitive habitats etc. LB recommended that this is considered as part of the assessment. DB noted that particle distribution is fairly consistent within the study area, but it will be very difficult to ensure that the two environments are exactly the same. DB confirmed that aggregated mud material was assessed separately within the chapter.</p>	RHDHV to consider point on deposition of seabed sediments as part of benthic ecology assessment.
6	<p><u>Construction: Changes in seabed level due to coarse sediment deposition during GBS foundation installation</u></p> <p>KM question clast material deposition mechanism and DB confirmed that clast materials would be static and most probably stay in the same location but over time clasts would erode. DB stated that no specific calculations have been undertaken to confirm how long it would take for these features to erode.</p>	-
7	<p>DB summarised results of the suspended sediment concentration modelling generated by Dudgeon Offshore Windfarm export cable installation which inform the assessment for DEP and SEP.</p>	-
8	<p><u>Construction: Changes in seabed level due to SSC created during cable installation</u></p> <p>KM questioned jetting and ploughing activities and impacts on associated coarse material deposition within the vicinity of the cable route. DB stated that no specific assessment had been undertaken for this type of material, but it is assumed the material would be backfilled into the trench, where relevant.</p> <p>KM suggested that this should be expanded on in the PEIR.</p>	
9	<p><u>Operation: Sediment transport effects due to cable protection within the offshore cable corridor seaward of the closure depth (including MCZ)</u></p>	RHDHV to ensure clear discussion in the PEIR of potential

Number	Details	Action
	<p>DB agreed to provide more information about areas subject to more sediment transport within the PEIR, including whether there is any empirical evidence for the movement of sediment over cable protection structures. AP noted that the surface sediments for much of the export cable route through the MCZ are effectively not mobile, as evidenced in the sedimentary processes report, limiting potential effects on bedload sediment transport. RS noted that BGS report will provide more confidence in the areas where mobile sediment is present.</p>	<p>sediment transport effects from cable protection.</p>
Marine Water and Sediment Quality impact assessment		
10	<p>RS presented a summary of the data collected for the sediment quality assessment including three samples within the MCZ (please see slides for results). No contaminants exceed lower Cefas Action Level. Only arsenic levels exceeded Canadian Sediment Quality Guidelines Threshold Effect Level (TEL) at nearly all sites.</p> <p>JE confirmed that high levels of arsenic are usual for the area but Cefas will come back with further comments.</p>	
11	<p>RS presented summary of the marine water and quality scenarios taken into account in the assessment (see slides) and results of the assessment undertaken.</p> <p>JE stated that arsenic levels might require further consideration as the project will lead to the disturbance of sediment where these are elevated. JE to check if there are papers and information that can be used to support the assessment and RHDHV encouraged to search the available literature for the same.</p>	<p>JE to provide any recommendation on literature to support assessment of the arsenic concentrations within the sediment</p>
Benthic ecology baseline description		
12	<p>RS presented a summary of the benthic survey and mapping undertaken for the DEP and SEP (please see slides for results). Sediment classes identified included sand, gravelly sand, sandy gravel and gravelly muddy sand. Higher gravel content in export and interlink corridors and SEP wind farm site DEP wind farm sites generally have higher sand fraction.</p>	-
13	<p>RS presented a summary of the habitats and biotopes identified by the survey (please see slides for results). RS noted that one station in the area of SEP array identified piddocks with a sparse associated fauna in sublittoral very soft chalk or clay. No areas where sublittoral biogenic reefs were identified have been classified as Annex I habitat.</p> <p>JE asked if any camera drops were undertaken in the rocky areas. RS confirmed one transect had been undertaken although there had been access difficulties during the survey due to fishing gear.</p>	-
14	<p>RS presented information on benthic sediment habitats within the SEP and DEP export cable corridor in the Cromer Shoal Chalk Beds MCZ.</p>	-

Number	Details	Action
	<p>The feature identified as exposed chalk will not be impacted by DEP and SEP due to the location of the HDD exit pit approximately 1000m offshore.</p> <p>JE noted that mixed and coarse sediment areas usually overlap with each other, this type of habitat with the addition of muddier sediments could provide habitat for different species. RS confirmed that biology was also considered when classifying habitats.</p> <p>JE confirmed that benthic data presented looks good but she cannot provide further comments until full report is reviewed.</p>	
Fish and shellfish		
15	<p>RS presented information on the herring spawning grounds (please see slides for more information) based on recently received information. No specimens of herring were recorded across the survey area. Low intensity nursery areas overlap with the DEP and SEP wind farm sites, as well interlink and offshore export cable corridors.</p> <p>GE commented on levels of herring spawning in area and noted that the previous (Dudgeon and Sheringham Shoal) survey results should not be treated as conclusive as they were not consistent, however agreed that herring spawning is not prevalent in the areas considered for DEP and SEP. Noted potential relevance of the Flamborough Head grounds to this project, which should be considered alongside the outputs of the UWN modelling and the available IHLS data. Assessment should acknowledge data gaps.</p> <p>AP noted that a herring spawning restriction was in place for piling activities during Dudgeon offshore windfarm construction. However, piling activities were completed much quicker than originally anticipated and before the restriction period.</p> <p>RS confirmed that the data used is based on sidescan and multibeam survey results, however, in the areas where grab stations were present sample results were used to provide more information. GE suggested using Marinspace (Latto et al.) methods for the mapping work, as previously agreed.</p>	<p>GE to provide details of their concerns about the herring spawning surveys completed for Dudgeon and Sheringham Shoal.</p>
16	<p>RS presented information on important commercial species and shellfish fishing grounds (please see slides for more information).</p> <p>GE stated that surveys results collected in the past were not always consistent and therefore feedback will be provided based on the interpretation of results within the PEIR. However, both GE and CR stated that they are happy with the species identified. CR stressed that data used within the assessment should not normally be older than 5 years, or where it is that the limitations are noted. RS stated that for fish and shellfish other reports and regional surveys were used but it is understood that these are limited. RS stated that post construction</p>	<p>RHDHV to note any data limitations in the assessment</p>

Number	Details	Action
	monitoring data from Dudgeon and Sheringham Shoal offshore windfarms was used to inform the report as well.	
Cable Installation in the Cromer Shoal MCZ		
17	<p>AP summarised which factors have been considered when assessing cable installation within the MCZ. AP stated that feedback and lessons learnt from Hornsea Project Three and the existing Dudgeon and Sheringham Shoal projects were used to inform the assessment. The cable route is parallel to the existing Dudgeon route where the installation was successful and that gives DEP and SEP confidence given the similarity of ground conditions and use of similar methods for these projects. AP confirmed that Equinor has prepared a draft cable burial risk assessment to help inform the environment assessment. DEP and SEP will also commit not to use loose rock type external cable protection and will use alternative solutions which will increase possibility of removal at the decommissioning stage. AP confirmed that two options at the HDD exit considered and that these are presented with the PEIR.</p> <p>TD questioned if team intends to include evidence from the previous project to showcase that the cable successfully installed. AP stated that it will likely be key part of the outline CSIMP (to be included with the DCO application). ME confirmed that it can be included to increase project confidence. TD requested that information with regard to the recovery of the habitats along the cable corridor should also be included. AP stated that Dudgeon post-construction monitoring from year 1 and for Sheringham Shoal are available and will be used. TD stressed that impacts on the whole MCZ should be considered not only on the exposed chalk feature. TD noted that the assessments will need to consider works required during O&M. AP stated that nothing is currently defined for operation in terms of remedial cable protection requirements, but this will be confirmed with the PEIR.</p> <p>LB stated that there is a guidance for repair/replacement works available. LB noted that there are operation and maintenance applications for Dudgeon and Sheringham Shoal offshore wind farms, which might suggest that similar work will be needed during DEP/SEP operation. AP noted that these applications are made to provide consent for works should they be needed in the future and that there has been no remedial or repair work on the export cables through the MCZ to date for either Dudgeon or Sheringham Shoal.</p>	Project to share available data on existing Dudgeon export cable installation to help support the proposals for DEP and SEP
Next steps		
22	<p>Cable installation studies to be shared in advance of DCO submission (TD noted that it will be very useful to have early sight of these):</p> <ul style="list-style-type: none"> • BGS commissioned to review geophysical survey data and existing geotechnical information to further characterise seabed geology, include the depth of surface sediments 	Project to share MCZ cable installation related documents when available to help inform

Number	Details	Action
	<ul style="list-style-type: none"> • Draft Cable Burial Risk Assessment (CBRA) • Outline Cable Specification, Installation, Monitoring and Plan (CSIMP) <p>MCZ Assessment</p> <ul style="list-style-type: none"> • In development - will be shared in advance of DCO submission (as will HRA) <p>TD pleased to hear about risk assessment and document being drafted, however, she stressed that it would be useful to share within the group as soon as possible for earlier discussion.</p> <p>TD also suggested that further work in relation to developers coordinating export cabling should be discussed – AP noted that a key element of the DEP/SEP approach was the plan for integrated transmission infrastructure.</p>	future discussions
	<p>It was agreed that the next ETG meeting will take place after comments on the PEIR are received, possibly on 17th June 2021 (date to be confirmed).</p> <p>MCZ cable installation related documents could be discussed during that meeting if available, alternatively Project to set up a separate later meeting to review these prior to DCO application.</p>	-

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: Equinor: ██████████ (SC); ██████████ (EO);
 RHDHV: ██████████ (AP), ██████████ (PM), ██████████ (DB), ██████████ (ES);
 Natural England: ██████████ (LB);
 MMO: ██████████ (CP), ██████████ (NW);
 Cefas: ██████████ (CR), ██████████ (GE), ██████████ (JE), ██████████ (JE);
 Eastern IFCA: ██████████ (SC), ██████████ (ST);
 TWT: ██████████ (CP).

Apologies: TWT: ██████████; Eastern IFCA: ██████████; Cefas: ██████████; Natural England: ██████████, ██████████, ██████████.

From: Royal HaskoningDHV
 Date: Monday, 16 August 2021
 Location: MS Teams meeting
 Copy:
 Our reference: PB8164-RHD-ZZ-OF-MI-Z-0015
 Classification: Project related
 Enclosures: ETG meeting slides

Subject: SEP and DEP Seabed ETG4

Number	Details	Action
Introduction		
1	<p>Introductions and agenda.</p> <p>ST noted Eastern Inshore Fisheries Conservation Authority IFCA's (EIFCA) feedback in relation to commercial fisheries isn't being discussed at this Expert Topic Group (ETG).</p> <p>AP confirmed that the seabed ETG does not cover commercial fisheries however matters not considered during the ETGs which are still outstanding can be addressed outside the ETG. A meeting with ST in relation to EIFCA comments can be organised.</p>	RHDHV to organise follow up meeting with EIFCA outside the seabed ETG to discuss fisheries matters.
Project Update		
2	<p>SC provided a project update. Consultation on the Preliminary Environmental Information Report (PEIR) ran from April 2021 to June 2021. Consultation debrief is ongoing with a series of ETGs underway.</p> <p>Next steps:</p> <ul style="list-style-type: none"> Refinement of design parameters to be completed in August. Intention is to submit certain draft outline management plans for consultation prior to submission of the Development Consent Order (DCO) application. Target DCO application submission by the end of 2021 however the programme is currently being looked at so this will be confirmed. 	

Number	Details	Action
	<ul style="list-style-type: none"> Aim to have another seabed ETG in autumn prior to submission of the DCO application. 	
General PEIR comments on WCS		
3	<p>AP explained comment on worst case scenario (WCS) and different construction scenarios. Comment that applies across the whole of the assessment. Discussed with Natural England already at monthly meeting.</p> <p>AP acknowledged that the development scenarios add a degree of complexity to the assessment. However, it follows a similar approach to other offshore wind farms (OWFs) e.g. Dogger Bank.</p> <p>AP stated we are intending to revisit assessment and add further explanation where possible, and to ensure that where there are differences between the WCS that this is presented clearly. A clear summary will be provided for each scenario within the Environmental Statement (ES) summary tables and a review and consistency check of all WCS will be undertaken.</p> <p>JR questioned if there has been a reduction in the range of platforms [foundations] being considered for wind turbines and the substation.</p> <p>AP confirmed that following engagement with engineering and the supply chain, the option for the Gravity Based Structures (GBS) does need to remain as an option in the envelope.</p> <p>JR stated that no wave modelling of GBS has been undertaken and noted that existing arrays at Dudgeon Offshore Windfarm (DOW) and Sheringham Shoal Offshore Windfarm (SOW) don't have GBS.</p> <p>LB agreed with JR and that further wave modelling may be beneficial to inform the assessment (see discussion under point 5 below).</p>	RHDHV to update the WCS tables and assessment for ES.
Marine Geology, Oceanography and Physical Processes Impact Assessment		
4	<p><u>Baseline data is insufficient</u></p> <p>DB confirmed all the wind farm sites, export cable and interlink cable areas have had geophysical and benthic surveys. DB does not consider there are any data gaps with respect to geophysical and benthic coverage. We provided a detailed report using all existing data.</p> <ul style="list-style-type: none"> Wave and climate data - We have used the existing wave climate and wave current data from DOW and SOW to support the assessment from Dudgeon Extension Project (DEP) and Sheringham Shoal Extension Project (SEP), no bespoke wave collection for the project. DB considers DOW and SOW are suitable analogues for DEP and SEP and it is disproportionate to model waves, based on previous experience. Impacts on waves typically local to turbines and don't extend a significant distance from the array so DOW and SOW is suitable for assessing wave and tidal currents. 	<p>RHDHV to include sandbanks as one of the receptors in the ES.</p> <p>RHDHV to use the Tiago <i>et al.</i>, 2016 report in the ES.</p> <p>Attendees of the ETG to review this section to ensure the points raised have been</p>

Number	Details	Action
	<ul style="list-style-type: none"> Suspended sediment concentration (SSC) data - used existing from DOW and SOW, bespoke not considered necessary because DOW and SOW act as suitable analogues. Scour pit model result - not proposed to include in ES as scour pit modelling unnecessary for DEP and SEP since scour protection will be used in areas where scour is anticipated. Sandbank characterisation – we will include sandbanks as a separate receptor (primarily found in the north of both DEP North and DEP South). These will be shown on a map and included in assessment, including consideration of impacts on morphology. Existing plume modelling – more detail will be provided in the ES. Particle Size Analysis (PSA) across site – we consider this data is sufficient for baseline characterisation. The number and location-spread of samples provides an appropriate representation of the offshore development area and the benthic survey scope was agreed through the evidence plan process. <p>JR asked was the Tiago <i>et al.</i>, 2016 report¹ on suspended sediment climatologies used? DB confirmed it will be used within the ES chapter.</p> <p>SC stated it would be helpful to understand if the response presented in this ETG deals with points raised in PEIR consultation comments.</p>	<p>understood and addressed satisfactorily and to respond to the project team to confirm agreement or otherwise following review of the minutes and ETG slides.</p>
5	<p><u>WCS scenario doesn't include all receptors</u></p> <p>DB confirmed sandbanks will be assessed as a separate receptor in the ES. DB confirmed wave shadow effects of the arrays are implicit in the assessment of changes to waves. Additional clarity will be provided in the ES.</p> <p>DB confirmed plume dispersion due to export cable installation has been covered albeit through analogous studies at DOW and SOW, and modelling for DEP and SEP would be disproportionate to the potential impacts. However, additional clarity will be provided in the ES.</p> <p>Seabed change due to export cable installation has been covered in the PEIR assessment.</p> <p><u>Landfall and beach access not considered</u></p> <p>Changes to the shoreline / landfall have been covered (Section 8.6.5.6 of the PEIR) although there is no impact because Horizontal Directional Drilling (HDD) will be used at the landfall.</p> <p><u>Wave modelling</u></p> <p>JR stated Hornsea Four (H4) modelling shows GBS impacts outside the licence area (but not as far as the coast).</p>	<p>RHDHV to include sandbanks as a receptor within the ES.</p> <p>RHDHV to review and consider relevance of wave modelling data used by the Hornsea projects.</p> <p>RHDHV to check post-construction monitoring of DOW and SOW is used in enough detail in the ES chapter, provide more information</p>

¹ Tiago *et al.*, 2016, available at:
[CEFAS 2016 Suspended Sediment Climatologies around the UK.pdf \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/544212/CEFAS_2016_Suspended_Sediment_Climatologies_around_the_UK.pdf)

Number	Details	Action
	<p>DB confirmed a wave model will not be undertaken as it is considered there is already a robust evidence base to show the impacts are negligible, but agreed to look at the H4 data and see what it shows.</p> <p>LB questioned if reference is to modelling for DOW and SOW or is it real time studies. DB confirmed that the modelling of sediment transport is based on previous modelling studies. Monitoring outcomes, e.g. at DOW and SOW, have also been considered in relation to effects on morphology (including scour processes) and seabed recovery.</p> <p>LB stated importance of ensuring things remain fit for purpose. Would be really helpful if it could be determined that the modelling and the expected impacts were what was seen on the ground. It's quite a lot to build on and expand on something that was theoretical for something different that is going to be considered.</p>	<p>if necessary, and reassess.</p>
6	<p><u>GBS Ballast</u></p> <p>AP stated that consideration of removing the option to reuse dredged sediment as ballast in GBS foundations will be considered for the ES. However, we acknowledge that this is something that needs to be assessed if it is included in the PDE.</p> <p>DB stated that it's very likely there won't be a significant impact on sediment transport due to the small volumes being considered.</p>	<p>RHDHV to confirm at the next ETG whether reuse of dredged sediment as GBS ballast is in the project design envelope and assess it in the ES if it is.</p>
7	<p><u>Assessment of scour required</u></p> <p>DB, not proposing to undertake an assessment, as scour protection to be used in areas where scour is anticipated. However, we will look at DOW and SOW monitoring to look at secondary scour to see if anything further can be added.</p> <p>For other receptor topics, direct impact from scour protection is assessed as a worst case. Secondary scour effects are not factored into the worst case scenarios for footprints. Footprints for secondary scour are difficult to quantify and not directly comparable in terms of impact pathways to scour protection. Therefore, it is not proposed to include a footprint of secondary scour within the ES assessments.</p> <p>JR asked will you place scour before insertion of pile or once pile is inserted and stated adding a layer of slate before the WTG foundation is inserted doesn't allow any scour to occur.</p> <p>LB stated it would be preferred if limestone was used as it is naturally present in the area unlike slate, however anticipates the engineers probably not able to commit to limestone due to its tendency to winnow away.</p>	<p>RHDHV to check details of scour protection installation with engineers and clarify in ES where relevant to the assessment.</p>

Number	Details	Action
	AP confirmed that the likely approach would be to include a layer of scour protection prior to pile installation however need to check that with the engineers.	
8	<p><u>Changes in SSC and plume from export cable installation, impacts in relation to commercial fisheries</u></p> <p>DB confirmed this is in the PEIR and will be in the ES. The results from DOW export cable have been modelled, and it is considered this is a good analogy given similarities in tidal currents and seabed sediment types, only a small proportion of sediment is suspended. Sediment is only advected around 10km from the source and only remains for hours or days, within one tidal excursion. DB considers no extra data required.</p>	
9	<p><u>Seabed sediments at all sites are similar</u></p> <p>DB confirmed a map showing DOW and SOW and DEP and SEP sediment distribution and types will be included in the ES for context.</p>	RHDHV to update sediment maps to show data from DOW and SOW.
10	<p><u>Cumulative Impact Assessment (CIA)</u></p> <p>DB confirmed further justification will be provided, to show how project screening for CIA was undertaken.</p> <p>JR stated the main concern is in relation to wave impacts from GBS.</p>	RHDHV to update CIA in Marine Geology, Oceanography and Physical Processes (MGOPP) chapter in the ES
Marine Water and Sediment Quality impact assessment		
11	<p>PM confirmed there was no exceedances of CEFAS Action Levels (AL) in the survey site.</p> <p>MMO PEIR comment stated in consultation with adviser from CEFAS adequate evidence has been gathered and presented.</p>	
12	<p>PM stated United States (US) Environmental Protection Agency (EPA) priority list is what the sediment sample analysis was based on, this will be added into the chapter. PM confirmed Fugro did the contaminant analysis.</p> <p>CP (MMO) stated that Fugro is not an MMO certified lab, and MMO will have to double check if this is an issue as other developments had issues during consenting as they were not done at an accredited lab, and sometimes further sampling was required.</p> <p>SC questioned what makes a lab MMO accredited? Can MMO provide more info on that for future reference?</p> <p>CP (MMO) explained there is a lab validation process and shows the samples are always analysed to a certain standard.</p>	<p>RHDHV to add US EPA priority list information to the ES.</p> <p>MMO to consider whether lab analysis at Fugro is an issue given the agreed absence of contaminants, and respond to RHDHV and Equinor.</p>

Number	Details	Action
13	<p>PM explained that survey was not able to target the fine sediment areas as didn't know where they were but really low concentrations of mud throughout the whole site.</p> <p>PM confirmed the chapter will be updated to show Particle Size Analysis (PSA) maps for DOW and SOW and DEP and SEP.</p>	<p>RHDHV to update PSA map to also include DOW and SOW.</p>
Benthic ecology impact assessment		
14	<p><u>Stony Reef</u></p> <p>PM explained there are two sample stations with low resemblance stony reef which don't represent Annex I reef.</p> <p>PM stated clarification was sought from Fugro and Envision, who confirmed it was classified as low stony reef, and limited extent so didn't constitute Annex I reef or a mappable habitat.</p> <p>PM confirmed we will provide further info but not proposing to do any additional assessment on that.</p>	<p>RHDHV to provide habitat reports as appendices to the ES.</p> <p>RHDHV to provide further information on low resemblance stony reef.</p>
15	<p><u>Sabellaria</u></p> <p>PM confirmed no Annex 1 <i>Sabellaria spinulosa</i> reef was found. Although A5.611 was closest EUNIS habitat, it is not Annex I habitat. We will provide further clarity on this in the ES.</p>	<p>RHDHV to update Table 10-15 in Chapter 10 Benthic Ecology.</p>
16	<p><u>Piddocks.</u></p> <p>PM explained there was one site where biotope A4.231 was recorded. As only recorded once it could not be mapped. Piddocks not found in any great abundance.</p> <p>PM confirmed pre-construction surveys will be undertaken to microsite around any Annex I <i>Sabellaria</i> or Piddocks.</p> <p>PM confirmed value of the Cromer Shoal Chalk Beds Marine Conservation Zone (MCZ) will be increased to high however, this change won't necessarily change the sensitivity of a species or habitat.</p>	<p>RHDHV to update the benthic chapter to high value for national designations including the MCZ.</p>
17	<p><u>Decommissioning</u></p> <p>PM explained a decommissioning plan will be produced at the pre-construction stage with a commitment to leave buried scour and cable as removing would cause more disturbance, but the decommissioning plan would ensure there is flexibility if updated guidance is provided or stakeholders consider it is better to be removed.</p> <p>AP stated unsure how a commitment to remove as much as possible could be conditioned in the DCO. If The Wildlife Trusts (TWT) have any further points to raise that would be good.</p> <p>CP (TWT) confirmed TWT mainly raised this because decommissioning will have an impact on duration of impact therefore consider it should be undertaken as early as possible. Having a condition in the DCO would give certainty of duration of impacts being considered in the</p>	<p>RHDHV and TWT to continue to engage on decommissioning.</p>

Number	Details	Action
	<p>assessment. But open to having wider discussions on how this would be achieved or what best practice would be.</p> <p>AP stated other OWF conditions discharged under those Marine Licences (ML). Actual approval by the Department for Business, Energy and Industrial Strategy (BEIS) does not tend to be forthcoming until decommissioning. It's a matter of confirming the condition can be discharged and ensuring financial security. The decommissioning plan retains the option to remove or leave assets in-situ (where assets are buried), with the final decision being made at the time of decommissioning based on the available information and guidance at that time.</p>	
18	<p><u>Monitoring</u></p> <p>PM confirmed that the project will be submitting a draft in-principal monitoring plan (IPMP) prior to submission of the DCO application to stakeholders for consultation.</p> <p>CP (TWT) requested TWT are included in the consultation on the draft IPMP prior to submission.</p>	RHDHV to prepare draft IPMP prior to submission for consultation with relevant stakeholders including TWT.
19	<p><u>Permanent habitat loss:</u></p> <p>PM confirmed we are considering potential updates, and overall assessment criteria to address comments on permanent habitat loss. Look to maybe assess on a regional scale rather on a biotope scale. Agree piddocks should be assessed as high, and there is mitigation that can be put in place where those sensitive habitats are found, to ensure the impact remains minor.</p> <p>AP stated it's more appropriate to focus on what the assessment outcomes are and appropriate mitigation, we can look to build that in. So, for piddocks biotope with potential to be classified as United Kingdom (UK) Biodiversity Action Plan (BAP), we can assess that as a 'high' however combined with micro-siting mitigation this would result in a minor impact.</p> <p>AP stated for <i>Sabellaria</i>, there was no Annex I or BAP habitat therefore it is not relevant to change to high value and sensitivity. More detail to be provided in the final chapter.</p>	RHDHV to provide further info in ES.
20	<p><u>Temp habitat loss/physical disturbance in construction phase.</u></p> <p>PM stated we will keep the classification of negligible for temporary habitat loss/disturbance during the construction phase, however further information will be provided to strengthen the assessment in the ES.</p>	RHDHV to provide further info in ES.
21	<p><u>HDD</u></p> <p>No impacts in intertidal zone as HDD is being used.</p>	
22	<p><u>Sediment disposal</u></p>	RHDHV to share draft of the

Number	Details	Action
	<p>PM confirmed offshore disposal of sediment will take place within 10s of metres of the source, either near seabed or at sea surface. Further detail will be provided in the Disposal Site Characterisation Report to be submitted with the DCO application</p> <p>JR requested that contingency be added to the volumes. Just in case you need extra volumes in case you need to bury deeper than expected or profiles are different. Or sandwave fields, which can be variable. Please consider the range of sediment disposal volumes.</p> <p>AP confirmed we will check there is adequate contingency in disposal volumes however WCS are precautionary and so contingency should already be built in.</p>	<p>Disposal Site Characterisation Report to consultees prior to Application submission for consultation</p>
23	<p><u>Invasive Non-Native Species (INNS)</u></p> <p>JE stated colleague provided comments on PEIR and the comment has been misunderstood. Agreed to screen out introduction of INNS, but spread of INNS should still be included in the CIA or screened out with further justification.</p> <p>PM confirmed this will be considered and further detail will be provided in the assessment in the ES.</p>	<p>RHDHV to provide further detail in the ES.</p>
24	<p><u>Cumulative</u></p> <p>PM stated 5km for cumulative zone of influence (ZOI) was used in the assessment. As per Natural England request, we can increase this to 10km however note ZOI for SSC (i.e. the only relevant impact pathway) has a maximum range of 1km as a determining factor therefore changing this to 10km would not result in a change to the assessment.</p>	<p>RHDHV to consider further in the ES.</p>
Fish and shellfish		
25	<p><u>Preferred spawning habitat for herring and sandeel.</u></p> <p>PM stated permanent change in habitat is scoped in and assessed in the PEIR however, no specific discussion of sandeel habitat is provided here so this will be included for the ES.</p> <p>PM noted that confidence about the extent of herring spawning habitat is low.</p> <p>PM stated that cable protection will be minimised through burying cables where possible. DOW and SOW did not install any cable protection, which gives us confidence levels of cable protection required will be small and this is reflected in the WCS.</p> <p>PM confirmed impact assessed as minor adverse significance and therefore a seasonal restriction on construction activities is not considered proportionate to the level of impact.</p> <p>LB confirmed the comment is not just in relation to pilling noise but change in habitat from the cable, scour and infrastructure, if there are potential impacts on herring and sandeel populations there is potential for impacts on Annex I birds.</p>	<p>RHDHV to add sandeel habitat to ES in relation to permanent habitat loss.</p> <p>RHDHV to consider habitat change, and how potential changes to herring and sandeel populations can impact ornithology receptors.</p> <p>RHDHV to update assessment not to use</p>

Number	Details	Action
	<p>GE stated quantifying an area that could be used as sandeel or herring is difficult. There is a lack of data for DEP and SEP area. Coull <i>et al.</i> is old. Herring don't spawn in same places. Therefore, delineating an area and saying this is area we are impacting and using Coull to determine if sandeel or herring will be impacted isn't a suitable methodology. Either don't say a percentage area affected, or state an amount of site has habitat which is suitable for herring or sandeel.</p>	<p>percentage loss based on Coull <i>et al.</i> Discuss in future meetings if needed.</p>
26	<p><u>International Bottom trawl Survey (IBTS) regional study data</u> PM noted and stated this data will be used in the ES.</p>	<p>RHDHV to update ES</p>
27	<p><u>Concurrent piling at SEP and DEP.</u> PM stated piling noise exposure contours have been modelled for DEP and SEP separately and mapped together. However, concurrent piling within the DEP and SEP sites has not been modelled. Concurrent piling within the DEP and SEP wind farm sites will be modelled and included in the final assessment. PM stated behavioural contours will also be included in the additional modelling.</p>	<p>RHDHV to include modelling results in ES.</p>
28	<p><u>Concerns on Electro-Magnetic Field (EMF)</u> PM confirmed the assessment of EMF impacts on fish and shellfish receptors will be updated in the ES assessment to take account of EIFCA comments on the PEIR. ST questions when will EIFCA get to review this and provide comments. SC confirmed comments to be taken on board in ES. Some draft application documents will be consulted on ahead of submission and there is always a consultation on the accepted application including ES documents, so if not before application, then during the formal consultation process post-application.</p>	<p>RHDHV to update assessment of EMF on fish and shellfish within the ES.</p>
Scour and cable protection decommissioning		
29	<p><u>Rock bags</u> PM noted comment on rock bags. Options are under review and further information where available will be included in final assessment. PM: Project Team look forward to seeing the NE paper on decommissioning of cable/scour protection systems. PM confirmed information on decommissioning feasibility will also be provided as part of the Outline Cable Specification Installation and Monitoring Plan (CSIMP). AP stated it is a lot more difficult to remove scour if there is a layer of it piled through. This will be dealt with nearer the time. Leaving it in situ is currently the best practice with regard to reducing impact. Cable protection can be removed more easily.</p>	<p>RHDHV to update ES to include latest available information on use of rock bags. RHDHV to provide Outline CSIMP for consultation prior to application submission. Equinor/RHDHV to look into</p>

Number	Details	Action
	<p>LB stated the comment was in reference to remedial cable protection work at Race Bank. Advice on the avoidance of plastic in these systems should be in the public domain from ML applications (in relation to Race Bank OWF and the Inner Dowsing Race Bank SAC). Rock bags to be used wherever possible but concerns remain with plastic being used.</p> <p>AP stated in terms of alternatives, options are still being looked at. Need to consider what rock bags could be made of other than plastic.</p>	<p>alternatives to plastic for rock bags.</p>
Cable Installation in the Cromer Shoal MCZ		
30	<p><u>External cable protection</u></p> <p>PM confirmed experience from export cable installation at DOW and SOW suggests cable burial along majority of the route within the MCZ will be possible. DOW and SOW did not require any external cable protection.</p> <p>PM confirmed a study will be undertaken to identify the best route to try and avoid need for cable protection. Look to minimise need for it at time of construction, following approach taken for DOW and SOW.</p> <p>PM stated areas of hard substrate within the MCZ will be avoided as far as possible. Therefore, cable protection requirements will be limited as cables will be buried. Worst case of 1,800m² of cable protection within the MCZ required for DEP & SEP together.</p> <p>PM confirmed a draft Cable Burial Risk Assessment (CBRA) was provided to the ETG in May 2021. An outline CSIMP will be provided with the DCO application which will provide further detail on the installation of export cables through the MCZ. Information on decommissioning feasibility will also be provided as part of the outline CSIMP.</p> <p>JR stated Cefas don't have access to the CBRA.</p>	<p>RHDHV to share CSIMP and CBRA with consultees prior to submission of the application for comment.</p>
31	<p><u>Sediment disposal</u></p> <p>PM confirmed sediment disposal within the MCZ would likely only be required at the HDD exit point. Any sediment excavated there would be used as backfill once the cable has been pulled through the transition zone. Therefore, sediment would be returned to a location with the same sediment type. Further detail will be provided in the outline CSIMP and Disposal Site Characterisation Report.</p>	<p>RHDHV to include more information on sediment disposal in the outline CSIMP and Disposal Site Characterisation Report.</p>
32	<p><u>Figure 7.2 polygon</u></p> <p>PM queried Natural England comment about A4 rock being present on Figure 7.2 because the figure does not appear to show this. Natural England to please check comment and confirm.</p>	<p>Natural England to check their comment regarding Figure 7.2 of the MCZ assessment</p>

Number	Details	Action
33	<p><u>Physical change to another sediment type</u></p> <p>PM stated 'Physical change (to another sediment type)' is not relevant because external cable protection will be a hard substratum rather than a sediment.</p> <p>However, we note the pressure justification is identical between 'another seabed' and 'another sediment' types. The sensitivity of features to the pressure is the same and both pressures can be included.</p>	<p>RHDHV to include physical change to another sediment type in the MCZ Assessment (MCZA).</p>
34	<p><u>Loss of broadscale habitat</u></p> <p>PM noted comment and confirmed we have looked to mitigate and reduce uncertainty, reduce WCS to a minimum, avoided the outcropping chalk, and confined potential impacts to broadscale habitats.</p> <p>LB stated that this feeds into the Measures of Equivalent Environment Benefit (MEEB) discussions.</p>	
35	<p><u>UXO impacts</u></p> <p>CP (TWT) confirmed this the TWT comment was referring to seabed disturbance.</p> <p>PM confirmed the assessment of seabed disturbance from UXO detonation will use data on Unexploded Ordnance (UXO) from DOW and SOW in the MCZ to confirm number, and use the Ordtek report for crater sizes in the North Sea. An assessment of this will be provided within the MCZA for information.</p> <p>AP confirmed UXO not going to be consented through DCO, there will be a separate licence. This has also been agreed with the marine mammals ETG.</p>	<p>RHDHV to update MCZA with seabed disturbance assessment from UXO detonation.</p>
36	<p><u>Condition Status report for MCZ</u></p> <p>LB stated it is an update on the website not a report but will check why we aren't seeing it.</p>	<p>LB to check the NE website to see if this is available.</p> <p>NE can confirm that further edits have been identified and therefore is not currently uploaded. We will let you know once uploaded.</p>
37	<p><u>Cumulative</u></p>	<p>RHDHV to include updated</p>

Number	Details	Action
	<p>PM stated DOW and SOW are included in the CIA for Operation and Maintenance (O&M) impacts due to the potential need to maintain their export cables within the MCZ. Note there have hitherto been no maintenance activities on either the DOW or SOW export cable. Information from SOW monitoring results will be included within the MCZA.</p> <p>PM stated DOW and SOW construction impacts not included within CIA. Is it construction impacts Natural England are referring to?</p> <p>LB confirmed not in-combination for construction, as DOW and SOW are constructed, only operational impacts.</p> <p>PM: Ok, this is already included in the assessment. We will include info on monitoring from DOW and SOW.</p> <p>AP stated we are planning on running MEEB consultation separate to ETG. Already seen 1st iteration. Meetings have been held with individual stakeholders to discuss feedback, and the project is now working up next version of proposals based on feedback. The plan is to share two further versions with follow up meetings.</p>	<p>monitoring from DOW and SOW in the updated MCZA.</p> <p>RHDHV to confirm date of next MEEB submission and date of next consultation.</p>
Next steps		
38	<p><u>Minutes and agreement log</u></p> <ul style="list-style-type: none"> • We will aim to send out within one week of meeting for ETG to review. • ETG to aim to send back comments within two weeks of receiving minutes and agreement log <p><u>Actions prior to next ETG</u></p> <ul style="list-style-type: none"> • ETG comments on draft CBRA to please be provided by 8th October • Consult on IPMP and outline CSIMP prior to DCO application submission. • Natural England MCZ Condition Status information to be provided to Equinor • Next ETG - One further ETG to go through what we have done to address these comments. Date to be agreed. 	<p>RHDHV to confirm dates of when Outline CSIMP and IPMP will be provided for consultation.</p> <p>RHDHV to confirm date on next seabed ETG in due course.</p> <p>RHDHV to update seabed Agreement Log.</p>

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: Equinor: ██████████ (SC); ██████████ (TM);
 RHDHV: ██████████ (AP), ██████████ (PM),
 Natural England: ██████████ (LB), ██████████ (HM);
 MMO: ██████████ (CP), ██████████ (NW);
 Cefas: ██████████ (PMc), ██████████ (JE); ██████████ (MG), ██████████
 ██████████ (IB)
 Eastern IFCA: ██████████ (SC), ██████████ (ST);

Apologies:
 From: Royal HaskoningDHV
 Date: 14 March 2022
 Location: MS Teams meeting
 Copy:
 Our reference: PB8164-ZZ-ZZ-MI-PM-0016
 Classification: Project related
 Enclosures: ETG meeting slides

Subject: Seabed ETG5 Meeting Minutes 14MAR22

Number	Details	Action														
Introduction																
1	<p>Agenda</p> <table border="1"> <thead> <tr> <th>Schedule</th> <th>Topic</th> </tr> </thead> <tbody> <tr> <td>14:00-14:15</td> <td>Introductions and Purpose of Meeting</td> </tr> <tr> <td>14:15-14:30</td> <td>Project Update</td> </tr> <tr> <td>14:30-15:15</td> <td>CSIMP discussion / review of comments</td> </tr> <tr> <td>15:15-15:30</td> <td>BREAK (15 minutes)</td> </tr> <tr> <td>15:30-16:15</td> <td>Review updates and pending agreements on Seabed ETG topics (physical processes, marine water and sediment quality, benthic, fish & shellfish) Marine Conservation Zone Assessment Stage 1 report</td> </tr> <tr> <td>16:15-16:30</td> <td>Agree next steps <ul style="list-style-type: none"> Minutes and agreement log Actions AOB? </td> </tr> </tbody> </table> <p>PM ran through introductions and agenda</p>	Schedule	Topic	14:00-14:15	Introductions and Purpose of Meeting	14:15-14:30	Project Update	14:30-15:15	CSIMP discussion / review of comments	15:15-15:30	BREAK (15 minutes)	15:30-16:15	Review updates and pending agreements on Seabed ETG topics (physical processes, marine water and sediment quality, benthic, fish & shellfish) Marine Conservation Zone Assessment Stage 1 report	16:15-16:30	Agree next steps <ul style="list-style-type: none"> Minutes and agreement log Actions AOB? 	
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2	<p>SC provided a project update.</p> <ul style="list-style-type: none"> Continued engagement with technical consultees through the EPP and ETG. Preparation of DCO, associated plans and draft outline plans Maturation of compensatory measures (HRA) and MEEB Pre-application meeting with the Planning Inspectorate (Jan 2022) 															

Number	Details	Action
	<ul style="list-style-type: none"> Four public information days held last week TM joined project as Equinor Offshore Consents lead 	
CSIMP		
3	<ul style="list-style-type: none"> CSIMP describes export cable installation methodologies and mitigation to minimise impact on the CSCB MCZ Comments received from Natural England and Eastern IFCA on draft outline CSIMP. Final outline version to be submitted with Interim Cable Burial Study (ICBS), Cable Burial Risk Assessment (CBRA) and Decommissioning Feasibility Study as appendices Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP) benefit from previous installation campaigns at existing windfarms CBRA and geotechnical survey (Autumn 2021) brought forward to aid consenting process Outline CSIMP to be submitted with DCO application will incorporate results from Geotech survey in mid-2022 Final CSIMP produced pre-construction following detailed route engineering. Commitment made to HDD out to a point that allows for complete avoidance of the outcropping chalk feature. <p>ST – asked what commitments to monitoring would be made?</p> <p>AP - Asset integrity survey will be ongoing, but engineering focus. Post construction surveys will be conducted.</p> <p>JR – Cefas have provided comments to CSIMP. Concerns raised with transition between HDD and breakout zone.</p> <p>AP – Highlighted information already within PEIR. Will look to draw more of this detail through for final version of Outline CSIMP.</p> <p>LB – More installation information required as well as post construction burial. Example given to HDD breakout pit.</p>	RHDHV to add more details to CSIMP regarding construction methods e.g. break out pit for landfall HDD.
Marine Geology, Oceanography and Physical Processes Impact Assessment		
4	<p>PM: Gave update. Chapter changed numbering for ES submission. Agreement log from 2021 shared.</p> <p>PM gave update that numerical wave modelling is now being undertaken and will take a similar approach to modelling undertaken for East Anglia (EA) TWO, EA ONE North and the Dogger Bank projects. Will include SEP, DEP, Sheringham Shoal Offshore Wind Farm (SOW) and Dudgeon Offshore Wind Farm (DOW). Reference to Hornsea 4 cumulative wave modelling has been added to the Environmental</p>	Wave modelling to identify approximately 12 sensitive locations along the coast at which differences in wave height etc. are to be determined.

Number	Details	Action
	<p>Statement (ES) chapter.</p> <p>JR – Sensitive locations (approximately 12) to be identified along coast and differences in wave heights etc. to be presented in modelling report.</p> <p>PM – Thiago suspended sediment concentration (SSC) data incorporated. JR asked to note this is based on surface concentrations (satellite data)</p> <p>PM – further interpretation of the plume dispersion modelling undertaken for SOW and DOW export cables has been provided.</p> <p>PM presented proposed monitoring likely to be included in the In Principle Monitoring Plan (IPMP) to be submitted with DCO application. There is an overlap with engineering / design related geophysical survey for asset integrity. Results will input into benthic and other related ecological monitoring surveys.</p>	<p>RHDHV to highlight in the ES that Thiago SSC data is based on surface concentrations using satellite data that doesn't penetrate below the sea surface.</p>
Marine Water and Sediment Quality		
5	<p>PM noted that there was a pending agreement on the suite of contaminants analysed.</p> <p>Contaminants analysis undertaken by Fugro. Not Marine Management Organisation (MMO) accredited, however agreed absence of contaminants in the area should hopefully prevent this from being an issue.</p> <p>CP: To check with SEAL team today regarding lab accreditation.</p> <p>HM: It would be for Cefas SEAL team to respond, but you could have Fugro demonstrate capability/alignment of methodologies. Could also pull off analytes from previous samples (if stored).</p>	<p>MMO to check with SEAL team regarding positions on lab approval. <i>[MMO provided SEAL team response on this matter. Consider setting up a call with the project team, MMO and the Cefas SEAL team to discuss]</i></p>
Benthic Ecology		
6	<p>PM: Pending agreement on a cumulative zone of influence of 10km being appropriate.</p> <p>PM presented chapter updates including those around value and sensitivity of receptors to permanent habitat loss. PM noted that the MarESA sensitivity is high for the biotopes recorded however since the assessment considers wider community level impacts on these biotopes which are known to be present across the wider area in the southern North Sea (noting that evidence of this has been added for the ES), the sensitivity is considered to be medium as the biotope will not be completely removed.</p> <p>PMc noted that this seemed like a sensible approach.</p> <p>PM noted that additional detail on pre-construction surveys for micro-siting with use of Drop Down Video (DDV) and grabs (as applicable) to ensure a comprehensive ground-truthing has been added to the</p>	<p>RHDHV to include consideration of INNS within the Planning Statement to be submitted with the DCO application.</p>

Number	Details	Action
	<p>chapter.</p> <p>Cumulative assessment now includes further consideration of Invasive Non-Native Species (INNS) with respect to potential for steppingstone effect from the existing hard structures during operation.</p> <p>CP: INNS assessment to be included within Marine Plan Policy Assessment.</p> <p>JR: Directed to ‘One Benthic’ dataset being pulled together by Keith Cooper.</p> <p>LB: Monitoring should be targeted to validating conclusions and mitigation measures of the ES.</p>	
Fish ecology		
7	<p>PM: Pending agreement on:</p> <ul style="list-style-type: none"> • Sandeel and herring habitat phraseology i.e. should be defined as areas which are potentially ‘suitable’ rather than being defined explicitly as habitat or spawning ground. • Include underwater noise modelling from simultaneous and sequential piling. <p>PM: Presented chapter updates. No plan to update chapter with 2020 and 2021 surveys in case these are affected by Covid. As requested, International Bottom Trawl Survey (IBTS) data from regional study area (34F0 & 35F0) have been incorporated.</p> <p>MG: Latest ICES working group. MG to send over latest as there may be some spatial overlap.</p> <p>MG: To check on suitability of data and return. Sent link to ICES 2020 and 2021 reports in chat. UK data collected (Norwegian and Dutch not collected).</p> <p>PM: Further detail on sandeel added to the permanent habitat loss assessment.</p> <p>PM: EMF calculations clarified – assumes a cable burial depth of 1m. Now clarified in response to comments and text supporting table and caption. Assessment updated to reflect 1m burial depth.</p> <p>PM: Underwater noise modelling updated to include 4m pin piles, behavioural impact ranges and simultaneous and sequential (within a 24-hour period) piling. PM presented new worst-case scenario (sequential piling at SEP and DEP based on a stationary receptor) which has formed the basis of the ES assessment conclusions.</p>	RHDHV to check and update documents for recent IHLS data.
Marine Conservation Zone Assessment (MCZA) Stage 1 Report		
8	<p>PM presented MCZA Stage 1 Report which was submitted with the PEIR and is now being updated for the DCO application. Assessment of sea bed disturbance impacts from UXO detonation now included as an appendix for information purposes. As agreed at the marine</p>	

Number	Details	Action
	<p>mammals ETG in July 2021, a separate Marine Licence will be sought for UXO detonation post-consent.</p> <p>SOW and DOW already considered in the CIA for operational impacts.</p> <p>PM – it is understood that the MCZ condition status is due to be updated by the end of March.</p> <p>LB noted that this may not now be the case.</p> <p>PM noted that it would be useful to be kept informed on when the update to this can be expected and that there would need to be a cut-off point at which it could be included within the ES. Although it is noted that it is unlikely to make any material difference to the assessment as the project is already proposing Measures of Equivalent Environmental Benefit for the MCZ. LB agreed.</p>	
9	<p>Next steps:</p> <p>Minutes and agreement log</p> <p>Summary of actions</p> <p>AOB</p>	

1.2 Marine Mammal Ecology Expert Topic Group Meeting Minutes

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (AS) – MMO; [REDACTED] (LB) – NE; [REDACTED] (AP) – RHDHV, [REDACTED] (MW) – RHDHV, [REDACTED] (RS) - RHDHV, [REDACTED] (JL) – RHDHV; [REDACTED] (ME) – Equinor, [REDACTED] (OV) – Equinor; [REDACTED] (RF) - Cefas, [REDACTED] (CL) – Cefas; [REDACTED] (TD) – The Wildlife Trust (TWT) (attended a catch up meeting on Monday 16th December 2019 – comments included below).

Apologies: [REDACTED] (AG) – NE; [REDACTED] (RW) - MMO

From: [REDACTED]

Date: Tuesday, 03 December 2019

Location: skype

Copy: Richard Stocks

Our reference: PB8164-RHD-ZZ-OF-MI-PM-0006

Classification: Project related

Enclosures: ETG presentation and agreement log

Subject: Sheringham Shoal and Dudgeon Extension – Marine Mammal ETG 1

Number	Details	Action
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Introductions and purpose of the meeting

- | | | |
|---|---|--|
| 1 | ME Briefly introduced the projects and provided update on the status. Scoping report submitted on 8 th October and scoping opinion received on 18 th November 2019. | |
|---|---|--|

Summary of the baseline

- | | | |
|---|---|----------------|
| 2 | ME provided information with regards to the current design envelope of the projects. Please see attached ETG presentation for more details. | |
| 3 | JL presented the baseline information used to inform the assessment and methodology of the digital aerial surveys currently being undertaken for the Projects. JL presented preliminary results from the surveys and stated that it is too early to make any comments about the species densities (please see presentation for the early results).
JL also stated that unidentified small cetaceans will be treated as harbour porpoise and unidentified seals will be added to both grey and harbour seal numbers in the assessment and when calculating species densities as a worst case. The approach used for density estimates will be also informed using other data sources listed in the ETG presentation, with the relevant worst-case used where appropriate. | |
| 4 | CL stated that results of the aerial surveys should be used when calculating seal density if possible, in addition to published SMRU data, and the highest density should be used in the assessment. | RHDHV - agreed |

Number	Details	Action
5	CL also confirmed that there will be an update to the Management Unit (MU) reference populations, but the date of the update is unknown.	
6	TD stated that there is a harbour porpoise population estimate for the SNS SAC and requested that this be referenced in the assessment, e.g. as an appendix, in addition to the MU estimate.	RHDHV – include SNS SAC harbour porpoise population estimate in the assessment as an Appendix to the PEIR and reference in the ES.
7	The ETG agreed that the PEI comments stage will be a cut off point for when new information can be included in the assessments. If any information becomes available after this cut-off point, a clarification note might be required to fill in the gaps but a full reassessment will not be required. The same approach has been agreed for other projects.	
Summary of the proposed impact assessment methodology		
8	JL described the potential impacts on marine mammals that will be assessed and those that have been scoped out. JL clarified that barrier effects from the physical presence of the wind farms have been scoped out from the assessment, but potential barrier effects due to the underwater noise (including during operation as well as during construction and decommissioning) are scoped in as per the Scoping Opinion (ID 4.5.1).	
9	JL described the proposed use of marine mammal noise PTS and TTS thresholds from Southall <i>et al.</i> (2019). CL requested use of NOAA thresholds because they are familiar and comparable to other recent assessment. JL agreed, noting that Southall et al. 2019 used the same thresholds, and that both sources will be referenced and the relationships between them described for clearer interpretation and comparison with other assessments.	RHDHV - Include NOAA thresholds in noise impact assessment.
10	TD questioned how the number of UXOs will be estimated for the impact assessment. A dedicated UXO survey will likely take place post-consent. TD suggested UXO surveys undertaken previously for nearby project infrastructure could be useful. JL stated that the number of UXO can vary considerably over a small distance, but that available data sources including the number of UXO identified at nearby wind farms on other project infrastructure will be reviewed and used where appropriate.	
11	JL described the general impact assessment methodology, including the proposed approach to cumulative impact assessment (CIA), and Habitats Regulations Assessments (HRA). JL clarified that the HRA will consider the following potential effects on harbour porpoise, grey and harbour seals, during project construction, operation and decommissioning: <ul style="list-style-type: none"> • Underwater noise; 	TD – provide grey seal foraging range reference.

Number	Details	Action
	<ul style="list-style-type: none"> • Vessel interactions (increased collision risk); • Disturbance at seal haul-out sites; • Disturbance of foraging seals at sea; • Changes to prey resources; and • Any in-combination effects. <p>TD stated that she thinks the maximum foraging range of grey seals may be 125km (rather than 100km) and if she can locate the reference will provide it.</p> <p>The ETG agreed they have no other comments on the proposed impact assessment, CIA and HRA methodologies.</p>	
<p>Summary of proposed approach to mitigation and monitoring</p>		
12	<p>JL presented the proposed approach to the Marine Mammal Mitigation Plans (MMMP). Separate MMMPs will be developed pre-construction for piling and UXO clearance activities. No objections were raised to the outline approach.</p>	
13	<p>JL stated that if required, an In Principle Southern North Sea SAC Site Integrity Plan (SIP) will be developed as an adaptive management tool, documenting any project mitigation or management measures in relation to the significant disturbance of harbour porpoise from underwater noise. It was noted that the SIP would require a strategic approach including consideration of cumulative and in-combination effects, and Equinor is open to working with stakeholders and other developers to achieve this. AS agreed with the proposed approach. TD noted that there is currently no regulatory mechanism to assess underwater noise impacts and therefore it currently cannot be concluded that there will be no adverse effect on the integrity of designated sites.</p>	
14	<p>JL stated that the draft MMMP and In Principle SIP will contain key principles that provide the framework for any monitoring that could be required. These will be included in an In-Principle Monitoring Plan that will identify relevant offshore monitoring as required by the deemed marine licence conditions, establish the objectives of such monitoring and set out the guiding principles for delivering any monitoring measures as required.</p> <p>TD requested that TWT be named in the draft MMMP and In Principle SIP and included in discussions related to post-consent monitoring and mitigation, which should be discussed and agreed as part of the Evidence Plan Process (EPP) before DCO submission. TD suggested a Memorandum of Understanding (MoU) for how TWT would work with the developer post-consent, following a similar model to the EPP. TD requested a separate meeting to discuss this.</p>	<p>Equinor / RHDHV to schedule a meeting to discuss post consent issues.</p>
<p>Consultation</p>		
15	<p>JL summarised the proposed approach to consultation with marine mammal stakeholders and proposed that ETG meetings will be held at key milestones such as completion of:</p> <ul style="list-style-type: none"> • Method statement; 	<p>Equinor / RHDHV – Issue timetable for project marine</p>

Number	Details	Action
	<ul style="list-style-type: none"> • HRA screening; • Baseline survey results; • Underwater noise modelling results; and • PEIR. <p>Following request from CL it was agreed that the timetable for the milestone activities will be shared and will inform the timing of the next ETG meeting, likely to be to discuss the Method Statement and possibly HRA screening report.</p>	mammal milestones to ETG.
Actions, arrangements for future meetings, AOB		
16	The next ETG is likely take place in April 2020 via skype, subject to completion of required project milestones. MW to organise the meeting.	MW
17	RS summarised the meeting actions and asked whether the ETG members agree with the proposed approach. All ETG members agreed with the approach discussed and it was requested that this be recorded in an Agreements Log.	RS – Issue Agreements Log
18	AS confirmed that consenting process review is still ongoing but that no date of finalisation of the process can shared at this stage.	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (SE) – MMO; [REDACTED] (HA) – MMO; [REDACTED] (CL) – Natural England; [REDACTED] (LB) – Natural England; [REDACTED] (JT) – Natural England; [REDACTED] (RF) – Cefas; [REDACTED] (EO) – Equinor; [REDACTED] (ME) – Equinor; [REDACTED] (OV) – Equinor; [REDACTED] (AP) – RHDHV; [REDACTED] (JL) – RHDHV; [REDACTED] (RS) – RHDHV; [REDACTED] (MW) – RHDHV.

Apologies: [REDACTED] (TD) – The Wildlife Trusts

From: Royal HaskoningDHV

Date: Thursday, 18 June 2020

Location: MS teams

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-PM-0014

Classification: Project related

Enclosures: ETG meeting slides

Subject: Marine Mammal ETG2

Number	Details	Action
Introductions and Purpose of the meeting		
1	ME presented a project update. The landfall decision was announced in May with Weybourne chosen as the preferred location. The landfall selection was the result of a technical feasibility study and analysis of the geophysical survey campaign results.	RHDHV to issue ETG meeting slides with these minutes.
2	Equinor submitted the Statement of Community Consultation (SoCC) to major stakeholders for review. Community consultation planned to be undertaken in late June.	
3	A geophysical survey of the extension array areas and interlink cable corridors was completed last week and reporting is currently being progressed. Fishing gear was encountered in the survey area which made surveys difficult and caused some delays.	
Actions from last meeting		
4	JL summarised actions from previous meeting and stated that most of the actions are still ongoing and will be addressed through PEI and ES (please see attached ETG slides). ETG agreed that there are no other outstanding actions.	
Method Statement		
5	JL listed marine mammal species to be included in the PEIR and ES (please see attached ETG slides).	

Number	Details	Action
	<p>JL stated that digital aerial surveys for marine mammals have been completed in April 2020 and covered the DEP and SEP sites (plus a 4km buffer). The values presented on slides are based on the raw data as final reporting is still not yet available. Majority of sightings in the study area involved harbour porpoise and seal species.</p> <p>JL stated that the survey results will be used to calculate abundance and density estimates (please see Method Statement for more information). Correction factors will be applied to the data to account for seasonal changes and individuals present below 2m below water depth.</p> <p>The results will be compared to density estimates for the wider area (please see attached ETG slides).</p>	
6	<p>Aerial survey data for dolphin species and minke whale will not be sufficient to inform site specific density calculations due to the low number of records. Therefore SCANS-III survey and relevant management unit estimates will be used (please see attached ETG slides).</p> <p>Aerial survey derived abundance and density estimates will be used for harbour porpoise, and where possible, grey seal and harbour seal, along with SCANS-III survey and relevant management unit estimates for the wider area. The highest density estimate will be used in the assessments as worst case scenario.</p> <p>CL stated that the Wadden Sea seal population estimates for grey seal and harbour seal might not be relevant. JL explained that it will be included to take into account the wide range of grey and harbour seals, particularly for the cumulative and in-combination assessment. JL and CL agreed that the SE England MU population estimate will also be used to provide context for the assessment.</p>	
7	<p>JL presented approach to the Impact Assessment Methodology. No comments from the ETG to any of the elements of the methodology.</p>	
8	<p>JL presented approach to underwater noise modelling (please see attached ETG slides). The underwater noise modelling will incorporate current international best practice guidance, thresholds and criteria, including Southall <i>et al.</i> (2019). Noise modelling will be based on the worst-case scenario impact piling.</p> <p>JL asked if underwater noise modelling should also use Lucke <i>et al.</i> (2009) criteria for PTS, TTS and behavioural response in harbour porpoise? CL stated that Lucke <i>et al.</i> (2009) was incorporated in Southall <i>et al.</i> (2019) for TTS and PTS and therefore does not have to be considered separately. Lucke <i>et al.</i> (2009) can still be used for behavioural response in harbour porpoise. The relevant EDRs in the</p>	

Number	Details	Action
	latest JNCC <i>et al.</i> (2020) will also be used for the disturbance of harbour porpoise.	
9	CL asked if the maximum hammer energy presented in the Method Statement is being reconsidered and JL responded that the worst case scenario will be presented with the PEIR.	
10	JL presented a list of potential impacts identified to be taken into the PEIR. No comments from the ETG to any of the impacts presented.	
11	<p>JL presented the approach to assessing the potential impacts from underwater noise on marine mammals during UXO clearance. UXO clearance will not be part of the DCO submission but impacts will be addressed as part of the assessment. A detailed UXO survey will be completed prior to construction and therefore for the assessment a conservative estimate will be made based on desk study information (please see attached ETG slides).</p> <p>CL asked that UXO clearance at other sites was included in the in-combination assessment. JL confirmed that this would be done.</p>	
12	<p>JL presented the approach to assessment of underwater noise impacts from piling, other construction and maintenance activities, vessels, operational turbines and barrier effects (please see attached ETG slides).</p> <p>No comments from the ETG to the approach presented.</p>	
13	<p>JL presented the approach to assessment of potential vessel collision, potential disturbance at seal haul-out sites, potential changes to marine mammal prey resources, changes to water quality on marine mammals and prey, and decommissioning.</p> <p>No comments from the ETG to the approach presented.</p>	
14	<p>JL presented the approach to assessment of potential cumulative impact assessment, and transboundary impacts (please see attached ETG slides).</p> <p>No comments from the ETG to the approach presented.</p>	
HRA Screening		
15	<p>JL presented summary of the HRA screening and HRA assessment approach (please see attached ETG slides).</p> <p>CL asked if UXOs impacts will be considered in the HRA and JL responded that although UXO will be covered by a separate application they are screened in as part of the in-combination assessment.</p>	

Number	Details	Action
	No other comments from the ETG were received with regard to the results to the screening or the assessment presented.	
Data Sources and Information		
16	<p>JL presented list of data sources to be used to inform the assessment and asked the ETG if there are any other data sources to be considered (please see attached ETG slides).</p> <p>No comments from the ETG to the list of data sources. CL will review the list and provide updates if necessary, following the meeting. If Natural England becomes aware of any data/sources, information or guidance that are relevant to this project and the assessment, they will pass this on as appropriate.</p>	<p>If Natural England becomes aware of any data/sources, information or guidance that are relevant to this project and the assessment, they will pass this on as appropriate.</p>
AOB		
17	<p>It was agreed that the HRA screening will be shared with the ETG as soon as possible.</p> <p>Next ETG meeting will be organised following submission of the PEIR once comments to the document have been provided.</p>	



Project Team
Equinor New Energy Limited

Our reference:
DCO/2019/00004

By email only

07 August 2020

Dear Sir/Madam,

Dudgeon & Sheringham Extension Projects: Marine Mammal Expert Topic Group 2

Equinor New Energy Ltd (“the Applicant”) are proposing the extension of two Offshore Wind Farms (OWF), Dudgeon Extension Project (“DEP”) and Sheringham Shoal Extension Project (“SEP”) which are situated off the North Norfolk coast. The applicant provided a Marine Mammals Method Statement for review at the Marine Mammal Expert Topic Group 2 (“ETG”) held on 18 June 2020. The purpose of this method statement is to outline the proposed approach to be taken and considerations to be made in the assessment of the effects of DEP and SEP on marine mammals.

The Marine Management Organisation (“MMO”) has reviewed the supporting documentation in consultation with our technical advisors at The Centre for Environment, Fisheries and Aquaculture Science (“Cefas”). Please find the MMO’s comments provided in this response. The MMO reserves the right to modify its present advice or opinion in view of any additional matters or information that may come to our attention.

Your feedback

We are committed to providing excellent customer service and continually improving our standards and we would be delighted to know what you thought of the service you have received from us. Please help us by taking a few minutes to complete the following short survey [REDACTED].

If you require any further information, please do not hesitate to contact me using the details provided below.

Yours Sincerely,

Hope Armstrong
Marine Licensing Case Officer

[REDACTED]
[REDACTED]

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1. Marine Mammal ETG Presentation - Questions

1.1. Does the ETG agree with the marine mammal species to be assessed in the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES) for DEP & SEP?

The marine mammal species proposed appear to be reasonable (those being harbour porpoise, white-beaked dolphin, minke whale, grey seal and harbour seal). These species cover the four main functional hearing groups as per the National Oceanic and Atmospheric Administration (NOAA) (NMFS, 2018) criteria. However, the MMO defer overall to Natural England for confirmation on the marine mammals to be assessed for the PEIR and ES.

1.2. Does the ETG have any questions on the marine mammal surveys for DEP & SEP?

The MMO defer comments to Natural England on this matter.

1.3. Does the ETG agree with the approach for the harbour porpoise, white-beaked dolphin, minke whale, grey seal and harbour seal density estimates and reference population (NS MU) to be used in the PEIR and ES assessments for DEP & SEP?

The MMO defer comment to Natural England on this matter.

1.4. Does the ETG agree with the approach for determining marine mammal sensitivity to be used in the PEIR and ES assessments for DEP & SEP?

The MMO defer comment to Natural England on this matter.

1.5. Does the ETG agree with the approach for determining marine mammal value and how it will be used in the PEIR and ES assessments for DEP & SEP?

The MMO defer comment to Natural England on this matter.

1.6. Does the ETG agree with the approach for determining magnitude in the PEIR and ES assessments for DEP & SEP?

The MMO defer comment to Natural England on this matter.

1.7. Does the ETG agree with the approach for determining impact significance in the PEIR and ES assessments for DEP & SEP?

The MMO defer comment to Natural England on this matter.

1.8. Should modelling also be conducted using the Lucke et al. (2009) criteria for PTS, TTS and behavioural response in harbour porpoise?

Given that the noise modelling will utilise the most recent, peer-reviewed marine mammal noise exposure criteria (e.g. Southall et al., 2019 and NOAA, 2018), the

MMO do not believe it is necessary to also include criteria from Lucke et al. (2009) to assess PTS and TTS impacts.

1.9. Does the ETG agree with the approach for underwater noise modelling? Are there any questions regarding the underwater noise modelling?

Overall, the MMO agree with the approach for the underwater noise modelling, as detailed in slides 19 – 27 of the presentation pack. The approach refers to recent, peer reviewed noise exposure criteria, e.g. Southall *et al.* (2019) and NOAA (NMFS, 2018). Furthermore, it appears as though all the potential impacts have been identified and will be assessed.

Please note that the MMO will disseminate information in due course regarding the behavioural assessment (details in Annex I for reference), as soon as a position has been agreed. The MMO are aware that Cefas have provided comments on the JNCC draft guidance document (JNCC, 2020).

The MMO have no questions regarding the underwater noise modelling at this stage.

1.10. The ETG agreed with the potential impacts to be assessed at the previous ETG meeting - are there any further comments on the potential impacts to be assessed for the PEIR and ES for DEP & SEP?

The MMO do not have any further comments regarding the potential impacts to be assessed at this stage. As noted above, it appears as though all the potential impacts have been identified and will be assessed.

1.11. Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during unexploded ordnance (UXO) clearance?

Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate.

The MMO understand that for the UXO assessment, underwater noise modelling will be undertaken based on the worst-case scenario, with no mitigation, for the types and sizes of UXO that could be present at DEP, SEP and in the cable route (see slide 23). However, specific details of the UXO modelling are limited at this stage.

1.12. Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during UXO clearance, piling, operational turbines and from other construction/maintenance activities?

Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate.

1.13. Does the ETG agree with the approach for assessing the potential impacts on marine mammals from underwater noise and disturbance from vessels at DEP & SEP?

Based on the information provided to date, The MMO believe the general approach for assessing the potential impacts on marine mammals from underwater noise and disturbance from vessels is reasonable.

1.14. Does the ETG agree with the approach for assessing the potential barrier effects from underwater noise on marine mammals for DEP & SEP?

The MMO believe the general approach for assessing the potential barrier effects from noise is reasonable, although defer to Natural England for further comments.

1.15. Does the ETG agree with the approach for assessing the potential vessel collision risk for marine mammals at DEP & SEP?

The MMO defer comment to Natural England (and other relevant advisory bodies) on this matter.

1.16. Does the ETG agree with the approach for assessing the potential disturbance at seal haul-out sites for DEP & SEP?

The MMO defer overall comment to Natural England for comments on this matter. The MMO believe that the general approach proposed for assessing the potential disturbance at seal haul-out sites is reasonable. Of relevance, slide 30 states that *“the potential for any disturbance at seal haul-out sites, taking into account breeding and moulting periods for grey and harbour seal, will be assessed based on known haul-out sites and their proximity to activities associated with DEP, SEP, the cable route and vessel routes”*.

1.17. Does the ETG agree with the approach for assessing the potential changes to marine mammal prey resources for DEP & SEP?

The MMO believe the general approach for assessing the potential changes to marine mammal prey resources is reasonable, although defer to Natural England for specific comments on this matter.

1.18. Does the ETG agree with the approach for assessing the potential impacts of changes to water quality on marine mammals and prey for DEP & SEP?

The approach to assessing changes to water quality seems reasonable, however, the MMO defer to Natural England for further comment.

1.19. Does the ETG agree with the approach for assessing the potential impacts of decommissioning on marine mammals for DEP & SEP?

As expected at this stage, details of the decommissioning assessment are limited. The documents provided state that the *“potential impacts associated with the decommissioning stage(s) will be assessed in detail ahead of any decommissioning works to be undertaken taking account of known information at that time, including*

all relevant guidelines and requirements. For the assessment in the PEIR and ES, the potential impacts on marine mammals associated with the decommissioning stage(s) will be assessed, based on the potential impacts associated with construction". The MMO believe this approach is appropriate.

1.20. Does the ETG agree with the approach for assessing the potential cumulative impacts for marine mammals?

The MMO have no major concerns regarding the approach for assessing the potential cumulative impacts for marine mammals. However, please note that cumulative effects are difficult to assess, and EIA-based cumulative effects assessments (CEAs) led by developers of individual projects have clear shortcomings (when compared to CEAs led by government agencies on a regional and strategic level) (Willstead *et al.*, 2017).

1.21. Does the ETG agree with the Habitats Regulation Assessment (HRA) Screening for marine mammals? Does the ETG agree with the approach for the marine mammal assessments to inform the HRA?

The MMO defer to Natural England as the Statutory Nature Conservation Body (SNCB) for comments on the HRA. The MMO do not have any major comments or concerns to raise at this time.

1.22. Are there any other recent data sources, information and guidance?

The MMO's advisers at Cefas advised it is acceptable to include (and implement) the recent guidance from JNCC (JNCC Report no.654 2020). This report sets out the SNCBs' advice on assessing the risk of significant disturbance as a result of noise and consequently managing noise disturbance within harbour porpoise sites (e.g. SACs), to avoid a potential adverse effect on site integrity. The report recognises that it will be a challenge for regulators or industry to monitor the daily proposed area/time thresholds i.e. 20% limit per day, in 'real' time. Therefore, careful planning and a good understanding of all the various developments will be required by the regulator.

Please note however, that this JNCC guidance does not supersede the EIA process, where each development and the risks to harbour porpoise are reviewed on a case by case basis.

It the MMO's understanding that the Applicant wishes to apply the Effective Deterrence Ranges (EDRs) provided in the above JNCC guidance document (e.g. 26 km EDR during piling) to the marine mammal disturbance assessments in their ES. Another alternative is to assess disturbance impacts based on an appropriate dose response curve. This would be the Applicant's decision on which approach they wish to use, but either approach would be acceptable.

Cefas have noted that they will endeavour to pass on any new relevant information that may be useful and/or relevant.

2. Marine Mammals Method Statement – additional comments

- 2.1 Overall, the MMO believe that an appropriate evidence base has been proposed to be used in the assessment, and the data sources identified are also appropriate.
- 2.2 Based on the information provided at this stage, the MMO believe that standard practices are proposed, and the evidence/modelling being proposed is consistent with that submitted for operations of a similar nature.
- 2.3 The MMO understand that the mitigation measures will be finalised once an assessment of the potential impacts has been undertaken. Section 1.6 of the method statement outlines the embedded mitigation that will be incorporated into the design of the development to prevent or reduce any significant adverse effects. These measures will include soft start/ramp up of piling activity, and a mitigation zone, and are the standard measures that are typically seen for such developments. The method statement further states that if further mitigation is required and possible, these will be reviewed in the relevant impact sections of the PEIR and ES.
- 2.4 The MMO believe it is appropriate that a Marine Mammal Mitigation Protocol will be developed for UXO clearance and piling. The MMO will be happy to advise on this matter at the relevant stages.
- 2.5 The MMO recommend the use of noise abatement technologies (i.e. bubble curtains) to reduce the risk of potential impact on marine receptors. Ideally, the MMO recommend that noise modelling is undertaken to assess the reduction in permanent threshold shift (PTS)/temporary threshold shift (TTS) zones that applying noise abatement measures will bring. Further steps on this are provided in Faulkner *et al.* (2018), and, on noise abatement, in Merchant (2019) and the report of the recent workshop at the Royal Society (Merchant and Robinson, 2020).
- 2.6 On page 63 of the marine mammal method statement, the report states that “*the soft-start and ramp-up for the SELcum scenarios will be defined and agreed prior to the commencement of the underwater noise modelling*”. If more than one pile (monopile or pin pile) is anticipated to be installed within 24 hours, then the assessment (pile driving sequence) should account for this.

References

Faulkner, R.C., Farcas, A., Merchant, N.D. (2018) Guiding principles for assessing the impact of underwater noise. *J Appl Ecol.* 2018; 00:1–6. [REDACTED]

JNCC, DAERA and Natural England (2020). Draft guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales and Northern Ireland). Dated 30th January 2020.

JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 654, JNCC, Peterborough, ISSN 0963- 8091. Dated May 2020.

Annex 1

Summary of proposals for disturbance assessments (the following are extracts taken from the presentation slides and method statement)

Approach to Assessing Underwater Noise During Piling:

- The SNCBs current advice is that a potential disturbance range of 26 kilometres (km) (approximate area of 2,124 square kilometres (km²)) around piling and UXO locations is used to assess the area within which harbour porpoise may be disturbed in the Southern North Sea Special Area of Conservation (SAC) (paragraph 157 of method statement).
- TTS onset can be used to determine the onset of disturbance (Southall *et al.*, 2007). It is proposed that the potential onset of disturbance in grey seal and harbour seal will be based on the NOAA (NMFS, 2018) and Southall *et al.* (2019) metrics and criteria for TTS (paragraph 158 of method statement).
- The threshold and criteria from Lucke *et al.* (2009) will be used to assess the potential impacts of behavioural response in harbour porpoise, based on a dose-response function (paragraph 159).
- There are currently no agreed thresholds for potential disturbance or behavioural effects, so the proposal is to use 26 km Effective Deterrent Radius (EDR) for monopiles and 15 km EDR for pin-piles based on current SNCB guidance for harbour porpoise SAC (JNCC *et al.*, 2020) (slide 24 of presentation pack).

Approach to Assessing Underwater Noise During Other Construction Activities and Maintenance Activities, operational turbines, and vessels:

- Underwater noise modelling will be undertaken to determine potential TTS / fleeing response ranges. No EDRs (see presentation pack).

Date: 30 June 2020
Our ref: 319668
Your ref: Dudgeon and Sheringham Shoal Extension Seabed ETG



Sterling House
Dix's Field
Exeter
EX1 1QA

T 0300 060 3900

BY EMAIL, NO HARD COPY TO FOLLOW

Dear Dudgeon and Sheringham Shoal Extension Project Team,

Consultation: Dudgeon and Sheringham Shoal Extension Projects Second Marine Mammal Expert Topic Group Meeting and Accompanying Documents

Thank you for your consultation on the above. The following advice is provided under Natural England's Discretionary Advice Service (DAS).

1. Summary

Natural England welcomes the continued engagement as part of the Evidence Plan process and at both the Steering Group and Topic Group level. This letter provides Natural England's detailed advice on the documents provided on 01 June 2020 and the second Marine Mammal Expert Topic Group (ETG) meeting held on 18 June 2020.

Overall Natural England welcomes the work that Equinor and your consultants have put in to preparing the Marine Mammal Method Statement and detailing how the marine mammal assessment will be undertaken.

2. Responses to Questions from Second Seabed ETG call on 18 June 2020

Ref.	Question	Natural England Response
2.1	Are there any other outstanding actions from ETG1?	None.
2.2	Does the ETG agree with the marine mammal species to be assessed in the PEIR and ES for DEP & SEP?	Yes, Natural England is in agreement.
2.3	Does the ETG have any questions on the marine mammal surveys for DEP & SEP?	Natural England has no further questions at this stage.
2.4	Does the ETG agree with the approach for the harbour porpoise density estimates and reference population (NS MU) to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.

Ref.	Question	Natural England Response
2.5	Does the ETG agree with the approach for the white-beaked dolphin density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.6	Does the ETG agree with the approach for the minke whale density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.7	Does the ETG agree with the approach for the grey seal density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Natural England is broadly in agreement with the approach. However, the assessment should be presented both with and without the Wadden Sea seal population included in the reference population.
2.8	Does the ETG agree with the approach for the harbour seal density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Natural England is broadly in agreement with the approach. However, the assessment should be presented both with and without the Wadden Sea seal population included in the reference population.
2.9	Does the ETG agree with the approach for determining marine mammal sensitivity to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.10	Does the ETG agree with the approach for determining marine mammal value and how it will be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.11	Does the ETG agree with the approach for determining magnitude in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.12	Does the ETG agree with the approach for determining impact significance in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.
2.13	Should modelling also be conducted using the Lucke et al. (2009) criteria for PTS, TTS and behavioural response in harbour porpoise?	The Lucke <i>et al</i> (2009) criteria for TTS and PTS have been absorbed in to the Southall <i>et al</i> (2019) criteria, but can still be used for behavioural response in harbour porpoise.
2.14	Does the ETG agree with the approach for underwater noise modelling?	Yes, Natural England is in agreement.
2.15	Are there any questions regarding the underwater noise modelling?	None at this time. Natural England notes details such as the maximum hammer energy stated in the method statement are currently

Ref.	Question	Natural England Response
		being reviewed and may therefore provide further comment on this at a later date.
2.16	The ETG agreed with the potential impacts to be assessed at the previous ETG meeting - are there any further comments on the potential impacts to be assessed for the PEIR and ES for DEP & SEP?	None at this time.
2.17	Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during UXO clearance?	Yes, Natural England is in agreement.
2.18	Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during piling at DEP & SEP?	Yes, Natural England is in agreement.
2.19	Does the ETG agree with the approach for assessing the potential impacts of underwater noise on marine mammals from other construction and maintenance activities at DEP & SEP?	Yes, Natural England is in agreement.
2.20	Does the ETG agree with the approach for assessing the potential impacts on marine mammals from underwater noise and disturbance from vessels at DEP & SEP?	Yes, Natural England is in agreement.
2.21	Does the ETG agree with the approach for assessing the potential impacts of underwater noise from operational turbines on marine mammals at DEP & SEP?	Yes, Natural England is in agreement.
2.22	Does the ETG agree with the approach for assessing the potential barrier effects from underwater noise on marine mammals for DEP & SEP?	Yes, Natural England is in agreement.
2.23	Does the ETG agree with the approach for assessing the potential vessel collision risk for marine mammals at DEP & SEP?	Yes, Natural England is in agreement.
2.24	Does the ETG agree with the approach for assessing the potential disturbance at seal haul-out sites for DEP & SEP?	Yes, Natural England is in agreement.
2.25	Does the ETG agree with the approach for assessing the potential changes to marine mammal prey resources for DEP & SEP?	Yes, Natural England is in agreement.

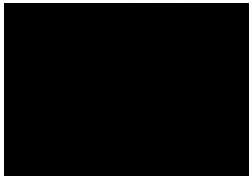
Ref.	Question	Natural England Response
2.26	Does the ETG agree with the approach for assessing the potential impacts of changes to water quality on marine mammals and prey for DEP & SEP?	Yes, Natural England is in agreement.
2.27	Does the ETG agree with the approach for assessing the potential impacts of decommissioning on marine mammals for DEP & SEP?	Yes, Natural England is in agreement.
2.28	Does the ETG agree with the approach for assessing the potential cumulative impacts for marine mammals?	Yes, Natural England is in agreement.
2.29	Does the ETG agree with the approach for assessing the potential cumulative impacts for marine mammals?	Yes, Natural England is in agreement.
2.30	Does the ETG agree with the HRA Screening for marine mammals?	Yes, Natural England is in agreement.
2.31	Does the ETG agree with the approach for the marine mammal assessments to inform the HRA?	Yes, Natural England is in agreement.
2.32	Are there any other recent data sources, information and guidance?	None at this time. If Natural England becomes aware of any data/sources, information or guidance that are relevant to this project and the assessment, we will pass this on as appropriate.
2.33	ETG to agree to send back comments within two weeks of receiving minutes, e.g. 16th July?	Yes, Natural England is in agreement.
2.34	Does the ETG agree with the proposed meetings for the Marine Mammal ETG?	Yes, Natural England is in agreement.
2.35	Are any further ETG meetings required prior to DCO submission?	None other than the proposed ETG to discuss comments on the PEIR.

For any queries regarding this advice letter or to provide further information on this consultation please send your correspondence to me using the contact details below.

The advice provided in this letter has been through Natural England's Quality Assurance process. The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any

proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely,



Jessica Taylor
Marine Lead Adviser



Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: Equinor: [REDACTED] (SC)

Royal HaskoningDHV (RHDHV): [REDACTED] (JL); [REDACTED] (AP); [REDACTED] (PM); [REDACTED] (AS)

Natural England: [REDACTED] (OH); [REDACTED] (HM); [REDACTED] (AG)

Marine Management Organisation: Sarah Errington (SE)

Cefas: [REDACTED] (RF)

The Wildlife Trusts (TWT): [REDACTED] (CP)

Apologies: [REDACTED] (TWT); [REDACTED] (Natural England); [REDACTED] (Natural England); [REDACTED] (Equinor)

From: Royal HaskoningDHV

Date: Tuesday, 20 July 2021

Location: Teams meeting

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-Z-0009

Classification: Project related

Enclosures: ETG meeting slides

Subject: DEP and SEP Marine Mammals ETG3

Number	Details	Action
Project Update		
1	<p>SC - thanked stakeholders for their comments on the Preliminary Environmental Information Report (PEIR) and provided a brief project update:</p> <ul style="list-style-type: none"> ■ Noted that comments are currently being processed and plans underway for how they will be addressed in the final Environmental Statement (ES), Habitats Regulations Assessment (HRA) and wider Development Consent Order (DCO) application documents. ■ Timescales - currently working towards a DCO application submission by the end of the year. <p>JL - noted that no fundamental changes to the worst-case scenarios for marine mammals are anticipated.</p> <p><i>Copy of the presentation has been included in the meeting invite.</i></p>	
UXO clearance as separate marine licence or through DCO?		
2	JL – as agreed with the Marine Management Organisation (MMO), Unexploded Ordnance (UXO) clearance will be a separate marine licence,	

Number	Details	Action
	<p>however (as with PEIR documents) assessments will be provided within ES and HRA for information.</p> <p>JL – Due to timeframes between now and the UXO clearance campaign, and the likelihood that new information / guidance will become available, a separate ML is the preferred route.</p> <p>AG - noted that there was an inconsistency in the Natural England PEIR comments and clarified that Natural England support the separate marine licence route for UXO (included in Agreement Log below). However, AG noted that it is important to show clear consideration of potential UXO impacts.</p> <p>JL - thanked AG for clarification and confirmed that this approach will be taken and that a separate draft Marine Mammal Mitigation Protocol (MMMP) for UXO will be also be provided for information.</p>	
Main PEIR Comments - Underwater Noise (UWN) Modelling		
3.1	<p>Further UXO modelling</p> <p>JL - provided clarification on UXO charge weights i.e. sizes were converted from lb to kg for consistency, however, this is not the same as the Net Explosive Quantity (NEQ) or TNT equivalent charge weights. This will be clarified in the ES and Information for HRA.</p> <p>JL – further UXO modelling to be done with and without current mitigation requirements. This will be used in the draft MMMP, for information. However, this is indicative only and the assessments will be based on worst case.</p> <p>It is important to note that the final MMMP for UXO will be agreed prior to UXO clearance based on the latest information, modelling, guidance and requirements at that time.</p> <p>OH – confirmed that the updates/clarifications are appropriate.</p> <p>CP - requested that the Applicant be explicit when describing the differences between ‘low order’ and ‘low yield’ deflagration.</p> <p>RF - queried if the bubble curtain modelling would be based on real-world data.</p> <p>JL - noted that this would be confirmed with SubAcoustech but will likely be an arbitrary reduction of X dB. A high-level approach is considered appropriate at this stage. It is anticipated that by the time of these projects’ license(s) for UXO clearance there will be a lot more data available for the modelling and to include in any marine licence assessment.</p> <p>Outline of proposed UXO modelling included in Agreement Log.</p>	<p>RHDHV to clarify charge weight size conversions in the ES.</p> <p>-----</p> <p>RHDHV to clarify low-order and low-yield techniques.</p>
3.2	<p>Further underwater modelling for piling</p> <p>JL - noted that there are no plans to re-do all noise modelling as no changes to originally modelled piling parameters are planned (except further modelling of 4m diameter pin-pile for wind turbine jackets, 3.5m diameter pin-piles previously modelled for offshore sub-stations (OSS)).</p>	

Number	Details	Action
	<p>JL - noted that the PEIR stated that if there is potential for concurrent piling activities or for more than one piling event within a 24 hour period, this would be considered within the ES. All possible options are being considered and if required these options will be modelled and assessed.</p> <p>AG - requested that consideration be given to how no concurrent piling would be secured in the Deemed marine Licences (DMLs) if this is ruled out as an option.</p> <p>AG - queried if the Applicant had considered whether piling and UXO could be undertaken at the same time. JL - noted that this was unlikely, however all possible options to determine worst-case scenarios are being considered.</p> <p>JL – consideration of behavioural impact range of fish, particularly in relation to spawning areas during piling will be provided.</p> <p>JL - requested that ETG check whether any additional considerations regarding UWN modelling need to be included. If so, could they please be indicated in these minutes and agreement log, since a relatively early cut off point is required in order for the modelling and assessments to be updated in a timely manner. Included in Agreement Log below.</p>	<p>----- Equinor/RHDHV to consider all possible piling options to be included in the updated assessments. ----- Equinor / RHDHV to determine if concurrent UXO and piling options to be included in the updated assessments. If there is any potential for concurrent UXO and piling this will be assessed as the worst-case. ----- If required, ETG to indicate within these minutes and agreement log if any additional information should be included in the UWN modelling</p>
Main PEIR Comments – Updates to Data Sources		
4	<p>JL – all new data sources that have become available since PEIR writing and submission will be taken on board within the updated assessments.</p> <p>JL – this includes updates to density estimates and references populations, which, where relevant, will be updated for all assessments.</p> <p>No changes to the cetacean density estimates used in the assessments.</p> <p>Seal density estimates - Carter <i>et al.</i> (2020)¹ provide a relative index of seal density at sea, so not yet clear if this can be used to provide updates</p>	<p>RHDHV to include as appropriate updated data sources within the updated assessments.</p>

¹ Carter, M.I.D., Boehme, L., Duck, C.D., Grecian, W.J., Hastie, G.D., McConnell, B.J., Miller, D.L., Morris, C.D., Moss, S.E.W., Thompson, D., Thompson, P.M., and Russell, D.J.F., 2020. Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles. Sea Mammal Research Unit, University of St Andrews, Report to BEIS, OESEA-16-76/OESEA-17-78. Available online at:

Number	Details	Action
	<p>to the absolute seal densities. This will be further looked at internally and if necessary, the authors will be contacted to determine how best the data can be used.</p> <p>However, if the data are not fit for purpose, the seal density estimates used in the PEIR will be used in the ES and information from Carter <i>et al.</i> (2020) included for context.</p> <p>OH – recommendation to use Carter <i>et al.</i> (2020) came from the authors, but OH will take this away and consider.</p> <p>JL - noted updates to seal and cetacean reference populations which will be taken into account in the updated ES and HRA assessments.</p> <p>OH - noted that NatureScot did not agree with the Coastal East Scotland MU bottlenose dolphin figure of 189 and therefore the 209 figure may be the most appropriate one to use.</p> <p>OH - noted that a minor amendment to the IAMMWG report may be forthcoming so the Applicant should keep an eye out for that.</p> <p>JL - thanked OH for the update and noted that any changes to the agreed reference population for bottlenose dolphin from the Moray Firth / Coastal East Scotland MU would be taken into account in the assessments.</p> <p>JL - requested that ETG check whether there are any additional data sources that have recently become available and need to be included. If so, could they please be indicated in these minutes and agreement log so they can be considered for the updated assessments. Included in Agreement Log below.</p>	<p>NE to consider use of Carter <i>et al.</i> (2020)</p> <p>-----</p> <p>If required, ETG to indicate within these minutes and agreement log, any additional data sources that should be included within the updated assessments.</p>
Main PEIR Comments – Vessel Movements		
5	<p>JL - noted that no changes to the worst-case vessel movements are anticipated. However, additional clarification and further information will be provided within the ES/HRA to address stakeholder comments.</p>	<p>RHDHV to address stakeholder comments in relation to vessel movements</p>
Main PEIR Comments – Use of Qualitative and Quantitative Assessments		
6	<p>JL - queried whether the comment was in relation to barrier effects and noted that further information / clarification will be provided on the approach used and how it provides an estimation of the number of animals that could be affected by barrier effects.</p> <p>OH - confirmed that the comment was in relation to barrier effects.</p> <p>JL - noted that the area of physical disturbance and habitat loss will be reviewed and updated</p> <p>Foraging habitat – JL noted that this is not typically done however relevant information will be provided on the foraging habitat / availability of subtidal sand and gravel habitats in the sites and the wider area.</p>	
Main PEIR Comments – Updates to Cumulative Impact Assessment (CIA)		

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/959723/SMRU_2020_Habitat-based_predictions_of_at-sea_distribution_for_grey_and_harbour_seals_in_the_British_Isles.pdf

Number	Details	Action
7	<p>JL – noted, as expected, that there were quite a lot of comments on CIA. It is recognised and was anticipated that there would be changes since the CIA screening was undertaken for PEIR, but the ES/HRA will be updated to address comments.</p> <p>JL - noted that the CIA and in-combination assessments are very time consuming assessments and therefore it would be welcomed if an appropriate cut off time for a final list of projects/activities can be agreed so that there is time to finalise the assessments for DCO submission. Therefore, it is recommended that prior to the next ETG, a final list of projects/activities is sent to ETG for agreement.</p> <p>OH - noted that this seemed like a sensible approach however Natural England would like to have a bit more of a think about this. Even if they can't be included for the ES they may need to be included in pre-examination / examination period.</p> <p>JL – clarified any further changes to projects/activities after the cut off date for the ES would be included, if required, in submissions as part of the pre-examination / examination process. It is noted that no further action is required by Natural England. Included in Agreement Log below.</p>	<p>RHDHV to circulate a list of projects / activities to be considered in the CIA and in-combination assessments with an appropriate cut off time to be determined (likely at the next ETG meeting)</p>
Main Comments on Draft Information for HRA		
8	<p>JL – summarised main comments on HRA (see slides) and indicated that these will be addressed for the DCO submission.</p> <p>In addition, any relevant PEIR comments will be carried through to the HRA.</p>	
Proposed Approach for Draft Marine Mammal Mitigation Protocol (MMMP) (UXO and Piling)		
9	<p>JL – Separate draft MMMPs for piling and UXO will be provided.</p> <p>Mitigation requirements will be based on the worst-case, but options for different mitigation measures and potential impact ranges, will be provided.</p> <p>JL – proposed approach will be to provide ETG with draft MMMPs for UXO and piling prior to next ETG meeting. Included in Agreement Log below.</p>	<p>RHDHV to provide draft MMMPs prior to next ETG.</p>
Proposed Approach for In-Principle Site Integrity Plan (IPSIP)		
10	<p>Although the DEP & SEP sites are not located within the SNS SAC, the EDR of 26km would overlap. The IPSIP will be developed as the is the most appropriate way to consider potential in-combination effects.</p> <p>JL – proposed approach will be to provide ETG with draft IPSIP prior to next ETG meeting. Included in Agreement Log below.</p>	<p>RHDHV / Equinor will develop IPSIP for managing any in-combination impacts on the Southern North Sea SAC.</p> <p>RHDHV to provide draft IPSIP prior to next ETG.</p>

Number	Details	Action
Next Steps		
11	<p>JL & SC - reiterated their appreciation of all the feedback provided to date. This will be taken on board and addressed as the ES, HRA and DCO documents are being prepared.</p> <p>JL - requested that stakeholders aim to send these minutes and agreement log table back within two weeks of receipt and if this is not possible could they please indicate a likely timescale for a response.</p> <p>In addition, if stakeholders have any other feedback please could this be provided at your earliest opportunity.</p> <p>JL - noted that draft versions of the MMMP and IPSIP will be sent to the ETG for review.</p> <p>CP - asked if any indication on MMMP/IPSIP delivery timescales (month wise) could be provided as TWT will be very busy over the next few months.</p> <p>JL - noted that delivery timescales would be considered and updated within the minutes if possible.</p> <p><i>[post meeting note – aim to provide draft versions of MMMPs and IPSIP as early as possible prior to DCO submission].</i></p>	<p>ETG attendees to review these minutes and agreement log table and provide feedback within two weeks of receipt. if possible.</p> <p>-----</p> <p>RHDHV to circulate draft versions of the MMMP and IPSIP as early as possible prior to DCO submission</p>

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (SC) - Equinor
 [REDACTED] (JL); [REDACTED] (PM) - Royal HaskoningDHV
 [REDACTED] (OH); [REDACTED] (LB); [REDACTED] (HM) - Natural England
 [REDACTED] (CP) - MMO
 [REDACTED] (RF) - Cefas

Apologies:

From: [REDACTED]
 Date: 14 February 2022
 Location: Microsoft Teams
 Copy:
 Our reference: PB8164-RHD-ZZ-XX-MI-Z-0031
 Classification: Open
 Enclosures: Meeting slides

Subject: SEP&DEP Marine Mammals ETG4 14FEB22

Number	Details	Action
1	<p>Project Update</p> <p>SC provided a project update - We are continuing with the evidence plan process through these extra months that we've afforded ourselves by pushing the DCO submission back to summer 2022.</p> <p>Currently in the process of updating Environmental Statement (ES) chapters, outline management plans etc.</p> <p>We had a pre application meeting with PINS a few weeks ago to update them on e.g. derogation work etc. and we will be submitting some documents to them for consultation.</p>	
2	<p>Overview of Marine Mammal ES and RIAA Updates</p> <p><i>Underwater noise modelling:</i> JL - we have undertaken further Underwater Noise (UWN) modelling which has been incorporated into the assessments where relevant.</p> <p><i>Data sources:</i> JL - we have to incorporate latest data sources and information since Preliminary Environmental Information (PEIR) and addressed PEIR comments in updates to ES and Report to Inform Appropriate Assessment (RIAA).</p> <p><i>Density estimates and reference populations:</i> JL - We have reviewed and updated density estimates and reference populations based on comments received and latest data available.</p>	

Number	Details	Action
	<p><i>Seal density estimates:</i> Prior to the ETG we had done an initial review of the data from both Carter <i>et al.</i> (2020) and Seal at Sea Usage maps by Russel <i>et al.</i> (2017) reports. [post-meeting note - Initially it was determined that it looked like the Russel <i>et al.</i> (2017) estimates provided the best approach. However, since the ETG we have done further, more detailed analysis of the data in Carter <i>et al.</i> (2020) and how to generate density estimates from the data. The assessments in the ES and RIAA will be based on the worst-case density estimates for grey and harbour seal.]</p> <p>OH - when you say worst case, do you mean in terms of numbers predicted or methodology?</p> <p>JL - in terms of numbers predicted that could be impacted. More information will be provided in the Appendix to the Marine Mammal ES Chapter on how density estimates were determined.</p> <p>JL - Harbour seal populations in The Wash have been updated based on recent counts to reflect current decline in numbers.</p> <p><i>Comments on disturbance at seal haul out sites:</i> JL explained that it is not possible to provide a quantitative assessment but more information has been provided within the submission documents.</p> <p><i>Updates to Special Area of Conservation (SAC) counts:</i> These have also been reviewed and updated since RIAA submission with PEIR.</p> <p><i>Cumulative Impact Assessment (CIA) screening:</i> JL - we looked at the impacts and at what was screened in and screened out at PEIR to see if anything needed to be updated. Impacts - no changes from PEIR, the same approach has been taken as shown on slide 10.</p> <p>Projects screened in for piling impacts - we have taken a very precautionary approach and included the projects shown on slide 11, not all of which are in the SAC. Very much a worst case scenario approach. Projects included shown on slide 12 in relation to the Southern North Sea (SNS) SAC summer and winter areas. Important to note that SEP and DEP are not in the SAC and that underwater noise impact ranges have a limited overlap.</p> <p>Screening for the CIA and in-combination assessments determined the projects and activities that could be undertaken at same time as construction of SEP and DEP, including:</p> <ul style="list-style-type: none"> • OWF construction (piling and other construction activities) 	

Number	Details	Action
	<ul style="list-style-type: none"> • OWF geophysical surveys • O&G seismic surveys • Aggregate extraction and dredging (screened in for harbour porpoise) • Subsea cables and pipelines (screened in for harbour porpoise) • UXO clearance - same approach as for PEIR <p>Similar precautionary approach to PEIR, with updates based on PEIR comments and the latest information currently available.</p> <p>OH - in reference back to where you presented the impact area around geophysical sources, does this take account of the fact that vessels are mobile?</p> <p>JL – In the ES it has been assumed that all marine mammals within 5km of the survey source, a total area of 78.54km², could be disturbed. For geophysical surveys with sub-bottom profilers, it is realistic and appropriate to base the assessments on the potential impact area around the vessel, as the potential for disturbance would be around the vessel at any one time. Marine mammals would not be at risk throughout the entire area surveyed in a day, as animals would return once the vessel had passed, and the disturbance had ceased.</p> <p>However, as a precautionary approach, the assessment of the potential disturbance of harbour porpoise in the SNS SAC in the RIAA will also include the possible disturbance from the survey area as assessed in BEIS (2020)¹.</p> <p>Projects screened out are shown on slide 19 - no significant contribution of these to construction noise from SEP and DEP. Shipping and commercial fisheries are considered to be part of the baseline.</p>	
3	<p>MMMP for Piling and UXO</p> <p>Draft MMMP for UXO will be submitted with the DCO application for information purposes, although UXO clearance will be submitted as separate Marine Licence (ML) and not with the DCO application.</p> <p>The MMMPs for piling and UXO will be developed, finalised and agreed pre-construction based upon comments on draft MMMPs, best available information, methodologies, industry best practice, latest scientific understanding, current guidance and detailed project design etc.</p>	

¹ BEIS (2020). Record of the Habitats Regulations Assessment undertaken under Regulation 65 of the Conservation of Habitats and Species 2017, and Regulation 33 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. Review of Consented Offshore Wind Farms in the Southern North Sea Harbour Porpoise SAC. September 2020. Department for Business, Energy and Industrial Strategy.

Number	Details	Action
	<p>Preferred method for UXO clearance will be low order however the assessments are based on potential requirement for high order detonation.</p> <p>Initial draft MMMPs sent to ETG for comments, which will be addressed in updated draft MMMPs submitted with the DCO application.</p>	
4	<p>Site Integrity Plan (SIP) for the SNS SAC</p> <p>JL reiterated that the projects aren't located in the SAC however there is potential for overlap from the 26km EDR for piling of monopiles without mitigation.</p> <p>SNS SAC SIP will be developed, finalised and agreed pre-construction based upon comments on draft SIP, best available information, methodologies, industry best practice, latest scientific understanding, current guidance and detailed project design, etc.</p> <p>RF - Will noise abatement be considered for pile driving? JL - yes, we have considered examples of mitigation, however mitigation will be agreed at the pre-construction stage.</p> <p>Initial draft SIP sent to ETG for comments, which will be addressed in updated draft In Principle SIP submitted with the DCO application.</p>	

1.3 Offshore Ornithology Expert Topic Group Meeting Minutes

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (ME) - Equinor, [REDACTED] (OV) – Equinor; [REDACTED] (AP) – RHDHV, [REDACTED] (RI) – RHDHV, [REDACTED] (MG) – RHDHV, [REDACTED] (RS) – RHDHV, [REDACTED] (MW) - RHDHV; [REDACTED] (LB) - NE, Sophy Allen (SA) – NE, Ruth Porter (RP) - NE; Aly McCluskie (AM) - RSPB

Apologies: [REDACTED] (MK) – NE; [REDACTED] (AS) - MMO, [REDACTED] (RW) – MMO; [REDACTED] (JD) - RSPB

From: Royal HaskoningDHV
Date: Thursday, 09 January 2020
Location: Skype meeting
Copy:
Our reference: PB8164-RHD-ZZ-OF-MI-PM-0007
Classification: Project related
Enclosures: ETG meeting slides

Subject: DEP and SEP Offshore Ornithology ETG (Meeting 1)

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Action

Introductions and project summary

- 1 Following introductions, ME summarised the project and consenting approach. Please refer to ETG meeting slides. Equinor (ME) to issue ETG meeting slides with these minutes.
- 2 SA asked whether it is the intention to develop the entire extension areas. ME stated that this is unlikely and that the extension areas are large enough to allow for flexibility of the array layout within them. Furthermore, the increasing generating capacity of turbine designs is likely to mean that fewer turbines are required to meet consented capacity. Although turbine spacing would be greater, overall it is likely that this will reduce the area of the extension arrays overall.

Summary of site aerial surveys

- 4 RI described the coverage and methodology of the ongoing site specific aerial surveys for offshore ornithology (starting May 2018 and expected to continue until April 2020). Please refer to ETG meeting slides. ME explained that the survey area boundary was redrawn (extended south – see slide 11) in September 2018, as a result of changing the Sheringham Extension to avoid overlap with the proposed Race Bank Extension.
- 5 The ETG discussed whether the surveys are sufficient. SA made reference to Natural England’s Scoping Opinion, stating that NE is not convinced that a 4km buffer around the survey area is sufficient to ensure that characterisation data is gathered across the full sea area over which the zone of influence of DEP and in particular SEP may extend – particularly in regard to the red-throated diver interest feature of the Greater Wash SPA. For this species there is increasing evidence of the zone of influence of operational windfarms exceeding 10km and

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Action

- perhaps reaching 20km. These distances would see the zone of influence around SEP overlapping with the Greater Wash SPA.
RI/MG acknowledged this but pointed out that most of the extensions are more than 10km from the SPA, coming to c.9km from the SPA at the closest point.
- SA suggested it should be possible to assess red-throated diver abundance in the relatively small area of potential influence outside the project survey area using other sources including a comparison between pre-construction red-throated diver distributions and project survey results.
AM agreed, citing mapped bird distributions from the Marine Ecosystems Research Programme (MERP) as an important data source.
- 6** AM stated that it will be important to understand variability in the data, particularly spatial variability. He would welcome the idea to assess whether analysis of data from the extra 2 digital cameras would significantly improve confidence in data variability. SA stated that it should not be assumed that 10% coverage (2 cameras) will be sufficient, and that this decision should be made based on an assessment of the data. RI confirmed that there will be an assessment of the benefits of using the extra data which will be discussed at a future ETG.
- 7** SA noted that the offshore scoping area in the Scoping Report does not correspond with the area covered by the digital aerial surveys and requested that this be addressed/explained.
- 8** AM would like to know the timing of survey flights to understand whether diurnal foraging peaks are likely to have been recorded. RI pointed out that survey times are subject to a number of practical restrictions, but that flight times can be provided and will be investigated.
- Key species of interest and first year survey results**
- 9** RI listed the species that will be the focus of assessments as Sandwich tern, kittiwake, gannet, guillemot, little gull, red-throated diver, lesser black-backed gull and great black backed gull, but noting that other species will be considered.
- 10** RI/MG summarised the monthly abundance and density estimates of Sandwich tern, kittiwake, gannet, guillemot, razorbill, and red-throated diver, from the first year of aerial surveys.
- 11** MG showed estimated abundance of Sandwich tern in the Dudgeon and Sheringham Shoal Extensions (with 95% confidence intervals) using two approaches – Bootstrapping and Poisson error regression based upon the null model.
- RI/MG to assess requirement/benefits of using the extra camera data
- Equinor/RHDHV to explain why the offshore scoping area is different to the aerial survey area in the method statement to be shared with the ETG before the next ETG meeting.
- Equinor/RHDHV to provide flight times prior to the next ETG meeting.

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- MG asked the ETG if they have a view on a preferred method.
AM and SA stated that they have no strong preference.
- 12** RI stated that density estimates will be derived from the site specific surveys (split in to appropriate reporting regions) and will be presented with appropriate confidence intervals for biologically relevant seasons. The ETG was asked if they agree with this approach.
- SA and AM stated that it is important to agree on the definition of biologically relevant seasons early in the process.
- 13** RI stated that design-based estimates are most likely to be employed. The ETG was asked if they agree with this approach.
- SA asked why density estimates will not be model based since the data collected outside the extension arrays is valuable.
MG stated that this would require confidence in covariates of abundance having good explanatory power, and suggested that this might work to determine relative abundance but would be unlikely to predict numbers with sufficient confidence. MG stated that whilst such approaches have been shown to work for species such as red-throated diver, he was not aware of examples demonstrating their success at predicting the distribution and abundance of species such as terns or kittiwakes in areas relatively far from shore. MG is also doubtful that any patterns would not be consistent at the scale of the extensions, pointing to the variability in distribution and abundance between months in the project surveys (with some months having low abundance and hence low sample size for modelling).
SA stated that a model approach is worth exploring given the large confidence intervals and that the Lincs Offshore Wind farm post-consent work suggests successful use of a model (MRSea work).
AM suggested discussing a model-based approach with HiDef, which was agreed by the ETG.
AP asked whether a model-based approach will be considered for just Sandwich tern or other species. The ETG agreed that a list of species to be investigated using modelled estimates should be produced (should a model-based approach be pursued), which may be determined by the number of observations.
- 14** MG asked the ETG to what extent the period of two surveys per month offsets the issue of large confidence intervals, pointing to the relative consistency of the mean abundance values from the different surveys in each month.
AM stated that for Sandwich tern the key months are April and May, and that DEP April 2019 data shows large abundance difference between the two surveys in that month. AM noted that unusual events such as a
- Equinor/RHDHV to define biologically relevant seasons in the method statement and share with the ETG before the next ETG meeting (currently planned for June 2020).
- Equinor/RHDHV to discuss the feasibility of a model-based approach to density estimation and bird distribution with HiDef.
- If a model-based approach is considered appropriate, the species suitable for modelling should be listed.
- Further thought and discussion required on assessing variability in abundance

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flock/feeding aggregation have a large effect and this needs to be considered. We are still learning how variability can be best incorporated in to the assessment.

SA stated that two surveys per month is beneficial but given the high variability within and between months, more thought is needed how variability in numbers is reflected. It is important that variability reflects reality and is not a result of survey design and analysis. More discussion is needed.

Baseline data sources

- | | | |
|----|--|--|
| 15 | RI summarised the key baseline data sources to be used. Please refer to ETG meeting slides. | |
| 16 | RI described the Wilson <i>et al.</i> 2014 data source, which used two breeding seasons of fast boat-based tracking of Sandwich tern from both Scott Head and Blakeney Point colonies. | RI/MG to consider how this dataset will be used and propose this to the ETG. |
| 17 | <p>RI described the Cleasby <i>et al.</i> 2018 data source (for kittiwake, guillemot, razorbill and European shag). The data suggests the extensions are within the home range of breeding kittiwakes from the Flamborough and Filey Coast SPA but not within their core range.</p> <p>AM asked if project team had looked at the outputs from the more recent report on the Flamborough kittiwake tracking in 2017. RI stated that had not been done yet but was aware of report.</p> <p>AM stated that there is a more recent RSPB report that will be available shortly including 2019 data. AM will check with the RSPB project lead as to whether the raw data can be shared. Later studies cover more of the breeding season – a new tagging method has been used where tags are retained for longer (up to 1 month) compared to a few days in Cleasby <i>et al.</i> 2018.</p> | <p>Equinor/RHDHV to obtain and use more recent data.</p> <p>AM to check with the RSPB project lead as to whether the raw data can be shared from imminent RSPB report by end of February 2020.</p> |
| 18 | Wakefield <i>et al.</i> 2013 shows gannet utilisation distribution from the Flamborough Head and Bempton Cliffs SPA and suggested the extension areas may be on the edge of the distribution but better data is required. AM was uncertain if the Wakefield paper included all of the tracking data from the Langston DECC report but stated the raw data from the DECC tracking are available. | |
| 19 | Sandwich tern tracking for Dudgeon OWF Operational Monitoring Plan (OMP) – AM asked what sort of tags were used since, although flight height information is not an objective of the monitoring, GPS data may include information that can be used to interpret flight heights (distribution rather than exact spot heights). The ETG agreed this possibility is worth exploring and MG would follow up with Bureau Waardenburg (undertaking the Dudgeon OMP tracking). | RI to investigate whether any flight height information can be obtained from Dudgeon OMP Sandwich tern tracking. |
| 20 | <p>RI stated that the applicant will consider SPA apportioning methods and consult with the ETG at a later date.</p> <p>AM stated that the BTO TCE review of seabird foraging ranges, which would inform apportioning, should be published imminently.</p> | Equinor/RHDHV to consider and propose SPA apportioning methods. |

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Impact assessment

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|------------------------------|--|--|
| 21 | RI presented the potential impacts to be assessed. Please refer to ETG meeting slides. The ETG agreed with the list. | |
| 22 | RI summarised the proposed high level impact assessment methodology, which will include a detailed method statement to be prepared and agreed with the ETG. Please refer to ETG meeting slides. The ETG agreed with the high level methodology subject to seeing the detailed method statement. | Equinor/RHDHV to produce a detailed method statement to be shared with the ETG in advance of the next ETG meeting (currently planned for June 2020) for approval. |
| 23 | RI summarised the proposed approach to cumulative impact assessment (CIA). Please refer to ETG meeting slides. The ETG agreed with the high level CIA approach subject to seeing the detailed method statement. | |
| 24 | RI summarised the proposed information for the HRA, including relevant SPAs and key species. Please refer to ETG meeting slides. The ETG agreed with the high level HRA approach. | |
| 25 | RI summarised the proposed consultation approach. Please refer to ETG meeting slides. The ETG agreed with the proposed approach. SA asked if there is a timeline for key milestones and consultation. IR/MG stated there is no detailed timeline at present but one will be produced. | Equinor/RHDHV to produce a detailed timeline to be shared with the ETG in advance of the next ETG meeting for approval. |
| 26 | RI confirmed that the next step will be to produce a detailed method statement including information sources, the EIA approach and methodology. This will be shared and agreed with the ETG. The ETG agreed with this approach. | See action against minute 22. |
| Collision risk models | | |
| 27 | RI proposed to update the Folkerts CRM used for the DECC (2012) Appropriate Assessment for all relevant wind farms, using the latest information input in to the online stochastic model where the available input data permit this. This will be used to undertake the in-combination impact assessment. The ETG agreed that it will probably be necessary to re-run models for all wind farms (reassess previous CRM assessments) where feasible. AM asked SA whether Natural England has a position on whether the stochastic or deterministic model should be used. SA stated that NE have been encouraging developers to use the stochastic model. SA noted a reservation due to discrepancies between the stochastic and deterministic outputs. AM then stated that he believes that recent work has resolved these discrepancies. LB stated that NE will formally provide its position as to whether the stochastic or deterministic model should be used (see action). | Natural England (SA) to state their position on the CRM model to use - stochastic or deterministic – in advance of the next ETG meeting currently planned for June 2020. |

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- SA and AM stated that any limitations of stochastic model outputs related to limitations on the parameters for which variability could be assessed would need to be made clear – the range of values available for model input variables will affect the extent to which variation is captured in the outputs.
- 28** LB recommended that the CRM assessments be re-run rather than building on the existing assessment, and the NE had stated this in its advice to The Crown Estate regarding its plan-level HRA. LB advised that the project team should try to obtain the NE advice to TCE. RI stated that rerunning the models (where feasible) was the next step after Sandwich tern density estimates for other relevant wind farms are obtained. LB also stated that for Sandwich tern, confidence in the acceptable annual mortality level without an adverse effect on site integrity of 94 birds (beyond which an adverse effect on North Norfolk Coast SPA site integrity would occur, as calculated by DECC (2012) Appropriate Assessment) is not high because there has not been sufficient evidence from post-construction monitoring.
- Equinor/RHDHV to request and obtain NE advice to TCE regarding its plan-level HRA.**
- Equinor/RHDHV to re-run the CRM for other wind farms.**
- As-built versus consented**
- 29** RI pointed out that there are 124 more consented turbines across Dudgeon OWF, Race Bank OWF and Triton Knoll OWF than have been installed, and suggested that a CRM assessment based on as-built information would be more realistic. SA referred to the Scoping Opinion which states, “*any assessment of collision risk using ‘as built’ scenarios should also be accompanied with equivalent information for the ‘as consented’ and as ‘as proposed’ scenarios since there is no apparent legal mechanism in place which secures a reduction in turbine numbers from the consented, and proposed development.*”. NE also states in its scoping response email that its “*position on as-built layouts is that for revised collision figures based on design or build changes to be accepted, it is necessary to: Provide documentary proof that the design envelope used to calculate new collision figures is*
- 1) legally secured with no further change possible (i.e. written confirmation from the appropriate Regulator provided);*
 - 2) the worst case scenario design envelope for collisions for each species considered for projects that are not yet built.*
- SA stated that the provision of legally binding documentary proof that as built wind farms will not change or expand is key before as built would be accepted in the CRM assessment. AM agreed with this position. LB reflected that this could be achieved either by the Regulator issuing a blanket restriction of further expansion of wind farms post-construction, or individual developers issuing a statement in the public domain.
- SA acknowledged that Rochdale Envelopes are too wide and are not reflective of reality. SA also pointed out that the important as-built metrics for CRM are those related to number and type of turbines rather than capacity.

Number Details

Action

Flight height for CRM

- 30** RI summarised the available flight height information for Sandwich tern and other species. Please refer to ETG meeting slides. The current position is to use Johnston *et al.* (2014) flight height distribution data and Option 2 CRM for Sandwich tern. However, further assessment of Sheringham Shoal OMP data to inform potential changes in flight height and distribution in the presence of an operational wind farm is proposed. AM stated that HiDef may have a method to incorporate flight height based on shadow casting in which might enable use of the Option 1 CRM, which is functionally the same as Option 2. However, the ETG noted this method may be difficult to use for Sandwich tern due to the problems of producing reliable flight height estimates from aerial survey data. AM stated that if this is not possible, he supports the use of Johnston *et al.* (2014), unless there is better data available in Harwood *et al.* 2018 (e.g. use of laser rangefinders).
- Equinor/RHDHV to investigate the possibility of incorporating flight height based on shadow casting with HiDef.
- Equinor/RHDHV to look at Harwood *et al.* 2018 for any better flight height information.

Avoidance rates

- 31** RI presented Sandwich tern avoidance rates used in recent assessments, including the 0.9883 used in DECC (2012) Appropriate Assessment and 0.994 taken from Sheringham Shoal post construction monitoring (Harwood *et al.* 2018). RI stated it was the intention to further investigate the latest Harwood evidence and asked the ETG what its current position is on the Sandwich tern avoidance rate.
- LB stated that it is still NE's official position that 0.98 should be used as stated in the SNCB 2014 advice note. However, NE recognises that this should be reviewed and is in the process of commissioning work to do so (which will include Sheringham Shoal post construction monitoring data). It is hoped that this work will report in time to be used in the assessment – expected around the end of this financial year (April 2020). However, this work has yet to be commissioned.

AM stated that the RSPB's position is the same for now (0.98).

AM advised caution when using predictors from the Folkerts model:

- Bear in mind avoidance rate is model specific and not same for Folkerts and Band models
- Undecided whether the same avoidance rate used in stochastic and deterministic model
- JNCC are commissioning work on 5 species which will be useful. It has recommended different avoidance rates for deterministic and stochastic models.

LB stated that the NE work previously referenced (Action 31) is an extension of the JNCC work AM referred to.

Sandwich tern flight speed

- 32** RI summarised a recent study by Fijn and Gyimesi (2018) informing Sandwich tern flight speeds which is proposed to be used in the CRM. Please refer to ETG meeting slides. RI stated the intention to use the overall flight speed from Fijn and Gyimesi (2018) and asked if the ETG agrees with the proposed approach.
- RI to confirm the frequency of GPS fixes was in the Fijn and Gyimesi (2018) study advance of

Number Details

Action

- AM asked what the frequency of GPS fixes was in the Fijn and Gyimesi (2018) study. RI agreed to come back with the details.
AM stated that flight speed is used in the Band model twice – used in the flux and probability of collision variables. Both are unvalidated.
AM advised the ETG would need to decide whether account for different behaviours (as identified in Fijn and Gyimesi, 2018) in the model flight speed parameters.
SA stated that she would welcome further discussion on use of flight speeds.
- Updating the 2012 Models: PVA**
- 33** RI asked the ETG if the 2019 Natural England PVA tool is this the preferred tool to be used for this project.
SA stated that it is, noting that there are some minor issues with the coding of the current version, although it is still functional. A final updated version of the tool is expected in early February 2020.
- 34** RI illustrated the PVA parameters that could be updated including starting population which has increased, breeding productivity, adult survival, juvenile survival and output interpretation. Please refer to ETG meeting slides. RI asked if the ETG agreed that the PVA input parameters should be updated.
The ETG broadly agreed that the parameters should be updated.
SA asked if the parameters for Sandwich tern in the PVA tool are national or specific to the North Norfolk Coast, noting that local / site specific information should be used where possible. AM agreed on this point.
RI stated that some are specific to the local area and that the input parameters will be reviewed bearing in mind that the input parameters should be based on local data where possible.
SA acknowledged that the PVA from the 2012 assessment should be compared with the 2019 analysis.
- 35** RI presented recent Sandwich tern population trends at the North Norfolk Coast SPA since the 2012 assessment including number of occupied nests, breeding success and a switch from breeding primarily at Blakeney Point to breeding almost entirely at Scolt Head. Please refer to ETG meeting slides.

SA stated that the impact of a switch back from Scolt Head to Blakeney Point should be assessed because this would bring the Sandwich tern breeding population closer to the existing Sheringham Shoal and Dudgeon OWFs and their proposed extensions, particularly Sheringham OWF and extension.

MG pointed out that foraging activity from Blakeney Point appears to be more restricted to the area close the colony than for Scolt Head (e.g. slide 40, Wilson *et al.*, 2014).

SA stated that it may be necessary to consider transit routes to and from foraging areas from different home colonies.
- the next ETG meeting currently planned for June 2020.
- RI/MG to review PVA input parameters bearing in mind that local data should be used where possible.
- MG/RI to consider if there is a need to assess the impacts of the projects in the event of a switch back to breeding primarily at Blakeney Point, and consider whether if/how transit routes to and from foraging areas from different home colonies need be considered.
- MG/RI to assess numbers of birds at

Number Details

Action

MG committed to give this further thought.

Scolt and Blakeney in all years where Wilson *et al.* (2014) data was collected.

AOB

- | | | |
|-----------|---|--|
| 36 | SA asked whether the air gap between rotors and sea level has been considered in the design envelope because increasing the air gap is an obvious mitigation option which would result in a considerable reduction in collision risk. SA stated that it would be useful to consider the impact of different scenarios. ME stated that the project is prepared to look in to this. | Equinor/RHDHV to investigate the impact of different air gap scenarios on bird collision risk, to inform the turbine design envelope. |
| 37 | Next meeting – there was a brief discussion about the scheduling of the next meeting. It was agreed that a timeline should be produced for offshore ornithology work and milestones, including further studies/investigations and production of a method statement, and that the next ETG should be informed by this timeline. | Equinor/RHDHV (RI/MG) to produce a timeline to be shared with the ETG (see also minute 25), and based on this timeline recommend an appropriate time for the next ETG. |
| 38 | RS confirmed that meeting minutes will be drafted and distributed to the ETG members for review along with a first draft of the Offshore Ornithology Agreements Log. | ME to issue meeting minutes and Agreements Log to ETG members for review. |
| 39 | ME thanked everyone for their contributions and brought the meeting to a close. | |

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: ██████████ (SE) – MMO, ██████████ (HA) – MMO; ██████████ (SA) – Natural England, ██████████ (JT) – Natural England, ██████████ (LB) – Natural England; ██████████ (AM) – RSPB, ██████████ (PP) – RSPB; ██████████ (ME) – Equinor, ██████████ (OV) – Equinor; ██████████ (AP) – RHDHV, ██████████ (MG) – RHDHV, ██████████ (RI) – RHDHV, ██████████ (RS) – RHDHV, ██████████ (MW) - RHDHV

Apologies: ██████████ (RP) - Natural England

From: Royal HaskoningDHV

Date: Thursday, 04 June 2020

Location: MS teams

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-PM-0013

Classification: Project related

Enclosures: ETG meeting slides

Subject: Offshore Ornithology ETG2

Number	Details	Action
Introductions and Purpose of the meeting		
1	<p>ME presented a project update. The landfall decision was announced in May with Weybourne chosen as the preferred location. The landfall selection was the result of a technical feasibility study and analysis of the geophysical survey campaign results. Aerial surveys for birds and marine mammals are now complete with the final monthly survey having been completed in April 2020 (24 months in total).</p> <p>Equinor submitted the Statement of Community Consultation (SoCC) to stakeholders for review. Community consultation planned to be undertaken in late June.</p>	RHDHV to issue ETG meeting slides with these minutes.
Actions from last meeting		
2	<p>RI reviewed the list of actions from the last meeting and stated that majority of these are addressed in the Method Statement, which was shared with the ETG members on 19th May 2020.</p> <p>RI stated that the Project Team is not proposing to use project specific flight height information (from baseline surveys) including for Sandwich tern – HiDef are still developing their methods. Due to COVID-19 pandemic related restrictions, the 2020 Dudgeon OMP Sandwich tern tracking study has been cancelled and therefore no further information with regard to flight height can be obtained for the assessment.</p>	
3	<p>Natural England is still to provide information with regard to the review of Sandwich tern avoidance rates (review of existing evidence to investigate why avoidance rates have varied). SA stated that although</p>	SA to confirm timeline for the report on the

Number	Details	Action
	<p>progressing with contract, Natural England had no budget capacity to undertake the project before end of the previous financial year and therefore the review is expected to be available in autumn this year (2020). SA will confirm timeline following the meeting.</p>	<p>Sandwich tern avoidance rate review after the meeting.</p>
4	<p>AM stated that kittiwake and gannet tracking raw data cannot be shared with the ETG until final publication; it is currently with Orsted. AM suggested that RI submits a formal data request for the data to speed up the process. AM offered to forward a request form.</p> <p>AM stated that tagging work is not occurring at FFC SPA this year (due to COVID-19).</p>	<p>AM to provide RSPB request form.</p> <p>RI submit a formal request for kittiwake and gannet tracking data.</p>
Method Statement		
5	<p>RI presented information on the Method Statement shared with the ETG in advance of the meeting and asked for feedback.</p> <p>PP stated that RSPB is not able to provide definitive responses now due to resourcing issues but will provide timeline for response following the meeting.</p> <p>SA commented that the document has good structure, but Natural England will require more information before providing a formal response to the document as some topics will need to be taken to the wider ornithology team. SA stated the formal response from Natural England will follow the team meeting 30th June. Following the meeting, in early July it has been confirmed by Natural England that due to unforeseen circumstances, delivery of the advice has now been delayed until the first week of August.</p> <p>AM stated that RSPB will provide their feedback by early July, but will confirm.</p>	<p>Natural England and RSPB to provide a formal response/comments on the method statement. NE response expected early August, RSPB to provide updated timescale.</p>
Baseline		
6	<p>RI stated that aerial surveys were concluded in April 2020 and minimum 4km buffer around the project areas have been included to support displacement assessment and provide context for the data collected. RI stated that existing data sources will supplement the assessment for key bird species.</p>	
7	<p>RI explained the relationship between survey area and the offshore scoping area, explaining that the scoping area designed to provide flexibility in cable route selection in case that only DEP was taken forward and allowing for landfall at Bacton. RI confirmed that no other infrastructure will be constructed outside of the red line boundary (see presentation slides for details). Both SA and AM accepted the explanation.</p>	

Number	Details	Action
8	<p>During the last meeting the ETG agreed that in terms of methods for density estimation, model-based approaches would be worth exploring. RI stated that after extensive further consideration it has been concluded that a model-based approach (e.g. using MRSea) is unlikely to be appropriate for this assessment (refer to slide 8 for justification). The proposal is therefore to employ design-based approaches to density estimation.</p> <p>SA stated that she will have to discuss these conclusions with the wider team before providing formal feedback. She also noted that there are concerns around confidence in density data due to large confidence intervals.</p> <p>AM agreed with SA and stated that RSPB needs more time to process the information. AM stated that in the MRSea package there is the possibility to review procedures, efficiency of different model approaches and scenarios including patchy distributions, limited covariate data and low numbers. RI stated that the proposal to employ a design-based approach is based on a review of MRSea and advice from HiDef (who have undertaken a model-based approach at another site which bears several similarities to DEP and SEP).</p> <p>MG stated that the data is such that models would not converge. In Lincs wind farm the amount of density explained by covariates was <10%.</p> <p>AM suggested that it would be helpful to get more detail on the advice provided by HiDef.</p> <p>SA stated that it would be good to know the final sample size in terms of records for the full aerial survey now complete. RI stated that this information is not available at present as final survey data is still to be delivered.</p> <p>SA requested more information on how density and abundance will be calculated in reporting regions and RI and MG agreed to provide more information on the methodology.</p> <p>SA stated that more information will have to be provided before Natural England can comment on the spatial coverage and acceptability of the baseline survey data. SA added that methodology will be easier to discuss if there are examples of what is being proposed are presented to support the Method Statement.</p> <p>At the time of the meeting it was stated that the report would be ready in early July; however, following further correspondence with HiDef, delivery of data is now expected by the end of August, with the report following later.</p>	<p>RI to prepare note detailing density estimation methodologies to be employed, and final sample sizes.</p>

Number	Details	Action
9	<p>RI presented the proposed reporting regions with the study area. RI stated that he did not have the method used to calculate density in the reporting regions to hand, but will share with the ETG when available.</p> <p>SA stated that reporting regions presented might not be useful for displacement assessment as wind farm sites are broken down into individual reporting areas. She would prefer these regions to be wind farm site, wind farm site plus 2km buffers, wind farm site plus 4km buffers. RI has incorporated this approach into the latest reporting region versions.</p> <p>SA questioned why there are separate reporting regions for DEP. ME stated that lease areas are quite large and provide flexibility in terms of turbine location, for example there is one scenario where all turbines could be located in DEP-N and therefore DEP-S would not be used. The reporting areas were therefore chosen to assess all these scenarios as well as the scenario that only one project will be consented.</p> <p>Post meeting note: Further discussions have taken place on this topic, and some changes have been made to the reporting regions presented in the method statement due to concerns surrounding their size, and the number of observations made within them. It is proposed that RI will prepare a technical note detailing these changes.</p>	<p>RI to prepare note detailing latest changes to reporting regions.</p>
10	<p>MG presented findings of the assessment of use of the data from second pair of cameras. Doubling the camera coverage results in a reduction in the variability about the mean estimates by a quarter to a third, but sometimes by less. The level of variability associated with the mean density estimates for Sandwich tern remains relatively high - does not solve the problem of having high levels of variability about the mean abundance estimates.</p> <p>SA suggested exploring if this could be beneficial for surveys with more bird records. MG agreed to review in more detail.</p>	<p>Project to review the benefit of using additional cameras for only the surveys with more bird records.</p>
12	<p>RI summarised the proposed parameters to be used for the sCRM for Sandwich tern compared to those used in the 2012 assessment. It was proposed that Option 2 would be used and sCRM recalculated for existing wind farm sites, although it was noted that it may not be possible to calculate 95% confidence intervals for other wind farms due to data availability, asking whether this would be an issue.</p> <p>SA and AM both stated that they are happy with use of proposed sCRM input data. Regarding other wind farms, SA stated that the assessment will have to be undertaken with the data available and that it would be going too far to expect calculation of these for other sites, however the assessment will have to be transparent about any limitations. AM suggested recalculation sCRM for other wind farms should be</p>	<p>SA to respond in writing on NE's preferred approach to sCRM – specific points to cover include preferred method of density estimation input and list of parameters around which variation is expected to be included.</p>

Number	Details	Action
	<p>deterministic with zero values for variability. AM also proposed running deterministic model for all wind farms including the extensions for the CIA.</p> <p>RI asked if there were any thoughts on agreeing and standardising the parameters for which variation should be included (both with respect to bird parameters, but also for turbines). AM stated that the sources of default variance estimates cannot be recalled and that it would be best to prioritise parameters by species.</p> <p>SA offered to respond in writing with NE's preferred approach to sCRM having consulted with colleagues.</p> <p>Flight height</p> <p>Flight heights in Johnston et al. (2014) are generally lower than the DECC (2012) Appropriate Assessment, which appeared to use the site-specific % of birds recorded above 20m during baseline boat-based surveys. SA suggested that site specific data such as Sheringham Shoal post-construction data might be usefully considered by the assessment.</p> <p>RI informed the ETG that the Bureau Waardenburg flight height study on Sandwich tern due to be carried out during the 2020 breeding season as part of the Dudgeon OMP has been delayed due to COVID-19, and given the current schedule for DEP and SEP, it seems improbable that any data would be available for the assessment. MG stated that to date, the Dudgeon OMP has used GPS tracking that focusses on collecting flight path data and AP added that GPS loggers will collect flight height distribution data. Those proposals are subject to stakeholder consultation and agreement and will kick off next year if agreed. AP stated that Bureau Waardenburg will have to be contacted with regard to how tags were reconfigured to meet objectives of the monitoring, and if this method was used for Sandwich tern before.</p> <p>SA took an action to look at flight height use in CRM for other windfarms and discuss this with the wider Natural England team.</p> <p>Flight speed</p> <p>The ETG generally supports use of Fijn & Gyimesi 2018. AM questioned how behaviour will be classified, and if HiDef data can be classified accordingly. RI suggested this will be difficult, as it might be challenging to reliably assign behaviour to birds recorded by the surveys. It was also suggested that Dudgeon tracking data could be investigated and flight speed categorised according to behaviour although no commitment is made to use this data.</p> <p>Air gap</p>	<p>RHDHV to contact Bureau Waardenburg to understand how tags have been configured to meet objectives of monitoring including flight height.</p> <p>SA to review flight height parameter use for other windfarms CRM and revert with a recommendation, along with air gap recommendation for use in CRM for other OWFs.</p>

Number	Details	Action
	<p>The minimum air gap for the Projects is being defined. RI presented a slide showing the effect of different air gaps on collision risk for key species.</p> <p>PP expressed frustration that other projects have changed their design parameters including minimum air gap mid-examination and stressed that anything that can be done to increase air gap before DCO submission would be appreciated. ME stated that collision risk is being considered, but pointed out that raising the air gap significantly increases foundation size and project cost. PP acknowledged this but restated the value of agreeing air gap pre-examination.</p> <p>RI stated that the air gap for existing windfarms is not 20m and enquired which value should be used in the collision model. NE will take an action on information around flight height and model used for the wind farms.</p> <p>AM stated that data gathered by HiDef can be used to pick up birds in transit, and potentially birds foraging. AM suggested that it would be good to do a behaviour-based collision risk modelling, as risks are different depending on bird behaviour. RI responded that it would be difficult and would require further consideration.</p>	
14	<p>RI stated that it is currently proposed to undertake PVA using stochastic population models because providing reliable input parameters are available, they provide more realistic outputs than deterministic models.</p> <p>Likely that density-dependent and density independent model scenarios will be explored with justification as to which one is preferred.</p> <p>RI stated that construction and decommissioning schedules for Greater Wash wind farms should be included in the PVA because the annual harvest values and headroom will vary over the lifetime of DEP and SEP.</p> <p>LB stated that for CRM, a consistent and agreed industry approach to modelling (i.e. “buy in” from other developers), including the commitments required to no further expansion beyond ‘as built’ to allow as built parameters to be used in the assessment, will be required. Natural England will require that the Project reaches an agreement with other wind farm developers so that there is an agreed approach to the cumulative impact assessment. ME confirmed that Equinor will consider this but at present consented parameters will be used for existing wind farms, alongside data for as built.</p> <p>LB stated that this would constitute a change in how cumulative impacts are assessed, and that given post construction monitoring for Dudgeon is incomplete this would not be sufficient. LB stated that all CRMs need to be repeated with cross industry agreement on the approach that will be carried forward and applied to any future extension projects, and agreed with the Crown Estate. PP supported this approach. The applicant requests that Natural England and the RSPB provide</p>	<p>Natural England and the RSPB to provide written clarification of the standard and agreed cross industry approach to CRM and CIA they described to avoid any confusion about what is being requested.</p> <p>Equinor to discuss approach to CIA with The Crown Estate, following up on the extensions plan level HRA.</p>

Number	Details	Action
	<p>clarification on this point in writing to avoid any confusion about what is being requested.</p> <p>AP asked if the ETG could suggest how a strategic approach to this would best be undertaken. LB and PP could not advise other than to say a wider discussion is required. ME asked whether a discussion with The Crown Estate would be helpful to see if they could facilitate a cross industry approach, and stated that the project will consider this.</p>	
15	<p>RI presented the PVA parameters proposed to be used for Sandwich tern, and questioned what to use for the initial population size and productivity rate (latest or mean, if mean how many years). RI also observed that age class 0-1 survival rate seems low and indicated that confirmation of whether this includes all birds, or fledged, may be required from the authors of the work in question.</p> <p>SA asked to see a table of productivity rates to understand any variation over the years. PP agreed to approach site managers and request productivity data.</p>	<p>PP to approach site managers and request Sandwich tern productivity data.</p> <p>RI to email authors of relevant study with query.</p>
16	<p>RI presented Impact Assessment Methodology to the ETG. All agreed that the approach is acceptable.</p>	
17	<p>Biologically relevant seasons were discussed as no definite decision was made during last meeting. RI suggested that the decision will be led by available evidence and referenced the proposed biologically relevant seasons in the Method Statement. The ETG will respond in writing.</p>	<p>ETG members to provide written response on ETG and Method Statement.</p>
18	<p>RI stated that apportioning values (to allocate recorded birds to SPAs) from recent offshore wind assessments (Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three) will be used. These will be supplemented by published values and species-specific literature.</p>	<p>ETG members to address apportioning in their written response.</p>
HRA		
19	<p>RI presented approach to HRA and presented screening exercise results. ME stated that the HRA screening report will be issued in time to be reviewed before providing feedback.</p>	<p>ETG members to comment on HRA screening in their written response.</p>
Next meeting		
20	<p>ME stated that one more meeting in September in advance of the PEIR submission would be useful for the project. PP and LB also mid to end of September (MW to create a doodle w/c 13th 21st).</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (SE) – MMO; [REDACTED] (HA) – MMO; [REDACTED] (SA) (first half only) – Natural England, [REDACTED] (JT) – Natural England, [REDACTED] (LB) – Natural England, [REDACTED] (YF) – Natural England; [REDACTED] (PP) – RSPB; [REDACTED] (ME) – Equinor; [REDACTED] (AP) – RHDHV, [REDACTED] (MG) – RHDHV, [REDACTED] (RI) – RHDHV, [REDACTED] (RS) – RHDHV, [REDACTED] (MW) – RHDHV

Apologies: [REDACTED] (RP) – Natural England; [REDACTED] (AM) – RSPB

From: Royal HaskoningDHV

Date: Wednesday, 09 December 2020

Location: MS teams

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-PM-0010

Classification: Project related

Enclosures: ETG meeting slides

Subject: Offshore Ornithology ETG3

Number	Details	Action
Introductions and Purpose of the meeting		
Agenda:		
<ul style="list-style-type: none"> • Project update • Actions from last meeting • EIA update <ul style="list-style-type: none"> ○ Density Estimation – overview and key results ○ Collision Risk Modelling (DEP and SEP) ○ Collision Risk Modelling (Sandwich tern, other OWFs) ○ Migration Collision Risk Modelling ○ Sandwich tern PVA(?) – tbc ○ Displacement assessment • HRA update <ul style="list-style-type: none"> ○ Updated screening outcomes based on NE feedback 		
A PowerPoint slide pack was provided ahead of the meeting and provided the basis for the discussions.		
1	ME presented a project update.	RHDHV to issue ETG meeting slides with these minutes.
Actions from last meeting		
2	RI reviewed the status of actions from the last meeting.	-
EIA update		
3	LB queried why GW SPA as foraging habitat had not been included in the assessments – RI confirmed that the site has been screened into the HRA	-

Number	Details	Action
4	<p>SA noted that the difference in S. tern flight speed from the DOW OMP was interesting and asked whether the project would be interested in exploring this – NE would support that despite previously advising against due to the relationship with avoidance. But suggest that exploring what this means could be of value to the assessment i.e. reduced speed increases the chance of a single collision but reduces overall flux.</p>	<p>RHDHV to investigate effect of varying flight speed for S. tern.</p>
5	<p>SA described the ongoing work on S. tern avoidance being undertaken by BTO/Aonghais Cook. Work is underway to try and resolve some differences in the original Zeebrugge datasets provided to NE and BTO. Study has to complete by end March 2021, after which it would be useful to also consider the more recent flight speed data from the Dudgeon OMP. Has considered Sheringham Shoal ECON post-construction data but it is still expected than the original (Zeebrugge) data to be more applicable. SA considers that it will be appropriate to consider the ECON data in some capacity for DEP/SEP but will not be appropriate for the overall review of the avoidance rate due to differences in methodology, namely ECON dataset doesn't consider flux and is more focussed on behavioural aspects.</p> <p>RI noted that a range of avoidance rates will be presented in the assessments.</p>	-
6	<p>Ref. survey timings and S. tern activity, SA recommended investigation of the peak in activity circa 2pm. Agreed nocturnal 10% assumption sounds sensible but recommends checking if the DOW OMP data gives any insight into whether the birds are actually foraging at these times.</p>	<p>RHDHV to investigate point on nocturnal activity.</p>
7	<p>Natural England project to model S. tern population impacts:</p> <p>SA noted slow progress with this NE project. Productivity data being given careful consideration to account for colony switching between Scolt and Blakeney so that it is not artificially lowered. Requires a weighted mean approach to the 2 colonies. Will be progressed in 2021, although the full PVA incorporating all projects for their lifetimes will not complete until 2022. SA asked whether Equinor is intending to share any details on the population assessment before PEIR. RI noted that this may be useful.</p>	<p>RHDHV to consider availability of S. tern population modelling work pre-PEIR.</p> <p>Post meeting update – see next steps section below.</p>
8	<p>Headroom issue. SA interested in holding a workshop with the existing DOW project to investigate options for releasing headroom.</p> <p>Post meeting note – Equinor is investigating options on this and will share details when available.</p>	-
9	<p>Design based density estimation – SA requested further information to justify the approach being taken.</p>	<p>RHDHV to provide further info to explain the</p>

Number	Details	Action
	<p>Post meeting update: the following text has been received from Grant Humphries at HiDef on this subject:</p> <p><i>“Spatial models of this sort (MRSea and otherwise) require that there be measurable ecological gradients from which to develop predictions. Small spatial scales that don’t take into account the majority of the distribution of wide-ranging species are rarely able to capture these gradients, particularly when there are limited environmental data at appropriate spatial and temporal scales. This is further compounded by the fact that in these data, there are many months where there are very few observations, which biases the model towards the relationship derived by the months with more observations.</i></p> <p><i>An example. Let’s say that during most surveys, only 15 birds are seen, but then suddenly in one of those surveys, 250 individuals are detected in the area, and they happen to be sitting on the water over an area that is slightly deeper (or maybe .2 degrees colder) than the rest of the survey area. The model will detect that relationship, which could very well be biased by the fact that these birds happen to be sitting there. In other words, the biological relationship that is detected is improperly applied, and so when predictions are made to other months (even when including month as a covariate or interaction in the model to account for this to some degree), the predictive performance likely decreases because there are simply not enough birds in other months to properly assess that relationship. While this is happening, MRSea in particular, includes a spatial smoothing algorithm which is designed to handle spatial autocorrelation and account for the spatial configuration of the animals. When the relationships in the environmental covariates are weak, the spatial parameter “takes over” and what you get is a “model” that has simply taken the data and applied a sophisticated smooth.</i></p> <p><i>The short of it all is that although you could apply the MRSea method, there is the risk that the data don’t converge because of the spatio-temporal distribution of the observations, or that the environmental relationships are too weak and the spatial configuration of the observations is the only parameter that means anything. All that could lead to CVs on the population estimate that are just as high as those you would derive in the design-based method. Furthermore, in our experience, population estimates derived from MRSea are generally in line with those from the design-based method, with the real difference lying in the CVs (where MRSea can in some cases lead to more confidence in the population estimate), however based on the spatio-temporal distribution of this dataset, we aren’t convinced that MRSea would provide CVs for the population estimate that would be significantly better than those from the design-based method.</i></p>	<p>approach to density estimation.</p>

Number	Details	Action
	<p><i>As such and based on the density data from the aerial surveys, our take is that it is certainly a no-go with sandwich tern and marginal for kittiwake”.</i></p> <p>The complete kittiwake and Sandwich tern dataset can be provided on request, although it should be noted from above that the spatial extent is the key factor.</p>	
10	Kittiwake distribution – SA noted distribution maps for the whole survey area would be useful given the complex nature of the reporting regions.	RHDHV to provide with PEIR.
11	SA – queried why DEP N wind farm site is the shape that it is. ME described the constraints that resulted in the boundaries being selected as they are – including shallow water depths in the western area and oil and gas activity.	-
12	<p>Red throated diver and GW SPA – SA noted that the conservation objectives include disturbance in its own right. RI confirmed that this will be considered in the HRA.</p> <p>PP asked if Equinor has looked at how RTD distributions have changed post OWF construction? RI confirmed that we have considered Lincs post-con. SA noted that Natural England are planning updated GW SPA surveys in the future.</p>	-
13	<p>CRM</p> <p>PP asked whether a higher air gap would be realistic to consider at this point? ME noted that an increase in air gap comes at significant additional cost for the foundations, however any options will continue to be explored as the assessment process moves ahead.</p> <p>LB noted other projects including those currently in examination have needed to assess any potential trade off in impacts as a result of such a change e.g. between reduced collision risk and increased visual impact.</p> <p>PP noted that they would like to see the auks included in the CRM, although he would seek further clarification on this from AM. Also noted importance of the in-combination assessment for S. tern, which may be critical even where individual project numbers may be very low.</p>	PP to clarify point on auks
14	Flight height estimations from boat based data for S. tern – LB questioned the accuracy of this methodology and suggested transparent presentation of what is used in the assessment. Natural England are confident in the pre-construction survey data for Race Bank, Dudgeon and Docking Shoal. Evidence is that terns switched from sandeel to herring later in the year and that the Dudgeon OMP data should provide useful insight into these patterns. Suggested that	RHDHV to follow up on fisheries data suggestion

Number	Details	Action
	Cefas/MMO are asked whether there is any fisheries data available to help underpin the tern distribution patterns.	
15	Without prejudice derogation case. An update was provided by the Project on its plans for early pre-application engagement with the ETG on potential compensatory measures for kittiwake and S. tern. A document will be shared prior to the PEIR, including the identification of specific questions to aid consultees' in responding.	
Next steps and meeting		
16	<p>It was discussed that it may be useful to provide some further information on both the density estimation process and the S. tern PVA, ahead of the PEIR, for ETG comment.</p> <p>Next meeting will be scheduled for once the comments on the PEIR have been received and prior to DCO application.</p>	<p>Post meeting note: Further justification of the approach to density estimation, direct from HiDef, is provided above.</p> <p>The draft PVA will be included with the PEIR, although if Natural England has any specific comments or requests in relation to the information already provided on the methodology (through ETG meeting 2 and the method statement), the project would be happy to consider these ahead of the PEIR.</p>

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: Equinor: [REDACTED] (SC); [REDACTED] (EO)

Royal HaskoningDHV: [REDACTED] (RI) [REDACTED] (AP); [REDACTED] (MG)
[REDACTED] (PM)

Natural England: [REDACTED] (MK); [REDACTED] (SA); [REDACTED] (RB); [REDACTED] (RP)

RSPB: [REDACTED] (PP)

MMO: [REDACTED] (CP); [REDACTED] (NW)

Apologies: [REDACTED], [REDACTED]

From: Royal HaskoningDHV

Date: 10 August 2021

Location: MS Teams

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0022

Classification: Open

Enclosures: ETG Meeting Slides

Subject: DEP & SEP Offshore Ornithology ETG4 Meeting Minutes Aug 21

Number	Details	Action
Introductions and project update		
1	<p>RI described the purpose of the meeting and ran through the agenda.</p> <p>Attendees introduced themselves.</p> <p>RI: We will produce a technical queries note following the meeting, that will focus on key issues flagged by stakeholders that we are hoping to get some further clarity on. We will aim to provide this by COB 13/08 and request responses by 3rd September if possible.</p> <p>SC provided a project update - noted the usefulness of ETG meetings and that the project team are grateful for the feedback received. Current plan is for a DCO submission by the end of the year however this is being considered against multiple factors and will be confirmed.</p> <p>RI explained that we are digesting PEIR comments and additional data / sources that have been received. All of the consultation and information from these sources will feed into discussions about project design and to the revised assessment that will form part of the ES assessment.</p>	<p>ETG to review Ornithology Technical Queries Note provided by RHDHV on 16th August 2021 and aim to provide a response by 3rd Sept 21.</p>

Number	Details	Action
	<p>For the purposes of this presentation, stakeholder PEIR comments are split into three main categories:</p> <ul style="list-style-type: none"> • Baseline surveys • Comments on North Norfolk Coast (NNC)/Greater Wash (GW) Special Protection Area (SPA) • Comments on Flamborough and Filey Coast (FFC) SPA <p>There are too many comments to cover in this meeting, but we aim to address all PEIR comments from all stakeholders within the ES.</p>	
Baseline Data		
2	<p>RI: Applicant's position remains that data collected for the projects is appropriately robust and in line with that for other OWF projects.</p> <p>However, there are two areas where additional work is being considered:</p> <ul style="list-style-type: none"> • Processing of data from 2 additional cameras during March-September to increase survey coverage from 10% to 20%, with data being used to produce revised design-based density estimates. • The use of model-based density estimation for key species <p>RI: Through use of data from additional cameras it was estimated that upper 95% confidence intervals for mean Sandwich tern density could be reduced by 1/4 to 1/3. A summary of this work was presented in the ETG meeting of June 2020.</p> <p>Investigation of CRM indicated that collision rates using the upper 95% confidence interval would be reduced by approximately 11% (presented at the same ETG meeting).</p> <p>RI: There is a need to balance the need/usefulness of doing this additional work against project programme and resource implications. We are not sure that such a reduction would satisfy the concerns of Natural England.</p> <p>RI: In order to assist with decision making, are Natural England or RSPB aware of any evidence that using additional camera data to increase survey coverage increases the robustness of density estimates?</p> <p>SA: Response we provided was based on the evidence that you provided for DEP and SEP, no other sources of evidence. Using additional camera data could potentially increase robustness of the density estimates.</p> <p>SA: On whether Natural England can provide evidence of whether DEP and SEP data are more/less robust than data at other OWFs, NE do not propose to produce a "leaderboard" of who has the most robust data.</p> <p>RI: Are Natural England or RSPB aware of any evidence on the robustness of using model-based density estimation vs design-based that would help us make a decision on whether to proceed with this?</p> <p>SA: Precision may not differ between the two but it is possible that there could be reasons (e.g. coefficient of variation) to have greater confidence in the data produced using model-based density estimation. It is clear that</p>	<p>RHDHV to share the coefficients of variation for density estimates of key species</p>

Number	Details	Action
	<p>extra camera data would only be useful with the higher densities – could refine the analysis to reflect this.</p> <p>SA: For design-based density estimation to work well, the survey design is really important. What hasn't been provided to date is a clear description of why the survey was designed in the manner that it was.</p> <p>SA: With design-based methods, it seems that there may be a missed opportunity because you have a large survey area which is disregarded for the impact assessment, but which could be included if model-based estimates are used.</p> <p>SA: Project boundaries are more contorted than usual, which can make survey design and density estimation challenging.</p> <p>MK: To provide some reassurance, these two issues are coming up in evidence plan meetings for other projects. We are seeing developers working on the use of additional cameras and model based vs design based density estimates. We are not holding you to higher standards than other projects. We see the biggest thing that makes the difference in CRM is the variation in bird density so we need to try and do the best with what we've got.</p> <p>MG: We have had these discussions before and there is a risk of repeating them. I remain concerned that there is not enough variation in spatial density to get the best out of the modelling and to get the modelling to work. Would be good to have the evidence to be able to determine if it is worth investing the additional resource, but seems there isn't any.</p> <p>MG: My understanding why additional data are collected during digital aerial surveys was so that if for example Camera 1 failed you had the option to use Camera 3.</p> <p>SA: Not sure that is always the case because HiDef used to put in their Method Statements that they would look to increase precision through use of other cameras / data.</p> <p>RI (not stated during meeting – added in minutes review): During my time working for APEM I developed the understanding that both of these points are valid reasons for additional data collection.</p> <p>SA: 10% coverage is an arbitrary figure, no evidence to support that this is appropriate. Would make more sense to work to a certain coefficient of variation (CV) for each species so e.g. for some species, for some months, a higher coverage may be appropriate. It's not as clear cut whether 10% or 20% is appropriate. Power analysis has been considered to potentially inform this figure however this isn't a method commonly employed at the present time.</p> <p>MG: Agreed, but 10% has been the figure used to date so is commonplace. How you get to the correct type of sampling effort is getting more into the realm of a strategic industry type of initiative than what you could expect from a single project.</p>	

Number	Details	Action
	<p>SA: Perhaps, but the Greater Wash is a well-studied area with lots of baseline data so focusing on key species shouldn't be too difficult.</p> <p>MK: is there a reason why the coefficients of variation for density estimates can't be made available?</p> <p>RI: These can be shared.</p> <p>MK: When weighing up the risk of whether to do or not do additional work on baseline data, you may be in an examination at the same time as another project that has done these.</p> <p>MK: Natural England advice is also that compensation should be based on upper 95% confidence intervals outputs (added to Agreement Log below), and so if the additional camera data is bringing that down this may be useful for the Applicant in terms of better defining the level of compensation required.</p> <p>RI: We will try and encapsulate all that in writing within the aforementioned doc for review by stakeholders.</p> <p>RI: DEP North and DEP South are combined reporting regions. We looked at splitting them up, but for design based density estimation the combined region was considered to be the most suitable approach, in line with the advice from HiDef.</p> <p>SA: Do the existing DOW and SOW sites form part of the DEP and SEP buffer zones?</p> <p>RI: Yes.</p> <p>SA: Did you take statistical advice whether it was appropriate to consider these as a single entity?</p> <p>RI: I can't recall the conversations with HiDef about this, but can say that this was looked at, and the approach we have taken was considered to be the most appropriate.</p> <p>RI presented comments and figure with transects, transect lengths per reporting region and observations of key species by reporting regions (note that there is some duplication in this however so don't add up DEP + 2km, SEP +2km etc.). If stakeholders have any comments once they've had time to think about this, they would be welcome.</p>	
Sandwich Tern Avoidance Rate (AR) Review		
3	<p>RI requested an update on when we are likely to see the AR review?</p> <p>SA: BTO review should be finalised and on their website any day now. However, we can share the key findings from that review essentially a tabulated list of the avoidance rates that are recommended. Other stage to that is the SNCB note in response to their review which is not available in the next few days but is being worked on. SNCBs are very likely to adopt these ARs. [post meeting note: table with figures has since been supplied –</p>	

Number	Details	Action
	<p>thank you] [post meeting note - This section has now been superseded by delay/retraction of use of revised BTO 2021 ARs by SNCBs.]</p> <p>RI: Is detail on the methods used to calculate ARs available within the report?</p> <p>SA: Yes, ready to go basically so we can share if it's not available on BTO website in next few days [post meeting note: now available]</p> <p>RI: Particularly keen to understand the methods which underpin the AR calculations. SA these are essentially the same as the 2014 review as in it uses observed collisions and compares that to expected collisions based on the Band model. Main difference is substantial amounts of new data for some species and not so much for other species.</p> <p>RI: Have Sandwich tern observations from Sheringham Shoal (SOW) and Dudgeon (DOW) been considered and whether it is possible to incorporate these into the BTO work?</p> <p>SA: Was considered by the BTO but couldn't quantitatively consider this because the data doesn't align with the data standard from which ARs are usually calculated.</p> <p>SA: The review of the work for Sandwich tern reduced AR to 97% based on Zeebrugge data, however Natural England advice is to use AR for all gulls and all terns to reduce reliance on Zeebrugge data, which results in a recommended AR of approximately 98.6%. Original 98% wasn't based on anything empirical.</p> <p>RI: AR of 98.83% originally came out of Zeebrugge so why is it now 97%?</p> <p>SA: There was a p.coll value originally used for the Zeebrugge work of 26% (in error), however when this was re-run by BTO, the p.coll was determined to be less (11%?) so this resulted in a higher AR being calculated.</p> <p>RI: Immediate thought about that is whether some of the observations made at SOW and DOW are going to be adequately captured in that AR. With particular ref to the ECON meso avoidance behaviour demonstrated at SOW and DOW. Therefore, may have to bring this in on a qualitative basis, is that appropriate?</p> <p>SA: I think yes if we were to use SOW and DOW to inform ARs this would result in a fundamental change to the calculation of avoidance and is only one source.</p> <p>RI: This is a highly relevant data source. Birds from the very colony we are interested in, on a site that is adjacent to SEP.</p> <p>SA: Bringing these observations into the assessment qualitatively is appropriate. Nothing to stop you bringing in a quantitative AR based on SOW, however this would not be what NE based conclusions on. Added to Agreement Log below</p> <p>SA: Within the upcoming BTO report, the data on which ARs are based do not include macro-avoidance i.e. they are from within the windfarm.</p>	

Number	Details	Action
	<p>RI: Presentation of CRM in the ES will be similar to that presented in the PEIR (though we note the NE PEIR comments on this). We will present what has been recommended by stakeholders, along with results based on SOW Ornithological Monitoring Plan (OMP) avoidance rate (99.3%). Added to Agreement Log below</p> <p>SA: Based on the new AR review you can replace 98% AR with 98.6% (BTO). Added to Agreement Log below [post meeting note - This section has now been superseded by delay/retraction of use of revised BTO 2021 ARs by SNCBs.]</p> <p>RI: Are these ARs compatible with deterministic Band Model (i.e. the spreadsheets, which is what we're using)?</p> <p>SA: Yes, ARs for deterministic and stochastic CRMs are available.</p> <p>RI: We do not plan to present extended or stochastic CRMs. Added to Agreement Log below</p>	
Non-breeding impacts on Sandwich tern		
4	<p>RI: We are in process of obtaining collision estimates from other windfarms for non-breeding season cumulative/in-combination collision risk assessment for Sandwich tern. We have been following approach used previously for kittiwake, gannet and large gulls, is that what NE were expecting?</p> <p>SA: Yes.</p> <p>RI: PVA. We agree with your comments about Sandwich tern PVA. We have identified double counting among SMP data and juvenile mortality data from Robinson (2010) so this will be changed slightly to reflect the observed population trends at North Norfolk Coast. Does this seem appropriate?</p> <p>SA: Yes. One of the parameters that we were looking at when looking at PVAs was considering how to look at the two colonies (Scolt Head and Blakeney Point). You have a problem where low productivity at one site and high at the other and it switches between the two. One way to deal with this would be a weighted mean population and productivity estimate in order to incorporate the two subpopulations as one but weighting the population to allow for that. This needs to be considered in the PVA quite carefully.</p> <p>RI: Happy to go away and consider the approach. In terms of the numbers of years of previous data to include, the key consideration is to show our working. A case of showing what we've done and why.</p> <p>SA: Agree. Re. colony counts, it may be reasonable just to draw the line at 2019. 2020 is unusual (immigration). 2021 therefore difficult to use without using 2020.</p> <p>RI: Ok. Would make sense for us to draw the line at 2019. If we can obtain 2021 counts we can refer to them for context.</p>	<p>RHDHV to consider using weighted mean population and productivity estimate to account for large variation in productivity between the two subpopulations at Scolt Head and Blakeney Point when updating PVA.</p> <p>-----</p> <p>RHDHV/Equinor to arrange for a workshop with Natural England in October to run through and agree sandwich tern PVA model parameters. Use PEIR scenarios if ES not available.</p>

Number	Details	Action
	<p>Added to Agreement Log below</p> <p>PP: This year was around 4,000 pairs at Scolt Head, just to get a feel for how that compares with last year. <RI: checked after meeting: 4,160 pairs last year></p> <p>MG: How important is it to NE that the models used closely reflect observed population trends? The use of counterfactual metrics for model interpretation means that models which realistically reflect observed trends are not as important.</p> <p>SA: If a population is nosediving it makes me consider whether the input parameters are as good as we can get. But for a decrease that isn't as dramatic we can accept that the population model is appropriate.</p> <p>MG: In relation to subpopulation is it not the case that the NE PVA tool allows you to input for two subpopulations.</p> <p>SA: Yes, but the problem with that approach is when you start averaging productivity over e.g. five years it's not quite the same dynamics that are being exhibited by the colony so uncertain about what the appropriate approach is. Can often mean that the productivity is dampened more than it should be by that process.</p> <p>MG: Ok. We need to look into this further.</p> <p>MK: It'd be fair to make clear in your reports that of all the seabird species Sandwich tern is probably the most dynamic and we have agreed to do this in the following way.</p> <p>RI: Based on these discussions, the weighted average approach definitely warrants further investigation because Scolt Head productivity much higher than Blakeney Point.</p> <p>RI: We are seeing in the baseline scenario colony extinction before the end of operation of the project, which indicates that something is clearly wrong in the parameters.</p> <p>PP: It may be the case that is a reflection of the ecology of that species and the wider factors that are affecting it. All adds complexity.</p> <p>SA: If it seemed a more useful approach, we would be happy to spend a couple of hours online working through the modelling which might help make the process of reaching agreement more efficient.</p> <p>RI: Thanks, this could potentially be really useful. Would probably have to restrict this to a baseline scenario or could use scenarios that were in the PEIR.</p>	
Sandwich tern flight speed		
5	<p>RI: We have had a bit of back and forth with Bureau Waardenburg and we'll be able to include something in writing on the NE queries we previously received on this, but not sure if this will make doc on the 13th August [post meeting note: provided in update on 25 August]. We can</p>	<p>RHDHV to provide responses from Bureau</p>

Number	Details	Action
	<p>provide useful responses to most of your comments. However, easier to do this in writing. Hopefully this will provide sufficient clarity on most of the points that you raised. Addressing the points on accuracy and precision might be a little bit too much work.</p> <p>MK: DOW OMP Macro avoidance map - whatever analysis that's referring to. Triton Knoll has been mapped but hasn't been built, it's not incorporated into the analysis?</p> <p>RI: That's correct the boundaries have just been superimposed on the map. They have not been used in the analysis.</p> <p>MK: Understood.</p>	<p>Waardenburg on Natural England queries</p>
Sandwich tern Flight Height		
6	<p>RI: Have NE had a chance to review the ECON Sandwich tern flight height report?</p> <p>SA: Not been through the full review process yet.</p> <p>RI: It's a very detailed report with lots of useful info. Good that data has now been split spatially so that there is now a dataset within the 1-4km buffer to make up for the fact that there are operational windfarms within the vicinity of these birds.</p> <p>SA: There is supplementary info on flight height distribution within that that can be provided.</p> <p>RI: That data should answer most of my questions.</p> <p>PP: Has there been some validation of the heights and estimation used in that work i.e. measuring and accuracy of the measurements.</p> <p>RI: Short answer is yes but can't recall the details to explain.</p> <p>SA: Yes; a subset were measured with a range finder and by human observer.</p> <p>RB: Drones also used to test accuracy of range finder however not presented within report. Was done to groundtruth the rangefinder data.</p> <p>PP: Thanks was just a query Aly had. Sounds like the drone work might address that.</p> <p>RI: The other point to flag was SOW baseline data recorded baseline data of 13% flying above 20m whereas 2014/15 data showed 27%. Unclear why this is.</p> <p>SA: 2004/05 data would have been at a time when no data validation and when no turbines were in place but very difficult to untangle why this is. Turbines acting as reference points for observers?</p>	<p>RHDHV / Equinor to send engagement tracker to Natural England ----- Natural England to send Annual NNC Count data that was sent to the RSPB by Neil Lowton.</p>

Number	Details	Action
	<p>SA: In terms of Harwood (2021), the “ESAS style” flight height distributions are the most appropriate for use in CRM, and are the most similar to Johnston et al. (2014) measurements. Added to Agreement Log below</p> <p>SA: We have concerns around the flight height distributions collected using RIB tracking studies (autocorrelation). This could be dealt with through further analysis and may not be an issue but don't know that until/unless it's looked at.</p> <p>SA: regarding providing a document in September, it might be a good idea to talk about timelines for submission of docs etc.</p> <p>RI Other areas:</p> <p>Noted comments on description of populations at NNC and agree there is value in looking at those across different timescales in ES.</p> <p>Regarding NE PEIR comment 7.10 ref to data provided to RSPB. We were not clear about what this may refer to.</p> <p>PP: We had some data from Neil Lowton at Natural England so not quite sure why this data hasn't been passed on.</p> <p>RI: This is just annual counts of breeding pairs at NN? We pulled this from SMP database.</p> <p>SA: There seems to be a couple of discrepancies between these two datasets. Have you had the data?</p> <p>RI: No, don't think so.</p> <p>SA: We will send this data from Neil at NE. Although unlikely to make large difference to population modelling.</p>	
Collation of latest Sandwich tern counts elsewhere		
7	<p>RI: Is the proportion of non-breeding season impacts to the NNC SPA appropriate based on latest counts? We are just checking this. This will be included in the ES chapter.</p>	
Clarification of displacement and mortality rates		
8	<p>RI showed the rates used, by showing extract from PEIR chapter with sources for where the assumptions are from.</p> <p>Mortality rate restricted to 5% because the existing known mortality rate for adult terns is 10% so didn't seem appropriate to increase to this level.</p>	
Nocturnal Activity Factors		
9	<p>RI: We estimated this based on the number of trips starting in each hour of the day.</p> <p>RI: One question raised was the peak between 1400-1500. We have done a bit of digging to find out why this might be the case but not really sure.</p>	<p><u>Nocturnal Activity Factors</u> RHDHV to obtain information from</p>

Number	Details	Action
	<p>SA: Not when a warden does a round?</p> <p>RI showed figure on slide 25 which shows that most Scott Head terns stay close to the colony at night.</p> <p>SA: Concern as to what constitutes sunrise and sunset and because there are different ways of measuring it and the Band model measures this in different ways. Have we measured it in a way compatible with the Band model?</p> <p>RI: Band model does it by sunrise and sunset which isn't a very good biologically realistic metric. We looked at sunrise and sunset and dawn and dusk. If you use dawn and dusk the NAF will be slightly greater than when you use sunrise and sunset. Raises the question that if the Band model is using sunrise and sunset then can you deviate? Need to have a look at whether the figures show trips closer to sunrise/sunset or dawn/dusk.</p> <p>PP: Is it genuinely nocturnal activity on the 2nd plot or is it from birds leaving the colony during the day and showing in that area between daylight and darkness?</p> <p>SA: The question you need to get to is how much activity is there at the project areas after sunset and before sunrise and how that compares to activity at the places after sunset and before sunrise but it seems like it will be pretty low levels from what is being presented (slide 25).</p> <p>RI: Yes, it does seem quite likely that birds don't venture far from the colony during night time.</p> <p>SA: The key thing is to make it compatible with band timings so that it is being assessed in the same way.</p> <p>PP: Peak in early morning. It would be useful to know where those birds are going. Could that early morning movement be looked at to see where they're going so take this into considerations of impact?</p> <p>RI: Question that needs to be asked then is the spatial distribution consistent throughout the day or is their variation. We will look to get this information from Bureau Waardenburg.</p> <p>RB: Caution against putting too much confidence in the tagging data because there aren't too many tagged Sandwich terns. Might be more appropriate to use the early boat based data which might be easier to get a picture of this.</p>	<p>Bureau Waardenburg to aim to determine consistency of daily spatial distribution of Sandwich tern</p>
FFC SPA		
10	<p>RI: Gannet, guillemot, kittiwake and razorbill. We will be using the NE tool to produce those PVAs as requested. In the process of pulling together draft input parameters which will largely be based on what was used at Hornsea 3. Is Hornsea 3 the most appropriate project to base this on?</p> <p>SA: Yes although think we have provided advice for Hornsea 4 recently. We can refer to this advice in our response to your technical queries note.</p>	

Number	Details	Action
	<p><u><i>In-combination totals</i></u></p> <p>RI: We will still be working on the cumulative and in-combination numbers that will be within ES and Information to Support HRA report. Are EA1N/2 totals the ones most recently reviewed by NE?</p> <p>MK: Yes, although check examination submissions for that project as may be updated submissions.</p> <p>PM: Yes, I can dig these out to ensure we are working with the most recently agreed numbers from EA2/1N Deadline 13¹. Added to Agreement Log below</p>	
GW SPA		
11	<p>RI: RTD - with respect to vessel activity, the only activity that will occur through the SPA will be for export cable installation. Great Yarmouth being considered as an option but can't make a commitment at this stage.</p> <p>MK: That may bring Outer Thames SPA into play then.</p> <p>RI: Showed figure and slide with text showing density and mortality estimates for RTD as a result of export cable installation.</p> <p>RI: Little gull - this will be included in the Information to Support AA. Added to Agreement Log below</p>	
AOB		
12	<p>SA: Expectations around timelines?</p> <p>RI: Is that indication of when we are putting a freeze on the things that will be included in the assessment.</p> <p>SA: Yes I think that's right. I am on leave for most of September.</p> <p>RI: October for modelling parameter meeting would be fine.</p> <p>SC: It would be good to get something in the diary asap so as to avoid diary conflicts later down the line.</p> <p>RI: Can't commit to a date at the moment where I can say no more questions.</p> <p>SC: NE engagement plan has been provided to Helen and Lou which details engagement on requirements and likely timelines etc. Regarding model based density estimations this very much sits on our critical path as a project regarding questions on the need to do this and implications for programme. Clearly for us there is a balance that needs to be struck between robustness of assessment and the delays during examination that have been experienced by other recent windfarm projects. We are revisiting the programme in light of these additional requests and will provide further update asap.</p>	<p>RHDHV to attempt to use Natural England template for data and parameter presentation within the ES</p> <p>-----</p> <p>RHDHV / Equinor to send engagement tracker to Natural England</p>

¹ https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-005485-ExA.AS-12_D13.V1%20EA1N&EA2%20D13%20Offshore%20Ornithology%20Cumulative%20and%20In-Combination%20Collision%20Risk%20and%20Displacement%20Update.pdf

Number	Details	Action
	<p>PP: Mirrored SA comments about timelines and that clear steer of when input is likely to be required would be very useful in order to help RSPB schedule resource.</p> <p>SA: Within the PEIR comments we provided you with a template for data and parameter presentation will you be able utilise this within the ES at all?</p> <p>RI: Yes we will be able to use this in some format within the ES.</p> <p>SA: Useful for us as an SNCB if we can standardise some of the parameters that go into that so was interested to know whether it would work within the ES.</p> <p>RI: Lack of standardisation in ES is a pain so can definitely see the value of this and can provide specific feedback on this when we actually start using it.</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (SC); [REDACTED] (HA) - Equinor
[REDACTED] (RI); [REDACTED] (AP); [REDACTED] (PM); [REDACTED] (RB) - Royal
HaskoningDHV
[REDACTED] (SA); [REDACTED] (MK); [REDACTED] (RBe); [REDACTED] (LB);
[REDACTED] (HM) - Natural England

Apologies: RSPB
From: [REDACTED]
Date: 09 February 2022
Location: Microsoft Teams
Copy:
Our reference: PB8164-RHD-ZZ-XX-MI-Z-0031
Classification: Open
Enclosures: Meeting Slides

Subject: SEP&DEP Offshore Ornithology ETG5 09Feb22 Minutes and Agreement Log

Number	Details	Action
1	<p>Introductions & Project Update</p> <p>Attendees introduced themselves.</p> <p>SC provided a project update.</p> <p>Since the last ornithology ETG we've had the PVA workshop and we've been looking at the additional data and modelling work undertaken by HiDef.</p> <p>We are continuing with the evidence plan process through these extra months that we've afforded ourselves by delaying the application submission date.</p> <p>Currently updating ES chapters, outline management plans etc.</p> <p>We had a pre-application meeting with PINS a few weeks ago to update them on things e.g. derogation work etc and we will be submitting some of those documents to them for consultation.</p>	
2	<p>Agenda and Opening Remarks</p> <p>RI ran through the agenda</p> <p><i>Sandwich Tern (S. tern)</i></p>	

Number	Details	Action
	<p>Baseline survey coverage and density estimation in Preliminary Environmental Information Report (PEIR) - Underpinned by 10% coverage from aerial surveys. Following receipt of PEIR responses survey coverage was increased to 20% for March to September only. Also, commissioned HiDef to look at model based density estimation for Sandwich tern.</p> <p>This means that data for October to April remain at 10% coverage.</p> <p>RI showed extracted comparisons for the design based density estimates between PEIR and ES. All are for flying Sandwich terns (S. terns) in DEP. Green highlighted cell indicates that the lower 95% Confidence Intervals (CI) have increased slightly with one exception in April which had a slight decrease.</p> <p>For mean densities there's more of a mixed bag. Some mean densities have moved up, some down but not seeing huge changes which is to be expected for the mean densities.</p> <p>SA - DEP has two array areas, is this those two areas combined?</p> <p>RI - yes, it is these two areas combined which have fed into the density estimates.</p> <p>LB - I have an inkling that the northwest tip of the DEP north array area is likely to have more S. terns compared to the south and therefore would be very helpful to have these split out.</p> <p>RI - ok, now we've produced the model based density estimates we are able to do this. Nothing concrete to show you at the moment however it is evident that there are more S. terns in the DEP North array area as is reflected in the raw data.</p> <p>RI – Any mitigation should be evidence led. However, we have only two years of data and so using the model based density estimate to formulate mitigation should be approached with great caution. We could have a separate discussion with Grant Humphries from HiDef on this at some point to further explain the approach to, and the outputs</p>	

Number	Details	Action
	<p>from, the model based density estimation work. [MRSea report shared and meeting held on 1st March 2022.</p> <p>MK - Splitting DEP North and South array areas would be possible for S. tern but not for other species because we don't have model based density estimates for those other species?</p> <p>RI – yes, that is the case.</p> <p>RI - Coefficients of variation (CV) were a bit mixed whether they went up or down.</p> <p><i>Kittiwake</i></p> <p>Compared to other species, there's a lot more green for kittiwake, indicating tighter CIs and increased precision in the density estimates. Whilst improvements have occurred, on the whole they are still relatively modest.</p>	
3	<p>Model Based Density Estimation</p> <p>RI – this includes all birds in flight and on the sea which, if we used this estimate for Collision Risk Modelling (CRM), would result in a slight overestimate however about 98% of birds were found to be in flight so wouldn't materially impact the conclusions of the assessment. So, for a precautionary assessment we included them all.</p> <p>RBe - were they on a buoy? RI - not sure would need to check. (31 birds sitting total, 22 recorded as “sitting on man-made object”).</p> <p>SA - ultimately you are using all birds in your metric.</p> <p>RI - yes.</p> <p>RI - Grant Humphries at HiDef undertook this work and considered several co-variates but only bathymetry was taken forward in the model as it was the only one which was statistically significant.</p> <p>SA - so you didn't include e.g. distance to wind farm, distance to colony etc?</p> <p>RI - we would need Grant to comprehensively answer so would be useful to have a follow up discussion with him.</p> <p>SA - so, in this model you are using the entire survey area?</p>	<p>Natural England to request manuscript paper submitted by BTO and Bureau Waardenburg using the Dudgeon post construction monitoring data. [Note the project team actually had this which SC shared with Natural England on 15/03]</p> <p>RHDHV to look at how Vanguard East and West implemented mitigation to address differing sensitivities between each site.</p>

Number	Details	Action
	<p>RI - yes.</p> <p>SA - and then you are getting the densities for the areas of interest by using some form of bootstrapping technique.</p> <p>RI - yes, the outputs we have been provided allow us to open the grids in the GIS and explore each cell.</p> <p>SA - ok, so you have the functionality to see what would happen if certain areas were removed from the OWFs?</p> <p>RI - yes, and you can also look at precision within certain areas.</p> <p>RI - in terms of predictive power and root mean squared, what this model is showing us is fairly typical e.g. 15% r squared value which is quite low.</p> <p>SA - yes this is why it's quite surprising that the existing wind farms were not considered in the co-variables. Perhaps more variables would be explaining the variation. Also, e.g. the presence of breeding colonies. There may be very good reasons why Grant hasn't included that but would be good to know because it could explain the variation around the model.</p> <p>RI - in terms of the displacement rate, we have been looking at a paper submitted by BTO and Bureau Waardenburg using the Dudgeon post-construction monitoring data to look at whether displacement is the same for all birds whether they are commuting or foraging. That shows it is likely that displacement varies based on what the birds are doing. So, Race Bank has lower levels of displacement compared to Sheringham which could be to do with the fact birds at Sheringham are commuting rather than foraging.</p> <p>SA - could we get a hold of that work?</p> <p>LB - we have the annual reports.</p> <p>RI - the manuscript is what has the analysis of all this data [not the annual reports].</p> <p>SA - ok we can request that.</p> <p>MK - what is the relationship to bathymetry?</p> <p>RI - in deeper water you expect to see fewer birds. However, the whole site is quite shallow so not sure how useful this relationship is.</p> <p>RI explained the relationship of bathymetry with reference to the graph on slide 21.</p>	

Number	Details	Action
	<p>SA - so this is quite an important point. Presumably you have this in a report from HiDef? The sooner we get to review that report the better given the complexity of this approach. We may need external advice on some of the process so it would be good for us to get back to you in plenty time before examination.</p> <p>RI – yes, we have a report we can share with you [post meeting note: this has now been shared]</p> <p>RI showed slide 23 which was a comparison of the results of the model and density based density estimates which showed that CIs are tighter generally speaking which is what you'd expect. What is quite reassuring is the similarities to design-based density estimates suggests that spurious results haven't been generated by MRSea. However, the results are unlikely to affect the conclusions of the assessment.</p> <p>SA - regarding the peak in that July survey, do you have any explanation of why that was, anything unusual in the surveys?</p> <p>RI - nothing I'm aware of from the survey. Will go and have another look after the meeting. (high densities on this survey driven mainly by very high count of birds relative to other surveys).</p> <p>RBe - could be a mass feeding event and include birds from other colonies e.g. failed breeders bolstering the population.</p> <p>SA - were all three wind farms operational throughout the baseline surveys.</p> <p>RI - yes, I think so.</p> <p>RI showed slide 25, design-based vs model -based density estimation for all S. tern at DEP only which showed a mixture of increases and decreases to the mean compared to what was in the design based density estimate. We have seen some modest decreases in the Upper 95% CI but also some quite big increases e.g. July 2018.</p> <p>SA - so the 2018 one in August for model based is blank because? One of the things to consider in model based density estimates is how you account for the temporal changes e.g. run a global model and have months as a factor within that or run a model for each month.</p> <p>RI – yes, there was a reason for that - insufficient numbers of birds. However, there is an inconsistency here in that some surveys that were included seemed to have similar</p>	

Number	Details	Action
	<p>numbers to those that were excluded. I'll follow this up in separate meeting with HiDef.</p> <p>RI - precision for model based generally is a bit of an improvement on design based with a couple of exceptions but this is really positive. It's possible to drill down as much as you want within each subset of the aerial survey data.</p> <p>SA - combining the two separate DEP array areas could be driving some of the uncertainty / lack of precision.</p> <p>RI - need to be a bit cautious because you are not dealing with a huge dataset here. Reality is, S. tern are pretty dynamic so in other years you could see different results. So, challenge is coming to a decision about how you go chopping things up and refining things in really fine detail.</p> <p>SC made the point that the DCO application is essentially considering one wind farm site in relation to DEP and we therefore consider it is justified in taking the two areas together particularly given the small size of these areas and the large amount of work that has already gone into refining these down on the basis of all the different environmental constraints.</p> <p>SA – yes, it's about a trade-off because you see that as one windfarm site but e.g. if you were considering these as one DEP site then we would consider difference between that and SEP. It's about the ecological realities and looking at the most appropriate from an ecological perspective.</p> <p>MK - it might be worth a bit of a review of Vanguard East and Vanguard West. Some of the mitigations they looked at were e.g. to reduce the relative proportions of turbines as mitigation. These are the sorts of approaches that might help with your impact reduction. Follow the mitigation hierarchy and look at what you can do.</p> <p>SC – yes, we can have a look at that. Do you know if that was considered as two separate wind farm sites?</p> <p>LB - it was a single proposal but split into two separate sites because there was a shipping lane through the middle. However, it's a good suggestion to look at what was done for Vanguard with regard to this.</p> <p>SA - could target the mitigation more specifically by considering DEP North and DEP South arrays noting that lots of variation.</p> <p>LB - you need to lose the northwest tip of Dudgeon since that is where the sandbanks/sandeels are and therefore where the S. terns are more likely to be. That from my</p>	

Number	Details	Action
	<p>perspective is a more ecosystem view. The only science I have on that is that sandeels are associated with sandbanks and I'm basing that on the benthic ecology that's there.</p> <p>RI - I can't speak on behalf of Equinor but splitting up a windfarm could result in lots of potential further issues however from an ornithological assessment perspective potentially resulting in there not being a large enough area for design based density. Any changes/mitigation would need to be driven by evidence.</p> <p>SC - yes, we are already considerably constrained as evidenced by the weird shapes of the sites. We have looked at ways of mitigating across the board and are probably at the limits of where we can be.</p> <p>MK - in our experience of looking at this as it plays out through examination you should probably start to have some advanced thinking on this because once you get into the tunnel [examination] it's hard to get out.</p> <p>SC - yes, thanks Martin, that's appreciated and understood however would just like to note that we are not one of these large gigawatt scale projects so this has a greater impact on commercial scale and whether the project is viable.</p> <p>MK - yes, appreciate that it's complicated.</p> <p>RI - just thinking out loud, one way of reducing this would also be through air gap so there is more than one way of mitigating this.</p> <p>RI - just a word on assessment approach. As we've got these two sets of data for S. tern, we propose to present two outcomes of the assessment based on this. Because the outputs are quite similar we expect the outcomes of the assessment to be very similar. From what I've seen looking at the design based density estimate, increasing the survey coverage has been useful in tightening CIs and precision. We do recognise that this exercise could be done for other species. However, we are mindful that this can't be guaranteed and we already have good design based density estimates for other species so we propose to use design based density estimates for all other species.</p> <p>SA - my comment on that is that for us to provide any comment we'd need to understand the model based approach that's been undertaken and also having the full detail on that would be useful. So, having the design based outputs increased to 20% coverage for all species would really help us form that opinion and advise you. I think perhaps we would need to have a short meeting with Grant once we have read the report.</p>	

Number	Details	Action
	<p>MK - I suppose just on a more sort of case work note, little bit chicken and egg, we do need to get a bit of an idea of impacts and apportioned impacts as we need to understand what needs to be/can be mitigated. So, at the moment, because we don't have a sense of what the conclusions are, it's hard to advise.</p> <p>RI - yes there are two ways to come at this. One part wants to provide the most robust density estimates. The other is looking at what the conclusions of the assessment are likely to be and whether the increased precision is able to provide any more robust outcomes. In my view, moderately increasing the precision of the density estimates isn't changing the conclusions of the HRA. This is what is informing my thinking of relying on the design based density estimates in the assessments.</p> <p>MK - If model-based gives us a better idea of distribution across the sites, this gives us a better idea of potential mitigation so there is that.</p> <p>RI: it might, though only two years of data etc.</p>	
4	<p>Impact Assessment</p> <p>RI - moving on to discuss the actual impact assessment, we will look at displacement and collision.</p> <p>RI ran through the available evidence on sandwich tern displacement. Based on Cook et al which uses a generic multi-species rate so need to be careful with this.</p> <p>Hi Def's work at Lincs looked at S. tern but didn't make any great attempt to quantify any potential effects. Effects were fairly small and inconsistent which obviously isn't very useful for us.</p> <p>Sheringham Shoal: 3 years of monitoring work. A more consistent displacement effect with macro avoidance rates of 0.31 and 0.42, with effects limited to within the array with no evidence of effect beyond 500m. Also, buoys nearby the windfarm were being used by S. terns which links back to Richard's point earlier.</p> <p>RBe - certainly around Lincs and Lynn and inner Dowsing, the location of those buoys from a distribution perspective might be quite interesting because there are quite a lot of them.</p> <p>RI - are you aware of any work looking at this?</p>	<p>RHDHV: Seabord evidence to be investigated to check for potential effects of displacement on productivity</p> <p>RHDHV to provide a worked example of theoretical as built collision risk calculations</p> <p>Engagement plan to be updated with detail of pre-consultation on ornithology submissions</p> <p>Natural England to please clarify point in Helen Mann's email of 01/02/2022, <i>'it is recommended in point 2 that a standard deviation of 0.206 is applied to juvenile/ immature survival rates'</i>. This value</p>

Number	Details	Action
	<p>RBe - no I'm not, but this would be a useful piece of work. When the buoys were at Sheringham you could track the birds going to roost on the buoys.</p> <p>LB - Lynn and Inner Dowsing and Lincs aren't preferred by S. terns, having looked at the tracking data believed to be because of a natural barrier of the deep channel that runs through The Wash i.e. 'The Well'.</p> <p>SA - if there are other records of buoys this might be useful to include.</p> <p>RI - Green et al (2021) is the unpublished manuscript that we discussed before the break. The key takeaway is that birds engaging in commuting behaviour are more likely to be displaced than those foraging.</p> <p>SA - does the paper quantify any of that behaviour?</p> <p>RI - yes there is quite a lot of quantitative analysis but it has not been calculated like you would for an offshore wind farm impact assessment.</p> <p>RI - in terms of coming up with a sensible range for displacement, at the moment, the ES is looking at a range of macro avoidance from 0-0.5 which encompasses the measured values that I've come across. Do you have any questions on this?</p> <p>SA - you're really talking about a displacement matrix which is what we always come back with. That is appropriate. Advice sometimes is that you'd look at up to 100%.</p> <p>RI - evidence from the tracking data shows that this is very unlikely.</p> <p>SA - well I guess it would just be a few extra columns in a table.</p> <p>RI - I will be showing a matrix up to 100% however will base the assessment conclusions on 0-50%.</p> <p>There is this possibility that rates at SEP and DEP might be different between the two if behaviour is different e.g. if, as we think, SEP is used for commuting and DEP for foraging then this could result in differences.</p> <p>Mortality rates - situation is even more unclear than displacement. Again, we'll present the full range in the matrix but this is about how we select an appropriate rate to take into the assessment. At the moment we are looking at a rate of around 1% and applying some logic to look at this. Current mortality rate is 0.102. RI described the uncertainty</p>	<p>is derived from Horswill and Robinson (2015), but is a standard error, not a standard deviation. Could NE please clarify? For the time being we have reverted to the use of adult only mortality models).</p> <p>NE Response:</p> <p>Thanks for pointing this out, we've looked back at the NE PVA log for this, and we did use the standard error (from Horswill & Robinson, 2015) of 0.206 in our model. This was an error, and we should have used the Standard Deviation of 0.824 (as populated in the NE PVA tool). We have yet to re-run the model with that corrected rate (SD rather an SE), but would encourage the Applicant to explore it, as the population trajectory was more realistic than the adult only model. Apologies for the mistake.</p>

Number	Details	Action
	<p>in assigning a mortality rate as a result of SEP and DEP as shown on slide 32.</p> <p>RI - at the moment I'm looking at a 1% mortality rate.</p> <p>RBe - advice is to look at mortality rates up to 10% in 1% increments up to 5% and then 5 and 10%. Do tend to agree that that the lower end of the mortality rate is suitable for S. tern.</p> <p>SA - it would be useful to see the Seabord evidence from Scotland which would take account of both impacts to mortality and productivity which we are not doing for this, we are just bundling everything together. It may well be that it is more likely to be a productivity effect rather than a mortality effect so could check the Seaboard modelling results for other species as it may help contextualise the rates that we have here although I do tend to agree with Richard that mortality rate is likely to be at the lower end.</p> <p>RI - this is very tricky and is a bit of a balancing act.</p> <p>MK - all you are probably going to be able to do is provide a narrative approach around this and use the shading approach to the matrix to indicate the probability.</p> <p>RI - yes, glad you agree with this.</p> <p>MK - think we'd like to see recognition that the mortality rate is a bit of a hopper of lethal and sub-lethal effects with regards to impact because previously, assessments have said that anything above 1% is unlikely but need nuance around the other variables that could contribute to the uncertainty.</p> <p>RI showed slide 33 displaying the outputs of operational phase displacement for S.tern.</p> <p>RI - we've ended up doing our own displacement assessments for those existing sites as there was no information from those projects. In summary, we're dealing with pretty low numbers of birds being displaced but very useful to get your thoughts.</p> <p>SA - what data have you used from the other wind farms, are they from the ES chapters?</p> <p>RI - yes, for the most part but I think Dudgeon might have been from something more recent but densities came from the ES. But yes, all original baseline data.</p> <p>SA - and same for collision? RI - yes.</p>	

Number	Details	Action
	<p>Collision risk</p> <p>RI presented slide 35. Showing the evolution of the input parameters for the S.tern CRM including a slight reduction in max number of turbines and an increase in air gap.</p> <p>SA - where you say 32 to 30 in DEP do you know if that's in the DEP North or DEP South array area.</p> <p>SC - across DEP as a whole. Detailed layouts will come post consent at detailed design.</p> <p>SA - and did the reduction allow you to decrease the area?</p> <p>SC – no, we've been able to refine these down based on the available turbines on the market.</p> <p>SA - going back to the DEP N / DEP S point. If there was a need to limit the numbers of turbines in one of those two areas, is there a way to secure that.</p> <p>SC - I think what you're talking about is theoretically possible within the consent however there are many permutations that feed into the design of the windfarm and that have an effect on so many different areas.</p> <p>RI - consented and as built scenarios for the other windfarms have been included in the cumulative assessment.</p> <p>We are looking at 3 different designs i.e. consented; as built; and maximum theoretical as built with the latter looking at the maximum MW envelope consented and then assuming building that windfarm out with the turbines that are already installed.</p> <p>SA - one thing that NE require is for the as built to be in some way legally secured before that assessment can be considered. Regarding this approach of looking at what's built and the remaining capacity which is as yet un-built, I think for that to be useful to us you'd need to model that from a worst case scenario of what's been consented. So what's in the water is not necessarily what could be built out in future so I think that's slightly different to what's here. Needs to be a scaling of those consented turbines.</p> <p>RI - ok, noted, although there is zero chance of those turbines being built out.</p> <p>MK - we've not seen this approach before.</p> <p>SA - think it's come out of the headroom workshop which looked at the possibility to examine the legally allowed grey</p>	

Number	Details	Action
	<p>area of capacity but I haven't actually seen this anywhere yet either.</p> <p>MK - so this [maximum theoretical] will lie within a range of the as built and the consented. Is the idea that you present a scale and say we think that the impact is likely towards this end.</p> <p>RI - yes, that's a good description. Where I'm coming from is that presenting these with a lot of the spare build out capacity which are all at 22m height above MHWS based on Harwood you are ending up with massive collision rates.</p> <p>MK - ok, thinking this isn't going to be good to deal with through the examination so would be good if we could have this presented to us beforehand so that we can seek input from other SNCBs and try and provide you some advice.</p> <p>SA - yes, seeing it worked through like this outside of the examination process would be very useful. Although, pretty sure one of Natural England's legal teams' points would be that it needs to be based on a build out of the consented turbine.</p> <p>RI - that presents a potential problem as it will be two separate CRMs.</p> <p>SA - but you can just use the existing CRM for consented and change the turbines.</p> <p>RI - ok, it's not so bad.</p> <p>MK - is there a way that you could present something for DOW and SOW that would say 'this is it' we are not building this out.</p> <p>SC - yes, this could be done through amending the consent and this is something that we are thinking about.</p> <p>MK - what we are missing is a mechanism to bridge the divide that we can all live with, and the feeling is that BEIS fixed that for the recent consents but still unclear for the old ones.</p> <p>SC - what I'm not getting is how projects could be built out to capacity when they are limited from an Agreement for Lease (AfL) perspective.</p> <p>LB - I think it's a full area but with a maximum capacity so they could still potentially look at getting a variation to the AfL for additional capacity.</p>	

Number	Details	Action
	<p>SA - the problem is the practicalities of it, is that we have legislation that precludes the ability to take account of the practicalities of whether you would or would not be able to build out so this is a problem with the planning and DCO consents which can now be fixed going forward but there's a problem with the Habitats Regulations requirements to have certainty in the impacts, so it's all kind of mired in a theoretical legal issue.</p> <p>SC - yes, it needs to be a legal fix for a legal challenge.</p> <p>AP - worth reinforcing our intended approach to the release of the headroom from Dudgeon. We have investigated the legal mechanism to do this, as set out in the PEIR project description. A legal mechanism will be included in the DCO to secure the release of the headroom from Dudgeon. This is not possible or necessary for some of the other projects that might otherwise be relevant either because they are outside of our control or the headroom available would be very small.</p> <p>SA - so the problem here for consented vs as built is that you've got these design factors that indicate that capacity isn't an issue for Race Bank and Sheringham or are the as built and consented turbines very different? RI - Sheringham very close to being built out with what was consented so not much to be gained.</p> <p>AP – yes, the biggest gain is from Dudgeon.</p> <p>RI showed slide 37 describing how the S.tern CRM input parameters have evolved. Going to focus principally on an avoidance rate of 0.98.</p> <p>Flight height distributions - we have switched to the Harwood 2021 flight heights.</p> <p>Speed - we are proposing to mainly focus on the flight speed collected at the North Norfolk Coast (NNC) and we had comments at PEIR of providing additional info so that these can be accepted. We now have that so it can be included with the Technical Report.</p> <p>Nocturnal Activity Factors (NAF) - we previously suggested that nocturnal activity could be as high as 10% however that lacked a spatial input parameter so when we actually looked at that, the vast majority of nocturnal activity was birds moving between the colony and some sort of coastal roosting location. The visits out to the windfarm were very limited.</p> <p>RI presented comparison of model and design and 0 and 20% macro avoidance collision outputs. Seeing slightly</p>	

Number	Details	Action
	<p>higher means and tighter CIs when the model based densities are used. Compared to PEIR, it's hard to say but I think we've slightly reduced collision risk but I think these gains have been cancelled out due to the increase in birds at PCH from use of the Harwood data.</p> <p>SA - and flight speed?</p> <p>RI - yes that uses 8.2m/s flight speed.</p> <p>SA - so when you have a higher flight speed you have more collisions?</p> <p>RI - yes, that's correct</p> <p>SA - it's going to be really important to see all this new material as soon as possible before DCO application.</p> <p>RI showed outputs of CRM looking at the other windfarms. Very close to what was predicted in the DECC (2012) plan level HRA which is good as it gives us an idea that the input parameters are what were envisaged when that was done.</p> <p>SA - so all the parameters which went into these individual projects are completely different for DECC so it's quite remarkable that using all these new assumptions and parameters have given us such a close value.</p> <p><i>Population Viability Analysis (PVA)</i> Next thing is taking these numbers and putting them into PVAs.</p> <p>RI presented PVA outputs based on as built un-apportioned mortalities so we assume 100% of S. terns in the breeding season are from NNC and from migration season around a third so the numbers shown here will be very similar to those for the HRA.</p> <p>RI - so we are seeing a 0.1 to 0.2% change in annual growth which shows a 5-6% reduction in the estimates of S. tern population over the entire operational phase. Our conclusion is that this is unlikely to result in a project alone Adverse Effect on Integrity (AEoI).</p> <p>Using the adults only survival does overestimate the survival rates of other age classes. However, counterfactuals are the important metrics here and they don't appear to be affected when you incorporate other classes and survival rates into the model. (an important point – in Helen Mann's email of 01/02/2022, it is recommended in point 2 that a standard deviation of 0.206 is applied to juvenile/immature survival rates. This value is derived from Horswill and Robinson (2015), but is a standard error, not a standard deviation.</p>	

Number	Details	Action
	<p>Could NE please clarify? For the time being I have reverted to the use of adult only mortality models)</p> <p>SA - is this using a 10 year average?</p> <p>RI - yes for starting population and productivity</p> <p>SA - and running it for one population?</p> <p>RI - yes. I think if you do this it results in a substantially more positive population trend between the two colonies you eliminate zero productivity values from the productivity means.</p> <p>SA - yes running as one you reduce the variability in the predictions so that seems appropriate to reflect one productivity figure per year unless we thought that the impacts were occurring to one specific colony then it would be more appropriate to model separately but we're not so one is more appropriate. You end up with wider CIs if you go down the two sub-populations.</p> <p><i>In-combination effects</i></p> <p>RI - again, we are looking at the as built scenario here. Even so, we have impacts that are large enough to be in the adverse effect bracket. So the annual growth rates are impacted by 1 to 1.5% which has a big effect on the population size at the end of 35 years. In that scenario you are looking at a 40% reduction in population over the 35 year period.</p> <p>What is quite clear to me is that SEP and DEP are not a very large contributory factor to this, it's coming very much from the other projects.</p> <p>MK - on a cautionary note about SEP and DEP not really making a difference. You may recall that the original Vanguard approach to <i>de minimis</i> for kittiwake impacts is no longer going to be accepted. The SoS has made it clear that the <i>de minimis</i> route is not an option.</p> <p>RI - yes agree I did not mean to suggest that is necessarily an argument we would be looking to rely on.</p> <p>MK - it will be much more productive as we go into Examination, so good we'll be on the same page that we need to focus on what to do about this.</p> <p>SA - nothing more to say, I agree with the modelling approach you have taken but this would be great to see as early as possible in a sort of draft ES format. When could we have sight of this?</p>	

Number	Details	Action
	<p>RI – yes, we can discuss that at the end.</p> <p><i>Kittiwake & Gannet</i></p> <p>We have done some CRMs and would just like to present a comparison of the impacts between the PEIR and ES which show a reduction primarily due to the air gap increase so for kittiwake and gannet we've seen around a 50% reduction in impact.</p> <p><i>Red-Throated Diver (RTD)</i></p> <p>RI presented slide 58. Is 10km buffer appropriate for RTD operational displacement?</p> <p>MK - have you seen our guidance, that says 10km.</p> <p>RBe - situation is now all the statutory nature conservation bodies (SNCB) have signed off and agreed that and we can supply that to you.</p> <p>MK - use of 10km is in line with that guidance.</p> <p>MK - Rob does this include Westermost Rough and Humber Gateway?</p> <p>RI - no it doesn't I'll need to include them.</p> <p>RI - at SEP you do have some overlap of the 10km buffer. So I'm focussing on the area that overlaps the SPA but which has not already been overlapped by the existing windfarms.</p> <p>MK - thanks, useful to see that. Your next step is to look at what EA1N and EA2 have done so you've got your effect over the total area and then a straight line approach assuming a 100% displacement at 0km and 0% at 12km. What they did do and I would council against is trying to model that because their model ended up with displacement values that were below what empirical evidence was suggesting.</p> <p>RI - yes, this GW data is quite old anyway so wouldn't like to go down this route.</p> <p>LB - we're hoping there will be a report some point after the end of March. Data were collected in mid-January and the other survey I'm waiting for confirmation of but should be this week or next.</p> <p>MK - querying whether you will be considering RTD in compensation? Useful that you are not taking big chunks out</p>	

Number	Details	Action
	<p>of the site so you might be able to use the mitigation hierarchy here without the need for compensation.</p> <p>SA - just want to reiterate that it would be really good to have an understanding of when you might share some of these docs and what the engagement plan is because there are some quite meaty issues on which it would be good to engage on prior to submission.</p> <p>SC - we had a discussion with Helen and Lou on this so the same thought had crossed our minds about sharing a draft with you. Ideal world we could provide documents in time that would allow us to incorporate feedback within the submission chapter however alternatively it would still be useful to share this even if we are not able to update in time for submission.</p> <p>LB – useful even if we have discussions about the chapter that is to be submitted. We have to provide our relevant representation based on that submitted.</p> <p>MK - yes bit of a risk that we get out of sync so this does need a bit of planning.</p> <p><i>Closing remarks</i></p> <p>RI/SA – difficult to put timescales on when we can provide updated draft assessments, however we will update on this as soon as possible.</p> <p>[end]</p>	

1.4 Terrestrial Ecology and Ornithology Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (LB) – Natural England; [REDACTED] (BMT) – Environment Agency; [REDACTED] (VW) – Natural England; [REDACTED] (KW) – Environment Agency; [REDACTED] (CC) – South Norfolk and Broadland District Council; [REDACTED] (CD) – Norfolk North County Council; [REDACTED] (ME) – Equinor; [REDACTED] (MC) – Equinor; [REDACTED] (JA) – RHDHV, [REDACTED] (OB) – RHDHV, [REDACTED] (MW) – RHDHV; [REDACTED] (WR) – Wild Frontier; [REDACTED] (RE) – Wild Frontier;

Apologies: [REDACTED] (OV) – Equinor; [REDACTED] (JH) – Norfolk Wildlife Trust; [REDACTED] (MJ) – Norfolk Wildlife Trust; [REDACTED] (DW) – Norfolk County Council; [REDACTED] (GL) – North Norfolk Council; [REDACTED] (MR) – Broadland District Council; [REDACTED] (WH) – Natural England; [REDACTED] (PP) – RSPB;

From: Royal HaskoningDHV
Date: Tuesday, 28 January 2020
Location: Maids Head Hotel Tombland, Norwich, Norfolk, NR3 1LB
Copy:
Our reference: PB8164-RHD-ZZ-OF-MI-PM-0007
Classification: Project related
Enclosures: ETG meeting slides

Subject: DEP and SEP Terrestrial Ecology and Ornithology ETG

Number	Details	Action
Introductions and Purpose of the meeting		
1	Following introductions, JA outlined the agenda, purpose and aims of the meeting. Please refer to the ETG meeting slides. JA also discussed the wider context of the meeting and future ETGs.	RHDHV to issue ETG meeting slides with these minutes.
2	CC expressed concern the project will adopt a similar approach to Hornsea 3 when assessing hedgerows and trees. She reminded the ETG that these should not only be assessed from the ecology perspective but also from the point of view of Hedgerow Regulations (impacts on the historic value and landscape value). CC recommended the upcoming hedgerows and trees surveys should also be undertaken in accordance with the Hedgerow Regulations and associated methodology. JA stated that this has also been flagged by the landscape consultant.	RHDHV to ensure that any issues raised in the Landscape ETG relevant to Hedgerows Regulations are also discussed during the next Ecology ETG.
Project Update		
3	MC summarised the project and consenting approach. Please refer to ETG meeting slides. Scoping report was submitted on 8 th October 2019 and scoping opinion was received on 18 th November 2019. DCO application is scheduled for Q3 2021.	

Number	Details	Action
	<p>The onshore site selection process is ongoing with a series of internal workshops that took place in December 2019. The process involved specialists from various disciplines including onshore ecology specialists. The current focus of site selection is to narrow down the 1km wide scoping area to identify a 200m wide corridor for surveys to be undertaken during 2020. It is also anticipated that the single preferred landfall option will be confirmed in Q1 2020 for the survey and assessment work that will be reported in the Preliminary Environmental Information Report (PEIR).</p> <p>JA explained the 200m survey corridor will be further reduced (down to c.45m and wider in HDD areas) for the DCO application.</p> <p>CC asked if there will be a permanent and a temporary easement on the corridor. MC mentioned that there may be opportunity for a narrower working corridor, in the region of 30m.</p>	
4	<p>MC stated that no booster station will be required close to the shore for this project. CC raised concern over the worst-case height of the substation (25m) as this is taller than Hornsea 3 but for a much smaller project.</p>	
5	<p>CD is keen to see if the river Wensum crossing could be installed in cooperation with another proposed project (Norwich Western Link) to reduce the total number of crossings required. MC mentioned that a meeting has been set up with Norfolk County Council to discuss the two projects.</p>	
6	<p>CD stated that the area north of the A47 (ROAR dinosaur park) is considered to support a large population of Barbastelle bats and should be taken into consideration during the survey and assessment work</p>	
7	<p>CC indicated that she can provide information on housing developments proposed in south Norfolk. MC stated that Equinor is aware of the Food Enterprise Park proposal and the cable route will avoid this area.</p>	
8	<p>CC asked for clarification on the location of the permanent construction compound site. JA outlined the project is still at an early stage of development and no decision has been taken on the build out approach. The project is aware that two recent wind farm applications in Norfolk had different approaches :</p> <ul style="list-style-type: none"> • One large main compound - Hornsea 3 project. • Multiple smaller compounds to distribute the traffic evenly - Norfolk Vanguard project. 	

Number	Details	Action
	An exercise will be undertaken to determine the approach that the Sherigham and Dudgeon Extension projects will take, and this will be set out within the PEIR.	
9	CD stated that Bat Conservation Trust (BCT) are keen to install bat detectors on the offshore turbines to gather data on migrating bats, although the practicalities of this are not fully understood.	ETG to discuss further.
10	<p>BMT stated the project should look to implement the principle of net gain for biodiversity. As the project has a long life, it can be future proofed by ensuring surveys reflect calculations using the Defra metric. LB stated that net gain should be secured prior to consent, rather than post consent and should not be confused with compensation.</p> <p>ME asked if a negative impact onshore could be compensated by a net gain offshore. CC stated that a negative impact onshore should be compensated by a net gain onshore. LB agreed and stated that net gain should be enhancing the area that is affected.</p> <p>ETG discussed options of enhancing the area surrounding the substation and along the cable route and that Hornsea 3 effectively introduced space along the corridor for enhancement opportunities to address tree losses along the route. BMT suggested watercourse crossings location could provide opportunity for enhancement and provide net gain opportunities.</p>	
11	ETG discussed location and size of the landfall HDD. CC asked if HDD will be used at hedgerow locations. JA stated that the locations of HDDs along the rest of the cable route have not been identified. MC stated that the preference is for open cut but HDD will be considered for features such as ancient woodland, specific designated sites, roads and rivers.	
12	CD asked for clarification on lighting at the sites. MC confirmed that lighting will be required for construction. During operation the site onshore substation is expected to be unmanned and that lighting would be required at least for security purposes. Configuration of lighting will be sensitive to the surrounding areas.	
13	LB recommended that the PINS website includes Natural England's advice on the impact East Anglia One North and East Anglia TWO may have on an AONB. JA stated that Equinor have appointed a Landscape consultant assess landscape impacts and that this advice will be passed on.	
Baseline information		
14	JA introduced Wild Frontier and their role in the project.	
15	WR outlined the phased approach and timescales of surveys required and what the surveys hope to achieve. RE suggested that most surveys	

Number	Details	Action
	will be completed this year but acknowledges the potential constraints related to the land access.	
16	CD pointed out that Western Link Project survey reports will be available in February this year and could be used to inform ecological assessment.	
17	CD stated that for the bat surveys it is preferred that static bat detectors used rather transect surveys. WR stated that static detectors will be used in most of the areas. Transects would be used only in the areas where there are concerns over leaving equipment overnight.	
18	CD stated that if Bacton landfall is chosen as preferred option then the onshore corridor is going to be in proximity to Paston Great Barn SAC; a 5km survey area (for features that may support qualifying bat species associated with the SAC) should be used (similarly to Norfolk Vanguard).	CD to confirm the size of the survey area and potential mitigation options.
Survey Methodology		
19	WR listed protected species likely to be present along the route and the methodology for surveying. Please refer to ETG meeting slides.	
20	CD queried whether trail cameras could be used for bat emergence surveys. RE highlighted the limitations of this method as you have to commit to a single feature for the duration of the survey and may miss other features.	
21	WR stated that skylark population is considered to be high in the scoping area and will be considered in the assessment. WR discussed a sampling methodology to cover the cable route (spot sample and extrapolate) and mitigation opportunities may have to consider timing of the works.	
22	It was agreed that eDNA surveys will be used for great crested newt surveys presence / absence. Some population assessment may be progressed depending on the findings. JA flagged up that access to all ponds is highly unlikely (approximately 50% of ponds were surveyed on other schemes due to access restrictions) so a mitigation strategy based on detailed population assessment for each pond would not be possible. JA stated that a mitigation protocol would be developed to support the assessment (and to determine residual impacts), based on a precautionary approach. CD stated that district level licensing may assist with this in the future although may not be in time for this application. CD suggested that additional background data is available from Natural England.	
23	WR presented programme and methodology of the surveys. Please refer to ETG meeting slides. CD stated that provided best practice guidelines are followed then it should only be necessary to discuss methodologies	

Number	Details	Action
	where the approach deviates for some reason so that this could be explained and agreed with the ETG. MC stated that at present the challenge was obtaining land access and that this would mean we are unable to achieve 100% coverage for any surveys.	
24	LB suggested that the project team should review Natural England's response to Norfolk Vanguard and Hornsea 3 projects for the comments related to the biodiversity data collection. Although NE's main response to Hornsea 3 was at PEI stage and may not be publicly available.	
25	BMT stated concern over the cumulative impacts construction may have on the water quality crossing multiple minor watercourses that connect into main rivers. LB also pointed out the issues of groundwater connectivity identified in the Norfolk Vanguard project and that this should be taken into account for these projects, i.e. ensure that indirect impacts to groundwater dependent sites are assessed.	
26	RE explained that the distribution of sugar beet fields is closely correlated with pink footed geese populations in Norfolk. The ETG discussed reviewing the cropping patterns during construction to mitigate the impact through timing, adopting a similar approach to Hornsea 3. CC suggested contacting North Norfolk District Council Ecologist who was heavily involved in developing this approach with Hornsea 3.	
27	WR asked the ETG if further wintering bird surveys were needed where should they focus or, given the close correlation with crop patterns (particularly sugar beet) would a desk-based exercise into cropping patterns be more informative? The current wintering bird survey could be used to corroborate the correlation described above.	CD and LB to confirm if a desk-based approach to cropping patterns is acceptable or whether further wintering bird surveys would be required.
28	MC confirmed that a separate report will be produced to outline the results of the wintering birds survey.	
AOB		
29	JA suggested, whilst it was agreed that the project will be adopting best practice approaches for all the surveys that, for the avoidance of doubt, a survey method statement would be circulated to the group and ensure everyone is comfortable with the approaches proposed.	Wild Frontier produce a survey method statement
30	CD stated that it would be useful to agree a target percentage and metrics for the calculations in advance of the starting the assessment. BMT suggested the Defra metric would be the most appropriate.	

Number	Details	Action
31	MC clarified that Equinor has limited capacity to implement green infrastructure as part of the project (lease only giving rights for access and maintenance).	
32	LB stated that around the Bryant's Heath and North Walsham areas there is scope for heathland creation in terms of soils, geology and hydrology which could be considered as net gain for the project, i.e. enhancement of sites away from the Order limits would contribute towards net gain	
Next Meeting		
33	JA suggested that the next meeting should take place following the completion of the initial surveys to inform the drafting of the PEIR document. Dates will be circulated for a meeting in June/July. A document will be provided in advance of the meeting to update the ETG.	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (YF) – Natural England; [REDACTED] (FS) – Natural England;
[REDACTED] (LB) – Natural England; [REDACTED] (BT) – Environment Agency;
[REDACTED] (PP) – RSPB, [REDACTED] (MJ) – Norfolk Wildlife Trust Kerys Witton
(KW) – NNDC, [REDACTED] (CD) -NCC; [REDACTED] (RY) – WFE; [REDACTED]
(WR) -WFE; [REDACTED] (JT) – Equinor; [REDACTED] (MC) –
Equinor; [REDACTED] (CDr) – Equinor; [REDACTED] (CS) – RHDHV; [REDACTED]
(MW) - RHDHV

Apologies:

From: Royal HaskoningDHV
Date: Thursday, 10 December 2020
Location: MS teams
Copy:
Our reference: PB8164-RHD-ZZ-ON-MI-PM-0018
Classification: Project related
Enclosures: ETG meeting slides

Subject: DEP and SEP Onshore Ecology and Ornithology ETG2

Number	Details	Action
Introductions and Purpose of the meeting		
1	<p>JT was introduced as the new onshore consenting workstream lead within the Equinor team for DEP and SEP. JT presented project update, as well as an update on the surveys undertaken in 2020 (please see presentation slides). JT stated that a feasibility study was undertaken to inform the project development and as a result the onshore cable corridor is now typically 200m wide. It was noted that the onshore cable corridor is wider in certain areas. For example, two routes are currently being considered through the Weybourne area.</p> <p>The five shortlisted substation sites were narrowed down to two preferred sites which will be assessed within the Preliminary Environmental Information Report (PEIR). JT confirmed that further refinement of the onshore cable corridor will be undertaken in advance of the DCO application. JT stated 70% of land access was secured within PEIR boundary.</p>	MW to issue slides to the ETG
Baseline surveys		
2	<p>WR presented a summary of the overwintering birds surveys undertaken between November 2019 and March 2020 (please see presentation slides). The surveys were focused in the areas where birds are known to be present including landfall area and were undertaken from Public Rights of Way due to a lack of survey access at the time of the surveys.</p>	<p>WR/RY to confirm with bird surveyors that surveys will include searches for other signs of wintering birds wherever possible. WR/RY to</p>

Number	Details	Action
	<p>Surveys recorded few flocks of wintering waders and wildfowl. Most records were around the landfall location near Weybourne with up to 3,500 pink-footed geese <i>Anser brachyrhynchus</i> recorded.</p> <p>CDr stated that the field where the high numbers of birds were recorded is located around 1km away from the landfall sites. PP also stated that the results of previous studies should be considered where possible to understand the usage of the relevant fields over a longer time period.</p> <p>WR and RY confirmed that they will use other available data sets to inform the PEIR and will confirm that surveyors will check for other signs of over-wintering birds other than direct sightings (e.g. geese droppings, feeding signs). It was noted that such signs are difficult spot during the harvest season when fields are being ploughed.</p> <p>WR stated that further surveys are planned between October 2020 and March 2021. ETG did not have comments to the overall survey methodology.</p>	<p>incorporate other relevant data sets into assessment</p>
3	<p>WR presented results of breeding bird surveys which were undertaken between March and July 2020 with coverage similar to overwintering birds (please see presentation slides). Surveys recorded ten Red listed, nine Amber listed and two Schedule 1 species within the PEIR Boundary.</p> <p>The most common bird recorded during the surveys was skylark <i>Alauda arvensis</i> with 170-240 estimated breeding territories along the cable route.</p> <p>WR stated that further surveys are scheduled for March to July 2021 and will be undertaken only in targeted areas. WR asked the ETG if a survey approach using extrapolation would be acceptable for arable habitats and associated species (given the wide extent of this habitat and anticipated access restrictions, full survey coverage will be difficult to achieve). The approach would involve surveying a selection of representative sites across the DCO boundary, from which it would be possible to extrapolate likely levels of bird nesting throughout the rest of the un-surveyed arable habitats. FS confirmed that this approach would be acceptable if at least ten sites are chosen for the surveys. PP stated that he will confirm if this approach to the surveys is acceptable to RSPB.</p>	<p>PP to confirm if this approach to the breeding bird surveys is acceptable to RSPB, and provide advice on sample size and locations.</p>
4	<p>WR summarised results of the great crested newt <i>Triturus cristatus</i> surveys undertaken between April and June 2020 for the project. The survey involved HSI appraisal and eDNA survey of ponds within the PEIR boundary and surrounding 250m. 161 ponds were fully surveyed and 24 returned a positive eDNA result indicating great crested newt presence (please see presentation slides). Further surveys are planned for 2021 to cover the ponds not accessed or not surveyed due to the PEIR boundary change during the 2021 surveys. In addition, ponds which were</p>	

Number	Details	Action
	<p>dry in 2020 will be revisited and surveys completed (if ponds are holding water) in 2021.</p> <p>ETG did not have comments to the overall survey methodology.</p>	
5	<p>WR presented summary of the bat activity surveys undertaken between June and October 2020 (please see presentation slides). As arable land dominates landscape within the PEIR boundary the surveys were focused on areas important for bats (e.g. river corridors, woodlands). The 2020 data will provide a useful baseline of general bat activity in selected areas, to be supplemented with more detailed surveys in 2021.</p> <p>Over 87% of all recorded bat activity related to pipistrelle species. Surveys recorded relatively low numbers of registrations of barbastelle <i>Barbastella barbastellus</i> and brown long-eared <i>Plecotus auritus</i> bats. Nathusius' pipistrelle <i>Pipistrellus nathusii</i> and serotine <i>Eptesicus serotinus</i> were very rarely recorded, and only at the River Wensum. MK suggested contacting Dr Charlotte Packman from Wild Wings Ecology to obtain information with regards to the surveys undertaken in this area on barbastelle maternity colony woodlands. CDe suggested further supplementing assessment with the existing data collected along river Wensum including data from WSP.</p> <p>WR confirmed that further surveys are planned to take place between April to September 2021. CDe suggested using application developed by Dr Fiona Mathews from University of Sussex to inform the assessment of hedgerow value for bats. CDe also stressed that surveys of solitary trees should be part of the surveys.</p> <p>WR asked ETG if extrapolation approach (similar to that proposed for breeding birds) would be acceptable for bat activity, such as by sampling a representative selection of arable sites throughout the DCO boundary. ETG raised similar points to those raised for breeding birds – i.e. extrapolation needs to ensure sufficient number of sites which are representative of the whole route.</p> <p>KW questioned if there is a scope for avoiding trees as part of the site selection and CDr confirmed that it is this is the intention, and will form part of the refinement of the PEIR boundary. WR stated that no buildings are expected to be demolished as part of the projects and that trees will be the sole focus of the future surveys for roosting bats.</p>	<p>WR/RV to consult Wild Wings Ecology and WSP on bat data around the River Wensum.</p> <p>WFE and RHDHV to review University of Sussex bat hedgerow tool.</p>
6	<p>WR presented summary of the Phase 1 habitat surveys undertaken between March and September 2020 with 65% of the PEIR boundary surveyed (please see presentation slides). The PEIR boundary passes through predominantly arable landscape with most field boundaries marked by hedgerows, often with trees.</p> <p>PP stressed that scrub habitat is important to retain as much as possible as it can support various invertebrates and birds species. PP suggested</p>	

Number	Details	Action
	that these areas should be mapped and could provide biodiversity net gain opportunities.	
7	<p>WR stated that the biodiversity net gain data was collected during the majority of EP1H surveys and as the project committed to achieve minimum of 10% net gain, the Project team would welcome recommendation for biodiversity net gain opportunities.</p> <p>KW stated that pond enhancement could be linked with District Level Licensing team compensatory scheme. Norfolk Biodiversity Information Service (NBIS) can provide locations of all newly created ponds as part of the scheme. Pond enhancements associated with DLL known to be underway around Bodham.</p> <p>BT suggested that tree planting should be considered along watercourses crossed by the project. CDr stated that most watercourses will be crossed using trenchless techniques (for example HDD) but this suggestion would be considered further.</p> <p>MK suggested focusing on the important landscape areas and addressing landscape restoration targets, using NWT Living Landscapes approach.</p> <p>PP suggested cooperation with the Upper Wensum focus area turtle dove project. FS confirmed that this is a good idea.</p> <p>PP also highlighted that the impact assessment should consider the Orstead and Hornsea 3 projects, particularly regarding possibilities for combining BNG enhancements.</p> <p>ETG also advised that other large schemes in the same region should be reviewed to ensure BNG approaches align and do not conflict. The A47 road improvement works near Honingham/Easton and the Easton Growth Point were specifically mentioned.</p> <p>MW confirmed that it is not possible to plant trees over the cable or immediately next to it. However, planting will be considered along the corridor and around substation. FS confirmed that this is a good idea as this would help to increase ecological connectivity.</p>	<p>WFE/RHDHV to consult NBIS on pond enhancement as a possibility for BNG when calculations are ready to be completed.</p> <p>PP to review the PEIR boundary to consider possibilities for co-ordinating with the Upper Wensum turtle dove project.</p>
8	<p>The ETG discussed how to assess the areas where there is no access and it was agreed that NBIS data will be used to fill in the gaps.</p> <p>MW confirmed that project will take into account of other projects and their plans as part of the cumulative impact assessment and opportunities where projects could work together will be considered. CDe suggested checking planning application 2014/2611/Norfolk District Council.</p>	<p>MW to share PEIR boundary with the ETG.</p>
Next meeting		

Number	Details	Action
9	Next meeting is proposed to take place following the PEIR submission which is currently planned for mid April 2021.	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (Norfolk County Council), [REDACTED] (RHDHV), [REDACTED] (Wild Frontier Ecology), [REDACTED] (Natural England), [REDACTED] (North Norfolk District Council), [REDACTED] (Equinor), [REDACTED] (Norfolk Wildlife Trust), [REDACTED] (Environment Agency), [REDACTED] (Equinor), [REDACTED] (Natural England), [REDACTED] (Natural England), [REDACTED] (Equinor)

Apologies: [REDACTED] (RHDHV), [REDACTED] (South Norfolk District Council), [REDACTED] (Equinor), [REDACTED] (Wild Frontier Ecology), [REDACTED] (North Norfolk District Council), [REDACTED] (Dalcour Maclaren), [REDACTED] (Broadland), [REDACTED] Tebbutt (Norwich), Cathy Batchelar (North Norfolk District Council)

From: [REDACTED]
Date: 01 July 2021
Location: Online
Copy:
Our reference: PB8164-RHD-ZZ-XX-MI-Z-0001
Classification: Confidential
Enclosures: Consultation Response Spreadsheet

Subject: Onshore Ecology and Ornithology ETG

Number	Attendee	Details	Action
Introduction			
1	JA	Introduced the purpose of the meeting and summarised agenda. Requested meeting is followed with an action log and statement of common ground.	
2	All	Introductions from Royal HaskoningDHV, Equinor and ETG members.	
Project Update			
3	JT	Provided a project update, currently working through consultation responses and technical studies to refine the routing of the cable. Advised that site selection was in the second stage with further refinement by Autumn 2021, with the DCO application planned end of 2021 but may move into 2022.	
4	KW	Queried what was included in the refinement and whether this included design parameters such as HVAC vs HVDC cabling system.	
5	JT	Confirmed that the proposed solution for DEP and SEP has always been HVAC.	
6	JA	Noted that what was presented in PEI was considered the worst-case scenario.	
7	JA	Provided an introduction to Rob Yaxley and ecological surveys.	
8	RY	Gave update on the progress of the 2021 Extended Phase One Habitat Survey (EP1HS) effort. Additional surveys are being undertaken as and when land access becomes	

Number	Attendee	Details	Action
		available. Approximately 75% coverage with some gaps south of the landfall and these areas are primarily associated with large estate landowners. Confirmed that JNCC methods and standard survey technique have been followed. In addition to EP1HS, targeted NVC classification surveys have been undertaken to categorise the grassland areas near the landfall.	
9	KW	Questioned whether gaps in surveys will be filled by working with the large estate landowners.	
10	CD	Confirmed that progress has been made regarding access and that engagement with estates and landowners is still ongoing. Access will be obtained prior to the DCO submission where possible.	
11	CD	Stated NBIS Living Map Data will be used to inform those areas where land access has not been obtained prior to the DCO application.	
12	RY	Detailed the approach to the 2021 breeding bird surveys, which is the same as that which was presented and agreed in 2020. Common bird census survey comprises 6 visits. Confirmed it is the intention to focus surveys in ecologically sensitive areas and not the whole route and gave the example of surveys within 10km of SAC / SPA, main river crossings and the proposed substation area. On arable land, ground nesting bird surveys have been undertaken, with oystercatcher and skylark recorded. Nightjar surveys are underway in the area north of Weybourne Wood, one visit has been completed and the second visit is planned for mid-July. Considered overall that survey to date has been undertaken in suitable weather conditions and a good range of bird species recorded.	
13	RY	Detailed the approach to the 2021 bat survey effort. Bat surveys in 2021 have focused on ecologically sensitive areas. Static bat detectors have been deployed in 10 locations including Weybourne Woods and key river crossings. Monthly bat activity transect surveys have been undertaken in high activity areas using wildlife acoustics SM2 static detectors. Each detector has been set to full spectrum mode and subsequent bat recording analysed via the Bat Conservation Trust portal. Advised monthly bat activity transect surveys commenced in April 2021 and are planned until September 2021. Potential features (trees) assessed as providing suitability for roosting bats have been identified and are in the process of being surveyed (tree climb survey and targeted emergence/re-entry surveys) with focus on those trees that are likely to be felled as part of the works.	
14	MJ	Stated that the Western Link area overlaps with the survey efforts of the Barbestrelle survey group.	

Number	Attendee	Details	Action
15	RY	Confirmed that the survey data has been requested from the independent survey group but has not yet been received.	
16	MJ	Stated that the Dr Charlotte Packman is currently very busy with survey work. Requested GIS files of the DCO boundary to check potential overlap.	Equinor to agree and provide shape file to MJ to check overlaps in areas
17	YF	Queried how roosting and foraging habitats were being differentiated and how we are looking at habitats.	
18	RY	Confirmed static monitoring around hedgerows, woodlands, floodplains and connecting habitats.	
19	RY	Queried whether bat detectors are able to pick up multiple species if present at the same time.	
20	RY	Confirmed that as each static bat detector that has been deployed has been set to be in full spectrum mode, bats are able to be identified to the species level. However, long eared bats are quiet so likely to be underestimated.	
21	RY	Provided an update on the 2021 reptile surveys, which includes 14 locations along the onshore cable route. Roughly 80% complete with reptiles present across all areas being surveyed in 2021. Adder and common lizard associated with survey areas near landfall and slowworm on areas further inland. Surveys undertaken follow standard 7 visit methodology.	
22	RY	Described progress on the 2021 great crested newt surveys. eDNA sampling of ~100 ponds in 2020 and ~90 in 2021 within and up to 250m of the PEI boundary. Low numbers showing positive results. Explained the last survey date was 30 th June, so no further eDNA surveys will be undertaken in 2021.	
23	RY	Provided an update water vole and otter surveys. 12 sites have been surveyed in the first half of the survey season. There has been some evidence of water vole (droppings) on flowing water course. Not many signs of otter, but the evidence recorded does confirm their presence. Explained that standard protected species survey methods had been adopted.	
24	RY	Provided an update on badger surveys. No specific additional badger surveys had been undertaken other than reporting of badger setts recorded during the EP1HS and noting their classification, i.e. main, outlier, annex etc.	
25	LB	The locations of badger setts will be required to inform the Letter of No Impediment (LoNI). Flagged concern that a lack of information on the EA1 /EA2 DCO application was caused an issue and a draft LONI could not be submitted by the Applicant prior to the end of Examination. Stressed that this was an important item to get right early.	RHDHV/ Equinor

Number	Attendee	Details	Action
26	JA	Questioned whether the LoNI would still be required if the project can show that route refinement meant that no badger setts were impacted.	
27	LB	Stated that this requirement is dependent on how successful micro siting and routing is and the proximity of outlying and satellite setts. Stressed that this is not just an issue for badger, but all legally protects species.	
28	RY	Provided update on the invertebrate surveys which are ongoing with vacuum sampling underway. The results of this will inform any mitigation requirements.	
29	CD	Stated that the landfall area presented at PEI was much larger than that what is required and will be presented in the final DCO submission. The area has been refined considerably to avoid important grassland habitats.	
30	RY	Stated that this area [landfall] is an important section of the route [for ecology].	
31	KW	Asked to be reminded where the landfall surveys cover.	
32	RY	Confirmed that the survey area extends from the car park in Weybourne to the Ministry of Defence compound.	
33	KW	Questioned what percentage of the identified ponds for great crested newts had been surveyed.	
34	RY	<p>Stated that of the 129 ponds to be surveyed in 2021, 90 had been completed. Any unsurveyed great crested newt ponds in 2021 was due to landowner access not being granted.</p> <p>Update:</p> <p>Now surveys are complete, the final figures for 2021 are: 116 ponds out of a total of 142 identified have been surveyed, but this includes ponds which were found to be dry or removed. The 26 ponds which were not even visited (so could not be surveyed or found to be dry/removed) were all because of withheld landowner access. Approximately 82% of all relevant ponds which have been surveyed or visited in 2021. However, a large number of these will be irrelevant given refinements to the DCO boundary, and dozens will be outside the survey zone, so the final figures are yet to be determined. The final figure will be provided in the technical appendix in due course.</p>	
35	JA	Stated that the narrowing of the cable route corridor to typically 60m meant that no ponds are included within the application boundary.	
36	JA	Questioned if a LoNI is still required if DEP and SEP applies for district level licencing (great crested newts)?	
37	LB	Suggested that LoNI would be easier to obtain in conjunction with district level licencing. Suggested that a meeting, through	RHDHV/ Equinor to arrange

Number	Attendee	Details	Action
		Discretionary Advice Services (DAS) and Natural England wildlife licencing team would be useful for DEP and SEP.	DAS meeting
38	JA	Stated that all protected species could be discussed at the DAS meeting.	
39	JA	Provided an introduction to the PEI consultation responses. Confirmed the intended use of the comments spreadsheet as a comprehensive approach to dealing with responses. Stressed the ETG to raise any key issues that were not covered in the spreadsheet.	
PEIR Consultation Responses			
For the following section items, please refer to the consultation response spreadsheet provided. Meeting minutes below detail additional dialogue with the ETG members only and should be read in conjunction with the consultation spread sheet.			
40	CS	<p>Provided a commentary of the consultation response spreadsheet.</p> <ul style="list-style-type: none"> • Norfolk Wildlife Trust • Natural England • North Norfolk District Council 	
41	MJ	In relation to wildlife sites and Horizontal Directional Drilling (HDD), requested further information on the working drilling distance of the HDD and questioned whether all sensitive habitats can be avoided through this method.	
42	MJ	With reference to habitat restoration and improvements, stressed that the lead-in time would be important. Preference for genuine local provenance seeds and plants. Suggested that Norfolk Wildlife Trust has capacity and experience of delivering habitat restoration schemes locally and to contact him should services be required.	Equinor / RHDHV
43	MJ	In relation the uptake of bat boxes, suggested it was up to the project to prove there was no adverse effect to bats but stressed that consideration should be given to the provision of bat boxes solely as mitigation. Avoidance being their preferred mitigation.	
44	KW	Suggested that they had seen good uptake of KENT bat boxes; however, woodcrete boxes had a longer life span.	
45	CDe	Stated that the KENT bat boxes were self-cleaning. Suggested veteranisation of mature/overmature trees as alternative to concrete bat boxes and made reference to new Bat Conservation Trust guidance (Beta version).	
46	CDe	In relation to cumulative impacts, brought to the project's attention an Anglian Water project, comprising a 13km pipeline, which overlaps the cable route. Strategic Pipeline Alliance (2021/0791).	Equinor / RHDHV to check that this is considered

Number	Attendee	Details	Action
			as part of the CIA
47	CDe	In relation to the Western Link project, questioned if there may be opportunity to install the DEP and SEP cables over the new bridge and therefore avoid an HDD under the river.	
48	CD	Commented that although a good suggestion there are many variables that would make this a difficult option, but it can be taken away for further discussion.	Equinor
49	LB	In relation to habitat restoration and monitoring, confirmed that Natural England were not expecting monitoring of arable field margins.	
50	CD	In relation to pond restoration, provided opportunity for Biodiversity Net Gain (BNG) and improvements to habitats for great crested newts.	
51	CDe	Suggested opportunity to reinstate ghost ponds and advised on contact: Norfolk Ponds Project (Carl Sayer, UCL).	
52	RY	Confirmed that Norfolk Pond Project had been approached.	
53	LB	In relation to invasive non-native species (INNS), recommended that a draft INNS management plan is submitted with the DCO application.	Equinor / RHDHV
54	RY	Queried which white clawed crayfish surveys would be required if HDD was planned.	
55	LB	Suggested that in the event of bentonite breakout, data on white clawed crayfish would be important to establish areas of sensitivity and impacts. Suggested these surveys could be completed now or pre-construction. Following discussion, the project has decided to complete the surveys now to inform the DCO application.	
56	LB	In relation to fish surveys, suggested the project should liaise with the Environment Agency to obtain fish data.	Equinor / RHDHV
57	LB	Confirmed that protected species should be considered within the water crossing method statement. NE confirm an outline water crossing method statement should be included within the application.	
58	LB	In relation to pink-footed geese mitigation plan, stated that an outline plan would be required. Any plans suggested to be completed post consent will require draft/outline plan at submission.	Equinor / RHDHV
59	CDe	In relation to the Barbestrelle study group, queried what the project would do if this data is not provided.	
60	RY	Confirmed that the project would rely on available data, provide precautionary mitigation on the assumption that the area is of high importance to Barbestrelle.	

Number	Attendee	Details	Action
61	MJ	Will request slides from a presentation delivered to the East of England Bat Conservation Group by Dr Packman on the potential Barbestrelle super colony.	MJ
62	YF	In relation to eDNA survey accuracy, suggested that the project does not rely overly on eDNA and undertakes surveys post consent.	
63	RY	Suggested that district level licencing should remove the necessity of full surveys. To be discussed at the DAS meeting.	
64	CS	Stated the great crested newt survey is the area within and up to 250m of the PEI boundary, an approach agreed previously with Natural England. This should be followed up with the licensing team at the DAS meeting	RHDHV / Wild frontier Ecology
65	KW	Questioned whether the required outline pink-footed goose mitigation plan would take into consideration other pipeline projects.	
66	JA	Confirmed that the project is aware of the pink-footed goose mitigation plan produced by Hornsea 3 and would build on this.	
67	KW	In relation to a bund in Weybourne, questioned complications with regards to listed invertebrates and the possible enforcement notice to remove the bund from a landscape / contamination perspective.	
68	RY	Confirmed the presence of the bund and its importance for various insects and bees. The results of the invertebrate surveys at Weybourne will be presented in the Environmental Statement. Should the bund be removed then this will need to be reflected within the impact assessment.	
Summary of main actions and future meetings			
69	JA	Stated that the minutes would be issued and followed with an agreement log.	
70	JA	<p>Outlined the following main actions:</p> <ul style="list-style-type: none"> • Link the Western Link and external surveys • Share shapefile with MJ and ETG once agreed with Equinor • Set up meeting with Natural England to discuss wildlife licencing and LoNI • Follow up with Norfolk Wildlife Trust, and other local conservation groups for habitat works • Consider cumulative impacts with Anglian Water pipeline proposal • Equinor /RHDHV/ Wild Frontier to liaise with the Environment Agency to obtain fish data • Equinor /RHDHV/ to ensure outline management plans are submitted for pink footed geese and INNS. 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> MJ to request slides from a presentation delivered to the East of England Bat Conservation Group by Dr Packman on the potential Barbestrelle super colony. 	
71	JA	Stated that the requirement for further ETG meetings would be dictated by the ETG members	
72	KW	Considered that additional ETG meeting requirement will depend on the details of the cable route refinement. Still lacked clarity on the impacts at landfall and Weybourne Woods. Suggested an additional ETG would be useful to discuss impacts of the cable route refinement.	
73	JA	Suggested a meeting would be useful once the design freeze and impact assessment has been completed, to clearly define changes from PEI. Provisionally suggested September 2021.	
74	YR	Suggested additional BNG meeting may also be of benefit.	
75	CD	Stated that the project is currently in the early stages of defining BNG commitments and are focussing on filling survey gaps. Once the boundary is fixed, baseline biodiversity unit calculations will be made. BNG will be linked with the landscape plan and taken forward post consent. Further discussion will be undertaken in advance of DCO submission.	
76	KW	Suggested that offsite BNG habitat enhancement may be of higher ecological benefit.	
77	CD	Assured that offsite BNG will be important but it is not yet clear what can be achieved onsite. Potential offsite opportunities will be explored as required.	
Meeting closed			

Minutes

**HaskoningDHV UK Ltd.
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Present: [REDACTED] WR (Wild Frontier Ecology), [REDACTED] AP (Wild Frontier Ecology),
[REDACTED] JT (Equinor), [REDACTED] CS (Royal HaskoningDHV),
[REDACTED] CHJ (Natural England), [REDACTED] HM (Natural England)

Apologies:

From: [REDACTED]

Date: 30 June 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0020_Ecology ETG4 June2022

Classification: Confidential

Enclosures: [Click to enter "Enclosures"](#)

Subject: Onshore Ecology and Ornithology ETG

Number	Attendee	Details	Action
Introduction			
1	WR	Presented the approach taken for the Initial BNG assessment and the broad issues (i.e. the route passes through predominantly arable habitats, most key habitats will be avoided by trenchless crossing, e.g. HDD)	
2	CHJ	Enquired about the c.10% of the DCO boundary which had not been surveyed – it was confirmed by WR and JR that these areas would be surveyed pre-construction and the updated information put into a more advanced and complete BNG assessment at that time. WR mentioned that the un-surveyed parts of the DCO boundary are likely equivalent to the surveyed parts, so mostly arable. This is what is suggested by the NBIS Living Maps data which has been used to plug gaps for the 10%, but the data is not sufficiently detailed for use in a BNG assessment.	
3	WR	Enquired as to whether NE had any suggestions/comments on the broad approach taken or on enhancement options beyond those outlined in the presentation. NE agreed that the basic proposals for habitat reinstatement, hedgerow planting, landscaping around the substation etc. would be acceptable. No specific suggestions were put forward by NE for alterations to the approach or additions/changes to the enhancements.	
4	WR	Outlined the precautionary nature of the Initial BNG assessment, whereby habitat losses are likely overestimated (as micro-siting etc. should be able to reduce some losses) and gains are likely underestimated (because landowners and other stakeholders have not yet been consulted to agree further enhancements), so overall the BNG assessment should become more favourable as it progresses from this very preliminary stage towards a more complete assessment which can be provided pre-construction.	

Number	Attendee	Details	Action
Actions			
5		Slides and meeting minutes to be made available.	SM

1.5 Onshore and Offshore Archaeology Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
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Present: [REDACTED] (CP) – Historic England, [REDACTED] (JP) – Norfolk County Council,
[REDACTED] (AP) – RHDHV, [REDACTED] (MW) - RHDHV, [REDACTED] (RS)
- RHDHV, [REDACTED] (JA) – RHDHV, [REDACTED] (VC) – RHDHV, [REDACTED] (FS)
– RHDHV, [REDACTED] (MC) – Equinor, [REDACTED] (OV) – Equinor

Apologies: N/A

From: [REDACTED]

Date: Tuesday, 14 January 2020

Location: Norwich

Copy: Richard Stocks

Our reference: PB8164-RHD--ON-MI-PM-0007

Classification: Project related

Enclosures: ETG presentation and agreement log

Subject: Sheringham Shoal and Dudgeon Extension – Archaeology (onshore and offshore) ETG 1

Number	Details	Action
Introductions and purpose of the meeting		
1	<p>Following introductions, OV summarised the project and consenting approach. Please refer to ETG meeting slides. Scoping report was submitted on 8th October 2019 and scoping opinion was received on 18th November 2019. DCO application is scheduled for Q3 2021.</p> <p>The onshore site selection process is ongoing with a series of workshops that took place in December 2019. The process involved specialists from various disciplines including onshore archaeology. The current focus of site selection is to narrow down the scoping area to identify a 200m wide corridor for surveys to be undertaken during 2020. It is also anticipated that the single preferred landfall option will be confirmed in Q1 2020 for survey and assessment work that will be reported in the Preliminary Environmental Information Report (PEIR). MC also confirmed that the substation site selection process is ongoing.</p>	Equinor (OV) to re-issue ETG meeting slides with these minutes.
2	CP requested that the draft copy of the Evidence Plan Terms of Reference be sent through for review.	RHDHV (MW) to send the latest version of the document with these minutes.
3	<p>The most up to date project information was presented during the meeting. Please refer to the slides shared.</p> <p>CP asked if the turbines will be uniform throughout the project. OV responded that at this stage this cannot be confirmed, however, for all future assessment a realistic worst-case scenario will be used.</p>	

	CP queried if there was some overlap with the individual offshore boundaries (where Dudgeon offshore export cable routes into the Sheringham array area and then a shared route to shore beyond). It was confirmed that each project would be assessed separately (as well as together) and that it would be made clear in the report and subsequent deemed Marine Licence what the boundaries are for each individual project.	
4	OV confirmed that a landscape consultant has been appointed for the project and that a landscape and seascape Expert Topic Group (ETG) meeting will likely be taking place in Q1 of 2020.	
Summary of the baseline and future assessment		
Offshore Archaeology		
5	<p>VC presented a summary of the anticipated offshore archaeology baseline. Please refer to the presentation for the additional information.</p> <p>Based upon data previously acquired for the existing Sheringham Shoal and Dudgeon Offshore Wind Farm projects, there is high potential for the presence of submerged prehistoric archaeology, maritime archaeology and aviation archaeology within the extension areas. Existing data (for example, marine geophysical and geoarchaeological assessments and ROV data) will inform the assessment where relevant.</p>	
6	<p>CP commented that a number of geophysical anomalies identified during previous surveys undertaken for Sheringham Shoal were not subject to further investigation and identification. CP therefore queried if there will be further interpretation of the anomalies along the boundaries of Sheringham undertaken as part of the current project.</p> <p>VC confirmed that data will be reviewed and integrated with current interpretations and datasets where relevant.</p>	
7	VC confirmed the intertidal archaeology will sit with the offshore archaeology assessment rather than onshore.	
8	<p>VC stated that no protected archaeological features were identified in the scoping area. Heritage assets identified included wreck sites, aircraft crash site geophysical anomalies, prehistoric sites, palaeolandscape features and sub-surface deposits and intertidal heritage assets. If aircraft elements were found to be present, these would be automatically protected under the Protection of Military Remains Act 1986, and would be avoided through the implementation of exclusion zones.</p> <p>CP stressed that, when preparing reports and documents for the PEIR and Environmental Statement (ES), care should be taken to ensure that sufficient guidance is provided for the delivery of method statements and subsequent archaeological investigations as necessary to adequately mitigate potential</p>	

	<p>impact to wrecks, aircraft crash sites and palaeolandscape features, for example.</p> <p>CP confirmed that published guidance on the marine geophysical surveys and archaeological analysis and interpretation requires updating to reflect rebranding as Historic England, however he is not aware of an updated draft being in preparation.</p>	
9	<p>VC confirmed that palaeolandscape/palaeoenvironmental information for the existing Dudgeon project is in the public domain (including a published article in the Journal of Quaternary Science). However, it is less clear what information is available for Sheringham, and further investigation will be required.</p> <p>CP stressed that if any geotechnical investigations are being undertaken at any stage of the project there should be provisions to include archaeological objectives. This commitment will have to be included at every stage of the project.</p>	
10	<p>A strategy for the mitigation of impacts will be submitted with DCO application, including submission of an Outline Written Scheme of Investigation (WSI) for offshore archaeology. CP stressed that detailed information will be needed to be provided to guide the process.</p>	
11	<p>Post-construction archaeological monitoring for the Dudgeon project is currently being finalised and this information will also inform the assessment and mitigation strategy for the extension projects. An archaeological assessment of post-construction data for Sheringham is not known to have taken place.</p>	
12	<p>CP stated that prehistoric potential in the landfall area is recognised, however no existing sites are known.</p> <p>Impacts on the intertidal area should be avoided through the use of HDD. The intertidal area will be covered by desk study assessment which will be included in the offshore archaeology section. Signposts will be included in the onshore archaeology section.</p>	
13	<p>CP stated that Historic Seascape Characterisation (HSC) will be an important part of the assessment. The national GIS datasets for HSC produced by Historic England are a point in time source of data and will require updating by the proposed project in accordance with the published methodology for HSC. This will include the changes to seascape since the national HSC was undertaken to reflect the current character.</p> <p>In connection with this, it is recognised that a strategic study of cumulative impact from multiple offshore renewables projects is required at an industry level. This is beyond the scope of individual projects. However, cumulative impacts will be assessed and will include information on other developments in the area, including archaeological</p>	

	<p>information from other projects in the region where possible. Project owners should be making this information publicly available.</p> <p>The choice of the methodology to describe wider character is up to the project. An effort should be made to identify opportunities and involve stakeholders.</p> <p>CP also suggested it would be good to consult with Crown Estate to understand the wider future and leasing plans so that this could be included in the assessment as well.</p>	
14	<p>The ETG agreed with the survey and assessment methodology presented during the meeting.</p> <p>VC stated that the preliminary deposit model included in the PEIR/ES would be high level and based on the results of the assessment of geophysical data and existing geotechnical data rather than specific ground investigations planned for the project.</p> <p>CP stated that although it is understood that there are currently no plans to undertake geotechnical surveys pre-consent, these should be considered essential alongside geophysical survey results in any subsequent programme of survey and investigation.</p> <p>The existing Sheringham Shoal and Dudgeon data will be integrated with the newly collected data. The approach to integration will be agreed with the archaeological contactor once they are engaged by the project. Existing anomalies within the current footprints will be retained, depending on the resolution and quality of the old data. It is recognised that some of the anomalies could be buried under sand waves.</p>	
15	<p>It was suggested that CITiZAN (Coastal and Intertidal Zone Archaeological Network) could contain some useful information and should be used to inform the assessment at the landfall.</p>	
Onshore Archaeology		
16	<p>FS presented a summary of the current and anticipated onshore archaeological baseline. Please refer to the presentation for the additional information.</p> <p>Amongst other designated heritage assets highlighted and discussed, the Roman Town of Caistor St. Edmund was identified as being located in relatively close proximity to the proposed onshore substation zones currently under consideration. In terms of heritage setting, it was confirmed that LVIA tool kits, including e.g. zones of theoretical visibility, would be used to inform assessment.</p> <p>It was noted that there is an important tie-in and collaborative working requirement between the heritage and LVIA teams in this regard.</p>	
17	<p>It was recognised that the Weybourne landfall and cable route option is quite constrained due to the requirement for crossing</p>	

	<p>other projects' cables (existing and planned), as well as other constraints including National Trust land.</p> <p>FS stated that the project is also aware of the large rural conservation areas along/adjacent to route Option 1 of the cable corridor (from Weybourne heading south).</p>	
18	<p>Existing onshore Historic Environment data is being collected initially as follows:</p> <p>Designated heritage assets within 1km of the onshore project boundary (and 5km of the onshore substation re. heritage setting).</p> <p>Known non-designated heritage assets within 500m of the onshore project boundary.</p> <p>The issue of the locally listed buildings data sets was discussed during the meeting. It was recognised that these data sets are not always coherent and consistent.</p>	
19	<p>JP noted that there is quite a push at present to get a better handle on the Palaeolithic Period in Norfolk, including incorporating geoarchaeological approaches (and consideration of e.g. river terrace deposits and ground water levels). As part of the assessment, BGS borehole logs will be reviewed in order to identify any potentially interesting deposits (e.g. peat) in the first instance.</p>	
20	<p>It was agreed that if any Engineering-led Ground Investigation (GI) works are planned for the project, NCC HES and HE should review the methodology and provision for associated archaeological watching brief and/or geoarchaeological monitoring, where such presence may be required on site during the works.</p>	
21	<p>It was agreed that consideration will be given to potential changes of groundwater levels as a result of the project and any associated impacts on archaeological preservation conditions.</p> <p>Additionally, impacts from the use of and possibility for bentonite break out, as well as cable warming, re. archaeological impacts and preservation conditions will also be included in the assessment.</p>	
22	<p>Analysis of Lidar and aerial photographic data will primarily be undertaken within the 200m onshore cable corridor and will also likely include a suitable small buffer out with the onshore project boundary. Following this, locations for priority archaeological geophysical surveys will be agreed with NCC HES.</p> <p>JP stated that it would be beneficial to include members of the project engineering team in the conversation on key archaeological findings throughout the process, in respect of ongoing project siting and design considerations.</p>	

	<p>JP stated that possible targeted archaeological trial trenching should be considered in the areas identified as 'critical', or at particular pinch-points, for the project. FS agreed but also noted related constraints in the pre-consent stages, as this is often linked with land access being associated with landowner 'good-will' to allow and facilitate access for survey work of an intrusive nature.</p>	
23	<p>JP and CP acknowledged that they understood that a matrix-based approach to assessment would be implemented within the PEIR and subsequent ES, and is required as part of the EIA, but that a narrative and appropriate heritage assessment language should also be used to qualify impacts and effects findings. JA confirmed that any matrix presented is primarily to introduce transparency to the lay audience and does not replace professional judgement.</p>	
24	<p>It was agreed that neither an offshore nor onshore Evidence Plan Process (EPP) specific archaeology 'Method Statement' document is required at this stage, as this would simply be repeating much of the Scoping Report and Scoping Opinion. The discussion documented within the minutes of this first ETG meeting demonstrates that there is broad understanding on the approaches to surveys and assessments proposed at this stage.</p>	
25	<p>It was agreed that the project and survey information can be shared with the ETG via email or if necessary a sharepoint will be created for the group.</p>	
27	<p>The next ETG meeting is proposed to take place in June or July 2020. The date and form of the meeting will be agreed closer to the date.</p>	

Minutes

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Present: [REDACTED] (CP) – Historic England, [REDACTED] (JA) – Historic England, [REDACTED] (JP) – Norfolk County Council, [REDACTED] (AP) – RHDHV, [REDACTED] (MW) – RHDHV, [REDACTED] (RS) – RHDHV, [REDACTED] (JA) – RHDHV, [REDACTED] (VC) – RHDHV, [REDACTED] (SM) – RHDHV, [REDACTED] (DF) – RHDHV, [REDACTED] (GSP) – RHDHV, [REDACTED] (MC) – Equinor, [REDACTED] (CD) – Equinor, [REDACTED] (ME) – Equinor, [REDACTED] (EO) – Equinor

Apologies:

From: [REDACTED]

Date: Wednesday, 21 October 2020

Location: Online

Copy:

Our reference: PB8164-Onshore and Offshore Archaeology ETG 2

Classification: Confidential

Enclosures: ETG presentation

Subject: Sheringham Shoal and Dudgeon Extension Projects – Archaeology (onshore and offshore) ETG 2

Number	Attendee	Details	Action
Introduction			
1	MW	Provided an introduction to the ETG meeting and an overview of the agenda followed by introductions from all attendees.	
2	MC	Provided an update on programme dates, and the site selection process and studies currently underway. Note: substation fields 1 and 2/4 not yet in public domain until next week.	
3	CP	Keen to know exact submission dates for PEIR and DCO.	
Onshore Archaeology and Cultural Heritage			
4	SM	Provided an update on the onshore studies and surveys undertaken so far and initial findings: <ul style="list-style-type: none"> • ADBA – HER data received 13/02/2020. Significant amount of HER records within existing boundary but this would likely reduce following route refinement. • HE walkover survey to include initial setting assessment, undertaken 5th-8th October 2020. A number of ‘key’ assets have been identified from the existing data at landfall, cable corridor and onshore substation, including above ground structures and earthworks. • AP, LiDAR and map regression work being undertaken by APS, however work currently 	

Number	Attendee	Details	Action
		<p>restricted to online searches only as all record offices are shut due to covid restrictions.</p> <ul style="list-style-type: none"> Priority geophysics survey underway – 11 areas are unavailable and 3 areas have been extended due to archaeological findings to date. 	
5	JP	Highlighted that earthworks are a rare resource within the county and therefore have a higher level of importance and should be avoided wherever possible.	
6	JP/JA	Agreed with approach to obtaining aerial photos and historic maps given current closures of record offices. Potential for Norfolk record office to re-open in January 2021. Unknown when HE archive will re-open.	
5	JP/JA	Highlighted the importance of using all desk-based data as well as geophysics data to inform location of trial trenches.	
6	JP	Queried an oval anomaly west of the very clear ring ditch in geophys area 22. The shape appears similar to a mortuary enclosure or barrow of Neolithic date. The same feature is visible as a cropmark on Google Earth imagery dated 23/08/2019. Suggested info is shared with APS for their assessment.	SM
7	SM	Highlighted that the results of the onshore studies and surveys will inform the route refinement process.	
Heritage Setting and Viewpoints			
8	SM	Presented the heritage viewpoints proposed for the onshore substation. These are based on a screening assessment completed which drew on the LVIA ZTV and initial setting assessment.	
9	JA	<p>Provided initial agreement with viewpoint presented and suggested a further viewpoint taken from within Venta Icenorum.</p> <p>Also requested that RHDHV considers the possibility that Hornsea 3 may not be constructed when undertaking the setting assessment.</p>	
10	SM	<p>Highlighted that photomontages/wireframes won't be available in time for the PEIR submission but will be presented in the ES.</p> <p>Viewpoints for the coastal infrastructure setting assessment will also be provided prior to PEIR.</p>	
11	JA	Requested that ongoing consultation would be useful given the timeframes and absence of photomontages and setting assessment from the PEIR.	
Offshore (and Intertidal) Archaeology and Cultural Heritage			
12	VC	<p>Presented the CIA methodology.</p> <p>Highlighted that written responses for EA1N/2 were expected in November 2020.</p>	

Number	Attendee	Details	Action
13	CP	Highlighted that the CIA methodology needs to be specific and proportionate to this project and not to rely on other examples, i.e., EA1N/2. Indicated that the proposed approach to CIA would be appropriate.	
14	GSP	Presented an update on the studies and surveys undertaken to date and the initial results: <ul style="list-style-type: none"> • National Historic Seascape Characterisation. • Location of wrecks and aircraft within Projects boundary. • Palaeolandscapes. • Geophysical data – assessment undertaken by Wessex Archaeology has identified palaeogeographic features and further features on the seabed. • Intertidal walkover survey informed by HER data. 	
15	CP	Queried if Wessex Archaeology's Technical Report would be appended to the PEIR chapter and if a copy could be reviewed before PEIR submission. Queried if additional geophysics would be undertaken pre-construction alongside geotechnical works – VC confirmed this would be the case.	RHDHV
Next Steps			
16	SM	Provide note and figures detailing LVIA and heritage-specific viewpoints for onshore substation and coastal infrastructure to the ETG for consultation and agreement.	RHDHV
17	VC	Provide Wessex Archaeology's Technical Report to CP for review prior to PEIR submission.	RHDHV
Meeting Closed			

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (Equinor), [REDACTED] (RHDHV), [REDACTED] (Historic England), [REDACTED] (Equinor), [REDACTED] (RHDHV), [REDACTED] (Equinor), [REDACTED] (RHDHV), [REDACTED] (Norfolk County Council)

Apologies:

From: [REDACTED]

Date: 14 July 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0018_Archaeology ETG3 July2021

Classification: Confidential

Enclosures:

Subject: Dudgeon and Sheringham Shoal Extension Projects Archaeology ETG #3

Number	Attendee	Details	Action
Introduction			
1	VC	Provided an introduction to the ETG meeting and an overview of the agenda followed by introductions from all attendees.	
2	SC/JT	Provided an overview of the project and updates to the ETG, describing the route refinement process and the integrated approach to studies. Confirmed that site and compound assessments were still ongoing.	
Offshore (and Intertidal) Archaeology and Cultural Heritage			
3	VC	Outlined the PEIR Section 42 Responses provided by: <ul style="list-style-type: none"> North Norfolk District Council (NNDC); and, Historic England (HE). 	
4	VC	In relation to Geophysical Survey Results , queried whether the ETG agreed that with the addition of historic datasets, the geophysical data assessment carried out in support of PEIR is considered to provide an accurate characterisation of the archaeological potential of the study area, and appropriate to the purposes of EIA. Outlined there would not be the opportunity to acquire more data, data gaps and associated risk would be highlighted in the ES. Stated that a commitment to filling these data gaps and method by which these data gaps would be filled would be incorporated into the outline Written Scheme of Investigation (oWSI - Offshore).	

Number	Attendee	Details	Action
5	CP	Suggested that it was the responsibility of the project to show that this approach was sufficient and confirmed that Historic England (HE) would welcome a commitment to analysis post consent set out in the oWSI.	
6	VC	In relation to Worst Case Scenario Definitions , stated that the worst case scenario for the disturbance of setting and seascape character equates to the maximum intrusive effect (e.g. number and type of new infrastructure elements and height and size of infrastructure) over the longest duration. VC questioned what HE considered to be the worst case and whether HE could provide any examples of how this definition can be established in light of other projects in the area.	
7	CP	Stated that there has not been a large scale example previously. A well thought out argument should be made in relation to what is known and perceived to be the historic seascape character of the area. A scenario of offshore wind farms should be included as the national Historic Seascape Characterisation (HSC) (as a point intime study) does not include such schemes; the assessment should provide a narrative of the capacity of the historic character to accommodate change. Considered that the arrangement and physical appearance of the infrastructure should be given further attention rather than a purely quantitative assessment.	
8	SC	Confirmed that as flexibility was still required at this stage of the application, the project was still considering all options in relation to the size and arrangement of the turbines and that greater resolution would be provided moving forward.	
9	VC	Summarised that the worst case scenario in the ES will be amended to consider qualitatively how the project could change the historic seascape character, rather than being based just on numbers. This will include incorporation of available data to update the HSC as relevant to SEP and DEP.	
10	VC	In relation to oWSI and embedded mitigation stated that there is no embedded mitigation relevant to the Offshore Archaeology and Cultural Heritage and provided clarification on this point based on the following definitions: <ul style="list-style-type: none"> • Embedded Mitigation: mitigation which has determined the design to date • Additional Mitigation: measures which will further influence the ongoing design process 	

Number	Attendee	Details	Action
		In this sense, all mitigation will be additional mitigation. Avoidance will remain key and all avoidance measures will be captured and presented within the ES and oWSI.	
11	CP	Requested an oWSI that informs the critical period between consent and final design. This document should give clarity to how the data gaps will be filled and, where possible, figures should be submitted which illustrate assets/areas/data and data gaps.	
12	VC	<p>In relation to Landfall and HDD stated:</p> <ul style="list-style-type: none"> • The final depth of HDD and location of exit pits will be determined on the basis of post-consent geotechnical and high resolution geophysical data • This will include an integration of the results of geoarchaeological assessment and archaeological assessment of the geophysical data set out in the oWSI • Onshore geotechnical surveys are being progressed with geoarchaeological monitoring and assessment to include a borehole above MWHS at the landfall (cliff top) <p>Stated that the wider area of landfall along this stretch of the east coast of England is known to be important for palaeolithic archaeology and Royal HaskoningDHV are already consulting with universities and researchers (established academic research groups) for other projects; however, SEP and DEP had not progressed with this at the time of the ETG. The oWSI will include a commitment to engaging with academic research groups with respect to post-consent survey and assessment to maximise the value of data acquisition.</p> <p>Indicated that no geotechnical surveys are planned below Mean High Water pre-consent. The design and depth of the HDD will be determined post-consent based on high resolution studies (including geoarchaeological assessment); this requirement will be included within the oWSI.</p>	
13	CP	Suggested that the oWSI should clearly set out the data gaps and uncertainties so that this is clear to any consultant/contractor involved with taking work forward post-consent. The programme of archaeological work should draw on published academic research and align with existing research frameworks.	

Number	Attendee	Details	Action
		Opportunity exists to further the knowledge, and mitigation measures would be required to protect these opportunities.	
14	VC	In relation to Residual Impacts , confirmed rewording of a section of the PEIR with the ETG members, as follows: <ul style="list-style-type: none"> Where micro-siting is not possible, and additional mitigation will be required, it is anticipated that the residual magnitude and significance can be reduced or offset so that impacts may be considered non-significant in EIA terms (i.e. anticipated to be no worse than a minor adverse significance). 	
15	VC	In relation to Cumulative Impact Assessment , requested from HE examples to help articulate Cumulative Impact on the historic seascape.	
16	CP	Referred to guidance produced by COWRIE, recognising that this was now produced some time ago. With reference to earlier discussion on worst case scenarios this will require a more qualitative narrative and consideration of how the HSC has changed since the National HSC dataset was issued, and how the HSC has capacity for change associated with the current projects.	
Onshore Archaeology and Cultural Heritage			
17	VC	Provided an overview of the comments made at PEIR by NNDC, Norfolk County Council (NCC) and HE.	
18	VC	Confirmed that the approach to onshore archaeology has been similar to that of other offshore renewable projects in the area (i.e. Norfolk Vanguard and Boreas). These projects are similar in type and location, and this approach has been effective and accepted by the stakeholders previously. A key point for discussion was that Historic England raised concerns about the current level of uncertainty in the assessments, particularly regarding the nature and magnitude of impacts.	
19	VC	Raised a concern over the suggested requirement by Historic England in their PEIR consultation response, for the project to undertake trial trenching and intrusive archaeological investigations pre-consent. A further meeting will be arranged to discuss this with James Albone (HE) who authored the consultation response. John Percival (NCC) will also attend to better understand the concerns raised by HE.	RHDHV
20	VC	In relation to Route Refinement , described that: <ul style="list-style-type: none"> Route refinement is currently ongoing 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> • Process to avoid (where possible) the main geophysical survey anomalies such as enclosures and rectilinear enclosures (indicative of occupation), as well as the obvious curvilinear features which may be indicative of barrows, cemeteries etc. • A number of anomalies still intersect the DCO boundary limits and help indicate areas of higher archaeological potential and would require further mitigation considerations post-consent. 	
21	JA	Reiterated that PEIR boundary was approximately 200 meters wide and that the route refinement process would result in a cable corridor presented at DCO application, which is typically 60 meters wide.	
22	JP	Commented on the number of similar projects in the area, which due to certain geographical constraints across Norfolk (e.g. the Broads), all follow relatively similar routes, as they aim for defined grid connection points; meaning that proportionately there is less room on a macro and a micro scale to avoid archaeological interests.	
23	VC/DF	<p>In relation to Identifying Potential, stated that:</p> <ul style="list-style-type: none"> • Consideration has been made for third party consultants APS to carry out the additional 18th century and earlier mapping review for consistency and continuity once the requirements and record office/archive access provision have been understood. • Information from the historic hedgerow assessment (currently ongoing) will help inform the historic parish and hundred boundaries identification. APS will also be asked to assist in this matter. • Early Saxon finds from the HER would be assessed for sites e.g. Saxon cemeteries, which tend to show less obviously in AP, LiDAR and geophysical survey data, alongside further review of e.g. the Natural England Landscape character assessments, and historic landscape characterisation to inform the different landscape types and period potential across the different landscapes zones which the onshore cable route runs through. <p>With Norfolk Records Office re-opening following lockdown restrictions due to COVID, RHDHV will be</p>	RHDHV/ APS

Number	Attendee	Details	Action
		engaging with APS to carry out all of the additional late 18th century mapping and earlier work.	
24	JP	Detailed that the Historic Environment Record would be moved to/integrated with the Norfolk Records Office in the coming weeks and located on an alternative site to Gressenhall.	
25	JP/FS	<p>Further discussed the review of the Early Saxon metal work finds held within the HER and using this evidence to gage the likelihood of sites of historic interest being present, which perhaps haven't shown in AP/LiDAR reviews or in the geophysical survey data gathered to date.</p> <p>Discussed the range of survey technique available. Ranging from aerial photos to LIDAR, geophysical surveys (currently magnetometry), to metal detecting and later intrusive surveys. JP noted this was the process that Vanguard and Boreas followed, so would be inconsistent if SEP&DEP were asked to deviate from this. Trial trenching for these projects was ultimately considered an 'initial informative stage of mitigation' to be undertaken in the post-consent stages of the Projects.</p>	
26	VC/DF	<p>In relation to Priority Geophysics, raised that:</p> <ul style="list-style-type: none"> • The remaining Priority Geophysical survey areas have been provisionally arranged to be surveyed from September 2021 (land access permission dependent), with the results envisioned to be received within 6 weeks after completion of the surveys. • It is not currently envisaged that alternative techniques (such as resistivity, GPR, etc.) will be adopted in the pre-application stages. But the geophysical survey contractor will be engaged and asked to identify and comment on any areas where a more suitable survey technique may exist/apply for future consideration and subsequent completion of surveys across the route as a whole. Likely to be picked up in the post-consent stages. • In the event that the current priority geophysical (magnetometry) survey works/results are not completed in time for the submission, works will still continue wherever possible, although aware they will not form part of the examination. Consultation and flow of information would continue alongside examination. 	

Number	Attendee	Details	Action
27	DF	Confirmed that ~50ha of Priority Geophysics areas still required survey but were restricted by both access and cropping.	
28	CD	Suggested that about half of the outstanding areas should be accessible to survey once the harvest period is over, around the beginning of September. This would allow sufficient time to incorporate the data into the assessment and presented at ES.	
29	FS/CD	Agreed to focus on cropped land for surveys but would not stop efforts to engage with landowners currently refusing access.	
30	DF	In relation to Geoarchaeology , raised that <ul style="list-style-type: none"> The results of the Geoarchaeological monitoring of the GI works, planned later in the Summer across the DCO boundary limits, would inform the initial review of geoarchaeological potential as part of the ES. Micrositing of the GI work borehole/trial pit locations has been undertaken to avoid (as much as possible) known archaeology from the HER data, Geophysical survey results, and APS data, with the advice given to the GI Contractor around archaeological provision for these works (including areas of both geoarchaeological monitoring and archaeological watching brief, but not blanket approaches to either). 	
31	JT	Confirmed that the GI works would start mid-August. The GI locations and geoarchaeological/archaeological provision will be agreed and communicated to the GI Contractor.	
32	VC	Confirmed that the project will be agreeing an approach to geoarchaeological monitoring and watching briefs prior to GI works. Agreed that the geoarchaeologist will be producing the WSI for the GI works. The WSI will be produced as a single document for all GI locations and be submitted to JP.	Geoarchaeologist/ RHDHV
33	JP	Confirmed that in relation to geoarchaeology, they were happy with the general approach and principles presented.	
34	FS	Suggested a sliding scale of monitoring based on risk, with likely permanent geoarchaeological monitoring of boreholes and trial pits within the landfall area and historic river crossings. For lower risk areas, the requirement would likely be for access to the logs without the need for a geoarchaeologist/archaeologist onsite.	

Number	Attendee	Details	Action
35	JP	Confirmed that micrositing would not necessarily alleviate the need for either type of archaeological monitoring but stated agreement with the general approach to monitoring. Explained that archaeological information gathering would be on the back of the GI works, and this is an initial stage of the investigation only. If areas of particular sensitivity are identified through this, they will need to be taken forward for further survey.	
36	VC	Outlined the consultation responses made by HE in relation to Trial Trenching .	
37	FS/ JP	Discussed the merit of trial trenching post consent. JP agreed that this was the position taken by other linear projects in Norfolk, and considered that a deviation from this position would be inconsistent, but stressed the importance of allowing time within the delivery schedule to achieve any requirements of mitigation.	
38	All	Agreed that a further ETG meeting would be arranged to discuss the timing of trial trenching with HE, with NCC in attendance too.	RHDHV
Heritage Setting and Viewpoints			
39	DF	In relation to Setting and Heritage specific Viewpoints , stated: <ul style="list-style-type: none"> We have worked extensively to consider all of the heritage viewpoints surrounding the substation, and additionally for the Offshore coastal viewpoints, and worked closely with the SLVIA consultant LDA Design. The suitability of the viewpoint(s) from Mangreen Lane will be presented at the additional meeting with HE.	
40	DF	Presented example substation viewpoints from key heritage assets, e.g.: <ul style="list-style-type: none"> RH_2: Keswick Hall RH_1: Intwood Hall RH_10: Venta Icenorum Viewpoints have been identified within the 5km study area of the substation, alongside those that have been identified in other projects, such as Hornsea 3 (Intwood Hall).	
41	DF	Presented example coastal viewpoints from key heritage assets, e.g.: <ul style="list-style-type: none"> RH_C7: Cley windmill RH_C9: Scheduled Monument: Bowl Barrow on north side of Muckleburgh Hill RH_C14: Cromer Lighthouse RH_C16: Mundesley Coastal Battery 	

Number	Attendee	Details	Action
		Viewpoints are generally focused on assets that have or potentially have a direct relationship with the sea, i.e. those that may derive a degree of heritage significance from their direct association with the sea and sea views.	
42	FS	The settings photography work has been led by the SLVIA consultants (LDA). A selection process has been undertaken by reviewing the baseline photography and requesting either wireframe or photomontages to be produced by the SLVIA consultants for both key substation and coastal heritage specific viewpoints identified as requiring further visualisations.	
43	FS	Suggested generally the setting of non-designated heritage assets and grade 2 listed buildings would fall under the remit of the district councils and scheduled monuments, grade 2* and grade 1 listed building were the primary focus of HE. This is in reference to the North Norfolk District Council S42 Consultation response.	
Next Steps			
44	VC/SM	Meeting minutes will be produced and circulated. An additional meeting will be arranged with HE to discuss their specific comments, particularly around trial trenching. NCC will also attend.	RHDHV
45	JA	Agreed minutes and actions will form the initial foundation/draft of the statement of common ground.	
46	CD	Confirmed that the WSI for the GI works will be progressed as works are due in August.	Equinor/ RHDHV
Meeting Closed			

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (Equinor), [REDACTED] (Norfolk County Council), [REDACTED] (Historic England)

Apologies:

From: [REDACTED]

Date: 16 August 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0019_Archaeology ETG4 July2021

Classification: Confidential

Enclosures:

Subject: Dudgeon and Sheringham Shoal Extension Projects Archaeology ETG #4

Number	Attendee	Details	Action
Introduction			
1	DF	Provided an introduction to the ETG meeting and an overview of the agenda followed by introductions from all attendees. Stated that the focus of this ETG would be in relation to onshore archaeology and cultural heritage. Minutes from both this and the previous ETG, which included offshore, would be circulated to all ETG members.	
2	CD	Provided an overview of the project and updates to the ETG, describing the route refinement process and the integrated approach to studies and stated the likelihood of a DCO submission date in 2022.	
Onshore Archaeology and Cultural Heritage			
3	DF	Provided an overview of the comments made at PEIR by NNDC, Norfolk County Council (NCC) and HE.	
4	JP	Provided clarification on the roles of NNDC, NCC and HE.	
5	DF	Confirmed that the approach to onshore archaeology has been similar to that of other offshore renewable projects in the area (i.e. Norfolk Vanguard and Boreas). These projects are similar in type and location, and this approach has been effective and accepted by the stakeholders previously. A key point for discussion was that Historic England raised concerns about the current level of uncertainty in the assessments, particularly regarding the nature and magnitude of impacts.	
6	DF/ JA	In relation to Route Refinement , described that: <ul style="list-style-type: none"> Route refinement is currently ongoing 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> • Process to avoid (where possible) the main geophysical survey anomalies such as enclosures and rectilinear enclosures (indicative of occupation), as well as the obvious curvilinear features which may be indicative of barrows, cemeteries etc. • A number of anomalies still intersect the DCO boundary limits and help indicate areas of higher archaeological potential and would require further mitigation considerations post-consent. <p>JA confirmed that this process had also been followed when considering the substation site selection.</p>	
7	DF	<p>In relation to Identifying Potential, stated that:</p> <ul style="list-style-type: none"> • APS will carry out an additional 18th century and earlier mapping review for consistency and continuity. This is expected to be provided by mid-September. • Information from the historic hedgerow assessment (currently ongoing) will help inform the historic parish and hundred boundaries identification. APS will also be asked to assist in this matter. • Early Saxon finds from the HER would be assessed for sites e.g. Saxon cemeteries, which tend to show less obviously in AP, LiDAR and geophysical survey data, alongside further review of e.g. the Natural England Landscape character assessments, and historic landscape characterisation to inform the different landscape types and period potential across the different landscapes zones which the onshore cable route runs through. 	RHDHV/ APS
8	DF/ JA/ JP	<p>Discussed that a review of the Early Saxon metal work finds held within the HER would be undertaken to help establish areas of high archaeological value. However, it was considered by JA/ JP that these could not be relied on solely to identify the likelihood of Early Saxon cemeteries.</p> <p>VC stated that geoarchaeological monitoring and assessment was being brought forward in the programme to help further inform the process.</p>	
9	VC/DF	<p>In relation to Priority Geophysics, raised that:</p> <ul style="list-style-type: none"> • The remaining Priority Geophysical survey areas have been provisionally arranged to be surveyed 	

Number	Attendee	Details	Action
		<p>from September 2021 (land access permission dependent), with the results envisioned to be received within 6 weeks after completion of the surveys.</p> <ul style="list-style-type: none"> In the event that the current priority geophysical (magnetometry) survey works/results are not completed in time for the submission, works will still continue wherever possible, although aware they will not form part of the examination. Consultation and flow of information would continue alongside examination. 	
10	DF/CD	Confirmed that ~50ha of Priority Geophysics areas still required survey but were restricted by both access and cropping. ~300ha of high priority area had been surveyed.	
11	DF	<p>In relation to Geoarchaeology, raised that</p> <ul style="list-style-type: none"> The results of the Geoarchaeological monitoring of the GI works, planned later in the Summer across the DCO boundary limits, would inform the initial review of geoarchaeological potential as part of the ES. Micrositing of the GI work borehole/trial pit locations has been undertaken to avoid (as much as possible) known archaeology from the HER data, Geophysical survey results, and APS data, with the advice given to the GI Contractor around archaeological provision for these works (including areas of both geoarchaeological monitoring and archaeological watching brief, but not blanket approaches to either). 	
12	DF	Confirmed that the GI works would start mid-August. A WSI has been produced for all GI locations and has been submitted to NCC for review.	
13	DF	Outlined the consultation responses made by HE in relation to Trial Trenching .	
14	JP/ JA / VC	<p>Discussed the of trial trenching post submission/consent. JP agreed that this was the position taken by other liner projects in Norfolk, and considered that a deviation from this position would be inconsistent.</p> <p>JA raised the importance of the risks being clearly understood and acknowledged.</p> <p>RHDHV / Equinor to demonstrate how the risk of post submission/consent trial trenching has been addressed, and how the risk will continue to be addressed through</p>	Equinor / RHDHV to share OWSI with HE and NCC

Number	Attendee	Details	Action
		<p>ongoing archaeological evaluation. This would be agreed through the Statement of Common Ground, and the OWSI.</p> <p>Landscape zones would be used to help inform potential, scale, and focus for the desk-based appraisal.</p> <p>Once complete OWSI would be shared with NE and NCC</p>	
Heritage Setting and Viewpoints			
15	DF	<p>In relation to Setting and Heritage specific Viewpoints, stated:</p> <ul style="list-style-type: none"> We have worked extensively to consider all of the heritage viewpoints surrounding the substation, and additionally for the Offshore coastal viewpoints, and worked closely with the SLVIA consultant LDA Design. <p>After discussions on location, JA confirmed that the viewpoint was suitable.</p>	DF to provide drawing showing viewpoints to HE
16	DF	<p>Presented example substation viewpoints from key heritage assets, e.g.:</p> <ul style="list-style-type: none"> RH_2: Keswick Hall RH_1: Intwood Hall RH_10: Venta Icenorum <p>Viewpoints have been identified within the 5km study area of the substation, alongside those that have been identified in other projects, such as Hornsea 3 (Intwood Hall).</p>	
17	DF	<p>Presented example coastal viewpoints from key heritage assets, e.g.:</p> <ul style="list-style-type: none"> RH_C7: Cley windmill RH_C9: Scheduled Monument: Bowl Barrow on north side of Muckleburgh Hill RH_C14: Cromer Lighthouse RH_C16: Mundesley Coastal Battery <p>Viewpoints are generally focused on assets that have or potentially have a direct relationship with the sea, i.e. those that may derive a degree of heritage significance from their direct association with the sea and seaviews.</p>	
AOB			
18	JA	SM to provide minutes for both ETGs and circulate to all members. Finalised minutes will be used to inform the agreement log and Statement of Common Ground	RHDHV
Next Steps			

Number	Attendee	Details	Action
19		APS will carry out an additional 18 th century and earlier mapping review for consistency and continuity. APS have confirmed this will be provided by October.	RHDHV/ APS
20		Meeting minutes will be produced and circulated.	RHDHV
21		Agreed minutes and actions will form the initial foundation/draft of the statement of common ground.	All
22		OWSI shared with HE and NCC.	Equinor/ RHDHV
Meeting Closed			

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (JA) (RHDHV), [REDACTED] (SMor) (RHDHV), [REDACTED] (RHDHV),
[REDACTED] (SM) (RHDHV), [REDACTED] (JP) (Norfolk County Council), [REDACTED]
[REDACTED] (JAL) (Historic England), [REDACTED] (ZO) (Historic England)

Apologies: [REDACTED] (Equinor)

From:

Date: 06 April 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0035_Archaeology ETG5 Apr2022

Classification: Confidential

Enclosures: Onshore Archaeology ETG5 April 2022.pdf

**Subject: Dudgeon and Sheringham Shoal Wind Farm Extension Projects Archaeology
ETG #5**

Number	Attendee	Details	Action
Introduction			
	JA	<p>Outlined the purpose of the meeting to:</p> <ul style="list-style-type: none"> ■ Provide an update on the Projects; ■ Review the agreement log (Statement of Common Ground Precursor); ■ Provide an update of the findings of the geophysical survey and monitoring of GI works; and ■ Provide an overview of the Outline Written Scheme of Investigation for Onshore Archaeology 	
	JA	<p>Provided a high-level project update. The project is currently looking to submit the DCO application in early summer 2022, and hoping for decision by Q2 2023. Other updates included:</p> <ul style="list-style-type: none"> ■ Targeted compound consultation – Q1 2022 <ul style="list-style-type: none"> □ Decision on main compound located at Attlebridge ■ Environmental assessment and surveys completed ■ Public Information Days at key locations along the cable corridor, landfall and substation – Q1 2022. 	
Review of Agreement Log			
	DF	<p>Confirmed the ETG still agreed with approach to baseline and surveys status (ETG1):</p> <ul style="list-style-type: none"> ■ The list of categories of known and potential 'heritage assets' and other elements for consideration was agreed with the ETG, including use of LVIA tool kits to inform setting assessment. 	<p>Agreed by the ETG. To be included in agreement log and SoCC.</p>

Number	Attendee	Details	Action
	DF	<p>Confirmed the ETG still agreed with approach to baseline and surveys status (ETG1):</p> <ul style="list-style-type: none"> ■ The list of sources for desk-based assessment. 	<p>Agreed by the ETG. To be included in agreement log and SoCC.</p>
	DF	<p>Confirmed the ETG still agreed with approach to baseline and surveys status (ETG1):</p> <ul style="list-style-type: none"> ■ The approach to baseline surveys, and potential additional surveys, being suitable for the characterisation of the study area and onshore project boundary for EIA purposes. ■ It was agreed that if any Engineering-led Ground Investigation (GI) works are planned for the project, Norfolk County Council (NCC) Historic Environment Service (HES) and Historic England (HE) should review the methodology and provision for associated archaeological watching brief and/or geoarchaeological monitoring. ■ Analysis of Lidar and aerial photographic data will primarily be undertaken within the 200m onshore cable corridor and will also include a suitable small buffer out with the onshore project boundary. ■ Locations for priority archaeological geophysical surveys would be agreed with NCC HES. It was agreed that possible targeted archaeological trial trenching should also be considered in the areas identified as 'critical', or at particular pinch-points, for the projects. However, it was acknowledged that this is heavily dependent on land access. ■ ETG agreed that trial trenching was not required pre-consent. 	<p>Agreed by the ETG. To be included in agreement log and SoCC.</p>
		<p>Confirmed the ETG still agreed with approach to assessment methodology (ETG1):</p> <ul style="list-style-type: none"> ■ The potential impacts to be assessed, the proposed impact assessment methodology, approach to cumulative impact assessment and approach to consultation. 	<p>Agreed by the ETG. To be included in agreement log and SoCC.</p>
		<p>Confirmed the ETG still agreed with approach to assessment methodology (ETG1):</p>	<p>Agreed by ETG. To be included in</p>

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ An onshore Evidence Plan Process specific archaeology and cultural heritage Method Statement document is not required, as this would be a repeat much of the Scoping Report and Scoping Opinion, as well as discussion as already documented within the minutes of the first and future ETG meetings. ■ Separate to the acknowledged requirement for survey-specific Written Scheme of Investigation (WSI) to be agreed prior to archaeological related site-based survey work and relevant engineering led activities. 	agreement log and SoCC.
	DF/JP	<p>Confirmed the ETG still agreed with approach to obtaining desk-based data (ETG2):</p> <ul style="list-style-type: none"> ■ Approach to obtaining aerial photos and historic maps given current closures of record offices. <p>JP confirmed that records centre was now open and the HER had moved to this site.</p> <p>DF stated that APS had gained access to the records required for their assessments through the HER and records office.</p>	Agreed by ETG. To be included in agreement log and SoCC.
	DF	<p>Confirmed the ETG still agreed with approach to obtaining desk-based data (ETG2):</p> <ul style="list-style-type: none"> ■ Desk-based data as well as geophysics data would inform location of trial trenches 	Agreed by ETG. To be included in agreement log and SoCC.
	DF	<p>Confirmed the ETG still agreed with heritage viewpoints (ETG2):</p> <ul style="list-style-type: none"> ■ Additional viewpoint taken from within Venta Icenorum. Agreed that ongoing consultation would be useful given the timeframes and absence of photomontages and setting assessment from the PEIR. 	Agreed by ETG. To be included in agreement log and SoCC.
	DF	<p>Confirmed the ETG still agreed with the approach to ongoing surveys (ETG3):</p> <ul style="list-style-type: none"> ■ In the event that the current priority geophysical (magnetometry) survey works/results are not completed in time for the submission, works will still continue wherever possible, but would not form part of the examination. Consultation and flow of information would continue alongside examination. Agreed to focus on cropped land for surveys but would not stop efforts to engage with landowners currently refusing access. ■ Further geophysical surveys are being considered for this year (2022). 	Agreed by ETG. To be included in agreement log and SoCC.

Number	Attendee	Details	Action
	DF	Confirmed the ETG still agreed with an WSI for GI (ETG3): <ul style="list-style-type: none"> The geoarchaeologist will be producing the WSI for the GI works. The WSI will be produced as a single document for all GI locations and be submitted to NCC 	Agreed by ETG. To be included in agreement log and SoCC.
	DF	Confirmed the ETG still agreed with the approach to identifying potential (ETG4): <ul style="list-style-type: none"> Early Saxon finds from the HER would be assessed for sites e.g. Saxon cemeteries, which tend to show less obviously in AP, LiDAR and geophysical survey data, alongside further review of the Natural England Landscape character assessments, and historic landscape characterisation to inform the different landscape types and period potential across the different landscapes zones which the onshore cable route runs through. 	Agreed by ETG. To be included in agreement log and SoCC.
	DF	Confirmed the ETG still agreed with heritage viewpoints (ETG4): <ul style="list-style-type: none"> Locations of the heritage viewpoints within the 5km study area of the substation. 	Agreed by ETG. To be included in agreement log and SoCC.
Phase 2 Geophysical Survey Results			
	DF	Described Area 11, located near Easton and consisting of the cable corridor and access track. Stated that no anomalies of probable archaeological potential had been identified in PA11. Discrete anomalies of possible archaeological origin had been identified in the southern part of the access track.	
	DF	Described Area 14, located near Taverham Road/Telegraph Hill north of Area 11. Stated that a single ring-ditch, indicative of a barrow had been identified, which corresponds to cropmarks of a Bronze Age round barrow. Two discrete anomalies of possible archaeological origin are identified towards the southern end of the survey area.	
	DF	Described Area 17, located near Weston Longville. Stated that no anomalies of likely or possible archaeological potential had been identified in this area. A former field boundary had been recorded in the data, along with parallel and oblique linear anomalies which are indicative of ploughing.	

Number	Attendee	Details	Action
	DF	Described Area 34, located near south of Weybourne. Stated that no anomalies of probable archaeological potential had been identified in this area. Discrete anomalies of possible archaeological origin were identified in the east of the survey area. A former field boundary had been recorded within the area. The southern part of the survey area was constrained by bird cover.	
Monitoring of Engineering-led Ground Investigation Works			
	DF/JP	<p>Outlined the scheme of archaeological and geoarchaeological monitoring and recording during ground investigations, comprising boreholes and test pits, undertaken in September 2021:</p> <ul style="list-style-type: none"> ■ 31 locations were archeologically monitored during the ground investigations whilst a further 15 were monitored for geoarchaeological and palaeoenvironmental potential. ■ Deposits of palaeoenvironmental and geoarchaeological interest were identified at three separate locations; River Bure, north of Oulton (BH6-15), Swannington Beck (BH9-25) and River Wensum, south of Attlebridge (BH10-31). ■ The deposits identified within BH6-15 and BH10-31 represent alluvium and organic alluvium associated with the Rivers Bure and Wensum respectively and have high to moderate palaeoenvironmental and moderate geoarchaeological potential. ■ The organic deposits identified within BH9-25 have high palaeoenvironmental and geoarchaeological potential. These are interpreted as the fills of a buried tunnel valley of Anglian age. <ul style="list-style-type: none"> □ If this origin is accepted then the fills must post-date MIS 12 and, due to the absence of Devensian gravels within this area, must predate the deposition of the Briton's Lane Formation (possibly MIS 6/191 – 130ka) and therefore a provisional, mid-Pleistocene date of between c. 424,000 – 191,000 years ago is proposed. ■ All other deposits are considered to have no to low palaeoenvironmental or geoarchaeological potential due to the generally shallow sequences, dominated by coarse, gravelly sediments of mid-Pleistocene origin. <p>ZO requested a copy of the slide.</p>	Provide ETG a copy of the slides with the minutes.

Number	Attendee	Details	Action
	JP/SM/ZO	<p>JP stated that potential impacts to findings at BH25 would need to be considered as the project is proposing HDD under the River Wensum. This may interact with deposits depending on the depth of HDD. It was considered that should an impact be identified, mitigation would be required, which may include further boreholes to collect palaeoenvironmental and geoarchaeological samples.</p> <p>SM shared that the methodology selected by the engineers had not allowed for the collections of samples. SM stated that the cores had been disturbed, but this would be checked.</p> <p>A 2nd phase of GI works was planned for summer 2022. Locations for the works would be reviewed by RHDHV with recommendations made, this would be shared with ETG prior to works being undertaken. A WSI would also be provided for approval by the ETG.</p> <p>RHDHV will also review the GI methodology and discuss provision for obtaining samples for geoarchaeological purposes during the 2nd phase of GI works, with the GI contractor and Equinor.</p>	SM to check the engineer's methodology for GI works.
Outline Written Scheme of Investigation for Onshore Archaeology			
	SM	<p>Aim to submit a draft for comment by end of April. The structure and content would be similar to those for Vanguard and Boreas. The terminology adopted in these documents would be used for SEP and DEP.</p> <p>Stated that the Outline WSI for Onshore Archaeology sets out the following approaches.</p> <p>Initial informative stages of mitigation:</p> <ul style="list-style-type: none"> ■ Additional project-wide Onshore Archaeological Geophysical Survey across areas not subject to the Priority Archaeological Geophysical Survey (re-commission 2022 post-harvest and after DCO submission); ■ Targeted Metal Detecting Survey in areas of Saxon finds; ■ Archaeological Trial Trenching across DCO boundary, targeted at areas of known archaeological importance and a sample of apparent 'blank' areas; 	SM to confirm whether HDD would cover the area of medieval earthworks near Easton.

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ Targeted Earthwork Condition (GPS/topographic) Survey in areas of historic earthworks including the medieval tufts near Easton which would be impacted by the works; <ul style="list-style-type: none"> □ JP queried whether HDD would include the area of medieval earthworks near Easton. ■ Historic building Recording potentially required where built heritage assets will be impacted within the DCO boundary; and ■ Targeted Geoarchaeological Assessment/Palaeoenvironmental Survey is outlined in the oWSI and will be informed by GI works. 	
	SM/JA	<p>Stated that the Outline WSI for Onshore Archaeology sets out the following approaches.</p> <p>Subsequent, Additional Mitigation Measures</p> <ul style="list-style-type: none"> ■ Set-Piece Excavation (SPE); ■ Strip, Map and Sample (SMS) Excavation; ■ Archaeological Monitoring/Watching Brief; ■ Preservation In-Situ; ■ Sensitive and Precautionary Approaches to Construction Works; ■ Protocol for Archaeological Discoveries; and ■ Reinstatement of Field Boundaries and Hedgerows. <p>JA considered that in practice SPE and SMS were similar, both being excavations. There is a move away from defining these as separate mitigation measures. Instead, sites should be considered in terms of generalised potential: class 1 and class 2.</p> <p>JA shared that Vanguard's, Boreas' and Hornsea 3's mitigation and excavations have been undertaken across the whole width of DCO corridor and as part of the pre-construction phase of works.</p>	SM to make update to the oWSI to remove distinction between SPE and SMS.
	SM	<p>Stated that the Outline WSI for Onshore Archaeology sets out the following approaches.</p> <p>Outline Schedule of Archaeological Requirements</p>	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ Presents a summary of the currently known and potential remains within the onshore SEP and DEP Order Limits. ■ A summary of the findings from the desk-based work and priority geophysical survey (where completed) is provided in the Schedule. ■ A description of how the DCO boundary interacts with the known and potential heritage asset is given. ■ The type of initial informative stages of mitigation required for each asset is highlighted, where relevant to the asset. 	
Next Steps			
	SM	<p>Confirmed that the next steps would be to:</p> <ul style="list-style-type: none"> ■ Submit draft of Outline WSI for Onshore Archaeology to Stakeholders for comment prior to formal DCO submission. ■ Submit locations and recommendations for Phase 2 GI works to Stakeholders for consultation and agreement. 	
Any Other Business			
	SM/JP	<p>Discussed the requirement for further Geophysical surveys; however, these are constrained by crop cover and access. Geophysical survey campaign will continue post submission. Alternative techniques to magnetometry discussed with contractor around River Wensum.</p> <p>Updated shapefiles of the DCO boundary to be provided to JP.</p> <p>JP highlighted that at the landfall for Hornsea 3 (where it crosses the former Weybourne military training camp), buried asbestos has been encountered.</p>	
Actions			
		<p>Presentation slides and minutes to be provided to ETG</p> <p>Updates to the agreement log and SoCC to be shared with ETG.</p> <p>SM to check the engineer's methodology for GI works.</p> <p>SM to confirm whether HDD would cover the area of medieval tofts near Easton.</p>	

Number	Attendee	Details	Action
		SM to make update to the oWSI to remove distinction between SPE and SMS.	
Meeting Closed			

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] and [REDACTED] (Historic England), [REDACTED] (Equinor),
[REDACTED] and [REDACTED] (RHDHV)

Apologies: [REDACTED] (Historic England)

From: [REDACTED]

Date: 08 April 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-Z-0032

Classification: Confidential

Enclosures: Presentation Slides, Agreement Log

Subject: Dudgeon and Sheringham Shoal Extension Projects Archaeology ETG #6

Number	Attendee	Details	Action
Introduction			
1	VC	Provided an introduction to the ETG meeting and an overview of the agenda followed by introductions from all attendees.	
2	TM	Provided update on project and amendment to DCO boundary with the addition of temporary working areas.	
3	VC/TM	<p>Provided an overview of the approach to the archaeological assessment of the temporary working areas, to comprise desk-based assessment only.</p> <p>TM clarified that these areas might not be used but are being considered should there be a requirement for installation vessel anchor spread to extend beyond the permanent works area. This will increase micro-siting ability of the vessel anchors themselves and wind turbine foundations.</p> <p>CP requested attention to the potential for unknown (pre-20th century) assets as well as known wrecks recorded by the UKHO within these areas</p> <p>CP WSI will have to be rigorous and detail how data will be collected and tailored to the project.</p> <p>TM confirmed that anchored vessels may not be used, but when that decision is made the required geophysical data would be collected and assessed in line with the WSI.</p>	

Number	Attendee	Details	Action
Review of Agreement Logs			
4	VC	<p>Review of previous agreements (as set out in enclosed Agreement Log)</p> <p>CP concurred that there was no disagreement on the approaches as discussed in previous ETGs, although any formal agreement from Historic England on the 'Agreement Logs', as a precursor to a Statement of Common Ground, would need to be considered, based on the information provided</p>	
Historic Seascape Characterisation			
5	VC	<p>Additional projects since the Historic Seascape Characterisation (HSC) dataset was produced, include the construction of Sheringham Offshore Wind Farm (SOW) and Dudgeon Offshore Wind farm (DOW), the Elgood Wellhead and Blythe Platform and the planned Hornsea THREE cable route.</p> <p>CP noted that with consideration of the concept of 'change', it is important to note that there is still new gas infrastructure against current emphasis on renewables.</p> <p>Assessments of sub-bottom profiler (SBP) data for SOW, DOW and SEP&DEP show an increasingly more detailed picture of former prehistoric landscapes when considered against the palaeolandscape component mapped for the HSC.</p> <p>Consideration of turbine sizes and layouts shows the progression of energy infrastructure (increasing size/ reduction in number, wider spaced layouts) through SOW to DOW and then SEP&DEP.</p> <p>This may have implications for impacts, in terms of maintaining access for further research (i.e. access to palaeolandscapes now less restricted due to separation of turbines compared to earlier more densely spaced layouts).</p> <p>CP suggested access for future work is also restricted by presence of the inter-array cabling and questioned if access can be maintained on a practical level.</p>	

Number	Attendee	Details	Action
		VC suggested that there would be no permanent limitation to access for further research beyond the foundations and safety zones (including cables).	
Geoarchaeology			
6	VC	<p>Since PEIR, geotechnical investigations have been undertaken including 89 vibrocores, with logs assessed by Wessex Archaeology (WA). Four cores have been identified as high priority (peat) with 14 medium priority cores.</p> <p>High priority cores were X-rayed before opening. This informed determining actions when cores are opened to allow geotechnical and geoarchaeological objectives to be met. The 4 priority cores all correlate with channel features mapped from SBP data.</p> <p>Advice was obtained from specialists to confirm likely effect of x-rays on potential optically stimulated luminescence (OSL) dating options and have been advised that the process would not affect samples to any significant degree. Furthermore, as these four cores were selected for containing potential organic material, more likely to use C14 dating instead.</p> <p>Samples for geoarchaeological recording have been requested and are currently stored at WA. The Stage 1 geoarchaeological assessment report will be an appendix to the ES. A borehole survey is also planned for 2022 and further stages of assessment will be progressed alongside DCO application/examination.</p>	
Outline WSI			
7	VC	<p>The Outline WSI has been prepared in line with the updated Crown Estate guidance (2021).</p> <p>CP confirmed that the proposed content is appropriate for an Outline WSI.</p> <p>Further geophysical data is being collected now and won't be interpreted in support of the DCO application, although the WSI will include detail on the acquired data to inform assessment post-consent.</p>	

Number	Attendee	Details	Action
		<p>CP commented that the Outline WSI must include the detail of the acquired and planned survey data and assessment rather than just representing a generic document.</p> <p>VC confirmed that the WSI includes a commitment to post-consent data review and to filling data gaps and has been drafted to ensure that any subsequent consultant or archaeological contractor (should this differ to Equinor's current archaeological consultants/contractors) would have sufficient information to inform the approach to taking the project forward.</p>	
Next Steps			
8	VC	<p>The baseline will be updated relative to the results of the Stage 1 geoarchaeological assessment in both the ES and the WSI. Furthermore, the approaches to current and planned surveys will be included in the WSI.</p> <p>CP confirmed that it would be useful to see the draft Outline WSI pre-submission for review.</p>	VC to send WSI for review once latest data included.
Meeting Closed			

1.6 Traffic Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (JS) - NCC, [REDACTED] (MD) - NCC, [REDACTED] (AC) - AECOM,
[REDACTED] (SH) Highways England; [REDACTED] (AR) – RHDHV, [REDACTED]
(ST) - RHDHV [REDACTED] (MW) - RHDHV; [REDACTED] (AL) - RHDHV, [REDACTED]
[REDACTED] (MC) – Equinor

Apologies: [Click to enter "Apologies"](#)

From: [REDACTED]

Date: Friday, 17 January 2020

Location: Maids Head Hotel, AC via Skype

Copy: Richard Stocks

Our reference: PB8164-RHD-ZZ-ZZ-MI-PM-0008

Classification: Project related

Enclosures: ETG presentation and agreement log

Subject: Sheringham Shoal and Dudgeon Extension – Traffic ETG 2

Number	Details	Action
Introductions and purpose of the meeting		
1	<p>Following introductions, MC summarised the project and consenting approach. Please refer to Expert Topic Group (ETG) meeting slides. Scoping report was submitted on 8th October 2019 and scoping opinion was received on 18th November 2019. Development Consent Order (DCO) application is scheduled for Q3 2021.</p> <p>MC indicated the DCO application would be for both projects, but will include an assessment of each project individually as well the effect of constructing both together (either concurrently or sequentially).</p> <p>The onshore site selection process is ongoing. The process is being informed by technical specialists from various disciplines including transport. The current focus of site selection is to narrow down the scoping area to identify a 200m wide corridor for surveys to be undertaken during 2020. It is also anticipated that a single preferred landfall option will be confirmed in Q1 2020 for survey and assessment work that will be reported in the Preliminary Environmental Information Report (PEIR).</p>	Equinor (MC) to re-issue ETG meeting slides with these minutes.
2	<p>MC confirmed that the onshore substation site selection process is ongoing. MD inquired if the Project was offered connection at Necton so that the project existing infrastructure could be utilised. MC stated that National Grid offered Norwich Main for the substation location and that new infrastructure will be required in order to deliver the project. MC also stated that there is no possibility for the project to share the Hornsea Three cable corridor.</p>	
3	<p>Both JS and MD stated that if Oulton is considered as a location for the compound the traffic impacts will need to be investigated MC stated that no decision has been made with regards to the compound location at this stage, or whether a main compound will be required</p>	

Number	Details	Action
	(similar to Hornsea Three) or a number of smaller compounds will be utilised (similar to Norfolk Vanguard).	
4	MC stated that the project construction programme is still being developed. Currently it is envisaged that construction works could to start between 2024 and 2026.	
Summary of the baseline and future assessment		
5	ST identified that at this stage the final cable corridor and access locations had not been determined and therefore an initial study area was presented to show the extents of the assessment. ST noted that the initial study area focused upon the main 'A' roads only and that local roads would be added to the study area once final access locations are known. ST confirmed that this information would be provided within a Method Statement that will be shared with members of the ETG.	
6	ST highlighted that the study area presented has taken account of sensitive links at Horsford, Reepham, Cawston and Cromer and that where possible the access strategy will be developed to route traffic away from these communities.	
7	MD stressed that the assessment will have to take other projects into account (cumulative assessment). These projects include other windfarms and road projects. MD stressed that the local road networks would be under a lot of stress as result of all other projects and new options and out of box thinking might be required to address impacts from traffic.	
8	<p>JS stated that when establishing sensitive receptors/routes consideration should be given to routes where there would be higher seasonal holiday traffic and routes identified as 'traffic sensitive' by NCC (refer to one.network website).</p> <p>MD stated that similar to other projects, caps on vehicle movements might need to be agreed for certain road links. The cap values will be agreed by the members of ETG.</p>	
9	<p>Access to Norwich Main [substation site] was discussed. MD suggested that existing access to the Norwich Main via the A140 would be preferred as Hornsea Three had issues with accessing off the B1113 due to capacity constraints at Harford signalised junction (Harford Triangle opposite Tesco).</p> <p>JS indicated issues to consider – during the am concern raised by Highways England that traffic would back up onto the A47 slip road. Also need to examine the effect at the pm impact to traffic exiting the B1113.</p>	
10	JS informed the project team about the proposed Harford Triangle application for commercial land use/ industrial estate (the site located in the triangle of land between the A140 near Harford Bridge Tesco and the B1113). JR noted that these proposals would need to be	

Number	Details	Action
	taken account of for abnormal load assessment if access was to be taken from the B1113.	
11	MD and JR also identified roads between the A47 at Honingham and the Norwich Northern Distributor Road within the Wensum valley as another sensitive area. In particular would not support the use of U78206 Church Lane. The C174 Taverham Road was also highlighted as problematic. The roads in the area are narrow and heavily trafficked. The severity of impact will depend on the Norwich Western Link (NWL) status when the project starts construction. Currently construction of the NWL is proposed to start late 2022 and be complete by 2025. The NWL proposal is yet to be approved (impacts on Wensum valley designated areas identified) and therefore it is not clear if the NWL will be ready in time to be used by the project. The members of the ETG agreed that if available, the NWL should be used, however, the members of the ETG also agreed that a worst-case assessment of using local road may need to be developed.	
12	Other cumulative projects in the county that should be considered include the Third River Crossing Great Yarmouth. It was advised that work on this project is programmed to start next year.	
13	As the Outlon site might not be available for a works compound, MD suggested that another compound location could be Weston Longville airfield. However, it should be noted that the roads in that location are also narrow and not in good condition.	
14	JS and MD questioned the possibility of future proofing the project by providing an allowance to introduce additional cabling along the route for further project extensions. JA explained that it would be difficult as connections of any future projects are not known. In order to allow for the project to accommodate future cabling a wider cable corridor would be required, this would be extremely difficult to justify during compulsory acquisition process if there is no demonstrable need for the extra land.	
15	MD stated that future road widening should be considered when designing the project, for example there might be a need to install extended duct run for future A47 widening. Western link will also cross River Wensum and a combined crossing should be considered if possible.	MD will put the members of the ETG in contact with the NCC's head of major development for further information. SH to provide contact to the managers of the A47 widening project.
16	ST discussed the proposed approach to distributing HGV and employee traffic. ST identified that a final supply chain would not be known at the time of application, however it would be likely that the majority of the materials would either be sourced from local quarries	

Number	Details	Action
	<p>or via existing ports at either Kings Lynn to the west or Lowestoft and Great Yarmouth to the east. ST noted that traffic movements from local quarries would not generate additional movements and can therefore be discounted, the members of the ETG agreed to this approach.</p> <p>ST identified that a gravity model approach using distance deterrence would be used to define the distribution of HGVs from Kings Lynn, Lowestoft and Great Yarmouth Ports. ST noted that the final methodology would be set out in the Method Statement. The members of the ETG were familiar with this approach from recent DCO applications and agreed with this approach.</p> <p>With regards to employee distribution, ST noted that this would be informed by the availability of workers with relevant skills from census data and the availability of hotel accommodation. The numbers of workers and hotel bed spaces would then be factored using a gravity model with distance deterrence. The members of the ETG agreed with this approach.</p>	
17	<p>JR and MD suggested that travel planning measures should be developed for the project. It was agreed that travel planning could focus upon a multi occupancy vehicle strategy. ST confirmed that detail of any embedded travel planning measures would be outlined within the Method Statement.</p>	
18	<p>ST set out the proposed approach to data gathering. ST enquired if the members of the ETG would accept the use of baseline traffic count data gathered for Hornsea Three or Norfolk Vanguard. This approach was suggested to allow consistency between the projects.</p> <p>JS and MD agreed that where existing traffic counts from Norfolk Vanguard and Hornsea Three are available these could be used to inform the assessment for roads managed by NCC.</p> <p>SM and AC noted that Highways England would require data to be less than three years old and therefore new data would likely be required. ST confirmed that new data would be captured for the strategic road network.</p>	
19	<p>ST explained the approach to gathering data for other cumulative projects and that any assessment would be based upon published data and timescales. The members of the ETG agreed with this approach.</p>	
20	<p>ST stated that further understanding of the project is required for the abnormal load assessment. At this time only high-level information is available.</p>	
21	<p>ST outlined the proposed scope of the Traffic and Transport Method Statement:</p> <ul style="list-style-type: none"> • Baseline traffic data and reference years; • Traffic demand; 	

Number	Details	Action
	<ul style="list-style-type: none"> • Delivery routes; • Traffic assignments; and • Route sensitivity. <p>The members of the ETG agreed with the proposed content presented.</p>	
22	<p>ST questioned that onshore traffic movements associated with the offshore construction can be scoped out, noting a similar approach was adopted for both Hornsea Three and Norfolk Vanguard?</p> <p>The members of the ETG agreed that onshore impacts from offshore construction can be scoped out and could be dealt with by way of a planning Requirement.</p>	
23	<p>ST noted that PINs had raised a comment that the assessment of Road Safety and Driver Delay requires clear definitions of magnitude. SH and AC advised that a threshold of more than 30 two-way movements per hour could require assessment, however the effect may only be significant when traffic blocks back towards another junction or from a slip road on to the main carriageway.</p> <p>JS and MD noted that where junction geometry constrained two-way traffic, even a small increase in traffic could lead to significant delays. ST suggested that the driver delay assessment could consider capacity and geometry. The members of the ETG agreed with this approach.</p> <p>MD suggested reviewing mitigation measures proposed as part of the Hornsea Three project (for example proposed construction of laybys for HGVs).</p>	
24	<p>ST confirmed that the effect of increases in traffic upon pedestrian delay would be scoped in to the assessment at the request of NCC.</p>	
25	<p>ST noted that NCC scoping opinion had requested a Transport Assessment (TA). ST enquired if NCC and Highways England would be content that stand-alone TA would not be required so long as the detail was included in the ES chapter. The members of the ETG agreed with this approach.</p>	
26	<p>The potential for cumulative impacts and programmes of other projects were discussed:</p> <ul style="list-style-type: none"> • Vanguard 2022-2024 with peak 2023 • Hornsea 3 2021-2027 with peak 2023 • Boreas 2024-2027 with peak 2026 • Norwich Western Link 2025 completion <p>It was discussed and agreed between the members of the ETG that at this stage TEMPro growth factors would be considered to be appropriate to account for all other developments.</p>	

Number	Details	Action
27	ST set out that the DCO would be supported by an Outline Traffic Management Plan and Outline Access Management Plan. ST enquired if the ETG agreed that a separate Travel Plan would not be required as the information could be contained within the Outline Traffic Management Plan. The members of the ETG agreed that a separate Travel Plan would not be required.	
28	MD and JR stated that the project will have to commit to removing of the temporary field accesses following construction unless otherwise agreed with the the highway authority.	
29	The next meeting to take place once Method Statement has been prepared, issued and reviewed by the ETG team.	

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (SH) – Highways England, [REDACTED] (AC) AECOM, [REDACTED]
[REDACTED] (MD) - NCC, [REDACTED] (CC) - SNDC, [REDACTED] (JS) – NCC, [REDACTED]
[REDACTED] (JPH) – AECOM, [REDACTED] (JA) - RHDHV; [REDACTED] (MW) - RHDHV;
[REDACTED] (ST) - RHDHV, [REDACTED] (CD) - Equinor, [REDACTED] (MC) –
Equinor

Apologies: [REDACTED] (ME) – Equinor
From: [REDACTED]
Date: Friday, 18 September 2020
Location: skype
Copy: [Click to enter "CopyTo"](#)
Our reference: PB8164-RHD-ZZ-ON-MI-PM-0010
Classification: Project related
Enclosures: ETG presentation and agreement log

Subject: Sheringham Shoal and Dudgeon Extension – Traffic ETG2

Number	Details	Action
Introductions and purpose of the meeting		
1	MC informed ETG members that Weybourne has been chosen as the landfall location and that substation options have been narrowed down to two sites (please see presentation slides: sites 1 and 2&4). These sites were chosen following the public consultation in July and will be taken forward for further assessment into the PEI.	
2	MC stated that several onshore surveys and studies are underway to support the assessment including ecology, geophysical surveys and engineering concept study. An engineering concept study is being delivered by Murphy's and will confirm HDD and potential compound locations.	
3	Public consultation was undertaken using virtual exhibition room and maildrop. Over 1,700 visited the website over the consultation period.	
4	ST stated that the purpose of the meeting was to discuss the content of the Method Statement (issued in July 2020) and request any comments and feedback from the ETG prior to commencement of the PEI.	
Review of study area, proposed access and HDD locations		
5	ST asked for initial feedback to the access strategy presented in the Method Statement and reiterated that Murphy's is undertaking the engineering concept study which will confirm location of the HDD crossings and other traffic related aspects so there was still opportunity to provide input into the access selection process. ST presented maps showing proposed access locations and routes to accesses and asked ETG members for feedback	

	<p>(see ETG slides and Traffic MS). Following comments were made:</p> <ul style="list-style-type: none"> ■ MD stressed that A149 and A148 in the coastal area during the summer season takes a lot tourism related traffic, (window 23rd May to end of September) therefore traffic sensitivity is upgraded and vehicle caps (similar to adopted by Hornsea Three, Norfolk Boreas and Vanguard) may be required for these links during these periods. ■ MD added that for A148 caps should be considered for the commuting times, same as for A1067. HGV caps should be considered for more sensitive times morning and evening commuting peaks. ■ MD highlighted issue of the A140 and the western link and A1067 closer to Norwich, (depending on timescale might overlap with Norwich Western Link construction and result in increase in the morning commute), B1149 through Horsford (access to the NDR is now busy). ST stated that this commitment has already been taken on board that the Method Statement shows that B1149 through Horsford is not to be used. 	
6	ST confirmed that the cable route will pass to the east Cawston and will not require HGV traffic to pass through Cawston.	
7	MD enquired if direct material transport from port to site is assumed for the Project or if storage compounds are proposed to be used. ST stated that engineering concept study Murphy's will confirm which approach will be taken forward but for now direct transport was assumed as part of the Method Statement.	
8	MD requested that for B1436 a HGV cap is required due holiday season traffic. MD stated that caps for links 71, 73, 74, 75, 76 and 78 links vehicle traffic caps at least in the morning should be considered as a starting point.	
9	<p>MD stated that for link 90 Hornsea Three proposed localised junction improvements as part of their proposed mitigation.</p> <p>AC stated that links 88 and 86 junction mitigation was provided by Hornsea Three and suggested review of the Hornsea Three statement of common grounds.</p> <p>links 82, 83, 84 (incl. Ringland Rd) should be avoided if possible</p> <p>AC was also information on flows on links 29-31 as this could be accessed via the A47</p>	
10	AC asked if access was proposed from the A47 and noted potential concerns with high traffic speeds. ST stated that for accesses A21/22, A23/34 A25 a proposal is to take direct access from A47 to balance impacts on local communities. ST asked if Highways England would accept access from this location if a suitable design including measures to address speeds could be implemented. AC confirmed that Highways England would be willing to consider access proposals at this location.	

	SH noted that this section of the A47 may be widened and stated that he will consult Highways England's RIS team with regards to proposed timescales.	
11	AC highlighted that there is a collision cluster turning right at access A25 location. Hornsea Three proposed road widening at this location which will be kept permanent. AC suggested reviewing the statement of common ground in relation to this junction. JS stated that for link 90 works will be designed to be kept permanent. He also requested that link 91 should not be used (this would require similar level of mitigation as Hornsea Three).	
12	MD stated that traffic movements along links 101 and 103 should be limited. ST confirmed that the Method Statement set out limited movements along these links.	
13	AC stated that link 118 is considered good junction with A11 and that he has no specific comments. However, link 120 should not be used (railway crossing is very tight, HGV use should be avoided and has height restrictions). The ETG agreed that access to accesses A4 and A5 for HGVs should be via link 118 rather than link 120.	
14	MD stated that that access A1 (A140) already has a speed limit 40 mph and this should mitigate some of the impacts. However, A1 also services national grid and quarry and this should be considered when designing the access.	
15	AC outlined that a capacity model may be required for the junction of the A47 and A140. ST outlined the proposals to include proposed traffic flows within the PEIR and asked if modelling could then be undertaken as part of the ES once the highway authorities had seen the forecast traffic flows. The ETG confirmed that this approach would be acceptable. AC also noted that Hornsea Project Three committed to avoid peak commuting times at the A47/A140 area.	
16	JS stated that for link 60 traffic calming measures would be going in October and the study area should therefore be amended in this location to route traffic via Heath Dr rather than Hempstead Road.	
17	The ETG confirmed that they had no other comments on the remaining access routes proposed.	
Review of study area, proposed access and HDD locations (HDD locations)		
18	ST reiterated that Murphy's is undertaking the engineering concept study which will confirm location of the HDD crossings. As part of an initial exercise HDDs are proposed for all A roads and most B roads, however where possible open cut will be proposed as HDD is itself a traffic intense activity (please see Method Statement for plans where HDD and open cut is needed). The proposed open cut locations were agreed with the exception of the following locations where HDD was advised:	

	<ul style="list-style-type: none"> ■ Inkwood Lane - MD suggests HDD but would not insist. ■ Taverham Road – MD suggested HDD but would not insist due to cumulative impacts and access routes, please review as high level of traffic. ■ Ringland Lane HDD to be considered ■ Oulton Street ■ B1149 (double check if not mislabelled) 	
19	AC enquired if in the area of A11 and railway crossing one HDD will be proposed. JA confirmed that this will be a single HDD.	
Proposed data collection methodology		
20	<p>ST stated that as agreed during the first ETG meeting it is proposed to re-use data gathered for Norfolk Boreas, Norfolk Vanguard and Hornsea Three projects where DEP and SEP are using same links and gather data for others.</p> <p>JS confirmed that minor road network approach is fine, however there might be changes to traffic flows as result of NDR. JS stated that NCC does not hold data for minor roads but would be happy to review any information collected. MD confirmed that NDR has changed traffic flows.</p> <p>ST stressed that new surveys will need to accommodate changes to traffic caused by Covid-19.</p> <p>ST stated that a note summarising approach to data collection will be issued in advance of the surveys being undertaken. The ETG agreed to review this note and provide feedback.</p>	
21	Collision data was discussed. ST presented potential collision clusters identified (27 cluster sites). ST proposed to collect Stats 19 data for all identified clusters sites for the period last five years. AC advised that that the 5 year period should finish before March 2020 (Covid-19 lockdown).	
Impact assessment methodology		
22	ST outlined the impacts that would be assessed (slide 17).	
23	<p>ST noted that it was previously agreed to scope out traffic impacts associated with employee and HGV movements to the base port for construction and operation.</p> <p>The ETG agreed that the impacts associated with the offshore construction and operational phases of the Projects could be dealt with by means of a requirement for a Port Traffic Management Plan. JA agreed to review commitments that other projects made and replicate these.</p>	
24	<p>ST presented the proposed sensitive receptors. The ETG agreed the assigned receptor sensitivity with the following proposed changes:</p> <ul style="list-style-type: none"> ■ 11, 13 and 100 should be high. ■ 10 and 12 should be high in the summer (outside of summer they can be medium). 	

	<ul style="list-style-type: none"> ■ 14 should be medium as this had seasonal restrictions on other projects. ■ 4, 5, and 6 should be medium. ■ 46 can stay low but if traffic adjustments should be considered for planned seasonal activities, e.g. cycling events and Cromer carnival, as part of the Construction Traffic Management Plan (CTMP). ST confirmed that the CTMP would include measures to manage traffic flows during planned events, such as cycling events. ■ 52 and 53 should be medium. 	
25	<p>ST presented the proposed impact assessment methodology. The ETG agreed assessment methodology with the following amendment to driver delay (road closures):</p> <ul style="list-style-type: none"> ■ MD suggested that the assessment should include consideration of whether roads service sensitive infrastructure, for example schools, bus routes or hospitals. 	
26	<p>MD suggested that the Construction Traffic Management Plan should include a strategy for liaison between the local community, highway authorities and Contractor to ensure any unforeseen or unplanned issues can be managed.</p> <p>It was discussed how this is proposed to work for similar projects and it was noted that Norfolk Vanguard/Boreas has a liaison strategy and is appointing a specific person to take role of a traffic liaison. ST committed to including an outline of a liaison strategy within the Construction Traffic Management Plan.</p> <p>It was discussed that the Construction Traffic Management Plan should also take into account seasonal sensitivities and planned events.</p>	
27	<p>ST outlined the proposals to scope out assessment of operational and decommissioning impacts. The ETG agreed to scope out operational and decommissioning.</p>	
28	<p>Traffic demand and distribution was discussed. ST stated that PEI will consider a worst case scenario (DEP and SEP being built together). The ETG agreed with the approach to calculating and assigning HGV traffic to the highway network.</p>	
29	<p>JH questioned if travel times during the peak hours had been used in the gravity model. ST to double check if peak hours was used.</p> <p>Post meeting note: The morning peak hour was used 07:00 – 08:00.</p> <p>AC stated that he would need to review the employee distribution further and would provide comments.</p>	
30	<p>ST stated that in 2024 only early enabling works are proposed with construction proper activities starting in 2025. The ETG agreed to the use of 2025 as the assessment year.</p>	

31	ST stated that it would be proposed to use TEMPro growth factors to derive future 2025 year flows. The ETG agreed with the use of TEMPro.	
32	<p>ST presented the projects that would be considered cumulatively. The ETG agreed with list of projects to be considered cumulatively.</p> <p>JS asked if consenting delays on other windfarm projects would be considered. JA stated that it is currently understood that the consenting delays should not lead to a delay in starting construction. However, the project will monitor programme of other projects and update the assumptions regarding potential overlaps if new information is published.</p> <p>AC also raised the A47 works and that we may need to consider scenarios where the A47 works may already be complete, or occurring at the same time as our works.</p> <p>MD also asked that the third river crossing be shown on the list of projects even though it's a 2021/2022 project.</p>	
Next meeting		
33	Next meeting subject to agreement but otherwise following submission of the PEI.	

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (RHDHV), [REDACTED] (Galliford Try), [REDACTED] (RHDHV), [REDACTED] (Highways England), [REDACTED] (Highways England), [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (Norfolk County Council), [REDACTED] (Equinor), [REDACTED] (Aecom), [REDACTED] (Highways England), [REDACTED] (Equinor), [REDACTED] (Aecom), [REDACTED] (Norfolk County Council)

Apologies: [Click to enter "Apologies"](#)

From: [REDACTED]

Date: 13 July 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0021_Traffic ETG3 July2021

Classification: Confidential

Enclosures: [Click to enter "Enclosures"](#)

Subject: Dudgeon and Sheringham Shoal Extension Projects Traffic ETG #3

Number	Attendee	Details	Action
Introduction			
1	ST	Introduced the purpose of the meeting and summarised the agenda. Requested meeting is followed by an agreed action log and statement of common ground.	
2	All	Introductions from Royal HaskoningDHV, Equinor and ETG members.	
Project Update			
3	JT	Provided a project update, the project is currently working through consultation responses and technical studies to refine the routing of the cable. Advised that site selection was in its second stage with further refinement by Autumn 2021. The DCO application planned end of 2021 but may move into 2022.	
Review of Previous Agreements			
4	AR	Provided a review of the agreements following the previous ETG meeting to gain an understanding of whether these were still secured or required further comment.	
5	AR	In relation to the TTSA, questioned whether the ETG members were in agreement with the study area.	
6	MD	Queried whether this referred to the route refinement.	
7	AR	Stated that this was the Zone of Influence (Zol), not the route refinement and restated the question whether the ETG members were in agreement with the Zol and what was included at PEIR.	
8	MD	Stated that the Norfolk County Council (NCC) had identified the high impact points such as A130/B1113 and provided initial thoughts within the PEIR consultation response.	

Number	Attendee	Details	Action
9	JS	Agreed with the extent of the Zol and study area but would welcome more detail on specific routes and junctions.	
10	KP	Stated that finer detailed modelling around key junctions would be required but was in general agreement with the extent of the Zol.	
11	AR	Stated that the effects to be assessed were agreed ETG1 - 17 January 2020	
12	AR	Stated that the assessment methodology was agreed at ETG2 – 18 September 2020	
13	AR	Stated that the baseline data collection for neutral daily traffic flows and road safety data was agreed at ETG 2 September 2020. However, NCC Section 42 comments suggest a re-survey in September 2021 is required. This was presumed to be associated with abnormal traffic conditions due to COVID and queried the ETG's position on this.	
14	JS	Stated this was related to Covid and NCC wanted to protect their position on further survey efforts.	
15	EC	Reflected on the long-term effects of COVID on traffic, and that any additional survey requirement should be reasonable and realistic.	
16	SH	Highlighted the seasonal variation of traffic in the area.	
17	EC	Suggested that the worst case scenario would take into consideration the likely higher seasonable variation in holiday makers.	
18	AR	Reflected on experience of similar projects at examination which concluded only normal and neutral traffic flows should be used in the assessment.	
19	EC	Agreed with the above; however, stated that the during the construction period the Outline Construction Traffic Management Plan (OCTMP) needs to account for seasonal traffic.	
20	MD	Stated that NCC would expect to see reduced construction traffic and heavy goods vehicle (HGV) movements during summer holiday period and at peak hours.	
21	AR	Confirmed that this would be established through the OCTMP.	
22	MD	Agreed and continued to explain that the total numbers of HGV movements could be redistributed to allow lower numbers during the summer period and peak times and allow higher HGV cap outside these periods.	
23	AR	Reaffirmed that the assessment will be undertaken on neutral traffic and mitigation measures will be established via the OCTMP.	
24	MD	Suggested that mitigation could include a range of measures such as reduction in HGVs at certain times and off-peak working.	

Number	Attendee	Details	Action
25	EC	Confirmed Highways England (HE) agree with the approach to the assessment suggested by AR and the OCTMP measures approach.	
26	CD	Requested clarification on the point around further survey requirement.	
27	AR	Summarised that HE and NCC reserve the right for further control surveys in September 2021 onwards should traffic flow patterns be contrary to those submitted at PEIR. However, stated that a cut-off point would be required to for the purpose of the ES.	
28	JS	Suggested that traffic data would be required before the ETG members could make a decision.	
29	CD	Queried the approach to mitigate Covid influence on surveys has been agreed and stated that the potential September 2021 surveys would prove difficult if the submission is planned end 2021.	
30	KP	Agreed on the point of survey timing and submission and reflected on the unknown of what 'normal' would be post COVID.	
31	EC	Stated that they would take advise from other HE colleagues working on major projects but was more a consideration for NCC, as opposed to a complete resurvey.	
32	JS	Indicated NCC have identified where problems already exist on the County Network and that these would be the location of further surveys, if required.	
33	AR	Stated the concern only relates capacity issues in the local network.	
34	EC	Suggested that there would be an element of managing and monitoring, and where traffic flows are over a set number, there would be the need to cap and redistribute HGVs.	
35	JS	Outlined that this was already an issue for similar projects and that A140/A47 junction was at capacity already.	
36	AR	Suggested that the contractor may be able to lower demand and reaffirmed that the use of neutral traffic data for the assessment was a good position.	
37	MD	Detailed that the OCTMP allows for discussion whilst the neutral traffic flow data still needs to be reviewed. A statement would be required within the ES/OCTMP on impacts of COVID on traffic and potential for further survey.	
38	CD	Agreed that he considered this appropriate.	
39	MD	Stated that there should be enough detail in the OCTMP for the DCO to be processed and submitted. This should be an indication of intent and provide reassurance that due process in provided in the pipeline if required.	
40	AR	Summarised that the ETG are content for the baseline traffic data presented in the PEIR to be utilised for the DCO	

Number	Attendee	Details	Action
		application and for the OCTMP to contain a clause that permits further assessment of network capacity constraints at identified sensitive junctions if baseline traffic conditions are evidenced to have changed materially from those of the DCO application post consent.	
41	AR	Confirmed that the ETG members were still in agreement with the HGV distribution (including local suppliers) (ETG2, 18 September 2020).	
42	AR	Confirmed that the ETG members were still in agreement with the employee distribution (ETG2, 18 September 2020).	
43	AR	Confirmed that the ETG members were still in agreement with the scope of consideration of operational, maintenance and decommissioning phases (ETG 2, 18 September 2020)	
44	AR	Confirmed that the ETG members were still in agreement that the traffic impacts associated with employee and HGV movements for the offshore phases via the base port can be scoped out of the assessment (ETG 1, 17 January 2020)	
45	AR	Noted that impacts (driver delay, capacity) had not been agreed and would be discussed in the meeting. Highways England Section 42 comments outline the requirement for detailed junction modelling. NCC Section 42 comments note excessive deliveries should be avoided at traffic sensitive times and assessment of the A140 and B1113 for cumulative impacts.	
46	AR	Noted that impacts (driver delay, road closure) had not been agreed and would be discussed in the meeting. Highways England have requested further consideration of impacts of diverted traffic due to road closures on the SRN. NCC have requested Taverham Road, Inkwood Lane, Ringland Lane and Oulton Street to also be crossed using trenchless technology (e.g. HDD).	
47	AR	Stated that no comments at PEIR consultation has been made of the following: <ul style="list-style-type: none"> • Impacts (driver delay, highway constraints) • Impacts (pedestrian delay) • Impacts (Severance) • Impacts (Pedestrian and cycle amenity) 	
48	MD	Confirmed that no formal comments had been made by NCC on the points above.	
49	AR	Stated that road safety would be considered further within the ES and would cover 5 years.	
50	AR	Stated that Highways England's abnormal load team were undertaking further structural analysis. NCC Section 42 comments identify potential constraints at the junction of the A140 and B1113.	

Number	Attendee	Details	Action
Review of potential changes between PEIR and ES: Potential main compound locations			
51	AR	<p>Provided an overview of the changes between PEIR and ES</p> <ul style="list-style-type: none"> • Outline Traffic Management Plan (to include Construction Travel Plan measures): <ul style="list-style-type: none"> ○ Governance and Comms ○ Monitoring ○ Enforcement ○ Abnormal Load assessment (to be appended) ○ Outline Access Management Plan ○ Access schedule ○ Concepts and Basis of Design • An abridged Transport Assessment: <ul style="list-style-type: none"> ○ Detail of the derivation of construction traffic demand and distribution ○ Detailed collision analysis ○ Junction capacity modelling 	
52	KP	Agreed that the DCO documents listed were acceptable.	
53	JS	Stated that this was a realistic expectation of what can be agreed.	
54	CD	Added that in addition to the documents aforementioned, an Access to Work Plan was being produced.	
55	AR	Stated that Equinor are still evaluating the potential location for the main construction compound and are also considering options for two larger secondary compounds (up to 7.500 m2). Equinor would seek the views of the ETG on four preferred options with specific regard to access and any other traffic and transport concerns.	
56	JT	Detailed the process of compound selection as an integrated approach between technical disciplines.	
57	MD	In relation to the Attlebridge site, stated that the A1067 was the main arterial route, and considered the concept good; although identified potential issues with access/egress of vehicles at peak times, and suggested strong traffic control measures would be required.	
58	JS	Stated that permanent direct access onto the A1067 would be contrary to policy	
59	AR/JT	Queried what was considered long-term/ permanent as the construction phase of both projects would span 4 years. Four years was considered by the ETG to be long-term.	
60	JT	Suggested alternative access on Old Fakenham Road.	

Number	Attendee	Details	Action
61	MD	Considered this an interesting approach; however, highlighted that traffic would still ultimately arrive at A1067 and current traffic restrictions would need to be considered and adhered to.	
62	JS	Stated that an access on Old Fakenham Road to the Main compound would be preferred by NCC than providing an access direct from the A1067.	
63	MD	Stated that the Attlebridge site was in close proximity to the Western link and should be considered in the cumulative assessment. Access EW61 onto Felthorpe Road considered problematic as the road was small with minor bends.	
64	JT	Confirmed that EW61 is to enable Early Works (EW) and would therefore have a minor use.	
65	JS	Reaffirmed that no access would be allowed onto A1067 and the Old Fakenham Road would be favored for access to a Main Compound at Attlebridge.	
66	AR	Queried whether this was a general principal for all A roads not having new access and highlighted that HE had relaxed rules on temporary access.	
67	JS	Stated the need for a balance in planning but confirmed access on a 'corridor of movement' would not be permitted.	
68	CD	Agreed to share more detailed access and compound designs with the ETG members for them to provide written comment.	Equinor /CD
69	JS	In relation to the Atlas Works , highlighted the site already has an agreed access strategy determined via previous planning approvals and site allocation, which seeks to rationalise the number of access points to this site.	
70	MD	Stated some advantages with the existing 50mph speed limit in this area.	
71	JS	Stated that there are extant permissions for minerals and waste facilities. NCC noted issues with the existing accesses but if these were improved in-line with the already agreed access strategy for the site NCC would favour the Atlas Works option over the other compound options presented.	
72	CD	Shared plans and google earth street view on screen.	
73	JS	Considered that there would be a problem creating another access point onto the Atlas Works site as three existed already. The access strategy for the site is to reduce the number of access points rather than allow an increase.	
74	JT	Questioned how this might be achieved and stated that the third point of access would remain outside the control of the project.	
75	JS/MD	Agreed to discuss the access options with the Development Control team and revert with comments and recommendations	JS/MD
76	JT	In relation to Woodforde Farm , queried possible access via B-roads.	

Number	Attendee	Details	Action
77	MD/JS	Suggested the B1535 but raised concern about interactions with Western Link and the current volume of traffic on the road, which had been upgraded from a C- to a B-road due to this.	
78	CD	Stated that Equinor were in a process of gathering feedback from local community who had raised concern about increases in traffic through Western Longville.	
79	JS	Reassured that this would not be an issue as the village already had size and weight restrictions for vehicles in place.	
80	CD	Stated that a one way system to avoid the A47 does reduced the attractiveness of Woodforde Farm as an option.	
81	JS	Stated that Woodforde Farm was not considered the preferred option by NCC.	
82	JT	Discussed the last main compound option at Oulton Airfield Oulton Airfield as an option.	
83	JS	Stated that the site was already proposed by Orsted as their main compound for Hornsea 3 with a cap on daily vehicle movements. If the project is looking to do this, The Street would need widening which raises more environmental issues.	
84	AR	Raised that NCC's position on forming a new accesses off the B1149 had been reversed during the Boreas examination.	
85	JS	Clarified that this was based on planning balance and the fact it was aimed at reducing a worse impact elsewhere and did not think the same test would apply for access from the B1149 to a Main Compound at Oulton Airfield.	
86	MD	Raised the environmental issues surrounding this, including the need to potentially remove mature trees and hedges.	
87	JT	Stated that the project was aware of the issues associated with this option and it was currently the least favourite.	
Potential secondary compound locations			
88	JT	Introduced the potential secondary compound location at Bodham , to serve the northern section of the cable route with new access from the south of the A148.	
89	MD	Stated that this was a holiday sensitive route to the North Norfolk Coast and Cromer. NCC would expect to see measures to reduce HGV numbers. The A148 is also a corridor of movement so no new permanent access would be allowed.	
90	JT	Stated that access would only be required for a short period of time around a few months.	
91	MD	Considered the main concerns to be vehicle speeds and seasonal traffic.	
92	JS	Raised that NCC would not allow new access onto the A148 unless it was temporary and used outside peak tourist season. JS to confirm NCC position on this.	

Number	Attendee	Details	Action
93	JS/MD	Agreed to discuss the access options with the Development Control team and revert with comments and recommendations	JS/MD
94	ST	Introduced the potential secondary compound location at Hethersett , to serve the southern section of the cable route with new access from Hethersett Road. Noted that all traffic would be expected to arrive and depart from the A11.	
95	MD	Noted that the junction of Hethersett Road and the A11 was already busy.	
96	EC	In relation to the strategic road network, suggested that assessment of junction capacity and safety should be undertaken. Recommended that a GG104 assessment should be undertaken to establish safety requirements as part of the DCO application. This is in addition to a review of collision data at this location.	
97	GO	Highlighted that a new slip road was proposed nearby which could help with the construction traffic, with the potential that there would be improved highway access in place by the start of the project (2025).	
Substation access			
98	ST	Provided the following update: <ul style="list-style-type: none"> • An option to access the substation from B1113 has now been removed. Vehicle movements would therefore be significantly reduced through the A140 and B1113 junction and no abnormal loads would need to use the junction. • Equinor are still evaluating the potential access options from the A140. • Equinor would seek the views of the ETG on the proposed substation access options, with specific regard to access and any other traffic and transport concerns. 	
99	JS	In relation to the Quarry Access , this is likely to cause no issue for NCC.	
100	ST	Asked if NCC would permit a crossing of Mangreen Lane from the Quarry Access and if so what form of access.	
101	JS	Agreed that a crossing would be acceptable. JS/MD to confirm form of crossing (signal/ priority).	JS/MD
102	JS	In relation to the Mangreen Lane Access , NCC need to review this junction further and committed to providing feedback.	JS/MD
103	JS	In relation to the Hickling Lane Access , there are conflicts with existing plans in the area requiring a new roundabout access. Advised this option should be avoided.	
Potential access changes			
104	ST	Provided updates on the following access changes:	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> 16 accesses have been removed to reduce impacts upon local communities 9 additional / relocated accesses proposed 	
105	MD/ST	C01a from A149 would require traffic control measures due to poor visibility. Also identified, issues of traffic flow during peak season.	
106	JT	Confirmed crossing at The Street and B1149 would be trenchless.	
107	MD/JS	Stated that an access from the B1149 for a short duration with enhanced management measures may be acceptable. Enhanced mitigation measures to include a temporary speed limit, banksman, and traffic signals would be required. MD/JS committed to discussing this option with the Development Planning team and providing a formal response.	MD/JS
108	MS	Stated that Haydon Road needs further provision and traffic control measures due to the potential overlap with Hornsea 3.	
109	MD	Discussed difficulty and conflicting traffic movements around The Street.	
110	JT	Raised the possibility of the construction of the solar park, if the solar park is in place the project would need to HDD the area and there will be a lock out as we are also crossing The Street with HDD so an access to the corridor from the north would be required(C23)	
111	MD	In relation to accesses C25/26, stressed the importance of getting traffic off the main road (B1149) onto Birds Lane, which was relatively quiet, with preference for short term works which were more manageable. Use of B1149/Birds Lane junction would be acceptable with Management measures, such as a temporary speed limit and traffic signals.	
112	MD	Confirmed no concerns with accesses C43 and C48.	
Highways England PEIR Comments			
113	ST	Presented the list of junctions to be assessed, and modelling software to be used and outlined that it is proposed to survey the junctions in September 2021.	
114	KP	Confirmed that this met HE requirements.	
114	SH	Suggested that there may already be traffic modelling available for A47/Longlard for both roundabouts. SH to check for existing traffic models.	SH
116	EC	Will check the list of junctions for historical data.	EC
117	ST	Discussed the need for an access from the A47 due to the requirement to HDD under the A47 and a lock out due to the River Tudd. Stated that access would be short in duration and the junction would be provided as left in and left out.	

Number	Attendee	Details	Action
118	EC	Stated that access would be acceptable in principle subject to a review of the preliminary access design, and a GG104 and Stage One Road Safety Audit being completed.	
119	ST	Discussed road closures near the Strategic Road Network (SRN): <ul style="list-style-type: none"> • Existing traffic flows on roads to be closed are very low • Closures would be less than five days • Closures would not formally divert traffic via the SRN • Closures to be scheduled to ensure they are undertaken sequentially 	
120	KP	Considered that it would be acceptable if the considerations outlined above were stated in the Transport Assessment.	
Norfolk County Council PEIR Comments			
121	ST	In relation to Trenchless Crossings, ST confirmed that Equinor propose that the DCO will include a commitment to all trenchless crossings requested by NCC, namely: <ul style="list-style-type: none"> ○ All A and B roads; ○ Taverham Road; ○ Inkwood Lane; ○ Ringland Lane; and ○ Oulton, The Street. 	
Proportionate approach to Cumulative Impact Assessment			
122	ST	Presented the list of cumulative schemes to be assessed. ST asked if the Harford Triangle scheme can be removed from the list recognising that access to the substation would not be from the B1113	
123	ETG	All members of the ETG agreed with the list of schemes to be assessed and the removal of the Harford Triangle.	
124	ST	Discussed the Highways schemes which were to be included in the cumulative assessment. Noted that the latest information suggests all projects should be substantially completed prior to DEP and SEP commencing 2024 at the earliest. ST noted a spatial overlap with A47 North Tuddenham to Easton and the Norwich Western Link and stated that the design of the Project would account for this. ST stated that the DCO will consider a worst case that the highways schemes do not get consent and assess the impact of capacity and road safety upon the existing layouts. ST stated that it is proposed that any potential overlap in construction traffic between the highways schemes and DEP	

Number	Attendee	Details	Action
		and SEP would be better managed through the respective construction traffic management plans for all the projects.	
125	GO	Stated that interactions with other major projects should be minimal and projects were working collaboratively to deal with cumulative effects.	
126	ETG	All members of the ETG agreed with this approach outlined above.	
127	EC/ KP	Requested that the cumulative assessment also consider the impact of DEP and SEP construction traffic upon constructed schemes.	
128	ST	ST suggested a proportionate approach could be to consider how the changes in total traffic as a result of DEP and SEP compare to future TEMPro growth forecasts.	
129	EC/ KP	Agreed with this approach.	
130	ST	<p>Discussed the other windfarm schemes which were to be included in the cumulative assessment:</p> <ul style="list-style-type: none"> • Vanguard, construction 2022 to 2024 <ul style="list-style-type: none"> • No consent, decision quashed • If consent regranted, works would be completed prior to DEP and SEP • <u>No cumulative impacts</u> • Hornsea Project Three, construction 2021 to 2027 (peak 2023) <ul style="list-style-type: none"> • Consented, assume outlined DCO construction programme could be delayed by a year • <u>Potential for cumulative impacts</u> • Assessment of overlap of Hornsea Project Three traffic in 2024 with DEP and SEP traffic • Norfolk Boreas <ul style="list-style-type: none"> • Consent to be determined • Scenario 1 - Construction 2024 to 2027 (assuming Vanguard installs ducts) • Scenario 2 - Construction 2023 to 2026 (assuming Vanguard does not install ducts) • <u>Potential for cumulative impacts</u> arising from both construction scenarios <p>Assessment DEP and SEP in 2024 and a worst case of an overlap with Norfolk Boreas Scenario 2</p> <p>CIA to assess the impact with Hornsea and Norfolk Boreas Scenario 2 in 2024.</p>	
131	ETG	All members of the ETG agreed with this approach outlined above.	

Number	Attendee	Details	Action
132	ST	CIA to assess where there could be cumulative effects to traffic. Where caps have been established for the other windfarms a commitment will be made to not exceed these. Where there are no caps further assessment will be undertaken and caps established if required.	
133	MD	Suggested that the OCTMP should include statement on the reviewability of HGV caps.	
AOB			
134	EC	Raised the requirement for protected provisions (S278) and requested a timeline and checklist for the project.	
135	SH	Raised requirement for abnormal loads assessment as an appendix.	
136	All	Additional meeting requested mid – end of August 2021. SM to arrange this with the ETG members	SM
Summary of Actions			
		<p>Equinor/ CD agreed to share more detailed access and compound designs with the ETG members for them to provide written comment.</p> <p>JS/ MD agreed to discuss the access options with the Development Control team and revert with comments and recommendations</p> <p>JS/MD agreed that a crossing at Mangreen Lane would be acceptable. JS/MD to confirm form of crossing (signal/ priority). NCC need to review this junction further and committed to providing feedback.</p> <p>MD/JS committed to discussing an access from the B1149 and mitigation measures with the Development Planning team and providing a formal response.</p> <p>SH to check for existing traffic models and list of junctions for historical data.</p> <p>SM to arrange additional ETG meeting for the end of August 2021.</p>	CD/ JS/ MD/ SH/ SM
Meeting Closed			

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] SM (RHDHV), [REDACTED] ST (RHDHV), [REDACTED] JT
(Equinor), [REDACTED] JS (NCC), [REDACTED] MD (NCC), [REDACTED] AR
(RHDHV)

Apologies: N/A

From: [REDACTED] (RHDHV) (drafted by [REDACTED] (RHDHV))

Date: 31 March 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0034_TrafficandTransport_ETG4_NCC

Classification: Confidential

Enclosures: T&T ETG 4 Meeting 31 March 2022 (1).pptx

Subject: T&T ETG 4 Meeting 31 March 2022 – Norfolk County Council

Number	Attendee	Details	Action
Introductions and agenda			
1	ST	Brief introduction and described the purpose of the fourth meeting of the Traffic and Transport ETG which was to: Provide an update on the Projects; Review the agreement log (Statement of Common Ground Precursor); Discuss any areas where there is no agreement; Provide an overview of the assessment findings; and Agree a way forward.	
Project update			
2	JT	Provided a project update to the ETG, in summary: Extended DCO submission to early summer 2022; Targeted compound consultation has finished – Q1 2022; Environmental assessment and surveys are completed; Public Information Days – Q1 2022. Ongoing: Main ongoing activities are consultation debrief, technical studies, landowner engagement; Review of design parameters following PEIR stage: Refinement of offshore envelope and design parameters. Upcoming: Offshore Temporary Works Targeted Consultation - Q2 2022; DCO submission – early summer 2022; Hoping for a decision by H2 2023.	
Review of previous agreements with NCC (Slide 1 of 4)			
3	ST	For reasons of ease and productivity, there will be a separate meeting with National Highways (NH).	

Number	Attendee	Details	Action
		<p>ST briefly reviewed previous agreements with NCC, summarised below:</p> <p>Traffic and Transport Study Area: Agreed (ETG 3) The extent to the Traffic and Transport study area (zone of influence) was agreed with the ETG.</p>	
	ST	<p>Impact assessment methodology: Agreed (ETG 1) to consider the impact of onshore construction traffic upon: Driver Delay; Severance; Pedestrian and Cycle Amenity; Pedestrian and Cycle Delay; Road Safety; and Abnormal Loads.</p>	ST to liaise with MD.
	MD	<p>Can you confirm whether cumulative impacts had been considered?</p>	
	ST	<p>Confirmation that cumulative impacts are being considered.</p>	
	ST	<p>DCO Documents: Agreed (ETG 1) that a separate Travel Plan would not be required as the information could be contained within the Outline Construction Traffic Management Plan (OCTMP).</p>	
	ST	<p>Transport Assessment (TA): Agreed (ETG 3) that stand-alone TA would be required. It was agreed this would be an abridged TA to include, detail of the derivation of construction traffic demand and distribution, detailed collision analysis and junction capacity modelling.</p>	
	JS	<p>Which port will be used for offshore construction operation? Is a separate travel plan for port operations needed?</p>	
	ST	<p>Currently unsure which port will be chosen, so this is something to be dealt with once the port is known. It will either be dealt with by a new planning application or by choosing a port with existing permissions.</p>	
	All	<p>This approach was agreed with the ETG.</p>	
	ST	<p>Baseline data: Agreed (ETG 3) that the baseline traffic data presented in the PEIR could be utilised for the Development Consent Order (DCO) application, but that the OCTMP would contain a clause that permits further assessment of network capacity constraints at identified sensitive junctions if baseline traffic conditions are evidenced to have changed materially from those of the DCO application post consent.</p>	
	ST	<p>Baseline data:</p>	

Number	Attendee	Details	Action
		Agreed (ETG 3) with assessing impacts against a neutral traffic period. However, Norfolk County Council (NCC) requested that the OCTMP should include measures to manage traffic movements during peak periods to account for seasonal fluctuations [traffic sensitive times for discussion].	
Review of previous agreements with NCC (Slide 2 of 4)			
	ST	Future baseline: Agreed (ETG 1) to use TEMPro to factor baseline flows to a future year and agreed (ETG 2) to consider 2025 as a base year for assessment.	
	ST	Construction traffic demand and distribution methodology: Agreed (ETG 1) a gravity model approach will be used to distribute HGV traffic from the ports of King's Lynn, Great Yarmouth and Lowestoft; and HGV movements from any local suppliers (such as quarries) within the traffic and transport study area would be captured within the existing permissions and do not need to be assessed.	
	ST	Employee distribution: Agreed (ETG 1) with regards to employee distribution, that this would be informed by the availability of workers with relevant skills from census data and the availability of hotel accommodation. The numbers of workers and hotel bed spaces would then be factored using a gravity model with distance deterrence.	
	ST	Accesses and crossings: Agreed (ETG 3) in principle with the location of the proposed accesses and crossings and that outline concepts could be provided within the OCTMP. NCC however asked for further detail prior to the DCO submission with regards to accesses from the B1149, A148 and A140.	
	ST	B1149 Access: Agreed (ETG 3) in principle to access from the B1149 (north west of The Street) for a short duration with enhanced management measures. Enhanced mitigation measures to include a temporary speed limit, banksman, and traffic signals would be required. Noted that only one access would be permitted from the B1149 at same time.	
	ST	A148 Access: Agreed (email 10 December 2022) outline design for access from the A148 to a secondary compound north of Bodham. Subject scheduling works away from the school holiday season.	
	ST	A140 Substation Access:	

Number	Attendee	Details	Action
		Agreed (email 24 March 2022) outline design for an access to the onshore substation from the A140/ Mangreen Lane junction.	
	ST JS/MD	A1 Quarry Access: Agreed Would need to cross Mangreen Lane to get access to quarry. During Public Information Days, the owner of the Hall on Mangreen Lane said that guests have a preference for signal-controlled crossing on Mangreen Lane, rather than 'give way' crossing. Agreement that this wasn't necessary, as level of traffic that uses this road is quite low.	
	ST JS ST	A1067/Old Fakenham Road Access: Agreed (email 10 December 2022) outline design for an access to the main compound from the A1067/Old Fakenham Road junction near Attlebridge. Rights will be acquired to clear hedge. Any feedback from District in terms of landscaping and hedgerow removal? Hedge removal would be temporary and would be replaced once works finish, no specific comments have been made.	
Review of previous agreements with NCC (Slide 3 of 4)			
	ST	Impacts (driver delay, capacity) Not agreed, approach to assessment to be discussed. NCC Section 42 comments note "excessive deliveries should be avoided at traffic sensitive times".	
	ST	Impacts (driver delay, road closures): Agreed (ETG 3) Equinor have committed to trenchless technology (e.g. HDD) to cross all the roads where NCC has requested that this technology is employed. These include all A and B roads as well as 16 other local roads (which include those identified by NCC, namely: Taverham Road, Inkwood Lane, Ringland Lane and Oulton Street). Road closures may occur on smaller roads as a result of cable installation.	
	ST	Impacts (driver delay, highway constraints): NCC reserve their position until submission of the DCO documentation. There is an option for a future meeting with NCC after DCO has been submitted but before NCC begin their local impact report.	
	ST	Impacts (pedestrian delay): NCC reserve their position until submission of the DCO documentation.	

Number	Attendee	Details	Action
	ST	Impacts (Severance): NCC reserve their position until submission of the DCO documentation.	
	ST	Impacts (Pedestrian and cycle amenity): NCC reserve their position until submission of the DCO documentation.	
	ST	Impacts (Road Safety): NCC reserve their position until submission of the DCO documentation.	
	ST	Impacts (abnormal loads): Agreed with NCC structures. Abnormal loads would avoid Hornsea. May have to come off at A47 and onto a local road to bypass a structure; National Highways haven't provided permission to cross structure.	ST to send an update of agreement logs
	ST	Will need to send update of agreement logs and amend it to say this has been agreed with the NCC Structures team but NCC Highways reserve their position.	
	MD	Need consideration of other factors such as width and length, rather than just weight loading.	
	ST	Noted that an abnormal load report for the transformers with this information will be appended to DCO application.	
	JS	Also noted that the size of cable drums used for other wind farms have caused problems in the past, due to their width (4.4m wide).	
	MD	Any load movement over 2.9m requires formal notification to NCC Highways. There are physical restraints on some smaller roads and movement of certain wide loads may be impossible.	
	ST	Currently 'transformer' has been identified as biggest single move. It is not proposed to undertake a detailed assessment of cable drum routeing at this stage as sizes will vary depending on what contractor is appointed and whether they decide to go for bigger and less, or smaller and more. ST however noted that this would also need to be informed by the size of roads being used.	
	ST	Requested confirmation from NCC that they would be happy that the assessments of cable drum movements are dealt with in Construction Traffic Management Plan (CTMP)?	

Number	Attendee	Details	Action
	MD	Agreed that this could be dealt with in the CTMP. There must be reference to this in the Outline Construction Traffic Management Plan (OCTMP).	ST to include statement of commitment in OCTMP
	MD	There also needs to be a general statement that consideration will be made for drum sizes when potential highway constraints determine.	
	ST	OCTMP should contain a clause that says this will be subject to further assessment in conjunction with local authorities. Include statement of commitment in OCTMP.	
	ST	Impacts: Operational and decommissioning Agreed (ETG 2) to scope out consideration of operational and maintenance and decommissioning phases. Assuming minimal traffic demand on onshore phase.	
	ST	Impacts: Offshore construction impacts Agreed (ETG 1) that the traffic impacts associated with employee and HGV movements for the offshore phases via the base port can be scoped out of the assessment.	
Review of previous agreements with NCC (Slide 4 of 4)			
	ST	Cumulative Impacts (schemes to be assessed): Agreed (ETG 3) the list of cumulative schemes for assessment presented within the PEIR were acceptable and that the Hartford Triangle scheme can be removed.	
	ST	Cumulative Impacts (highway schemes): Agreed (ETG 3) that potential cumulative impacts between the construction phases of the identified highways schemes and SEP and DEP could be assessed as part of the respective CTMPs rather than in the DCO application.	
	MD	Can NCC provide any further indication on Western Link, in terms of timescales and development? No more detail can be provided on Western Link. There are three other schemes that may need consideration depending on proposed start of works and duration. Three NH DCO schemes are coming up and two of them could potentially have an impact on SEP & DEP. Burlingham is not really an issue but will need to consider Thickthorn and Tuddenham. NCC is still waiting for information on Tuddenham and Thickthorn commencement of works from NH (no start dates given yet but would assume that works begin end of 2023).	

Number	Attendee	Details	Action
	ST ST MD	<p>Confirmed that these schemes have already been identified for consideration in the cumulative impact assessment.</p> <p>Discussed with NH that the best-case scenario is that they have completed their works and new capacity is there before SEP & DEP begins. Another potential is that there would be construction overlapping of the projects – it was agreed with NCC and NH at ETG that this is better dealt with through the respective CTMPS and would need to coordinate deliveries.</p> <p>NH expect all three of their projects to get DCO summer-September 2022 (potentially they will be done and gone but also could end up with cumulative works).</p>	
	ST	<p>Cumulative Impacts (other windfarms)</p> <p>Agreed (ETG 3) with the approach to assessing potential cumulative impacts with other offshore wind farm schemes. It was agreed that the CIA will:</p> <p>Assess the overlap of DEP and SEP with Hornsea Project Three and Norfolk Boreas (scenario 2) in 2025. Note will now consider potential overlap with Vanguard.</p> <p>Will be consideration of cumulative impact of Hornsea Three, Norfolk Vanguard and SEP and DEP. Boreas not included as this is a cable pulling project.</p> <p>CIA to review agreed caps for Vanguard, Boreas and Hornsea. Where caps have been established, DEP and SEP will include a commitment within OCTMP to not exceeding these limits.</p> <p>Where caps have not been established, the DCO application will assess the potential for cumulative impacts and define additional caps (if required).</p>	
Review/ discussion of Norfolk County Council Outstanding Comments			
	ST	<p><i>NCC Comment: “Excessive deliveries should be avoided at traffic sensitive times on some key routes”</i></p> <p>Peak changes in traffic upon all (but two) A and B roads forming part of the NCC local road network are less than typical day to day fluctuations (10%) in traffic. It is unlikely this will impact on traffic sensitive times.</p> <p>Average changes in traffic would be significantly lower.</p>	
	ST MD	<p>Based upon the information presented, do NCC have any residual concerns related to driver delay? Do NCC consider caps would be required upon the B1149?</p> <p>Morning rush hour can cause bottlenecks in arterial routes (EG in A148, B1150, A1151). SEP and DEP would need to avoid exacerbating these where possible. This is less of an issue in the evening (due to flexible working). NCC would</p>	

Number	Attendee	Details	Action
		need to be shown that some consideration has been made for a different approach to HGV movement during traffic sensitive times, particularly in the morning (between 7:30-9:30am) along key routes. Important to recognise that % change can be concentrated within a narrow time window, not always across the whole day.	
	AR	Would it be useful to repeat exercise for AM peak time?	
	MD	Yes.	
	MD	Focus should be on A and B routes across the county, particularly those close to the city fringe, which are particularly sensitive receptors.	
	AR/ST	Will repeat exercise and share with MD.	
	AR	Compromise would be to have a commitment to this exercise in CTMP.	
	MD	There is an option to put a general statement of intent in the OCTMP and put a caveat that this will be subject to refinement with NCC in the final CTMP.	
	AR	Would a statement of commitment satisfy NCC concerns related to driver delay?	
	MD/JS	Whilst there are still concerns as certain arterial routes still need different considerations during the AM peak, a statement of commitment would be satisfactory in the DCO and NCC would revise at the CTMP stage	
	ST	Will come back to NCC as to what they will decide to do.	ST to come back to MD/JS as to whether there will be a repeat of the exercise or a statement of commitment.
Assessment Findings (slide 1 of 5)			
	ST	<p>The following is a summary of assessment findings, mostly focusing on the mitigation.</p> <p>Driver Delay – highway constraints A total of 57 of the 153 links within the study area are of substandard width to accommodate two-way construction traffic. Forecast traffic volumes associated with DEP and SEP would result in significant impacts upon a total of 37 links. It is proposed to provide an outline of mitigation measures within the OCTMP, these measures would include: Use of pilot/escort vehicles; New passing places;</p>	

Number	Attendee	Details	Action
		<p>Widening/improving existing passing places; Reduction in peak LCV movements.</p> <p>It is proposed that the final form of mitigation would be developed in liaison with NCC and local communities and secured by the OCTMP and DCO Requirement.</p>	
	<p>ST</p> <p>JS/MD</p> <p>MD</p> <p>ST</p>	<p>Does NCC agree with the proposed approach to providing an outline of mitigation measures within the OCTMP?</p> <p>Both content with the proposed strategy,</p> <p>Is it worthwhile including temporary obstruction as a mitigation method? Using signage would allow closure of highway for period of 15 mins in any 1 hour. Need to tell local authority if you are doing it, so would have to be included in the OCTMP.</p> <p>Agree to add this method in.</p>	<p>ST to include temporary obstruction as a mitigation method.</p>
Assessment Findings (slide 2 of 5)			
	<p>ST</p>	<p>Driver Delay – road closures</p> <p>Roads to be crossed by HDD have been agreed with NCC (ETG 3);</p> <p>A total of 21 roads are proposed to be crossed using open cut techniques;</p> <p>All other roads would be crossed using trenchless techniques, e.g. Horizontal directional drilling;</p> <p>Roads to be crossed using trenchless techniques include all A and B roads, as well as 16 other local roads which include those identified by NCC, namely: Taverham Road, Inkwood Lane, Ringland Lane and Oulton Street to also be crossed;</p> <p>Roads would typically be closed for up to two weeks with a temporary diversion implemented (it may be about a week);</p> <p>Access would be maintained at all times for pedestrians and cyclists through the closures;</p> <p>An assessment of diversions indicates that there would be no significant impacts associated with these diversions except for Church Street (link 64, Plumstead) and Reepham Road (link 69, north of Attlebridge);</p> <p>A commitment will be included to within the OCTMP to ensuring that link 69 is not closed and cables are installed under the road using trenchless technology, e.g. HDD;</p> <p>Link 64 is identified as potentially sensitive as a school bus service will be disrupted. A commitment will be included within the OCTMP to undertaking works during school holidays only.</p>	
Assessment Findings (slide 3 of 5)			

Number	Attendee	Details	Action
		An assessment of the DEP and SEPs impacts upon the clusters has been undertaken. The assessment has identified that DEP and SEPs traffic would not exacerbate the baseline road safety conditions at any clusters on the local highway network	
Next Steps			
	ST MD/JS SM	Completion of onshore assessment for the DCO application. Meeting with NCC following DCO submission (prior to draft local impact report?). (could be scheduled for summer) Agree this would be a good idea to schedule a meeting in. SM to schedule a meeting with NCC.	SM to schedule in a meeting once it is known when documents will be with NCC.
AOB			
	MD ST	Request for the ppt. slides on peak traffic information. Send MD ppt. slides on peak traffic information.	ST to send MD ppt. slides on peak traffic.

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] ST (RHDHV), [REDACTED] SM (RHDHV), [REDACTED] JA (RHDHV),
[REDACTED] AR (RHDHV), [REDACTED] GM (AECOM), [REDACTED] AC
(AECOM), [REDACTED] SH (National Highways), [REDACTED] EC (National
Highways)

Apologies: N/A

From: [REDACTED] (RHDHV) (drafted by [REDACTED] (RHDHV))

Date: 05 April 2022

Location: Virtual

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0033_TrafficandTransport_ETG5_NationalHighways

Classification: Confidential

Enclosures: T&T ETG 5 Meeting 5 April 2022 (1).pptx

Subject: Traffic and Transport ETG 5 - National Highways

Number	Attendee	Details	Action
Agenda/Meeting Purpose			
1	ST/EC	<p>Described the purpose of the fourth meeting of the Traffic and Transport ETG which was to:</p> <ul style="list-style-type: none"> ■ Provide an update on SEP and DEP; ■ Review the agreement log (Statement of Common Ground Precursor); ■ Review of National Highways TN03 Comments on the main compound targeted consultation; ■ Provide an overview of the assessment findings and discuss any areas where agreements can be updated; and ■ Agree a way forward. <p>EC requested that it would also be useful to understand where the impacts on the strategic road network (SRN) are.</p>	
Project Update			
	JA	<p>Provided a project update to the ETG, in summary:</p> <ul style="list-style-type: none"> ■ Extended DCO submission to early summer 2022; <ul style="list-style-type: none"> □ Note that 200m wide corridor has been fixed at 60m wide corridor that widens to 100m where there are trenchless crossings. ■ Targeted compound consultation – Q1 2022; ■ Environmental assessment and surveys completed; ■ Public Information Days – Q1 2022. 	

Number	Attendee	Details	Action
		<p>Ongoing:</p> <ul style="list-style-type: none"> ■ Consultation debrief, technical studies, landowner engagement; ■ Review of design parameters following PEIR stage: <ul style="list-style-type: none"> □ Refinement of offshore envelope and design parameters <p>Upcoming:</p> <ul style="list-style-type: none"> ■ Offshore Temporary Works Targeted Consultation- Q2 2022; ■ DCO submission – early summer 2022; ■ Hoping for a decision by Q2 2023. 	
	JA/EC	<p>EC stated that NH had agreed a lot of the matters, and requested that the project provide a document that can be validated in relation to SRN issues? Then NH can sign it off.</p> <p>JA confirmed that the project will submit an agreement log in the next few weeks in advance of application, which pulls out the key decisions relevant to the SRN.</p>	RHDHV/Equinor to circulate an agreement log of key decisions relevant to SRN.
	JA/SH	<p>Queried the change in DCO submission date from the previous ETG meeting and the options for the main construction compound.</p> <p>JA confirmed that at PEIR stage a number of potential locations had been identified and there was consideration of numerous options, but Equinor have now settled on one preferred large main compound at near Attlebridge (there is no third construction compound).</p> <p>JA confirmed the location of the substation next to existing Norwich Main substation and provided a summary of the project construction scenarios and implications for worst-case with regard to cable laying:</p> <ul style="list-style-type: none"> ■ SEP or DEP ■ SEP and DEP Concurrently ■ SEP and DEP Sequentially. <p>SH considered that there would likely be a big topic of discussion at the enquiry. Doing both projects separately may cause longer periods of disruption on the network. NH Would prefer both projects to be done together.</p>	

Number	Attendee	Details	Action
		JA confirmed that this was not something the project can commit to as factors remain out of the projects control (such as funding), therefore flexibility would be required in the DCO application.	
	JA/SH/EC	<p>SH questioned whether the project had been working closely with major projects being developed by National Highways (NH).</p> <p>JA confirmed the assumption that works would be finished at the A47 by the SEP DEP construction date. The project is in contact with Hornsea Project 3 (HP3) HP3 and SEP & DEP cable route will avoid crossing over with HP3 cables at the A47. In the event the A47 works aren't complete by the time SEP & DEP start construction, SEP & DEP would work with HP3 to maintain the mitigation HP3 put in place. This is in the (Outline Construction Management Plan) OCTMP, where numerous scenarios and how they will be managed are set out. Liaison with HP3 is ongoing.</p>	
Review of previous agreements with National Highways (Slide 1 of 4)			
	ST	<p>Stated that the table in slide 4 provides overview of Equinor's understanding of the current areas of agreement and areas where there is currently no agreement. Agreements will form the basis of forthcoming Statement of Common Ground discussions.</p>	
	ST	<p>Traffic and Transport Study Area:</p> <ul style="list-style-type: none"> ■ Agreed (ETG 3) The extent to the Traffic and Transport study area (zone of influence) was agreed with the ETG. 	
	ST	<p>Impact assessment methodology:</p> <ul style="list-style-type: none"> ■ Agreed (ETG 1) to consider the impact of onshore construction traffic upon: Driver Delay; Severance; Pedestrian and Cycle Amenity; Pedestrian and Cycle Delay; Road Safety; and Abnormal Loads. 	
	ST	<p>DCO Documents:</p> <ul style="list-style-type: none"> ■ Agreed (ETG 1) that a separate Travel Plan would not be required as the information could be contained within the Outline Construction Traffic Management Plan (OCTMP). 	
	ST	<p>Transport Assessment (TA):</p> <ul style="list-style-type: none"> ■ Agreed (ETG 3) that stand-alone TA would be required. It was agreed this would be an abridged TA to include, detail of the derivation of construction traffic demand and distribution, detailed collision analysis and junction capacity modelling. 	

Number	Attendee	Details	Action
		Baseline data: <ul style="list-style-type: none"> ■ Agreed (ETG 3) that the baseline traffic data presented in the PEIR could be utilised for the Development Consent Order (DCO) application. 	
	ST/EC/ AC/AR	Baseline data: <ul style="list-style-type: none"> ■ Agreed (ETG 3) with assessing impacts against a neutral traffic period. 	
	ST/EC/ AC/AR	ST confirmed data had been collected November 2021 for junction capacity surveys, as previously agreed with NH (ETG3). Lockdown wasn't in place so should be a representative baseline. NH Technical Note on data collection had been produced which was provided via MS Teams. NH would prefer to confirm that the data collected is of typical longer-term trends. ST suggested that the data should be representative of the 'new normal' rather than historic (pre-covid) trends. NH requested, cross checking the data with the NH data to understand if November 2021 data is representative of the new normal. AS suggested that it may not be proportionate calibrating baseline traffic counts to demonstrate limited impact when there is already safety net of the Manage and Monitor. The projects will focus on capping vehicle flow through the junction if there is a problem.	EC to provide ST with NH Technical Note on data collection. Cross check November 2021 data with Technical Note
Review of previous agreements with National Highways (Slide 2 of 4)			
	ST	Future baseline: <ul style="list-style-type: none"> ■ Agreed (ETG 1) to use TEMPro to factor baseline flows to a future year and agreed (ETG 2) to consider 2025 as a base year for assessment. 	
	ST	Construction traffic demand and distribution methodology: <ul style="list-style-type: none"> ■ Agreed (ETG 1) a gravity model approach will be used to distribute HGV traffic from the ports of King's Lynn, Great Yarmouth and Lowestoft; and HGV movements from any local suppliers (such as quarries) within the traffic and transport study area would be captured within 	

Number	Attendee	Details	Action
		the existing permissions and do not need to be assessed.	
	ST	Employee distribution: <ul style="list-style-type: none"> ■ Agreed (ETG 1) with regards to employee distribution, that this would be informed by the availability of workers with relevant skills from census data and the availability of hotel accommodation. The numbers of workers and hotel bed spaces would then be factored using a gravity model with distance deterrence. 	
	ST	Accesses and crossings: <ul style="list-style-type: none"> ■ Agreed (ETG 3) in principle with the location of the proposed accesses and crossings and that outline concepts could be provided within the OCTMP. NH however asked for further detail prior to the DCO submission with regards to the access from the A47. 	
	ST	A47 Access: <ul style="list-style-type: none"> ■ Agreed (ETG 3) in principle to access from the A47, subject to a review of the preliminary design, a road safety audit and GG104 (GG104 within final CTMP?) <p>ST noted that as the access will only be needed in the NH RIS scheme is not complete, it is proportionate into detail of road safety audit and the GG104 or could these be dealt with by a commitment in the OCTMP?</p> <p>NH agreed that they would be comfortable with a statement of commitment to undertaking the road safety audit and CC104 in the OCTMP.</p>	Insert commitment in OCTMP to undertake road safety audit and GG104.
Review of previous agreements with National Highways (Slide 3 of 4)			
	ST	Impacts (driver delay capacity) – Modelling approach <ul style="list-style-type: none"> ■ Agreed (ETG 3) the junctions to be assessed, the modelling software to be used and the date for capture of baseline data (November 2021) was agreed with NH. 	
	ST	Impacts (driver delay, capacity) <ul style="list-style-type: none"> ■ NH reserve their position until submission of the DCO documentation. 	
	ST	Impacts (driver delay, road closures) <ul style="list-style-type: none"> ■ Agreed (for discussion) NH requested further assessment of impacts upon the SRN due to diverted traffic from road closures. 	
	ST	Impacts (driver delay, highway constraints) <ul style="list-style-type: none"> ■ Agreed (ETG 3). 	
	ST	Impacts (pedestrian delay) <ul style="list-style-type: none"> ■ Agreed (ETG 3). 	

Number	Attendee	Details	Action
	ST	Impacts (Severance) <ul style="list-style-type: none"> ■ Agreed (ETG 3). 	
	ST	Impacts (Pedestrian and cycle amenity) <ul style="list-style-type: none"> ■ Agreed (ETG 3). 	
	ST	Impacts (Road safety) <ul style="list-style-type: none"> ■ Not Agreed (ETG 3) NH have requested further evaluation of road safety impacts. 	
	ST	Impacts (abnormal loads) <ul style="list-style-type: none"> ■ Not Agreed (for discussion). 	
	ST	Impacts: Operational and decommissioning <ul style="list-style-type: none"> ■ Agreed (ETG 2) to scope out consideration of operational and maintenance and decommissioning phases. 	
	ST	Impacts: Offshore construction impacts <ul style="list-style-type: none"> ■ Agreed (ETG 1) that the traffic impacts associated with employee and HGV movements for the offshore phases via the base port can be scoped out of the assessment. Confirmed that abnormal loads for offshore will not travel via road, will be loaded onto a ship from manufacturer and taken straight offshore. 	
Review of previous agreements with National Highways (Slide 4 of 4)			
	ST	Cumulative Impacts (schemes to be assessed) <ul style="list-style-type: none"> ■ Agreed (ETG 3) the list of cumulative schemes for assessment presented within the PEIR were acceptable and that the Hartford Triangle scheme can be removed. 	
	ST	Cumulative Impacts (highway schemes) <ul style="list-style-type: none"> ■ Agreed (ETG 3) that potential cumulative impacts between the construction phases of the identified highways schemes and SEP and DEP could be assessed as part of the respective CTMPs rather than in the DCO application. 	
	ST	Cumulative Impacts (highway schemes) <ul style="list-style-type: none"> ■ Agreed (ETG 3) that the cumulative impact assessment consider the potential for cumulative impacts from SEP and DEP upon the operational capacity of the constructed Road Investment Strategy (RIS) schemes. NH, agreed to exclude the A47 Great Yarmouth as not enough information at this stage. 	
	ST/EC	Cumulative Impacts (other windfarms) Agreed (ETG 3) with the approach to assessing potential cumulative impacts with other offshore wind farm schemes. It was agreed that the CIA will:	EC to check if any NH projects have come forward.

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> □ Assess the overlap of DEP and SEP with Hornsea Project Three and Norfolk Boreas (scenario 2) in 2025. Note will now consider Norfolk Vanguard □ CIA to review agreed caps for Vanguard, Boreas and Hornsea. Where caps have been established, DEP and SEP will include a commitment within OCTMP to not exceeding these limits. □ Where caps have not been established, the DCO application will assess the potential for cumulative impacts and define additional caps (if required) <p>ST confirmed previous schemes considered include Vanguard, Tuddenham, Burlingham, Great Yarmouth and Thickthorn.</p> <p>Long Stratton bypass expected to be finished before SEP & DEP start.</p> <p>NH previously didn't want SEP & DEP to take up all the new operational capacity produced by the Road Investment Strategy (RIS) schemes.</p> <p>EC to check Great Yarmouth RIS scheme and provide an update. This should be dealt with in the CTMP.</p>	<p>EC to provide an update on Great Yarmouth RIS scheme.</p>
TN03 Review (Slide 1 of 3)			
	ST/AC/EC	<p>It was agreed with NCC and NH at ETG 3 that the cumulative impacts should be considered within the OCTMP for the respective projects as no information is available with regards to the Norwich Western Link.</p> <p>Q: Can NH confirm that no further commitments are required beyond those proposed for within the OCTMP.</p> <p>AC questioned whether the construction compound site selection acknowledged the Norwich Western Link, is it behind SEP & DEP timescale wise?</p> <p>ST confirmed no firm timescale on Norwich Western Link and are working on basis it doesn't go ahead so will use existing road network. This is the worst-case scenario.</p> <p>Information online suggests it is going ahead but may be built a lot later than anticipated. It is a major road network (MRN) scheme.</p>	

Number	Attendee	Details	Action
		Agreed that having a commitment to consider it in OCTMP, considering there are no planning information or definitive timescales, is acceptable to NH.	
TN03 Review (Slide 2 of 3)			
	ST	<ul style="list-style-type: none"> ■ The TA will include detail of traffic derivation, and distribution for SEP and DEP. ■ The TA will include detail analysis of traffic flows through all junctions identified by NH at ETG3. ■ The OCTMP will include detail of prohibited routes. This will include those identified by NH. 	
TN03 Review (Slide 3 of 3)			
	ST/AC	<ul style="list-style-type: none"> ■ The TA will include detail of traffic derivation, and distribution for SEP and DEP. ■ The TA will include detail analysis of traffic flows through all junctions identified by NH at ETG3. <p>AC requested a copy of the presentation. NH to then confirm issues identified in Technical Note 3 have been addressed or there is a commitment to address them in the OCTMP.</p>	ST to send AC a copy of the presentation.
Assessment Findings (slide 1 of 8)			
	ST	<p>Driver Delay – highway constraints</p> <ul style="list-style-type: none"> ■ A total of 57 of the 153 links within the study area are of substandard width to accommodate two-way construction traffic. ■ Forecast traffic volumes associated with SEP and DEP would result in significant impacts upon a total of 37 links. ■ It is proposed to provide an outline of mitigation measures within the OCTMP, these measures would include: <ul style="list-style-type: none"> □ Use of pilot/escort vehicles □ New passing places □ Widening/improving existing passing places □ Reduction in peak LCV movements ■ It is proposed that the final form of mitigation would be developed in liaison with NCC and local communities and secured by the OCTMP and DCO Requirement. 	
Assessment Findings (slide 2 of 8)			
	ST	Driver Delay – road closures	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ A total of 21 roads are proposed to be crossed using open cut techniques ■ All other roads would be crossed using trenchless techniques, e.g. Horizontal directional drilling ■ Roads to be crossed using trenchless techniques include all A and B roads, as well as 16 other local roads which including Broom Lane identified by National Highways. ■ The Colton Road and the Unnamed Road are proposed to be open cut. 	
Assessment Findings (slide 3 of 8)			
	<p>ST/AC</p> <p>AC</p> <p>ST</p>	<p>Driver Delay – road closures (continued)</p> <ul style="list-style-type: none"> ■ Roads would typically be closed for up to two weeks with a temporary diversion implemented ■ Access would be maintained at all times for pedestrians and cyclists through the closures ■ Closures would not divert traffic via the strategic road network ■ Closures to be scheduled to ensure they are undertaken sequentially ■ No significant impacts have been identified. <p>Q: Do National Highways agree that the impacts of road closures upon the SRN are acceptable?</p> <p>None of the diversion routes will use the SRN. Official diversion routes will be sign posted. Diversions will divert small amounts of traffic onto roads that already have small amounts of traffic, and roads won't be congested.</p> <p>The OTCMP will contain a commitment to where a road won't be closed and CTMP will include diversion routes.</p>	
Assessment Findings (slide 4 of 8)			
	ST	<p>Severance, Amenity and Pedestrian Delay</p> <ul style="list-style-type: none"> ■ A total of 74 of the 156 links are screened into the assessment ■ Adverse impacts upon amenity are identified for 14 links. ■ No adverse impacts upon severance are identified. 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ No adverse impacts upon pedestrian delay are identified. ■ A range of mitigation measures would be set out and secured in the OCTMP. ■ Mitigation measures for amenity will focus upon reducing peak vehicle movements (a cap) through: <ul style="list-style-type: none"> □ Commitments to travelling planning measures for employees, such as car-share targets; □ Commitments to reducing peak HGV movements, through scheduling of activities. 	
Assessment Findings (slide 5 of 8)			
	ST	<p>Road Safety</p> <ul style="list-style-type: none"> ■ A review of potential collision clusters within the traffic and transport study area was undertaken, considering the five-year period, prior to Covid-19 (January 2015 – January 2020). ■ A total of 37 cluster locations have been identified. ■ An assessment of the DEP and SEPs impacts upon the clusters has been undertaken. ■ The assessment has identified that DEP and SEPs traffic could exacerbate the baseline road safety conditions at one location on the A47 where there is an existing pattern of collisions involving turning vehicles at a layby. ■ Mitigation measures would include provision of new warning signage and would be captured within the OCTMP. <p>Confirmed that analysis will be in the TA and the details of mitigation in the layby will be in the OCTMP.</p>	
Assessment Findings (slide 6 of 8)			
	ST/AC/EC	<p>Road Safety</p> <ul style="list-style-type: none"> ■ National Highways S42 TN02 noted that: <i>A full detailed collision analysis, of the locations stated in Recommendation 2 from TN01, should be carried out. (para 3.4)</i> <p>Q: Do National Highways consider that additional analysis above that presented below is required? (see screenshot presented in slide 16).</p>	EC to confirm with Kim and come back to ST with any additional comments on safety analysis.

Number	Attendee	Details	Action
		<p>is a small structure. This route will be submitted at DCO and will have to go over this Culvert. There are a number of ways this would work:</p> <ol style="list-style-type: none"> 1) The Culvert is repaired/replaced; 2) There is further assessment of Culvert confirms crossing it will not be a problem; 3) Would need a temporary deck to cross it (either using bridge or steel plates). <p>ST confirmed the project has been working closely with the Abnormal Loads team.</p> <p>Cannot avoid Culvert and if it's not replaced, we will need to go over it, which may require a temporary structure to be put in place and an overnight closure.</p> <p>NH to come back with formal comments on this proposal. EC to liaise with colleagues to see if there are any ways to deal with the crack in the Culvert.</p>	<p>the Culvert proposal.</p>
Assessment Findings (slide 7 of 8)			
		<p>Driver Delay - Capacity</p> <ul style="list-style-type: none"> ■ Modelling work is still progressing. Initial outputs indicate baseline capacity issues in the network peak hours at the locations of the RIS schemes <p>Q: Do NH consider that assessment of junctions that will be improved as part of the RIS schemes can be deferred until post consent as part of the CTMP?</p> <p>AR Feels like a lot of work micro assessing junctions which will be removed/ improved as part of the RIS schemes. Could assessment be stopped at the baseline, note there are capacity issues there and then outline scenarios in CTMP? In event that RIS scheme doesn't come forward , SEP and DEP would have to agree an acceptable demand through these junctions.</p> <p>Will know the outcomes of the RIS DCO in six months and have more clarity/answers on this in a relatively short time period. ETG Agreed that it doesn't seem reasonable to do too much work before this.</p> <p>ST confirmed weekday SEP and DEP working hours 7am to 7pm, discussion regarding hours to be assessed (a proportionate assessment). Considered that noting the</p>	

Number	Attendee	Details	Action
		<p>working hours the majority of the workforce will arrive before and depart after the conventional peak hours.</p> <p>it would be proposed to load all the peak SEP and DEP demand am and pm demand on the hour before and after the network peak hours.</p> <p>NH agreed this approach is acceptable as it's assessing the worst-case scenario not an unrealistic scenario.</p>	
Next Steps			
	EC	EC Will send a draft of what DCO should include in terms of protected provisions.	EC to send ST what to include for protected provisions.
	ST/AR	Confirmed TIMP (traffic incident management plan) would be included in the CTMP.	
	EC	Further meeting after DCO submission was considered beneficial. If feasible, a meeting before then to provide an update on how things are going would be useful.	SM to set another meeting date with NH.
	ST/SM	ST/SM will update agreement logs and these will be issued with the meeting minutes and slides following this meeting.	SM/ST to update agreement logs and issue
Any other Business			
	ST/EC	<ul style="list-style-type: none"> ■ Completion of onshore assessment for the DCO application. ■ Would be useful to have a meeting with National Highways following DCO submission (prior to draft local impact report?). <p>EC suggested to avoid an issue with the modelling in the report, it would be useful to engage with NH and share modelling information (even if not included in final document).</p> <p>NH to review and provide a rapid response to confirm modelling is okay. NH would need an indication of when this information will be shared so AC can ensure he has the capacity to review modelling.</p>	ST to confirm with NH whether modelling will be shared for review.

1.7 Seascape, Landscape and Visual Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (LB) – Natural England; [REDACTED] (TC) – South Norfolk and Broadland District Council; [REDACTED] (CB) – Norfolk North District Council; [REDACTED] (ZT) – Norwich City Council; [REDACTED] (OV) - Equinor; [REDACTED] (MC) – Equinor, [REDACTED] (MW) - RHDHV; [REDACTED] (RS)– RHDHV; [REDACTED] (AP)– RHDHV; [REDACTED] (PB) – LDA Design; [REDACTED] – LDA Design

Apologies: [REDACTED] (SB) – Norfolk North County Council, [REDACTED] (GC) – AONB, [REDACTED] (JA) – Historic England

From: Royal HaskoningDHV

Date: Monday, 23 March 2020

Location: skype

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-PM-0010

Classification: Project related

Enclosures: ETG meeting slides

Subject: DEP and SEP Landscape ETG

Number	Details	Action
Introductions and Purpose of the meeting		
1	Following introductions, MW outlined the agenda, purpose and aims of the meeting. Please refer to the ETG meeting slides. MW also discussed the wider context of the meeting and future ETGs.	RHDHV to issue ETG meeting slides with these minutes.
Project Update		
2	<p>OV summarised the project and consenting approach. Please refer to ETG meeting slides. Scoping report was submitted on 8th October 2019 and scoping opinion was received on 18th November 2019. DCO application is scheduled for Q3 2021.</p> <p>The onshore site selection process is ongoing with a series of internal workshops that took place in December 2019 and January 2020. The process involved specialists from various disciplines including onshore ecology specialists. The current focus of site selection is to narrow down the 1km wide cable corridor scoping area to identify a 200m wide corridor for surveys to be undertaken during 2020. OV explained the 200m survey corridor will be further reduced (down to c.45m and wider in HDD areas) for the DCO application.</p> <p>CB stated that consulting local communities on two different cable corridor routes might potentially lead to conflict between the communities. This was an issue for Norfolk Vanguard and Boreas projects.</p>	

Number	Details	Action
	<p>MC stated that the landfall decision will be driven by results of technical feasibility study. It is anticipated single preferred landfall will be chosen by 1st June 2020. Equinor has already contacted some of the parish councils, however the team is not planning consult communities on which route to choose.</p> <p>LB asked if other projects (Hornsea Three etc.) will be also taken into consideration when choosing the landfall as both Weybourne and Bacton are really busy. MC stated that this also be taken into account although technical risks are considered to be more important.</p>	
4	<p>MC stated that nine substation areas have been identified as part of the substation site selection process (see attached slides). These areas far greater than area required for the substation (approximately 200m x 200m). We were planning to consult these areas with stakeholder which is not possible for now. These sites were presented during the meeting with Swardeston Parish Council.</p> <p>MC stated that by Q1 2021 1-2 preferred locations will be selected.</p>	
Baseline information and assessment approach		
4	<p>PB introduced LDA Design team to the ETG and listed District landscape character assessments that will be used as the baseline for assessing landscape effects (please see ETG slides).</p>	
5	<p>PB presented a list of sources to be used to inform the landscape impact assessment and asked if ETG agree with the list.</p> <p>CB stated that AONB is working on the new management plan which will be available early next year. CB stated that as far as she knows the landscape guidance for the AONB will not be update but this should be confirmed with AONB.</p> <p>RT confirmed that Broadland and South Norfolk districts do not have plans to update their landscape character assessments.</p> <p>Both RT and CB confirmed that they agree that the North Norfolk, Broadland and South Norfolk district landscape character assessments should be used as the baseline for assessing landscape effects, informed by other reports and assessments.</p>	
6	<p>The ETG agreed with the presented list of visual receptors.</p> <p>RT stressed that the Roman town (Venta Icenorum) is a key receptor when assessing the substation. PB confirmed that people visiting the Roman town will be visual receptors assessed in the LVIA depending on the prosed development, because it is accessible to the public.</p> <p>CB stressed that horse riders should be covered. PB confirmed that they will be and that bridleways are included in the assessment.</p>	

Number	Details	Action
	<p>CB asked if permissive paths would also be taken into account during the visual impact assessment. PB confirmed that information on permissive paths is not readily available as these paths are provided by private landowners. However, if any information on permissive paths is available they will be included in the assessment.</p>	
7	<p>The ETG agreed that Norfolk Coast AONB should be taken into account in the LVIA for onshore works, and that North Norfolk Heritage Coast and the Broads National Park would not be affected by onshore development and are scoped out.</p> <p>CB stated that historic parks and gardens should be treated as historic designated landscape. PB confirmed that if these areas are open to public then effects on views from them will be considered as part of visual assessment. Effects on historic parks and gardens as historic designated landscapes will be part of cultural heritage assessment, and not the LVIA.</p>	
8	<p>South Norfolk Local Plan Development Management Policies Document Policy DM 4.5 protects Landscape Character and River Valleys in particular Rural River Valleys and Valley Urban Fringe landscape character types</p> <p>RT stressed that policy covers all landscapes but the particular ones are as listed in the presentation.</p>	
9	<p>ETG agreed with the list of landscape designations and areas or features protected by policy for consideration with regard to onshore landscape and visual impact assessment.</p> <p>CB stated that she is concerned if heritage aspects (e.g. Conservation Areas) are separated from the landscape. PB confirmed that these will be cross referenced in the assessment, but topics will be assessed separately to avoid repetition. PB stated that the LVIA will assess views from publicly accessible locations within a Conservation Area, but effects on the setting of a Conservation Area will be assessed in the heritage assessment and not the LVIA.</p> <p>RT stated that he doesn't think that Broadland District Council has any specific designations and areas or features protected in their policies relevant to LVIA, but RT will double check and come back to the ETG.</p>	
10	<p>It was agreed that South Norfolk District Council and Norwich City Council will be consulted to agree representative viewpoints for the onshore substation.</p>	
11	<p>ETG agreed with the list of potential impacts for assessment with regard to onshore development (see presentation slides).</p>	

Number	Details	Action
12	ETG agreed with the approach to the assessment of effects on residential visual amenity (see presentation slides).	
13	ETG agreed with the approach to the assessment of effects on the Qualities of Natural Beauty of the AONB within the LVIA (see presentation slides). [Note: the AONB Partnership sent was not able to attend the meeting so will be consulted separately on this.]	
14	<p>ETG agreed with this approach to the preparation of visuals for LVIA and SLVIA (see presentation slides).</p> <p>RT stressed that impacts from security lighting at the substation should be considered in the assessment. MC stated lights should be low level and targeted and therefore no significant impact should be expected however the design is yet to be developed</p> <p>TR also stated that winter photos also needed to compliment the summer survey. PB agreed to take these comments on board consider additional winter photography.</p>	
15	ETG agreed that feedback from the scoping opinion has been sufficiently understood and will be adequately addressed through the approach to assessment of onshore and offshore works, for EIA.	
16	<p>ETG agreed with the approach to the tree and hedgerow assessment (see presentation slides), but that further detail has yet to be defined by Equinor on matters such as replacement and 'no net loss' for trees that may need to be removed.</p> <p>TR stressed that a lot of trees in Norfolk are not covered TPOs and therefore he advised that the assessment of trees should take a conservative approach.</p> <p>It was agreed that replanting trees if required will have to be considered on the case by case basis.</p> <p>CB advised that historical maps should be reviewed during the assessment to help identify old trees.</p> <p>MW confirmed that scrub areas will be identified during phase 1 habitat surveys.</p>	
AOB		
17	It was agreed that Seascape meeting will be take place separately on 30 th or 31 st March so that AONB and relevant personnel at North Norfolk District can attend.	MW to organise the meeting.

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (LB) – Natural England; [REDACTED] (RY) – Norfolk North District Council; [REDACTED] (CB) – Norfolk North District Council; [REDACTED] (KT) – Norfolk North District Council; [REDACTED] (RG) – Norfolk North District Council; [REDACTED] (OV) - Equinor; [REDACTED] (MC) – Equinor; [REDACTED] (ME) – Equinor; [REDACTED] (MW) - RHDHV; [REDACTED] (RS) – RHDHV; [REDACTED] (AP)– RHDHV; [REDACTED] (JA) – RHDHV; [REDACTED] (PB) – LDA Design; [REDACTED] (MS) – LDA Design

Apologies: [REDACTED] (SB) – Norfolk North County Council, [REDACTED] (GC) – AONB

From: Royal HaskoningDHV
Date: Monday, 30 March 2020
Location: skype
Copy:
Our reference: PB8164-RHD-ZZ-OF-MI-PM-0011
Classification: Project related
Enclosures: ETG meeting slides

Subject: DEP and SEP Seascape ETG

Number	Details	Action
Introductions and Purpose of the meeting		
1	Following introductions, MW outlined the agenda, purpose and aims of the meeting. Please refer to the ETG meeting slides.	RHDHV to issue ETG meeting slides with these minutes.
Project Update		
2	<p>OV summarised the project and consenting approach. Please refer to ETG meeting slides. Scoping report was submitted on 8th October 2019 and scoping opinion was received on 18th November 2019. DCO application is scheduled for Q3 2021.</p> <p>The onshore site selection process is ongoing with a series of internal workshops that took place in December 2019 and January 2020. The process involved specialists from various disciplines including onshore ecology specialists. The current focus of site selection is to narrow down the 1km wide cable corridor scoping area to identify a 200m wide corridor for surveys to be undertaken during 2020. OV explained the 200m survey corridor will be further reduced (down to c.45m and wider in HDD areas) for the DCO application.</p> <p>CB asked if using Sheringham Shoal or other cable corridors could be used. JA explained that the previous projects did not consider space required for future projects as this information is not available, for example 10m separation for additional ducting would be required which would increase the land requirements significantly.</p>	

Number	Details	Action
	<p>OV stated that the landfall decision will be driven by results of technical feasibility study. It is anticipated single preferred landfall will be chosen by 1st June 2020.</p> <p>RG suggested that Bacton landfall should be considered even if it means that the offshore cable will have to cross the multiple pipelines or following disused pipelines to avoid MCZ. He advised that further conversations with pipeline operators should be undertaken. ME explained that the cable corridor search area west of Bacton is 1km wide but the project would aim to stay as close to the Bacton pipelines as safely possible. CB and KW stated that there are also constraints onshore that should be considered. Stakeholder fatigue near Waybourne area will be an issue even if the option is more environmentally friendly.</p> <p>ME stated that following Hornsea 3 cable corridor would be extremely difficult due to the constraints along the cable corridor (additional 45m wide corridor is required).</p> <p>JA explained that the cable relay station will not be required for this project.</p>	
4	<p>OV stated that nine provisional substation areas have been identified as part of the substation site selection process (see attached slides). Q1 2021 1-2 preferred locations will be selected.</p>	
Baseline information and assessment approach		
4	<p>In 2019 MMO issued a document detailing the approach to seascape sensitivity assessment. PB confirmed that the assessment will follow approach set out in this document to develop the baseline and assess sensitivity of the seascape.</p> <p>CB asked if surveys will be also undertaken offshore. PB stated that the surveys will only be undertaken from land and the intertidal landscape will be covered as part of the assessment.</p>	
5	<p>The ETG agreed the list of visual receptors (please see ETG presentation). PB confirmed that the assessment will cover offshore workers including fishing boats.</p> <p>RG recommended high ground areas should be covered by the assessment.</p>	
6	<p>No seascape designations identified for the assessment. However, following onshore designations will be taken into account: Norfolk Coast AONB, North Norfolk Heritage Coast and the Norfolk Broads National Park. PINs scoping opinion asks for the effects of offshore development on the Norfolk Broads National Park to also be included in the assessment.</p>	

Number	Details	Action
7	<p>The ETG agreed with the list of sources for desk-based assessment with regard to offshore seascape and visual impact assessment presented on the attached ETG slides.</p> <p>The ETG agreed that the Seascape character area assessment East Inshore and East Offshore marine plan areas, Marine Management Organisation 2012 should be used as the baseline for assessing landscape effects, informed by other documents and site assessment.</p>	
8	<p>It was agreed that viewpoints for assessment of the offshore development will be consulted with North Norfolk Council, Norfolk Coast AONB Partnership and Natural England. It was suggested that the Wash EMS should be consulted, however it was agreed that the seascape issues sit outside of their area of expertise. It was agreed that the PB will contact the Wash EMS to check if they can provide any relevant information for the assessment.</p>	
9	<p>The ETG agreed with the list of potential impacts for assessment with regards to offshore development and the approach to the assessment as presented on the ETG slides.</p> <p>ME stated that the each of the projects (Dudgeon and Sheringham extension projects) will be assessed on their own and cumulatively.</p> <p>PB that other confirmed other windfarms projects will be considered as part of the cumulative assessment.</p>	
10	<p>ETG agreed that feedback from the scoping opinion has been sufficiently understood and will be adequately addressed through the approach to assessment of offshore works, for EIA.</p>	
11	<p>The ETG agreed to the proposed approach to further consultation with the ETG. LDA Design will be consulting relevant ETG members on the selection of representative viewpoints and the study areas informed by Zone of Theoretical Visibility analysis. The next ETG meeting will be either post-PEIR submission, or earlier if it is considered necessary.</p>	
12	<p>MW stated that public consultations are currently on hold due to coronavirus and the project is still developing an approach to the consultations.</p> <p>ME confirmed that the Public Information Days planned for March were cancelled and no consultations are planned in near future, due to restrictions caused by coronavirus. ME confirmed that there is certain decision that the project will need to be consult with public. It is acknowledged that some of the surveys programme might potentially be delayed.</p>	

Number	Details	Action
	RG suggested that the material for the Public Information Days could be shared with the local parish councils.	
AOB		

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (LDA Design), [REDACTED] (LDA Design), [REDACTED] (RHDHV), [REDACTED] (Equinor), [REDACTED] (RHDHV), [REDACTED] (Equinor), [REDACTED] (LDA Design), [REDACTED] (Natural England), [REDACTED] (North Norfolk District Council), [REDACTED] (Norfolk County Council), [REDACTED] (Natural England), [REDACTED] (Equinor)

Apologies: [REDACTED], [REDACTED] (South Norfolk and Broadland District Council), [REDACTED] (Norwich City Council), [REDACTED] (Norfolk Coast Partnership)

From: [REDACTED]
Date: 21 July 2021
Location: Online
Copy:
Our reference: PB8164-RHD-ZZ-OF-MI-Z-0016_SLVIA ETG2 Part 1 of 2 July2021
Classification: Confidential
Enclosures: 727_ETG-Mtg_SVIA+LVIA_July_Final_210719

Subject: Seascape, Landscape and Visual Impact ETG 2

Number	Attendee	Details	Action
Introduction			
1	PB	Provided an introduction to the ETG meeting and an overview of the agenda followed by introductions from all attendees.	
2	SC/JT	Provided an overview of the project and updates to the ETG, describing the route refinement process and the integrated approach to studies. Confirmed that site and compound assessments are still ongoing.	
Chapter 27: Seascape and Visual Impact Assessment			
Review of Previous Consultation, Agreements and Project Response			
3	PB	<p>Provided a review of previous consultation, agreements, and project responses (see attached, slides 7-11). It was confirmed that the ETG agreed with the following, as presented in PEIR Chapter 27:</p> <ul style="list-style-type: none"> • The data sources (i.e. character assessment, SPDs and Management Plans) used for the SVIA. • The seascape, landscape character areas / types identified and assessed in the SVIA. • The visual receptors identified and assessed in the SVIA. • The designated landscapes identified and assessed in the SVIA. 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> The list of potential impacts assessed for the offshore development. The approach to the assessment of effects on the Special Qualities of Natural Beauty of the AONB within the LVIA. The proposed approach to the visualisations. <p>ETG members had no comment on the points raised.</p>	
4	CG	Stated that the Norfolk Coast AONB was due to publish a new 5 year management plan which would be a useful reference for the project.	
Consultee Comments: Norfolk Coast Partnership (NCP)			
5	CG	<p>Identified that NCP were not present at the meeting and have requested that further consultation is undertaken via email.</p> <p>In relation to offshore array & seascape views, detailed the following comments from NCP:</p> <ul style="list-style-type: none"> <i>“The visual Impact of the turbines differs at different times of the year and different times of the day. Certainly some days the coastline can look highly industrialised with a continuous line on the horizon. An LVIA needs to show impacts from different conditions.”</i> <p>Stated that four targeted consultation responses have been made in relation to the visibility of wind turbines at varying times of day and weather conditions. Confirmed that the assessment would take account of this, with worst case being maximum visibility to avoid underplaying effects.</p> <p>CB Considered that the new AONB management plan may be helpful and requested a publication date.</p> <p>Queried the relationship between NCP and Natural England (NE), in terms of the advice that is provided by the two organisations.</p>	<p>Equinor to respond to NCP consultation via email.</p> <p>CB to provide update on new management plan</p>
6	LB	Affirmed that NE are not decision makers, but have an advisory role. NCP have considerable local knowledge which NE would defer to. NE’s remit is focussed around the special qualities of the AONB and the statutory mechanism by which the site is designated. NE’s advice would typically focus of the technical elements whilst NCP will provide the local perspective.	
7	LB	Stated that NE’s advice in terms of visual impacts to the AONB in addition to the existing windfarms was unlikely to change and that the decision by the examiners would rely on professional judgement.	HM to forward response to other stakeholders

Number	Attendee	Details	Action
		Was conscious that not all ETG members had seen NE's advice and as such had requested Helen Mann (NE) to forward this onto the LPA's and ETG members.	
8	CB/ LB	Discussed the role of NE and North Norfolk District Council (NNDC). NE's focus is predominantly seascape, which for them is going to be the biggest impact, and NNDC predominantly has focus on land-based issues. CB noted that seascape views from the land were an important issue.	
Consultee Comments: North Norfolk District Council			
9	CG	<p>Provided a summary of NNDC comments (see attached, slide 14). Discussed comments in light of experience from the existing Dudgeon windfarm, and whether the predicted and actual impacts differed.</p> <p>Confirmed that the existing Dudgeon windfarm would form part of the baseline assessed against.</p>	
10	LB	Commented that when Dudgeon and Sheringham Shoal were submitted, there were very few windfarms that had been constructed, highlighting the limitations of photomontages and wireframes compared to the real visual significance of the built projects.	
11	LB/ CG	Discussed and agreed on the importance of following the most recent guidance and to learn from these previous examples. Referenced recently published reports by White Associates - which compared predicated and actual visual impacts of windfarms off the Welsh Coast. This research was considered important in calibrating professional judgement when undertaking the assessments of the project, along with experience of other developments, including Dudgeon.	
12	CG	Confirmed the operational period of the project to be 35 years, which is the duration of time assessed. Any potential extension would be granted under a separate planning application and would be assessed separately on its own merit.	
13	CG	In relation to the windfarm extensions and potential impacts to dark skies character of North Norfolk, confirmed night-time photomontages from three viewpoints would be included.	
Consultee Comments: Natural England			
14	LB	Confirmed that Andrew Baker had collated the responses for NE but was unable to attend the meeting.	
15	CG	Summarised NE comments into 18 points (see attached, slides 15-17)	
16	CG/ LB	<p>In relation to:</p> <ol style="list-style-type: none"> 1) Concern focused on the part of the AONB as defined by North Norfolk Heritage Coast (NNHC) 	

Number	Attendee	Details	Action
		LB confirmed that the NE's concern focuses most on the heritage coast area of the AONB, this advice followed recent experience from the EA1 and EA2 examinations.	
17	CG/ LB /SC	<p>In relation to:</p> <p>2) Potential conflict with mitigation measures sought for other topics</p> <p>LB discussed the potential conflict in mitigation proposed by SVIA and other chapters, such as offshore ornithology. Areas and locations of wind turbines indicated as having less impact visually are in areas of higher sensitivity for ecological receptors including birds. Stressed that both the height and the location of the turbines should be considered.</p> <p>SC stated that the project was currently looking at feedback from all stakeholders and ETG meetings to look at how the project envelope can be refined whilst reaching a balance between any conflicting areas.</p>	
18	CG	<p>In relation to:</p> <p>3) Existing significant adverse effect on the statutory purpose of the AONB, chiefly through Sheringham Shoal (Para 1.1 and 40). Race Bank in isolation does not give rise to significant effects on purpose of AONB (para 17)</p> <p>Confirmed understanding of the comment.</p>	
19	CG	<p>In relation to:</p> <p>4) Agree fewer tallest turbines is worst case scenario (para 11)</p> <p>Discussed the worst case scenario presented at PEIR, which was considered to be fewest largest turbines. The maximum height parameter was confirmed as 325m (26MW).</p>	
20	CG	<p>In relation to:</p> <p>5) SLVIA Methodology is suitable for assessing effect on landscape and visual receptors located within the NCAONB and NNHC. (para 22)</p> <p>CG welcomed confirmation of the suitability of the methodology for assessing the effect on the AONB and Heritage Coast.</p>	
21	CG/ LB	<p>In relation to:</p> <p>6) Assessment to incorporate a comparison with existing windfarms (1.5)</p> <p>CG discussed the requirement for calibration of the assessment against the baseline, which includes the existing</p>	NE to confirm point 6

Number	Attendee	Details	Action
		<p>windfarm arrays. Confirmed that LDA Design were not proposing to include a technical appendix detailing a 'before and after' comparison of the existing windfarms, but judgements would be calibrated against the increasing body of experience, and reviews of relevant technical reference documents (such as those authored by the White Consultants).</p> <p>LB suggested that she believed this to be the overarching view of NE but would need to confirm with Andrew Baker.</p>	
22	CG	<p>In relation to:</p> <p>7) Assessment approach for effects on designated landscapes is sufficiently rigorous and adequate</p> <p>CG welcomed the comment</p>	
23	CG	<p>In relation to:</p> <p>8) Seascape baseline and assessment agreed for SCA 03, 07 and 09 (para 24)</p> <p>CG welcomed comment</p>	
24	CG/ LB	<p>In relation to:</p> <p>9) Agreement on offshore assessments for 7 Landscape Character Types (LCT). Disagreement for 4 LCTs due to differences with regard to ratings, and judgements leading to disagreement on significance (para 25 -31)</p> <p>10) Regarding viewpoints, 7 of 14 DEP viewpoints (VPs) agreed, disagreement for all of SEP assessments (paras 36-40)</p> <p>11) Regarding effect on the AONB, little difference between the Applicant's judgement and NE. NE suggested this is simply a matter of a difference in professional judgement and interpretation of the evidence (para 57)</p> <p>Confirmed that NE disagreed in the significance of effect for 4 LCTs.</p> <p>LB stated that the assessments were adequate, and were not being challenged; however, the conclusions of the assessment and the judgement of significance differed. Considered that this was a result of differing professional judgements. LB indicated that NE would like to be as close as possible, and this may be achieved as a result of the refinement of the wind array's layout.</p> <p>CG stated that the worst case scenario would be assessed at Environmental Statement stage, which through a process of</p>	

Number	Attendee	Details	Action
		<p>design iteration and refinement to the project envelope and parameters, may result in reducing effects.</p> <p>CG has assumed baseline agreed for the 7 LCTs, noting that there is disagreement regarding 4 LCTs considered as part of the assessments - NE requested to confirm former</p> <p>CG reiterated that regarding these points there was a difference in professional judgment. Interpretation of the evidence was key.</p>	<p>NE to confirm seven LCTs identified in baseline study is agreed</p>
25	CG/ LB/ CB	<p>In relation to:</p> <p>12) Natural England consider the special character of NNHC will be significantly affected (para 59). Thus, disagree with assessment</p> <p>Discussed the relationship in policy between NNHC and the AONB. Paragraph 178 of the updated NPPF (July 2021) states:</p> <p><i>“Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 176), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.”</i></p>	<p>Equinor/ LDA Design to ensure the assessment of the HC is included within the ES</p>
26	CG/ LB	<p>13) Additionality of the DEP and SEP, emphasised by size and proximity (para 1.20 and 40)</p> <p>14) Lateral Spread – welcome that the Race Bank and SEP remain separate. Overall Sheringham Shoal, Dundgeon, SEP and DEP presents a confusing and incoherent vista (para 1.3)</p> <p>LB reconfirmed NE’s position in that they consider there to be a potential significant impact to the special qualities of the AONB. Their position is unlikely to change because the site is already being significantly impacted by the presence of Sheringham Shoal offshore wind farm. The inferred ‘test’ is the additional harm that would be caused as a result of the proposed DEP and SEP schemes.</p>	
27	CG/ LB	<p>In relation to:</p> <p>15) Apparent Turbine Height - Seeking design changes to demonstrate Good Design, to reduce as far as possible the visual effects due to differences in height, to lessen visual incoherence and clutter in Scenario 2 (para 21). Too big and too close to coast - visually incoherent and cluttering seascape (para 62)</p>	

Number	Attendee	Details	Action
		Discussed the potential turbine heights of 325m and 246m and the discernability of these heights from the shore. LB confirmed that even at 246m these would be discernible from the shore and would be considered by NE as negatively impacting the special qualities of the AONB.	
28	LB/ SC	<p>In relation to Diagram 27.12 NE 2021:</p> <p>16) With respect to Realistic Worst Case Scenario (RWCS), and areas A, B and C, there is a desire from Natural England to retreat from coast and reduce spread and maintain separateness of arrays (para 20). Maximise use of Area D, and 'mauve area' behind SS</p> <p>Discussed the spatial arrangement of the turbines to reduce the appearance of lateral spread, by placing turbines behind and further away from the existing array in relation to the shore.</p> <p>LB stated that from an NE perspective, there was a greater concern over the lateral spread of the turbines than from their height, as this would be an issue regardless. Spatial designs to minimise the appearance of lateral spread should be an area of focus.</p> <p>Discussed the potential for an agreed set of design principles.</p>	Equinor / LDA/ NE to consider
29	CB /LB	<p>CB suggested that in NEs view the project should look to limit the expansion east and west of the existing array and position them behind to create a narrower field of view from shore, in particular from the stretch of coast where the AONB and NNHC overlap.</p> <p>LB agreed that this should be considered a high priority area but recognised a compromise would need to be made.</p>	
30	CG	<p>In relation to:</p> <p>17) Single Frame 39.6 degree visualisations sought for 7 VPs (1,2,4,10,15,16,18) Para 43, with focal points to be agreed (para 44)</p> <p>Confirmed that this would be provided as ES. Meeting to be held to agree focal points.</p>	Equinor / LDA Design
Consultee Comments: Historic England			
31	CG	Discussed the perceived overlap between historic landscape and some aspects of seascape. Confirmed that Historic England were not in attendance and their comments have been addressed within Chapter 16, with no specific comment on Chapter 26.	
LVIA Proposed Response / Actions			

Number	Attendee	Details	Action
32	PB	Provided a summary of the comments, the proposed response and action (See attached, slide 19 – 22)	
Chapter 28: Landscape and Visual Impact Assessment			
Review of Previous Consultation, Agreements and Project Response			
33	PB	<p>Provided a review of previous consultation, agreements, and project responses (see attached, slides 25-32). It was confirmed that the ETG agreed with the following as presented in the PEIR Chapter 28:</p> <ul style="list-style-type: none"> • The methodological approach to the LVIA • The data sources (i.e. character assessment, SPDs and Management Plans) used for the LVIA • The landscape character areas / types identified and assessed in the LVIA • The visual receptors for identified and assessed in the LVIA • The designated landscapes for identified and assessed in the LVIA • The list of potential impacts assessed with regards to the onshore cable corridor (including landfall) and onshore substation • The approach to the assessment of effects on residential visual amenity • The approach to the assessment of effects on the Special Qualities of Natural Beauty of the AONB within the LVIA • The proposed approach to the visualisations <p>CD clarified that a 200m cable corridor was presented at the PEIR stage, which will be reduced for the ES through a process of design refinement: 60m for open cut cable installation, and 100m for trenchless cable installation to allow adequate separation of the cables. This would be reduced to ~20m working corridor at sensitive crossings such as hedgerows.</p>	
Consultee Comments: Norfolk Coast Partnership			
34	NA	Confirmed NCP absence at the meeting and provided a summary of their comments which related to the location of the onshore construction compounds, landfall area and onshore substation access.	As for SVIA, Equinor to respond to NCP consultation via email.
35	JT	In relation to onshore construction compounds , provided commentary on the selection process. Four compound locations had been shortlisted, currently the Atlas works site is the most favourable and it is unlikely that Woodforde Farm would be taken forward.	

Number	Attendee	Details	Action
36	NA	In relation to landfall , confirmed that the LVIA chapter would set out all the potential effects at landfall. An outline Landscape and Ecological Management Plan (OLEMP) would be submitted as part of the DCO application. The landscape proposals would aim to minimise potential visual effects as far as possible and create new opportunities for ecological enhancements.	
Consultee Comments: Norfolk County Council			
37	NA	In relation to landscape , highlighted key points made by NCC including phased and layered planting around the substation which forms part of the mitigation, in addition to no net loss of trees. These elements would be captured in the OLEMP.	
38	NA/ JA	In relation to the cumulative impacts on the landscape , discussed efforts to coordinate mitigation measures with other projects including wind farms and other development such as A47 expansion and Western Link to ensure projects deliver in a positive way together.	
39	CB/ JH	Queried whether the project would conflict with other windfarm cable routes. JH confirmed that there would be crossing points with other cable routes but that discussions were underway to identify opportunities where ducts could be laid by other earlier projects.	
Consultee Comments: North Norfolk District Council			
40	NA/ CB/ JT	<p>In relation to the 10-year replacement period for trees, hedgerows, and other vegetation requested by NNDC, queried the rationale behind the request.</p> <p>CB confirmed this was in response to the poor growing conditions in North Norfolk, evidence for which had been submitted Orsted and Vattenfall examinations. The extended period provided assurance in success of the mitigation planting.</p> <p>JT questioned whether the 10-year replacement period would be applied to the whole DCO application boundary or just applicable to NNDC.</p> <p>CB confirmed that to her knowledge, other projects had committed to 10-year replacement period for the entire cable route but the requirements of South Norfolk, and Broadlands District Council should be confirmed with their representative officers. NB this point was confirmed as a requirement for the whole route in the second session of the ETG.</p> <p>CD stated that the aftercare period would be secured primarily through voluntary agreement with landowners; however, if voluntary agreements could not be reached, powers could be</p>	

Number	Attendee	Details	Action
		exercised under the DCO as part Equinor's requirement to deliver the OLEMP.	
41	NA	In relation to OLEMP , questioned whether NNDC could provide guiding principles. CB requested that NNDC remained engaged and were consulted with during the production of the OLEMP.	
Consultee Comments: South Norfolk & Broadlands District Council			
42	NA	Confirmed the absence of SNDC and BDC from the meeting and provided an overview of their comments to the ETG members, noted that the approach to the LVIA is generally acceptable. A separate meeting is being held with SNDC and BDC to discuss Chapter 28: Landscape and Visual Impact Assessment on 28 July 2021.	
43	NA	In relation to the absence of a Hedgerow Assessment at PEIR, confirmed that an assessment was currently being undertaken and would be submitted as part of the DCO application. This assessment would cover ecological, landscape and historic criteria as per the regulations to identify 'important' hedgerows.	
44	NA	In relation to an assessment of the effects of any lighting , confirmed that night-time photomontages of the onshore substation would not be provided; however, assessment of the effects of lighting would be included in the LVIA at ES.	
45	NA/ CD	In relation to the ability of landowners to veto replacement planting , discussed that this would mostly be within the agricultural landscape and replacement planting would mostly be field boundaries and hedgerows, which would be covered under landowner negotiations or mechanisms via the DCO.	
46	NA	In relation to a refused planning application at the Land north of the Street Cawston , noted that further discussions would be held with SNDC and BDC.	
47	NA/ JT	In relation to the absence of arboricultural surveying at PEIR, confirmed that further tree surveys of environmentally sensitive areas would be undertaken, including the area of the substation.	
Consultee Comments: Natural England			
48	NA	Detailed Natural England's comments, confirming that NE offered no detailed comments on the implications of the onshore construction phase effects, but referred back to advice from NCAONB partnership and relevant local authorities.	
LVIA Proposed Response / Action			
49	NA	Provided a summary of the comments, proposed response and actions (see attached, slide 39-40)	
SVIA + LVIA Areas of Agreement			

Number	Attendee	Details	Action
50	PB	<p>Confirmed that the ETG members agreed with the following as presented in the PEIR:</p> <ul style="list-style-type: none"> • The methodological approach to the SVIA / LVIA • The data sources (i.e. character assessment, SPDs and Management Plans) used for the SVIA / LVIA • The seascape, landscape character areas / types identified and assessed in the SVIA / LVIA • The visual receptors identified and assessed in the SVIA / LVIA • The designated landscapes identified and assessed in the SVIA / LVIA • The list of potential impacts assessed for the offshore and onshore developments in the SVIA / LVIA • The approach to the assessment of effects on the Special Qualities of Natural Beauty of the AONB within the SVIA / LVIA 	
LVIA Onshore Substation Site Selection			
51	NA/ JA	<p>In relation to the extent of visual influence at the substation site (see attached, slides 42-43), discussed the similarity between the extent of theoretical visibility from the two shortlisted sites, and proximity of Site 1 to existing Norwich Main Substation, and other infrastructure including 400kV overhead power lines, a railway line and the A149 provided landscape benefits too.</p> <p>JA confirmed that based on the technical input from other disciplines, Site 1 was emerging as the favoured site at the time of the ETG meeting.</p>	
52	NA/ PB	<p>Discussed the preliminary landscape proposal (see attached, slide 44) that formed part of an interdisciplinary project discussion on the onshore substation sites. NA noted that the proposals were high-level and irrespective of other topics / constraints, which would be accounted for in due course.</p> <p>NA set out that the landscape proposals would look to create new areas of native woodland to connect to the existing landscape character, which would provide mitigation in terms of visual effects, but also create and improve biodiversity corridors.</p> <p>PB stated that the area was already characterised by infrastructure and enclosed by trees and woodlands, with the potential to extend this wooded character. Consideration would be needed to the other factors, such as drainage and landowner negotiations.</p>	

Number	Attendee	Details	Action
AOB and Next Steps			
53	SC/ JH	<p>Stated that further ETGs were scheduled in the coming weeks on several other topics and together with the outcomes of multidisciplinary workshops would inform any refinement to the project envelope for the final ES and DCO application.</p> <p>Suggested a further SLVIA ETG is scheduled for Autumn 2021.</p>	
Summary of Actions			
54		<p>Equinor to respond to NCP consultation via email.</p> <p>CB to provide update on new AONB management plan.</p> <p>HM to forward NE's advice to other LPA and stakeholders.</p> <p>LB to confirm with Andrew Baker requirements in relation to: Assessment to incorporate a comparison with existing windfarms (1.5).</p> <p>NE to confirm seven LCTs identified in baseline study is agreed</p> <p>Equinor/ LDA Design to ensure the assessment of the HC is included within the ES</p> <p>NE/ Equinor / LDA Design to consider design principles for the windfarm array.</p> <p>Equinor/ LDA Design to include single Frame 39.6 degree visualisations for 7 VPs (1,2,4,10,15,16,18) Para 43, with focal points to be agreed.</p> <p>SM to arrange a further SLVIA ETG for Autumn 2021.</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (RHDHV), [REDACTED] (RHDHV), [REDACTED] (LDA Design), [REDACTED] (LDA Design), [REDACTED] (Equinor), [REDACTED] (South Norfolk District Council and Broadland District Council)

Apologies: [REDACTED] (Norwich City Council), [REDACTED] (Norfolk Coast Partnership)

From: [REDACTED]

Date: 18 July 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0017_SLVIA ETG2 Part 2 of 2 July2021

Classification: Confidential

Enclosures: Seascape, Landscape and Visual ETG Meeting No.2 (28 July 2021)

Subject: Seascape, Landscape and Visual Impact ETG 2 (Part 2 of 2)

Number	Attendee	Details	Action
Introduction			
1	PB	Introduced the ETG meeting and an overview of the agenda followed by introductions from all attendees.	
2	CD	<p>Provided an overview of the project and updates to the ETG, describing the route refinement process and the integrated approach to studies. Confirmed that site and compound assessments were still ongoing. Stated that the environmental survey programme was still ongoing, including the ecological and targeted arboricultural surveys.</p> <p>CD clarified that the 200m cable corridor presented for the PEIR, will be reduced for the ES, which has been achieved through a process of design refinement to 60m for open cut cable installation, and 100m for trenchless cable installation to allow adequate separation of the cables. This would be reduced to ~20m working corridor at sensitive crossings such as hedgerows</p>	
3	PB	Provided an overview of the SLVIA ETG meeting held the previous week. PB detailed the purpose of this meeting, which would include only comments related to the LVIA for the onshore project envelope and the contents of Chapter 28. PB noted that meeting minutes would be recorded and agreed, and then used to produce an agreement log and statement of common ground.	
Chapter 28: Landscape and Visual Impact Assessment			
Review of Previous Consultation, Agreements and Project Response			
	PB	Provided a review of previous consultation, agreements, and project responses (see attached, slides 8-15) to confirm that RT agreed with the following:	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> • The methodological approach to the LVIA • The data sources (i.e. character assessment, SPDs and Management Plans) used for the LVIA • The landscape character areas / types identified and assessed in the LVIA. • The visual receptors identified and assessed in the LVIA <ul style="list-style-type: none"> ○ PB/ RT discussed that there had not been any formal comment from South Norfolk District Council (SNDC) or Broadland District Council) on the viewpoints taken forward in the PEIR assessment. ○ CD suggested that there would not be sufficient time in the programme to include additional viewpoint photography, and that the viewpoint information presented at the PEIR covered what is considered necessary to produce a robust assessment. ○ JA stressed the importance of gaining agreement with the ETG to avoid objections at examination. • The designated landscapes identified and assessed in the LVIA • The list of potential impacts assessed with regards to the onshore cable corridor (including landfall) and onshore substation. <ul style="list-style-type: none"> ○ PB discussed the route refinement process, avoiding hedgerows and trees where possible and commitments to trenchless crossings at certain locations. ○ PB stated that a full hedgerow assessment was currently being undertaken. • The approach to the assessment of effects on residential visual amenity <ul style="list-style-type: none"> ○ PB discussed that the residential visual amenity would only be assessed at the substation if applicable. • The proposed approach to the visualisations <ul style="list-style-type: none"> ○ Confirmed that winter photography would be presented at ES, covering the worst case visibility at the viewpoints. • PB confirmed the LVIA study area, 1km from the cable corridor and 4km from the substation, as agreed through consultation. 	

Number	Attendee	Details	Action
Consultee Comments: Norfolk Coast Partnership			
	NA	Confirmed NCP absence at the meeting and provided a summary of their comments which related to the location of the onshore construction compounds, landfall area and onshore substation access. Agreed that all consultees would be included in future correspondence and meeting minutes circulated to all parties.	RHDHV
Consultee Comments: Norfolk County Council			
	NA	In relation to landscape , highlighted key points made by NCC including phased and layered planting around the substation which forms part of the mitigation, in addition to no net loss of trees. These elements would be captured in the OLEMP.	
	NA/ CD	In relation to the cumulative impacts on the landscape , discussed efforts to coordinate mitigation measures with other projects including wind farms and other development such as A47 expansion and Western Link to ensure projects deliver in a positive way together. CD confirmed that there would be crossing points with other cable routes but that discussions were underway to identify opportunities where ducts could be laid by other earlier projects.	
Consultee Comments: North Norfolk District Council			
	NA/ CD/ RT	In relation to the 10-year replacement period for trees, hedgerows, and other vegetation, queried the rationale behind the request. RT confirmed this was in response to the poor growing conditions in North Norfolk, the extended period provided assurance in success of the mitigation planting. This would likely be expected across the whole DCO (including SNDC and BDC), and not just the elements of the project in North Norfolk.	
Consultee Comments: South Norfolk & Broadland District Council			
	NA	Noted that the comments received from SNDC and BDC stated that the approach to the LVIA is generally acceptable.	
	NA / CD/ RT	In relation to the absence of a Hedgerow Assessment at PEIR, confirmed that an assessment was currently being undertaken and would be submitted as part of the DCO application. RT stated that South Norfolk have a specific development management policy that presumes in favour of important hedgerows. SNDC and BDC would like to ensure that no identified important hedgerows are removed as a result of the	

Number	Attendee	Details	Action
		<p>onshore cable corridor and / or substation, as this would cause degradation of the landscape.</p> <p>SM confirmed that the Hedgerow Assessment would cover ecological, landscape and historic criteria as per the regulations to identify 'important' hedgerows.</p>	
	CD/ RT	<p>CD confirmed that further tree surveys of sensitive areas would be undertaken, which would include areas around the substation. Micrositing and trenchless techniques would be used to avoid trees along the cable corridor route where possible.</p> <p>CD detailed the desk-based approach to assessing trees using aerial photography, in addition to Phase One Habitat Survey data and Tree Preservation Order Data. This assessment would be presented as an appendix report to the ES chapter.</p>	
	SM/ RT	Discussed the approach to obtaining TPO records.	SM to contact James Shreeve for TPO data
	NA	In relation to an assessment of the effects of any lighting , confirmed that night-time photomontages of the substation would not be provided; however, assessment of the effects of lighting would be included in the LVIA at ES.	
	NA/ CD/ RT	<p>NA/ CD discussed that, in relation to the ability of landowners to veto replacement planting, this would mostly be within the agricultural landscape and replacement planting would mostly be field boundaries and hedgerows, which would be covered under landowner negotiations or mechanisms via the DCO.</p> <p>RT reaffirmed the importance of avoiding losses in the first place due to time lag for establishment and risk associated with replacement planting resulting in incremental changes to the landscape over time.</p>	
Consultee Comments: Natural England			
	NA	Detailed Natural England's comments, confirming that NE offered no detailed comments on the implications of the onshore effects but referred back to advice from NCAONB partnership and relevant local authorities.	
LVIA Proposed Response / Action			
	NA	Provided a summary of the comments, proposed response, and actions (see attached, slide 22-24)	
LVIA Areas of Agreement			
	PB	<p>Confirmed that the RT agreed with the following:</p> <ul style="list-style-type: none"> The methodological approach to the LVIA 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> • The data sources (i.e., character assessment, SPDs and Management Plans) used for the LVIA • The seascape, landscape character areas / types identified and assessed in the LVIA • The visual receptors identified and assessed in the LVIA • The designated landscapes identified and assessed in the LVIA • The list of potential impacts assessed for the onshore developments in the LVIA • 	
LVIA Onshore Substation Site Selection			
	NA	<p>In relation to the extent of visual influence at the substation site (see attached, slide 25-26), discussed the similarity between the extent of theoretical visibility from the two shortlisted sites, and proximity of Site 1 to existing Norwich Main Substation and other infrastructure including a 400kV overhead power line, railway line and the A149 provided landscape benefits too.</p> <p>Confirmed that based on the technical input from other disciplines, Site 1 was the favoured site at the time of the ETG meeting.</p>	
	NA/ PB/ RT	<p>Discussed the preliminary landscape proposal (see attached, slide 27) that formed part of an interdisciplinary project discussion on the onshore substation sites. NA noted that the proposals were high-level and irrespective of other topics / constraints, which would be accounted for in due course.</p> <p>NA set out that the landscape proposals would look to create new areas of native woodland to connect to the existing landscape character, which would provide mitigation in terms of landscape and visual effects, but also create and improve biodiversity corridors.</p> <p>PB stated that the area was already characterised by infrastructure and enclosed by trees and woodlands, with the potential to extend this wooded character. Consideration would be needed to the other factors, such as drainage and landowner negotiations.</p> <p>RT agreed on the wooded nature of Site 1's locality.</p> <p>PB confirmed that the LVIA would assess the worst-case approach with regards to site and platform levels.</p>	
AOB and Next Steps			

Number	Attendee	Details	Action
	CD	<p>Stated that further ETGs were scheduled in the coming weeks on several other topics. The ETG feedback, input from community consultation, surveys and technical studies would all inform the outcome of multidisciplinary workshops to refine the DCO boundary refinement.</p> <p>Suggested a further ETG is scheduled for Autumn 2021.</p> <p>Discussion around design principles for the outline Landscape Management Plan.</p>	RHDHV/ Equinor.
Summary of Actions			
		<p>SM to contact James Shreeves for TPO date.</p> <p>SM to arrange a further SLVIA ETG for Autumn 2021.</p> <p>SM to circulate meeting minutes to all ETG members.</p>	SM

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] JA (RHDHV), [REDACTED] SM (RHDHV), [REDACTED] PB (LDA Design), [REDACTED] CD (Equinor), [REDACTED] JT (Equinor), [REDACTED] HM (Natural England), [REDACTED] CB (North Norfolk District Council), [REDACTED] ES (Norfolk County Council), [REDACTED] LB (Natural England), [REDACTED] RT (South Norfolk and Broadland District Council)

Apologies: [REDACTED] (LDA Design), AONB Partnership

From: [REDACTED] (RHDHV) Drafted by [REDACTED] (RHDHV)

Date: 08 February 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0031

Classification: Confidential

Enclosures: 7273_ETG_MTG_3_PART2_LVIA_Final

Subject: Landscape and Visual Impact ETG 3

Number	Attendee	Details	Action
Introduction			
1	PB	Provided an introduction to the expert topic group (ETG) meeting and an overview of the agenda followed by introductions from all attendees.	
Onshore Cable Corridor			
2	CD	Described that since Phase 2 consultation, the project has refined the cable corridor width from 200m to 60m, although a wider 100m corridor has been maintained for trenchless crossings. The construction easement would be approximately 36m, which allows for flexibility and micro-siting of the cables. It was noted that the sequential construction of the projects would mean construction easement would be 45m.	
Weybourne Woods			
3	CD	Provided a general update for the project and outlined the key project updates from the Preliminary Environmental Information Report (PEIR) including the preferred routing of the cable corridor through Weybourne Woods, having discounted open cut solution along Sandy Hill Lane due to impacts on road traffic, and the open cut solution through the woods due to ecological, landscape and recreational impacts.	
4	CD	Described the potential options for the trenchless crossing of the Weybourne Woods: Option 1 - Horizontal Directional Drilling (HDD) beneath Sandy Lane. Short drill but would result in longest overall route and would require drilling under caravan park, so was discounted Option 2	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> - HDD beneath Weybourne Woods (short), which involves 2 trenchless crossings and a reception pit of 50x100m within Weybourne Woods. Will require some conifer clearance, the majority of which are dead/dying (this area has already been marked for clearance by the Forestry Commission). - May provide an opportunity for biodiversity net gain by replacing low value conifers with another habitat. <p>Option 3</p> <ul style="list-style-type: none"> - HDD beneath Weybourne Woods (long). Too high a risk from construction perspective, so was discounted. 	
5	CB/CD/LB	<p>CB Raised concern over ecological aspects and impact assessments for these options. CD confirmed that areas were covered by ecological surveys.</p> <p>LB considered it would be beneficial to produce a clear biodiversity net gain (BNG) plan which detailed biodiversity opportunities at Weybourne Woods. This should clearly outline that the cleared area will not be replanted with trees due to the buried cables. Requested that BNG plan/report is shared with Natural England.</p>	BNG Plan to be provided by Wild Frontier Ecology.
6	CD/HM	<p>CD provided an update to compound location, which is now a site near Attlebridge. Two documents have been published to explain and support this decision.</p> <ul style="list-style-type: none"> - Onshore Main Construction Compound – Updated Site Selection Report - Onshore Main Construction Compound – Additional Environmental Information <p>HM raised concern that there may be some information missing for Natural England, as Natural England hasn't received any information since November 2021. This is to be checked internally within Natural England.</p>	Equinor to check if Natural England was consulted.
Summary of ETG Meetings on 21st and 28th July			
7	PB	<p>Summarised ETG meetings in July, in terms of attendees, matters covered and what was agreed for the SVIA and LVIA.</p> <p>Outlined two actions agreed as a result of the ETG meetings</p> <ul style="list-style-type: none"> - Continued discussion of design principles that will form the Outline Landscape Management Plan (OLMP) (discussed in this meeting) - Confirmation that another meeting will be held in Autumn 2021 (this meeting) <p>Update to LVIA Chapter will take account of refinement of project proposals, draft landscape and substation proposals and section 42 comments from consultees.</p>	

Number	Attendee	Details	Action
		<p>Confirmation needed over whether the Norfolk Coast Area of Outstanding Natural Beauty (AONB) Special Qualities refers to the Norfolk Coast Area of Outstanding Natural Beauty Management Plan Strategy 2014-2019, or the Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy 2019-2024.</p> <p>Tentative agreement that the 2014-2019 Strategy will be used, and confirmation is being sought by Equinor from the AONB Partnership.</p>	
Update on the Tree Survey			
8	PB	<p>Provided brief overview of desk-based and ground level arboricultural survey undertaken within the latest Development Consent Order (DCO) boundary and notes a number of impacts have been identified but can be avoided using sensitive design and best practice construction methods. Trees will receive a full arboricultural survey post-consent if not identified for retention.</p>	
9	CD	<p>Described the aim to exclude mature, high-value trees from the route, or, if not possible, ensure that there is enough room in the construction easement to avoid impacting those trees. Trees were identified using a number of data sources, including the ancient tree inventory and Tree Preservation Order (TPO) data from relevant Councils. One veteran tree and two TPO's were identified.</p>	
10	CB	<p>CB requested Equinor to look at the cable corridor in relating to Mossy Mere wood close to Saxthorpe due to its sensitivity.</p>	<p>Equinor confirms that the cable corridor stays outside of Mossymere wood</p>
11	RT/LB	<p>RT raised concern that a full arboricultural survey would not be carried out until post-consent, and considers that the information is needed earlier to inform the Examiners decision. Some valuable trees may not be covered by TPOs and highlights importance of gathering enough information on the trees to inform the Examiners decision.</p> <p>LB noted lessons learnt from Hornsea Project 3 where there was insufficient information on trees, including how many veteran trees would be lost, at the Examination. Not knowing how many veteran trees are to be removed pre-consent could leave the decision open to judicial review.</p> <p>Equinor agreed to review approach to tree survey</p>	<p>Equinor/ RHDHV/ LDA Design to review the approach to tree survey.</p>
Document Hierarchy – Design Process			

Number	Attendee	Details	Action
12	PB	<p>Summarised the document hierarchy, starting with project vision and moving on to cover:</p> <ul style="list-style-type: none"> - Planning statement - Design and Access Statement (onshore) - Design statement (offshore narrative) - EIA - Navigational risk assessment incl. layout commitments - AONB special qualities assessment - Outline management plans <p>Summarised the design objectives that were informed by National Infrastructure Commission's guidance (Climate, people, places, value – Design Principles for National Infrastructure). DCO application will demonstrate how the project has been guided by the objectives and fulfilled best practice, including safety.</p>	
Outline Landscape Management Plan			
13	PB	<p>Provided an overview of cable corridor alignment and construction proposals to minimise harm and removal of hedgerows and trees. Hedgerows and trees will be removed within the 12m crossing for projects in isolation and within the 20m crossing for projects done concurrently/sequentially.</p> <p>To briefly summarise, it has been decided that:</p> <ul style="list-style-type: none"> - Trees removed will be replanted within the DCO boundary but outside the final cable corridor easement subject to landowner agreement. - Hedgerows would be replaced if removed. - Hedgerow enhancement would be undertaken within DCO boundary where feasible and with consent of the landowners. <p>Provided a summary of landscape design objectives and key principles for the onshore substation, including reducing potential impacts on landscape and visual receptors, retaining and protecting trees, hedgerows and other vegetation except where removal is necessary, enhancing landscape features using appropriate species and habitat enhancements, and minimising off-site soil deposition.</p>	

Number	Attendee	Details	Action
14	PB	<p>Outlined latest draft of onshore substation illustrative landscape proposals, and how visual screening will be provided. The landscape proposal aims to integrate the substation into the landscape by providing screening and enhancing existing habitat within the vicinity.</p> <p>Equinor will be consulting with National Rail and National Grid in terms of planting alongside the railway line, and electricity pylons and overhead lines.</p>	<p>Equinor to consult with National Rail and National Grid in terms of planting alongside railway line, pylons and overhead lines.</p>
15	RT/CD/PB	<p>RT's initial opinion was that the landscape proposals appear as good as you could hope. There is a good existing landscape framework. The substation site location is the most appropriate in this vicinity.</p> <p>PB confirmed that Equinor would commit to maintaining planting along the onshore cable corridor to be maintained by the applicant for the first 10 years following implementation before being handed over to landowner. Additionally, planting and habitat creation around the onshore substation would be managed for the operational life of SEP and DEP. RT and CB agreed with this.</p>	
Next Steps			
16	PB LB	<ul style="list-style-type: none"> - Equinor will issue minutes of this meeting - Equinor will issue an Agreement Tracker to record matters agreed, for future reference when preparing Statements of Common Ground. This will be issued for comment - Meeting planned with the AONB Partnership - No further Landscape ETG meetings are planned before DCO submission - DCO submission planned for early summer 2022 <p>Additional actions highlighted involve:</p> <ul style="list-style-type: none"> - BNG Plan to be provided by Wild Frontier Ecology. - Equinor/RHDHV/ LDA Design to review the approach to tree survey. - Consulting with National Rail and National Grid in terms of planting alongside railway line, pylons and overhead lines. 	

Number	Attendee	Details	Action
	ALL	Highlighted preference for written communication rather than another ETG meeting, which will help Natural England identify whether comments/concerns raised have been addressed. General agreement with this from other attendees.	

Subject	Sheringham Shoal and Dudgeon Extension Projects Seascape and Visual Impact Assessment ETG
Meeting location	Microsoft Teams video meeting
Meeting date	02 February 2022
Attendees	<p>██████████ (CB)– North Norfolk District Council, Landscape Architect</p> <p>██████████ (HM)– Natural England, Marine Lead Advisor, Major Casework</p> <p>██████████ (AB)– Natural England, Senior Environmental Specialist</p> <p>██████████ (LB) – Natural England, Marine Senior Adviser</p> <p>██████████ (CG) – LDA Design, Director</p> <p>██████████ (PB) – LDA Design, Associate</p> <p>██████████ (AN)– LDA Design, Associate</p> <p>██████████ (NA) – LDA Design, Senior Consultant</p> <p>██████████ (SC) – Equinor, Consent Manager</p> <p>██████████ (EO) – Equinor, Offshore Project Developer</p> <p>██████████ (AP) – RHDHV, Project Director</p> <p>██████████ (RW) – RHDHV, Environmental Offshore Assistant</p>

Meeting Agenda

Meeting Agenda
<ol style="list-style-type: none"> 1. Introductions 2. Project update 3. Summary of previous ETG's. 4. Update on Seascape and Visual Impact Assessment 5. Design update 6. Single frame views 7. AOB and next steps

Meeting minutes

Ref	Item / Action	Who [initials]	Status
01	<p><u>Introductions</u></p> <p>Participants introduced themselves and their role on the project.</p> <p>CG introduced meeting agenda.</p> <p>CB questioned absence of Gemma from the AONB Partnership and pointed out the importance of ensuring AONB remain involved. CG explained that Gemma was unable to attend but AONB continue to be consulted. Katy Owen has been identified as the point of contact for the AONB going forward and a meeting has been arranged March 8th 2022.</p>	CG	Meeting fixed
02	<p><u>Project Update</u></p>		

Ref	Item / Action	Who [initials]	Status
	<p>SC provided a project update, including the timeline for submission of Development Consent Order planned for summer /end of Q2 2022.</p> <p>PB ran through a summary of the previous ETG meetings held in March 20 and July 21 including agreed actions</p> <p>The following action was discussed in detail:</p> <p><i>'LB (Natural England) to confirm with Andrew Baker requirements in relation to: Assessment to incorporate a comparison with existing windfarms.'</i></p> <p>AB explained that this requirement was raised for the EA02 project. Comparison can be undertaken with existing windfarms, and the examiner will likely request this. It would be helpful to pre-empt this question and provide draft text describing and comparing existing and proposed schemes for discussion and agreement with Natural England in advance of the DCO submission. LDA Design and Equinor to prepare text and share with Natural England.</p> <p>In response to the outstanding action at Minute Item 24 from the previous ETG meeting on 21st July 2021, AB confirmed that Natural England agreed that 4 of the 7 LCTs assessed in the PEIR SVIA chapter can be scoped out of the assessment, as noted in Natural England's Section 42 consultation response, and no further action is necessary.</p>	LDA Design	Open
03	<p><u>Seascape and Visual Impact Assessment Update</u></p> <p>The SVIA is being updated to take account for:</p> <ul style="list-style-type: none"> • Refinement of project proposals; • Section 42 comments from consultees; and • Susceptibility and sensitivity of users of long-distance walking routes, PRoWs, accessible and recreational landscapes, valued viewpoints and Dark Sky Discovery Sites within designated landscapes changed to high. <p>AB welcomed the increase to the sensitivity scores that are consistent with the national approach that categorises the sensitivity of these receptors within AONB as high. Seconded by CB.</p> <p>PB explained that the viewing gazebo at National Trust Oak Wood is inaccessible and therefore a nearby ground level viewpoint and historic photography from the Sheringham Shoal offshore wind farm SLVIA will be referred to in reaching judgements on effects on visitors to the viewing gazebo at Oak Wood. This has been agreed with the National Trust.</p>		
04	<p><u>Design Process</u></p> <p>CG explained the document hierarchy and interdependencies with other specialist topics such as Shipping and Navigation and the layout commitments being established as part of the Navigation Risk Assessment (NRA).</p> <p>CB questioned the approach to the AONB document and whether individual qualities will be considered. CG explained that special qualities will be dealt with upfront in the relevant chapters, however, it was thought that pulling all of that information together into one separate document would be helpful. LB agreed with this approach.</p>		

Ref	Item / Action	Who [initials]	Status
	<p>CB noted that the AONB partnership has produced a new management plan which had been published on their web site (Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy 2019-2024). This plan has recently been taken down as it has not been formally ratified. As such the previous plan (Norfolk Coast Area of Outstanding Natural Beauty Management Plan Strategy 2014-2019) is the current published plan. LDA Design requested clarity on which management plan should be used and CB explained that it would need to be verified by Katy Owens of the AONB Partnership.</p> <p>AB noted that a standalone AONB special qualities assessment document is welcome as part of the DCO application and suggested that it might be worth undertaking a gap analysis between the two management plans. SC agreed and requested further clarity on the timings of each management plan be sought from Katy Owen.</p> <p>CG presented the approach to Good Design and the design objectives that underpin the design, notably; climate, people, places, value and safety. Three stages of the offshore design process were discussed 1: Area for Lease definition, 2: Preliminary design – PEIR, 3: Responding to feedback.</p>	LDA Design	Open
05	<p><u>Turbine Layout</u></p> <p>The criteria guiding layout design, including constraints from other EIA topic areas such as, MGN 654, pipelines, water depths and wake effects were discussed and nearby other marine infrastructure viewed. It was noted that flexibility, when all constraints are considered is restricted.</p> <p>SC clarified the 1 nautical mile set back related to different size turbines. If the turbines were the same size as existing, there would be scope to continue the same grid pattern as existing.</p> <p>LB pointed out that from an ecological perspective Natural England has issues with turbines 1- 7 in DEP N and their preference is that these be removed.</p> <p>It was noted that the Realistic Worst-Case Scenario still assumes construction of the largest turbines. SC explained that it remains necessary to retain these turbines within the envelope to account for technological advances, however, reminded that this layout with turbines at the boundaries represents a worst case and the consented layout could be an improvement on that presented.</p> <p>The realistic worst case turbine layout that is to be assessed within the SVIA was presented, noting that a lot of work has gone into developing the layout since PEIR following consultation responses.</p>		
06	<p><u>Aesthetics and Array Design</u></p> <p>CG explained the factors that influence aesthetics, design and magnitude of change including:</p> <ul style="list-style-type: none"> • the proportion of the view affected by the development; • the angle of view in relation to main receptor activity; • the degree to which aesthetic or perceptual aspects of the landscape /view would be altered; and • the relationship between existing/ proposed/ future wind farms. <p>CG presented a summary of Natural England's feedback on the PEIR layout which AB agreed with.</p>		

Ref	Item / Action	Who [initials]	Status
	<p>The new layout was presented alongside the PEIR layout as wirelines to illustrate the comparative aesthetic impact.</p> <p>AB acknowledged the amount of work which had been undertaken since the last ETG and provided some initial commentary but reserved the right to provide full comments at a later date once he had more time to review the revised layout. He noted that the lateral spread is reduced from the PEIR wireline and the spacing across the horizon is clearly an improvement (wireline VP15). AB commented that they would need to know the angle of view of the wirelines. AB also noted that 'stacking' is occurring in the new layout (eg wireline VP18) , which can have benefits in that it appears to reduce the number of turbines overall. He did not comment on VP3 Sheringham promenade which is outside the AONB.</p> <p>AB requested formal document demonstrating wirelines for review and detailed comment.</p> <p>CB agreed that the right principles are being applied to improve the layout, however, the spacing between the turbines still remains high. CG explained that the spacing is to overcome the impacts of wake effect from nearby turbines.</p> <p>AB questioned whether design principles could be transferred into the DCO to ensure the principles of design currently being applied are secured. AB also noted that the size of the turbines remains an issue, albeit noting this is as a consequence of the technology.</p> <p>CG raised a point regarding securing aesthetic led design principles via the marine authority whose interest/duty relates to safety and navigation? AB advised that his only experience of this was on Rampion 1 where principles were added during the examination. AB agreed to provide a copy of the relevant Rampion 1 documents for reference. (Post meeting note- received with thanks)</p> <p>SC explained that as part of the work being undertaken for the NRA, layout commitments are being secured, although these primarily address layout requirements set out in MGN 654. SC explained that the project team have thought very hard whether to include the maximum sized turbine and that this was required to future proof the project.</p> <p>PB presented single frame views with an aim of agreeing focal points proposed.</p> <p>AB commented that more time is required to absorb and review the single frame views before providing any comments. LDA agreed to share the slide show after the meeting and AB agreed to respond by 18 February</p>	<p>LDA</p> <p>AB</p> <p>AB</p>	<p>Open</p> <p>Closed</p> <p>Open</p>
07	<p><u>AOB</u></p> <p>AB mentioned that Natural England provided some general design principles to the Crown Estate in 2017/18. CG requested a copy of these comments and AB agreed to provide them. .(Post meeting note- received with thanks)</p> <p>A copy of the presentation was requested. (Post meeting note- this has been issued)</p> <p>It was agreed that another ETG will not be required prior to submission unless any material comments come out of the meeting with AONB. It was suggested that the minutes of this meeting could be shared with Natural England to ensure alignment.</p>	<p>AB</p> <p>LDA</p> <p>RHDHV</p>	<p>Closed</p> <p>Closed</p> <p>Open</p>

1.8 Water Resource and Flood Risk Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (LP) – Norfolk County Council; [REDACTED] (HW) – RHDHV; [REDACTED] (ID) – RHDHV; [REDACTED] (MC) – Equinor; [REDACTED] (JA) – RHDHV; [REDACTED] (MW) - RHDHV

Apologies:

From: Royal HaskoningDHV
Date: Thursday, 28 May 2020
Location: MS teams
Copy:
Our reference: PB8164-RHD-ZZ-ZZ-MI-PM-0010
Classification: Project related
Enclosures: Meeting slides

Subject: DEP and SEP Water Resources and Flood Risk meeting

Number	Details	Action
Introductions and Purpose of the meeting		
1	<p>JA and MC introduced the project (please refer to the presentation slides for details). JA explained that DEP and SEP are two separate projects with a single DCO application. The Projects will share one cable corridor and will share a single onshore substation. Different construction scenarios are currently being developed, i.e. whether the projects are built at the same time or one after the other</p> <p>MC confirmed that the Project is in dialogue with Hornsea Project 3 as geographically the project have similarities with their proposed onshore cable routing and that the SEP/DEP will cross the Hornsea Project cables. SEP and DEP will also cross the Norfolk Vanguard and Norfolk Boreas cable routes.</p> <p>Two landfall options (Weybourne and Bacton) were presented at the scoping stage of the Projects. However, Equinor has now confirmed that the preferred landfall location is Weybourne. This is due both environmental and technical considerations.</p> <p>The onshore cable corridor search area presented at scoping was 1,000m wide. Since scoping we have undertaken a process to narrow this down to a 200m wide corridor for surveys and detailed assessments (in some locations the survey corridor remains greater than 200m to allow greater flexibility in route selection). That work will lead to the identification of a 60m wide corridor, which will be the final DCO application boundary. The Preliminary Environmental Information Report (PEIR) will be submitted in March 2021 and will be based on the 200m survey corridor.</p> <p>The substation selection process is also being progressed. Nine potential substation zones (A – I) within the original 3km scoping search area have been identified and assessed. Potential substation sites within the two</p>	<p>Equinor to share minutes and slides following the meeting</p>

Number	Details	Action
	<p>preferred substation zones (B and C; please refer to the presentation slides for details) have then been identified and will be subject to further consideration leading to the identification of 2-3 preferred options to take forward into the PEI assessment. The eventual DCO application will be based on a single substation that can accommodate both projects.</p> <p>JA explained that the Projects have committed to the use of HDD at the landfall site, similarly to other offshore wind farm projects in the area. MC stated that the lifespan of the Projects is 30 years. LP recommended that this will have to been taken into account for the climate change predictions. Based on the proposed development lifetime (30 years) a climate change allowance of +20% will be appropriate (i.e. Epoch 2040 to 2069) , and consideration of +40% would only be required if the project were to comprise a longer design life and therefore the guidance relevant to Epoch 2070 to 2115 would be applicable.</p> <p>LP suggested that the issue of drainage of haul roads and compounds should be an important aspect of the FRA. JA confirmed that this will be taken into consideration although project concept is still being developed.</p>	
Baseline and Assessment		
2	<p>ID explained that the onshore infrastructure is located in three main surface water drainage catchments; the Bure, the Wensum and the Yare (please refer to the presentation slides for further details).</p> <p>All rivers within the study area are lowland, low energy meandering rivers, and a large proportion of them are also chalk rivers.</p> <p>ID stated that the project recognises that chalk rivers are a unique (internationally rare) and sensitive habitat which is under a lot of pressure (e.g., from water abstraction and the supply of nutrients and fine sediment). However, rivers in the study area have been extensively modified for land drainage and flow capacity purposes with only some of the reaches still displaying natural characteristics. The water quality data show that the rivers are in good condition, although impacted by agriculture.</p> <p>There are many source protection zones (SPZs) as well as a number of licensed and unlicensed abstractions in the area.</p>	
3	<p>HW stated that the majority of the study area has a low risk of flooding from rivers and the sea (i.e. it is in Flood Zone 1), although bands of higher flood risk (i.e. Flood Zones 2 and 3) are located adjacent to the river network. Both landfall option areas are located in a narrow area of increased coastal flood risk (please refer to the presentation slides for details).</p> <p>The FRA will consider other flood risk sources including surface water, groundwater, sewers, etc.</p>	LC to provide the flooding incident record to the team

Number	Details	Action
	LP stated that flooding incident record can be provided to the team with areas historical flood events.	
4	<p>ID stated that the data used is for the assessment will be mostly secondary data which will be supplemented by a targeted geomorphological survey to inform the assessment of impacts at the proposed watercourse crossing locations.</p> <p>LC requested that the NCC is informed as early as possible about the location of HDD crossings and any culverting needs so that this can be part of one consent. JA replied that the initial site selection process has identified likely crossing locations, however this will have to be confirmed through interactions with the engineering team. The crossing information will be submitted with the PEIR.</p>	Equinor to provide the information with regards to the crossing numbers if possible.
5	<p>ID stated that WFD water body boundaries will be used to delineate receptors. The desk based assessment and results of the walkover surveys will be used to identify value and sensitivity for each receptor. Biological characteristics (e.g. designations and the presence of priority species) will be also taken into account when assigning sensitivity and value of receptors.</p>	
6	<p>ID discussed potential impacts identified and outlined the proposed assessment methodology (please refer to the presentation slides for details).</p> <p>LP stated that infill material around the cable could create a pathway for water flows and impact local hydrogeology and hydrology. It was agreed this should be taken into consideration in the assessment, particularly in the consideration of operational stage impacts.</p>	
7	<p>HW described the proposed approach to the flood risk assessment (please refer to the presentation slides for details).</p> <p>Hydraulic modelling is not considered as part of the assessment, however this will be reviewed as the Projects progress.</p> <p>LP agreed that the approach was acceptable.</p>	LC to send guidance document describing NPPF and LPA requirements for SsDS etc..
8	<p>IAD presented the three stage approach to the WFD assessment as well as guidance that will be followed during the process (please refer to the presentation slides for details). Stage 1 and 2 will be undertaken as part of the PEI and 3 will be undertaken at the ES stage.</p> <p>LP agreed that the approach was acceptable.</p>	
9	<p>LC agreed with the principles of the assessment presented. JA confirmed that the site investigations will be limited to when required by the engineering team.</p>	

Number	Details	Action
10	<p>LC recommended that climate change plus 20% should be used for the FRA and Projects design.</p> <p>LC stated that FSR rainfall data is no longer acceptable and only FEH data will be accepted by NCC.</p> <p>LC stated that the operation and maintenance plan will have to be shared with NCC.</p>	
AOB		
11	<p>LC confirmed that she was comfortable for future water resources and flood risk meetings to be flexible and programmed at points in time that would most benefit the assessment.</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] len JA (RHDHV), [REDACTED] SM (RHDHV), [REDACTED] CD
(Equinor), [REDACTED] JT (Equinor), [REDACTED] ID (RHDHV),
[REDACTED] HW (RHDHV), [REDACTED] BT (Environment Agency),
[REDACTED] KW (Environment Agency), [REDACTED] YS (Internal
Drainage Board)

Apologies: [REDACTED] LP (Norfolk County Council)

From: [REDACTED]

Date: 06 September 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0023_ Water Resources and Flood Risk Sept21

Classification: Confidential

Enclosures: Water ETG Meeting 06 Sep 2021 v1

Subject: Water Resources and Flood Risk ETG 2

Number	Attendee	Details	Action
Introduction and Purpose of the Meeting			
1	All	Members of the Expert Topic Group (ETG) and Project Team reaffirmed their roles	
2	ID	Described the objectives of the second meeting of the Water Resources and Flood Risk ETG, to: <ul style="list-style-type: none"> • Provide an update on the Projects • Discuss flood risk at the Onshore Substation • Discuss the Section 42 comments and agree a way forward 	
Project Update and Timescales			
3	JT	Provided an update to the project since PEIR submission, detailing the route refinement process, substation and compound site selection. Highlighted the importance of addressing water related issues and identifying a way forward at the favoured substation site (Site 1).	
Flood Risk at the Onshore Substation			
4	ID	Presented figures showing fluvial and surface water flood risk at Site 1 (See attached Slide 5-6), and considered the following: <ul style="list-style-type: none"> • Site 1 falls outside Environment Agency (EA) Flood Zone 2 and 3 and is therefore at negligible risk of fluvial flooding. • Surface water models show a surface water flow path running west to east across the northern section of Site 1, pooling where this path meets the railway. 	
5	HW	Confirmed that in accordance with the changes in the National Planning Policy Framework, due regard would be being given to all types of flood risk.	

Number	Attendee	Details	Action
		Identified the importance of engagement with the ETG to identify how this indicative flow path presents on the ground to help inform potential drainage strategies, and the requirement for space within the DCO application boundary to attenuate surface water.	
6	CD	Shared that Ground Investigations (GI) of Site 1 and the surrounding fields to the north east of the site had been recently undertaken. The GI included infiltration tests which had failed. These results presented the worst-case for defining the area required for surface water attenuation, as ground infiltration was very low.	Equinor / RHDHV to provide infiltration test results to the ETG.
7	HW/BT/YS	HW identified that surface water flood risk would fall under the remit of the Lead Local Flood Authority (LLFA); however, representative from Norfolk County Council (the LLFA) was absent from the meeting. BT/YS confirmed that the EA and Internal Drainage Board (IDB) would not be able to provide comment on surface water issues. Agreed that minutes and additional information would be provided to the LLFA.	RHDHV to provide meeting minutes and information to LLFA.
8	CD	Added that the area shown to accumulate surface water was overgrown with vegetation. No culverts have been located during initial site inspections, in addition, the land-owner also does not believe a culvert to be present.	
9	HW	Stated that further engagement with the landowner would be useful to understand how and where surface water accumulates within the area identified. Update – feedback received from landowner following this ETG meeting is that they have no experience of the land flooding in this location. This makes sense given historic Google Earth imagery also shows no evidence of difficulties farming here.	Equinor to approach Dalcour Maclaren
Discussion of Section 42 comments (Environment Agency)			
10	ID	Detailed the Section 42 comments from the EA and project responses (see attached, slide 7-9 for full text).	
11	HW/CD	Discussed whether the project would be using Protective Provisions or the full consenting process.	Equinor to confirm Protective Provisions will be used

Number	Attendee	Details	Action
12	BT	Confirmed that EA Protective Provisions were standardised and are not adjusted between projects.	BT to provide a copy of the Protective Provisions
13	HW	Confirmed that the type of river crossing would be defined within the watercourse crossing method statement.	
14	BT	Stated that groundwater sources in Norfolk are particularly vulnerable and any degradation to ground water would be unacceptable. Suggested that they would contact the EA groundwater specialist to provide further detail to the project.	BT to liaise with the EA ground water specialist
15	ID	Commented on the chalk river catchments through which the onshore infrastructure would pass. Stated that these are complex, sensitive and internationally complex systems. This is acknowledged in the PEIR, in the description of the baseline environment and in the definition of the value and sensitivity of surface and groundwater receptors and would be further emphasized in the ES.	
16	ID/BT	Described that assessment used the approach set out in the Method Statement and agreed at the ETG meeting in May 2020, i.e., that each receptor has been assigned a sensitivity based on an assessment of the observed baseline characteristics of each receptor (e.g., for surface waters, their hydrology, geomorphology, water quality and related habitats are considered). A precautionary approach has been adopted, whereby the receptor is assigned the highest sensitivity based on available baseline data. BT considered that this would not be appropriate based on EA requirements under the Water Framework Directive, which remained EA's absolute responsibility. Suggested that a secondary meeting should be held to discuss this point in more detail with ID.	RHDHV to arrange secondary meeting with EA.
17	ID	In relation to cumulative assessment , confirmed that further details would be provided within the ES.	
18	ID/KW/	In relation to Natural Flood Management (NFM) scheme at Weyourne (Spring Beck) requested whether any additional information was available from the EA. KW confirmed that they would provide a copy of the report on the scheme. KW suggested that the landowner has concerns around:	KW to provide NFM report

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> The crossing which is located on their land. Potential for ground water flooding Interactions with other cable network projects on the land (Croma ridge) 	
Discussion of Section 42 comments (Local Authorities)			
19	HW	Detailed the Section 42 comments from the local authorities and project responses (see attached, slide 10-12 for full text).	
20	HW/YS	<p>HW Acknowledged Norfolk County Council's concerns with regards to watercourse crossings and the flood risk from the substation and compounds and confirmed that further information would be provided in the ES and supporting FRA.</p> <p>HW Noted the requirement for Land Drainage Consent from NCC for the crossing of ordinary watercourses, and stated that further consultation regarding the consenting strategy would be undertaken as the DCO develops.</p> <p>YS reaffirmed the remit of the IDB, LLFA and EA.</p>	
21	JA	Confirmed that the project was committed to trenchless crossing for all main rivers and that a detailed crossing schedule would be provided with the application.	
22	ID	<p>In relation to private water supplies, requested further data pertaining to their location from the ETG.</p> <p>ETG were not aware of any wells, boreholes, or unlicensed abstractions of less than 20 cubic meters a day. It was considered that the LLFA may have more information.</p>	RHDHV to request information from LLFA.
Discussion of Section 42 comments (IDB)			
23	ID	Detailed the Section 42 comments from the local authorities and project responses (see attached, slide 13-14 for full text).	
24	ID	Requested a catchment boundary map of IDB rivers.	RHDHV to check requirement and request GIS data as necessary
25	YS	Confirmed that surface water discharge into privately maintained watercourses within the IDB district would require IDB consent.	
26	YS	Stated that the IDB are changing the way they deal with crossings underneath watercourses, as it is likely that future widening of rivers may be required to allow for increased flow (as a result of climate change).	

Number	Attendee	Details	Action
		<p>This easement was considered to be 6m on either side of the bed bank top level, and 2m below the hard bed as a minimum.</p> <p>YS also detailed the requirement for a strike plate 1m below the hard bed, together with marker posts on the banks to indicate the location.</p>	
27	YS	Indicated that the Protective Provisions approach would be considered by the IDB. YS would provide the standardised text for these.	YS to provide IDB Protective Provisions text
Actions and next steps			
28	JA	<p>Suggested that future meetings should be topic specific and ad hoc as required.</p> <p>Request for future meetings to be held in the second half of the week.</p>	SM /BT to circulate dates
29		<p>Equinor / RHDHV to provide infiltration test results to the ETG.</p> <p>RHDHV to provide meeting minutes and information to LLFA.</p> <p>Equinor to approach Dalcour Maclaren on landowner engagement at substation.</p> <p>Equinor to confirm Protective Provisions approach will be used by the project.</p> <p>BT to provide a copy of the EA Protective Provisions.</p> <p>BT to liaise with the EA ground water specialist.</p> <p>RHDHV to arrange secondary meeting with EA to discuss Method Statement.</p> <p>KW to provide Weybourne NFM report.</p> <p>RHDHV to request private water supplies information from LLFA.</p> <p>RHDHV to check requirement for IDB catchment boundary map and request if necessary.</p> <p>YS to provide IDB Protective Provisions text.</p> <p>BT to check availability of EA team members for future meeting</p> <p>SM to circulate dates for meeting.</p>	Various

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] JA (RHDHV), [REDACTED] SM (RHDHV), [REDACTED] CD
(Equinor), [REDACTED] ID (RHDHV), [REDACTED] (Environment
Agency), [REDACTED] KW (Environment Agency), [REDACTED] AS
(Environment Agency)

Apologies: [Click to enter "Apologies"](#)

From: [REDACTED]

Date: 30 September 2021

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0025_Water Resource EA ETG2 Sept21

Classification: Confidential

Enclosures: Water ETG Meeting 06 Sep 2021 v1

Subject: Water Resources and Flood Risk EA ETG 2

Number	Attendee	Details	Action
Introduction and Purpose of the Meeting			
1	All	Members of the Expert Topic Group (ETG) and Project Team reaffirmed their roles	
2	ID	Described the objectives of the meeting with Environment Agency (EA), to discuss further the Section 42 comments in relation to: <ol style="list-style-type: none"> 1. Spring Beck and the Weybourne Natural Flood Management (NFM) scheme; and 2. Definition of receptor sensitivity and value and impact magnitude; 	
Discussion of Section 42 comments			
Spring Beck and the Weybourne Natural Flood Management (NFM) scheme			
10	ID	Detailed the Section 42 comments from the EA and project responses in relation to Spring Beck and the Weybourne NFM scheme. Confirmed that the potential impacts of the proposed development on off-site flood risk as a result of any changes to the Weybourne NFM scheme would be considered in more detail in the FRA. Where necessary, additional mitigation will be considered.	
11	KW	KW confirmed that they have provide a copy of the report on the NFM scheme(s), which will be issued via BT. Should the project have questions regarding the report of the NFM designs, further meeting may be arranged with the report author.	BT to issue NFM report

Number	Attendee	Details	Action
	BT/KW	<p>Suggested that the distribution of NFM features would likely be avoided through HDD and stated hydrological assessments would be appropriate and could be included in the FRA.</p> <p>KW described a complex ground water system which some of the NFM measures were targeted at, in addition to leaky dams to slow the flow of surface water off steeper gradients.</p> <p>It was considered that should the project commit to HDD in the area, the requirement for backfilling would be eliminated. Agreed that the ES chapter would consider potential impacts on the Weybourne Natural Flood Management (NFM) scheme, including impacts on backfilling on groundwater flow paths.</p>	
	BT	Stated that the EA would require commentary on how the project intends to avoid a cumulative effect on any preferential pathways.	
	CD/AS	AS requested that GI data is shared with the EA to help inform case studies on HDD. CD agreed to share GI data with the EA, and for Jason Sparks to provide a summary of previous SEP and DEP HDD works.	
	CD/BT	Discussed the risk of HDD breakout VS HDD length. CD confirmed that the project is looking at how the risk of breakouts could be managed following comment from Natural England	
Definition of receptor sensitivity and value and impact magnitude			
16	ID	Described that assessment used the approach set out in the Method Statement and agreed at the ETG meeting in May 2020, i.e., that each receptor has been assigned a sensitivity based on an assessment of the observed baseline characteristics of each receptor (e.g., for surface waters, their hydrology, geomorphology, water quality and related habitats are considered). A precautionary approach has been adopted, whereby the receptor is assigned the highest sensitivity based on available baseline data.	
	AS	Stated that assessment should ensure that there is no further deterioration of WFD class, so that the whole of the resource is protected for current and future use.	
	ID/AS	<p>Described that although there were only a small number of WFD waterbodies, there were large ground water receptors within the study area.</p> <p>AS presumed there would be a water feature survey to identify receptors present, with hydrological risk assessments undertaken where required so that all receptor which require protection were identified.</p>	

Number	Attendee	Details	Action
	ID/AS	<p>Described one of the main difficulties with regards to ground water resource was pin pointing the locations of unlicensed abstractions as data is limited.</p> <p>AS confirmed the EA does hold data sets for unlicensed abstractions; however, these were not up to date. This may be used as a starting point, combined with water features surveys and landowner discussions.</p> <p>CD stated that the shapefile and details of the DCO boundary was confidential information and not to be shared.</p> <p>Agreed that the assessment of groundwater impacts will consider unlicensed abstractions, based on the Environment Agency's dataset covering deregulated licences and small unlicensed abstractions. Ground Water Dependent Terrestrial Ecosystems would also be considered.</p>	<p>AS to provide EA data set for unlicensed abstractions.</p> <p>Equinor to provide shapefile of the DCO boundary.</p>
	ID/KW	<p>Agreed that all chalk river systems, including the Wensum, Bure and Weybourne, should be defined as highly sensitive.</p>	
	ID/AS/BT	<p>Agreed that the approach to defining impact magnitude based on the risks of impact occurring as a proportion of a catchment in which activities would be undertaken was appropriate, but that a clearer explanation of the approach was required in the ES.</p>	
Actions and next steps			
		<p>BT to issue NFM report</p> <p>AS to provide EA data set for unlicensed abstractions.</p> <p>Equinor to provide shapefile of the DCO boundary.</p> <p>SM to issue minutes.</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] JA (RHDHV), [REDACTED] CD (Equinor), [REDACTED] JS (Equinor),
[REDACTED] HW (RHDHV), [REDACTED] DS (Norfolk County Council), [REDACTED]
SL (Norfolk County Council), [REDACTED] JT (Equinor)

Apologies:

From: [REDACTED] (RHDHV) (drafted by [REDACTED] (RHDHV))

Date: 10/02/2022

Location: Online

Copy:

Our reference: PB8164-ZZ-XX-MI-Z-0004

Classification: Confidential

Enclosures: OnSS surface water modelling – LLFA update v0.4.pptx

Subject: Water Resources and Flood Risk ETG 3 – LLFA update

Number	Attendee	Details	Action
Introductions and Project Updates			
1	All HW	Introductions. Provided a brief overview of purpose of the meeting, which was to provide an update on 2D surface water modelling and the key considerations in relation to surface water drainage at the Onshore Substation Site (OnSS).	
Onshore Substation Site Selection			
3	JA/HW	Provided a high-level overview of the project, outlining a number of design assumptions: <ul style="list-style-type: none"> - Building height = approximately 15m. - Construction compound footprint = approximately 1ha. - Operational compound footprint = up to 6.25ha. - External equipment height = up to 30m. 	
4	JA	Outlined key considerations that went into the selection of preferred site: <ul style="list-style-type: none"> - Must be as close as possible to a connection point. - Avoid residential titles - Avoid direct significant impacts to designated areas. - Avoid mature and historic woodland. - Avoid areas within Flood Zone 2 and 3. - Avoid areas of local amenity value. <p>Described the location of the proposed OnSS south of Norwich Main substation. Stated that the site sits within</p>	

Number	Attendee	Details	Action
		Environment Agency Flood Zone 1 and noted there is a surface water flooding issue. However, the low-lying land is considered beneficial from the visibility perspective, and the site was preferred by the local community during public consultation.	
	SL/JA/HW	<p>Discussion around the requirements of the updated National Planning Policy Framework (NPPF) (July 2021) to account for all sources of flooding, and how this has been considered in the project.</p> <p>SL suggested a brief technical note would be useful for understanding how the project is dealing with this update in the guidance.</p>	Equinor/Legal to produce technical note on implications of updated NPPF.
2D Surface Water Modelling			
	HW	<p>Provided an overview of site visit (13th December 2021) and the TuFLOW surface water modelling exercise undertaken using the 0.5m LiDAR data from the Environment Agency open source dataset. Cross referenced with survey data flown for the Project (August 2021) and DSM LiDAR for validity.</p> <p>This modelling has taken a conservative approach by assuming a zero-infiltration rate, which is reflective of infiltration testing results.</p>	
Baseline Modelling Results			
	SL/HW/DS	Discussed that the results of baseline modelling show a shape and location broadly similar to the Environment Agency surface water modelling. The primary difference is likely to arise from the representation of soil characteristics, as the Project baseline modelling assumes zero permeability / infiltration based on initial ground investigations. This was considered a conservative approach to modelling.	
Raised OnSS Platform Indicative Modelling Results			
	SL/DS/JS	<p>Indicative modelling results of the raised OnSS platform suggest maximum water depth of approximately 3 metres (m) against the railway embankment in the 1 in 100 year plus 40% CC Depth scenario.</p> <p>A 10m nominal height was set within the model to ensure the platform and access road didn't flood.</p>	
	HW/DS/SL/JS	SL/DS questioned whether outflow underneath the railway line and road had been identified. HW/JS confirmed from the various site visits that none had been detected. There remains some uncertainty related to the ponding of water to the east of the OnSS site as the landowner has never seen water in the area.	

Number	Attendee	Details	Action
	DS	Voiced concern that should water pond to an extreme depth against embankment, it could breach.	
	SL	Noted that the access road would act as buffer, preventing water reaching the railway infrastructure.	
Raised OnSS Platform – Summary of Results			
	HW	Described that the northern area has a maximum water depth of approx. 3.05m. The eastern area has a maximum water depth of 1.2m, below the level of railway embankment. Confirmed that the indicative platform level is set at 27.63m AOD plus 300mm freeboard (=27.93m AOD), which meets National Grid's requirements.	
	SL/DS/JS	Suggested the extent of unknown factors should mean increasing the freeboard from 300mm to 600mm. JS suggested putting a bund around the periphery of the platform, rather than lifting the entire platform, which could be designed to be 900mm high.	
	JS/SL/DS/CD	Discussed alternative options to raising platform further, considering the landscape/visual impacts. Options discussed included a concrete retaining wall to keep out burrowing animals (and also low maintenance demands), or a bund re-using local material. SL stated that modelling should consider the potential footprint of the bund and whether it would affect where water is redirected to. SL highlighted the importance of carbon as a consideration. A bund would be a better solution than a concrete wall, as it would take into account the nature-based solution requirements outlined in NPPF and would provide opportunity to improve the local environment. CD confirmed that a bund/concrete wall solution is better than constructing an attenuation pond, which may interfere with Hornsea 3 cables.	
Consideration of SuDS drainage hierarchy			
	DS	Questioned where surface water drains away with minimal infiltration and no watercourse connection.	
	HW/DS/SL/JS	Reviewed the drainage options for surface water: Option 1: Surface water runoff if collected for re-use - Initial conclusions were that it was feasible but of limited benefit.	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> - SL raised point of local water users creating demand for surface water (for example, farmers and potentially Dunston Hall Golf Course). - Potential issues with standing water and contamination. 	
	HW/DS/SL/JS	<p>Option 2: Discharge via infiltration (into the ground)</p> <ul style="list-style-type: none"> - Testing undertaken in August 2021. - Test pits concluded discharge via infiltration was of limited feasibility, due to slow rate of drain down. - DS highlighted importance of more testing to better understand drainage in key areas (i.e. where the water ponds the most); potential for creating another test pit between pits 255 and 254. 	Further ground investigations to be undertaken in June 2022.
	JS/SL/HW	<p>Option 3: Discharge to surface waterbody</p> <ul style="list-style-type: none"> - Site walkover confirmed agricultural field drains were present but no connection with other waterbodies. - Connection with a surface water body considered to be technically difficult. - Connection with Dunston Hall Golf Course is difficult and may be met with resistance. - Connection with River Tas has constraints in terms of distance, topography and landowners affected. - The topography between OnSS site and start of drainage network has no continual downward gradient. 	JS agreed to find out where gravel extraction works discharge to.
	HW/CD/DS/SL	<p>Option 4: Discharge to a surface water sewer, highway drain or another drainage system</p> <ul style="list-style-type: none"> - HW confirmed no evidence of surface water drainage within wider area and Network Rail drainage plans consider that their system is also unsuitable for connection. - HW/CD Engagement with Highways Authority required to confirm presence of highway drainage, but historically the Highways Authority have been resistant to third parties connecting to their drainage systems. - SL/DS indicated there appear to be no highways drainage assets in this location but this needed to be formally confirmed. - DS queried evidence as to whether there may be gravel pockets (amongst the impermeable clay) which could allow shallow infiltration. More investigation needed. 	Engage with Highways Authority to obtain information on highway drainage.

Number	Attendee	Details	Action
	HW/CD	<p>Option 5: Discharge to a combined sewer</p> <ul style="list-style-type: none"> - HW confirmed no combined sewer within the wider area, therefore only feasible option is to discharge into Anglian Water foul water sewer. - Anglian Water initially engaged with Equinor at a meeting in December 2021. - CD Anglian Water had demonstrated preference for nature-based solution and would also require further evidence this is only option. If this option is taken forward, it would require a sewer capacity upgrade. - HW concluded that at the current time this is the preferred solution. 	Further meeting to be arranged with Anglian Water.
Flood risk and drainage considerations			
	HW	<p>Stated that surface water would be discharged from platform at greenfield runoff rate, in accordance with NCC SuDS guidance.</p> <p>Confirmed that the level of platform would ensure no risk to project in an extreme event and that development is safe during its lifetime in line with NPPF and in accordance with the National Grid standard requirements.</p> <p>Stated that the displacement of flood water resulting from the OnSS platform would not increase risk to off-site receptors.</p>	
	SL/DS/HW	<p>SL queried whether there been any investigation into deep infiltration. DS voiced support for more investigation into this option as there are limited other options. HW noted that this is usually perceived as an unfavourable option. SL/DS acknowledged this but also noted that as the Project is looking at other less favourable solutions in terms of the SuDS Hierarchy this may also bring it into consideration.</p> <p>SL/DS provided examples at Beeston Park in Norwich and a logistics park near Snetterton where this solution was adopted.</p> <p>HW noted that the Environment Agency may have concerns in relation to this option and the potential impact on groundwater, as the OnSS site is in a Source Protection Zone (albeit one of the lower categories in terms of sensitivity).</p>	<p>Ground investigation teams may need to look into deep infiltration as an option</p> <p>Contact to be made with Environment Agency regarding deep infiltration to obtain an initial view</p>
	SL/DS	SL discussed new types of pumps that do not require electricity but are active when water is present. This would present a carbon neutral method to take water to	

Number	Attendee	Details	Action
		<p>a storage facility to be used by local farmers/ Dunston Hall Golf Club.</p> <p>DS advocated further ground investigation, as previous options were discounted perhaps due to a lack of evidence. Stated the importance of demonstrating that construction of the project would not worsen flood risk.</p>	
AOB and Next Steps			
		<ul style="list-style-type: none"> - Consider refinement of modelling work using 2014 topographical data (drone survey data) - Review of greenfield runoff rate based on ground investigations - Engagement required with the Highways Authority (NCC) to confirm the presence and/or condition of highway drainage - Follow up meeting with Anglian Water – would the LLFA like to be involved in this? <ul style="list-style-type: none"> ➔ LLFA agree they don't feel the need to be involved in that meeting, but instead would prefer to be involved further down the line. - Completion of onshore substation drainage study to accompany DCO application - Development and delivery of FRA as part of the DCO application. 	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] JA (RHDHV), [REDACTED] HW (RHDHV), [REDACTED] ID (RHDHV), [REDACTED] (LLFA), [REDACTED] JT (Equinor), [REDACTED] JS (Equinor), [REDACTED] DS (LLFA), [REDACTED] SL (LLFA)

Apologies: [REDACTED] (Environment Agency (EA))

From: [REDACTED] (RHDHV), Drafted by [REDACTED] (RHDHV)

Date: 07 April 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-00XX_Onshore Substation Layout_Flood Risk_Apr22

Classification: Confidential

Enclosures: OnSS Layout and Infiltration – LLFA update v0.3.pdf

Subject: Water Resources and Flood Risk ETG 4 - Onshore Substation Layout- Flood Risk - LLFA update

Number	Attendee	Details	Action
Agenda / Purpose the meeting			
	HW	<p>Noted that the meeting would not cover deep infiltration as this has been addressed in the previous meeting.</p> <p>Described the purpose of the meeting which was to provide ETG members with the following:</p> <ul style="list-style-type: none"> ■ Update on key actions from last meeting ■ Context of OnSS layout refinement ■ Overview of OnSS layout refinement ■ Discussion around flood risk and drainage clarifications 	
Context of OnSS layout refinement			
	HW	<p>Provided a summary of the issues associated with site parameters and environmental constraints, which were discussed at the previous meeting on 10th February 2022.</p> <p>Described further refinement process being undertaken for the OnSS layout to minimise, wherever possible, the interaction with the surface water flood risk area, while retaining the flexibility to optimise the design and construction process, and to ensure competitive procurement.</p> <p>The OnSS layout refinement undertaken by JT and JS. There has been engagement with some of the potential suppliers already.</p>	

Number	Attendee	Details	Action
		<p>However, the OnSS area has been revised based on early-phase designs from different OEMs (suppliers).</p> <p>Stated that the OnSS layout accounts for several fixed parameters:</p> <ul style="list-style-type: none"> ■ The need to locate the cable entry point from the south. ■ Connection to Norwich Main substation to the north. ■ Electricity Act Requirement to minimise costs to the end user by locating the OnSS as close as possible to the connection point. ■ In addition, there needs to be consideration of the location of the Hornsea 3 cables. 	
Overview of OnSS layout refinement (slide 5)			
	HW	<p>Considered options for the OnSS (see slide 5) and described the following:</p> <ul style="list-style-type: none"> ■ OnSS footprint presented at previous meeting shown by yellow polygon. ■ Pink polygon shows the area needed for a N-S orientation but also allows for a E-W orientation (if an efficient connection can be attained). Therefore, this outline takes into account the option for either of the two orientations. <p>Displayed in comparison with Environment Agency's surface water mapping (light blue: 1 in 100 year event and dark blue: 1 in 1,000 year event) to understand the potential interaction with the proposed OnSS footprint.</p> <p>Described several potential access road locations:</p> <ul style="list-style-type: none"> □ N-S orientation entry in NE corner. □ E-W orientation entry in NE corner in closer proximity to railway line. <p>Identified that these layout iterations have where possible sought to move the OnSS away from the surface water flood risk.</p>	
Discussion around flood risk and drainage clarifications			
	HW	<p>Stated that the Environment Agency flood zones and surface water flood mapping had been used in the initial site selection process. In terms of wider constraints and current NPPF guidance on the Sequential Test, site selection has sought to apply a sequential approach where possible.</p>	

Number	Attendee	Details	Action
		<p>Hydraulic modelling had been used to refine the platform in terms of height and where possible, the boundary (outputs presented during previous meeting).</p> <p>Described that the project was seeking to refine the modelling to use higher resolution LiDAR and review of rainfall input data, where available, to inform the detail design phase.</p> <p>Note: The pink polygon represents the worst-case scenario to be included for the DCO application - work will continue to further optimise the overall footprint, where possible, as well as the interaction with the modelled flood extent. It was noted that for the DCO application it is not feasible to reduce this further without constraints arising from other parameters.</p> <p>Presented the following questions to the ETG:</p> <p>Question: Do you have any observations on this, and can we confirm your position on the application of the Sequential Test in site selection, based on the current guidance and national mapping?</p> <p>Question: Do you have any initial feedback as to whether the level of interaction shown between the platform and the modelled flood extents would be acceptable in principle?</p> <p>Question: Do you have any further feedback with regard to the potential interaction between the access road and modelled flood extents?</p>	
Discussion			
	SL/DL	<p>SL considered that furthering the evidence base would enable the project to challenge the EA surface water flood mapping.</p> <p>SL suggested that building and running a groundwater modelling exercise with a linked surface water unit should provide the evidence base to reduce the surface water extent that is currently mapped that may be accepted by the EA. This may give the project a more flexible site to work with.</p> <p>DL considered that the project would need to provide sufficient evidence to challenge the current EA surface water flood mapping.</p>	

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		<p>SL highlighted formal changes to climate change allowances are anticipated to be published later this month.</p> <p>SL included reference to likely reductions in river flows and how this might be reflected in reduced rainfall intensities etc.</p> <p>In light of this, SL suggested that should models be run before these updates are published, it would be reasonable to utilise the values of 20% and 30% for increased rainfall intensity as a result of climate change.</p>	
	SL/DS/HW /JA/JT	<p>SL considered that groundwater modelling should enable the project to provide evidence that the flood extents in both scenarios are less than shown on the EA's mapping. Putting in this extra modelling means the project may not be as heavily constrained.</p> <p>DS identified the issue of timescales as a formal challenge to the surface water flood mapping would be time-intensive for the project.</p> <p>HW confirmed that a formal flood map challenge, can take considerable time and engagement with the EA. Instead, the focus would be on providing project and site-specific evidence specifically to support the DCO application.</p> <p>SL also proposed keeping this to a challenge in the context of the DCO application but that obtaining information related to groundwater may aid in demonstrating that the area of flood risk is smaller than shown on the national dataset when progressing the design post-consent.</p> <p>HW queried whether the project had currently demonstrated that it was minimising the interaction with surface water as much as possible?</p> <p>SL confirmed that currently the pink polygon footprint is the LLFA preferred option; however, the LLFA would need to see the refinement process and collection of evidence to support the decision-making process.</p> <p>HW confirmed that the project is committed to carrying out extra work to support the evidence base, where possible. However, the project wishes to confirm that the works undertaken so far meets the initial requirements prior to continuing to gather further evidence.</p>	

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		<p>JA shared that it was difficult to define the exact location of the access road, and in the DCO application this will be defined as a general zone. However, it is important to note that the whole area identified would not need to be used for the access road. The location of the access road would not be confirmed until post-DCO. It is assumed that this is a post-consent requirement, rather than comprising part of the information to be provided now.</p> <p>HW will provide the LLFA with the information gathered from boreholes and any updates to the modelling scope before undertaking the any modelling work.</p> <p>SL also suggested engaging with the EA. Whilst the LLFA will have an input, the EA would also be able to advise on what approach is needed in order to validate the model. LLFA to provide contact details for the correct EA team.</p> <p>JT questioned in terms of visual impact and mitigation (specifically planting), are there any constraints on what vegetation could be planted in an area of surface water flood risk?</p> <p>SL recommended contacting Norfolk County Council's natural environment team who can provide guidance on this issue.</p> <p>JA stated that the most important thing is ensuring vegetation doesn't reduce capacity of the area.</p> <p>DS added that as long as planting does not adversely interfere with flow path, the LLFA would not have a strong opinion on planting. SL proposed that it may be beneficial to have vegetation on the flow path. For instance, creating wet woodland for environmental gain.</p> <p>HW noted there is a risk that for the majority of time this might be a dry site and wetland plants may not be appropriate.</p>	<p>HW to send SL and DS information on boreholes.</p> <p>HW / ID to engage with the EA regarding the potential for groundwater modelling.</p> <p>SL / DS to provide contact details for EA flood mapping team.</p> <p>HW / ID to contact the environment team at Norfolk County Council with regards to landscaping queries.</p>
Concluding comments			
	DS/JS/HW	DS stated that is increasingly clear how the site is behaving. There seems to be very little ground evidence of	JS to raise flood risk and discharge of

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		<p>wetness along the flow path route. The LLFA were happy with the evidence being produced.</p> <p>JS noted that the project has engaged with quarry owners to the north but haven't discussed the flood issue. JS noted their quarries are dry. SL suggested that the quarry owner may have supplementary information that would help with the evidence base. JS will raise at the next meeting, in addition to enquiring where they discharge their water.</p>	<p>water queries at the next meeting with quarry owners.</p>
Any Other Business?			
	SL	Suggested sending out placeholders for upcoming meetings to ensure they were in the calendar.	
Actions/ Next Steps			
		<p>HW to send SL and DS information on boreholes.</p> <p>HW / ID to engage with the EA regarding the potential for groundwater modelling.</p> <p>SL / DS to provide contact details for EA flood mapping team.</p> <p>HW / ID to contact the environment team at Norfolk County Council with regards to landscaping queries.</p> <p>JS to raise flood risk and discharge of water queries at the next meeting with quarry owners</p>	

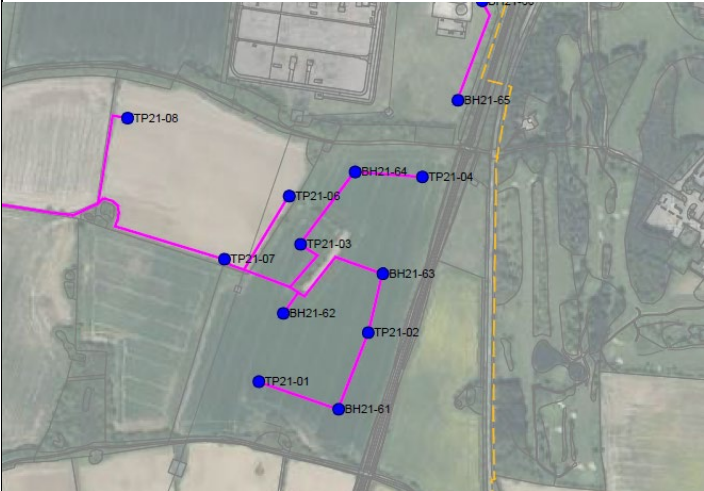
Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] JA (RHDHV), [REDACTED] CM (RHDHV), [REDACTED] HW (RHDHV),
[REDACTED] ID (RHDHV), [REDACTED] JT (Equinor), [REDACTED] JS
(Equinor), [REDACTED] DS (Norfolk County Council), [REDACTED] SL (Norfolk County
Council), [REDACTED] AS (Environment Agency)
Apologies: [REDACTED] (Environment Agency (EA))
From: [REDACTED] (RHDHV)
Date: 07 April 2022
Location: Online
Copy:
Our reference: PB8164-RHD-ZZ-ON-MI-Z-00XX_Water ETG_Deep Infiltration and GI Apr22
Classification: Confidential
Enclosures: OnSS Groundwater and Deep Infiltration - EA update v0.2

Subject: Water Resources and Flood Risk ETG 4 - OnSS Groundwater and Deep Infiltration - EA update

Number	Attendee	Details	Action
Agenda / Purpose the meeting			
	HW	Described the purpose of the meeting which was to provide ETG members with the following: <ul style="list-style-type: none"> ■ Update on key actions from last meeting. ■ Overview of onshore substation (OnSS) layout refinement. ■ Context to OnSS Infiltration Technical Note. ■ Summary of OnSS Infiltration Technical Note. ■ Summary of Geophysical Surveys. ■ Discussion around flood risk and drainage clarifications. 	
Update on key actions from last meeting			
	HW	Provided an update on key actions from the last meeting, many of which are still ongoing. Key actions included: <ul style="list-style-type: none"> ■ Further ground investigations (GI) to be undertaken in June 2022. ■ Equinor to identify where gravel extraction works discharge to (ongoing). ■ Equinor to engage with Highways Authority to obtain information on highway drainage (ongoing). ■ Equinor to arrange further meeting with Anglian Water (ongoing). 	

Number	Attendee	Details	Action
		<ul style="list-style-type: none"> ■ Car Park to be used infrequently for maintenance checks (approx. 1 vehicle per week). ■ Vehicle type – trucks / vans may be fuel. ■ Proposed platform surface – worst-case 50% impermeable, with the design to include oil interceptors etc (i.e. standard requirements for SuDS drainage design). 	
Summary of OnSS Infiltration Technical Note			
	CM	<p>Provided a summary of the review undertaken of the Exploratory Holes (part of the GI), comprising:</p> <ul style="list-style-type: none"> ■ Four cable percussive boreholes: BH21-61, BH21-62, BH21-63, BH21-64. ■ Six trial pits: TP21-01, TP21-02, TP21-03, TP21-04, TP21-06 and TP21-07. <p>Stated that the review excluded BH and TP north of the OnSS due to differing geology.</p> 	

Number	Attendee	Details	Action
	CM	<p>Described the typical geology which comprises:</p> <ul style="list-style-type: none"> ■ Topsoil encountered to depths of between 0.30 – 0.35m bgl (25.17 – 29.63m AOD). ■ In the majority of locations, the Topsoil is underlain by Sand and Clay. There is limited infiltration within the Sand. ■ A layer of Gravel was encountered in the boreholes, underlying the cohesive finer strata (either Clay or Silt). ■ Chalk bedrock encountered within all boreholes. <p>Focussed on the layer of Gravel which could be used to potentially discharge the water from the OnSS (the target layer for deep infiltration).</p> <p>Confirmed this layer appears to be directly overlying bedrock, and as such there is no confining layer between the Gravel and the Chalk.</p>	
	CM	<p>Set out the hydrogeology of the area, which is located within Source Protection Zone (SPZ) 3 but is also located near to SPZ2. The area falls outside the Drinking Water Protection Zone.</p> <p>Described the criteria established in the EA guidance <i>Use of Deep Infiltration System (G9)</i>:</p> <ul style="list-style-type: none"> ■ Indirect discharge; ■ Depth of system; and ■ Pollution control measures. <p>Considered that the deep infiltration on site would satisfy EA criteria.</p> <p>DS described that historically substations have used oil filled transformers which may pose a pollution risk and queried whether the project would be proposing similar. If so, queried whether additional measures would be required for additional prevention/mitigation measures. SL confirmed that self-contained bunded areas would be required for the volume of the container +10%.</p> <p>AS queried CM statement on indirect discharge and confirmed that this would be considered direct discharge to groundwater (regardless of the layer into which it was discharged). CM and AS clarified their understanding and</p>	

Number	Attendee	Details	Action
		agreed on the position with regards to the use of the term direct discharge, which includes any discharge to ground water.	
Summary of Geophysical Surveys			
	JT	<p>Described that the project was currently undertaking survey work near the proposed OnSS. Electromagnetic (EM) and resistivity testing was underway to develop understanding of the sub-surface features. Resistivity lines had been located to tie in with the boreholes from the ground investigation campaign undertaken in 2021.</p> <p>Questioned whether the ETG had experience of these types of tests or whether they had any further suggestions for testing.</p> <p>AS stated that geophysical surveys were outside her area of expertise but agreed that this further testing would be useful to help build an understanding of what was happening at the site and what is underlying it.</p>	
Discussion around flood risk and drainage clarifications			
	AS	<p>AS shared that in addition to public water sources there were licensed sources at Dunston and Mangreen Hall. Information on these will be shared by AS and may include borehole records.</p> <p>In addition, there is an EA monitoring site east of Dunston Hall, information for which will also be shared.</p>	AS to share information on nearby licensed sources and EA monitoring site.
	CM/AS	<p>CM queried AS on the potential adoption of deep infiltration at the OnSS as the pollution risk is considered to be minimum.</p> <p>AS confirmed that it is not the EA's preferred method of discharge and there is a presumption against it. AS identified that there would need to be mitigation measures in place, such as bunds and oil interceptors, and in addition treatment and penstock valves so that it can be isolated if required. AS confirmed the EA's preference for drainage to the foul sewer network, if possible.</p> <p>AS suggested that separating the water streams from various sources would also be useful. JA confirmed he was aware of this approach.</p> <p>DS stated that from an LLFA perspective, a SuDS based treatment train would need to be put in place prior to discharge to deep infiltration.</p>	

Number	Attendee	Details	Action
		AS confirmed that the project would need to demonstrate that any water discharged via deep infiltration would pose zero risk of groundwater pollution.	
	SL/JA/JT	<p>SL questioned the volume of water which would need to be dealt with. JT/HW confirmed circa. 3000m³ of water for the whole of the platform.</p> <p>SL requested whether this be split out into the different areas. JA considered this may be possible with some assumptions. JT confirmed it would be a relatively small area for the car park in relation to the overall OnSS footprint.</p>	
	SL	Questioned whether car parking and access could serve as a drivable swale, as other Highways schemes have. If feasible, this could form part of the treatment train, e.g. through filtration blanket.	
	AS	Stated that information on the unlicensed abstractions would need to be investigated. EA does not hold up to date information on this. Suggested that this should be checked with BGS and the local authority.	CM to request data on unlicensed abstractions from the local authority.
	AS/CM	<p>AS suggested it would be useful to look at what unsaturated layers were available in the area of the soakaway.</p> <p>2-5m of unsaturated zone above the Principal Aquifer would be required for soakaways given seasonal variations in groundwater recharge.</p> <p>CM proposed further boreholes with falling head tests would be needed in these layers of gravel. The scope of further testing would be shared with the EA prior to undertaking further works.</p>	Project to run scope of further testing by EA prior to undertaking further works.
	AS/SL	<p>In relation to the SuDS hierarchy and EA position, the project would need to show why the project cannot discharge to the foul sewer. AS questioned whether there was an option for a split system which would have less potential for environmental impact.</p> <p>SL confirmed that the project was highly constrained with regard to the SuDS hierarchy and connection to the foul network would not be feasible. The local foul sewer network is a pumped system, which in addition to carbon implications, has multiple points of possible failure in</p>	

Number	Attendee	Details	Action
		other sub-catchments and would pose an unacceptable flood risk.	
	JT	JT confirmed that a phase two GI would start in June 2022. The scope of this work would be shared with the project team and additional borehole testing would be undertaken in the OnSS area, based on the results of the current testing.	
	CM	The Project Team will review geophysical survey results and requirements for additional borehole(s) and provide summary to AS.	CM to review geophysical survey results and provide summary to AS.
	DS	Proposed that in addition to operational drainage, the construction phase drainage needs to be considered as early as possible.	
	JA	<p>Within the DCO application, the possibility of both deep infiltration and discharge to the foul sewer network would be shown, with ongoing steps required to demonstrate their viability. These steps would be agreed in consultation with the EA/LLFA but would not be fully resolved at submission of the DCO application.</p> <p>LLFA/EA agreed with the approach and confirmed they are satisfied.</p>	
Next Steps			
		<ul style="list-style-type: none"> ■ SM to issue minutes and slides to the ETG. ■ EA to review the revised OnSS layout and provide any feedback. ■ CM to request data on unlicensed abstractions from the local authority. ■ CM to review geophysical survey results and the requirements for additional borehole(s). ■ CM/HW to review scope for further testing and issue to AS for comment prior to undertaking further works. ■ AS to share information on nearby licensed sources and EA monitoring site. 	

Minutes

HaskoningDHV UK Ltd.
Industry & Buildings

Present: [REDACTED] (HW), [REDACTED] (JA), [REDACTED] (SC), [REDACTED] (CM),
[REDACTED] (DS)

Apologies: [REDACTED] (SM)

From: [REDACTED]

Date: 23 June 2022

Location: Virtual

Copy:

Our reference: PB8164-RHD-ZZ-ON-MI-Z-0039

Classification: Internal use only

Enclosures:

Subject: SEP and DEP Onshore substation & Agreement Log

Number	Details	Action
Introduction and agenda		
1	<p>HW: Provided an overview of the agenda of the meeting, which is as follows:</p> <ul style="list-style-type: none"> • Update on hydraulic modelling • Update on geophysical surveys and supplementary ground investigation • Update on wider stakeholder engagement • Review of Agreement Log 	
Update on hydraulic modelling		
2	<p>HW: The high resolution 0.25m LiDAR data in the model picked up plough lines but is not representative of the worst-case scenario (if the field had not been ploughed). On this basis the modelling has reverted back to using 0.5m LiDAR data. Reviewed the use of gross rainfall hyetograph and again made amendment to adopt the standard approach of using a net rainfall hyetograph, in order to capture ground infiltration.</p> <p>HW: Updated climate change guidance, which was published on May 10th 2022, indicates the use of the central allowance (20%) for the 2050s epoch and 2070s epoch. The net rainfall model using the 0.5m LiDAR data was run for the 20% climate change allowance and 40% climate change allowance, the latter of which was to test the sensitivity of the model. The 30% climate change allowance has also been tested as, prior to publication of the updated guidance, it was not clear how the policy would change.</p> <p>DS: Norfolk County Council (as the LLFA) is in the process of updating current standard climate change advice in its policy documentation.</p>	<p>SC and DS to discuss the hydraulic modelling and provide feedback on the climate change allowances</p>

Number	Details	Action
	<p>DS: Queried whether there is a decommissioning plan.</p> <p>JA: The decommissioning plan is a requirement which will be fulfilled before the end of operations, which is scheduled to be in the 2060s.</p>	<p>JA/HW to confirm end date of operations for DS</p>
Update on hydraulic modelling and outputs		
3	<p>HW: The model output shows the current orientation of the OnSS and includes the side slopes and embankments that may be required on the side of the platform.</p> <p>Layout changes to the OnSS footprint have minimised the interaction with the flood extent in events up to and including the 1 in 100 year with 40% climate change allowance.</p> <p>Post development modelling results have not yet been produced, but it is anticipated that the ponded area will increase in depth in certain areas.</p> <p>DS: Given the evidence presented this does not raise any concern.</p>	<p>DS requested the model, with post development layout, is run to demonstrate potential displacement impacts.</p>
Update on geophysical surveys and supplementary ground investigation		
4	<p>CM: Results from the geophysical survey undertaken in April 2022 indicates there is variation across the OnSS site, including a sands and gravel channel. The ponded area may be underlain by sands and gravel, which is a potential infiltration feature. Awaiting the results from additional ground investigations which are taking place, which comprises advancing four boreholes.</p> <p>Boreholes will confirm the depths of the geology, but the results from the geophysical survey suggests there won't be any changes in permeability.</p> <p>Falling head tests in the boreholes will determine how permeable the sand and gravel is. The boreholes will also be installed with groundwater monitoring equipment to determine whether the sand and gravel has its own water table.</p> <p>HW: There are two options for the drainage to be presented in the DCO; connection to the Anglian Water foul sewer and deep infiltration at the OnSS itself.</p> <p>DS: Queried whether it is possible to drain into the area of the site consisting of sands and gravel as an alternative drainage option, as such moving the project up the SuDS drainage hierarchy.</p> <p>JA: Confirmed that there may be an option to do this and there is flexibility within the DCO application to do so.</p>	

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	<p>HW: As investigations are currently ongoing, results may not be available in time for the DCO application, but if it is found to be an option then shallow infiltration would be the preference for the eventual drainage solution.</p> <p>JA: The DCO application will demonstrate that there are feasible options available for drainage from the OnSS but will also make it clear other options further up the drainage hierarchy are being explored.</p> <p>DS: LLFA preference would be an option that is further up the drainage hierarchy.</p>	
Update on wider stakeholder engagement		
5	<p>HW: Consultation with the Environment Agency and South Norfolk and Broadland Council has indicated that neither holds any records of private abstractions within 500m of grid reference 621853 Easting and 301819 Northing.</p> <p>The Highway Authority also has no record of any nearby highway drainage system and noted that even if such a drainage system existed it would be reserved for future highway use.</p> <p>Meeting was held with Anglian Water on 17th June to provide update on proposed approach to surface water drainage.</p>	
Review of Agreement Log		
6	<p>DS: Confirmed that in principle the LLFA are in agreement with selection and sequential layout of ONSS.</p> <p>JA: Highlighted importance of obtaining statements of common ground to be submitted with DCO application. Agreements taken from the Agreement Log can be formalised as a Statement of Common Ground (SoCG).</p> <p>DS: Raised the need for caution when it comes to interpreting agreements as the LLFA are not the determining authority and only provide advice to the Planning Authority as a statutory consultee.</p> <p>SC: The Applicant would enter a SoCG with Norfolk County Council, and the planning authority would usually defer to the LLFA for advice. There is nothing binding in the Agreement Log; it is designed to guide the examiners during the examination phase. The Agreement Log is an important part of the pre-examination phase as it sets out a record of what has been discussed.</p>	<p>HW / JA to re-send DS and Sarah Luff the Agreement Log</p> <p>DS and Sarah to review Agreement Log and provide any amendments/ feedback</p>

Number	Details	Action
	Confirmed that all Norfolk Councils are involved but the determining authority is the Secretary of State.	
AOB		
7	<p>HW: The same slide pack presented in this meeting will be presented to the Environment Agency, who were unable to attend this meeting.</p> <p>SC: Reiterated that DS can get in touch if more information on the DCO application process is required, in order to improve knowledge of the process.</p>	SM to issue slide pack, meeting minutes, Agreement Log and initial template for the SoCG to the LLFA

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (HW), [REDACTED] (JA), [REDACTED] (SC), [REDACTED] (CM),
[REDACTED] (DS)
Apologies: [REDACTED] (SM)
From: [REDACTED]
Date: 23 June 2022
Location: Virtual
Copy:
Our reference: PB8164-RHD-ZZ-ON-MI-Z-0039
Classification: Internal use only
Enclosures:

Subject: SEP and DEP Onshore substation & Agreement Log

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Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (JA), [REDACTED] (ID), [REDACTED] (CM), [REDACTED] (CW), [REDACTED] (BMT)
 Apologies: [REDACTED] (SM)
 From: [REDACTED]
 Date: 24 June 2022
 Location: Virtual
 Copy:
 Our reference: PB8164-RHD-ZZ-ON-MI-Z-0040
 Classification: Internal use only
 Enclosures:

Subject: SEP and DEP Onshore substation & Agreement Log

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1	<p>ALL: Introductions</p> <p>JA: Provided an overview of the agenda of the meeting, which is as follows:</p> <ul style="list-style-type: none"> • Update on hydraulic modelling • Update on geophysical surveys and supplementary ground investigation • Update on wider stakeholder engagement • Review of Agreement Log 	
Update on hydraulic modelling		
2	<p>ID: Highlighted a mismatch between ground observations and modelling. The high resolution 0.25m LiDAR data in the model picked up plough lines but is not representative of the worst-case scenario (if the field had not been ploughed). Reverted back to using 0.5m LiDAR data.</p> <p>Reviewed the use of gross rainfall hyetograph and adopted the standard approach of using a net rainfall hyetograph, in order to capture ground infiltration.</p> <p>ID: Updated climate change guidance indicates the use of the central allowance (20%) for the 2050s epoch and 2070s epoch. The net rainfall model using the 0.5m LiDAR data was run for the 20% climate change allowance and 40% climate change allowance, the latter of which was to test the sensitivity of the model.</p> <p>The ONSS footprint will endeavour to avoid the area of increased flood risk. It does not overlap significantly with baseline surface water flood extent in any event up to and including the 1 in 100 year with 40% for climate change.</p>	

Number	Details	Action
	<p>JA: The irregular ONSS footprint acknowledges where the potential ponding area would be and demonstrates efforts are being made to avoid that area.</p> <p>BMT: Noted that surface water is outside of the Environment Agency's (EAs) remit and will refrain from commenting.</p>	
Update on geophysical surveys and supplementary ground investigation		
4	<p>CM: A ground investigation has been completed at the site. A geophysical survey was then undertaken in April 2022, with results showing a variation across the OnSS site and a granular channel.</p> <p>Further borehole investigations commenced on 6th June, which included infiltration tests within the granular channel and groundwater monitoring. Emphasis was on not creating preferential pathways into nearby chalk deposits when groundwater monitoring wells are sealed into the sands and gravel areas. Level loggers will determine whether the gravel has its own groundwater table, with results expected after 12 months.</p> <p>If the gravel area to the north-east of the OnSS site is of shallow thickness, there is the potential to undertake shallow infiltration in this area, rather than deep infiltration.</p> <p>JA: The two potential options for drainage for the OnSS is deep infiltration or connection to the Anglian Water foul sewer. However, the geophysical survey and ground investigations indicate there is a potential to move further up the drainage hierarchy. DCO application will demonstrate there are feasible options available but also make clear other options further up the drainage hierarchy are being explored.</p>	
Update on wider stakeholder engagement		
5	<p>CM: Consultation with the Environment Agency and South Norfolk and Broadland has indicated that there are no records of private abstractions within 500m of grid reference 621853 Easting and 301819 Northing.</p> <p>JA: There has been consultation with the Highway Authority to explore whether there was a possibility of connecting to the nearest highway drainage system, but there is no record of any such drainage system existing in that area and the Highway Authority made clear that even if there was, there would be no spare capacity.</p> <p>Meeting held with Anglian Water on 17th June to provide update on proposed approach to surface water drainage.</p>	

Number	Details	Action
Review of Agreement Log		
6	<p>JA: Purpose of the Agreement Log is to lay the groundworks for creating statements of common ground, which will be submitted with the DCO application. The Agreement Log is not binding but focuses the Examiner's attention on the areas that need to be further explored at examination stage.</p> <p>BMT: A previous review of the Agreement Log did not raise any areas of large concern. Suggested that in some instances may need to change 'Agreed' to 'Outside of the Environment Agency's remit'.</p> <p>JA: Agreed with this suggestion and will await feedback from BMT before making the appropriate changes. Noted that more information will be provided to the LLFA via email to explain what is being achieved with the Agreement Log and what the statements of common ground are for.</p>	<p>BMT to review Agreement Log, identify which points need changing from 'Agreed' and feedback to JA</p> <p>JA to chase LLFA for feedback on Agreement Log</p>
AOB		
7	<p>BMT: Noted that whilst the EA host surface water maps, they would not be involved in any challenge to what is contained within the maps. Queried whether this information had been passed on. Queried whether there is a way for the EA to monitor the Applicant's monitoring and decision-making process as it goes through to examination regarding whether or not deep-water infiltration is necessary or whether there is the opportunity to move further up the drainage hierarchy.</p> <p>CM: A Ground Investigations technical note is being produced which will be appended to the FRA to ensure everyone is clear on what process will be used for discharging water.</p> <p>JA: There will be a DCO requirement regarding the operational drainage of the OnSS, which will include a commitment to comply with flood risk assessment stages. Confirmed that there will be engagement with the EA before discharging the requirements.</p> <p>BMT: Noted that this would be helpful for managing EA resources.</p>	<p>JA to chase SM regarding EA's comment on surface water maps and whether this information has been shared with the group</p> <p>JA to reissue minutes</p> <p>SM to issue slide pack and meeting minutes</p>

1.9 MEEB Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: Equinor: ██████████ (ME);
 Royal HaskoningDHV (RHDHV): ██████████ (AP), ██████████ (GK), ██████████ (ES);
 Natural England (NE): ██████████ (LB), ██████████ (HM);
 Marine Management Organisation (MMO): ██████████ (CP, MMO);
 Centre for Environment, Fisheries and Aquaculture (Cefas): ██████████ (JE), ██████████ (KM), ██████████ (MG);
 Eastern Inshore and Fisheries Conservation Authority (EIFCA): ██████████ (JS), ██████████ (SC), ██████████ (ST);
 The Wildlife Trust (TWT): ██████████ (CP, TWT);
 Planning Inspectorate (PINS): ██████████ (HL).

Apologies: ██████████ (Equinor)

From: Royal HaskoningDHV

Date: Friday, 01 October 2021

Location: MS Teams meeting

Copy:

Our reference: PB8164-RHD-ZZ-OF-MI-Z-0016

Classification: Project related

Enclosures: ETG meeting slides

Subject: SEP and DEP MEEB ETG

Number	Details	Action
Introduction		
1	<p>GK Ran through agenda and introductions. GK confirmed slides and minutes will be shared.</p> <p>Planning Inspectorate is in attendance. HL confirmed any advice shared will have to be made public.</p> <p>GK Ran through the purpose of the Measures of Equivalent Environmental Benefit (MEEB) and a reminder of the location.</p> <p>GK confirmed this Expert Topic Group (ETG) is interactive and comments and questions from each attendee on each measure is welcomed.</p>	RHDHV to share minutes and slides
Project Update		
2	<p>GK provided a MEEB update.</p> <ul style="list-style-type: none"> Initial draft MEEB report shared March 2021 Written responses April 2021 Meetings on draft MEEB undertaken in Q2/Q3 2021 with each stakeholder separately Updated version shared September 17th 2021 <p>AP provided a wider project update:</p> <ul style="list-style-type: none"> Updating Marine Conservation Zone Assessment (MCZA) assessment, Habitats Regulations Assessment (HRA) and Environmental Statement (ES) based on comments received on the 	

Number	Details	Action
	<p>Preliminary Environmental Information Report (PEIR) / s42 consultation</p> <ul style="list-style-type: none"> • Pulling together documents for Development Consent Order (DCO) application • Outline Cable Specification, Installation and Monitoring Plan (CSIMP) will be relevant to today's call, currently drafting and aiming to share with ETG. • Project was aiming for submission of DCO at the end of the year, recently moved back to Q2 of 2022. At the moment Equinor is requesting this remains internal as it is a recent decision and the project needs time to organise communication and press releases. • Planning for offshore geotechnical survey – some of the data from the survey will be useful for the cable installation and relevant to various assessments in the Marine Conservation Zone (MCZ) and outline CSIMP. Survey due to mobilise in October and results available early next year. 	
Key comments and Applicant's response		
3	<p>GK ran through the comments received on the MEEB and the Applicant's response:</p> <ul style="list-style-type: none"> • Measures to reduce fishing pressure – now removed as a potential MEEB option at a project level. <ul style="list-style-type: none"> ○ JS queried what is meant by 'at a project level', is this being considered further at another level? ○ GK confirmed that Equinor is not considering this further but remains open to considering any strategic measures that might be developed at a government level. • Designating new sites/ extending existing sites <ul style="list-style-type: none"> ○ not thought suitable by some consultees, including TWT ○ has potential implications for fisheries, EIFCA would not support measures that significantly impact fisheries. • Debris removal – further information has been provided in relation to this. • Removal of infrastructure – pipelines have now been included based on comments received. • Habitat creation – creation of oyster beds has now been added based on comments received. <p>CP, MMO asked what the Defra 2021 reference is. GK confirmed: Changes to the Habitats Regulations 2017 - GOV.UK (www.gov.uk)</p> <p>ST states that creation of a new designated site or extending an existing site would impact fisheries and any impacts would need to be considered by the developer.</p>	
Feedback summary		

Number	Details	Action
4	<p>GK explained the feedback summary, based on consultees position, based on their responses to the MEEB options presented:</p> <ul style="list-style-type: none"> • Red – not suitable • Amber – uncertain / unlikely • Green – potentially suitable <p>ST - Eastern IFCA consider the examination of innovative fishing methods a good idea in principle; however, in this instance, such innovative methods are already being considered, and so this would not meet the test of “additionality”, and should therefore be categorised “Red”.</p>	
Approach to identifying project-level MEEB		
5	<p>GK explained based on the guidance and feedback from the consultees more headings have been considered under each MEEB option.</p> <ul style="list-style-type: none"> • The environmental benefit it would provide to the value and function of the MCZ; • The mechanism for the Applicant to deliver the MEEB; • The spatial scale required for the measure to provide equivalent benefit; • The location of the in-principle measure; • The impact of undertaking the MEEB; • Options for monitoring the effectiveness of the MEEB; and • The level of confidence in delivering the MEEB successfully. <p>JS asked in relation to the impact of the MEEB, are environmental impacts considered only or other impacts including socio-economic impacts. GK confirmed it is not just limited to environmental impacts, it is any unintended consequences of the MEEB, including socio-economic impacts.</p>	
MEEB Removal of marine debris/litter from CSCB MCZ		
6	<p>GK ran through the removal of marine debris/litter from within Cromer Shoal Chalk Beds (CSCB) MCZ MEEB option.</p> <p>GK confirmed the litter could be removed from the beaches parallel to the MCZ, as it could prevent litter from ever entering the MCZ, in addition to subtidal removal from directly within the MCZ.</p> <p>Comments on this MEEB option: <u>TWT</u> CP: confirms TWT position; red is accurate. In relation to ghost fishing gear that would be specific to chalk features, therefore wouldn't have an impact on the area Sheringham Extension Project (SEP) and Dudgeon Extension Project (DEP) is impacting. TWT did not support this measure for the Hornsea Three project. TWT did not challenge Hornsea Three as it was thought there would be opportunity later to work together.</p>	<p>RHDHV to check if MEEB states impacts are only to the chalk bed.</p>

Number	Details	Action
	<p>CP: MEEB references a 1:1 ratio, however this is not standard practice, even for terrestrial projects which is more than 1:1. TWT would expect a much higher ratio than 1:1 (i.e. 3:1) if compensation is carried out.</p> <p>GK questioned ghost nets and debris only on the chalk reef, what is the basis for that? CP states the MEEB report references ghost nets are only on the chalk.</p> <p>GK confirms in terms of debris and ghost fishing it might move, therefore the project team needs to explore this further if the MEEB report stated it only impacts on the chalk bed. GK questioned what ratio would be appropriate?</p> <p>CP confirms the ratio is dependent on how certain it is to be successful, meaning it is used as a fail-safe to ensure it will be compensated adequately, however, at least 3:1.</p> <p>GK questions would it be appropriate to clean up the beach and quantify what is collected, and measure how much compensation would still be required?</p> <p>CP: TWT would not support that as it is not having an impact on the MCZ currently, and the MEEB is about compensating for the impact on the habitat. Litter on beach has no direct link to the MCZ. TWT do not think any of the options are viable for MEEB. The only alternative TWT consider is no cable protection within the CSCB MCZ.</p> <p>[Post meeting note: NE subsequently confirmed that they do not agree with TWT's view that none of the options presented are viable for MEEB, nor that the only option would be to pursue a surface marker buoy / fishing exclusion system around any areas of exposed cables as an alternative to using external cable protection. This is because such a system would be challenging in this particular area because of fishing activity and therefore NE will not be supporting this as an option.]</p> <p><u>EIFCA</u></p> <p>JS: EIFCA are actively working with fishermen to set up a campaign to locate and remove lost fishing gear in the CSCB MCZ. The focus of the campaign is lost gear on the rugged chalk, however, even if not currently on the chalk it could move onto the chalk under natural processes. It is a complicated area as there are already obligations and a legal requirement for fishermen in relation to this, therefore there is a question of additionality. However, the EIFCA are not proposing litter removal from the beaches, only fishing gear at sea.</p> <p><u>Natural England</u></p> <p>LB: Considering the fact of additionally, NE does not agree with marine litter as a compensation measure in isolation however, it could be part of a package of several measures, but with a lot of caveats. At the moment it is unlikely to provide MEEB. A survey of marine litter could be undertaken in the MCZ to demonstrate it is definitely an issue, however this should not include ghost fishing as this is already being addressed. At the moment Equinor/RHDHV are saying there is litter and it can be removed, however there is no certainty that it will not just be in the chalk area as the chalk feature is rugged and coarse. Additionally, there is the potential that removing the litter may have a greater impact than just leaving it there.</p>	

Number	Details	Action
	<p>LB: An adaptive management approach was referred to. There may be legal issues over the lifetime of the project / MEEB due to Offshore Transmission Owner (OFTO) arrangements.</p> <p>LB: Currently, NE's position is a 'very dark orange' nearing red. There is a lot to demonstrate to show it is additive and likely to be successful.</p> <p>GK: if we did a survey and there was litter would NE support the beach clean up to prevent it going in to the MCZ or does it need to be subtidal?</p> <p>LB: NE considers the removal of the litter would have to be within the MCZ rather than on the beach. LB's personal opinion is that litter removal would be an option for net gain.</p> <p>CP, MMO: How likely is it that beach litter will end up in the sea or in the MCZ, if not it might have terrestrial implications, rather than implications for the MCZ. MMO support this as an example of net gain and it has a positive message. Personal view is that large developments should be doing net gain, and it is going to be expected soon for marine projects. MMO are not supporting it as compensation because at the moment it cannot be demonstrated that it improves form and function of features of the CSCB MCZ.</p>	
Removal of Infrastructure		
7	<p>GK ran through the removal of infrastructure from the MCZ MEEB option.</p> <p>GK confirmed it would only be removal of infrastructure on the seabed, including cables/pipelines that have become exposed.</p> <p>GK explained this measure is quite uncertain in relation to cables, there is a precedent that cables can be removed, but for this specific cable there would need to be an understanding that the area of exposed cable is impacting on the MCZ. In terms of the pipeline, Equinor would need to know about risks and liabilities and who is responsible for that. Removal of cable or pipeline would be subject to securing agreement from the owners.</p> <p>Comments on the removal of infrastructure option</p> <p><u>Natural England</u></p> <p>LB: NE is in generally supportive of removal of disused infrastructure. It would need to be exposed, on the surface and having an impact on the MCZ to provide MEEB. In relation to needing agreements it would be advisable to start discussions with the owners soon and not post consent. [Post meeting note: NE subsequently referred Equinor to their most recent advice to Norfolk Boreas on this issue].</p> <p>NE agree with TWT in relation to ratio of compensation for MEEB in general that 1:1 is not appropriate, especially where there is increased risk of the deliverables being unsuccessful, the ratio would have to be reflective of the certainty of deliverables.</p> <p>LB: there are a number of exposed pipelines that run into Bacton, some in a poor condition and/or unstable e.g. concrete casing is dropping off in places. The CSCB MCZ is in unfavourable condition because of those pipelines. GK queried whether those pipelines are in use. LB: the pipelines are not disused at the moment but the owners are looking to decommission</p>	

Number	Details	Action
	<p>them soon. Defra are aware there may be a lag in the benefit and that it might not be delivered prior to the commencement of the SEP & DEP cable installation, however if there is a net benefit over the project lifetime, then that is still seen as a positive. Decommissioning expected in next 5-10 years, although decommissioning is not expected to involve removal of the pipelines, legislation for Oil and Gas (O&G) and how they were permitted in the first place means there is no requirement for O&G operators to remove pipelines. NE has flagged to Defra that removal for compensation/MEEB could be a positive thing.</p> <p>GK: is there a reason the owners are not removing the pipelines. LB: The pipelines are clean it is just costly and they do not have to do it. They have to clean the pipelines during decommissioning, they have a cleaning pig and block off either side of the section of the pipeline that the pig is cleaning. ME: clean in terms of O&G may not mean it is clean for potential release into the environment. Would need to confirm that this would not cause additional potential issues.</p> <p>ME: when does responsibility of operator cease to exist. LB: once the operators have decommissioned their wells. For many pipelines going into Bacton the wells have already been decommissioned. The concern is how the regulations around O&G are old and the implications of that for the MCZ.</p> <p>GK: if cable protection is on top, would that then require dredging to remove those, or are there still going to be exposed spans that could be removed as it is unlikely the cable protection has been designed to be safely lifted. LB: that is a discussion to be had, as decommissioning of rock and mattresses is a challenge but not impossible. Need first to identify nature/extent of exposed pipelines, then determine the engineering feasibility i.e. a lot more information would be required to confirm if this could be feasible and secured.</p> <p>GK confirmed Equinor are more comfortable with the prospect of removing cables than pipelines due to the potential pollution issue with the latter. NE has no further information on the disused cable in the SEP & DEP cable corridor.</p> <p><u>EIFCA</u></p> <p>KM: noted in the MEEB document which is updated with the impacts, in relation to the impacts for cable installation activity the effects would be temporary and localised, any differences in hydrodynamics of cable removal compared to cable installation would have to be considered. It would need its own assessment as it is in a different area to where ES was assessed.</p> <p>CP: restate the position on the 1:1 ratio for this measure, TWT would not consider 1:1 to be appropriate. In Defra Marine Protected Area (MPA) compensation guidance it states greater than 1:1 should be used as well.</p> <p>JS: there is not much to comment on this proposal just to highlight potential disruption to fishing activity if this does go ahead, imagine it would require</p>	

Number	Details	Action
	<p>marine licensing and go through consultation at that stage but just note it would require close fisheries liaison.</p> <p>GK: noting the impacts of temporary disturbance on fisheries, would the long term removal of potential snagging hazards be a benefit to the fisheries? JS: it is expected this would be a positive if they were hazards to fisherman.</p> <p>ST: In terms of snagging hazards, this area is closed to bottom towed gear anyway and is primarily used for static gear which has less snagging risk, and the potting might like the increased complexity of the seabed.</p> <p>AP: with regard to the current condition of pipelines, does anyone know if there have been any recent surveys e.g. benthic surveys to determine the condition of the environment in those locations? LB: The operators have to undertake surveys so there are some. How detailed and how willing the operators are to share them with Equinor is unknown, this would be a question for the operators.</p>	
Planting of Native Oyster		
8	<p>GK ran through the planting of native oyster MEEB option.</p> <p>GK explained oysters were historically present in this area of the North Sea. The oyster planting could be done within the CSCB MCZ or potentially within SEP and DEP array areas as they have appropriate substrate that could be colonised, creating enhanced biodiversity supported by the biogenic habitat.</p> <p>The scale would need to be determined but it would have to be large enough to allow for a self-sustaining population.</p> <p>In terms of timescales there are existing studies, Dornoch are conducting a phased deployment over five years, therefore this could be started during pre-construction, unless the oyster bed was in the array in proximity to the offshore wind farm infrastructure, then it would need to be post-construction.</p> <p>It is considered as beneficial, as it is returning the environment to a natural state. There would need to be consideration of protection from impacts such as fisheries impacts.</p> <p>Monitoring frequency to be agreed until bed is well established and self-sustaining.</p> <p>We think it is feasible and there is evidence it has been done elsewhere. Blue Marine Foundation confirmed it is likely to be suitable at 50 other UK offshore wind farms.</p> <p>Comments on the planting of native oyster option</p> <p><u>Natural England</u></p> <p>LB: NE is interested in this option. There was a delay to the CSCB MCZ being designated because there was a record of oysters at the site, and NE was trying to work out if oysters should be a feature of the MCZ. However, it was deemed it was a relic and there are currently no oysters present. It</p>	<p>LB to seek available useful info from Natural England colleagues, including whether/how oysters were considered in the site designation process and any North Sea wide info on oysters.</p> <p>All consultees consider if potential future fisheries opportunities should be considered in the MEEB</p>

Number	Details	Action
	<p>needed to be considered as there was a high probability they were there in the past and could still be there now.</p> <p>This option is not a like for like option however, in the right location within the MCZ it might be considered as MEEB. LB needs to speak to colleagues in NE first to get further info. Within the MCZ would be preferred to within the SEP or DEP array.</p> <p>GK: would the consideration of oyster during the MCZ designation be in public documentation? LB to ask colleague for further info on this and public documents.</p> <p><u>EIFCA</u></p> <p>JS: interesting and worth looking at other oyster projects, EIFCA interested in looking at this from an ecological and a potential fisheries opportunity. An example similar to this is happening in the Blackwater estuary where Zoological Society of London (ZSL) is working with fisheries to establish oyster beds ecologically but also commercially. JS: think the project has been ongoing for a number of years and papers are available on this: ██ ██</p> <p>ME: is there a preference from EIFCA of inside the MCZ or inside the array? JS: this would require consideration, as a potential fisheries resource then inshore would be better. But there could be potential to benefit offshore fisheries too and could provide enhanced ecological benefit.</p> <p>ST: we should acknowledge there may be a direct benefit to fisheries such as increased biodiversity which would be of interest to fisheries.</p> <p><u>TWT</u></p> <p>CP: TWT will not comment on oysters as TWT would require a lot more information on potential conditions for success before a conclusion is reached. Further information required includes how likely they are to be successful. TWT do not see this as constituting an option with comparable ecological function, therefore it is difficult to see how this would compensate.</p> <p>GK: What does TWT consider is the ecological function of the sediment affected in the MCZ and would the oyster bed not deliver an enhanced function?</p> <p>CP: the function the feature of concern provides to the ecosystem is as a supporting habitat. Therefore, a compensatory habitat would need to have a similar ecological function within the ecosystem. TWT would need to see proof that oysters would offer a similar function, TWT does not think wider biological benefits would be MEEB.</p> <p>ME: if we take into account oysters used to be present are we not restoring an ecological function which has been in place?</p> <p>CP: this is a bit of a grey area as to where you take the baseline from, they were there years ago. The SEP & DEP offshore wind farm is not going to be</p>	

Number	Details	Action
	<p>taking away oysters that were there. You are not going to fill the role of the habitat you are taking away.</p> <p>LB: I would question that, oysters are a reef and there is Sabellaria present in this area. It is recommended that there is further consideration of the ecological function of this MEEB option.</p> <p>CP: TWT would welcome more information on this, noting that this option was defined as providing comparable ecological function.</p> <p>GK: struggle to see why MEEB that provides greater biodiversity benefit than the area being impacted by the project would not be acceptable.</p> <p>ME: what if there were natural colonisation of oysters in the area, does that mean you would have to remove them as part of the management in the MCZ?</p> <p>CP: That would be a natural non human intervention, so it would depend on the management measures of the MCZ. TWT do not see wider ecological benefits as a comparable measure. We would welcome more information on whether it would be successful. Based on the information provided that is our position at the moment.</p> <p>GK: does TWT accept other levels of hierarchy if we change the categorisation from comparable. Is it just the categorisation you do not agree with? The Defra guidance opens up a wider hierarchy, some are non-comparable functions. Does TWT accept this as a MEEB at a different hierarchy?</p> <p>CP: TWT does not have a blanket position. It is just in terms of the information provided it does not constitute comparable ecological function.</p> <p>GK: if we did take this forward as MEEB would part of the MEEB be bringing oyster into the MCZ designation? LB: Potentially, oysters could become part of the designation and could be a designated feature which needs to be protected and managed in the longer term.</p> <p><u>Oysters and fisheries discussion</u></p> <p>AP: with regard to fisheries, if this MEEB option was selected, there would be a need to give the oysters time to establish, therefore there would be a need to prevent other disturbance initially until they are self-sustaining. Is this considered a showstopper for EIFCA?</p> <p>ST: the MCZ is already closed to towed gear therefore the primary consideration for this is in terms of other activity and it would require careful management as there might be other activities such as fixed netting and potting which may be interrupted during the establishment of the oyster beds. Not a showstopper just would need close liaison.</p> <p>ST: Need to consider why there are no oysters present anymore. What factors do not allow them to re-establish?</p>	

Number	Details	Action
	<p>LB: NE may have information in terms of reviewing the whole of the North Sea - NE will take an action to share reports we have been looking at on that.</p> <p>JE: it is unclear how the oyster planting MEEB option could be a potential option for fisheries due to the way oysters are collected. Oysters are collected using a dredge and bottom towed gear are restricted in the MCZ.</p> <p>JS: A comparable example is mussel beds in the Wash. Mussel beds are a feature of the Wash and North Norfolk Coast (WNNC) Special Area of Conservation (SAC), we undertake HRA assessments on fisheries on those mussel beds, and they are fished using dredgers, and it is very closely managed. If this option is taken forward, it is certainly right to look at potential fishing activity.</p> <p>LB: NE advise not to put reference to fishing of oyster beds into the MEEB proposal. The MEEB relates to the ecology of the features. The fisheries implications should be considered further along in the process. If it is included in the application it may have negative consequences.</p> <p>ST: already discussed that impacts of MEEB need to be considered, and fisheries should be considered now. If oyster beds become off limits to fishing then it is a negative impact to fishing. If fishing consideration are not included right now would send the wrong message locally, it could impact potting and other fishing methods which are allowed in the MCZ.</p> <p>LB: it would depend on the location you use, it might not impact fisheries. NE Do not think fisheries benefits should be included in MEEB as it is about offsetting impacts of project, not about benefits of fishing. Including benefits of fishing could make it a complicated assessment at this stage. [Post-meeting note: NE subsequently confirmed that once the required level of compensation had been found to be exceeded, fishing activity could be allowed in the future. However, this would require the scale of compensation to be increased to provide for this. NE would not support fishing by dredging in the MCZ].</p> <p>JS: agree on purpose of MEEB is ecological benefits but EIFCA would be concerned if it does not consider at the outset that in the future it could be a fishing opportunity. It would be difficult to have it considered retrospectively further along in the process, which is known from experience of fishing and conservation interactions.</p> <p>ST: From experience, once conservation measures are brought in it is difficult to get a relaxation of them, therefore this needs to be considered at the start, meaning the possibility of the oyster beds supporting a fishery should be considered within the MEEB.</p> <p>HL: what you are talking about is ways of reporting effects and perhaps what you have in the MCZA and MEEB does not talk about fisheries, however this could be considered in the commercial fisheries chapter of the ES.</p>	
Site Designation		

Number	Details	Action
9	<p>GK provided a summary on the site designation MEEB option.</p> <p>Site designation could include designating the array areas as similar habitat. Scale subject to site selection process to identify a suitable area. It would need to be meaningful in terms of conservation instead of directly comparable 1:1.</p> <p>It is noted that most are not keen on this measure but understand NE considers it has potential so it has been kept in.</p> <p>GK notes TWT point on designating new sites while chipping away at other sites, consideration of the wider network would be required when defining the spatial scale of the new designation.</p> <p>This one is uncertain due to the designation process, this would require government intervention and may not pass the consultation stage.</p> <p>The Defra compensation guidance refers to the timescales of the designation process taking a number of years. With financial support towards resourcing for the process in order to deliver the MEEB, this may be compatible with the number of years between consent and construction of the offshore wind farms.</p> <p>Comments on the site designation option</p> <p><u>TWT</u></p> <p>CP: TWT position the same as stated in previous responses.</p> <p><u>Natural England</u></p> <p>LB: This option is not off the table, but if there are better options available for ecological outcomes then they should be chosen. The timescale of four years suggested on the slides might be tight. The MEEB will require having management measures in place so it is managed like a protected area. If it was within an array it could not be a protected area until after construction.</p> <p>GK: would NE support the measures being secured before the development was constructed, in accordance with the Defra compensation guidance?</p> <p>LB: Potentially yes, for example Boreas offshore wind farm had a 1-10 ratio due to measures not being secured. The ratio of compensation increases without it being secured.</p> <p>GK: what would be an appropriate designation mechanism, e.g. would it be like for like and an MCZ rather than an SAC?</p> <p>LB: that is currently not known, there may be an option for a strategic compensation measure for a new MCZ or SAC but a new benthic site that compensates for all offshore wind farm projects in one area. At the moment everything is project specific but the best ecological outcomes are likely to be strategies that are bigger and compensate for a number of projects and more likely to be successful and provide that ecological function. Sometimes project specific compensation is so small it's not going to have that benefit</p>	

Number	Details	Action
	<p>a larger compensation measure would have. Further information would be needed to determine if this would be appropriate for this project on its own.</p> <p>ME: who would be the most appropriate to lead such a process. Is it appropriate to be developer led?</p> <p>LB: not individual developer led but potentially industry led, The Crown Estate led, or could be government department led. It is a wider discussion that would need to be had.</p> <p>It takes a lot to demonstrate that what you are creating has the same ecological function and benefit. It was possible for Boreas and Vanguard as a lot of surveys were undertaken in the area. This option should not be discounted.</p> <p><u>EIFCA</u></p> <p>JS: was not aware extensions were allowed. We have not been made aware of discussions and outcome.</p> <p>LB: In the draft Defra compensation guidance, extensions and new benthic sites are still being accepted. We have raised with them the need for consideration of options that are bigger than project specific.</p> <p>JS: we need direction from Defra on this. EIFCA position is 'more red than orange', due to a number of reasons including additional restrictions to fisheries. EIFCA would not support designation in inshore area (0-6nm). Another consideration is who would fund this.</p> <p>GK: This would be funded by the developer. However, we would need the support from relevant statutory stakeholders/regulators to understand what the cost implications of that would be.</p> <p>JS: elaborated on the additional funding considerations, mentioning (i) monitoring of feature condition; (ii) costs of assessing fisheries impacts and developing management (if needed – most likely); (iii) costs of monitoring compliance and any enforcement action.</p> <p>HL: the provision of suitable energy through wind power is a key government objective, appreciate there are resource constraints on the regulators, but this priority has to be borne in mind.</p>	
Summary		
10	<p>Debris removal and oyster beds are the measures the Applicant would have most confidence in delivering but note the comments on debris removal from today. i.e. is litter impacting the MCZ other than ghost fishing gear.</p> <p>Based on discussions during this ETG planting of oyster beds appears to be the preferred option in terms of focussing effort on collecting more information and progressing further.</p>	
Finalisation of In Principle MEEB for submission		

Number	Details	Action
11	<p>GK: do we need to choose a preferred option (potentially with back up options) for submission, or do we need to keep everything on the table. What detail is needed for the DCO submission?</p> <p>HL: With regard to expectations for the application, PINS does not have specific criteria. The more information provided or the more secure delivery is the more weight can be put on it. If there is limited information Examining Authority (ExA) may say this can probably work but no guarantee which will then be passed to the Secretary of State (SOS) and more consultation would be needed.</p> <p>LB: we advise further consideration of which options are most appropriate, further consideration of the type of information that is needed to inform if it is a viable option. Each option needs more to say if it is viable. If an option is viable then you need more information and detail, then there will be a smoother examination and post consent. If everything is secured at DCO it would mean less licences post consent, and instead would be dealt with at DCO.</p> <p>LB: Set the end of year as target date to see if any of the options can make a viable proposal. NE would much rather see something with a lot more detail. We advise once an option has been chosen NE can say what information needs to be provided to show it is viable. If an option is not suitable then NE can advise.</p> <p>AP: The project's forward plan is to have at least one further iteration of MEEB proposals document and one more meeting to discuss that prior to application. The minutes of today's meeting will be prepared which will include an agreement log, to draw out agreement, following the approach taken in other ETG meetings. Hopefully we can deal with all of this through agreeing minutes and agreement log, a further written response from stakeholders is not expected. If helpful to have additional meetings to explore particular aspects, then we can look to do that.</p> <p>LB: I think it would be good to see minutes and we will not provide a written response. NE will respond directly as to what may be appropriate, following internal NE discussions.</p> <p>JS: EIFCA will put brief comments on the report on representation on fishing activity and information on current fishing restrictions.</p>	Project team to provide slides, minutes and agreement log.
Next steps		
12	<ul style="list-style-type: none"> • Minutes and agreement log from today's meeting <ul style="list-style-type: none"> ○ We will aim to send out within two weeks of meeting for ETG to review. ○ ETG to aim to send back comments within two weeks of receiving minutes and agreement log • Summary of Actions prior to next meeting from today's meeting • Next ETG <ul style="list-style-type: none"> ○ Date to be agreed • AOB 	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (HA) - Equinor
 [REDACTED] (AP); [REDACTED] (GK); [REDACTED] (PM) - Royal
 HaskoningDHV
 [REDACTED] (LB); [REDACTED] (HM); [REDACTED] (MK) - Natural England
 [REDACTED] (ST); [REDACTED] (SC) - EIFCA
 [REDACTED] (CP); [REDACTED] (NW) - MMO
 [REDACTED] (MG); [REDACTED] (GE); [REDACTED] (CR) - Cefas

Apologies: [REDACTED] (JS) - EIFCA

From: [REDACTED]

Date: 21 February 2022

Location: Microsoft Teams

Copy:

Our reference: PB8164-RHD-ZZ-XX-MI-Z-0001

Classification: Open

Enclosures:

Subject: SEP&DEP MEEB ETG 21FEB2022

Number	Details
1	<p>Agenda and Introductions</p> <p>AP ran through the agenda.</p> <p>AP - focus is on the Measures of Equivalent Environmental Benefit (MEEB) rather than the Marine Conservation Zone (MCZ) assessment itself. The MCZ assessment will be covered as part of the more general seabed Export Topic Group (ETG).</p> <p>We will provide you with an overview of the most recent updates to our draft In principle MEEB plan which we submitted in December.</p> <p>We'd like to get into the detail of our proposed approach to delivering the MEEB post consent in the event that it is required.</p> <p>In terms of next steps, this is intended to be the final ETG with respect to MEEB. Hope to come out of this meeting with a very good idea of what further work we need to do to finalise the proposals with a view to then producing the updated document for submission with the DCO application.</p> <p>Project Update</p> <p>No major changes since the last meeting.</p> <p>We're continuing the process of engagement with various technical consultees across all of the topics and the various expert topic groups as we're going through the process of finalising the assessment ahead of application.</p>

Number	Details
	Also preparing the draft DCO and all of the associated outline management plans.
2	<p>MEEB Update/Options Review Summary</p> <p>GK - we've shared three versions so far with the third iteration which is the focus of the discussion today shared in December and have received written comments on this from the EIFCA (through the Agreement Log) and Natural England.</p> <p>The document has been updated following the ETG meeting we had in October which we can talk through today.</p> <p>The main update was to progress beyond the review of options in the previous versions and to put forward a proposal that would be taken forward if MEEB is required.</p> <p>Preferred option is the planting of oyster beds within the MCZ. But recognising that nothing can be 100% guaranteed we've proposed that other amber and green options are potentially on the table as backup options, given that that would need to be form part of an adaptive management and review approach. We have retained the review of all options considered (slide 9) in order to have that audit trail.</p> <p>We are not proposing to take forward the red options.</p>
3	<p>Approach to Identifying Project-Level MEEB</p> <p>GK - The preferred measures have been tailored around the Defra draft compensation guidance which covers compensation and MEEB and so we've reviewed a hierarchy of measures.</p> <p>We are proposing to take forward (on a without prejudice basis) the planting of oyster beds in the MCZ. So that would be at the same location.</p> <p>We considered-discussed the potential environmental benefit of the proposed measure in comparison to the value of the habitat that could be lost and then the implementation mechanisms, scale and location of the measures proposed. The impacts of undertaking the MEEB e.g. potential impacts on fisheries and other socioeconomic impacts on other marine users has-was-been-considered-raised together with how we would monitor the MEEB and more generally we looked at the overall confidence/feasibility of delivering the MEEB.</p> <p>Overwhelming <u>ETG MEEB</u> stakeholder preference is that the oyster planting measure is undertaken in the MCZ and so that is the preferred measure we're looking to implement, but again with the backup option that it could be in the SEP and DEP array areas if for some reason the MCZ became an unfeasible option.</p>

Number	Details
	<p>Given that the subtidal sand feature which will potentially be lost does not support a diverse community, oyster reef would provide an enhanced function in terms of biodiversity e.g. potential nursery grounds for fish etc.</p> <p>There is some evidence to suggest that oyster beds improve water quality and potentially carbon sequestration through their calcium carbonate shells. Oyster is understood to have been extensively present in this region historically, so we're returning a natural habitat.</p> <p>In terms of the feasibility, oyster beds have been planted in various locations (slide 11 shows examples) so these give us confidence that this will be a feasible measure.</p> <p>Approach – Development and Licensing</p> <p>GK - in terms of the approach it is proposed that there will be a condition in the DCO to ensure that this is fully secured and if MEEB is deemed to be necessary following the Secretary of State's decision, the plan would be developed in detail post consent, in consultation with the steering group (envisaged to be ETG members).</p> <p>We had envisaged, a series of licensing measures, but Natural England's comments suggested that this might not be necessary in terms of getting a marine licence.</p> <p>LB - In terms of Crown Estate and seabed leases, since you would be restoring site interest features it's not envisaged that a seabed lease would be required for doing something that is actually a positive biodiversity requirement for management of the site. That's my understanding, in terms of oysters, they are exempt from requiring a marine licence.</p> <p>GK - OK, in terms of the seabed lease not being needed because it is for an interest feature of the site, does it make any difference that oyster reef isn't a designated interest feature of the CSCB MCZ?</p> <p>LB - It was previously located off the Norfolk Coast and would replace the ecological function which could be lost along the export cable corridor if protection used.</p> <p>As far as Eastern IFCA are aware, native oysters have never been an interest feature of the MCZ. NE proposed that oysters be added as a designated feature of the site in 2017, however to date this has not been taken forward. We would appreciate if this could be clarified and accurately recorded in these minutes (post meeting note).</p> <p>CP - MMO will check the exemption for licensing because I don't know if sometimes we licence oyster planting/cultch deployment under a deposit.</p> <p>GK - Would there be any other licensing or anything you would envisage being needed or is it just the fact that it's secured through the DCO?</p> <p>LB - Yes. There would be some oversight that would be required in terms of management measures to be put in place and agreed as part of that as well.</p>

Number	Details
	<p><u>EIFCA Post meeting note:- If the 'management measures' relate to fisheries management we would highlight that this can be a very lengthy process - can take years!</u></p> <p>GK - OK. But if that's all embedded in the plan, then that can just be through the DCO?</p> <p>LB - yes.</p> <p>GK - In terms of the overall delivery of the MEEB, that would be funded by Equinor to ensure that they're delivering it for the project. This would cover appropriate resources for stakeholders contributing to the steering group with a requirement for agreement of what constitutes appropriate, but we would look for your advice in terms of what might be required.</p> <p>We would be commissioning relevant specialists noting that this has been done elsewhere. So there are a number of specialists that we would look to work with to develop the detailed plan, undertake the site selection exercises and then source the oysters and the required cultch etc. <u>[EIFCA - Post meeting note - Biosecurity would need to be considered]</u>. Then we'd look at the actual deployment and monitoring noting the comment from Natural England regarding adaptive management which is touched on in the MEEB document, but could possibly be drawn out more explicitly into a section of its own.</p> <p>ST - I think we would like to know more about what management would be envisaged? Everybody hopes that a plan like this would work, but what would happen if it didn't? What is success going to look like?</p> <p>GK - In the document, the monitoring and conclusion sections touch on the fact that the onus is on the developer to ensure that MEEB is delivered and if this doesn't work for whatever reason, they would be required to come up with an alternative or do remedial action to make this work.</p> <p>ST - We're talking about an area of 1800m² which is being impacted yet I haven't seen a figure for the area of oyster bed that has to be established. Would be interested to hear further thoughts on that?</p> <p>GK - Envisaged that would be dealt with through the steering group post consent, based on site selection, final design of the project etc.</p> <p>ST - We can see a win-win situation here whereby something like this could provide a very valuable resource which then becomes the foundation of a sustainable fishery. But the problem with that is we need to have some indication of what would be an acceptable size or total biomass of oyster reef at the site which could then be considered a starting point for a fishery.</p> <p>GK - Ok, it needs to be a size that can then be self-sustaining and so we recognise that a certain ratio may not be appropriate if that does not provide a biologically sustainable</p>

Number	Details
	<p>oyster reef so we would need to work with specialists to understand what that might require.</p> <p>ST - We'd like to understand what the likely progression of this plan would be into the future, because if a well-established, productive bed was produced would that mean that the area would automatically be a red area for no fishing as it expands in the future? We'd like to understand that before we can see what our position on it is likely to be.</p> <p>GK - OK, I think in terms of the fisheries management measures, we've touched on that in the document i.e. that the MCZ fisheries management measures are reviewed every five years, so we would envisage that any management measures for the MEEB would have to be reviewed at a similar frequency and be discussed as part of the steering group.</p> <p>LB - Natural England's advice is you cannot defer the size of the oyster bed you're going to create in terms of ecological functionality to post consent. So Natural England has provided in our advice potential location options so there is no need to do your areas of search that is talked about in the documents.</p> <p><u>EIFCA - Post meeting note: The same oyster shell location evidence currently presented by NE was highlighted in 2017 to support the designation of oysters as a CSCB MCZ site feature – following consultation we believe that the location was identified as remnants of an oyster storage area or shell deposition area used by fishers many decades ago. – and may not represent the most viable area for a successful MEEB. EIFCA would support the area searches documented by the applicant.</u></p> <p>There is a clear indication of where the oyster beds should be in relation to the site features and in relation to the size to ensure ecological functionality. The Secretary of State will want to know what that size needs to be because it will be a requirement of the DCO / DML. The other aspect of this is that it can take time to provide ecological functionality for whatever size is required. It can take up to 10 years and it may never be at a place where it could be sustainably fished. We don't know until it's actually in there and being monitored. So I agree with EIFCA that there needs to be some requirement or criteria as to what success looks like in terms of aims and objectives of MEEB. Following on from that, through monitoring you could look at what would be needed to build a sustainable fishery.</p> <p>MK - We haven't had to take MEEB through an examination before, but we have had to take habitats regulations compensation. So lessons to be learned from those e.g. need to set out the likely extent over which activities are planned, what the outcomes are etc.</p> <p>Should avoid any discussions around ratios because we are looking at habitat loss and the requirement to then replace that habitat. That's complicated because it's not a question of like for like, it's about an increase in the ecological value of a particular area, so thought needs to be given around ratios. As other people have said, the basis for starting is how big an area do you need to have a sustainable bed.</p>

Number	Details
	<p>We have provided you a list for the habitats regulations compensation which is relevant re. what a MEEB submission needs to contain. You should be aiming to do as much up front investigations and planning as possible.</p> <p>GK - Regarding the location that NE advised we should focus on, is there a risk that the conditions/habitat/pressures in that area might have changed since the historic oyster records which may therefore require further consideration through the site selection process.</p> <p>LB - I think the point is it's about restoring something that was there previously. So there is always going to be conflict between uses of the site and creation of site features. So recognising that you need to be providing a feature that was previously there or in a habitat that is appropriate for a reef. Natural England's preference would be a focus in that area unless there's evidence of why that wouldn't be appropriate. However, those areas were felt by Cefas and Natural England to have previously contained oyster beds.</p> <p><u>EIFCA - Post meeting note: Suggest that NE and the applicant examine the evidence base before focusing solely on the areas highlighted. Obviously very important that the site selected for MEEB is suitable based on current environment factors. Request that Cefas's conclusion (feeling) that these areas previously contained oyster beds be shared with Eastern IFCA.</u></p> <p>GK - I was envisaging that we would need surveys to inform site selection but we could potentially commit to developing in that area, subject to there being a reason that we can't and then agreeing a revised location with the steering group.</p> <p>LB - yes, since that's what we already know from an ecological perspective would be our preferred location.</p> <p>CP - Shellfish population cultivation is exempt as long as it does not apply to deposits made for the purpose of creating, altering, or maintaining an artificial reef, so it would be up to yourselves to satisfy yourself that this work does fit within the exemption.</p> <p>GK - Since we're not proposing to use any artificial structures i.e. only planting of natural shell and seed oysters, it would not be an artificial reef.</p> <p>LB - Agreed, it's restoring a reef.</p> <p>ST - I have missed the location of this reef.</p> <p>GK - Explained it's light blue dots on Figure 1 in Natural England response. [shared with stakeholders on 28/02/22]</p> <p>ST - My understanding is that we're looking now to have as much detail as possible and so it's important that this is done because historically within Cromer Shoal at the time of designation of the MCZ, the official Defra assessment did not really look at what was likely to be required from a fisheries perspective. All the features were to be maintained in good</p>

Number	Details
	<p>condition however there was no management from the perspective of the economic impact on the commercial fishing industry, and there's now a large amount of cynicism on the ground because of what has subsequently happened. So to try and get things clear and transparent at an early stage is very important.</p> <p>GK - OK, we'll take all those comments away, discuss internally and see what we can work up into the document for submission.</p>
3	<p>Site Selection Approach</p> <p>GK - Regarding the targeted area indicated by Natural England, we can check for the latest data in this area. Whilst it is still likely to be suitable since it's not likely to have changed that fundamentally, we can cross check this against the types of conditions that oyster beds favour and then reflect on why the oyster beds may not have re-established in this area or why they were lost in the first place. E.g. from our understanding, potentially overfishing, dredging, pollution, disease or spatial competition with other species and potentially invasive non-native species are the key pressures on oyster beds that would have caused them to be lost. We would focus on those, checking that the site is appropriate through understanding whether any of these pressures still exist.</p> <p>EIFCA, any general comments on other possible reasons that the oyster beds were lost that we should take into consideration?</p> <p>ST - Not aware of any clear evidence Post meeting note: see page 49 #53 - Fisheries (Norfolk) : report on the fisheries of Norfolk, especially ... - Full View HathiTrust Digital Library</p> <p>GK - With regards to site selection, assumed there'd be a need to avoid any features of conservation importance e.g. chalk beds and any Sabellaria reef or mussel beds.</p> <p>LB - Agreed</p>
4	<p>Development of Detailed Plans</p> <p>GK - Deployment strategy key areas for research include understanding the supply options, e.g. sourcing of cultch to help the bed establish, Natural England suggested working with local fishermen to source that, but there are various other potential sources e.g. from aquaculture and sources used by other restoration projects.</p> <p>ST - In connection with the cultch point, do you not need a licence for depositing that.</p> <p>GK - Based on the discussion earlier in this meeting, we don't think it would be classed as an artificial reef and therefore Natural England and MMO suggested earlier that licences are not required.</p> <p>ST - Advice we've received on something similar in The Wash (establishing mussel beds) was that you did.</p>

Number	Details
	<p>GK - OK, we will look into that.</p> <p>CP - It may be licensable because that may class as deposit on the seabed because the exemption is specifically worded as a marine licence is not required for the deposit or removal of any shellfish ropes, cages, markers or lines during the course of propagation, and therefore dropping cultch may class as a deposit on the seabed.</p> <p>GK - Would that be subject to the MMO's 13 week target for licensing?</p> <p>CP - It would be a standard license procedure.</p> <p>LB - But you wouldn't need it until post-consent if MEEB was deemed to be required by the Secretary of State. I assume it would be very similar to compensation.</p> <p>GK - Yes, that would make sense once site location and detailed plans are developed.</p> <p>Envisaged that there would be a phased deployment in a similar way that's being done elsewhere including at the Essex project in terms of deploying a certain area, monitoring its success and then planting more and more to build up the size of the bed. We can look at that in more detail in terms of coming up with an appropriate area and what success looks like.</p> <p>Also need to take into account, the most appropriate season for deployment that would afford the best chance of success. So avoiding times when there might be maximum amount of predators around and when there's optimal temperature food availability etc. I would envisage doing those detailed plans post consent once we've commissioned the relevant experts in this field.</p>
	<p>Approach - Deploy, monitoring and management</p> <p><i>Deployment</i></p> <p>GK - In terms of the deployment, monitoring and adaptive management, it's proposed that the detailed method for deployment is established post consent, but most likely deployment would be from a vessel.</p> <p>Monitoring in consultation with the steering group would be undertaken so that we can monitor any growth or loss or changes in health of the bed overtime. Noted that EIFCA and Natural England commented that monitoring would likely be required for the lifetime of the project. Will pick that up with Equinor but suspect this would be more frequent at first and then become less frequent once the bed became reasonably well established.</p> <p><i>Management</i></p> <p>GK - Understand the MCZ has a dredging restriction which would protect any planted oyster reef?</p>

Number	Details
	<p>ST - most of the area is covered by a no bottom gear regulation so any activity would have to have its own byelaw which would require its own assessment at that time.</p> <p>GK - So in terms of planting the oyster bed, if it's in the MCZ, it would be largely protected from fisheries pressures at first</p> <p>ST - Yes, although there is still existing potting in the MCZ so it would be useful to have some information as to whether there's an assumption from anybody that potting over the bed would be acceptable or not. And also, to consider at this point what conditions would need to be met to enable the oysters to support a sustainable fishery.</p> <p>GK - That will come with trying to settle on what success looks like, but if the bed extends beyond the area required to deliver MEEB, a review of the management measures for the MCZ would consider whether any further fisheries would be allowed. This would be discussed and agreed through the steering group in line with the processes for the MCZ that are already established in terms of regular reviews of the management measures.</p> <p>What would Natural England's position be in terms of potting being allowed?</p> <p>LB - Key thing for the Applicant to consider as is how detrimental allowing potting fishing within an area of MEEB would be, so if there is fishing gear regularly being deployed, how does that affect the oyster reef.</p> <p>GK - OK. We can look into that.</p> <p>ST - Important here to remember that all these sites were designated as multi-use and with an eye towards sustainable utilisation as well as purely nature conservation measures. So, an activity which is basically going to draw another red area on the map is more likely to attract local opposition than one which holds out the possibility for future sustainable utilisation.</p> <p>Alternatives if oyster reef in MCZ deemed unfeasible</p> <p>GK - We expect that the oyster bed planting would be successful, but if for some reason it wasn't successful, we would look at different options based on the review that we've done so far or any other options that emerge. The key options that would still be on the table include planting of oyster beds potentially elsewhere e.g. the arrays, another MCZ, or somewhere else deemed appropriate. We would develop alternatives, in consultation with the steering group.</p> <p>We recognise that there is currently limited stakeholder support for a site extension to the MCZ and there is uncertainty regarding the legal feasibility of these and the timescales, so this is not our preferred measure, but keeping anything on the table. If we end up in this scenario, it's likely to be a few years down the line, so things might have changed so we would review the options at that time.</p>

Number	Details
	<p>Removal of anthropogenic features (noting that Vanguard, Boreas, and Hornsea have marine debris removal) is also another option. That could be an area of focus if it became needed to find another MEEB or could be part of a suite of measures that contribute to providing equivalent benefit.</p> <p>MK - Might need to develop one of your backups in a bit more detail, the logical one to look at would be the planting of oyster beds elsewhere. And in turn, whether there's anything you can do at this time to indicate that those might provide feasible alternative options. You have detail of the habitats and hydrodynamics of the array areas. Is there enough information there to make a case? And if not, is there work that can be done readily. Gunfleet Sands looked at whether it was suitable to go into their array. Could you demonstrate at the time of the decision that if the primary MEEB doesn't work, then there are genuine options available. This is likely to be welcomed by decision makers.</p> <p>GK - We've done an initial review of the data that we have for the array area so we can draw out a bit more detail on that.</p> <p>In terms of the Gunfleet Sands study, I think it concluded that their site wasn't suitable, but that other unspecified locations in the UK are suitable.</p> <p>ST - In order to provide our position, we would need to see more detail about where and what is proposed and what are the conditions and the criteria to be met before it could be considered as a fisheries resource.</p> <p>GK - Noted</p> <p>MK - On a broader note. The Wildlife Trust had been involved in previous discussions. Are you going to be reaching out to them too?</p> <p>PM - They declined to stay involved due to resourcing constraints however do not support any of the proposed MEEB measures. We're still sending them all the relevant information and giving them the opportunity to comment if they want.</p> <p>Ratios / scales of MEEB</p> <p>AP - Any further comments on appropriate ratio / scales.</p> <p>ST - Have you looked at the extent planted at other projects?</p> <p>GK - Yes, most report the numbers of oysters that they've planted but it is unclear what area they covered.</p> <p>LB - Natural England have said specialists and other SNCB's would need to be involved. It would be helpful to focus on consideration of the ecological functionality, the size and the varying benefits of different sized beds .</p>

Number	Details
	<p>Look at how applicable it is in this location. It's not necessarily about ratios, it's about what size brings that ecological functionality. There's quite a few concerns about how long it takes for oyster beds to develop, some of the studies show it's taken up to 10 years through a phased deployment. Check what has worked previously and how uncertainties have been addressed.</p> <p>GK - OK. Regarding Stephen's comment about what's being done now. The Essex Nori projects planted 2km², but the other projects give numbers of oysters, so unsure how that translates into areas.</p> <p>ST - The area of habitat loss of 1800m² is really quite small. What would be your thinking if it turns out that the area that's required for ecological functionality of the MEEB is significantly more?</p> <p>GK - It depends what we mean by significantly, would need to discuss with Equinor and see what we can suggest we would commit to but we've said in previous documents that we would need to come up with a meaningful a size.</p> <p>ST - In terms of impacts on fisheries, that would be very important for EIFCA, because the size of the area would have implication as to what our position would be.</p> <p>GK - We need to find a balance. It's finding an appropriate size that is then going to be meaningful but not excessive.</p> <p>ST - I see great possibilities for this. Everyone accepts the biodiversity gains that can come from this sort of activity. But there are also sustainable utilisation gains that could potentially come from this.</p> <p>GK - It depends as well on your question before around whether the potting could still be allowed because if potting is still allowed but dredging isn't, then the size of the bed might have minimal impact on fisheries. Would you agree?</p> <p>ST - That would probably be the case. I was thinking more along lines of sustainable utilisation of the oysters themselves.</p> <p>Closing remarks</p> <p>GK - Action for us to define what success looks like and how this relates to scale. Could be through a literature review of how the other projects defined scale.</p> <p>ST - Is there a possibility of a strategic approach which brings in several projects?</p> <p>GK - Not aware of other projects looking at this at this stage, assume Equinor willing to collaborate but would need to discuss this further.</p> <p>HA - One thing to note is that there's a huge amount of oyster restoration work going on around the UK at the moment and there's knowledge and understanding to be gleaned</p>

Number	Details
	<p>from American projects where oyster restoration in America is perhaps 10, 20 years ahead of Europe.</p> <p>MK - Re. collaboration with other developers, there's an impasse at the moment because the extension projects towards Essex and the R4 projects don't have a connection point but when they do there will be more partners in play and that is something worth looking at right now.</p> <p>HA - Ok, we'll look at whether including potential for some sort of future collaboration with interested developers is an option.</p> <p>LB - Could consider the projects that have already got consent and that go through the MCZ as there's always operations and maintenance requests.</p> <p>ST - Regarding the NBN gateway data points of the historic oyster reef, my recollection is that was exactly where people who were processing oyster onshore used to go and dump the shells.</p> <p>SC - That's my recollection as well.</p> <p>GK - That's a valid point. Was part of the reason that it wasn't originally part of the features because there were too few data points?</p> <p>LB - Yes. So you would have to do a wider search but focusing in on that area for search.</p> <p>GK - OK. So just look at that northwestern region subject to review of the habitat types and hydrodynamic conditions to see whether they're appropriate, but we can focus in this area as a starting point.</p> <p>SC - We have got some incredibly old maps (1820 to 1870s) that had the historic oyster beds in The Wash on them so you could ask the True's Yard local fisheries museum if they have the equivalent for the Cromer area.</p> <p>GK - Thanks, are you able to confirm a contact?</p> <p>SC - Yes.</p> <p>ST - To reiterate, I don't think we'd be at the point of saying agreeing a final position so would very much like to hear what your thoughts are after this and the other information we've been talking about today such as the locations of this proposed bed.</p> <p>GK - Noted, we'll take that away and review that with the team. In terms of the programme for submission, we've also got the examination period to further progress things if need be but keen to get this as far as possible for submission. Plan is for early summer, so time is limited.</p>

Number	Details
	Next steps - we will write up minutes and circulate the agreement log for you to update your positions.

Actions

Action	Responsible
RHDHV to add additional detail on adaptive management to the MEEB document.	RHDHV
Site selection / feasibility review focussing on northwest section of the MCZ, looking at hydrodynamics, depth, sediment dynamics etc. Also include the array areas in any feasibility assessment.	Equinor/RHDHV
<ul style="list-style-type: none"> • Look at the potential size of reef required and how it relates to ecological functionality • Use other projects as examples (especially their initial planting process). • Develop a 'criteria for success' based on the oyster reef aims and objectives • Outline the potential for interaction between potting activity and the establishment of oyster reef. 	Equinor/RHDHV
Check if the areas indicated by Natural England are perhaps a historic shell dumping ground by the old oyster fishery as indicated by EIFCA.	RHDHV
Contact True's Yard to request historic oyster reef maps at Cromer	RHDHV
RHDHV to look at whether a marine licence is required for depositing cultch on the seabed.	RHDHV
Equinor / RHDHV to consider frequency of monitoring proposed within the MEEB document.	Equinor
Equinor to consider potential developers suitable for collaboration	Equinor

1.10 HRA Compensation Expert Topic Group Meeting Minutes

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (SC); [REDACTED] (HA) - Equinor
 [REDACTED] (AP); [REDACTED] (RI); [REDACTED] (PM) - Royal HaskoningDHV
 [REDACTED] (BF) - MacArthur Green
 [REDACTED] (MK); [REDACTED] (LB); [REDACTED] (RB); [REDACTED] (HM) -
 Natural England
 [REDACTED] (AD); [REDACTED] (AMc) - RSPB
 [REDACTED] (VE); [REDACTED] (NC); [REDACTED] (CB) - National Trust
 [REDACTED] (CP); [REDACTED] (NW) - MMO
 [REDACTED] (RK); [REDACTED] (LH) - PINS

Apologies: [REDACTED] (National Trust); [REDACTED] (RSPB) [Click to enter "Apologies"](#)
 From: [REDACTED]
 Date: 26 January 2022
 Location: Microsoft Teams
 Copy:
 Our reference: PB8164-RHD-ZZ-XX-MI-Z-0028
 Classification: Open
 Enclosures: Meeting slides

Subject: SEP & DEP Offshore Ornithology Compensation ETG 26_01_22 Minutes

Number	Details	Action
1	<p>INTRODUCTIONS</p> <p>Attendees introduced themselves</p> <p>AP ran through the agenda.</p> <p>SC provided a project update. Since the last ornithology Expert Topic Group (ETG) the project team have been performing additional ornithological data analysis and modelling work which is currently being updated and will feed into the regular offshore ornithology ETG which is scheduled for the 9th of February.</p> <p>More generally, we have been progressing with updates to the Environmental Statement (ES), draft Development Consent Order (DCO) and outline management plans. There are also a number of additional ETGs coming up in the next few months.</p> <p>We took the decision last year to delay submission so we are looking to get the best value out of this extra time which these ETG meetings will help provide.</p> <p>At the moment we are still targeting a Q2 DCO application submission. We have continued to mature our thinking around ornithological</p>	

Number	Details	Action
	<p>compensation measures that you will have seen reflected in the updated compensation submissions. We are very grateful for everyone's time and keen to make sure we make the most of the months we have left now before application which relies heavily on your input so really appreciate your feedback provided so far and look forward to that continuing in the run-up to application submission.</p> <p>AP - want this to be an open discussion so feel free to chip in at any point. In the spirit of this we recognise that naturally there will be some differing views between stakeholders and parties, so we are keen to listen to those and try to find as much common ground as we can.</p>	
2	<p>SUMMARY OF ACTIVITIES TO DATE</p> <p>AP provided a summary of activities to date.</p> <p>As a project we have had the opportunity to learn from other offshore wind farm (OWF) projects that have dealt with these issues either during or after their examination periods. We have made a lot of effort to reflect on the approaches taken by those projects and the feedback they have received alongside undertaking our own project specific pre-application consultation.</p> <p>To recap, we began by formulating a long list of potential options which cast the net as wide as possible and focused on Sandwich tern (S tern) and kittiwake as key species of concern. At the point of submission we aim to have produced at least 3 iterations of the documentation and have worked through those with stakeholders . We are currently at the second iteration of this for ornithology which you have been reviewing and commenting on.</p> <p>At a strategic level, Equinor is engaged in the Offshore Wind Industry Council (OWIC) compensation developer group which involves multiple developers and looks at opportunities for taking forward the more strategic compensatory measures. This is taking place in the background to SEP and DEP, and we are, where possible, looking to weave developments from this group into our proposals. However, with the timescales that we are working to we will have to see how well we will be able to do that.</p> <p>Also cognisant of recent outcomes and advice on projects like Norfolk Boreas, Hornsea 4 and EA1N/2 and Defra draft guidance which we understand is due to be finalised in the relatively early part of this year.</p> <p>AP showed a snapshot of the long and short list that was developed in the early stages which reflects a point in time and therefore doesn't capture recent feedback from RSPB and National Trust. We went</p>	

Number	Details	Action
	<p>through a Red/Amber/Green (RAG) process to help us to identify options which were: unlikely to be viable = red; potential option with hurdles to be overcome = amber; and the best available options at that time for further consideration = Green.</p> <p>It was the questions that were raised during this early exercise which have formed the thinking of the documents which you have been reviewing this last 6 months to a year.</p> <p>Compensation hierarchy - quite clearly set out in the Defra guidance mentioned earlier. It will not always be possible to deliver compensation measures in a like for like manner however measures which do this are preferable although where this is not possible, the overarching aim is to ensure the biological structure and function of the network is maintained.</p> <p>AP - we just wanted to reflect briefly on the questions posed in the most recent consultation and some of those responses.</p> <p>Do you agree with the evidence that measures to increase abundance of sandeels, sprats and juvenile herring in waters near to S tern colonies can be expected to result in an increase in breeding success, and probably an increase in adult survival, of S terns? Very interested to see your thoughts on this.</p> <p>MK provided feedback on Defra best practice guidance, noting that Defra are due to be providing a summary of the consultation responses imminently. An update is due some point in the summer so worth bearing in mind that this was a draft document and that they have had a lot of representations which will have a bearing on the content of the final document. Equinor should be careful not to get caught out by changes to the guidance.</p> <p>AD noted that the RSPB do not support the Defra draft guidance in its current form, with particular respect to the compensation hierarchy level 4 which includes potential to compensate for a different protected seabird species to the one being impacted.</p> <p>AP – thanks, that's useful. Obviously, as a project this is difficult as it's a rapidly evolving subject area so we have to go with what is in front of us, but we will take note of what is potentially becoming available in future. [Post-meeting note – Defra website currently states “We will look to publish a formal response and edited guidance by end March 2022”]</p> <p>Question 3 – Do you agree that there is considerable scope for management interventions to improve the breeding conditions for S</p>	

Number	Details	Action
	<p>terns, both at some SPA sites where the species has been in unfavourable condition for many years, and at non-SPA sites?</p> <p>We have tried to consider both the North Norfolk Coast (NNC) Special Protection Area (SPA) and other SPA sites as well as potentially non-SPA sites where those opportunities exist. In light of those potential options we asked if there were any potential preferences.</p> <p>Question 5 - Do you consider that the possible restoration of a third Sandwich tern breeding site within NNC SPA to add to the two successful sites currently in use should be further investigated at this stage (i.e. as part of the proposals included in the DCO application)? If so, do you have any information that could be useful to inform this exercise?</p> <p>We were cautious about progressing this measure before seeking feedback from stakeholders.</p> <p>The next round of documentation to be shared will be the final version before application submission. Within that we will be looking firstly to select a shortlist of particular measures and will look to develop those out at the specific level of detail required in order to demonstrate how those measures could be implemented, secured, etc. So today we will be looking to delve into that wherever possible.</p>	
3	<p>SANDWICH TERN COMPENSATION OPTIONS</p> <p>BF - thank you for the helpful feedback that we've had on the documents so far. To be clear, these were not meant to be compensation proposals, rather, reviews which set out the ecological evidence to show that compensation measures are available, particularly since there is a certain novelty to the S tern aspect of this.</p> <p>It's crucial that we now start to move forward to selecting measures to be developed in detail and so your support and guidance is very welcome. This includes any feedback in terms of corrections in the reviews and also additions. Thank you to RSPB for reference to the best practice reports and the provision of advice to ensure that there is clarity in the steps which are required to assess the suitability of measures.</p> <p>LB provided a slight clarification of Natural England's remit, whilst we can provide advice on the ecological merits of the measures, we can't tell you what options to progress.</p> <p>BF - ok understood but we would request guidance on what you think are most appropriate.</p>	<p>Project and NE to discuss with Defra whether and how fisheries management could be considered as compensation.</p> <p>Equinor/RHDHV to check what, if any, existing information is available on inshore sprat fishery from commercial fisheries assessment work already</p>

Number	Details	Action
	<p>BF summarised the evidence based suggestions for compensation i.e.</p> <ol style="list-style-type: none"> 1. Reduce fishing pressure on sandeels in ICES 1r (Strategic) 2. Reduce fishing pressure on sprats/juvenile herring in southern North Sea 3. Improve nesting habitat at non-SPA sites: Scar Point, Loch Ryan 4. Improve nesting habitat at failing SPA sites: <ul style="list-style-type: none"> • Farne Islands (National Trust) • Forth Islands – Isle of May (NatureScot) • Forth Islands – Inchmickery (RSPB) • Alde-Ore Estuary – Havergate (RSPB) • Foulness 5. Restore/create a third site within North Norfolk Coast SPA <p><u>Prey enhancement through fisheries management</u></p> <p>BF - Sandeels, sprats and also juvenile herring are important food sources for S terns. Sandeels and sprats are both important due to their varying seasonal abundance. They provide different feeding options for S terns, so any measures which would lead to an increase in biomass of these stocks would be valuable as a measure to increase breeding success. Clearly this is a measure which OWF developers cannot implement without Government intervention, so we need to be pushing for a strategic approach.</p> <p>It may be that it is possible to implement ecosystem-based management of these stocks. The current fisheries management approach aims to ensure that at least the lowest biomass of sandeels which would ensure the sustainability of the fishery is maintained however this is well below the levels that would be required to promote S tern population recruitment. Therefore, there is an argument that ecosystem-based management of the sandeel and sprat stocks is likely to provide the most ecological benefit for S tern (and kittiwakes) and it is therefore a key compensation measure to be pursued.</p> <p><u>Improvement at existing or creation of new nesting habitat</u></p> <p>BF noted that stakeholder feedback was that there were unlikely to be many options in the NNC SPA because it is also an a Special Area of Conservation (SAC) which limits options for habitat improvements but mainly because the S tern colonies are already being managed very well so it's initially difficult to see how these could be better managed to provide compensation. Therefore, suggest we step away from NNC SPA and wider NNC area for now and look at other tiers in the hierarchy i.e. looking at other SPAs or non-SPAs. However, it's noted that comments from National Trust suggest that there could actually be something that could be done in the wider NNC area e.g. wardening, predator control etc. Creating a third colony in the wider NNC area has been considered, which would provide another option for S terns to allow them to potentially have success at one particular colony when they may be doing less well at others for one reason or another. So, the</p>	<p>undertaken for the project</p> <p>Natural England to keep the project updated regarding future development of the Farne Islands Management Plan.</p> <p>MacG to liaise with NatureScot to look at potential reasons for increased erosion at Scar Point.</p> <p>VE provided contact details for the National trust site manager at the Farnes.</p>

Number	Details	Action
	<p>idea of a third site would allow the population to become more resilient but also to increase in size. However, there could be an argument that we need to do something outside of NNC region because those populations are already buoyant.</p> <p>One option outside of NNC is Scar Point at Loch Ryan, in the west of Scotland. It's noted that there are no breeding S terns in the whole of west Scotland. There used to be breeding S terns at Scar Point but because of coastal erosion (potentially caused by ferries to and from Ireland) the nesting site was lost. It likely wouldn't be hard to restore this, so creating a nesting site/colony there would be a very useful development if it was possible. However, it would be attempting to tempt birds back to an abandoned site which is obviously more difficult than improving numbers at an existing site. Although it is worth noting that S terns are regularly seen flying in the Clyde area, so establishment of a new breeding site may be more plausible in this area.</p> <p>Farne islands - numbers dwindling here. Colony has nearly gone and is in danger of disappearing because of vegetation. Thirty years ago it was short sward grass controlled by rabbit grazing but this has now become overgrown which is unfavourable for S terns and therefore management of this could be an option. However, this raises the point of additionality although I have difficulty with that because I don't understand how you discriminate between what should be being done with what could be done but is not because of lack of resource.</p> <p>Other options are Isle of May in Forth Islands but issues here are challenging as are those at Foulness.</p> <p>Farne islands seem to be a place where action could be taken to produce the best results.</p> <p>Any feedback stakeholders have on these potential options would be very helpful.</p> <p><u>Open table discussion of proposed measures</u></p> <p><u>Fisheries management</u></p> <p>AP - would make sense to look at prey enhancement through reduction in fishing pressure first of all as this measure stands on its own. We have been in discussions with the team at Defra in order to try and explore opportunities on this front. Defra seem to be looking at this measure not as compensation but rather an option which favours wider populations of seabirds, increasing the available 'headroom' which would potentially negate the need to compensate in the first place. So, it would be good to get agreement that this measure makes most ecological sense but obviously there are questions about delivery mechanisms, and for SEP and DEP, what we may or may not be able to say in time for application submission.</p>	

Number	Details	Action
	<p>LB - I have two points - it would be interesting to understand why Defra think this isn't compensation in itself and maybe MK this is something we need to explore with them ourselves because we have been exploring this for a number of OWFs for which this could be taken forward as a compensation measure.</p> <p>At the application stage you need to bring along the regulator (Defra) as, ultimately, the implementation of this measure sits with them. Defra need to be providing the mechanisms that enable this to be progressed. It's a good option but I don't know what to do to help you with that because I've not been involved in Defra discussions.</p> <p>BF - There is a scientific argument that these stocks should be managed from the view of ecosystem based management with 1/3 of stocks allocated for the birds. This is where we need to consider with Defra if this could be considered compensation.</p> <p>AD - reflecting on what BF and LB were saying, it seems the overall state of play is that the reduction in fishery pressure is preferred but people are still grappling with the mechanisms to achieve this. I'm struggling to see how this is a short term measure but understand the need to raise it since it pushes it up the ladder.</p> <p>I'm worried when I hear the word 'headroom'. This isn't about creating headroom, it's about creating healthy seabird populations so need to think carefully about the language. If it's an ecosystem restoration measure, you are seeking to improve a struggling population.</p> <p>BF - agreed headroom is the wrong word however if the sandeel and sprat stocks had been better managed in the first place then it would be likely that SPA populations would be stable or increasing.</p> <p>AP - on the headroom point from Defra, I think the point they were trying to make was could any measures be implemented that would prevent in-combination adverse effect on integrity (AEoI) from being triggered.</p> <p>MK - sandeel issue has been explored quite extensively with Hornsea 3 and we are a bit at a policy impasse at the moment. In the report [MacArthur Green (2021). Considerations of compensation options for Sandwich terns and kittiwakes] there was an aim to increase sprat stocks and is that possibly an easier win compared to sandeel which is primarily an international industrial fishery?</p> <p>BF - most sprat fisheries are UK fisheries so would cause issues with UK fishermen if these were to be limited. Sprat stocks are managed as a single stock in the North Sea however there are a number of small estuarine stocks which are crucially important for seabird species. E.g. Firth of Forth stocks crashed and common tern population then crashed. However, with the fishery stopping due to the stock crash, the terns recovered and now there are about 800 pairs at Leith Docks. There is some interconnectedness between local stocks and the wider North Sea stock however quite complex but yes there may be some</p>	

Number	Details	Action
	<p>opportunities to protect the local sprat stocks notwithstanding issue with UK fishermen. There's also not as much evidence of the biomass of sprats and how this influences the breeding success of S terns so sandeel route potentially holds more weight.</p> <p>MK - is there any local knowledge about sprat fishery? Thinking management of this could be done as a potential project alone measure.</p> <p>BF - yes there are some local inshore fisheries of sprats so this could potentially be an option.</p> <p>MK - is this managed by MMO or IFCA?</p> <p>BF - as far as I understand it these local fisheries stocks do not have biomass-based quotas because we don't know the stock abundance.</p> <p>SC – yes, we can look into this with support from our fisheries advisor.</p> <p><u>Improve nesting habitat</u></p> <p>BF - Farne islands - what do you think?</p> <p>MK - one of the additionality questions relates to anything being planned or secured. Management plans for the site are run on a five year cycle. The recent one has expired due to covid and difficulties managing the site however there is a commitment to manage this so looks like this could be a case of something already being done/planned.</p> <p>BF - OK. if vegetation management is included, then we would probably have to take this off the table unless compensation was 'over and above' routine planned management.</p> <p>MK - Will keep you updated.</p> <p>VE - National Trust would have welcomed a conversation at the start about the Farne islands as it's not as clear cut to say that there is just a vegetation management issue. I think you could learn a lot by speaking to the team at the site as there are a number of factors at play. I can put you in contact with the team at the Farnes.</p> <p>MK - Scar Point - I wouldn't be able to tell you a lot about that however is this potentially an issue to do with changing coastal processes? This may be a very tricky intervention to sustain so you'd really need to understand what's going on there.</p> <p>BF - there is a lot of hydrographic work going on around Scotland and we could enquire whether that could be an issue at this site. However, local knowledge suggests this could be the ferry but would obviously need to look at that.</p>	

Number	Details	Action
	<p>MK - in terms of non-SPA sites, Medway and Marshes was considered in one of the reports - was that an issue of not much information being available?</p> <p>BF - Yes, I was struggling to find non-SPA sites where S terns are nesting.</p> <p>AD - what BF was saying about ideally looking for sites outside the SPA networks, the RSPB view is that the starting point would be to look at non-SPA sites as additionality issues much easier to deal with. Clearly that's more difficult but this should be a starting point for all developers when looking at establishing colonies for S terns.</p> <p>Havergate is now being managed for the lesser black-backed gull (LBBG) colony there. Take Havergate off your list because S terns are not there anymore and we are trying to attract them to other areas in the vicinity following the loss of the main gull colony at Orfordness.</p> <p>BF - Inchmickery – NatureScot site management document indicates that RSPB has decided that because of the gull population it has not really been practical to try and increase the population of S tern there.</p> <p>MK - would be useful to hear about Foulness. Are there opportunities there?</p> <p>BF - yes that might be an option. S terns used to nest there, and as I understand it, no longer do.</p> <p>AD - But that area is very close to a number of OWFs.</p> <p>BF - Yes it might be less desirable to try to restore S terns to a site close to several offshore wind farms. Also, it's clear that S tern represent a metapopulation for which there is a lot of movement between colonies. So, in a way, it might not matter too much where a compensation site is because so many individuals are moving around anyway. For example chicks ringed in Netherlands nest at the colony in Caithness.</p> <p>AD - Foulness is a tricky one. There will probably be very few people who do know about this because it is a Ministry of Defence (MoD) site. I've been there once and I suspect they were nesting off the north end by old cockle beds. Would need to understand that in the first place. Seabird monitoring plan database would tell the story.</p> <p>BF - yes, this suggests that they haven't been there for a while.</p> <p>BF - would you like to talk about NNC?</p> <p>VE - yes, we were interested to hear about the thinking behind a third site within the NNC area however National Trust do have some concerns around what it would mean for the existing two sites. We are in contact with a lot of the land managers on the coast so it would be</p>	

Number	Details	Action
	<p>useful to have a discussion with them. You've had our response so happy to continue discussions over the next couple of months.</p> <p>BF - yes, thank you for your response, this was very useful and gave more weight to this option than we previously assigned to it.</p> <p>VE - In terms of additionality we are not sure about this as we are constantly reviewing management measures and making tweaks to how we are doing things.</p> <p>VE - to provide context we were brought in quite late on this and have suggested re-considering a number of the measures that were originally screened out.</p> <p>Regarding permanent fencing, this is not a good option due to e.g. grey and common seals, large rookery as well as logistical challenges. No simple answers for the Blakeney point site, however we do keep this constantly under review. We would be very happy to host a site visit which would help to explain some of these points. Temporary fences are used at Scolt Head and Blakeney.</p> <p>CB - elaborating on the electric fences and explaining the complexity - we do have some electric fences but where we deploy depends on where the terns nest. Experience of the terns response to electric fencing shows that it varies. Terns on Blakeney seem to be more disturbed than at Scolt Head. Also, very variable, so sometimes earlier in the year fox control has been very effective however sometimes they have been able to access the areas right through the breeding season. It's a very dynamic environment. We even had a record of an oystercatcher going along the coast and scaring adult common terns from their nests and eating the eggs. The team are constantly out there keeping a check on what's happening.</p> <p>LB - good that you're going out to understand and see Blakeney but it has to be clear that what is being set out addresses the additionality point. Measures need to meet the key principles in the draft Defra guidance. This needs to be thoroughly explored. We note that National Trust have suggested providing wardens however we think this might be something that could be provided as a supportive measure forming part of a bigger compensation package however whether this could be effectively demonstrated as offsetting the mortalities of S tern needs to be considered. Urging caution that this was very much seen as a site enhancement measure rather than compensation.</p> <p>AD - RSPB echoes LB's point.</p> <p>AP - if we were blessed with a surplus of alternative measures that all parties supported it might make sense not to focus on measures within the existing SPA network, but this tends not to be the case. The evidence seems to suggest that so called 'above and beyond' measures are and should be available. Norfolk Boreas LBBG fencing measure at Alde-Ore Estuary SPA as an example.</p>	

Number	Details	Action
	<p>LB - I would be very careful with that argument because that was a 'New Zealand' fencing type that had never been used in the UK and therefore a measure that is going above and beyond what would be expected.</p> <p>MK, BF - yes, this is a different level of intervention since it is a permanent structure that would exclude all predators.</p> <p>LB - Equinor will need to have adaptive management included as part of their compensation measures.</p> <p>AD - wherever you end up with the proposals you need to have a clear understanding of the ecological situation which is driving the decline before you go down this route.</p> <p>MK - on the point about a limited number of options, advice is that if you're in that situation then developing a package of different types of measures e.g. different sites, different scales etc would be beneficial because it will allow the Secretary of State (SoS) to look at the issue more broadly.</p> <p>AD - We would add to Martin's comment - all the measures need to have a reasonable guarantee of success. If they don't, then they cannot be considered compensation.</p> <p>MK - yes thanks for clarification Andrew, there's no point in progressing speculative measures.</p> <p>AP - yes, this is the approach we have generally been taking.</p> <p>HA - regarding third site at NNC, do the RSPB have any further information on the work they have been doing in collaboration with the Norfolk Coast Partnership to look at the creation of new nesting sites for S terns?</p> <p>AD noted that he couldn't speak for Phil Pearson who had drafted the response and was unable to provide any further information.</p> <p>AD - we would echo LB's caution on the additionality point and the ability to prove that this is actually compensatory and the point that S terns exist within a much larger metapopulation.</p> <p>VE - we don't imagine there are going to be further updates. Would definitely stress that you should speak to the land managers in this area before progressing proposals.</p> <p>LB - yes, you would potentially need to bring in Holkham Estate and other land owners.</p> <p>VE - yes, that would bring you to a place more quickly - Steve Rowland (RSPB), Jake Fiennes (Holkham Hall and Estate); Kevin Hart (TWT), would be useful people to contact.</p>	

Number	Details	Action
	<p>VE - we would again recommend referring back to earlier compensation measures which were not taken forward to the shortlist and consider these.</p> <p>MK - bit leftfield but thinking about this idea on NNC i.e. increasing the number of nesting locations. Is there any merit in thinking of locations away from north Norfolk that we know that S terns use? Is there any merit in looking in and around those areas to see whether there is a possibility of e.g. finding a plot of land behind a seawall where you could excavate a lagoon with a number of small safe islands?</p> <p>BF - yes, that is a nice model.</p> <p>MK - is there anywhere on the south coast that this could be implemented e.g. in an around the Solent, Isle of Wight?</p> <p>BF - very positive suggestion however this would be a risky option since it would be a very large piece of work creating a novel site that S terns may not notice.</p> <p>RB - possible way to narrow down prospective locations would be to do a scoping exercise to identify some locations where it might be possible.</p> <p>BF – yes, St John’s Pool is a nice model but my concern is with how quickly and whether S terns would actually colonise the site.</p>	
4	<p>KITTIWAKE COMPENSATION OPTIONS</p> <p>BF – There’s quite a bit of overlap with S tern so I won’t labour the point on some of these.</p> <p>Again, the strategic argument that allowing sandeel stocks to recover would be very beneficial but that takes us back to strategy.</p> <p><u>Artificial Structures</u></p> <p>BF – In terms of developer led measures, we know that building artificial structures is an option which is being taken forward by other OWF developers. However, there is potentially a point of diminishing returns where you fail to have a large enough pool of site seeking immature kittiwakes to accommodate colonisation of another artificial structure on the east coast.</p> <p>Therefore, we think it would be best to focus on existing artificial sites with small improvements. E.g. kittiwakes in Lowestoft have a generally high breeding success however they are now nesting in very strange places causing a nuisance which people and businesses have been trying to deter through putting up nets (e.g. Papa John’s).</p>	<p>MacG to look in more detail at providing evidence that provision of artificial ledges at the rear of Lowestoft Theatre is feasible and would provide the necessary compensation.</p> <p>Project to engage with the Lowestoft Kittiwake Partnership, as appropriate.</p> <p>RHDHV/Equinor to review</p>

Number	Details	Action
	<p>British Telecom also put-up nets which received some opposition after which they were removed and the kittiwakes moved onto the artificial ledges that were constructed in place.</p> <p>It would be possible to enhance the breeding prospects in parts of Lowestoft by providing artificial ledges where they would not be a nuisance. So, if you could provide the option for these birds to move to suitable nest sites, I think that would represent compensation.</p> <p>Another example is the wall at Lowestoft Harbour which was constructed for kittiwakes after the building that they were originally nesting on was demolished. However, this site has now been abandoned because it is very easily accessible to foxes and other predators and so I was trying to make the case for measures that would reduce nuisance and improve breeding success.</p> <p>The other option that I've suggested here is to develop nesting options on an offshore site. This was before the recent Hornsea 3 review that suggested there were up to 1,000 pairs nesting on offshore structures already.</p> <p>Thinking about sites far away from wind farms, Northumberland seems a sensible option. The breeding success of kittiwakes could be improved by making offshore sites more suitable e.g. preventing access for large gulls, favouring areas that are sheltered from, sun, wind, rain and sea spray, allowing them to breed more successfully. However, I'm not particularly enthused about this option because it is a relatively big undertaking and difficult to monitor.</p> <p>So, that was my thinking on these and it would be very good to get your feedback on these points.</p> <p><u>Open table discussion of proposed measures</u></p> <p><u>Onshore structures</u></p> <p>MK - enhancing the existing site at Lowestoft harbour wall: this could be a bit unfortunate as it was provided as a measure to address the port re-development so it starts to look a bit tricky as a separate compensation measure for SEP and DEP.</p> <p>AD - Also, Associated British Ports (ABP) are already planning to refurbish it: [REDACTED] [REDACTED] [REDACTED]</p>	<p>potential offshore structures around Northumberland and check whether they are being used by kittiwakes</p> <p>BF to revisit the fieldwork kittiwake data already available from Lowestoft to assess the potential benefits to productivity.</p>

Number	Details	Action
	<p>MK - I think what you were describing at British Telecom is a better option potentially because that is something that someone else should not already be doing.</p> <p>BF - another example is at the theatre in Lowestoft where kittiwakes nest on the front façade and are a nuisance to theatre-goers when entering however at the back of this you could easily set up artificial ledges which the birds are likely to recruit to.</p> <p>MK - I think it's potentially a good option and worth exploring however it's something that will need to be carefully demonstrated and then when impact levels are confirmed would need to check what is feasible. There may be limited capacity in Lowestoft given other projects' compensation measures however feasibility would depend on the scale of a project's impacts.</p> <p>AD - general point about Lowestoft and overplanting of compensation measures there is that it is potentially way above the pool of kittiwakes available. I would echo MK's comments. I suppose we can see potential in this. You are trying to find the right set of circumstances that will provide you with a clear line of site that will show that you are providing that additionality. E.g. for a random seaside town you need to build that evidence base so if you done x, y and z this would result in you meeting the required level of compensation for the potential impact. The thing I'm struggling with is how this could be done within the 4 months you have before application because it is complicated stuff to be able to say, yes this is a measure that would work.</p> <p>BF - there is evidence of fieldwork completed in Lowestoft where we looked at the number of nests that failed from being knocked off houses. Another study is from Dan Turner at the Tyne where a number of sites have been known to fail because owners have taken a number of actions to remove the nests. So, I think it would be a win-win situation through reducing nuisance and improving the breeding success of kittiwakes in Lowestoft and potentially elsewhere. Providing further nesting support could feasibly increase recruitment in the wider kittiwake population. I can revisit the data already available for the area to assess the potential benefits to productivity.</p> <p>RB - in terms of additional productivity and where kittiwakes are trying to nest on people's houses. We clearly would all like to see limited negative interactions with kittiwakes so would need to be careful that the local community do not then see that as a way to get rid of their nuisance kittiwakes i.e. don't give people the impression that this would reduce the nuisance. But overall, this would be a good option to consider in the local community.</p>	

Number	Details	Action
	<p>BF agreed there was merit in a public engagement piece that could run parallel to the compensation measure.</p> <p>AD noted that any work in Lowestoft should engage with the emerging Lowestoft Kittiwake Partnership which has grown out of the controversy and discussion in 2021.</p> <p><u>Offshore structures</u></p> <p>MK - This feels like an area of quite rapid movement following the Orsted surveys last year which focussed on the southern North Sea. It's unknown whether there are available offshore structures around Northumberland which is presumably more difficult because of the deeper water.</p> <p>BF - yes, presume there are fewer because few or no gas platforms however presumably there'll be some so we could possibly do a review of this.</p> <p>BF - key thing to remember is that offshore sites would be beneficial for kittiwakes since there is no requirement to commute, no disturbance from mammalian predators and limited disturbance from humans.</p> <p>MK - other issue is potential decommissioning of these structures. Would need to ask, what is your compensation pathway? If we are trying to maintain the national site network of SPAs then presumably you want your new colony producing birds that would be able to recruit into Flamborough and Filey Coast (FFC), Farnes, Isle of May etc.</p> <p>BF - yes that would be the aim. The vast majority of females recruit to different sites from where they were born so these structures would enable contribution to the national site network.</p> <p>MK - Lowestoft further away from FFC and other SPAs so from that perspective Northumberland may be favourable.</p> <p>AD - just another note of caution. I'm assuming that you are making an assumption that any measure like this would have a high breeding success from the get-go?</p> <p>BF - there is evidence that it would be less successful in the beginning but after that first year, improvement in breeding success picks up. Broad evidence seems to be that the offshore structures in Norway support higher breeding success compared to artificial and natural coastal colonies. Also, smaller colonies tend to have higher success than larger ones.</p>	

Number	Details	Action
	<p>AD - we don't have good data to suggest that we will get good breeding success. So just highlighting that uncertainty.</p> <p>BF - yes, clearly there is uncertainty because there is no colony off Northumberland, which takes us back to the adaptive management point.</p> <p>AD - there is an increasing tendency to rely on adaptive management and some sketchy information is being put forward by Round 3 developers. The level of precision on what is actually being proposed is limited and we are increasingly concerned on the overreliance of adaptive management to manage uncertainties post consent.</p> <p>BF - take your point, but from a developers point of view there is a need to control for a number of different eventualities. However, the idea to improve existing colonies is preferred since it is likely to be more successful.</p> <p>AD - yes, on the relative scale of preference, we would agree. We would be expecting more detail than has been provided by Hornsea 4.</p> <p>SC - would like to point out that we don't want to lose site of the fact that ourselves and Hornsea 4 are in a slightly different situation. We have been navigating this everchanging landscape and we are hoping to take forward measures that will provide the best success. However, I would echo BF's comments that we will need to rely on adaptive management to some extent.</p> <p>MK - just on offshore structures, evidence gathering on whether structures offshore are being used by kittiwakes would be pretty critical.</p> <p>BF - noted. The plan going forward as we develop this is to highlight that the main benefit would be through strategic measures however improving existing onshore structures will likely be the focus of our proposals moving forward.</p>	
5	<p>GUILLEMOT AND RAZORBILL</p> <p>RI - unlike most of the discussion we've had this afternoon for these species we are keen to start a discussion around why we have a particular issue with these species and what the next steps should be in developing these measures or identifying new ones.</p> <p>For auks, rather than reproducing the work done by the Boreas, EA1N/2 and Hornsea 4, we have produced a signposting document. The two measures that have been taken forward are rat eradication from a breeding colony and bycatch prevention.</p>	

Number	Details	Action
	<p>Rat eradication - I think we are all in agreement that there is evidence that this measure can be successful however there is a lack of locations where this could be feasible for these species.</p> <p>Bycatch prevention - there is a lack of evidence on whether this measure would be successful for these species.</p> <p>The written advice that we got from Natural England suggests that further exploration of potential measures for auks should be undertaken. We would like to explore what you would suggest that we look at.</p> <p>MK - in terms of predator eradication it goes back to this point about measures that are likely only to be feasible by looking north of the border. In terms of a submission, there's evidence that this can be a successful measure, but probably for large auks this is not conclusive. There's probably not an island where you could secure agreement that mammalian predation is an issue. Can you find a specific location where this has ecological merit? Can you bring regulators, landowners etc. on board? What we've seen so far is that there's not a lot of areas however it is a tenuous position to go into an Examination without at least a candidate site which makes it very difficult for us to respond positively when there is limited level of detail.</p> <p>Bycatch reduction - you will have seen that Hornsea 4 are looking at building evidence to demonstrate that bycatch reduction would work. But again there are a lot of unknowns with this.</p> <p>I see you have human disturbance on your list however we have looked at jet skis and implemented stop notices so this again may not be the best option. Struggling to see the pathway with those.</p> <p>MK - discussion with Scottish regulators seems like the thing that could unlock measures because Scottish Islands represent areas where this option would be most feasible.</p> <p>BF - completely agree with all that. However, the Scottish Government wants to reserve these for Scotwind sites so politically there's some difficulty here. Has anyone thought about Rathlin Island? AD - yes, we have got funding for that.</p> <p>AD - would just echo MK's description of the issues associated with these measures. Challenge we have placed at Hornsea 4's door regarding rat eradication is that we have said there would need to be a full feasibility study to demonstrate that rat eradication would work. But MK touched on a really important point and that is the time and patience it takes to achieve community support needs to be handled with great care and if you don't have full buy-in it can undermine support and massively increase lead in times.</p> <p>AP – re. points MK was making about needing to bring forward one or some candidate sites - the reason we have been doing a lot of head scratching about this is because we are not aware of any additional</p>	

Number	Details	Action
	<p>sites which have not already been proposed by other projects. Are we correct to be working from that basis or is your advice to further explore some avenues for rat eradication potentially at other locations or some slight variations to what has already been proposed? Understandably, you will see the catch 22 situation we are in, in that regurgitating all of this information may not be the best use of resource for us or stakeholders.</p> <p>MK - in terms of the nature of the measures, I can't see any new detail that could be added at this stage. I think we've seen e.g. for kittiwake that everyone can't go to the same place. So keep track of the Hornsea 4 examination and see what other sites may be a potential option. Look at what fisheries might be having an effect on bycatch. Again, providing a wide range of options should promote resilience.</p> <p>I suppose then, as an industry, should you collectively or through OWIC etc. be approaching UK plc. and say we can quite understand that Scottish areas will want to be reserved for Scotwind however is there a more UK wide approach that could be taken? Is there a scenario that both English and Scottish projects could be catered for from sites purely in Scotland? Would need to understand the evidence though, i.e. what islands are there issues at and what species are relevant.</p> <p>SC - thanks, MK that's helpful, we are, through OWIC, engaging very proactively however immediate feedback given through those workshops is the reality of timings. So, for me, we have a bit of a challenge in trying to align ourselves with industry wide strategic opportunities whilst pressing along with project alone measures and that for me is the tricky point. So, just to note a lot of what we are discussing here is being discussed through that forum.</p>	
6	<p>GANNET</p> <p>RI - We've taken forward bycatch reduction and alternative nest site measures as have been previously looked at by other developers. One point I wanted to touch on is the current state of the gannet population in the SPA network with all populations increasing, so gannet is defined as being in favourable conservation status (FCS). That poses a question of the extent to which compensation is required when the impacts that you're dealing with in the case of SEP and DEP are less than 10 individual mortalities in total.</p> <p>MK - the favourable conservation point came up for Boreas so I will dig out our response to that but I think the broad thrust is that if the in-combination impact is putting a particular SPA at risk of adverse effect then compensation would potentially be required.</p> <p>Establishment of new colonies seems very speculative. Probably the other way round when compared with the auks for bycatch reduction i.e. bycatch reduction likely to be a more suitable measure for gannet.</p> <p>RI - I did notice that the written advice provided by Natural England did not have any advice on gannet, was that intentional?</p>	Natural England to provide their response to Boreas on gannet FCS

Number	Details	Action
	<p>LB - we didn't get that far in terms of our review.</p> <p>RB - I think in terms of the evidence you've presented, you did a good job of highlighting everything that we would say back to you. Just as many failed attempts are successful for gannet. There is evidence of gannet nesting on an artificial structure in Australia, but this is very new thinking and there is no evidence for northern gannet. As MK has already outlined, the bycatch measure seems to be the most suitable for gannet. So the first step would be identifying a fishery that was causing an issue and reducing that – longline fishery most likely to have a bycatch issue.</p> <p>AD - to add on the gannet and longlining point. We would urge caution on the basis that there are techniques that are understood to be able to work in UK waters however there is limited evidence of this actually being implemented. A lot of work with the relevant fishery would be required to actually get these implemented.</p>	
7	<p>WRAP UP</p> <p>AP - thank you very much for all your input. We will take away and consider all your points and look to update the documentation relatively quickly given the application submission timescales.</p> <p>SC - Let us take stock and we will come back to you once we have considered what the next iteration of information may look like. We can update you separately on that.</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (HA); [REDACTED] (SC); [REDACTED] (MF) - Equinor
 [REDACTED] (BF) - MacArthur Green
 [REDACTED] (AP); [REDACTED] (PM) - Royal HaskoningDHV
 [REDACTED] (MK); [REDACTED] (RB); [REDACTED] (LB); [REDACTED] (HM) -
 Natural England
 [REDACTED] (PP); [REDACTED] (AD) - RSPB
 [REDACTED] (VE) - National Trust
 [REDACTED] (NW) - MMO

Apologies:

From: [REDACTED]

Date: 25 April 2022

Location: Microsoft Teams

Copy:

Our reference: PB8164-RHD-ZZ-XX-MI-Z-0033

Classification: Internal use only

Enclosures: Meeting Slides

Subject: SEP&DEP HRA Compensation ETG 2 Meeting Minutes 25APR22

Number	Details	Action
1	<p>Introductions and Agenda</p> <p>Attendees introduced themselves.</p> <p>HA ran through the agenda.</p> <p>HA noted that an HRA Compensation Briefing Note (BN) was shared on the 11th of April. This provided an overview of work undertaken since the last Expert Topic Group (ETG) meeting. The BN shows how the measures are developing and focussed on key areas of progress since the last meeting. A number of questions were set out within the BN which will be considered today.</p>	
2	<p>Derogation position update</p> <p>AP provided an update on derogation for the relevant sites and species. Underpinning all the discussions around compensation has been the ongoing ornithology technical work and the development of the Report to Inform Appropriate Assessment (RIAA). During the early discussions on potential compensation measures, that work was not well progressed which meant assumptions had to be made around the conclusions that would be reached within it and therefore what sites and species compensation proposals would be required for. We now have this completed so we can confirm our position with respect to Adverse Effect on Integrity (AEoI) and to the subsequent compensation requirements which was provided in the BN. We have considered all the feedback from stakeholders along the way as well as decisions on other recent offshore wind farm projects.</p> <p>VE - in the report I noticed that mortality of between approximately 75 and 150 Sandwich terns (S. terns) was stated. Just wondering what area</p>	

Number	Details	Action
	<p>those mortalities are in relation to. Also, how will mitigation be considered with respect to that?</p> <p>AP - the 75 to 150 number is the in-combination mortality i.e. the combined annual S. tern mortality from all other projects with connectivity to the Special Protection Areas (SPA) in question. The project-alone figure is around 11.5 annual mortalities for SEP and DEP.</p> <p>Regarding mitigation, that's slightly outside the scope of today's meeting but this is being looked at and taken into consideration in the assessments and development of compensation measures.</p> <p>AP noted an updated position (since Draft Information to Inform the HRA was submitted in April 2021) with respect to the Greater Wash (GW) and North Norfolk Coast (NNC) SPAs for S. tern; and at Flamborough and Filey Coast (FFC) SPA for kittiwake, is now that AEol in-combination cannot be ruled out. Therefore, a derogation case with compensation measures has been put forward for these sites and species.</p> <p>For FFC SPA guillemot, razorbill and gannet, the assessment concludes no AEol (alone and in-combination) however 'without prejudice' compensation measures have been proposed and will be submitted with the DCO application.</p> <p>GW SPA red-throated diver (RTD): the draft RIAA concludes no AEol alone and in-combination. No compensation measures are proposed. Available Lawson et al. data show generally low densities of RTD in the areas of interest for SEP and DEP. SEP and DEP are quite different to the East Anglia (EA) ONE North and TWO effect on the Outer Thames Estuary SPA in that SEP and DEP are not overlapping (i.e. based on 10km buffer) significantly with the GW SPA. It's considered that any potential issues can be managed through appropriate mitigation.</p> <p>AP noted that the approach to the development of compensation is the same regardless of whether they are being provided on a 'without prejudice' basis or not.</p> <p>PP - query on timeline. You mentioned about looking to submit fairly soon. What is the submission timeline? AP noted that DCO application submission is currently scheduled for June of this year.</p> <p>MK - we have not looked at the impact assessment in detail so difficult to provide a position on those conclusions but the logic set out for S. tern and kittiwake makes sense.</p> <p>AP showed an overview of the compensation measures that are on the table for each species (slide 4). Measures provide three different options for delivery i.e. project-led, collaborative and strategic. There is at least one project-led measure for each species.</p> <p>In terms of collaborative measures, SEP and DEP are small projects making a small individual contribution so if there is an appropriate collaborative solution that can be secured then that would be desirable however there are a number of commercial and legal considerations with regards to how these can be delivered. The project team are currently in</p>	

Number	Details	Action
	<p>conversation with other developers to look at how this could be put forward. By including a combination of these different delivery options we have built resilience within the proposals.</p> <p>Strategic-led measures are the most preferable from a purely scientific perspective but further development of these is outside of project control. We look forward to hearing the outcomes of discussions between Natural England (NE) and Defra on these strategic measures but recognise that detailed outcomes on these are unlikely to be forthcoming in time for DCO application submission.</p>	
3	<p>Sandwich Tern - Overview of proposed measures and recent progress</p> <p>BF - During previous discussions we described how we'd looked at range of measures for S. tern:</p> <ul style="list-style-type: none"> ■ Improve nesting habitat at NNC SPA – to explore further ■ Restore/create a third site within NNC SPA – to explore further ■ Improve nesting habitat at other SPA sites – to further explore opportunities at the Farne Islands (National Trust) and Foulness ■ Improve nesting habitat at non-SPA sites: Scar Point, Loch Ryan – to explore further with NatureScot and Marine Scotland <p>Aimed to follow Defra guidance on a hierarchical approach. In the case of S. tern we looked at what was possible in the NNC SPA. The S. tern population in NNC SPA is currently doing very well so it's difficult to identify measures there that could be implemented. Also, those colonies are currently being very well managed so it's difficult to find measures which are 'additional'.</p> <p>There's potential to do something at the Farne Islands SPA. At the moment, the Management Plan for the Farne Islands SPA is currently being reviewed by NE and has not been finalised. There are options not proposed within that that could help the S. tern population at the Farnes.</p> <p>A detailed search of other potential SPA sites in England at which compensation measures could be implemented was undertaken. One potential SPA site was Lindisfarne SPA in Northumberland, however there are human constraints there that make that very difficult. Therefore, a non-SPA site at Scar Point, Loch Ryan, Scotland looks much more promising.</p> <p>MK - at Lindisfarne there is annual wardening targeting little tern in particular. Might expect measures being implemented there to be beneficial for S. tern. Little Island at the far end is subject to erosion. I don't see Lindisfarne as being a particularly suitable option.</p> <p>BF - tend to agree, I recently spoke to a former NNC warden at that site who was of the same view.</p> <p>BF - the Farne Islands SPA Management Plan does not include provision for tern nest boxes and terraces. These have been shown to be very successful on the Isle of May. Therefore, it seems that tern nest</p>	<p>Natural England to update on progress on the Farne Islands, NNC and FFC SPA Management Plans and share if possible.</p> <p>Project team to check with PINS if they have any advice on the requirements for land tenure / ownership agreements in order to provide confidence in compensatory measures.</p> <p>National trust to share Farne Islands SPA management plan with Equinor when sending to Natural England</p>

Number	Details	Action
	<p>box and terrace installation at the Farnes would be a suitable measure. Do you think this would represent a suitable compensation measure?</p> <p>A package of measures are being put forward, rather than proposing that only one of these goes ahead. More discussion with the ETG would be required but of the view that this would be a sensible approach.</p> <p>PP - regarding the tern terraces, my colleagues were uncertain that S. terns would use nest boxes, so interested in understanding about Isle of May.</p> <p>BF - S. terns have used these at the Isle of May although it's unclear whether they will be as likely to use them as roseate and common tern. Isle of May were also providing tern shelters for juveniles to protect them from predators and intense sunshine. Terraces are essentially a mixture of nest boxes and juvenile shelters. Bamboo canes have also been implemented in an attempt to deter predators.</p> <p>PP - bamboo canes are an interesting one. We need to look carefully at that because different predator species will behave differently so would be good to look at the evidence on their effectiveness.</p> <p>BF - yes, main measure would be terraces but bamboo canes could be a potential additional measure.</p> <p>RB - In 2009 I wardened on the Farnes. We built the terraces to try and attract roseate tern. We also put out bamboo canes along some of the arctic tern nest sites. Great black-backed gulls simply walk around the bamboo canes. I'm struggling to see the additionality because it's so easy for the National Trust (NT) to implement. Any shelter you provide will be used by chicks. The problem with the Farnes is that it seems like most of the terns there simply aren't doing very well.</p> <p>BF - on the nearby Coquet Island, S. tern numbers have increased, suggesting no food problem in the area. Therefore, it's likely that if the situation at the Farnes was improved in terms of habitat and predation impacts then S. tern numbers would improve there too.</p> <p>In terms of additionality, tern terraces aren't currently being proposed in the Management Plan for the Farne Islands SPA so the addition of these would be classed as compensation.</p> <p>MK - We can follow up on the development of the Management Plan and share that hopefully. Most of the cliff nesting birds are doing well but the ground nesting birds aren't. Obviously, interventions are required to improve that site. Vegetation and large gull management on those islands are more difficult compared to single islands like Coquet. Hopefully we can get things to a position where the site is improving.</p> <p>BF - understood, however it's important to note that in developing these measures we can only make suggestions based on what is in the Management Plan.</p> <p>MK - my feeling is that it is unclear what the additional benefits at the Farnes might be.</p>	

Number	Details	Action
	<p>BF - essentially, we are looking to provide some measures that are genuinely additional to that which NT has the resources to implement at this stage. So that's why we're trying to produce this package.</p> <p>PP - thinking about larger areas of habitats that could be created e.g. lagoons and islands behind an SPA, are there any opportunities for this in Norfolk / Suffolk? E.g. offshore island at Scroby Sands used to support all UK tern species. Has this been looked at or is it getting a bit late in the day for this?</p> <p>BF - yes, time is against us in this regard and this goes back to the point about S. terns already doing very well in the NNC region.</p> <p>HA - For the NNC options, with regard to Blakeney, the feeling was that there aren't any specific measures that could be additional to the existing or future management but that additional financial resource could help NT deliver measures within the plan.</p> <p>VE - yes this comes down to what is additional. We are constantly evolving our management to deal with changing pressures. We need resource to support that e.g. warden resource, additional funding to enable measures to be implemented more robustly etc. So, rather than there being a specific measure, there's a whole host of things that could be done, which could primarily be facilitated by additional boots on the ground.</p> <p>Also, I'd just like to flag that the title of measure is 'improving nesting habitat' however you wouldn't actually be making changes to the nesting habitat, rather you'd be e.g. managing the predator-prey relationships, upgrading wardening resource, enabling additional observations etc. Title could be updated to better reflect this.</p> <p>HA - yes, this demonstrates the difficulty for us in being able to address the additionality point.</p> <p>VE - yes, that's difficult for us as well. It's hard to quantify any population gains as a result of the measures we are currently implementing. There's a balance of being able to do as much as we can with the resources that are available to us.</p> <p>MK - I think Bob set this out very well, it's a site that's doing well and is well managed so it's difficult to see if there are specific opportunities here. Struggle to see that these would form a primary measure.</p> <p>AD - the additionality will stem from the ability of the measures to create additional productivity. It's near impossible to disentangle whether any measures will result in productivity improvements.</p> <p>HA - ok, from our perspective we just wanted to make sure we were exhausting all the options. It's useful to have the feedback on the potential options that are available which allows us to demonstrate that we've stepped through the compensation hierarchy.</p>	

Number	Details	Action
	<p>Phil, I think it was you that provided a response from RSPB to our last set of draft compensation proposals shared with ETG members in November 2021 and said that this [a third breeding site in NNC SPA] was an option that was already being explored.</p> <p>PP - yes, work is planned to look at the various pressures on S. terns throughout the NNC region as part of e.g. Area of Outstanding Natural Beauty (AONB) partnership work. So, it's quite busy at the moment in terms of people looking at what's affecting seabirds in NNC e.g. visitor pressure, and so any additional proposals in relation to SEP and DEP start to look a bit complicated. Again, difficult to tease out which project is providing the benefits to species in which locations.</p> <p>HA - thanks, this closes this out as we thought these options were perhaps not the most appropriate so that helps cement that view.</p> <p>Scar Point, Loch Ryan BF - Loch Ryan used to have a fairly substantial island off the northwest shore which disappeared due to gravel extraction and from the bow waves of high-speed ferries going to and from Stranraer. Evidence on this from paper from Queens University.</p> <p>There are lots of S. terns in the west of Scotland but no nesting sites. Most colonies have been abandoned because of predation pressure but a couple due to human pressure.</p> <p>Sprat abundance is currently very high in the west coast of Scotland so it seems very likely that if this site could be brought back, then birds would use it. However, there's always a risk that the birds would not use it. Therefore, it's important that we consider these as a package of measures.</p> <p>Seem to be 3 ways to go about this (in descending order of preference):</p> <ol style="list-style-type: none"> 1 Option to install a floating pontoon with tern nest boxes. 2 Create an artificial pool similar to that at St John's pool in Caithness. Fox proof fence around this. Lots of human activity in this area so pontoon would be the slightly preferred measure. 3 Rebuild the island with locally sourced sand/sediment; however we are not proposing to do this as would be quite intrusive and potentially affect e.g. native oyster fishery in the Loch. <p>There are no nearby protected areas that would be affected as a result of these measures.</p> <p>It's considered that this would be a very useful way to compensate because it would extend the breeding range of S. terns.</p> <p>RB - generally, I really like this proposal. I'm not aware that S. terns have colonised a pontoon type structure before, are you?</p>	

Number	Details	Action
	<p>BF - no, there is no evidence of this (only common tern) but there's been very little opportunity for this to be looked at.</p> <p>RB - gut feeling with the pontoon thing is that they tend to be quite small and close to the water. In your report, a local bird recorder set out how the island used to be. S. terns seem to be at the highest point above the water mark. Seems like they tend to favour the habitat that is a little bit more set back/expansive. Would a pontoon for S. tern not therefore have to be quite large?</p> <p>BF - yes that's why I was suggesting a 20x30m pontoon which is bigger than those used for common tern.</p> <p>You could use agricultural land at Scar Point for an inland pool, using St John's Pool as a model. However, the advantage of a pontoon would be less human disturbance and much easier to reduce predator pressure.</p> <p>PP - I support what was said around the pontoon. Islands/pools are better proven. You need to give as much certainty as possible that the measure will be effective. A pontoon offers relatively limited opportunity in terms of scaling up and in terms of thinking about future management, it's important to keep areas constantly functioning and setting out the design in the right way. How much detail can you put together to show that what is being proposed is going to be as effective as possible in the long term. Preference for island/pool rather than the pontoon.</p> <p>MK - are there elements of the spit that remain uncovered at most high tides.</p> <p>BF - no, most of what you see on the map is covered at high tide now. There's space for about 25 oystercatchers however these are subject to human disturbance. Therefore, providing either of these options would be useful for a variety of species e.g. waterfowl in the winter.</p> <p>MK - I do think the island and lagoon model feels like the best fit here. In terms of rafts for birds, is there a track record of putting them in subtidal areas?</p> <p>LB - Wells harbour has a vessel barge on which little terns nest.</p> <p>BF - yes, pontoons usually not installed in areas subject to tides however Loch Ryan is fairly sheltered, and the pontoon could be engineered in such a way that this is unlikely to be an issue.</p> <p>BF - it seems like there's a bit of consensus that the St Johns Pool model is preferred.</p> <p>RB - could think about doing both?</p> <p>HA - perhaps.</p> <p>BF - I imagine you would also like to see this being implemented in England but as said earlier we are not aware of any suitable sites and S. terns very unlikely to be an issue at any future ScotWind site so there's an opportunity to take a different approach with this species.</p>	

Number	Details	Action
	<p>MK - yes, Hornsea Three issue was in relation to kittiwake so this isn't relevant here.</p> <p>PP - still some uncertainties about location. Regarding the level of detail that would be required in terms of design that would give confidence to the measures being proposed, I have slight reservations about the level of detail that will be submitted with the DCO. Question around whether June is realistic? Is there an opportunity to pause? What is the level of detail that's required? I can foresee that there's still some stuff that needs to be worked out to evidence that this measure will be suitable.</p> <p>BF – yes, completely understand that. In terms of design details you could assume we are going to develop a site that would be very like St John's Pool. The other aspect is that we are looking at a very small number of birds to be compensated for. So this together with measures at e.g. Farnes or Blakeney could come together to show effectiveness.</p> <p>AD - tradition has been that the further you get away from the point of damage, the ratios go up. How do you relate this to biogeographic populations? This has been pushed into the post-consent phase on other projects. The problem I have relates to just saying it will be something like St Johns' Pool but without having the land rights discussed. Need to get some security on where the works could be done which is entirely separate to the overarching scientific effectiveness question. I'm relaxed in principle about going to the other side of the country and how that relates to approximately 12 birds being lost in Norfolk.</p> <p>BF - we have identified a land owner so have been looking at this but pontoon option gives us flexibility in this respect as would be a Crown Estate Scotland lease.</p> <p>In terms of equating 12 birds, this is tricky but the measure would be restoring a geographical breeding range which is a very important part of nature conservation. If we can restore part of a lost breeding range then that would make a very positive contribution.</p> <p>SC - question for Andrew, I think you mentioned that if the proposed compensation site is further away, then a higher proportion of compensation would be required? Could you expand on that please, is that based on experience from other projects?</p> <p>AD - it's really a general point about why I have a problem with ratios. E.g. initially you should look at restoring populations as close to the impact site as possible. But in terms of general rule of thumb, the further you get away then the higher this ratio may need to be. Will get into some expert judgement but that's the general assumption / approach to tackling that level of uncertainty.</p> <p>HA - coming back to Andrew's point about land tenure, that's something we've been giving consideration to and have been working through with our legal team.</p>	

Number	Details	Action
	<p>MK - probably worth a conversation with PINS as well in terms of what they would expect the application to consider in terms of land ownership. As an example, Able Marine Energy Park land ownership has been an issue for delivery of compensation.</p> <p>HA - yes, good suggestion to take that one away and discuss with PINS noting that obviously the DCO regime does not operate in Scotland so in terms of the DCO there isn't a process that would accommodate this so it's a slightly tricky process but something we are working through.</p> <p>MK- if there are options available that would be of genuine benefit to the NNC SPA those would be preferred but appreciate some of the strategic avenues are difficult for you to access although in terms of that, things are progressing.</p> <p>HA - yes, both Monica and I are involved in the Offshore Wind Industry Council (OWIC) Derogation subgroup so we are keeping updated on that but for us it's a real challenge around timescales and whether they will come to fruition in time. That's why we're looking at considering these three different options and potential delivery mechanisms.</p> <p>AD - Martin mentioned Able Marine Energy Park, salutary lesson about needing as much upfront (before consent) information as possible. E.g. seven years on they're having to rethink what they're doing due to unexpected developments. Hornsea Four will be an interesting test of what you do when you go outside of England as they're going to Guernsey. If something is outside of BEIS's jurisdiction, how can you then secure things, particularly in the event that something goes wrong.</p> <p>HA - in terms of management plans, if there is any information on where they are in the development cycle for Blakeney and Farne Islands, that would be useful.</p> <p>VE - Farnes is likely to be finalised end of May so the snips you've had for Blakeney are likely to be very similar. It will be more of a light touch update rather than specific details being changed or updated. We will send you that copy at the same time this goes to NE.</p> <p>MK - Management Plans for NNC and FFC not sure what you mean for those sites?</p> <p>BF - in terms of NNC SPA is there an equivalent plan?</p> <p>BF - for those there's a plan produced by the local authority for the European marine site so would be good to have an update on those.</p> <p>LB - for The Wash and NNC Special Area of Conservation (SAC) there is one but not sure about the SPA.</p> <p>MK - ok, I can pick that up with area team colleagues</p>	
4	<p>Guillemot and razorbill - Overview of proposed measures and recent progress</p> <p>HA left the meeting at this point due to unforeseen circumstances.</p>	<p>Project Team to look at nature and</p>

Number	Details	Action
	<p>BF - at previous meetings we've talked about predator eradication, bycatch prevention or reducing disturbance at FFC SPA.</p> <p>Reducing disturbance is not favoured so we've focussed on the first two.</p> <p>We consider that predator eradication would be suitable for collaboration. Bycatch prevention could be collaborative or could be project-led.</p> <p>Bycatch: somewhere on the east coast of England would be preferred. Filey Bay implemented measures to reduce bycatch which was very successful but that hasn't been extended to where there is an overlap with gill net fisheries. Recent RSPB paper has highlighted some hotspot areas where different gear types or fisheries management could be implemented.</p> <p>Training for fishermen to safely remove birds that have become entangled combined with making nets more visible seems to have been one of the most effective of the Filey bay measures. Proposal would be that we develop one of these measures as soon as possible in a one to one ratio with a need to monitor bycatch reductions that have been achieved.</p> <p>AP - regarding the stakeholder engagement part, we've been having internal discussions, liaising with the project fisheries officer and using the existing channels and networks as far as we are able to. We have also reached out to the North Eastern Inshore Fisheries Conservation Authority (NEIFCA) however have learned that there may be some sensitivities between them and fishermen in that area at the current time. Therefore, have been looking to approach the fishermen themselves to help develop proposals further. In terms of collaboration we are aware that other developers are looking at very similar measures so have been discussing potential collaboration opportunities.</p> <p>BF - hoping to get feedback from you on the questions posed in the BN and on slide 14.</p> <p>MK - query on the salmon fishery at Filey Bay. Would be interested to hear more about the gill net fisheries in the vicinity of these areas e.g. what are they targeting, what season.</p> <p>BF - would have to refer you to the work done by RSPB which focussed on the breeding season.</p> <p>MK - what I'm not sure about is whether there are gill net fisheries operating in the area.</p>	<p>extent of gill net fishery in and around the Filey Bay area</p>

Number	Details	Action
	<p>RB - I don't recall from the Cleasby paper whether they accounted for the measures at Filey Bay. Northridge paper gathers data from when the Filey Bay fishery was operational. Not sure if Cleasby incorporated the Filey Bay bycatch reduction measures in their risk mapping.</p> <p>BF - slightly difficult to tell from reading the paper but they have updated from Northridge so assume they've considered the closure of the Filey Bay fishery.</p> <p>MK- so this raises the question of how much gill net fishing, where and when is going on.</p> <p>BF - yes, we need to follow up on that.</p> <p>RB - if you could demonstrate that there is gill net fishery in that area in reach of the FFC SPA then it's likely there's bycatch going on but you would need to demonstrate that. In terms of the Looming Eye technology, it is still unproven. As far as I understand from the RSPB trials it was relatively unsuccessful.</p> <p>AD - not sure, a colleague is working on bycatch in respect of Hornsea Four. I've shared the RSPB response on this to Hornsea 4.¹</p> <p>BF - the Filey Bay mitigation seems to have worked pretty well because the fishermen were required to be present during the setting of the nets in June and because fishermen were trained on how to release birds before they drowned. Therefore, it's considered that this approach could be implemented elsewhere. The threat of byelaw restriction seemed to spur the fishermen into being more proactive in releasing caught birds.</p> <p>AD - yes, that seems broadly right.</p> <p>Predator eradication</p> <p>BF - It's assumed that stakeholders are content with the idea of collaboration with other developers on predator eradication and bycatch measures.</p> <p>RB - seem sensible. MK noted that Hornsea Four have undertaken a wide screening exercise so it makes sense to collaborate</p> <p>AD - the jury is very much out in terms of effectiveness of predator eradication for guillemot and razorbill.</p> <p>RB - Lundy is evidence that it is working but is highly site specific.</p>	

¹ [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-001255-Hornsea%204_RSPB_Deadline%202_Annex%20B_Derogation%20case_Bycatch%20reduction%20\(FINAL\).pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-001255-Hornsea%204_RSPB_Deadline%202_Annex%20B_Derogation%20case_Bycatch%20reduction%20(FINAL).pdf)

Number	Details	Action
	<p>BF – yes, I think it will depend very much on the colony / will be very site specific.</p>	
<p>5</p>	<p>Gannet</p> <p>BF – despite investigating the long list of potential options, we haven't got very far on gannet because it's difficult to find feasible compensation options for projects in England. We also note the national population is doing very well.</p> <p>The lack of support and uncertainty in the potential measures together with the above has pushed us towards a non like-for-like approach. Keen to understand whether you think this would be appropriate? One of those possibilities is the Loch Ryan measure which could be adapted to maximise benefits for other species e.g. other tern species and waders, wildfowl etc.</p> <p>AD - our position is that compensation has to be for gannet but understand the position you're in.</p> <p>BF - ok, other argument to that would be that there is no need to compensate because the National Site Network is in favourable condition.</p> <p>AP - any other measures for gannet you're aware of?</p> <p>AD - I don't think so, no. Our position on gannet bycatch will be going in with Hornsea 4.</p> <p>BF – I think there is quite a lot of evidence that gannet are sensitive to bycatch but this happens in Spain, Portugal and off west Africa which makes it very challenging to implement and secure as a compensation measure.</p> <p>MK - bycatch a good avenue to explore and if the numbers (impacts) are very modest then NE see the possible benefit in looking at other measures that might not normally be recognised as compensation on their own, such as bycatch reduction trials e.g. Hookpods. Would encourage you to go down the like-for-like route where possible.</p> <p>BF - there is evidence that measures to reduce bycatch of albatross and petrels would also apply to gannets however there are very limited studies on this for gannets (none for northern gannets, but some for Australian and Cape gannets). Question of how you would implement these in a largely Spanish or Portuguese fishery.</p> <p>RB - some may not have a full understanding of the work it took to get to the position they are in with the albatross and petrel. It took a long time and a lot of hard work to get to the point we are at now.</p> <p>RB - speaking without my NE hat on I agree with everything you said at the beginning and I think gannet should fall way from compensation proposals.</p>	<p>Natural England to share report on gannet macro-avoidance and implications for avoidance rates when available</p>

Number	Details	Action
	<p>NE is looking at reducing the precaution in gannet impact assessment through adequate consideration of macroavoidance. This may be forthcoming within the timescale of the Hornsea Four examination but equally it may not be. I'm currently sitting on a draft report but would not want to put a timescale on when that can be shared. Something workable should be floating around by summer but may not be accepted by all statutory nature conservation bodies and could take a long time to firm up its use in impact assessment. It is possible that the requirement to consider compensation for gannet will fall away as a result.</p>	
6	<p>Kittiwake</p> <p>BF - last meeting we talked about developing new artificial structures on and offshore and also improving existing artificial sites e.g. nests on buildings and other built structures.</p> <p>We've been providing more focus on the second one because it's not what other developers are looking at and would have added benefit of reducing anthropogenic nuisance.</p> <p>Focus is on the Lowestoft and Tyne regions where the sites that they are currently nesting on are not ideal. Idea of installing some narrow ledges in areas where kittiwakes are tolerated would enable them to have higher breeding success than they currently do in areas where they are not tolerated by locals or where nests are located in areas with suboptimal conditions.</p> <p>Any modifications to structures in Lowestoft to increase breeding success would be done in consultation with the Lowestoft kittiwake partnership as we consider that they are best placed to determine priorities</p> <p>Gateshead tower looks like an appropriate area to implement or improve nesting ledges for kittiwake. Could also explore areas in Lowestoft appreciating that other developers are focusing on that area.</p> <p>MK - I'm a bit confused on timescales. When are you proposing to implement this?</p> <p>BF - ideally would want these operating 4 years before turbines are operational as any new chicks would need to have grown to adults and be breeding themselves to compensate, but could reduce this duration by increasing the scale of compensation. These measures could quite feasibly overcompensate for the small number of mortalities from SEP and DEP.</p> <p>MK - I thought these could be implemented fairly rapidly and that that would be the approach taken.</p> <p>BF - yes, that could happen.</p> <p>RB - this feels like a really useful thing to do before other developers pile in [at Lowestoft] and develop new artificial nesting structures which would likely be more attractive than any enhanced existing artificial</p>	<p>Bob to provide a note setting out the compensation pathway – i.e. what it is that generates the value / net gain (in terms of productivity and how to measure / demonstrate this)</p>

Number	Details	Action
	<p>structure. Doesn't seem like a great option if being implemented at the same time as those artificial structures.</p> <p>MK - in terms of Lowestoft you've got up to 2,000 additional nesting sites going in in the next year or so, so there's potential that birds will just move to them.</p> <p>BF - agreed that could happen, therefore, for SEP and DEP focus is proposed to be on the Tyne region. It's likely to be more successful to get kittiwakes to move relatively short distances so small scale relocation seems to be a good thing to try and achieve.</p> <p>MK - in terms of the second question [modification of existing Gateshead Tower] it will be useful to see the response you get from Gateshead Council. Would the option be to open up another side?</p> <p>BF - yes, you would be re-engineering the tower to encourage birds to nest on the north side.</p> <p>AD - and in terms of data, will there be a lot to measure success against?</p> <p>BF – yes, there are 25 years of data there, and fledged chicks are counted and ringed.</p> <p>MK - one of the challenges here is that the overall Tyne colony is increasing. Takes us back to the question of what extent is nest availability a limiting factor and if that isn't such a limiting factor then does providing additional nests increase productivity.</p> <p>BF – yes, it's hard to judge how many nests there are along the Tyne. There are bridges where they're not nesting where they feasibly could. There are some areas where the nesting sites are more favoured. There's evidence of kittiwakes nesting on hotel windowsills which in most cases fail so if they're provided with sites where they're encouraged to nest and can do so successfully this will increase productivity of the population whilst also somewhat reducing conflict with people.</p> <p>RB - interesting question around all of this is how you wind up quantifying your compensation. Still a question of whether you would just move birds around rather than facilitating recruitment in the population. Cleanest way to look at this is to try and find a very low or even zero productivity site and then create a new site at which you could measure productivity over and above that of the low / zero productivity sites. That might be a more palatable route for this project given the low kittiwake mortalities.</p> <p>If currently unsuccessful breeders on e.g. the south face of the Gateshead tower move the north face and achieve the average productivity of the rest of the tower then that would be easy to monitor success.</p> <p>MK - I do think it would be useful to capture the previous discussion on a couple of sides of A4 to try and nail what it is that is proposed in terms of the compensation pathway i.e. what it is that generates the value. That</p>	

Number	Details	Action
	<p>will help us come to a clear review of whether this is something we could support.</p> <p>BF - I could do this through some arithmetic using the Gateshead tower as an example.</p>	
7	<p>Collaborative approach</p> <p>AP - we have sought collaboration opportunities in order to ensure a comprehensive approach to these proposals. This makes sense to us as a relatively small project with small impacts where collaboration opportunities exist, although that approach does come with challenges around commerciality and legality. Good to understand any advice on collaboration.</p> <p>MK - advice we would give to you is that, given that nest space is at a premium, in terms of how you handle that with other developers, it relates to what the expectation of the Examiners is. Hornsea Four have indicated some preferred areas but they haven't provided a location or any specific details. I think it's a realistic expectation of examinations that these things are spelled out in quite a detailed way so I'm not sure what a collaborative compensation proposal really looks like. General guide would be to be as specific as you can. Could look at the other extension projects to see what they are proposing.</p> <p>Additionally, some of you are O&G companies so looking at what assets you have that could potentially be re-purposed may be useful.</p> <p>AD put in chat: <i>Apportioning the "compensation benefit" to specific projects from a collaborative approach is an area that needs careful thought and joint working. Think that's a real headache in general but one which needs to be worked through carefully by everyone, preferably outside an examination environment.</i> Obviously, each project has to show that it's achieved its goal so need to work out a formalised way to do this.</p> <p>SC - thanks Andrew, through the OWIC group we look at the strategic government led measures but also at multi-lateral collaboration so can assure you that we are looking at this and can provide updates as they become available.</p>	
8	<p>Closing remarks</p> <p>AP - thanks all for participating, been a very useful discussion.</p> <p>MK - you mentioned this is the last ETG so next time we'll be seeing proposals will be at submission?</p> <p>AP - yes, we will share some additional productivity analysis on kittiwake and are obviously going through consultation with you on the Appropriate Assessment but in broad terms we are approaching the end of pre-application consultation on compensation measures.</p> <p>[end]</p>	

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: [REDACTED] (HA) - Equinor
 [REDACTED] (AP); [REDACTED] (PM); [REDACTED] (LA) - RHDHV
 [REDACTED] (BF) - MacArthur Green
 [REDACTED] (MK); [REDACTED] (LB); [REDACTED] (RB) - Natural England
 [REDACTED] (PP); [REDACTED] (AD) - RSPB
 [REDACTED] (NW) - MMO

Apologies: [REDACTED] – National Trust
 [REDACTED] – Natural England

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Subject: HRA Compensation ETG 3

Number	Details	Action
1	<p>Introductions:</p> <p>AP ran through the agenda.</p> <p>AP described the meeting objectives. Documents have been provided for your consideration prior to the meeting to aid the discussion today. Want to have a detailed look at those but also a provide a generalised update.</p> <p>We'll provide an overview of the package of measures and what you can expect to see when you get the full suite of documents. We have looked to simplify the suite of documents and will give a preview of those today.</p>	
2	<p>Update on collaborative / strategic compensation</p> <p>HA – The Projects are looking to have at least one strategic or collaborative measure for each site, whilst recognising that this is being driven by external workstreams. It's our understanding that strategic mechanisms are being targeted to Round 4 projects. However, the Projects are engaging with Defra and industry forums to understand aspirations for this. Offshore Wind Industry Council (OWIC) case studies are potentially relevant to SEP and DEP, so we are keeping across that. Also exploring the idea of whether there's an option to future proof the DCO wording that would allow the project to take up a strategic mechanism if it became available in the necessary timescales. Big policy</p>	

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	<p>flux at the minute but recognise that SEP & DEP may not be able to take advantage of these. Prey enhancement remains the most ecologically beneficial measure from our perspective but recognise this can't necessarily be delivered at the Project or even collaborative level.</p> <p>Realisation in industry that collaboration is required to fulfil these strategic measures. However, lots of considerations around this e.g. security risk, apportionment of benefits and failures, regulatory barriers etc. We are hoping to be able to provide an update on this for submission. There's a dedicated submission document that will cover the strategic and collaborative proposals. Aim is to build resilience into our proposals, taking on board stakeholder feedback and ultimately realising the potential of these strategic and collaborative proposals.</p> <p>HA – I have a question for Lou. We have had several discussions with Natural England regarding a potential strategic measure based on pre-existing benthic compensation commitments and how this could be delivered to also achieve prey enhancement. We've been speaking to Defra and OWIC to find out where discussions have got to with respect to this idea but we've been unable to determine how this is filtering down or where it is currently sitting at the minute. Without further information, it is difficult to appraise this idea to determine how it can be taken forwards as a strategic measure. Is Natural England able to provide any clarity?</p> <p>LB – It's being looked into by other developers and whilst Defra are aware of it, it may take some time for them to work through although there's nothing stopping industry from supporting a nature recovery zone in the wider Greater Wash area that was for the protection of benthic habitat and prey availability. Outer Dowsing know what site / location is preferred. It isn't NE's role to say what you must do, it was more of a suggestion of this is what you could consider. A proposal from industry to support evidence gathering and assess whether it would be a viable strategic measure would be required and would provide a strong message.</p> <p>HA - OK thanks, would that be a designated site?</p> <p>LB - No, it would be a nature recovery zone that could be part of spatial planning. Could be taken forward by different mechanism. If you go down the designation route it ends up with challenges and difficulties. We would like this to be part of a package that can be used in future but recognise it won't be available in the timescales of SEP and DEP, and so won't have the offsetting capabilities.</p>	

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	<p>HA - So it's almost like a fund? LB - it might be that but would be up to you as an industry / company to work out what that is. HA - understand your point about it being a protection area but how would you safeguard it against other industries e.g. fishing? LB - well you could put a byelaw in place. You'd need to work strategically as an industry. HA - OK, would potentially require input from Inshore Fisheries Conservation Authority (IFCA), etc. so may not be straightforward.</p> <p>LB - Yes, but if it's outside of 6nm it would be within the MMO's remit and this could then feed into the East Marine Plans, etc. It could be a voluntary agreement. It's ultimately a strategic project that would need Defra involvement. Industry will need to show the ecological merit, provide the evidence to Defra that would allow Defra to move forwards strategically. HA - if this strategic measure was part of a compensation package would it just be the evidence gathering component? LB - no, the area would need to be operating to provide protection. HA - okay, so this would fundamentally need to be led by Defra? LB - yes but needs input from developers to provide that ecological evidence. HA - OK, I can see how this would feed into futureproofing the DCO but would need to have a think about that.</p> <p>MK - Worth thinking about the actions you can do now. E.g. Hornsea Project Three (HP3) couldn't bring forward sandeel fishery closures but did do some workstreams around how you might do this and the ecological merit that it would provide. Show that you are part of the facilitatory role. HA - yes, there's a real balance between the long-term objectives which Equinor supports and the need to focus on short term objectives securing consent and making sure stakeholders and the project team have confidence in the project led measures.</p> <p>AP - Lou did you have a specific area for the nature protection area that you could share? LB - have to be cryptic on this because it's not NE's position to say. It's an area I've identified as potentially being important having worked on a number of projects and have tried to get people to explore this further, but I don't have the knowledge of other areas that are potentially better, but I do know this area has potential but it's not NE's remit to say 'you must do this' so I'm treading a fine line. But if I don't say this then no one will know what I'm thinking. However, certain developers who know they need to be looking at compensation could explore this and ultimately enable NE to input and take this forward formally.</p> <p>HA - Has this been explored in the context of the marine recovery fund? LB - no.</p>	

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	<p>MK - If we are going to shift this to strategic there's a need to look at measures with a wider scope, which will benefit more than one feature or more than one site. Risk is that strategic ends up being a 'pipeline of the piecemeal' so really key that this is done.</p> <p>AD - Key area for anything like this is to scope out where the genuine research gaps are. E.g. seagrass restoration which can eventually have some benefits to seabirds, there are some gaps in the evidence chain for that and there's only so many literature reviews you can do. Evidence building is another area for collaboration.</p> <p>AP - One thing to add is that we have provided the evidence to support the prey enhancement measures for sandeel and sprats. So, a lot of the work on this has been done but I guess what this is about is looking to take it to the next level, look at specific areas and tie it to the benthic piece.</p> <p>AP - It was suggested at the last Expert Topic Group (ETG) that the discussion should focus around specific criteria put forward by NE and RSPB for what the project-led compensatory proposals should be covering at the point of application. So, we have these in a table on the slides.</p>	
3	<p>Sandwich tern (S. tern)</p> <p>AP - Emphasise that in line with previous discussions we are looking to put forward that package of measures which includes strategic prey enhancement that we'll look to develop as far as we're able to. The main project-led measure is habitat improvement at Loch Ryan. We still have on the table nesting habitat improvements at other nesting sites. Farne islands found to have the most potential for habitat improvements but this is still subject to further discussion and agreement with National Trust as we take that forward. Finally, as discussed in previous meetings, we have had a discussion with National Trust to support the work they're undertaking at Blakeney e.g. financial resource provisions. We understand NE don't consider this to be compensation but still it's something we want to keep on the table as a value-led measure.</p> <p>AP - Question around the option at the Farne Islands SPA - do ETG members feel that this is a measure that we should be progressing and including in our proposals? The Project team meeting with Gwen Potter suggests that the measures proposed which includes nest boxes and shelters and using cameras for e.g. nesting and predation monitoring and e.g. using bamboo canes to deter gulls would be additional to proposed management. We're including because we think it adds value to the overall package but at the same time don't what to spend time on</p>	

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	<p>progressing this further if the feedback from the ETG is that this measure can't be supported.</p> <p>MK - Fair to say that I've not discussed this at length with colleagues but it should be your priority to focus on Loch Ryan and deliver the best possible habitat creation there as your primary measure. Can't help but feel this [nesting habitat improvements at the Farnes] would only deal with fringe issues on site compared to e.g. vegetation management and gull predation deterrence which I think the updated management plan will go some way to addressing. Would much rather see some high quality habitat creation at Loch Ryan being your primary measure.</p> <p>RB - Agree, already given my view on that. I was using bamboo canes in 2009 on the Farnes then so I can't see how this is additional.</p> <p>PP - Yes agree, bamboo canes should be a standard management measure. We have invested in cameras to aid predation monitoring. We consider these to be standard management practices.</p> <p>BF - I agree with all those points however the trajectory of the S. tern population has been declining rapidly on the Farne Islands which has been attributed to gull predation so what we're trying to do is stop those declines. I feel that the S. tern Farne Island's population is worth recovering and seems like it's not doing well at the moment and current management measures don't seem to be working.</p> <p>RB - I completely agree with you Bob it does deserve management and to try and reverse those declines but I don't think bamboo canes would address that. I think you'd need to take a much deeper look at what has gone on there. These measures don't seem enough to give this colony a meaningful change in direction.</p> <p>BF - Yes, I'm comfortable with that but the fact is that canes aren't being used at the moment and evidence suggests that predation can be reduced by 50% from using bamboo canes. Reluctance to use bamboo canes may possibly be down to aesthetic reasons. Priority is not being put onto saving S. terns at the moment. Consensus seems clear that we should focus on Loch Ryan and I'm comfortable with that.</p> <p>AD - What strikes me from the outside looking in is the requirement for a closer conversation between Natural England and National Trust to put solutions in place. Treading delicately on this but noting that on some tern reserves where there have been rogue gulls, which has typically been 1 or 2 birds, we have had lethal control measures in place as a last resort option as part of site management if non-lethal options did not</p>	

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	<p>work. Seems like there's a separate conversation that needs to be had outside of this ETG.</p> <p>MK - I think the National Trust do have those abilities but because of the access issues etc at the Farnes which is a large archipelago site, these measures are difficult to implement.</p> <p>RB - With a quite limited knowledge of management measures in recent years, I'd think there's been a massive decline in control of gulls at the egg incubation stage.</p> <p>PP - We need to make sure that it is clear what elements are site management issues that need to be addressed separately to requirements for SEP & DEP. We don't want to end up with an ongoing situation where the issue of additionality, what's management, and what isn't, continues to be debated. Loch Ryan is clear compensation and simple to take forward at this stage.</p>	
4	<p>Tern Nesting habitat improvements</p> <p>BF - Approximately half of UK S. terns breed along the north Norfolk coast which makes the population less resilient. So, one of the arguments of restoring Loch Ryan is that it would provide greater resilience by enabling restoration of an area where S. terns once nested. However last year the SPA sites as a whole had a bigger population than when the SPA suite was designated. Avian flu - do we have to consider the potential implications of avian flu, this could change what actions would be appropriate. So, useful to get thoughts on this. Based on JNCC Seabird Monitoring Programme (SMP) data there are very few non-SPA sites that hold S. terns. In 2000 there were 16 but most of those have now gone. St John's Pool is doing ok but that has avian flu. Other sites (shown on slide 9) have gone.</p> <p>BF - Lindisfarne and Dungeness are options but Loch Ryan is considered to be the best option. It has good food resources and recolonisation is likely. If it occurred, it would restore a lost breeding range which is a very significant quality to gain.</p> <p>BF - Loch Ryan is not an SPA and there are no other protected areas there. It was a previous breeding site. The St John's Pool model which was set up privately is an appropriate model to follow at Loch Ryan. That site has evolved over time to make it better for breeding black headed gulls and terns. It has taken quite a period of time to develop but currently has about 140 pair of nesting S. terns. We have kept the</p>	

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	<p>pontoon option on that table however preference from ETG is for a pool so this is what we've focussed on.</p>	
5	<p>Appraisal of proposals at Loch Ryan</p> <p>AP - A policy and legislative mechanism is considered to be available. We haven't seen anything that would act as a significant blocker to the proposal. Clearly this is a measure in Scotland for a project in England however we had no objections from Marine Scotland when we met with them in April 2022. There's ongoing work that we're carrying out with a range of stakeholders. Happy to take any comments.</p> <p>MK - In terms of stakeholders, Scottish stakeholders are important. However, also need to take a steer from the English decision makers starting with PINS to understand how this will fit within the NSIP regime e.g. around compulsory purchase and what powers might be available. Worth speaking with BEIS as well to surface any issues that there may be.</p> <p>AP - PINS have very much been in the loop on this from the beginning and have had the opportunity to feed into that. We have had detailed consideration of the legal advice and any potential requirement for compulsory purchase, so those points have been thought through quite carefully for the project so for the purposes of this meeting we haven't identified any significant barriers at this stage.</p> <p>AD - Assuming this is going to be the lagoon with islands as the preferred approach, I'm wondering where you are in terms of landowner negotiations and whether access to the land has been considered. As part of the legal mechanisms you would also need to think about that. Finally, if it is the lagoon option, I don't know who the local planning authority would be but would need to get that side of things progressed and understand where they'd sit. Understand I may be teaching you how to suck eggs but want to flag so as not to cause problems in examination / post consent.</p> <p>HA - We have identified a preferred location and relevant land owner and in the process of appointing a local land agent to take discussions with the relevant land owner. This process has taken a bit of time but we are hoping to be able to provide an update at submission. However, this is a developing piece of work. We've also extended our area of search to include multiple land owners in case preferred area turns out not to be viable. This ensures we have several options to take forward which links to the compulsory purchase powers point. We have identified an alternative regime through which CPO could be actioned</p>	<p>Project team to include in S. tern compensation document the estimated numbers of individuals (and on what timeline colonisation may occur) that the Loch Ryan measure could compensate for.</p> <p>Project team consider construction timing for artificial lagoon to avoid mid-winter period when ground conditions unlikely to be favourable.</p>
	<p>but obviously Equinor's preference would be to secure a voluntary agreement.</p>	

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	<p>Discussions are ongoing for an exact location. To answer the point with regards to access, yes we are thinking about that for construction activities as well as ongoing monitoring and maintenance. Also thinking about community benefits and how these can be yielded to wrap all this up in one negotiation and planning application. On the planning side of things, we are talking about a rural location with a very low population so we are being very careful with who we are talking to in the first instance before we look to commence pre-application consultation with the local planning authority. We've felt it important to step through the process carefully whilst trying to cover as much of the NE checklist as possible.</p> <p>AD - That's great, sounds like you're in a much better position than other earlier projects.</p> <p>AP - Yes, we recognise landowners could be an issue which is why we've kept the pontoon on the table and looking more widely around the western part of Loch Ryan. Obviously, from a commercial perspective it's necessary to approach these things with options which naturally does take some time to step through.</p> <p>RB - You touched on what I was going to say. To me, even this extended search area looks quite optimistic in terms of drawing a line on a map. My concern is that I don't think there's much mileage in the pontoon idea, what happens if you can't secure the land there. Wondering if you've been looking at other areas? I'm completely on board with the Loch Ryan measures but sure there must be other areas in England or Scotland that could be suitable?</p> <p>AP - We're not looking outside of Loch Ryan at the moment, but as BF has already outlined, the process that led us to Loch Ryan has involved looking at a number of different potential sites. Further details on this process will be included with the application documents. Need to ensure we can put enough focus on the potential options so have taken a steer that this is the most appropriate and need to balance a number of constraints for all of the potential options.</p> <p>PP - Regarding specifics of the design, the note I shared yesterday provides criteria/principles against which designs will be assessed to determine whether proposals will be viable. The scale of delivery is important in considering success. What remains unclear is the number of pairs that need to be delivered to compensate for birds lost over the life of the project to maintain the Sandwich tern population. We know that productivity is variable, so this has to be factored in to the assessments and is why we would always work on a five year mean to better</p>	

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	<p>understand trends in population numbers and productivity. This query about the number of pairs and productivity requirements to compensate for impacts from SEP and DEP also touches on Bob's point about avian flu .</p> <p>AP - Just to take us back initially around the need to provide clear aims and objectives - we could spend a lot of time discussing the numbers and ratios however I think perhaps more relevant here is around what we're doing to maximise the potential for recolonisation in the first place and then once that happens what we've presented suggests that the measure will be successful. Therefore, I wanted to ask whether the aims and objectives we've presented are sufficiently clear?</p> <p>MK - I think as high-level objectives it needs to be set in the context of maintaining the coherence of the network. Those are the high-level areas but also need to consider numbers and range. In Examination, in terms of the number of individuals being added to the population, you need to set out that broad stall and show how the increase in birds in this location offsets the potential impacts. But second point is that this measure almost goes beyond that as it would restore the coherence of the network.</p> <p>AD - If we can try and work together to agree a method for coming up with an increased population target that would be helpful.</p> <p>PP - following on from Andrew, evaluation and learning is really important to capture. We don't want to have to keep repeating these conversations. Need to use lessons for the future so the learning as part of this will be useful too.</p> <p>AP - Next point is around the specifics of the measure e.g. what, where, when. We've already covered this somewhat however happy to pick up any other points people have on this. Can we pick up on scale?</p> <p>BF - I think that it's really useful to have some principles based on evidence as to what's likely to be most effective. Some things that Phil's note suggests may not be an essential requirement, for example, it's not clear that saline connection is optimal (St John's pool doesn't have this) however recognise that others do so may be useful for S. tern. Some of the sites have a freshwater stream so this could be an option. Wondering if freshwater would actually be preferable for bathing and drinking water for S. terns? My other point was about island size and development size. It's known that S. terns don't like disturbance which links to the large size criteria which you have suggested. However, would flag that I don't think this is essential e.g. in the lagoon of Venice there</p>	

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	<p>are 700 pairs on a 0.07ha area which the authors of a study suggests is more to do with the vegetation and lack of human disturbance so a large area perhaps is not the key consideration. Similarly in North America S. terns regularly nest on very small dredge-spoil islands. I was chatting to Dr Kees Camphuysen whose colleagues were looking at avian flu in Texel who suggest that S. terns nest on very small areas so size not crucial but recognise if available a larger site probably makes sense to avoid disturbance.</p> <p>PP - Thanks Bob. I can take that back to colleagues. The key point is around avoiding disturbance, which is easier when providing habitat at a larger scale. This could also present adaptive management opportunities going forward that might be beneficial for long-term management. Ultimately, we need to see something that's going to give sufficient confidence that a site will have the potential to provide adequate compensation.</p> <p>BF - On the point about numbers. When we started considering the Loch Ryan measure, it was thought this would form part of a package and not a measure on its own. We can't expect the numbers to be much above the historic number of 140 which is what would be expected to be the natural limit of the area so can't think of any reason that the numbers would go above that. Of course, we don't actually know the carrying capacity of the area but shouldn't expect it to go above this. Therefore, increased population size and restoring range need to be balanced.</p> <p>PP – Do we know if there is good prey availability. BF – Yes. PP – Could more birds not therefore be supported? BF – Yes in theory but that would assume prey availability remains high.</p> <p>PP – Additionally, you wouldn't know how other species might respond, so having that larger area provides greater margin for error to ensure you can accommodate the required number of S. terns.</p> <p>AP - Any other points around the what and the where?</p> <p>MK - You're obviously a little way into the process but it's worth thinking about where you want to get to in the Examination. From our perspective this looks like a well-defined location and a good draft management plan. That's where other projects have fell short and where they are experiencing difficulties. So good to have this drilled down before the end of Examination.</p>	

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	<p>HA – I was going to ask a question for Phil. You provided a couple of examples in your note which are quite large sites. Would be interesting to know how quickly those sites were colonised.</p> <p>PP - The Hollesley & Boyton sites sites have been impacted by large gulls and have a number of challenges, Currently, there haven't been terns that have actually come in and used them. The Freiston Shore example will be constructed in 2023.</p> <p>AP - Timescales: hopefully it's clear from the materials we've provided that we want the measure to be in place a minimum of three years before operation. These extension projects have condensed timescales between consent and operation and so we have had to give this careful thought to make sure what is proposed can be delivered. S. tern situation is slightly different to kittiwake. We do feel there are options to adjust the scale but it needs to be balanced against the merit of restoring the breeding range. Happy to take feedback on the timescales point.</p> <p>PP - First point is around the point of impact. My understanding is that displacement is occurring for S. tern so the point of impact around that would need to be factored in. The winter programme also includes habitat creation works, however, when we are doing habitat improvements, we avoid the winter due to ground conditions and what's feasible from a construction / plant perspective e.g. we would normally focus on August to October.</p> <p>AP - Thanks Phil, we'd programmed to avoid breeding season but will consider that.</p> <p>MK - Vanguard did a bit of work around what the debt and payback will be under certain scenarios. That's useful for us to see. Presenting a range of scenarios will give us a better sense of the levels of risk. But one of the tricky things about S. tern is that you could get a lot of them quite quickly but that could happen in year one or year 6. Having a range of scenarios would give us that sense of when a sensible start time might be.</p> <p>AP - Yes, the accumulated deficit point we have given a fair bit of thought to on kittiwake but thought it was less applicable to S. tern given the nature of the measure. We have tried to present what we feel is a realistic and reasonable approach to timescales accounting for this, as well as the ambitions of the British Energy Security Strategy.</p> <p>MK - OK I just think in terms of us advising PINS it would be useful.</p>	

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	<p>RB - This links back to the point about the scale of the measure, it might be a very transient colony that sets up here so setting up to be able to hold more than 140 would give you an extra level of certainty that you could achieve the numbers. Some of the calculations Martin is referring to look quite scary in terms of timescales. So while you're running a deficit you are looking at a loss of productivity so scaling up the measure is a clear way of adding a bit of certainty.</p> <p>AP - Remaining points will be covered by exception given time. We have covered the landowner side of things. Have spoken to Marine Scotland about licences for pontoon. Governance proposals post consent - point being made by Natural England in the criteria that we need to go beyond just saying that a steering group will be established. We have tried to go a bit further e.g. annual sign off requirement through the Steering Group.</p> <p>MK - That seems ok, it's fairly high level but as long as you keep an eye out for that.</p> <p>AP - Monitoring, we have built in adaptive management. We got some useful feedback on the annual management requirements from the person that has developed St John's Pool so looking to reflect that in our proposals for ongoing annual management.</p> <p>DCO/DML conditions we are still working on developing those and they will be provided with the application. We will ensure this is an open and transparent process and we have dropped in a few ideas for how this will be achieved. Materials will be available on the project portal and there will be various processes to keep the community and various stakeholders up to date.</p>	
6	<p>Avian flu</p> <p>PP - Clearly this is a very concerning development, adds to existing pressures on populations and is something that RSPB are looking into and planning to release advice on in due course.</p> <p>LB - Natural England are going to go away and produce some detailed advice in terms of avian flu. We are looking into this as well.</p> <p>BF - Just to add a bit more to this I think this could be a really major issue over the next few years. Probably more than half the bonxies [great skuas] have died in Scotland, it's now in guillemot, razorbill, and puffin. I understand that a large number of S. terns have died in the Netherlands. There's work from north America that the virus can remain live for over</p>	

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	<p>a year in freshwater pools. So one concern about bonxies in Shetland is that the virus will still be alive when they come back next year. We need there to be numbers available to colonise Loch Ryan.</p>	
7	<p>Kittiwake</p> <p>AP - Similar to S. tern the prey enhancement measure is key for us but the project led measure of provision of nesting habitat in Gateshead or Lowestoft is being progressed.</p> <p>AP - Described potential approach to implementation of artificial nest sites with reference to examples from the British Telecom building where the ledges were put up in May 2021 and the birds still nested in the same season, so have been very effective. We have met with Gateshead and East Suffolk Council who were very well aligned and supportive of our proposals. We're also engaging with other developers to gauge potential for collaboration.</p>	
8	<p>Checklist</p> <p>AP - Policy and legal mechanism is available. Feedback has been supportive to date. Aims and objectives covered sufficiently in the previous meetings we've had and materials we've shared.</p> <p>MK - Still struggling to see how this is different to what other developers have proposed elsewhere. Some developers are looking to have structures in place next year in the same area. Understand having the nest sites in that area could be a benefit. But if there are already over 2,000 additional nest sites being added in the next couple of years and you are looking to implement 3 years before construction you are at the end of the queue. I'm just not sure that the benefits are sufficiently distinct compared to an offshore site where there clearly is an extreme limitation on space when compared to the coast.</p> <p>AD – I'm collating comments on the productivity note. It will be different in Gateshead and Lowestoft. You mentioned the partnership, key challenge will be the similarity between the objectives you are laying out and the partnerships objectives so disentangling that and showing difference will need to be worked out very carefully. Will be difficult to show the added value with the other developers coming through. Gateshead – I understand that there's other stuff that's going to create disturbance e.g. works on the Tyne bridge, so other measures are being put in place to provide for the kittiwakes that nest there. So, as ever it's the additionality point but it's different depending on whether it's Lowestoft or Gateshead but will try and get feedback from my</p>	<p>RSPB to provide written feedback on the kittiwake productivity note.</p> <p>Project team to look at whether kittiwake compensation could be brought forward in the timeline.</p> <p>Project team to consider whether any lessons learned from alignment of environmental monitoring methodologies for other offshore wind</p>

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	<p>colleagues who know those areas. Will try and get you something in writing by the first half of next week.</p> <p>BF – I accept there’s an overlap between what we’re proposing here and what’s already being proposed by other developers so recognise that's a problem. However, I think ours are moving birds only a short distance and stopping them being a nuisance. At the moment, kittiwakes are increasing quite rapidly in Lowestoft and far more people are using deterrence and causing breeding failure. It depends on how many kittiwakes will move out of Lowestoft which we don't know. Gateshead is obviously different. Re-design of the Gateshead Tower is still a good potential measure since there are still kittiwakes nesting in areas where they are not wanted but agree there is a risk.</p> <p>AP - Question is I guess whether there is a risk we can get comfortable with. I feel like we've provided a significant amount of information to ensure that this point is covered off. We need to balance our proposals with those being put forward with other developers but also with the fact that there is good support from local planning authorities and kittiwake partnerships which suggest this is a measure which is still worth going forward with. We're at a point now of where we need to have a very clear idea of what we’re going into DCO submission with.</p> <p>MK - It might be useful to hear where you've got to in terms of offshore structures. I know it's down as a collaborative measure but would be interesting to hear how you might be presenting that in Examination.</p> <p>AP - This was explored as a possible option early on but was not deemed to be suitable however we recognise this could be developed as a collaborative opportunity.</p> <p>HA - Yes this is solely being considered in the collaborative space. Looking at developing a legal agreement that would enable this type of measure to be taken forward collaboratively. It's more around the legality of how that agreement would function.</p> <p>MK - Worth attending to the Natural England Hornsea 4 (HP4) advice which has steered them towards an offshore solution although note there are some legislative difficulties. On balance this probably offers a less ecologically risky measure compared to onshore. That's our position on Hornsea 4 and I don't think it's going to change greatly.</p> <p>HA - I think the angle we’ve been coming at this is that the scale of our impacts are much smaller compared to e.g. HP4 which has led us to go down the onshore route so that's why we've looked at Lowestoft and</p>	<p>farms can be applied to monitoring of compensatory measures</p>

Number	Details	Action
	<p>Gateshead because a few additional ledges could feasibly provide the required levels of compensation. But yes, we note your comment on NE's preference for an offshore structure.</p> <p>AP – It would be helpful to have a discussion around the timescales point. In the documents provided we have given a bit of thought as to what that would look like with the measures being available a minimum of three years before operation. We consider that these measures are highly scaleable and can adapt to the levels of compensation that are required including accounting for any deficit.</p> <p>MK - I think we may have covered in a previous meeting but will note again that there's some potential benefit in getting some of these structures in at the earliest date possible, so that you are priming that population for when these larger structures come so you are getting a larger boost. Which might give SEP and DEP a bit of uniqueness. So, if there are birds that are currently being lost to the system, compensating for them now be a different kind of benefit.</p> <p>AP - Yes, I think that's a good point and one that we could explore a bit further. The outline delivery and roadmap was conceived around what we thought was achievable around the various steps that would have to be taken to get in ahead of the breeding season in 2024 so can have a think about how we potentially look at bringing that forward.</p> <p>MK - There may be elements you can do now and elements that you can do later. That would be a strategy that would tie in more with what the other developers are doing. If you are getting more birds into the system as soon as possible you are reducing the risk.</p> <p>BF - I agree and think this is a good point. Because the nests are being put in places close to where kittiwakes are trying to nest but are not tolerated, they would be expected to move there quickly as evidenced by the BT tower ledges.</p> <p>AP - We're getting to a point where we have a shortlist of locations in Lowestoft that we're looking to share with the Council so things are progressing with this.</p> <p>AD - In terms of project led, collaborative, strategic, regarding additionality, there is a real need to get a pathway for collaborative cross project monitoring strategies because there's a risk of all this getting very messy. No one would want 3 projects all monitoring the same kittiwakes using different methodologies so need to move towards a</p>	

Number	Details	Action
	<p>collaborative approach to ensure common sets of information and adequate coordination.</p> <p>AP - Yes that was a key point we discussed with the partnership. Message from the partnership was that they don't have the resource themselves to do this so has to be a developer / partnership collaboration model with a lot of the coordination coming from the developers themselves.</p> <p>HA - I believe there's precedent for coherent monitoring programmes. Something was developed between Natural England and the Dogger Bank A, B, C and Sofia Offshore Wind Farms. Perhaps worth seeing if there are any lessons learned from that work that we can take forward.</p> <p>AP - Remaining criteria have all been covered in the documents so happy to take any inputs on these given the time constraints?</p> <p>AD – We haven't had capacity to review your materials due to resource constraints so don't take our silence as agreement or disagreement.</p>	
9	<p>Gannet</p> <p>AP - Focus last time was on non-like-for like measure which is still very much on the table. Clearly, we will be taking account of the wants and needs for that measure when we're thinking about scale etc. However, the thinking since our last meeting has been around bycatch prevention. What we've landed on as an outcome of that is a research proposal to understand the scale and pattern of bycatch and investigate reduction measures.</p> <p>BF - Evidence suggests bycatch of gannets in the UK is relatively small and spread over a wide range of fisheries however there's evidence of a lot of bycatch in long-line fisheries in southern Europe. We know you can reduce bycatch of petrels and albatross quite significantly and the same would appear to be likely for gannet however there is no evidence for this. Gannets are daytime visual feeders. Therefore, deploying long-lines at night could be a potential option. Other measures include plastic streamers, increasing line weight however it's not clear what would be the most acceptable to fishermen. Useful therefore to look at what the bycatch actually is and to try out these different measures to see what is most acceptable to fishermen. There are specialists in Portugal who I'm aware of and have worked with in the past who would be suitable to take this forward. Would probably be best as a collaborative measure.</p> <p>AP - Any thoughts? We did have discussion in our last meeting around whether compensatory measures should be a requirement for gannet.</p>	

Number	Details	Action
	<p>Suppose that will be influenced by avian flu however interested if there is any update from Richard around the macro-avoidance work that's being undertaken.</p> <p>RB - For a site like SEP and DEP it is likely that we will move to a position of reducing the number of gannets potentially at risk of collision by somewhere around 80%. May be that we have to expedite this for projects that need it. So once this is shared, I expect you might be out of the woods in terms of compensation. Might be able to update on this in the next 2 months.</p> <p>AP - Ok, that is slightly difficult for us in that we intend to present 'without prejudice' measures for gannet. Can we get to a point where we don't have to present measures for gannet?</p> <p>RB - I think we need to take that away and discuss with Sophy Allen.</p> <p>HA – Please do consider SEP & DEP as a project that would require early guidance if possible.</p> <p>AP – Is there anything we can do in the meantime to better understand whether we are likely to still be in derogation territory for gannet?</p> <p>RB – You could calculate the % decrease in density that would be required to take you outside the realm of adverse effect and then apply a 60-80% reduction in collision risk assessments.</p> <p>LB - We are doing this as part of the reviews we are doing of the draft chapter / appropriate assessment.</p> <p>MK - Putting the question of compensation aside, this might be a measure we'd want to advocate to government as some sort of strategic measure. This is the sort of work that might unlock that. Maybe this is some sort of government/industry collaboration and perhaps this is something that we can promote to our colleagues and Defra.</p> <p>BF - That's encouraging, I do think this would be a really worthwhile piece of work.</p>	
10	<p>Guillemot and Razorbill</p> <p>AP - Package approach with the prey enhancement. Bycatch reduction is the project led measure with the potential for collaboration. However, also keeping rat eradication on the table. For bycatch reduction we are largely in the same position as when we last met. Point on engagement</p>	

Number	Details	Action									
	<p>with fishermen is ongoing and will continue post application and into Examination.</p> <p>MK - Question we posed at the last meeting around whether those discussions have identified bycatch around Flamborough or within the auk foraging range of Flamborough?</p> <p>AP - Initial evidence from our Fisheries Liaison Officer suggests there is some opportunity but further work is required to tie down the locations and the scale of the problem.</p> <p>BF – Risk of bycatch has reduced with the reduction of the salmon fishery however fishing for sea trout still represents a risk and therefore there remains potential for bycatch reduction as compensation.</p>										
11	<p>Overview of Application Documents</p> <p>AP - Provided an overview of the proposed application documents that are being submitted :</p> <table border="1"> <thead> <tr> <th>Category</th> <th></th> </tr> </thead> <tbody> <tr> <td rowspan="4">General</td> <td>Strategic and Collaborative Approaches to Compensation (and Measures of Equivalent Environmental Benefit)</td> </tr> <tr> <td>Derogation Funding Statement</td> </tr> <tr> <td>Habitats Regulations Derogation: Provision of Evidence</td> </tr> <tr> <td> <p>Appendix 1: Compensatory Measures Overview</p> <ul style="list-style-type: none"> Annex 1A: Initial Review of Compensatory Measures for Sandwich Tern and Kittiwake Annex 1B: Sandwich Tern and Kittiwake Ecological Evidence Annex 1C: Initial Review of Compensatory Measures for Gannet, Guillemot and Razorbill </td> </tr> <tr> <td>NNC/GW SPA Sandwich tern</td> <td>Appendix 2: Sandwich Tern Compensation Document</td> </tr> </tbody> </table>	Category		General	Strategic and Collaborative Approaches to Compensation (and Measures of Equivalent Environmental Benefit)	Derogation Funding Statement	Habitats Regulations Derogation: Provision of Evidence	<p>Appendix 1: Compensatory Measures Overview</p> <ul style="list-style-type: none"> Annex 1A: Initial Review of Compensatory Measures for Sandwich Tern and Kittiwake Annex 1B: Sandwich Tern and Kittiwake Ecological Evidence Annex 1C: Initial Review of Compensatory Measures for Gannet, Guillemot and Razorbill 	NNC/GW SPA Sandwich tern	Appendix 2: Sandwich Tern Compensation Document	<p>Equinor to provide DCO schedule for compensation to Natural England when the application is submitted.</p>
Category											
General	Strategic and Collaborative Approaches to Compensation (and Measures of Equivalent Environmental Benefit)										
	Derogation Funding Statement										
	Habitats Regulations Derogation: Provision of Evidence										
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NNC/GW SPA Sandwich tern	Appendix 2: Sandwich Tern Compensation Document										

Number	Details	Action						
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Annex 5.2.1.2 Expert Topic Group Agreement Logs

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Annex 5.2.1.2: Expert Topic Group Agreement Logs

Title:	
Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects Environmental Statement Annex 5.2.1.2: Expert Topic Group Agreement Logs	
PINS Document no.: 5.2.1.1	
Document no.: C282-RH-Z-GA-00138	
Date:	Classification
August 2022	Final
Prepared by:	
Royal HaskoningDHV	
Approved by:	Date:
Sarah Chandler, Equinor	August 2022

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1.1 Sea Bed Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan Agreement Log Sea Bed ETG

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Glossary of Acronyms

AONB	Area of Natural Beauty
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEP	Dudgeon Offshore Wind Farm Extension Project
EIFCA	Eastern Inshore Fisheries and Conservation Authorities
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries and Conservation Authorities
MCZ	Marine Conservation Zone
MEEB	Measures of Equivalent Environmental Benefit
MMO	Marine Management Organisation
MPA	Marine Protected Area
RSPB	Royal Society of the Protection of Birds
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCG	Statement(s) of Common Ground
UK	United Kingdom

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Offshore cable corridors	This is the area which will contain the offshore export cables or interlink cables, including the adjacent Offshore Temporary Works Area.
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Offshore scoping area	An area presented at Scoping stage that encompassed all planned offshore infrastructure, including landfall options at both Weybourne and Bacton, allowing sufficient room for receptor identification and environmental surveys. This has been refined following further site selection and consultation for the PEIR and ES.
Offshore substation	A fixed structure located within the wind farm site/s,

platform (OSP)	containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy ('the Applicant') and stakeholders through the Evidence Plan Process. Several Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the Seabed ETG. In addition, whilst The Wildlife Trusts were involved in the first three seabed ETG meetings, they were unable to attend any ETG meetings for any relevant topics (seabed, marine mammal ecology and Measures of Equivalent Environmental Benefit (MEEB)) from January 2022 onwards citing a lack of capacity to engage.

Table 1-1: ETGs and members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, The Wildlife Trusts
Seabed (including benthic and fish ecology, marine water and sediment quality and marine physical processes);	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern IFCA, The Wildlife Trusts
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, Norfolk County Council
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, Norfolk County Council, North Norfolk District Council, Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk AONB/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, Highways England
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council
Habitats regulations Assessment (HRA) Compensation	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Cromer Shoal Chalk Beds Marine Conservation Zone MEEB	Equinor, Royal HaskoningDHV, Natural England, MMO, The Wildlife Trusts

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. Seabed ETG meetings have been held on:
 - 28th August 2019 (preliminary call between Equinor, Royal HaskoningDHV, and Natural England to discuss issues around a cable route through the Cromer Shoal Chalk Beds MCZ).
 - 30th October 2019 (ETG1)
 - 2nd June 2020 (ETG2)
 - 3rd February 2021 (ETG3)
 - 16th August 2021 (ETG4)
 - 14th March 2022 (ETG5)

2. Agreement Log

Table 2-1: Agreement Log

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
1	ETG1 30 th October 2019							
Agreement of baseline status								
1.1	Marine Geology, Oceanography and Physical Processes							
1.1.1	Agreement that the baseline should describe tidal currents, waves and bedload sediment and transport, and suspended sediment	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	-		As described in the Scoping Report and ETG meeting slides. Bedload sediment and transport within the Cromer Shoal Chalk Beds MCZ is of particular interest to understand the distribution, depth and persistence/transience of sediment veneers overlying chalk bedrock.
1.1.2	Agreement on the relevance, appropriateness and sufficiency of proposed baseline data sources (including both site specific and contextual data) as defined in the Method Statement	-	-	-	-	-		Method Statement shared with the ETG in advance of the second ETG meeting, along with a report on Sedimentary Processes in the Cromer Shoals Chalk Beds MCZ (PB8164-RHD-ZZ-XX-RP-Z-0001). Agreement provisional on review of project survey data, including geophysical and benthic survey results.
1.1.3	Agreement on the survey scope and methods for the export cable corridor	-	-	-	-	-		Survey scope documents shared with MMO and NE on 11 th September 2019.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
	geophysical survey							
1.1.4	Agreement on the adequacy of the export cable corridor geophysical survey results to describe seabed type, shallow geology, bathymetry and seabed features/anomalies	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	-		<p>Survey report has been shared with ETG members and results summarised in report on Sedimentary Processes in the Cromer Shoals Chalk Beds MCZ and in ETG2 presentation.</p> <p>The ETG agrees that the export cable corridor geophysical survey results are adequate, but need to review the benthic survey results separately.</p>
1.1.5	Agreement on the survey scope and methods for the array and interconnector cable corridors geophysical survey	-	-	-	-	-		
1.1.6	Agreement on the adequacy of the array and interconnector cable corridors geophysical survey results to describe seabed type, shallow geology, bathymetry and seabed features/anomalies	-	-	-	-	-		Awaiting geophysical survey report which will be shared with ETG members.
1.1.7	Agreement on the survey scope and methods for the targeted benthic survey (from a marine physical processes perspective)	-	-	-	-	-		An outline scope of work has been shared with the Natural England, MMO and Cefas. A detailed benthic survey design will be shared with the ETG on 22 nd July 2020 for approval in advance of survey

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
								mobilisation.
1.1.8	Agreement on the adequacy of the targeted benthic survey results to describe seabed type and seabed features/anomalies (from a marine physical processes perspective)	-	-	-	-	-		Awaiting results. Survey expected to be completed by the end of August 2020, but full reporting will be later and will be shared with the ETG when available.
1.1.9	Agreement on the requirement for pre-application geotechnical investigations to understand the feasibility of cable installation within the MCZ	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	-		It was agreed that the onus is on the Applicant to determine whether or not there is enough evidence to inform cable installation and provide a realistic figure for the amount of cable protection that may be required (including within MCZ). This evidence should be presented in a cable installation/trenching report (i.e. CSIP/PTA or similar).
1.1.10	Agreement on the adequacy of the Marine Geology, Oceanography and Physical Processes baseline description	-	-	-	-	-		The full baseline description will be shared at PEI submission. Results of the geophysical and benthic surveys will be made available to the ETG. The ETG would expect post-construction surveys for Dudgeon and Sheringham Shoal OWFs and existing MetOcean data will also be used in this analysis.
1.2	Benthic Ecology							
1.2.1	Agreement that the baseline	Agreed	Agreed	Agreed	Agreed	-		As described in the Scoping Report and

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
	should describe all subtidal and intertidal habitats and species with potential to be impacted by the projects with a focus on the MCZ and any other particularly sensitive receptors identified.	(30/10/19)	(30/10/19)	(30/10/19)	(30/10/19)			ETG meeting slides. Designated features within the Cromer Shoal Chalk Beds MCZ are of particular interest, with a focus on the distribution and nature of any chalk areas (either at the surface or shallow subsurface). Annex I habitats and areas that might be important for e.g. herring and sandeel (see below) are also of interest.
1.2.2	Agreement on the relevance, appropriateness and sufficiency of proposed baseline data sources (including both site specific and contextual data)	-	-	-	-	-		As described in the Scoping Report and ETG meeting slides. Includes reference to other surveys in the area including from Sheringham Shoal, Dudgeon, Hornsea Three, and MCZ surveys.
1.2.3	Agreement on the survey scope and methods for the targeted benthic survey	-	-	-	-	-		An outline scope of work has been shared. A detailed benthic survey design will be shared with the ETG on 22nd July 2020 for approval in advance of survey mobilisation.
1.2.4	Agreement on the adequacy of the geophysical survey results and targeted benthic survey results to describe benthic ecology	-	-	-	-	-		Results will be shared with ETG.
1.2.5	Agreement of adequacy of benthic ecology baseline description	-	-	-	-	-		

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
1.3	Fish and Shellfish Ecology							
1.3.1	Agreement that the baseline should describe the fish and shellfish community in the project area, including species of commercial importance, spawning and nursery areas, feeding grounds, migration routes and overwintering areas for crustaceans	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	-		As described in the Scoping Report, Scoping Opinion and ETG meeting slides.
1.3.2	Provisional agreement on the relevance, appropriateness and sufficiency of proposed baseline data sources	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	Agreed (30/10/19)	-		As described in the Scoping Report, Scoping Opinion and ETG meeting slides. New fish characterisation surveys are not necessary as the sources of data proposed to inform the desk-based assessment will be adequate. Assessment of herring potential spawning habitat and sandeel habitat will use MarineSpace method (published 2013).
1.3.3	Agreement of adequacy of fish and shellfish ecology baseline description	-	-	-	-	-		
2	ETG2 2nd June 2020							
Agreement of assessment methodology								

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
2.1	Marine Geology, Oceanography and Physical Processes							
2.1.1	Agreement of potential impacts to be assessed and those scoped out	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	-		<p>As described in the Scoping Report and Scoping Opinion.</p> <p>To include assessment of effects on seabed features, including likely significant effects of changes to hydrodynamic and sedimentary processes on designated features of the Cromer Shoal Chalk Beds MCZ, Greater Wash SPA and any other designated sites within the zone of influence.</p>
2.1.2	Agreement that the expert judgement method (without the need for detailed numerical modelling) proposed for the Marine Geology, Oceanography and Physical Processes PEI/ES for Dudgeon, Sheringham Shoal and cumulative impacts is appropriate and proportionate	-	-	-	-	-		<p>As described in the Scoping Report and ETG meeting slides.</p> <p>Assessed via conceptual model using existing resources, including the data collected for the Sheringham and Dudgeon projects. No numeral modelling required.</p> <p>ETG members note that the existing modelling being proposed to be used was conducted prior to construction but as both projects are now constructed, they question whether this modelling is fit for purpose.</p> <p>The ETG would expect that the use of the previous modelling is supported by post construction surveys and will provide further comment on the adequacy of this approach once the method statement has</p>

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
								been updated to reflect this.
2.1.3	Agreement that the methods for identifying the worst-case scenarios are appropriate and that the worst-case scenarios presented in the Method Statement are comprehensive and identify the elements of the project that will form the worst-case scenarios for Marine Geology, Oceanography and Physical Processes	Agreed (02/06/20)	Agreed (02/06/20)	Agreed (02/06/20)	Agreed (02/06/20)	-		<p>No objections in the ETG meeting or in written responses.</p> <p>However, GBS foundations are now in the project envelope and the Method Statement will be updated accordingly.</p> <p>Furthermore, Natural England pointed out that several wind farms have recently committed to not using jack-up barges for installation due to the impact that this method has on the seabed. Natural England would therefore recommend re-considering their use at an early stage for all projects. The Applicant understands that this comment was made in relation to the export cable corridor only, and only within the MCZ.</p>
2.1.4	Agreement that a combined approach of 1.) effects (where they are manifest as impacts on other receptors) and 2.) impacts (where they are defined as directly affecting receptors which possess their own intrinsic morphological value) is acceptable	Agreed (02/06/20)	Agreed (02/06/20)	Agreed (02/06/20)	Agreed (02/06/20)	-		No objections in the ETG meeting or in written responses.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
2.1.5	Agreement on the list of projects and impacts for inclusion in the cumulative impact assessment	-	-	-	-	-		List of other plans, projects and activities provided in the draft Method Statement. Natural England recommend that TIER 5 projects should be included if a PEIR has been undertaken. This has been done for Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three. Final list of other plans, projects and activities will be included in PEIR.
2.2	Benthic Ecology							
2.2.1	Agreement of potential impacts to be assessed and those scoped out	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	-		As described in the Scoping Report and Scoping Opinion. To include assessment of likely significant effects on designated features of the Cromer Shoal Chalk Beds MCZ, Greater Wash SPA and any other designated sites within the zone of influence.
2.2.2	Agreement of proposed approach to the benthic ecology impact assessment methodology	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	-		As described in the Scoping Report. The Marine Evidence Based Sensitivity Assessment (MarESA) method will be used to determine sensitivity using data from the MarLIN. 'Advice on Operations' will also be used to assess impacts within the designated sites.
2.3	Fish and Shellfish Ecology							

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
2.3.1	Agreement of potential impacts to be assessed and those scoped out	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	-		As described in the Scoping Report and Scoping Opinion.
2.3.2	Agreement of proposed approach to the fish and shellfish ecology impact assessment methodology	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	Agreed (18/11/19)	-		As described in the Scoping Report and Scoping Opinion.
2.4	Cromer Shoal Chalk Beds MCZ and other marine designated sites							
2.4.1	Agreement of proposed approach to MCZ Assessment and potential effects to be assessed	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	Agreed – See note (02/06/20)	-		<p>As described in the Scoping Report and Scoping Opinion.</p> <p>A draft MCZ screening assessment has been shared with ETG members.</p> <p>The ETG stated that effects on bedload sediment transport should be screened in. The screening report will be updated accordingly.</p> <p>This will be followed by MCZ Assessment, supported by a cable installation/trenching assessment e.g. CSIP or similar.</p> <p>The proposed approach and potential effects to be assessed will be informed by the results of the relevant project surveys.</p>
2.4.2	Agreement of proposed approach to Habitats Regulations Assessment (HRA) and potential effects	-	-	-	-	-		<p>As described in the Scoping Report and Scoping Opinion.</p> <p>A HRA screening exercise will be completed as part of the EIA process to</p>

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Annex reference	Notes
	to be assessed							determine if the Projects are likely to have a significant effect on the interest features of European sites, followed by shadow appropriate assessment as necessary. Conservation advice package 'Advice on Operations' will also be used to assess impacts within the designated sites. The proposed approach and potential effects to be assessed will be informed by the results of the relevant project surveys.
2.4.3	Agreement on MCZ Assessment conclusions	-	-	-	-	-		The ETG stated that it is expected that the final MCZ Assessment, as a minimum, will follow the Hornsea Project Three MCZ assessment.
3	ETG3 3rd February 2021							
Agreement of mitigation measures and monitoring								
3.1	Agreement of mitigation measures	-	-	-	-	-		See 3.2 notes
3.2	Agreement of Measures of Equivalent Environmental Benefit (MEEB) with the Cromer Shoal MCZ	-	-	-	-	-		Natural England stated they anticipate having any upfront discussions on avoiding, reducing and mitigating impacts as soon as possible so that should a stage two assessment be required MEEB can be explored prior to the start of examination.

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
4	ETG4 16 August 2021					
General Cross-Topic Matters						
4.0	HDD will be used to install the export cable(s) at landfall (exiting ~1,000m from the coastline in the subtidal) and therefore intertidal impacts are avoided and do not require assessment.	Agreed as long as no access to intertidal by vehicles/machinery during installation works. (29/9/2021). There will need to be a new assessment and permissions if HDD become no longer feasible.	Defer to Natural England	Not present	Defer to Natural England	
Marine Geology, Oceanography and Physical processes (MGOPP)						
4.1	Sandbanks to be included as separate receptor within MGOPP assessment. The list of MGOPP receptors is therefore agreed i.e: Cromer Shoal Chalk Beds MCZ Coastline Sandbanks	Agreed (29/9/2021)	Agreed (12/08/21)	Not present	Defer to Natural England	
4.2	RHDHV to use CEFAS, 2016 report ¹ on suspended	Not agreed. Discussion to be	Agreed (03/02/21)	n/a	n/a	Cefas stated agreement at ETG5

¹ Cefas (2016). Suspended Sediment Climatology around the UK. Report for the UK Department for Business, Energy and Industrial Strategy offshore energy Strategic Environmental Assessment Programme.

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
	sediment climatologies which will ensure adequate consideration of the baseline SCC environment.	had with CEFAS before agreeing this				
4.3	Additional scour pit modelling not required since scour protection will be used in areas subject to scour and monitoring of scour and secondary scour will be undertaken to be secured through the In-Principle Monitoring Plan	Not agreed. Secondary scour not considered here so unable to agree	Defer to Natural England	Not present	Defer to Natural England	
4.4	Dudgeon Offshore Wind Farm (DOW) and Sheringham Shoal Offshore Wind Farm (SOW) plume modelling results provide suitable analogues and following further interpretation of these results within the ES chapter, project specific plume modelling is not required for SEP and DEP.	This is still under discussion as the minutes reflect	Defer to Natural England	Not present	Defer to Natural England	
4.5	In order to demonstrate the lack of significant effects on waves, RHDHV will review wave modelling undertaken for the Hornsea Projects and incorporate any findings	Ongoing, the best available evidence should be used		Not present	n/a	Superseded by 5.4. Wave modelling now being undertaken.

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
	within the SEP and DEP MGOPE ES assessment.					
4.6	Footprints of secondary scour will not be factored into the worst case scenarios for direct impacts because they cannot be quantified and are not comparable in terms of impact pathways to the use of scour protection.	n/a	n/a	Not present	n/a	
MWSQ						
4.7	The suite of contaminants tested for (as set out within the MWSQ chapter and benthic characterisation appendices) is agreed.	Pending update / agreement by the MMO	Still under discussion	Not present	n/a	NE comment: See Comments above [response to ETG4 minutes], there is additional PAH data within Appendix 10.2 [and Appendix 10.1 of the PEIR] Baseline report that meets the MMO analyte requirements. However the issue of the Fugro laboratory methodology requires approval by the MMO.
Benthic						
4.8	Cumulative zone of potential influence of 10km is appropriate for benthic cumulative assessment.	Agreed (29/9/2021)	Agreed	Not present		
Fish and Shellfish Ecology						
4.10	Underwater noise modelling	Agreed	Defer to	Not present	Defer to	

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
	from concurrent piling between SEP and DEP to be undertaken and included in the assessment. Behavioural contours to also be included.	(29/9/2021)	Natural England		Natural England	
Cromer Shoal Chalk beds MCZ Assessment						
4.11	Seabed disturbance from UXO detonation to be included in the Cromer Shoal Chalk Beds MCZ assessment, following the same approach and assumptions as adopted for the marine mammals assessment for consistency.	Agreed (29/9/2021)	Defer to Natural England	Not present	Defer to Natural England (Fisheries Liaison Officer liaise with fishermen)	
4.12	Only SOW and DOW operation impacts to be included in the MCZ cumulative assessment. It is not appropriate to include SOW and DOW construction impacts however detail from SOW and DOW monitoring to be considered as appropriate.	Agreed (29/9/2021)	Defer to Natural England	Not present	Defer to Natural England	
5	ETG5 14 March 2022					
General CSIMP/MCZA Matters						

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
5.1	It is agreed that an HDD exit point in a soft sediment area of the MCZ (avoiding areas of outcropping chalk reef) will minimise impacts on the most sensitive features of the MCZ.	Agreed	Defer to Natural England	Not present	Defer to Natural England (FLO liaise with fishermen)	
5.2	The range of embedded and additional mitigation measures described in the draft Outline Cable Specification and Installation Monitoring Plan (CSIMP) [now the Outline Cromer Shoal Chalk Beds MCZ CSIMP] (section 1.6) are appropriate for avoiding, minimising and mitigating potential impacts in the MCZ.	Still under discussion	Still under discussion	Not present	Defer to Natural England	
Marine Geology Oceanography and Physical Processes						
5.4	It is agreed that modelling of potential changes to wave regime as a result of the presence of the SEP, DEP, SOW and DOW offshore wind farms only, is appropriate to inform the EIA.	n/a	Still under discussion	Not present	n/a	Wave climate modelling provided within Appendix 6.2 (document reference 6.3.6.2) of the ES
Benthic Ecology						

ID	Agreement	Natural England	MMO/Cefas	TWT	EIFCA	Notes
5.5	<p>Deviation from the MarESA sensitivity classifications for the biotopes recorded is acceptable since the assessment considers the wider presence of the biotope across the region and therefore a reduction in sensitivity from 'high' to 'medium' is appropriate. However, Annex I / UK BAP priority habitat <i>S. spinulosa</i> reefs that can be associated with biotope A5.611 and the UK BAP priority habitat 'peat and clay exposures with piddocks' which can be associated with biotope A4.231, will remain as high sensitivity.</p>	This is still under discussion	This is still under discussion	Not present	Defer to Natural England	Cefas indicated that this approach sounded sensible during meeting

1.2 Marine Mammal Ecology Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan Agreement Log Marine Mammal ETG

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Glossary of Acronyms

AONB	Area of Natural Beauty
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEP	Dudgeon Offshore Wind Farm Extension Project
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
MEEB	Measures of Equivalent Environmental Benefit
MMO	Marine Management Organisation
RSPB	Royal Society of the Protection of Birds
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCG	Statement(s) of Common Ground
UK	United Kingdom

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Offshore cable corridors	This is the area which will contain the offshore export cables or interlink cables, including the adjacent Offshore Temporary Works Area.
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Offshore scoping area	An area presented at Scoping stage that encompassed all planned offshore infrastructure, including landfall options at both Weybourne and

	Bacton, allowing sufficient room for receptor identification and environmental surveys. This has been refined following further site selection and consultation for the PEIR and ES.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy ('the Applicant') and stakeholders through the Evidence Plan Process. Several Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the Marine Mammal ETG. Whale and Dolphin Conservation were invited to participate in the Marine Mammals ETG but declined, citing staff resources and the need to focus their efforts on developments where they have the greatest concerns. In addition, whilst The Wildlife Trusts were involved in the first three marine mammal ecology ETG meetings, they were unable to attend any ETG meetings for any relevant topics (seabed, marine mammal ecology and Measures of Equivalent Environmental Benefit (MEEB)) from January 2022 onwards citing a lack of capacity to engage.

Table 1-1: ETGs and Members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, The Wildlife Trusts
Seabed (including benthic and fish ecology, and marine physical processes);	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, Norfolk County Council
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, Norfolk County Council, North Norfolk District Council, Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk AONB/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, Highways England
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council
Habitats regulations Assessment (HRA) - Offshore Ornithology Compensation	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB

ETG	Members
Cromer Shoal Chalk Beds Marine Conservation Zone MEEB	Equinor, Royal HaskoningDHV, Natural England, MMO, The Wildlife Trusts

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground (SoCG). In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. To date, Marine Mammal ETG meetings have been held on:
 - 3rd December 2019 (ETG1), with catch-up call for TWT on 16th December 2019
 - 18th June 2020 (ETG2)
 - 20th July 2021 (ETG3)
 - 14th February 2022 (ETG4)

2. Agreement Log

Table 2-1: Agreement Log

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
1 ETG 1 2/12/2019						
1.1 Agreement of baseline status						
1.1.1	Marine mammal species of interest are harbour porpoise, white-beaked dolphin, minke whale, grey seal, and harbour seal	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	
1.1.2	Agreement of data sources for marine mammal baseline	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As listed in the scoping Report and ETG meeting slides.
1.1.3	Agreement of site specific surveys approach	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and further in ETG meeting slides.
1.1.4	Agreement of approach to estimating marine mammal density	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	<ul style="list-style-type: none"> Density estimates from site-specific surveys (where possible) SCANS-III density estimates for survey block O SMRU seal at sea data Density estimates will be based on relevant worst-cast (i.e. highest) values.
1.1.5	Agreement of marine mammal reference populations	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As listed in the scoping report and ETG meeting slides. Not currently known when reference populations

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						<p>will be updated. ETG agreed that PEI review stage is the cut off for inclusion of new baseline data and impact reassessment, although a clarification note may be required after this cut off.</p> <p>The harbour porpoise population estimate for the SNS SAC should be referenced in the assessment, e.g. as an appendix to the PEIR that can be referred to in the ES, in addition to the MU estimate</p>
1.1.6	Agreement of key seal haul-out sites	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides.
1.2 Agreement of assessment methodology						
1.2.1	Agreement of marine mammal SACs to be assessed in the HRA	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	<p>The Wash and North Norfolk Coast SAC</p> <p>Humber Estuary SAC</p> <p>Southern North Sea SAC</p> <p>Other European Designated Sites where there is the potential effect on foraging seals, e.g. designated sites within 80km for harbour seal and 100km for grey seal (this may be extended to 125km for grey seal – see minutes of ETG1).</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
1.2.2	Agreement of potential impacts to be assessed and those scoped out	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As listed in the Scoping Report, Scoping Opinion and ETG meeting slides.
1.2.3	Agreement of proposed approach to underwater noise modelling	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides. Impact piling and UXO clearance to be modelled. NOAA (2018) thresholds will be used in addition to Southall <i>et al.</i> (2019).
1.2.4	Agreement of proposed approach to the impact assessment methodology	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides.
1.2.5	Agreement of proposed approach to the cumulative impact assessment methodology	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides.
1.2.6	Agreement of proposed approach to HRA and potential effects to be assessed	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides.
1.2.7	Agreement of proposed approach to HRA of the Southern North Sea SAC	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in the Scoping Report and ETG meeting slides.
1.3 Agreement of mitigation measures and monitoring						
1.3.1	Agreement of proposed approach to Marine Mammal Mitigation Plans (MMMPs), detailing mitigation measures to reduce the risk of any physical or permanent	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in ETG meeting slides. Separate MMMPs will be produced pre-construction for piling and UXO clearance operations.

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	auditory injury (PTS) to marine mammals during all piling and UXO clearance operations					TWT to be named in the draft MMMP and included in discussions related to post-consent monitoring and mitigation.
1.3.2	Agreement of proposed approach to developing an In Principle Southern North Sea SAC Site Integrity Plan (SIP), if required.	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	As described in ETG meeting slides. TWT to be named in the In Principle SIP and included in discussions related to post-consent monitoring and mitigation.
1.3.3	Agreement of proposed approach to developing an In-Principle Monitoring Plan	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	The In-Principle Monitoring Plan will identify relevant offshore monitoring as required by the deemed marine licence conditions, establish the objectives of such monitoring and set out the guiding principles for delivering any monitoring measures as required. TWT to be named in the In-Principle Monitoring Plan and included in discussions related to post-consent monitoring.
1.3.4	Agreement of proposed approach to consultation	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (3/12/19)	Agreed (16/12/19)	ETG meetings will be scheduled following completion of key milestones.
2 ETG 2 18/06/20						

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
2.2	Does the ETG agree with the marine mammal species to be assessed in the PEIR and ES for DEP & SEP?	Yes, Natural England is in agreement.	Agreed	-	-	MMO response: The marine mammal species proposed appear to be reasonable (those being harbour porpoise, white-beaked dolphin, minke whale, grey seal and harbour seal). These species cover the four main functional hearing groups as per the National Oceanic and Atmospheric Administration (NOAA) (NMFS, 2018) criteria. However, the MMO defer overall to Natural England for confirmation on the marine mammals to be assessed for the PEIR and ES.
2.3	Does the ETG have any questions on the marine mammal surveys for DEP & SEP?	Natural England has no further questions at this stage.	The MMO defer comments to Natural England on this matter.	-	-	
2.4	Does the ETG agree with the approach for the harbour porpoise density estimates and reference population (NS MU) to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	
2.5	Does the ETG agree with the approach for the white-beaked dolphin density estimates and	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	reference population to be used in the PEIR and ES assessments for DEP & SEP?					
2.6	Does the ETG agree with the approach for the minke whale density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	
2.7	Does the ETG agree with the approach for the grey seal density estimates and reference population to be used in the PEIR and ES assessments for DEP & SEP?	Natural England is broadly in agreement with the approach. However, the assessments should be presented both with and without the Wadden Sea seal population included in the reference population.	The MMO defer comments to Natural England on this matter.	-	-	
2.8	Does the ETG agree with the approach for the harbour seal density estimates and reference population to be used in the PEIR	Natural England is broadly in agreement with the approach. However, the	The MMO defer comments to Natural England on this matter.	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	and ES assessments for DEP & SEP?	assessments should be presented both with and without the Wadden Sea seal population included in the reference population.				
2.9	Does the ETG agree with the approach for determining marine mammal sensitivity to be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	
2.10	Does the ETG agree with the approach for determining marine mammal value and how it will be used in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	
2.11	Does the ETG agree with the approach for determining magnitude in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	
2.12	Does the ETG agree with the approach for determining impact significance in the PEIR and ES assessments for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comments to Natural England on this matter.	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
2.13	Should modelling also be conducted using the Lucke et al. (2009) criteria for PTS, TTS and behavioural response in harbour porpoise?	The Lucke <i>et al</i> (2009) criteria for TTS and PTS have been absorbed in to the Southall <i>etal</i> (2019) criteria, but can still be used for behavioural response in harbour porpoise.	Given that the noise modelling will utilise the most recent, peer-reviewed marine mammal noise exposure criteria (e.g. Southall et al., 2019 and NOAA, 2018), the MMO do not believe it is necessary to also include criteria from Lucke et al. (2009) to assess PTS and TTS impacts.	-	-	
2.14	Does the ETG agree with the approach for underwater noise modelling?	Yes, Natural England is in agreement.	Agreed	-	-	MMO response: Overall, the MMO agree with the approach for the underwater noise modelling, as detailed in slides 19 – 27 of the presentation pack. The approach refers to recent, peer reviewed noise exposure criteria, e.g. Southall <i>et al.</i> (2019) and NOAA (NMFS, 2018). Furthermore, it appears as though all the potential impacts have been identified and will be assessed. Please note that the MMO will disseminate information in due course regarding the behavioural

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						assessment (details in Annex I for reference), as soon as a position has been agreed. The MMO are aware that Cefas have provided comments on the JNCC draft guidance document (JNCC, 2020). The MMO have no questions regarding the underwater noise modelling at this stage.
2.15	Are there any questions regarding the underwater noise modelling?	None at this time. Natural England notes details such as the maximum hammer energy stated in the method statement are currently being reviewed and may therefore provide further comment on this at a later date.	The MMO do not have any further comments regarding the potential impacts to be assessed at this stage. As noted above, it appears as though all the potential impacts have been identified and will be assessed.	-	-	
2.16	The ETG agreed with the potential impacts to be assessed at the previous ETG meeting - are there any further comments on the potential impacts to be assessed	None at this time.	The MMO do not have any further comments regarding the potential impacts to be assessed at this stage. As noted above, it appears as	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	for the PEIR and ES for DEP & SEP?		though all the potential impacts have been identified and will be assessed.			
2.17	Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during UXO clearance?	Yes, Natural England is in agreement.	Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate. The MMO understand that for the UXO assessment, underwater noise modelling will be undertaken based on the worst-case scenario, with no mitigation, for the types and sizes of UXO that could be present at DEP, SEP and in the cable route (see slide 23). However,	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
			specific details of the UXO modelling are limited at this stage.			
2.18	Does the ETG agree with the approach for assessing the potential impacts from underwater noise on marine mammals during piling at DEP & SEP?	Yes, Natural England is in agreement.	Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate.	-	-	
2.19	Does the ETG agree with the approach for assessing the potential impacts of underwater noise on marine mammals from other construction and maintenance activities at DEP & SEP?	Yes, Natural England is in agreement.	Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate.	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
2.20	Does the ETG agree with the approach for assessing the potential impacts on marine mammals from underwater noise and disturbance from vessels at DEP & SEP?	Yes, Natural England is in agreement.	Based on the information provided to date, The MMO believe the general approach for assessing the potential impacts on marine mammals from underwater noise and disturbance from vessels is reasonable.	-	-	
2.21	Does the ETG agree with the approach for assessing the potential impacts of underwater noise from operational turbines on marine mammals at DEP & SEP?	Yes, Natural England is in agreement.	Based on the information provided to date, the MMO believe the proposed general approach for assessing the potential impacts from underwater noise on marine mammals during the construction activities (as noted above) is appropriate.	-	-	
2.22	Does the ETG agree with the approach for assessing the potential barrier effects from underwater noise on marine mammals for DEP & SEP?	Yes, Natural England is in agreement.	The MMO believe the general approach for assessing the potential barrier effects from noise is reasonable, although defer to	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
			Natural England for further comments.			
2.23	Does the ETG agree with the approach for assessing the potential vessel collision risk for marine mammals at DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer comment to Natural England (and other relevant advisory bodies) on this matter.	-	-	
2.24	Does the ETG agree with the approach for assessing the potential disturbance at seal haul-out sites for DEP & SEP?	Yes, Natural England is in agreement.	The MMO defer overall comment to Natural England for comments on this matter.	-	-	
2.25	Does the ETG agree with the approach for assessing the potential changes to marine mammal prey resources for DEP & SEP?	Yes, Natural England is in agreement.	The MMO believe the general approach for assessing the potential changes to marine mammal prey resources is reasonable, although defer to Natural England for specific comments on this matter.	-	-	MMO response: The MMO believe that the general approach proposed for assessing the potential disturbance at seal haul-out sites is reasonable. Of relevance, slide 30 states that “ <i>the potential for any disturbance at seal haul-out sites, taking into account breeding and moulting periods for grey and harbour seal, will be assessed based on known haul-out sites and their proximity to activities associated with DEP, SEP, the cable route and vessel routes</i> ”.

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
2.26	Does the ETG agree with the approach for assessing the potential impacts of changes to water quality on marine mammals and prey for DEP & SEP?	Yes, Natural England is in agreement.	The approach to assessing changes to water quality seems reasonable, however, the MMO defer to Natural England for further comment.	-	-	
2.27	Does the ETG agree with the approach for assessing the potential impacts of decommissioning on marine mammals for DEP & SEP?	Yes, Natural England is in agreement.	The MMO believe this approach is appropriate.	-	-	
2.28	Does the ETG agree with the approach for assessing the potential cumulative impacts for marine mammals?	Yes, Natural England is in agreement.	The MMO have no major concerns regarding the approach for assessing the potential cumulative impacts for marine mammals. However, please note that cumulative effects are difficult to assess, and EIA-based cumulative effects assessments (CEAs) led by developers of individual projects have clear shortcomings (when	-	-	

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
			compared to CEAs led by government agencies on a regional and strategic level) (Willsteed et al., 2017).			
2.29	Does the ETG agree with the HRA Screening for marine mammals?	Yes, Natural England is in agreement.	The MMO defer to Natural England as the Statutory Nature Conservation Body (SNCB) for comments on the HRA. The MMO do not have any major comments or concerns to raise at this time.	-	-	
2.30	Does the ETG agree with the approach for the marine mammal assessments to inform the HRA?	Yes, Natural England is in agreement.		-	-	
2.31	Are there any other recent data sources, information and guidance?	None at this time. If Natural England becomes aware of any data/sources, information or guidance that are relevant to this project and the assessment, we will pass this on as appropriate.	See notes	-	-	MMO response: The MMO's advisers at Cefas advised it is acceptable to include (and implement) the recent guidance from JNCC (JNCC Report no.654 2020). This report sets out the SNCBs' advice on assessing the risk of significant disturbance as a result of noise and consequently managing noise disturbance within harbour porpoise sites (e.g. SACs), to avoid a potential adverse effect on site integrity. The report recognises that it will be a challenge for regulators or

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						<p>industry to monitor the daily proposed area/time thresholds i.e. 20% limit per day, in 'real' time. Therefore, careful planning and a good understanding of all the various developments will be required by the regulator.</p> <p>Please note however, that this JNCC guidance does not supersede the EIA process, where each development and the risks to harbour porpoise are reviewed on a case by case basis.</p> <p>It the MMO's understanding that the Applicant wishes to apply the Effective Deterrence Ranges (EDRs) provided in the above JNCC guidance document (e.g. 26 km EDR during piling) to the marine mammal disturbance assessments in their ES.</p> <p>Another alternative is to assess disturbance impacts based on an appropriate dose response curve.</p> <p>This would be the Applicant's decision on which approach they wish to use, but either approach would be acceptable.</p> <p>Cefas have noted that they will endeavour to pass on any new relevant information that may be useful and/or relevant.</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
3 Marine Mammal ETG3 July 2021						
3.1	UXO clearance will be a separate Marine Licence and not part of DCO submission. However, assessments based on potential worst-case for UXO will be provided for information in the ES, Information for the HRA report, and draft MMMP for UXO.	Agreed (20/07/2021)	Agreed (19/08/2021)	-	No comment (18/08/2021)	
3.2	Further underwater noise modelling for maximum UXO to include: <ul style="list-style-type: none"> • High-order detonation, including donor charge, without bubble curtain • High-order detonation, including donor charge, with bubble curtain • Low-order detonation, such as deflagration • Low-yield detonation, such as Hydra method • Low-yield detonation, such as Hydra method, with bubble curtain 	Agreed (12/082021)	Agreed (19/08/2021)	-	No comment (18/08/2021)	This information will be used for the draft MMMP for UXO.
3.3	Presentation outlined the proposed options that were being	Pending	Agreed (19/08/2021)	-	No comment (18/08/2021)	Natural England advises that there were also two clarifications on the

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	<p>considered for further underwater noise (UWN) modelling. It was agreed that ETG would indicate within this agreement log if any additional information should be included in the further UWN modelling.</p>					<p>underwater noise modelling provided in our statutory response: Modelling continuous sources for 12 hours only in a 24 hour period; Modelling of operational turbine noise sounds. Natural England requests a response on how these are going to be considered before agreeing to this point.</p>
3.4	<p>Presentation outlined the proposed updated data sources and information in relation to the marine mammal baseline to be included in the updated assessments. It was agreed that ETG would indicate within this agreement log if any additional data sources and information should be included in the updated assessments.</p>	Agreed (24/09/2021)	Defer to Natural England	-	No comment (18/08/2021)	<p>Natural England requests that the wording of this agreement is clarified; specifically that the “presentation outlined the proposed update data sources and information in relation to the marine mammal baseline to be included in the updated assessments”. This clarification is needed as there are several other references, not related to the marine mammal baseline, which Natural England advised including in our statutory response but have not been discussed in the ETG. In our statutory response Natural England also advises that the Conservation Objectives of the Moray</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						Firth SAC should be updated. This wasn't included in the presentation but should be included in the updated assessments.
3.5	<p>Updates to CIA and in-combination assessments. All comments will be addressed. It is proposed to circulate a list of projects / activities to be considered in the CIA and in-combination assessments prior to the next ETG meeting. ETG to review and agree or indicate any other projects / activities that should be included, within two weeks of receiving. To be agreed that cut-off for updates to the CIA and in-combination assessments for the DCO submission would be receiving comments from the ETG on the circulated list. However, any further changes would be addressed, if required, in submissions as part of the examination process.</p>	Agreed (12/08/2021)	Defer to Natural England	-	No comment (18/08/2021)	Natural England agree to the approach noting that we will need to agree to the list once circulated.

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
3.6	Draft MMMPs for UXO and piling to be provided for comments prior to the next ETG meeting.	Agreed (24/09/2021)	Agreed (19/08/2021)	-	No comment (18/08/2021)	Natural England notes that, as per number 9, the draft MMMPs for UXO and piling will be provided prior to the next ETG meeting. Could this please be clarified in the agreement log.
3.7	The draft In Principle Site Integrity Plan (IPSIP) to be provided for comments prior to the next ETG meeting.	Agreed (24/09/2021)	Agreed (19/08/2021)	-	No comment (18/08/2021)	Natural England advises that an IPSIP is needed for the project. This should be clarified within this agreement wording.
4 ETG 4 14/02/2022						
4.1	The assessments in the ES and RIAA will be based on the worst-case density estimates for grey and harbour seal.	Not agreed – see note.	No comments	-	Not present	<p>Natural England comments received by email on 24th September 2021:</p> <p>We acknowledge that the Carter <i>et al.</i> (2020) paper presents ‘relative’ at-sea maps, whereas Russell <i>et al.</i> (2017) presents ‘absolute’ at-sea maps, the latter of which is more readily useable by industry in impact assessments. However, Appendix 2 at the end of Carter <i>et al.</i> (2017) gives an example of how to convert the relative into absolute using scalars. There is a caveat to this approach in that the scalars are currently under review (as detailed in Carter <i>et al.</i> (2020)). Nevertheless, Carter <i>et al.</i> (2020) can</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						<p>be used to generate absolute densities needed in impact assessments, using the method in Appendix 2. We note that the scalars used by Carter <i>et al.</i> (2020) are the same as those used to calculate the absolute density estimates in Russell <i>et al.</i> (2017), therefore any issues with the scalars applies to both papers.</p> <p>More generally, the entire report by Carter <i>et al.</i> (2020) is an upgrade on the papers (e.g. Russell <i>et al.</i> 2017) that has come before it, and is written by the same team. The habitat preference maps include the most recent data from seal telemetry and an updated approach to habitat usage. Our understanding from the authors is that there are uncertainties with both the usage maps and the habitat maps, but the habitat maps have fewer uncertainties. Carter <i>et al.</i> (2020) have presented a relative index, so that when (if) scalars are updated, they can be applied and the maps are still of use. We are open to developers using Carter <i>et al.</i> (2020)</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
						<p>alongside Russell <i>et al.</i> (2017) if they wish, for context, however we consider that Carter <i>et al.</i> (2020) is the more appropriate to use.</p> <p>Natural England comments following ETG meeting on 14th February 2022</p> <p>Natural England maintains the aforementioned position on the preferential use of Carter <i>et al.</i> (2020) over Russell <i>et al.</i> (2017). For the reasons mentioned above, we advise that Carter <i>et al.</i> (2020) should be used as it is the most accurate representation of seal density, even if it does not produce the highest densities for the project area when compared to Russell <i>et al.</i> (2017).</p> <p>Applicant response: Carter <i>et al.</i> (2020) has been used in the ES and Report to Inform Appropriate Assessment to estimate grey and harbour seal at sea densities.</p>
4.2	In the ES CIA, geophysical survey assessments are based on all marine mammals within 5km of the vessel being disturbed.	Agree with paragraph 2. More information needed to support	No comments	-	Not present	<p>Natural England comments following ETG meeting on 14th February 2022</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
	<p>However, as a precautionary approach, the assessment of the potential disturbance of harbour porpoise in the SNS SAC in the RIAA will also include the possible disturbance from the survey area as assessed in BEIS (2020).</p>	<p>paragraph 1 (see notes).</p>				<p>The Applicant's rationale behind using a 5km disturbance range from the vessel as a point source is in part reliant on the assumption that animals will return to the area immediately once the vessel has passed and disturbance has ceased. Evidence is required to support this point.</p> <p>With regard to the RIAA, any disturbance within a day is assumed to last for 24 hours for the purposes of assessing against the 20% daily threshold. This is in accordance with the SNCB noise guidance (JNCC, 2020). Therefore the Applicant must take into account the total area of noise disturbance from geophysical surveys that could occur within a 24 hour period. BEIS (2020) present a scenario for this in paragraph 18.170. We do not object to the Applicant using this figure in BEIS (2020) if it is the best available estimate at the time.</p>

ID		Natural England	MMO	Cefas	The Wildlife Trusts	Notes
4.3	CIA will be based on the latest information available at the time. In-combination effects for the SNS SAC will be further assessed during the development of the final SIP.	Further clarification required (see notes).	No comments	-	Not present	<p>Natural England comments following ETG meeting on 14th February 2022</p> <p>Does the Applicant propose a cut-off date for identifying the latest information for projects in the CIA and in-combination assessments?</p>

1.3 Offshore Ornithology Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan Agreement Log Offshore Ornithology ETG

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Glossary of Acronyms

AONB	Area of Natural Beauty
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEP	Dudgeon Offshore Wind Farm Extension Project
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries and Conservation Authorities
MEEB	Measures of Equivalent Environmental Benefit
MMO	Marine Management Organisation
RSPB	Royal Society of the Protection of Birds
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCG	Statement(s) of Common Ground
UK	United Kingdom

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Offshore cable corridors	This is the area which will contain the offshore export cables or interlink cables, including the adjacent Offshore Temporary Works Area.
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.

Offshore scoping area	An area presented at Scoping stage that encompassed all planned offshore infrastructure, including landfall options at both Weybourne and Bacton, allowing sufficient room for receptor identification and environmental surveys. This has been refined following further site selection and consultation for the PEIR and ES.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy ('the Applicant') and stakeholders through the Evidence Plan Process. Several Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the Offshore Ornithology ETG.

Table 1-1: ETGs and Members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, Norfolk County Council
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, Norfolk County Council, North Norfolk District Council, Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk AONB/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, Highways England
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.

3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. Offshore ornithology ETG meetings have been held on:
 - 24th April 2019 (preliminary meeting between Equinor, Royal HaskoningDHV, and Natural England)
 - 9th January 2020 (ETG1)
 - 4th June 2020 (ETG2)
 - 9th December (ETG3)
 - 10th August 2021 (ETG4)
 - 9th February 2022 (ETG5)

2 Agreement Log

ID	Agreement	Natural England	RSPB	MMO	Notes
1	Agreement of baseline status				
1.1	Agreement on the survey scope and methods for the site specific aerial surveys.	-	-	-	<p>Broadly agreed subject to understanding:</p> <ul style="list-style-type: none"> • timing of survey flights to understand whether diurnal foraging peaks are likely to have been recorded • variability of the data and assessing the need to analyse the data from the two additional cameras • The occurrence of red-throated diver beyond the 4km buffer, particularly between the Greater Wash SPA and the survey area, needs to be understood.
1.2	Agreement on the key ornithology species for assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	Key species identified as Sandwich tern, kittiwake, gannet, guillemot, little gull, red-throated diver, lesser black-backed gull and great black backed gull, but noting that other species will be considered.
1.3	Agreement on approach to ornithology density estimates (derived from aerial surveys, design-based, split in to appropriate reporting regions for biologically relevant seasons)	-	-	-	<p>Investigate merit of a model based approach.</p> <p>Define and agree 'biologically relevant seasons.</p> <p>A more defined method for estimating density (including Bootstrapping and Poisson error regression approach) will be provided in a Method Statement.</p>

ID	Agreement	Natural England	RSPB	MMO	Notes
1.4	Agreement on baseline data sources	-	-	-	Broad agreement of sources identified by Equinor/RHDHV in ETG slides. Equinor/RHDHV will also source recent/imminent sources identified by the ETG. A final list of sources will be included in the Method Statement.
2	Agreement of assessment methodology				
2.1	Agreement of potential impacts to be assessed.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and Scoping Opinion, and summarised in the ETG meeting slides.
2.2	Agreement of the proposed impact assessment methodology approach.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.3	Agreement of the proposed approach to cumulative impact assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.4	Agreement of the proposed approach to Habitats Regulations Assessment.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the Scoping Report and summarised in the ETG meeting slides.
2.5	Agreement of the proposed approach	-	-	-	As described in the Scoping Report and summarised in the ETG

ID	Agreement	Natural England	RSPB	MMO	Notes
	to consultation.				meeting slides. Equinor/RHDHV to produce a detailed timeline and share with the ETG.
2.6	Agreement on the Method Statement.	-	-	-	Equinor/RHDHV to issue for consultation and discussion with the ETG.
2.6.1	Agreement on the Collision Risk Model (CRM) to use.	-	-	-	Stochastic or deterministic Folkerts CRM.
2.6.2	Agreement on the scope of collision risk assessment (CRM for which wind farms).	-	-	-	ETG agreed that CRM will need to be rerun for wind farms using updated data. List of wind farms to be confirmed.
2.6.3	Agreement on the CRM inputs – Flight heights.	-	-	-	As described in the ETG meeting slides. Current position is to use Johnston <i>et al.</i> (2014) flight height distribution data and Option 2 CRM. However, further assessment of Sheringham Shoal OMP data, and investigation of aerial survey data to inform potential changes in flights height values is proposed.
2.6.4	Agreement on the CRM inputs – Avoidance rates.	-	-	-	Review of latest evidence. Equinor/RHDHV proposing to use Sheringham Shoal post construction monitoring (Harwood <i>et al.</i> 2018) for Sandwich tern which estimates 0.994. Official position of NE and RSBP is 0.98

ID	Agreement	Natural England	RSPB	MMO	Notes
					but this is under review.
2.6.5	Agreement on the CRM inputs – Flight speed.	-	-	-	Equinor/RHDHV proposing to use a recent study by Fijn and Gyimesi (2018) informing sandwich tern flight speeds for different behaviours. ETG to review this source.
2.6.6	Agreement on the CRM inputs – As-built versus consented	-	-	-	<p>There are 124 more consented turbines across Dudgeon OWF, Race Bank OWF and Triton Knoll OWF than have been installed. Equinor/RHDHV propose that CRM assessment based on as built information rather than consented would be more realistic.</p> <p>NE and RSPB have stated that for this to be acceptable they would require legally secured documentary proof that with no further change (from as built) possible, and that the worst case scenario design envelope is considered for projects that are not yet built. As built scenarios should also be accompanied with equivalent information for the ‘as consented’ and as ‘as proposed’ scenarios.</p> <p>Equinor will investigate options to deliver “legally secured documentary proof” for existing wind farms.</p>
2.6.6	Agreement on the Population Viability Analysis (PVA) - Tool to use.	Agreed (09/01/20)	Agreed (09/01/20)	-	ETG agreed use of the Natural England PVA tool.

ID	Agreement	Natural England	RSPB	MMO	Notes
2.6.7	Agreement on the PVA – Input parameters to be updated.	Agreed (09/01/20)	Agreed (09/01/20)	-	As described in the ETG meeting slides. The ETG broadly agreed that the parameters used in the DECC (2012) Appropriate Assessment should be reviewed and updated where necessary.
2.6.8	Agreement on the PVA – Revised Sandwich tern starting population to be used.	Agreed (09/01/20)	Agreed (09/01/20)	-	Sandwich tern starting population from JNCC, 2019 (Mean 4,401 pairs (419 S.D.) 2013-2018. 2019 counts will be used when available.
2.6.9	Agreement on the PVA – Revised Sandwich tern breeding productivity to be used.	-	-	-	Sandwich tern breeding productivity from JNCC, 2019 (Mean 0.755 (0.195 S.D.) 2013-2018.
2.6.10	Agreement on the PVA – Revised Sandwich tern adult survival to be used.	-	-	-	Sandwich tern adult survival in NE PVA Tool = 0.898 (0.116 S.D.) (Horswill and Robinson, 2015) – though S.D. different?
2.6.11	Agreement on the PVA – Revised Sandwich tern juvenile survival to be used.	-	-	-	Sandwich tern juvenile survival in NE PVA Tool (Horswill and Robinson, 2015) = 0.358 S.D. 0.876 (age classes 0-1 and 1-2), 0.741 S.D. 0.824 (age class 2-3)
2.6.12	Agreement on the PVA output interpretation.	-	-	-	Counterfactual of the probability of population decline and counterfactual of the population growth rate.

ID	Agreement	Natural England	RSPB	MMO	Notes
3	Agreement of mitigation measures and monitoring				
3.1	Agreement of mitigation measures	-	-	-	
3.1.1	Agreement that the air gap has been considered in the design envelope in respect of minimising bird collision risk.	-	-	-	Increasing the air gap would be expected to reduce collision risk for most species. RHDHV will investigate the impact of different air gaps on collision risk.
3.2	Agreement of monitoring requirements	-	-	-	
4	ETG4 10 August 2021				
4.1	Natural England advice is that compensation for offshore ornithology mortalities should be based on upper CIs.	Agreed	-	n/a	
4.2	Natural England consider that sandwich tern collision risk assessment conclusions should be based on an avoidance rate of 98.6%.	Advice Retracted	-	n/a	Advice Retracted by Natural England on 21/10/2021 reverting to the use of SNCB 2014 advised rates

ID	Agreement	Natural England	RSPB	MMO	Notes
4.3	RHDHV will include sandwich tern collision risk results based on 99.3% avoidance rate as determined through the ECON meso avoidance behaviour demonstrated at SOW and DOW however the results of this will not form the basis of Natural England's conclusions (see 4.2 above).	Agreed (with recognition of above retracted advice)	-	n/a	
4.4	RHDHV will run the deterministic CRM (i.e. as calculated via the Band spreadsheets). The extended or stochastic CRMs will not be used.	Agreed	-	n/a	
4.5	RHDHV to use data up to 2019 for sandwich tern PVA calculations and refer to 2021 counts for context if they can be obtained.	Agreed	-	n/a	
4.6	Natural England consider that in terms of Harwood (2021), the "ESAS style" flight height distributions are the most appropriate for use in CRM, and are the most similar to Johnston et al. (2014) measurements	Agreed	-	n/a	

ID	Agreement	Natural England	RSPB	MMO	Notes
4.7	Cumulative and in-combination figures from Deadline 13 of East Anglia TWO and East Anglia ONE North Examination ¹ to be used for ES.	Agreed	-		Hornsea 4 figures will be updated to match the ES figures for that project since the PEIR figures were presented at Deadline 13 of the EA2/1N Examination.
4.8	Little gull to be included within the Information to Support Appropriate Assessment for Greater Wash SPA	Agreed	-	n/a	

ID	Agreement	Natural England	RSPB	MMO	Notes
5	ETG5 9 February 2022				
Modelling assumptions					
5.1	Present two outcomes of the S. tern assessment, one based on design based density estimate and one based on model based	See notes	Not present	Not present	Natural England notes: There may be a range of modelling approaches that would potentially be suitable, arising from discussions we've had following the ETG meeting with Grant Humphries at HiDef. Therefore there may be more than two outcomes, but as a minimum then

¹ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010078/EN010078-005485-ExA.AS-12.D13.V1%20EA1N&EA2%20D13%20Offshore%20Ornithology%20Cumulative%20and%20In-Combination%20Collision%20Risk%20and%20Displacement%20Update.pdf>

ID	Agreement	Natural England	RSPB	MMO	Notes
	density estimate.				we agree that presenting two outcomes is appropriate.
5.2	For all species except S. tern (see 5.1), design based density estimates are sufficient to formulate ES assessment and HRA assessment conclusions.	See notes	Not present	Not present	<p>Natural England notes: With the exception of kittiwake, on balance Natural England considers that design based is probably sufficient to adequately characterise the baseline for all other species. This reflects the location of the OWF with respect to potential source colonies and the likely presence/densities of the potential species of interest.</p> <p>In the case of species where we are particularly interested in the application of the mitigation hierarchy, design-based doesn't present as much flexibility in examining mitigation options (by avoiding areas of repeatedly high density for example) as model based does. As previously stated, we consider this is a potential avenue to reduce impacts on kittiwake, given likely connectivity with FFC SPA during the breeding season. Therefore, the potential to produce model-based distribution/abundance should be thoroughly explored for this species.</p>
Sandwich tern displacement					
5.3	S. tern assessment conclusions to be based on a displacement rate of 0-50%	Yes, but please present the full matrix for consideration.	Not present	Not present	<p>Applicant added notes: Assessment to provide a narrative approach around the most suitable rates on which to base assessment conclusions. Shading of the matrix should be used to indicate probability of the displacement/mortality rates.</p>
5.4	Mortality rates up to 10% in 1% increments up to 5% and then 5	NE may wish to examine a higher mortality rate	Not present	Not present	

ID	Agreement	Natural England	RSPB	MMO	Notes
	and 10% to be presented in assessment however conclusions of the assessment to be based on 1%.	than 1%, but as long as the range is presented then the Applicant is entitled to base their assessment at 1%.			Discussion of potential variability in the mortality rate should be provided in that whilst anything above 1% is unlikely, there is additional nuance around the other variables that could contribute to the uncertainty.
Red-Throated Diver					
5.5	The red-throated diver assessment need only focus on areas of the SPA not already overlapped by existing wind farms. A 10km buffer between wind turbines and the Greater Wash SPA is sufficient to rule out potential for AEol of red-throated diver.	Agree that a 10km buffer around the array is sufficient to consider impacts on the Greater Wash SPA, noting this relates to windfarm area and not cable route. NE has not reviewed the draft RIAA so is not in a position to comment on whether AEol can be ruled out.	Not present	Not present	
As-built vs consented designs – Sandwich tern only					
5.6	Cumulative and in-combination collision risk assessment to present calculations based on 3 scenarios:	Agree	Not present	Not present	

ID	Agreement	Natural England	RSPB	MMO	Notes
	<ul style="list-style-type: none"> • Consented designs • As built designs • Maximum theoretical as-built designs (two scenarios, one using consented turbines to “build out” to consented capacity, one using as-built turbines to “build out” to consented capacity. <p>Assessment conclusions to be based on consented designs for all species, but other scenarios considered for context.</p>				

1.4 Terrestrial Ecology and Ornithology Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

DCO Application

Evidence Plan Agreement Log

Terrestrial Ecology and Ornithology

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1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy Limited ('the Applicant') and stakeholders through the Evidence Plan Process (EPP). Multiple Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the **Onshore Ecology and Ornithology ETG**.

Table 1-1: Expert Topic Groups and Organisations Represented

ETG	Members
Archaeology and Cultural Heritage (both onshore and offshore)	Historic England (HE), Norfolk County Council (NCC)
Offshore Ornithology	Natural England (NE), Marine Mammal Organisation (MMO), RSPB
Marine Mammal Ecology	NE, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	NE, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Onshore Ecology and Ornithology	NE, Norfolk Wildlife Trust (NWT), RSBP Environment Agency (EA), NCC, North Norfolk District Council (NNDC), South Norfolk Council (SNC) and Broadland District Council (BDC)
Seascape, Landscape and Visual	NCC, North Norfolk District Council (NNDC), Broadland District Council (BDC), NCC, NE, HE, North Norfolk Coast Area of Outstanding National Beauty (AONB)/Coastal partnership
Traffic	NCC, National Highways (NH)
Water Resources and Flood Risk	EA, Internal Drainage Board (IDB), NCC

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. A Preliminary Environmental Information Report (PEIR) was provided to stakeholders in April 2021, under Section 42 and 47 of the Planning Act 2008. Feedback received through this consultation has been taken into consideration and incorporated into the application where appropriate. The Development Consent Order (DCO) application is planned for submission early Summer 2022.
4. Onshore Ecology and Ornithology ETG meetings have been held on:
 - 28th January 2020 (ETG1);
 - 10th December 2020 (ETG2);

- 1st July 2021 (ETG3); and
- 30th June 2022 (ETG4, with focus on Biodiversity Net Gain).

2 Agreement Log

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders						Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC		NNDC
<p>ETG1 28/01/2020</p>	<p>Scope of ecological survey work (as described in the Scoping Report and summarised in the ETG meeting slides).</p>	<p>1.1</p>	<p>RSPB recommended that breeding bird surveys should be extended beyond June at least until end of July, but possibly into August depending on the species identified. SNC and BDC recommended that static bat detectors are used rather transect surveys. It was agreed that eDNA surveys will be used for great crested newt surveys presence/absence. Some population assessments may be progressed depending on the findings. The Applicant confirms that all onshore ecology surveys will be undertaken in accordance with industry accepted guidance and considering the points raised by ETG attendees above.</p>	<p>Present</p> <p>Agreed (noting the below comment, notably eDNA)</p> <p>Natural England has no additional comments to those raised by the other Interested Parties.</p> <p>However, we reflect that for the OLEMS and IPMP with respect to the pre-construction surveys, we wouldn't want the inclusion of transects surveys to be ruled out in order to refine down the required mitigation.</p> <p>eDNA: Natural England notes another project has had difficulty gaining a protected species licence (Letter of no Impediment) reliant solely on eDNA, rather than combined/additional use of conventional survey methods due to issues including: reliability of data (such as false positives), presentation of presence/absence, period of time between surveys and proposed start of development, seasonal timing of surveys. As such it is recommended that guidance available from NE Wildlife Licensing Service is followed if a draft LONI is sought.</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>None</p>

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
				Subsequent to this ETG, an IAPC has been awarded by the NE Wildlife Licencing Service and 1st Stage payment made by Equinor April May 2022 for the Norfolk and Suffolk District Level Licencing Scheme.								
	Approach to Extended Phase 1 Habitat Survey (as described in the Scoping Report and summarised in the ETG meeting slides)	1.2	<p>SNC and BDC recommended the upcoming hedgerows and trees surveys should also be undertaken in accordance with the Hedgerow Regulations and associated methodology.</p> <p>The Applicant confirms that all surveys of hedgerows will be undertaken in accordance with the Hedgerow Regulations methodology.</p>	<p>Present</p> <p>Agreed</p> <p>However, Natural England reserves the right to change our advice dependant on the information provided in the ES Application.</p>	Present Agreed	Present Agreed	Absent NA	Present Agreed	Present Agreed	Present Agreed	None	
	Approach to wintering bird survey approach and the selected target species (as described in the Scoping Report and summarised in the ETG meeting slides).	1.3	<p>RSPB recommended that wintering bird surveys are extended throughout October (pink-footed geese will be arriving, and their presence could influence timing of works). Recommend that two years survey effort would be good, unless additional information that would allow for a continuous run of data to be presented. Data should be available from Hornsea Project Three but appreciate challenge of data sharing.</p> <p>The Applicant confirms and agrees that the scope of the over-wintering surveys will include pink-footed geese. A full suite of over-wintering bird surveys has been undertaken, the findings of which will inform further site selection/route planning process and presented in the PEIR and ES.</p>	<p>Present</p> <p>Agreed</p> <p>NE agrees with comments raised by the interested parties in paragraph 1.</p> <p>Natural England will ensure our advice remains aligned with other projects in the area.</p>	Present Agreed	Present Agreed	Absent NA	Present Agreed	Present Agreed	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	
Meetings	Discussion Points	ID	Agreements and Notes	NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	Outstanding agreements
ETG 2 10/12/2020	Approach and methodology to over-wintering bird surveys (as described in the PEIR and summarised in the ETG meeting slides).	2.1	ETG did not have comments on the overall survey methodology and agreed to the methodologies that will be followed.	Present Agreed However, Natural England reserves the right to change our advice dependant on the information provided in the ES Application.	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None
	Use of available over-wintering bird survey data from other projects.	2.2	RSPB advised that the results of previous studies that cover the same footprint as SEP and DEP should be considered where possible and available to understand the usage of the relevant fields over a longer period of time. The applicant and ETG agreed that where other data sets were available these will be obtained and reviewed to inform the conclusions presented in the PEIR.	Present Agreed However, Natural England reserves the right to change our advice dependant on the information provided in the ES Application.	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None
	Approach and methodology to breeding bird surveys (as described in the PEIR and summarised in the ETG meeting slides).	2.3	Survey approach using extrapolation would be acceptable for arable habitats and associated species (given the wide extent of this habitat and anticipated access restrictions, full survey coverage will be difficult to achieve). The approach would involve surveying a selection of representative sites across the DCO boundary, from which it would be possible to extrapolate likely levels of bird nesting throughout the rest of the un-surveyed arable habitats.	Present Agreed Natural England advises this approach is fine for the ES application, but the approach for management of nesting breeding birds, will need to be included in the OLEMS to be taken forwards for pre-construction.	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
			ETG agreed with approach presented to them, as outlined above.									
	Approach and methodology to great crested newt surveys (as described in the PEIR and summarised in the ETG meeting slides).	2.4	The survey involved Habitat Suitability Index appraisal and eDNA survey of ponds within the PEIR boundary and surrounding 250m. ETG did not have comments on the overall survey methodology and therefore agreed to the approach taken.	Present Agreed (see above comment Item 1.1 regarding eDNA)	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	
	Approach and methodology to bat surveys (as described in the PEIR and summarised in the ETG meeting slides)	2.5	ETG raised similar points to those raised for breeding birds – i.e. extrapolation of data needs to ensure sufficient number of sites are considered which are considered representative of the whole route. ETG also questioned if there is a scope to avoid trees as part of the site selection and route refinement process. Agreed that the findings from surveys undertaken to date will be used to inform any future site selection and/or route refinement process. The applicant advised that there are no buildings that require demolition and therefore trees will be the sole focus of the future survey requirements for roosting bats. The ETG agreed with this approach.	Present Agreed Natural England is in agreement with the comments raised by other interested parties.	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	
	Preliminary findings from Extended Phase 1 Habitat Survey	2.6	ETG was presented with a summary of the Extended Phase 1 Habitat Survey findings obtained to date. ETG advised that the majority of the PEIR boundary passes through arable land with most	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
			<p>field boundaries marked by hedgerows, often with trees.</p> <p>RSPB advised that scrub habitat is important and therefore should be retained as much as possible as it can support various invertebrate and bird species. RSPB requested that areas of scrub should be mapped and potentially considered for biodiversity net gain opportunities.</p> <p>The Applicant agreed with these points and advised that opportunities for biodiversity net gain are being considered throughout the project.</p>	Natural England agrees with the points raised by other Interested Parties.								
	Biodiversity Net Gain opportunities	2.7	<p>The Applicant advised that biodiversity net gain data has been collected during the Extended Phase 1 Habitat Survey and that the Project has committed to achieve a net gain, the ETG has an opportunity to inform and contribute towards the development of these opportunities.</p> <p>The Environment Agency advised that tree planting should be considered alongside watercourse crossed by the Projects.</p> <p>Norfolk Wildlife Trust suggested focusing on the important landscape areas and addressing landscape restoration targets, using NWT Landscape approach.</p> <p>RSPB suggested cooperation with the Upper Wensum focus area turtle dove project.</p> <p>Wider ETG advised that other large schemes in the same region should be reviewed to ensure biodiversity net gain</p>	<p>Present</p> <p>Agreed</p> <p>Please note, Natural England raised BNG at the ETG1 meeting and we welcome this consideration.</p> <p>We look forward to more detailed discussions at the ETG proposed on the 30th June. Therefore we reserve the right to update on this.</p>	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
			approaches align and to not conflict with each other. The A47 road improvement works near Honingham/Easton and the Easton Growth Point were specifically mentioned.									
	Approach to data gaps	2.8	The ETG discussed how to assess the areas where there is no access, and it was agreed that NBIS data will be used to fill in the gaps. Badger records could be obtained from the local badger recorder and reasonable effort should be made to gain landowner access where possible.	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	
Meetings	Discussion Points	ID	Agreements and Notes	NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	Outstanding agreements	
ETG 3 01/07/2021	Update on survey results obtained to date and since last ETG meeting	3.1	ETG was provided with an update on the survey results obtained to date and since the last ETG meeting. The Applicant advised that surveys remain ongoing due to landowner access continually being sought. The Applicant informed the ETG that all surveys to date have been undertaken with the industry agreed methodologies, as presented at earlier ETG meetings. RSPB raised for clarification on how data gaps will be filled should landowner access from the larger	Present Agreed	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	
			<p>estate owners not be obtained. The Applicant advised that progress has been made regarding access and that engagement with estates and landowners remains ongoing. The intention is that all land requiring surveying will be accessed; however, where this is not possible NBIS Living Map Data will be used to inform these areas.</p> <p>ETG agreed with approach and efforts being made in respect to obtaining landowner access.</p>								
	Bat survey data from other projects	3.2	<p>Norfolk Wildlife Trust highlighted that the Western Link project overlaps with the survey efforts of the Barbastelle survey group. The Applicant advised that survey data from this group has been requested but not yet been received.</p> <p>ETG agreed that efforts have been made and should the data be available this will be used to support the conclusions presented in the ES.</p>	<p>Present</p> <p>Agreed</p> <p>Please see our comment on Item 2.8 above regarding other available survey data.</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	None
	Deployment of static bat detectors	3.3	<p>The Applicant advised that the static bat detectors that have been deployed have been set to be in full spectrum mode and therefore enabling bats to be identified to species level.</p> <p>ETG agreed with approach taken.</p>	<p>Present</p> <p>Agreed</p> <p>While Natural England agrees with the approach being taken, we advise that static bat detectors may not be able to identify all bats to species level.</p> <p>In addition some species may be missed, for example due to species not calling.</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
				Natural England advises static detector surveys will provide an overview of the species present in the area but the limitations to survey results must be stated within the ES Application and considered when assessing the potential impacts of the development.								
	Letter of No Impediment (LoNI)	3.4	<p>Natural England advised that sufficient level of survey information will be required for those species recorded within the SEP and DEP footprint and for which may require a LoNI to be sought.</p> <p>The Applicant agreed with requirements and will be seeking LoNI for bats and badgers. It is proposed that a GCN DLL application will be sought for GCNs.</p> <p>ETG confirmed with conclusions and those species seeking a LoNI.</p>	<p>Present</p> <p>Agreed</p> <p>Natural England agrees a draft LONI is required for bats and badgers.</p> <p>We confirm the draft LONI application for bats and badger will be reviewed in due course.</p> <p>For GCN, an IAPC has been awarded by the NE Wildlife Licencing Service and 1st Stage payment made by Equinor April and May 2022 for the Norfolk and Suffolk District Level Licencing Scheme.</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	
	Habitat improvements and biodiversity net gain	3.5	<p>Norfolk Wildlife Trust advised that the lead in times for the habitat restoration and improvement opportunities are important. Preference for genuine local provenance seeds and plants. Norfolk Wildlife Trust advised that they have capacity and experience of delivering</p>	<p>Present</p> <p>Agreed</p> <p>Please note, Natural England's comment is anomalous to this item.</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC		
			<p>habitat restoration schemes locally and therefore are happy to share this with the Applicant.</p> <p>Natural England confirmed that they would not expect or require monitoring of arable field margins.</p> <p>Norfolk County Council suggested that opportunities may be available of reinstating ghost ponds and advised the Applicant to contact Norfolk Ponds Project.</p> <p>NB further meeting to be held to discuss biodiversity net gain.</p>	<p>Please note Natural England's comment to item 2.7 BNG above.</p>								
	Bat boxes	3.6	<p>Norfolk Wildlife Trust advised that it is the Applicant's decision to determine and ensure that no adverse effect to bats would occur; however, advised that the provision of bat boxes should not be solely relied on as mitigation. Therefore, avoidance of impact to roosting bats would be preferred. However, where bat boxes are proposed consideration should be made to using the KENT bat boxes as these are self-cleaning.</p> <p>This has been acknowledged by the Applicant and will be considered.</p>	<p>Present</p> <p>Agreed</p> <p>Natural England agrees with the points raised by the other IP's.</p> <p>Although we wouldn't be descriptive on the type of boxes used., Natural England would welcome further consideration as part of OLEMS.</p> <p>We look forward to reviewing to how impacts will be avoided, reduced and mitigated for the as part of our review of the OLEMS, submitted with the application.</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	
	CEA approach	3.7	<p>Norfolk County Council advised that the Anglian Water project, which comprises</p>	<p>Present</p> <p>Agreed</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	
			<p>a 13km pipeline overlaps with the SEP and DEP onshore cable route.</p> <p>The Applicant acknowledges this and confirms that all projects and plans will be identified and considered in the CEA that will be presented in the ES, whilst noting that only those projects/plans with publicly available information will be included.</p>								
	Approach to white clawed crayfish surveys	3.8	<p>Natural England advised that in the event of a bentonite breakout during HDD activities, survey information relating to white clawed crayfish would be important to establish areas of sensitivity and impacts. Therefore, following this raised matter, the Applicant decided to complete eDNA surveys for white clawed crayfish prior to submission of the DCO Application. The findings of which will be presented in the ES.</p>	<p>Present</p> <p>Agreed</p> <p>Natural England are still in the process of reviewing the reliance of eDNA and will provide further comments as part of the Application review.</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None
	Fish surveys	3.9	<p>Natural England advised that the Applicant should obtain fish data from the Environment Agency.</p> <p>It was agreed that no baseline fish surveys will be undertaken by the Applicant.</p>	<p>Present</p> <p>Agreed</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None
	Inclusion of protected species within the water crossing method statement	3.10	<p>Natural England confirmed that an outline water crossing method statement should be included as part of the DCO application.</p> <p>Agreed that protected species will be included within water crossing method statement.</p>	<p>Present</p> <p>Agreed</p>	Present Agreed	Absent NA	Present Agreed	Present Agreed	Absent NA	Present Agreed	None
	Approach to and requirement of outline management plans	3.11	<p>Natural England confirmed any plans suggested to be completed post consent will require draft/outline plan at</p>	Present	Present	Absent	Present	Present	Absent	Present	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	
			<p>submission including pink-footed geese and invasive non-native species (INNS).</p> <p>The Applicant confirms that Outline mitigation /protocols with regard to pink footed geese and INNS will be provided in the OEMP.</p>	Agreed	Agreed	NA	Agreed	Agreed	NA	Agreed	
	Approach to data gaps	3.12	<p>Natural England confirmed that gaps in survey data need to be infilled wherever possible (and landowner permission is granted) to ensure the predicted impacts on ecological receptors are as accurate as possible.</p> <p>The Applicant confirmed that where access has not been granted, this will be acknowledged in the ES and considerations of its implications clearly presented.</p>	<p>Present</p> <p>Agreed</p> <p>However, Natural England reserves the right to change our advice dependant on the information provided in the ES Application.</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	None
	eDNA surveys	3.13	<p>Natural England advised that the Applicant should not rely overly on eDNA survey efforts and their results, and therefore should also undertake further surveys post-consent.</p> <p>The Applicant confirms that a suite of post-consent and pre-construction surveys will be undertaken, and these will be presented (and secured) via the OEMP.</p>	<p>Present</p> <p>Agreed</p> <p>Please see above comments on eDNA)</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	None
	Monitoring and replanting	3.14	<p>NNDC and SNC and BDC consider that 10-year commitment to monitoring and replanting of trees and hedgerows is appropriate and aligns with the commitments of other similar projects.</p> <p>The Applicant confirms its commitment to 10-year monitoring and replanting of trees and hedgerows.</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	<p>Present</p> <p>Agreed</p>	<p>Absent</p> <p>NA</p>	<p>Present</p> <p>Agreed</p>	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements
				NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	
Meetings	Discussion Points	ID	Agreements and Notes	NE	EA	RSPB	NWT	NCC	SNC and BDC	NNDC	Outstanding agreements
ETG 4 30/07/22	Approach taken for the initial Biodiversity Net Gain (BNG) assessment	4.1	c.10% of the Development Consent Order (DCO) order limits had not been surveyed at the time of writing the initial BNG assessment. The Application confirmed that these areas would be surveyed pre-construction and the updated information included into a more advanced and complete BNG assessment at that time.	Present Agreed	Absent NA	Absent NA	Absent NA	Absent NA	Absent NA	Absent NA	None
	Approach taken for the initial BNG enhancement options	4.2	NE agreed that the basic proposals for habitat reinstatement, hedgerow planting, landscaping around the substation etc. would be acceptable. No specific suggestions were put forward by NE for alterations to the approach or additions/changes to the enhancements.	Present Agreed	Absent NA	Absent NA	Absent NA	Absent NA	Absent NA	Absent NA	None

1.5 Onshore and Offshore Archaeology Expert Topic Group Agreement Log

**Sheringham Shoal and Dudgeon Offshore
Wind Farm Extension Projects**

DCO Application

Evidence Plan Agreement Log

Archaeology and Cultural Heritage ETG

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Glossary of Acronyms

BDC	Broadland District Council
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIA	Cumulative Impact Assessment
CITIZAN	Coastal and Intertidal Zone Archaeological Network
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
GI	Ground Investigation
GIS	Geographical Information System
HE	Historic England
HSC	Historic Seascape Characterisation
km	Kilometre
LVIA	Landscape and Visual Assessment
NCC	Norfolk County Council
NNDC	North Norfolk District Council
oWSI	Outline Written Scheme of Investigation
PEIR	Preliminary Environmental Information Report
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SNC	South Norfolk Council
WSI	Written Scheme of Investigation

Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Grid option	Mechanism by which SEP and DEP will connect to the existing electricity network. This may either be an integrated grid option providing transmission infrastructure which serves both of the wind farms,

	or a separated grid option, which allows SEP and DEP to transmit electricity entirely separately.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Infield cables	Cables which link the wind turbine generators to the offshore substation platform(s).
Interlink cables	<p>Cables linking two separate project areas. This can be cables linking:</p> <ol style="list-style-type: none"> 1) DEP South array area and DEP North array area 2) DEP South array area and SEP 3) DEP North array area and SEP <p>1 is relevant if DEP is constructed in isolation or first in a phased development.</p> <p>2 and 3 are relevant where both SEP and DEP are built.</p>

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy Limited ('the Applicant') and stakeholders through the Evidence Plan Process (EPP). Multiple Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the **Archaeology and Cultural Heritage (onshore and offshore) ETG**.

Table 1-1: Expert Topic Groups and Organisations Represented

ETG	Members
Archaeology and Cultural Heritage (both onshore and offshore)	Historic England (HE), Norfolk County Council (NCC)
Offshore Ornithology	Natural England (NE), Marine Mammal Organisation (MMO), RSPB
Marine Mammal Ecology	NE, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	NE, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Onshore Ecology and Ornithology	NE, Norfolk Wildlife Trust (NWT), Environment Agency (EA), NCC
Seascape, Landscape and Visual	NCC, North Norfolk District Council (NNDC), Broadland District Council (BDC), NCC, NE, HE, North Norfolk Coast Area of Outstanding National Beauty (AONB)/Coastal partnership
Traffic	NCC, National Highways (NH)
Water Resources and Flood Risk	EA, Internal Drainage Board (IDB), NCC

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. A Preliminary Environmental Information Report (PEIR) was provided to stakeholders in April 2021, under Section 42 and 47 of the Planning Act 2008. Feedback received through this consultation has been taken into consideration and incorporated into the application where appropriate. The Development Consent Order (DCO) application is planned for submission early Summer 2022.
4. Archaeology and Cultural Heritage ETG meetings have been held on:
 - 14th January 2020 (ETG1);
 - 21st October 2020 (ETG2);
 - 17th July 2021 (ETG3);
 - 16th August 2021 (ETG4);

- 6th April 2022 (ETG5); and
- 8th April 2022 (ETG6).

2 Agreement Log

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
ETG1 14/01/2020	Approach to baseline and survey status (As described in the Scoping Report and summarised in the ETG meeting slides).	1.1	Agreement on the categories of key known and potential heritage assets for consideration with regard to offshore archaeology and cultural heritage. As described in the Scoping Report and summarised in the ETG meeting slides.	Present Agreed	Present Agreed	None
		1.2	Agreement that the suggested data is suitable for the characterisation of the study area for EIA purposes, with data gaps to be filled post-consent with regard to offshore archaeology and cultural heritage. As described in the Scoping Report and summarised in the ETG meeting slides. The national Geographical Information System (GIS) datasets for Historic Seascape Characterisation (HSC) produced by Historic England are a point in time source of data and will require updating in accordance with the published methodology for HSC. This will include any changes in the perception of historic seascape character since the national HSC was produced. It was suggested that the Coastal and Intertidal Zone Archaeological Network (CITiZAN) could contain some useful information and should be used to inform the assessment at the landfall. It was agreed that geophysical anomalies identified during previous surveys undertaken for Sheringham will require further interpretation as part of the current project. It was agreed that if any geotechnical investigations are being undertaken at any stage of the project there will be provisions to include archaeological objectives.	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
		1.3	Agreement on the list of sources for desk-based assessment with regard to offshore (and intertidal) archaeology and cultural heritage. As described in the Scoping Report and summarised in the ETG meeting slides.	Present Agreed	Present Agreed	None
		1.4	Agreement on the list of categories of known and potential 'heritage assets' and other elements for consideration with regard to onshore archaeology and cultural heritage. As described in the Scoping Report and summarised in the ETG meeting slides. With respect to the proposed onshore substation, and potential impacts associated with changes to the setting of heritage assets, it was confirmed that Landscape and Visual Impact Assessment (LVIA) tool kits, including e.g. zones of theoretical visibility and photomontages, would be used to inform assessment.	Present Agreed	Present Agreed	None
		1.5	Agreement that the feedback from the scoping opinion has been sufficiently understood by the Applicant and will be adequately addressed, wherever possible, through the approach to assessment for Environmental Impact Assessment (EIA).	Present Agreed	Present Agreed	None
		1.6	Agreement on the list of sources for desk-based assessment with regard to onshore archaeology and cultural heritage.	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
		1.7	<p>Agreement on the approach to baseline surveys, and potential additional surveys, being suitable for the characterisation of the study area and onshore project boundary for EIA purposes. As described in the Scoping Report and summarised in the ETG meeting slides. It was agreed that if any Engineering-led Ground Investigation (GI) works are planned for the project, Norfolk County Council (NCC) Historic Environment Service (HES) and Historic England (HE) should review the methodology and provision for associated archaeological watching brief and/or geoarchaeological monitoring. It was also agreed that Analysis of Lidar and aerial photographic data will primarily be undertaken within the 200m onshore cable corridor and will also include a suitable small buffer out with the onshore project boundary. Following this, locations for priority archaeological geophysical surveys would be agreed with NCC HES.</p> <p>It was agreed that possible targeted archaeological trial trenching should also be considered in the areas identified as 'critical', or at particular pinch-points, for the projects. However, it was acknowledged that this is heavily dependent on land access in the pre-consent stage. NB - it was later agreed that pre-consent trial trenching would not be required.</p>	Present Agreed	Present Agreed	None
	Approach to assessment methodology. (As described in the Scoping Report and Scoping Opinion, and	1.8	Agreement of potential impacts to be assessed.	Present Agreed	Present Agreed	None
		1.9	Agreement of the proposed impact assessment methodology approach.	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
	summarised in the ETG meeting slides).	1.10	Agreement of the proposed approach to cumulative impact assessment (CIA). It is recognised that a strategic study of cumulative impact from multiple offshore renewables projects is required at an industry level. This is beyond the scope of individual projects. However, cumulative impacts will be assessed and will include information on other developments in the area, including archaeological information from other projects in the region, where possible.	Present Agreed	Present Agreed	None
		1.11	Agreement of the proposed approach to consultation. As described in the Scoping Report and summarised in the ETG meeting slides.	Present Agreed	Present Agreed	None
		1.12	Agreement on the Method Statement. Agreed that neither an offshore or onshore Evidence Plan Process specific archaeology and cultural heritage Method Statement document is required, as this would simply be repeating much of the Scoping Report and Scoping Opinion, as well as discussion as already documented within the minutes of the first and future ETG meetings. This is separate to the acknowledged requirement for survey-specific Written Scheme of Investigation (WSI) and/or Method Statements to be agreed prior to archaeological related site-based survey work and relevant engineering led activities.	Present Agreed	Present Agreed	None
Meeting	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				HE	NCC	

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
ETG2	Approach to obtaining desk-based data.	2.1	Agreed with approach to obtaining aerial photos and historic maps given current closures of record offices. Potential for Norfolk record office to re-open in January 2021. Unknown when HE archive will re-open. Agreed desk-based data as well as geophysics data would inform location of trial trenches.	Present Agreed	Present Agreed	None
	Heritage Viewpoint		Agreed with heritage viewpoints presented and suggested a further viewpoint taken from within Venta Icenorum. Agreed that ongoing consultation would be useful given the timeframes and absence of photomontages and setting assessment from the PEIR.	Present Agreed	Present Agreed	None
Meeting	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				HE	NCC	
ETG3 17/07/2021	Agreement on oWSI	3.1	Agreed that a commitment to filling survey data gaps and method by which these data gaps would be filled would be incorporated into the outline Written Scheme of Investigation (oWSI - Offshore). The oWSI will include a commitment to engaging with academic research groups with respect to post-consent survey and assessment to maximise the value of data acquisition.	Present Agreed	Present Agreed	None
	Approach to worst case scenario	3.2	Agreed that the worst-case scenario in the Environmental Statement (ES) will be amended to consider qualitatively how the project could change the historic seascape character, rather than being based just on numbers. This will include incorporation of available data to update the HSC as relevant to SEP and DEP.	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
	Approach on ongoing surveys	3.3	Agreed that in the event that the current priority geophysical (magnetometry) survey works/results are not completed in time for the submission, works will still continue wherever possible, although aware they will not form part of the examination. Consultation and flow of information would continue alongside examination. Agreed to focus on cropped land for surveys but would not stop efforts to engage with landowners currently refusing access.	Present Agreed	Present Agreed	None
	Agreement to WSI for GI	3.4	Agreed that the geoarchaeologist will be producing the WSI for the GI works. The WSI will be produced as a single document for all GI locations and be submitted to NCC.	Present Agreed	Present Agreed	None
Meeting	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				HE	NCC	
ETG4 16/08/2021	Approach to identifying potential	4.1	Agreed that Early Saxon finds from the HER would be assessed for sites e.g. Saxon cemeteries, which tend to show less obviously in AP, LiDAR and geophysical survey data, alongside further review of e.g. the Natural England Landscape character assessments, and historic landscape characterisation to inform the different landscape types and period potential across the different landscapes zones which the onshore cable route runs through.	Present Agreed	Present Agreed	None
	Agreement to approach on ongoing surveys	4.2	As agreed in ETG3	Present Agreed	Present Agreed	None
	Agreement to Heritage viewpoints	4.3	ETG agreed on the locations of the heritage viewpoints within the 5km study area of the substation.	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
	Trial Trenching	4.4	ETG agreed that the pre-consent trial trenching would not be required. This was considered to be in line with other offshore wind farm projects in the area.	Present Agreed	Present Agreed	None
Meeting	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				HE	NCC	
ETG5 06/04/2022	Agreement to monitor second phase of GI works	5.1	Agreed that the second phase of GI works would be reviewed, and recommendations made for monitoring requirements and if there is opportunity to retrieve samples for geoarchaeological assessment. All recommendations would then be agreed in consultation with the ETG and a WSI produced.	Present Agreed	Present Agreed	
	Agreement on mitigation approaches detailed in Outline WSI (Onshore)	5.2	Agreed to remove approaches to 'Set Piece Excavation' and 'Strip, Map and Sample', and to combine these two types of mitigation to fall under the heading 'Archaeological Excavation' within the Outline WSI (Onshore).	Present Agreed	Present Agreed	
ETG6 08/04/2022	Agreement on approach to assessment for temporary works area	6.1	Agreed that a commitment to acquiring survey data from the temporary works areas, and the method by which this would be assessed, would be incorporated into the Outline WSI (Offshore). Data will only be acquired from these areas should the worst-case anchor spreads be required and if impacts may occur. If no works, or construction activities, are required within these areas, further survey data may not be acquired.	Present Agreed	Absent NA	
	Agreement on mitigation approaches detailed in Outline WSI (Offshore)	6.2	Agreed that the Outline WSI (Offshore) will follow the structure and approaches set out in the updated Crown Estate guidance (2021) but will include specific detail for SEP and DEP as necessary to inform the requirements for post-consent survey and	Present Agreed	Absent NA	

Meeting	Discussion Points	ID	Agreements	Stakeholder		Outstanding agreements
				HE	NCC	
			mitigation, rather than just representing a generic document.			

1.6 Traffic Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

DCO Application

Evidence Plan Agreement Log

Traffic ETG

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Glossary of Acronyms

BDC	Broadland District Council
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
GI	Ground Investigation
GIS	Geographical Information System
km	Kilometre
NCC	Norfolk County Council
NH	National Highways
NNDC	North Norfolk District Council
PEIR	Preliminary Environmental Information Report
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SNC	South Norfolk Council

Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.

PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR.
Separated Grid Option	Transmission infrastructure which allows each project to transmit electricity entirely separately.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy Limited ('the Applicant') and stakeholders through the Evidence Plan Process (EPP). Multiple Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the **Traffic ETG**.

Table 1-1: Expert Topic Groups and Organisations Represented

ETG	Members
Archaeology and Cultural Heritage (both onshore and offshore)	Historic England (HE), Norfolk County Council (NCC)
Offshore Ornithology	Natural England (NE), Marine Mammal Organisation (MMO), RSPB
Marine Mammal Ecology	NE, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	NE, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Onshore Ecology and Ornithology	NE, Norfolk Wildlife Trust (NWT), Environment Agency (EA), NCC
Seascape, Landscape and Visual	NCC, North Norfolk District Council (NNDC), Broadland District Council (BDC), NCC, NE, HE, North Norfolk Coast Area of Outstanding National Beauty (AONB)/Coastal partnership
Traffic	NCC, National Highways (NH)
Water Resources and Flood Risk	EA, Internal Drainage Board (IDB), NCC

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. A Preliminary Environmental Information Report (PEIR) was provided to stakeholders in April 2021, under Section 42 and 47 of the Planning Act 2008. Feedback received through this consultation has been taken into consideration and incorporated into the application where appropriate. The Development Consent Order (DCO) application is planned for submission early Summer 2022.
4. Traffic ETG meetings have been held on:
 - 23rd March 2020 (ETG1);
 - 18th September 2020 (ETG2);
 - 13th July 2021 (ETG3);
 - 31st March 2022 (ETG4 with NCC); and
 - 5th April 2022 (ETG5 with NH).

2 Agreement Log

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
ETG1 23/03/2020	Scope of Transport Method Statement	1.1	Expert Topic Group (ETG) agreed with the proposed scope of the Transport Method Statement to include: Baseline traffic data and reference years; Traffic demand; Delivery routes; Traffic assignments; and, route sensitivity. ETG agreed that onshore impacts from offshore construction can be scoped out and could be dealt with by way of a planning Requirement.	Present Agreed	Present Agreed	None
	Impact assessment methodology	1.2	ETG agreed to consider the impact of onshore construction traffic upon: Driver Delay; Severance; Pedestrian and Cycle Amenity; Pedestrian and Cycle Delay; Road Safety; and Abnormal Loads. Agreed that traffic impacts associated with employee and Heavy Goods Vehicles (HGV) movements for the offshore phases via the base port can be scoped out of the assessment.	Present Agreed	Present Agreed	None
	Construction traffic demand and distribution methodology	1.3	ETG agreed that: a gravity model approach could be used to distribute HGV traffic from the ports of Kings Lynn, Great Yarmouth and Lowestoft; and HGV movements from any local suppliers (such as quarries) within the traffic and transport study area would be captured within the existing permissions and do not need to be assessed.	Present Agreed	Present Agreed	None
	Travel Plan	1.4	ETG agreed that a separate Travel Plan would not be required as the information could be contained within the Outline Construction Traffic Management Plan (OTMP).	Present Agreed	Present Agreed	None
	Stand-alone Transport Assessment	1.5	ETG agreed that stand-alone Transport Assessment (TA) would not be required so long as the detail was included in the Environmental Statement chapter. This agreement was later revised at ETG3 where it was agreed that a separate Transport Assessment would be beneficial for stakeholders. The TA would be submitted as an appendix to the ES chapter. Note it was subsequently agreed that a separate TA would be required ID. 3.7	Present Agreed	Present Agreed	None
	Future baseline	1.6	ETG agreed to use TEMPro to factor baseline flows to a future year.	Present Agreed	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Employee distribution	1.7	ETG members agreed, with regards to employee distribution, that this would be informed by the availability of workers with relevant skills from census data and the availability of hotel accommodation. The numbers of workers and hotel bed spaces would then be factored using a gravity model with distance deterrence.	Present Agreed	Present Agreed	None
Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
ETG2 18/09/2020	Scope of Transport Method Statement	2.1	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Impact assessment methodology	2.2	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Construction traffic demand and distribution methodology	2.3	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Travel Plan	2.4	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Standalone Transport Assessment	2.5	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Future baseline	2.6	As above and agreed to consider 2025 as a base year for assessment.	Present Agreed	Present Agreed	None
	Employee distribution	2.7	No change to ETG1 agreement.	Present Agreed	Present Agreed	None
	Baseline data collection	2.8	ETG agreed to baseline data collection for neutral daily traffic flows and road safety data.	Present Agreed	Present Agreed	None
	HGV distribution	2.9	ETG agreed to the approach to distributing HGV traffic.	Present Agreed	Present Agreed	None
	Operational and decommissioning impacts	2.10	ETG agreed to scope our consideration of operational and maintenance and decommissioning phases	Present Agreed	Present Agreed	None
Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
ETG3 13/07/2021	Traffic and Transport Study Area	3.1	The extent to the Traffic and Transport study area (zone of influence) was agreed with the ETG.	Present Agreed	Present Agreed	None
	Impact assessment methodology	3.2	No change to ETG1 agreement	Present Agreed	Present Agreed	None
	HGV distribution	3.3	No change to ETG2 agreement	Present Agreed	Present Agreed	None
	Employee distribution	3.4	No change to ETG2 agreement	Present Agreed	Present Agreed	None
	Operational and decommissioning impacts	3.5	No change to ETG2 agreement	Present Agreed	Present Agreed	None
	Travel Plan	3.6	No change to ETG1 agreement	Present Agreed	Present Agreed	None
	Standalone Transport Assessment	3.7	Following submission of the Preliminary Environmental Information Report (PEIR), the ETG agreed that stand-alone TA would be required. It was agreed this would be an abridges TA to include, detail of the derivation of construction traffic demand and distribution, detailed collision analysis and junction capacity modelling.	Present Agreed	Present Agreed	None
	Baseline traffic flows	3.8	The ETG agreed that the baseline traffic data presented in the PEIR could be utilised for the Development Consent Order (DCO) application, but that the OTMP would contain a clause that permits further assessment of network capacity constraints at identified sensitive junctions if baseline traffic conditions are evidenced to have changed materially from those of the DCO application post consent.	Present Agreed	Present Agreed	None
	Baseline traffic flows	3.9	The ETG agreed with assessing impacts against a neutral traffic period. However, Norfolk County Council (NCC) requested that the OTMP should include measures to manage traffic movements during peak periods to account for seasonal fluctuations.	Present Agreed	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Driver delay, capacity, assessment methodology	3.10	National Highways (NH) Section 42 comments outline the requirement for detailed junction modelling. The junctions to be assessed and the software to model these was agreed and captured within meeting minutes. NH also agreed that surveys of junctions could be undertaken post September 2021.	Present Agreed	Present Agreed	None
	Impacts (Driver delay, capacity)	3.11	Not agreed. NH requested the driver delay assessment for the DCO application should be supported by modelling at key junctions.	Present Not Agreed	Present Not Agreed	Yes
	Impacts (severance, amenity, pedestrian delay, safety)	3.12	Agreed with NH. Not agreed with NCC. NCC confirmed that no formal comments have been made at PEIR.	Present Agreed	Present Not Agreed	Yes
	Impacts (road safety)	3.13	Not agreed. NH have requested further evaluation of road safety impacts at key junctions. Details are provided within the meeting minutes.	Present Not Agreed	Present Not Agreed	Yes
	Impacts (driver delay, capacity)	3.14	Not agreed. NCC Section 42 comments note excessive deliveries should be avoided at traffic sensitive times.	Present Not Agreed	Present Not Agreed	Yes
	Impacts (driver delay, road closures)	3.15	Not agreed. NH have requested further consideration of impacts of diverted traffic due to road closures on the SRN.	Present Not Agreed	Present Not Agreed	Yes
	Impacts (driver delay, road closures)	3.16	Agreement on the roads that should be crossed by Horizontal Directional Drilling (HDD) following confirmation that Taverham Road, Inkwood Lane, Ringland Lane and Oulton Street will also be crossed using trenchless techniques (e.g. HDD).	Present Agreed	Present Agreed	None
	Impacts (abnormal loads)	3.17	Not agreed, NH abnormal load team undertaking further structural analysis.	Present Not Agreed	Present Not Agreed	Yes
	Access	3.18	Not agreed. Locations and form of access to the onshore substation, main and secondary compounds were discussed. NCC raised concerns with these and requested further detail and amendments.	Present Not Agreed	Present Not Agreed	Yes
	B1149 Access	3.19	NCC provided agreement in principle to access from the B1149 for a short duration with enhanced management measures may be acceptable. Enhanced mitigation measures to include a temporary speed limit, banksman, and traffic signals would be required.	Present Agreed	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	A47 Access	3.20	NH provided agreement in principle to access from the A47, subject to a review of the preliminary design, a road safety audit and GG104.	Present Agreed	Present Agreed	None
	Cumulative Impacts (schemes to be assessed)	3.21	NCC and NH agreed to the list of cumulative schemes for assessment presented within the PEIR were acceptable and that the Hartford Triangle scheme can be removed.	Present Agreed	Present Agreed	None
	Cumulative Impacts (highway schemes)	3.22	ETG agreed that potential cumulative impacts between the construction phases of the identified highways schemes and SEP and DEP could be assessed as part of the respective Construction Traffic Management Plan (CTMP) rather than in the DCO application.	Present Agreed	Present Agreed	None
	Cumulative Impacts (highway schemes)	3.23	NH requested the cumulative impact assessment consider the potential for cumulative impacts from SEP and DEP upon the operational capacity of the constructed Road Investment Strategy (RIS) schemes.	Present Agreed	Present Agreed	None
	Cumulative Impacts (other windfarms)	3.24	The ETG agreed with the approach to assessing potential cumulative impacts with other offshore wind farm schemes. Details are included within the meeting minutes.	Present Agreed	Present Agreed	None
Ad-hoc engagement	A148 Access	3.25	NCC agreed (email 10 December 2022) outline design for access from the A148 to a secondary compound north of Bodham. Subject to scheduling works away from the school holiday season.	NA	Agreed	None
	A140 Substation Access	3.26	NCC agreed (email 24 March 2022) outline design for an access to the onshore substation from the A140/ Mangreen Lane junction.	NA	NA	None
	A1067/Old Fakenham Road Access	3.27	NCC agreed (email 10 December 2022) outline design for an access to the main compound from the A1067/Old Fakenham Road junction near Attlebridge. Rights have been acquired to clear hedge	NA	NA	None
Meetings	Discussion Points	ID	Agreements and Notes	Stakeholder		Outstanding agreements
				NH	NCC	
ETG4 31/03/2022	Traffic and Transport Study Area	4.1	No change to ETG3 agreement	Absent NA	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Impact assessment methodology	4.2	No change to ETG1 agreement. Confirmation that cumulative impacts are being assessed	Absent NA	Present Agreed	None
	DCO Documents	4.3	No change to ETG1 agreement.	Absent NA	Present Agreed	None
	Transport Assessment (TA)	4.4	No change to ETG3 agreement. Confirmation that the port used for offshore construction was unknown and would be dealt with via a separate planning application or by choosing a port with existing permissions.	Absent NA	Present Agreed	None
	Baseline data	4.5	No change to ETG3 agreement.	Absent NA	Present Agreed	None
	Baseline data	4.6	Agreed with assessing impacts against a neutral traffic period. However, Norfolk County Council (NCC) requested that the OCTMP should include measures to manage traffic movements during peak periods to account for seasonal fluctuations. Agreed that whilst there are concerns at certain arterial routes that need different considerations during the AM peak, a statement of commitment would be satisfactory in the DCO and NCC would revise at the CTMP stage.	Absent NA	Present Agreed	None
	Future baseline	4.7	No change to ETG1 agreement to use TEMPro to factor baseline flows to a future year and no change to ETG2 agreement to consider 2025 as a base year for assessment.	Absent NA	Present Agreed	None
	Employee distribution	4.8	No change to ETG1 agreement.	Absent NA	Present Agreed	None
	B1149 Access	4.9	No change to ETG3 agreement.	Absent NA	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	A148 Access	4.10	No changes to ad-hoc agreement (email 10 December 2021)	Absent NA	Present Agreed	None
	A140 Substation Access	4.11	No change to ad-hoc agreement (email 24 March 2022).	Absent NA	Present Agreed	None
	A140 Quarry Access	4.12	Agreed that access to the onshore substation could be taken from the existing quarry access and that traffic could cross Mangreen Lane via a priority-controlled junction.	Absent NA	Present Agreed	None
	A1067/Old Fakenham Road Access	4.13	No change to ad-hoc agreement (email 10 December 2022).	Absent NA	Present Agreed	None
	Impacts (driver delay, capacity)	4.14	Not agreed, approach to assessment to be discussed. NCC Section 42 comments note “excessive deliveries should be avoided at traffic sensitive times”. NCC would need to be shown that some consideration has been made for a different approach to HGV movement during traffic sensitive times, particularly in the morning (between 7:30-9:30am) along key routes. Important to recognise that % change can be concentrated within a narrow time window, not always across the whole day.	Absent NA	Present Not Agreed	Yes
	Impacts (driver delay, road closures)	4.15	No change to ETG3 agreement.	Absent NA	Present Agreed	None
	Impacts (driver delay, highway constraints)	4.16	NCC reserve their position until submission of the DCO documentation.	Absent NA	Present Not Agreed	Yes

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Impacts (pedestrian delay)	4.17	NCC reserve their position until submission of the DCO documentation.	Absent NA	Present Not Agreed	Yes
	Impacts (severance)	4.18	NCC reserve their position until submission of the DCO documentation.	Absent NA	Present Not Agreed	Yes
	Impacts (Pedestrian and cycle amenity)	4.19	NCC reserve their position until submission of the DCO documentation.	Absent NA	Present Not Agreed	Yes
	Impacts (Road Safety)	4.20	NCC reserve their position until submission of the DCO documentation.	Absent NA	Present Not Agreed	Yes
	Impacts (abnormal loads) Special Order Vehicles	4.21	<p>Agreement with NCC Structures team regarding substation transformer movements. NCC Highways reserve their position until submission of the DCO documentation.</p> <p>Agreed with NCC on the need to make commitment in OCTMP to agree with NCC on the size and route appropriate for each access.</p> <p>Agreed with NCC on the need a general statement that consideration will be made for drum sizes when potential highway constraints determine. Need to identify worst-case scenario, which would be a cable drum of >4m. OCTMP should contain a clause that says this will be subject to further assessment in conjunction with local authorities.</p>	Absent NA	Present Agreed	Yes
	Impacts (abnormal loads) Non -Special Order Vehicles	4.22	<p>Agreed with NCC that non-special order abnormal load movements can be dealt with post consent through the CTMP.</p> <p>Agreed on the need to make commitment in OCTMP to agree with NCC on the size and route appropriate for each access.</p>	Absent NA	Present Agreed	No
	Operational and decommissioning	4.23	No change to ETG2 agreement.	Absent NA	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Offshore construction impacts	4.24	No change to ETG1 agreement.	Absent NA	Present Agreed	None
	Cumulative Impacts (schemes to be assessed):	4.25	No change to ETG3 agreement.	Absent NA	Present Agreed	None
	Cumulative Impacts (other windfarms)	4.26	No change to ETG3 agreement. Agreed to assess the potential for cumulative impacts with Hornsea Project Three and Norfolk Boreas (scenario 2) in 2025. Note will now consider potential overlap with Vanguard. Confirmed that. Confirmed consideration of cumulative impact of H3, Vanguard and SEP and DEP. Boreas not included as this is a cable pulling project. Agreed that the CIA will review agreed caps for Vanguard, Boreas and Hornsea. Where caps have been established, SEP and DEP will include a commitment within OCTMP to not exceeding these limits. Where caps have not been established, the DCO application will assess the potential for cumulative impacts and define additional caps (if required).	Absent NA	Present Agreed	None
	Driver Delay – highway constraints	4.27	NCC agreed with the proposed approach to providing an outline of mitigation measures within the OCTMP, these measures would include: <ul style="list-style-type: none"> • Use of pilot/escort vehicles; • New passing places; • Widening/improving existing passing places; • Reduction in peak LCV movements; and • temporary obstruction as a mitigation method. 	Absent NA	Present Agreed	None
	Severance, Amenity and Pedestrian Delay	4.28	NCC agreed with the proposed approach to providing an outline of mitigation measures within the OCTMP, including measures for	Absent NA	Present Agreed	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
			amenity will focus upon reducing peak vehicle movements (a cap) through: <ul style="list-style-type: none"> • Commitments to travelling planning measures for employees, such as car-share targets, mini-bus... • Commitments to reducing peak HGV movements, through scheduling of activities. 			
Meetings	Discussion Points	ID	Agreements and Notes	Stakeholder		Outstanding agreements
				NH	NCC	
ETG5 05/04/2022	Traffic and Transport Study Area	5.1	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impact Assessment Methodology	5.2	No change to ETG1 agreement.	Present Agreed	Absent NA	None
	DCO Documents	5.3	No change to ETG1 agreement.	Present Agreed	Absent NA	None
	Transport Assessment (TA)	5.4	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Baseline data (links)	5.5	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Baseline data (junctions)	5.6	NH requested that turning count data collected in November 2021 be compared against NH data to establish if it is representative of new normal conditions. CTMP would contain a commitment to Manage and Monitor	Present Agreed	Absent NA	None
	Future Baseline	5.7	No change to ETG1 and ETG2 agreement.	Present Agreed	Absent NA	None
	Construction traffic demand and distribution methodology	5.8	No change to ETG1 and ETG2 agreement.	Present Agreed	Absent NA	None
	Employee distribution	5.9	No change to ETG1 agreement.	Present Agreed	Absent NA	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Accesses and crossings	5.10	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	A47 Access	5.11	No change to ETG3 agreement. NH agreed that they would be comfortable with a statement of commitment in the OCTMP undertake road safety audit and the GG104.	Present Agreed	Absent NA	None
	Impacts (driver delay capacity) – Modelling approach	5.12	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impacts (driver delay, capacity)	5.13	NH reserve their position until submission of the DCO documentation.	Present Not Agreed	Absent NA	Yes
	Impacts (driver delay, road closures)	5.14	NH agreed that there would be no impact upon the SRN from local road closures.	Present Agreed	Absent NA	None
	Impacts (driver delay, highway constraints)	5.15	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impacts (pedestrian delay)	5.16	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impacts (Severance)	5.17	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impacts (Pedestrian and cycle amenity)	5.18	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Impacts (Road safety)	5.19	Not Agreed (ETG 3) NH agreed to review their position and confirm that the evaluation of road safety impacts presented within the PEIR is acceptable.	Present Not Agreed	Absent NA	Yes
	Impacts (abnormal loads)	5.20	Not Agreed (NH to provide formal comment on the proposal).	Present Agreed	Absent NA	Yes
	Impacts: Operational and decommissioning	5.21	No change to ETG2 agreement.	Present Agreed	Absent NA	None
	Offshore construction impacts	5.22	No change to ETG1 agreement.	Present Agreed	Absent NA	None
	Cumulative Impacts (schemes to be assessed)	5.23	No change to ETG3 agreement.	Present Agreed	Absent NA	None

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders		Outstanding agreements
				NH	NCC	
	Cumulative Impacts (highway schemes)	5.24	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Cumulative Impacts (highway schemes)	5.25	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Cumulative Impacts (other windfarms)	5.26	No change to ETG3 agreement.	Present Agreed	Absent NA	None
	Driver Delay – capacity	5.27	Agreed that the assessment of capacity will assess the impact of all employees arriving and departing in the hour before and after the existing morning and evening network peak hours respectively.	Present Agreed	Absent NA	None

1.7 Seascape, Landscape and Visual Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

DCO Application

Evidence Plan Agreement Log

Seascape, Landscape and Visual Impact ETG

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Glossary of Acronyms

BDC	Broadland District Council
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
GIS	Geographical Information System
km	Kilometre
LVIA	Landscape and Visual Assessment
NCC	Norfolk County Council
NNDC	North Norfolk District Council
PEIR	Preliminary Environmental Information Report
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SNC	South Norfolk Council

Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Grid option	Mechanism by which SEP and DEP will connect to the existing electricity network. This may either be an integrated grid option providing transmission infrastructure which serves both of the wind farms,

	or a separated grid option, which allows SEP and DEP to transmit electricity entirely separately.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Infield cables	Cables which link the wind turbine generators to the offshore substation platform(s).
Interlink cables	<p>Cables linking two separate project areas. This can be cables linking:</p> <ol style="list-style-type: none"> 1) DEP South array area and DEP North array area 2) DEP South array area and SEP 3) DEP North array area and SEP <p>1 is relevant if DEP is constructed in isolation or first in a phased development.</p> <p>2 and 3 are relevant where both SEP and DEP are built.</p>

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy Limited ('the Applicant') and stakeholders through the Evidence Plan Process (EPP). Multiple Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the **Seascope, Landscape and Visual Impacts ETG**.

Table 1-1: Expert Topic Groups and Organisations Represented

ETG	Members
Archaeology and Cultural Heritage (both onshore and offshore)	Historic England (HE), Norfolk County Council (NCC)
Offshore Ornithology	Natural England (NE), Marine Mammal Organisation (MMO), RSPB
Marine Mammal Ecology	NE, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	NE, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Onshore Ecology and Ornithology	NE, Norfolk Wildlife Trust (NWT), Environment Agency (EA), NCC
Seascope, Landscape and Visual	NCC, North Norfolk District Council (NNDC), Broadland District Council (BDC), NCC, NE, HE, North Norfolk Coast Area of Outstanding National Beauty (AONB)/Coastal partnership
Traffic	NCC, National Highways (NH)
Water Resources and Flood Risk	EA, Internal Drainage Board (IDB), NCC

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. A Preliminary Environmental Information Report (PEIR) was provided to stakeholders in April 2021, under Section 42 and 47 of the Planning Act 2008. Feedback received through this consultation has been taken into consideration and incorporated into the application where appropriate. The Development Consent Order (DCO) application is planned for submission early Summer 2022.
4. Seascope, Landscape and Visual Impacts ETG meetings have been held on:
 - 23rd March 2020 (ETG1);
 - 21st July and 28th July 2021 (ETG2, Part 1 and 2);
 - 2nd February and 8th February 2022 (ETG3, Part 1 and 2).

2 Agreement Log

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
ETG 1 23/03/2020	Seascape: approach to visualisation	1.1	Expert Topic Group (ETG) agreed the following approach to visuals: Visuals will be produced from agreed representative viewpoints, in accordance with: Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals, September 2019 and Visual Representation of Wind Farms Version 2.2, Scottish Natural Heritage, February 2017.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
		1.2	Wireframes for impact assessment will present the 'worst case' in accordance with the Rochdale Envelope approach. E.g. they will show the maximum outline development envelope.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
		1.3	Illustrative photomontages showing the proposed SEP and DEP projects during operation will also be produced showing: The offshore wind turbine array with the largest potential turbines (from land - daytime), and Night-time photomontages of the offshore wind turbine array from selected land-based viewpoints to illustrate lighting.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: approach to visual receptors	1.4	ETG agreed the following list of visual receptors for Seascape Visual Impact Assessment (SVIA): Marine: ferry routes, recreational vessels, fishing boats. Land: England Coast Path / Norfolk Coast Path, beach / coastal margin and other accessible landscapes, coastal settlements, specific viewpoints.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: list of data sources	1.5	ETG agreed with the following list of data sources: 'Seascape character area assessment East Inshore and East Offshore marine plan areas', Marine Management Organisation 2012; Historic Seascape Characterisation East Yorkshire to Norfolk Section, University of Newcastle unpublished report for English Heritage 2013; Admiralty charts; Recorded visibility data Met Office; 'Norfolk Coast Area of Outstanding Natural Beauty 2019-24 Management Plan', Norfolk Coast Partnership; and 'Norfolk Coast Area of Outstanding Natural Beauty (AONB) Integrated Landscape Character Guidance', Norfolk Coast Partnership	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: seascape character areas to be included in assessment	1.6	The ETG agreed that the Seascape character area assessment East Inshore and East Offshore marine plan areas, Marine Management Organisation 2012 should be used as the baseline for assessing seascape effects, informed by other documents and site assessment.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
	Seascape: list of potential impacts	1.7	The ETG agreed with the following list of potential impacts: Temporary impacts during construction and decommissioning, Long term impacts during operation, Effects on seascape character, Effects on landscape character where offshore elements would be visible from land, Effects on visual receptors sea based and land based, Effects on designated landscapes Norfolk Coast AONB, North Norfolk Heritage Coast and, potentially, the Norfolk Broads, National Park.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Landscape: approach to visualisation	1.8	ETG agreed the following approach to visuals: Visuals will be produced from agreed representative viewpoints, in accordance with: Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals, September 2019, Visual Representation of Wind Farms Version 2.2, Scottish Natural Heritage, February 2017.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
		1.9	Wireframes for impact assessment will present the 'worst case' in accordance with the Rochdale Envelope approach. e.g. they will show the maximum outline development envelope.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
		1.10	Illustrative photomontages showing potential scheme during operation will also be produced.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	
	Landscape: list of data sources	1.11	ETG agreed with the following list of data sources: National Landscape Character Area Profiles, 'North Norfolk Landscape Character Assessment' DRAFT Supplementary Planning Document 2018; 'North Norfolk Landscape Sensitivity Assessment' DRAFT Supplementary Planning Document 2018; 'Broadland District Landscape Character Assessment' 2008 (updated 2013); 'South Norfolk District Landscape Character Assessment' 2001 (updated 2006 and 2008); 'South Norfolk District Landscape Designations Review' 2012; 'Norfolk Coast Area of Outstanding Natural Beauty 2019-24 Management Plan', Norfolk Coast Partnership; and 'Norfolk Coast AONB Integrated Landscape Character Guidance', Norfolk Coast Partnership.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
	Landscape: landscape character areas to be included in assessment	1.12	The ETG agreed that the North Norfolk, Broadland and South Norfolk district landscape character assessments should be used as the baseline for assessing landscape effects, informed by other reports and assessments.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
	Landscape: approach to visual receptors	1.13	The ETG agreed with the following list of visual receptors for assessing visual effects: Settlements, Public Rights of Way, Beach / coastal margin and other accessible landscapes, Key routes road and rail, Key routes recreational (long distance walking routes, cycle routes), Specific viewpoints.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
	Landscape: key landscape designation and features	1.14	ETG agreed with the following list of landscape designations and areas or features protected by policy for consideration with regard to onshore landscape and visual impact assessment. Norfolk Coast AONB. Rural River Valleys and Valley Urban Fringe landscape character types (South Norfolk Local Plan DMPD Policy DM 4.5). Norwich Southern Bypass Landscape Protection Zone (NSBLPZ), Key Viewing Cones and Undeveloped Approaches to Norwich (South Norfolk Local Plan DMPD Policy DM 4.6).	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
	Landscape: List of potential impacts	1.15	The ETG agreed with the following list of potential impacts with regard to onshore cable corridor including landfall. Temporary effects during construction, No significant effects during decommissioning, Effects due to removal and re-instatement of hedgerows and trees, Effects during the first few years of operation as re-instated vegetation matures, (Noting that Planning Inspectorate for England and Wales (PINS) scoping opinion states that that visual effects from the onshore cable route (including the landfall) during operation are unlikely to be significant and can be scoped out of the assessment, but that landscape effects should be assessed (while planting matures)).	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
	Landscape: approach to the assessment of visual amenity	1.16	ETG agreed with the approach to the assessment of effects on residential visual amenity as the following summary: Will be assessed for onshore substation only as necessary. Assessment undertaken to identify whether the substation would be sufficiently "oppressive" or "overbearing" that the residential property would be rendered an unattractive place in which to live (consistent with Landscape Institute Technical Guidance Note 2/19, Residential Visual Amenity Assessment (RVAA) 15 March 2019). (Landscape Institute 2019)	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
	Landscape: assessment of effects on the AONB	1.17	ETG agreed with the following approach to the assessment of effects on the documented 'Special Qualities' of the Norfolk Coast AONB within the LVIA. The LVIA will assess effects on the Special Qualities of Natural Beauty that underpin the designation of the Norfolk Coast AONB that are relevant to seascape, landscape and visual.	Present Agreed	Absent TBC	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	None	N/A
ETG2 (Part 1 of 2) 21/07/2021	Seascape: as presented in Preliminary Environmental Impact Report (PEIR) Chapter 27	2.1	It was confirmed that the ETG agreed with the following, as presented in PEIR Chapter 27: The data sources (i.e. character assessment, SPDs and Management Plans) used for the SVIA; the seascape, landscape character areas / types identified and assessed in the SVIA; the visual receptors identified and assessed in the SVIA; the	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			designated landscapes identified and assessed in the SVIA; the list of potential impacts assessed for the offshore development; the approach to the assessment of effects on the 'Special Qualities of Natural Beauty of the Norfolk Coast AONB within the LVIA; the proposed approach to the visualisations. ETG members had no comment on the points raised.									
	Seascape: baseline	2.2	Confirmed that the existing Dudgeon windfarms would form part of the baseline assessed against. ETG agreed the importance of following the most recent guidance and to learn from these previous examples (including Dudgeon). Referenced recently published reports by White Associates - which compared predicted and actual visual impacts of windfarms off the Welsh Coast. This research was considered important in calibrating professional judgement when undertaking the assessments of the project, along with experience of other developments, including Dudgeon.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: dark skies character	2.3	Agreed with the ETG that in relation to the windfarm extensions and potential impacts to dark skies character of North Norfolk, night-time photomontages from three viewpoints would be included.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: worst case scenario	2.4	ETG agreed with the worst-case scenario presented at PEIR, which was considered to be fewer larger turbines. The maximum height parameter was confirmed as 325m (26MW).	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: assessment methodology	2.5	ETG agreed with the suitability of the methodology for assessing the effect on the AONB and Heritage Coast.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Seascape: impact significance	2.6	Confirmed that NE disagreed in the significance of effect for 4 LCTs. ETG agreed that the assessments were adequate, and were not being challenged; however, the conclusions of the assessment and the judgement of significance differed. Considered that this was a result of differing professional judgements. NE's position is that they consider there to be a potential significant impact to the special qualities of the AONB.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Landscape: as presented in PEIR Chapter 28	2.7	Provided a review of previous consultation, agreements, and project responses (see attached, slides 25-32). It was confirmed that the ETG agreed with the following as presented in the PEIR Chapter 28: The methodological approach to the Landscape Visual Impact Assessment (LVIA); the data sources (i.e. character assessment, SPDs and Management Plans) used for the LVIA; the landscape character areas / types identified and assessed in the LVIA; the visual receptors identified and assessed in the LVIA; the designated landscapes identified and assessed in	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			the LVIA; the list of potential impacts assessed with regards to the onshore cable corridor (including landfall) and onshore substation; the approach to the assessment of effects on residential visual amenity; the approach to the assessment of effects on the Special Qualities of Natural Beauty of the AONB within the LVIA; and, the proposed approach to the visualisations.									
	Landscape: OLEMP	2.8	Agreed that an outline Landscape Management Plan (OLMP) would be submitted as part of the DCO application. The landscape proposals would aim to minimise potential visual effects as far as possible and create new opportunities for ecological enhancements.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
	Landscape: 10-year replanting period	2.9	10-year replacement period for trees, hedgerows, and other vegetation requested by the ETG	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Absent NA	Absent TBC	Absent TBC	None	N/A
ETG2 (Part 2 of 2) 28/07/2021	Landscape: as presented in PEIR Chapter 28	2.10	Confirmed that the ETG agreed with the following: The methodological approach to the LVIA; the data sources (i.e., character assessment, SPDs and Management Plans) used for the LVIA; the landscape character areas / types identified and assessed in the LVIA; the visual receptors identified and assessed in the LVIA; the designated landscapes identified and assessed in the LVIA; the list of potential impacts assessed for the onshore developments in the LVIA.	Absent TBC	Absent TBC	Absent TBC	Absent TBC	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Landscape: visual receptors identified and assessed in the LVIA	2.11	There had not been any formal comment from South Norfolk District Council (SNDC) or Broadland District Council) on the viewpoints taken forward in the PEIR assessment. There would not be sufficient time in the programme to include additional viewpoint photography, and that the viewpoint information presented at the PEIR covered what is considered necessary to produce a robust assessment.	Absent TBC	Absent TBC	Absent TBC	Absent TBC	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Landscape: assessment of the effects of lighting	2.12	Confirmed that night-time photomontages of the substation would not be provided; however, assessment of the effects of lighting would be included in the LVIA at Environmental Statement (ES).	Absent TBC	Absent TBC	Absent TBC	Absent TBC	Present Agreed	Absent TBC	Absent TBC	None	N/A
ETG 3 (Part 1 of 2) 02/02/2022	Seascape: SVIA	3.1	The ETG agreed that it would be helpful to pre-empt the examiner's potential request with regard to the comparison with SEP and DEP and other existing windfarms and draft a description and comparison between existing and proposed schemes for discussion and agreement with NE in advance of the DCO submission. Equinor agreed to prepare this text and share with NE.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascape: SVIA	3.2	In response to the outstanding action at Minute Item 24 from the previous ETG meeting on 21st	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			July 2021, NE confirmed its agreement that 4 of the 7 LCTs assessed in the PEIR SVIA chapter can be scoped out of the assessment.									
	Seascope: SVIA	3.3	The ETG welcomed and agreed to the updates proposed for the next ES SVIA Chapter, which would take into account the following: <ul style="list-style-type: none"> Refinement of project proposals; Section 42 comments from consultees; and Susceptibility and sensitivity of users of long-distance walking routes, PRoWs, accessible and recreational landscapes, valued viewpoints and Dark Sky Discovery Sites within designated landscapes changed to high. 	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascope: SVIA	3.4	The ETG agreed with the decision to use ground level viewpoint and historic photography from the Sheringham Shoal offshore wind farm SLVIA within the ES SVIA Chapter be referred to in reaching judgements on effects on visitors to the viewing gazebo at Oak Wood. It was explained that the viewing gazebo at the National Trust Oak Wood is presently inaccessible, and the National Trust agrees to the SVIA's proposed approach.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascope: Assessment of the Norfolk Coast AONB	3.5	The ETG welcomed and agreed to the presentation of the assessments of the Norfolk Coast AONB from all relevant topics in a separate document. NE suggest undertaking a gap analysis between the two management plans – Equinor agreed to review and request clarity on the timings of each management plans directly from the Norfolk cost Partnership.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	It was confirmed by the Norfolk Coast Partnership (via email on 23 February 2022) that the 'Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy 2019-2024' remains the current management plan for the Norfolk Coast AONB, and as used to inform the SVIA.
	Seascope: SVIA	3.6	The ETG agreed that the realistic worst case turbine layout presented will be assessed in the SVIA, and recognised the on-going work that has been undertake since the PEIR / consultation responses to improve the layout that work has gone into developing the illustrative layout.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascope: Project Visions and Design Statement	3.7	The ETG agreed to the outline of the factors that influenced the changes to the offshore layout from that presented in the PEIR, and acknowledged the amount of work which had been undertaken since the previous ETG. These factors included:	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			<ul style="list-style-type: none"> the proportion of the view affected by the development; the angle of view in relation to main receptor activity; the degree to which aesthetic or perceptual aspects of the landscape /view would be altered; and the relationship between existing/ proposed/ future wind farms. <p>The ETG requested whether design principles could be transferred into the DCO to ensure the principles of design currently being applied are secured.</p> <p>Equinor confirmed that as part of the work being undertaken for the Navigation Risk Assessment, layout commitments are being secured, although these primarily address layout requirements set out in MGN 654. Equinor also confirmed the reason for its decision to include the maximum sized turbine was to future proof the project.</p>									
	Seascape: Project Visions and Design Statement	3.8	<p>NE agreed to provide copies of the following documents:</p> <ul style="list-style-type: none"> A Rampion 1 document that set out the how this project secured aesthetic led design principles via the marine authority whose interest / duty relates to safety and navigation during the examination. A NE document that provided general design principles to the Crown Estate in 2017/18. <p>These were received post-meeting.</p>	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascape: Single Frame Visualisations	3.9	<p>NE requested copies of the single frame visualisations presented at the ETG meeting to agree the focal points of each view. This was submitted and agreement reached post meeting.</p>	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Seascape: AOB	3.10	<p>The ETG agreed that it was not necessary to meet again prior to the submission of the DCO, unless any material comments were recorded as part of the sperate planned meetings with the Norfolk Coast Partnership.</p>	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
ETG 3 (Part 2 of 2) 08/02/2022	Landscape: OLEMP	3.11	<p>The ETG agreed that a biodiversity net gain (BNG) plan, which details biodiversity opportunities at Weybourne Woods, should be produced. NE requested this is shared with them for information. This BNG Plan is to be provided by Wild Frontier Ecology.</p>	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	A BNG Plan will be submitted as part of the DCO submission.
	Landscape: Assessment of the Norfolk Coast AONB	3.12	<p>The ETG agreed with that Norfolk Coast Area of Outstanding Natural Beauty Management Plan Strategy 2014-2019 should be used to inform the LVIA, due to the uncertainty of the ratification of</p>	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			the latest Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy 2019-2024.									
	Landscape: LVIA	3.13	The ETG requested that a review was undertaken of the cable corridor's routes in relation to Mossy Mere Wood (close to Saxthorpe) due to its sensitivity.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	This matter falls outside of the scope of the LVIA, but will be addressed as part of the documentation submitted for the DCO submission.
	Landscape: OLEMP and Arboricultural Surveys	3.14	Concerns were raised by the ETG that a full arboricultural survey would not be carried out until post-consent and considers that the information is needed earlier to inform the Examiners decision. Equinor agreed to review approach to tree survey.	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	
	Landscape: Project Vision and Design & Access Statement	3.15	The ETG agreed with the proposed approach to how Equinor will demonstrate, in the DCO application, how the project has been guided by overarching design principles / objectives, and will deliver a project that is in accordance with good practice (including safety), and demonstrates Good Design	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
	Landscape: OLEMP	3.16	The ETG confirmed that the landscape proposals, related to the landscape management of the onshore cable corridor and the onshore substation, were broadly acceptable and responded well to the local landscape and its existing framework. <ul style="list-style-type: none"> Equinor confirmed its commitment to the following: Maintaining planting along the onshore cable corridor for the first 10 years following implementation, before being handed over to landowner. Planting and habitat creation around the onshore substation would be managed for the operational life of SEP and DEP. 	Present Agreed	Absent TBC	Present Agreed	Present Agreed	Present Agreed	Absent TBC	Absent TBC	None	N/A
Meeting just with Norfolk Coast Partnership 08/03/2022	Assessment of the Norfolk Coast AONB	3.17	The meeting welcomed and agreed to the presentation of the assessments of the Norfolk Coast AONB from all relevant topics in a separate document. Status of 2014 plan to be confirmed AONB confirmed that the Heritage Coast interests are covered by the County Heritage team, being essentially a Heritage matter	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	It was confirmed by the Norfolk Coast Partnership (via email on 23 February 2022) that the 'Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy 2019-2024' remains the current management plan for the Norfolk Coast AONB, and

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
												as used to inform the SVIA.
	Seascope: SVIA	3.18	The meeting agreed that the realistic worst case turbine layout presented will be assessed in the SVIA, and recognised the on-going work that has been undertaken since the PEIR / consultation responses to improve the layout that work has gone into developing the illustrative layout.	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	N/A
	Seascope: 9Project Visions and Design Statement	3.19	The meeting agreed to the outline of the factors that influenced the changes to the offshore layout from that presented in the PEIR and acknowledged the amount of work which had been undertaken. These factors included: <ul style="list-style-type: none"> the proportion of the view affected by the development; the angle of view in relation to main receptor activity; the degree to which aesthetic or perceptual aspects of the landscape /view would be altered; and the relationship between existing/ proposed/ future wind farms. Equinor confirmed that as part of the work being undertaken for the Navigation Risk Assessment, layout commitments are being secured, although these primarily address layout requirements set out in MGN 654. Equinor also confirmed the reason for its decision to include the maximum sized turbine was to future proof the project.	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	N/A
	Seascope: Project Visions and Design Statement	3.20	Equinor agreed to provide copies of the following documents: <ul style="list-style-type: none"> Outline CSIMP OTNR Review- guide to communities Equinor FAQ PEIR site selection and alternatives chapters These were received post-meeting.	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	N/A
	Landscape: Project Vision and Design & Access Statement	3.21	The meeting agreed with the proposed approach to how Equinor will demonstrate, in the DCO application, how the project has been guided by overarching design principles / objectives, and will deliver a project that is in accordance with good practice (including safety), and demonstrates Good Design	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	N/A
	Landscape: LVIA	3.22	The meeting requested further information regarding the extent of HDD under the AONB and cable depths.	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	The AONB subsequently raised no concerns

Meetings	Discussion Points	ID	Agreements and Notes	Stakeholders							Outstanding agreements	Project Response
				NE	HE	NCC	NNDC	SNC BDC	NorCC	Norfolk Coast Partnership		
			This was all provided after the meeting, with Equinor confirming that it was not necessary, appropriate or justifiable to use trenchless methods to cross the entire AONB									
	Landscape: OLEMP	3.23	The meeting agreed that a biodiversity net gain (BNG) plan, which details biodiversity opportunities at Weybourne Woods and more generally, should be produced. Carbon sequestration to be considered	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	A BNG Plan will be submitted as part of the DCO submission.
	General	3.24	The meeting agreed that it was not necessary to meet again prior to the submission of the DCO, unless any material comments were recorded following a briefing at the CMG of the Norfolk Coast Partnership.	N/A	N/A	N/A	N/A	N/A	N/A	Present Agreed	None	AONB confirmed nothing was raised at the CMG, other than the need for all stakeholders to keep talking and work together as much as possible to add value to existing schemes and contribute to nature recovery where possible. A BNG Plan will be submitted as part of the DCO submission

1.8 Water Resource and Flood Risk Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

DCO Application

Evidence Plan Agreement Log

Water Resources and Flood Risk ETG

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Glossary of Acronyms

BDC	Broadland District Council
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
EA	Environment Agency
ES	Environmental Statement
ETG	Expert Topic Group
FEH	Flood Estimation Handbook
FSR	Flood Studies Report
FRA	Flood Risk Assessment
GIS	Geographical Information System
IBD	Internal Drainage Board
km	Kilometre
LLFA	Lead Local Flood Authority
LVIA	Landscape and Visual Assessment
NCC	Norfolk County Council
PEIR	Preliminary Environmental Information Report
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SNC	South Norfolk Council
WFD	Water Framework Directive

Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.

Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy Limited ('the Applicant') and stakeholders through the Evidence Plan Process (EPP). Multiple Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the **Water Resources and Flood Risk ETG**.

Table 1-1: Expert Topic Groups and Organisations Represented

ETG	Members
Archaeology and Cultural Heritage (both onshore and offshore)	Historic England (HE), Norfolk County Council (NCC)
Offshore Ornithology	Natural England (NE), Marine Mammal Organisation (MMO), RSPB
Marine Mammal Ecology	NE, MMO, Cefas, The Wildlife Trust
Seabed (including benthic and fish ecology, and marine physical processes);	NE, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Onshore Ecology and Ornithology	NE, Norfolk Wildlife Trust (NWT), Environment Agency (EA), NCC
Seascape, Landscape and Visual	NCC, North Norfolk District Council (NNDC), Broadland District Council (BDC), NCC, NE, HE, North Norfolk Coast Area of Outstanding National Beauty (AONB)/Coastal partnership
Traffic	NCC, National Highways (NH)
Water Resources and Flood Risk	Environment Agency (EA), Internal Drainage Board (IDB), Norfolk County Council (NCC) as the Lead Local Flood Authority (LLFA)

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground. In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. The projects' Scoping Report was submitted to the Planning Inspectorate (PINS) on 8th October 2019 and a Scoping Opinion was issued on 18th November 2019. A Preliminary Environmental Information Report (PEIR) was provided to stakeholders in April 2021, under Section 42 and 47 of the Planning Act 2008. Feedback received through this consultation has been taken into consideration and incorporated into the application where appropriate.
4. The Development Consent Order (DCO) application is planned for submission early Summer 2022.
5. Water Resources and Flood Risk ETG meetings have been held on:
 - 19th May 2020 (ETG1);

- 6th September 2021, 30th September 2021 and 11th November 2021 (ETG2);
- 10th February 2022 (ETG3);
- 2 no. meetings on 7th April 2022 (ETG4); and
- 24th June and 25th June (ETG5).

2 Agreement Log

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
ETG1 19/05/2020	Approach to baseline and assessment: study area	1.1	The Applicant confirmed that onshore infrastructure is located in three main surface water drainage catchments; the Bure, the Wensum and the Yare. All rivers within the study area are lowland, low energy meandering rivers, and a large proportion of them are also chalk rivers.	Present Agreed	Present Agreed	Present Agreed	None
		1.2	It is recognised that chalk rivers are a unique (internationally rare) and sensitive habitat which is under a lot of pressure. For example, from water abstraction and the supply of nutrients and fine sediment. However, rivers in the study area have been extensively modified for land drainage and flow capacity purposes with only some of the reaches still displaying natural characteristics. The water quality data show that the rivers are in good condition, although impacted by agriculture.	Present Agreed	Present Agreed	Present Agreed	None
		1.3	The majority of the study area has a low risk of flooding from rivers and the sea (i.e. it is in Flood Zone 1), although bands of higher flood risk (i.e. Flood Zones 2 and 3) are located adjacent to the river network. Both landfall option areas are located in a narrow area of increased coastal flood risk (please refer to the presentation slides for details).	Present Agreed	Present Agreed	Present Agreed	None
	Approach to baseline and assessment: data sources	1.4	The Applicant confirmed that the data used is for the assessment will be mostly secondary data which will be supplemented by a targeted geomorphological walkover survey (compatible with European Committee for Standardisation standard EN 14614 Water quality - Guidance standard for assessing the hydromorphological features of	Present Agreed	Present Agreed	Present Agreed	None

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
			<p>rivers, September 2020) to inform the assessment of impacts at the proposed crossing locations of Main Rivers and Water Framework Directive (WFD) river water bodies.</p> <p>The ETG agreed with this approach.</p>				
		1.5	<p>The Applicant confirmed that the WFD water body boundaries will be used to delineate receptors. The desk-based assessment and results of the walkover surveys will be used to identify value and sensitivity for each receptor. Biological characteristics (e.g. designations and the presence of priority species) will be also taken into account when assigning sensitivity and value of receptors.</p> <p>The ETG agreed with this approach.</p>	Present Agreed	Present Agreed	Present Agreed	None
		1.6	<p>The Applicant confirmed that the WFD compliance assessment will use a three-stage assessment process, as set out in PINS (2017) Advice Note 18: The Water Framework Directive. Stage 1 (screening) and 2 (scoping) will be undertaken as part of the Preliminary Environmental Information Report (PEIR) and Stage 3 (WFD impact assessment) will be undertaken at the Environmental Statement (ES) stage. Expert Topic Group (ETG) agreed that the approach was acceptable.</p>	Present N/A	Present Agreed	Present N/A	None
	1.7	<p>ETG recommended that a climate change allowance of +20% should be used for the Flood Risk Assessment (FRA) and the design of the permanent onshore infrastructure (e.g. the Onshore Substation).</p>	Present Agreed	Present Outside EA remit	Present N/A	None	
	Approach to baseline and assessment: methodology						

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
			<p>NCC stated that Flood Studies Report (FSR) rainfall data is no longer acceptable and agreed that Flood Estimation Handbook (FEH) 2013 rainfall data will be accepted.</p> <p>ETG stated that the Operational Drainage Plan will have to be agreed with NCC and that an Operational Maintenance Plan will have to be developed post consent to ensure that the drainage infrastructure is adequately maintained.</p>				
Meetings	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
ETG2 06/09/2021	Approach to surface water attenuation at the substation	2.1	The Applicant agreed to undertake further engagement with the landowner at the proposed substation location to understand how and where surface water accumulates within the area identified.	Absent N/A	Present Outside EA remit	Present Agreed	None
	Approach to surface water attenuation at the substation	2.2	The Applicant will engage further with NCC, in their role as the Lead Local Flood Authority (LLFA), to understand surface water flood risk at the substation and potential implications for surface water drainage design.	Absent N/A	Present Outside EA remit	Present Agreed	Yes - to be discussed further at meeting with NCC
	Approach to baseline and assessment: methodology	2.3	EA no longer considered that the approach to defining impact magnitude set out in the method statement would be appropriate based on EA requirements under the WFD, which remained EA's absolute responsibility.	Absent N/A	Present Agreed	Present Agreed	Yes - to be discussed further at meeting with EA on 30/09/21

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
	Protective Provisions	2.4	IBD and EA agreed that a protective provisions approach would be considered.	Absent N/A	Present Agreed	Present Agreed	None
ETG 2: Supplementary meeting with Environment Agency 30/09/2021	Groundwater receptors	2.5	The Applicant and EA agreed that the assessment of groundwater impacts will consider unlicensed abstractions, based on the EAs dataset covering deregulated licences and small unlicensed abstractions. Ground Water Dependent Terrestrial Ecosystems would also be considered.	Absent N/A	Present Agreed	Absent N/A	None
	Receptor sensitivity	2.6	The Applicant and EA agreed that all chalk river systems, including the Wensum, Bure and Weybourne, should be defined as highly sensitive.	Absent N/A	Present Agreed	Absent N/A	None
	Defining impact magnitude	2.7	The EA agreed that the approach to defining impact magnitude based on the risks of impact occurring as a proportion of a catchment in which activities would be undertaken was appropriate, but that a clearer explanation of the approach was required in the ES.	Absent N/A	Present Agreed	Absent N/A	None
	Weybourne NFM scheme	2.8	The Applicant and EA agreed that the ES chapter would consider potential impacts on the Weybourne Natural Flood Management (NFM) scheme, including impacts on backfilling on groundwater flow paths.	Absent N/A	Present Agreed	Absent N/A	None
Meetings	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
ETG2: Supplementary Meeting with NCC in their	Surface water flood risk at the OnSS	2.9	The Applicant and LLFA agreed the approach to be adopted for the development of a surface water model to understand surface water flood risk at the OnSS.	Present Agreed	Absent N/A	Absent N/A	None

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
role as the LLFA. 11/11/2021							
ETG3: Onshore Substation (OnSS) and surface water flood risk. Meeting with NCC in their role as the LLFA. 10/02/2022	Surface water flood risk at the OnSS	3.1	The Applicant agreed to the development of a technical note setting out the position with regards to changes in NPPF in July 2021 if SEP and DEP are unable to avoid the area of surface water flood risk at the OnSS.	Present Agreed	Absent N/A	Absent N/A	None
	Surface water drainage at the OnSS	3.2	The Applicant agreed to investigate deep infiltration techniques for the discharge of surface water drainage from the OnSS, alongside the option to discharge into the Anglian Water foul sewer. Agreement based on the options available within the SuDS Hierarchy - all parties agreed that both options should be pursued further.	Present Agreed	Absent N/A	Absent N/A	None
Meetings	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
ETG4: Part 1 OnSS groundwater and surface water flood risk. 07/04/2022 morning	Deep Infiltration and Ground Investigation	4.1	The Applicant agreed to undertake further investigation to determine the applicability of the use of deep infiltration methods for the discharge of surface water from the OnSS.	Present Agreed	Present Agreed	Absent N/A	None
	Deep Infiltration and Ground Investigation	4.2	The Applicant agreed and LLFA agreed the approach to the presentation of both options comprising deep infiltration as well as discharge to the foul sewer network as part of the DCO application.	Present Agreed	Present Agreed	Absent N/A	None

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
ETG4: Part 2 OnSS groundwater and surface water flood risk. 07/04/2022 afternoon	OnSS Layout and Flood Risk	4.3	The Applicant and LLFA agreed that site-specific evidence from surface water modelling to be provided as part of the DCO application to support understanding of surface water flood risk at the OnSS. All parties agreed there is some uncertainty around the existing surface water flood mapping (hosted, but not owned, by the Environment Agency) in this location.	Present Agreed	Absent N/A	Absent N/A	None
	OnSS Layout and Flood Risk	4.4	LLFA agreed that the updated layout, which includes for either a N-S or E-W orientation for the OnSS, is preferred to the original proposed layout as this now avoids the majority of the area identified in the 100 year surface water flood risk in the national dataset.	Present Agreed	Absent N/A	Absent N/A	None
ETG5: Part 1 OnSS groundwater and surface water flood risk. 24/07/2022 (LLFA)	Update on hydraulic modelling	5.3	<p>Layout changes to the OnSS footprint have minimised the interaction with the flood extent in events up to and including the 1 in 100 year with 40% climate change allowance. Post development modelling results have not yet been produced, but it is anticipated that the ponded area will increase in depth in certain areas.</p> <p>The LLFA agreed that given the evidence presented this does not raise any concern.</p>	Present Agreed	Absent N/A	Absent N/A	None
	Site selection and sequential test	5.4	<p>The DCO application will demonstrate that there are feasible options available for drainage from the OnSS but will also make it clear other options further up the drainage hierarchy are being explored.</p> <p>The LLFA preference would be an option that is further up the drainage hierarchy.</p>	Present Agreed	Absent N/A	Absent N/A	None

Meeting	Discussion Points	ID	Agreements Made in Meeting	Stakeholders			Outstanding agreements
				LLFA	EA	IDB	
			Confirmed that in principle the LLFA are in agreement with selection and sequential layout of ONSS.				
ETG5: Part 2 OnSS groundwater and surface water flood risk. 07/04/2022 (EA)	Update on hydraulic modelling, geophysical surveys and supplementary ground investigation	5.1	The Applicant agreed to include a Ground Investigations technical note (appended to the FRA).	Absent N/A	Present Agreed	Absent N/A	None
	Review of Agreement Log	5.2	Agreed that a previous review of the Agreement Log did not raise any areas of large concern. However, suggested that in some instances may need to change 'Agreed' to 'Outside of the Environment Agency's remit'.	Absent N/A	Present Agreed	Absent N/A	Updated agreement log to reflect changes

1.9 MEEB Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan Agreement Log Measures of Equivalent Environmental Benefit ETG

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Glossary of Acronyms

AONB	Area of Natural Beauty
CSCB	Cromer Shoal Chalk Beds
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEP	Dudgeon Offshore Wind Farm Extension Project
EIFCA	Eastern Inshore Fisheries and Conservation Authorities
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries and Conservation Authorities
MCZ	Marine Conservation Zone
MEEB	Measures of Equivalent Environmental Benefit
MMO	Marine Management Organisation
MPA	Marine Protected Area
RSPB	Royal Society of the Protection of Birds
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCG	Statement(s) of Common Ground
UK	United Kingdom

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Offshore cable corridors	This is the area which will contain the offshore export cables or interlink cables, including the adjacent Offshore Temporary Works Area.
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Offshore scoping area	An area presented at Scoping stage that encompassed all planned offshore infrastructure, including landfall options at both Weybourne and Bacton, allowing sufficient room for receptor

	identification and environmental surveys. This has been refined following further site selection and consultation for the PEIR and ES.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy ('the Applicant') and stakeholders through the Evidence Plan Process. Several Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the Measures of Equivalent Environmental Benefit (MEEB) ETG. The Wildlife Trusts were involved in the first MEEB ETG meeting however they were unable to attend any ETG meetings for any relevant topics (seabed, marine mammal ecology and Measures of Equivalent Environmental Benefit (MEEB)) from January 2022 onwards citing a lack of capacity to engage.

Table 1-1: ETGs and Members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, Marine Management Organisation (MMO), Royal Society for the Protection of Birds (RSPB)
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, The Wildlife Trusts
Seabed (including benthic and fish ecology, and marine physical processes);	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern Inshore Fisheries and Conservation Authorities (EIFCA), The Wildlife Trusts
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, Norfolk County Council
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, Norfolk County Council, North Norfolk District Council, Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk Area of Natural Beauty (AONB)/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, Highways England
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council
Habitats regulations Assessment (HRA) - Offshore Ornithology Compensation	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Cromer Shoal Chalk Beds Marine Conservation Zone MEEB	Equinor, Royal HaskoningDHV, Natural England, MMO, The Wildlife Trusts

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground (SoCG). In this way during the Development Consent Order (DCO) examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.

3. MEEB ETG meetings were held on:
 - ETG1:
 - 6th May 2021 with EIFCA
 - 8th June 2021 with The Wildlife Trusts
 - 16th June 2021 with Natural England
 - 7th September 2021 with Natural England
 - 1st October 2021 (ETG2)
 - 21st February 2022 (ETG3)

2. Agreement Log

Table 2-1: Agreement Log

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
ETG2 1st October 2022							
0.1 EIFCA added agreement	Management of fisheries Section 6.3.1 In connection with reduction of fishing pressures	N/A	N/A	N/A	N/A	N/A	We acknowledge that measures to reduce fishing pressure have been removed as a potential MEEB option at project level. As recorded in Minute Ref. PB8164-RHD-ZZ-XX-MI-Z-0001 (01/10/2021 Section 3) and paragraph 129 and 132 of the Draft MEEB Plan version 2 Dec 2021. IFCAs and MMO assess and manage fisheries within Marine Protected Areas (MPAs) (including Marine Conservation Zones (MCZs)) to ensure fishing activities are compatible with the conservation objectives of these sites.
1 Removal of marine litter/debris within the CSCB MCZ							
1.1	Do you agree with the value and function of this MEEB, discussed in Section 6.1.1.2 of the Draft In Principle MEEB Plan?	Natural England advises as with compensation that the removal of marine litter has wider marine benefits but doesn't provide MEEB as a singular option	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> The category "Marine Litter" is very broad, and it is difficult to be specific as to the value of this MEEB without understanding what type of "litter" is under consideration. Potential impacts from pots and ropes on chalk could be mitigated by removal of this type of "litter"; However, this removal is already planned for other reasons, and so

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
							the “additionality” test would not be met. EIFCA defer to Natural England.
1.2	Do you agree with the proposed delivery mechanism discussed in Section 6.1.1.3?	Natural England highlights the expanded upon requirements of Boreas and Vanguard from that of the HP3 approach.	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Needs consideration of impacts on fishing opportunities of removal methods. EIFCA defer to Natural England.
1.3	Do you agree with the proposed spatial scale discussed in Section 6.1.1.4?	Not agreed	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Para 60 seems to suggest that an area of 1800m ² would be surveyed, and debris removed from that. This is not the same as removing 1800m ² of debris, as the seabed would not be 100% covered. EIFCA defer to Natural England.
1.4	Do you agree with the proposed timescale discussed in Section 6.1.1.6?	Agreed as all compensation should be delivered prior to construction	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
1.5	Do you agree with the potential impacts of the MEEB discussed in Section 6.1.1.7?	Not Agreed as dredging would also remove site interest feature	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
1.6	Do you agree with the options for monitoring discussed in	Not Agreed – please see responses to	Defer to Natural	N/A	Not	N/A	EIFCA defer to Natural England.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
	Section 6.1.1.8?	HP3 21 January 2022	England		present		
1.7	Do you agree with the feasibility conclusions discussed in Section 6.1.1.9?	No Agreed due to on going discussions with regulators and challenges with deliver as currently this is something that should be being done within this site as site management.	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Technical feasibility of removing debris is likely to be high. Whether this delivers the required benefits is much more open to question. EIFCA defer to Natural England.
2 Removal of disused cables and pipelines within the CSCB MCZ							
2.1	Do you agree with the value and function of this MEEB, discussed in Section 6.1.2.2 of the Draft In Principle MEEB Plan?	Agreed	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
2.2	Do you agree with the proposed delivery mechanism discussed in Section 6.1.2.3?	Agreed	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Need to consider impacts of removal on fishing productivity/opportunities. EIFCA defer to Natural England.
2.3	Do you agree with the proposed spatial scale discussed in Section 6.1.2.4?	Natural England doesn't agree with a 1:1 ratio. Please see HP3 response 21 January 2022. Where there is the	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
		potential for ecological debt then there needs to be a overall net positive to MEEB not just offsetting					
2.4	Do you agree with the proposed timescale discussed in Section 6.1.2.6?	Agreed as long as ecological debt is addressed	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
2.5	Do you agree with the potential impacts of the MEEB discussed in Section 6.1.2.7?	Agreed – dependent on removal methodology	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> We note that there is an acceptance that there will be effects (temporary / localised). Consideration should be given to the assessment of any potential effects, particularly relevant would be reported/recorded effects of any previous removals of infrastructure from chalk areas. EIFCA defer to Natural England.
2.6	Do you agree with the options for monitoring discussed in Section 6.1.2.8?	Not Agreed – please see responses to HP3 21 January 2022	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
2.7	Do you agree with the feasibility conclusions discussed in Section 6.1.2.9?	Agreed	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
3 Removal of anthropogenic features outside the CSCB MCZ							

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
3.1	Do you agree in-principle with the proposed removal of anthropogenic features from within similar habitats to the ones impacted by the Project, but from another location, e.g. an alternative MCZ as discussed in Section 6.2.1 of the Draft In Principle MEEB Plan?	Agreed - as long as stepwise approach to the compensation/MEEB hierarchy has been followed	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Any such activity (Removal of Anthropogenic Features) would require careful appraisal and design to ensure that it did not impact on fisheries productivity or fishing opportunities. EIFCA defer to Natural England.
4 Planting of native oyster beds within the CSCB MCZ							
4.1	Do you agree with the value and function of this MEEB, discussed in Section 6.1.3.2 of the Draft In Principle MEEB Plan?	Agreed	Defer to Natural England	N/A	Not present	Partially agreed	EIFCA agree that creation of an oyster bed is likely to increase biodiversity locally. However until all factors (size, location, and future fishability) are known we can't give our full agreement to this MEEB.
4.2	Do you agree with the proposed delivery mechanism discussed in Section 6.1.3.3?	This is really in Section 7 and Not agreed due to not commissioning specialists pre consent to design the mechanism	Defer to Natural England	N/A	Not present	Partially agreed	<u>EIFCA</u> There is a need to understand why oysters have not "made a comeback" on their own. What is preventing the natural re-establishment of beds? If these conditions are not addressed, the chances of successful planting may be slim. (We believe the benefits could be delivered by oyster bed establishment outside the Cromer MCZ, although probably in the vicinity, as discussed in Section 6.4.1)

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
4.3	Do you agree with the proposed spatial scale discussed in Section 6.1.3.4?	Agreed	See notes	N/A	Not present	N/A	<u>EIFCA</u> Not possible to provide an answer, as the spatial scale is not defined but rather left open for future agreement with Natural England.
4.4	Do you agree with the proposed timescale discussed in Section 6.1.3.6?	Under discussion and dependent on 4.2 above	Defer to Natural England	N/A	Not present	Partially agreed	<u>EIFCA</u> It may well be possible to conduct the steps required to achieve initial planting within these timeframes (the UK – DEEP – is probably the closer to local conditions) however we don't feel the bed could be considered "established" within this timeframe.
4.5	Do you agree with the potential impacts of the MEEB discussed in Section 6.1.3.7?	Agreed, but recognise that careful consideration of location is needed as all designated features and also there may be other wider implications	Defer to Natural England	N/A	Not present	Not agreed	<u>EIFCA</u> Negative impacts which could arise from any required associated management must also be considered. For instance, if there is a requirement that the area identified be closed to certain activities, this should be considered.
4.6	Do you agree with the options for monitoring discussed in Section 6.1.3.8?	Not Agreed as delivery over the lifetime of the project and beyond must be maintained and managed	Defer to Natural England	N/A	Not present	Partially agreed	<u>EIFCA</u> It is likely that some form of ongoing monitoring would be required for a considerable number of years to ensure that the bed has truly become self-sustaining.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
4.7	Do you agree with the feasibility conclusions discussed in Section 6.1.3.9?	Agreed	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> There is a need to understand why oysters have not “made a comeback” on their own. What is preventing the natural re-establishment of beds? If these conditions are not addressed, the chances of successful planting may be slim.
5 Planting of native oyster beds within the SEP and DEP wind farm sites							
5.1	Do you agree with the value and function of this MEEB, discussed in Section 6.4.1.2 of the Draft In Principle MEEB Plan?	Not Agreed as it needs to enhance natural biodiversity of the seabed in those locations	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> Any such activity (Planting of native oyster beds) would require careful appraisal and design to ensure that it did not impact on existing fisheries productivity or fishing opportunities.
5.2	Do you agree with the proposed delivery mechanism discussed in Section 6.4.1.3?	Not agreed due to not commissioning specialists pre consent to design the mechanism	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> It is likely that significantly more work would be needed to identify a suitable site than would be the case if restoration was to be within Cromer MCZ. If restrictions to activities such as commercial fishing become necessary, this must be in dialogue with the local industry and (if relevant) local IFCA.
5.3	Do you agree with the proposed spatial scale discussed in Section 6.4.1.4?	Agreed	Defer to Natural England	N/A	Not present	N/A	<u>EIFCA</u> Not possible to provide an answer, as the spatial scale is not defined but rather left open for future agreement with Natural

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
							England.
5.4	Do you agree with the proposed timescale discussed in Section 6.4.1.6?	Under discussion and dependent on 4.2 above	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
5.5	Do you agree with the potential impacts of the MEEB discussed in Section 6.4.1.7?	Agreed	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> Agree that these are likely impacts. Impacts on fishing opportunities would need to be carefully assessed and mitigated in some way.
5.6	Do you agree with the options for monitoring discussed in Section 6.4.1.8?	Not Agreed as delivery over the lifetime of the project and beyond must be maintained and managed	Defer to Natural England	N/A	Not present	Partially agreed	<u>EIFCA</u> It is likely that some form of ongoing monitoring would be required for a considerable number of years to ensure that the bed has truly become self-sustaining.
5.7	Do you agree with the feasibility conclusions discussed in Section 6.4.1.9?	Agreed	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> There is a need to understand why oysters have not “made a comeback” on their own. What is preventing the natural re-establishment of beds? If these conditions are not addressed, the chances of successful planting may be slim.
6 Site extension / designation of a feature in a different location							
6.1	Do you agree with the value and function of this MEEB, discussed in Section 6.2.2.2 of	No agreed as there is expectation it would more than	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
	the Draft In Principle MEEB Plan?	offset the impacts					
6.2	Do you agree with the proposed delivery mechanism discussed in Section 6.2.2.3?	Agreed – but would be for expanding the MPA network not just focusing on MCZs	Defer to Natural England	N/A	Not present	Not agreed	<p><u>EIFCA</u></p> <p>The current MPA network has been designed to meet the legislative requirements. Any additional designations will impose restrictions on other legitimate activities, without providing any benefit to those activities.</p> <p>Were this option to be taken forward, as well as site selection and designation process costs - which the applicant has offered to financially support, there would also be ongoing additional burden on managers/regulator. The applicant should also provide ongoing financial support for assessment, management and enforcement of activities and condition monitoring in any new additional designated area.</p>
6.3	Do you agree with the proposed spatial scale discussed in Section 6.2.2.4?	Agreed	Defer to Natural England	N/A	Not present	Not Agreed	<p><u>EIFCA</u></p> <p>Disagree (with the fundamental principle, therefore not possible to “Agree” with this).</p>
6.4	Do you agree with the proposed timescale discussed in Section 6.2.2.6?	Agreed – that it will take several years for designation but protection mechanisms may be	Defer to Natural England	N/A	Not present	N/A	<p><u>EIFCA</u></p> <p>No comment</p>

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
		possible prior to designation					
6.5	Do you agree with the potential impacts of the MEEB discussed in Section 6.2.2.7?	Agreed	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> As this would be an action that would impose restrictions on one or more commercial activities for the benefit of another commercial activity, any such impacts must be carefully and thoroughly considered, quantified and minimised /mitigated.
6.6	Do you agree with the options for monitoring discussed in Section 6.2.2.8?	Under discussion	Defer to Natural England	N/A	Not present	N/A	EIFCA defer to Natural England.
ETG 3 21st February 2022							
7.1	Do you agree that the planting of oyster reef in the MCZ is the primary measure to be investigated by Equinor?	Natural England advises that this option has ecological merit	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> Agree that this should be the primary measure to be investigated, however Eastern IFCA will not be supportive of measures that will have an overall adverse impact upon fishing activities and opportunities (as agreed by Eastern IFCA 41 ST Authority meeting 9 th September 2020.)
7.2	Do you agree that most appropriate backup measure is the planting of oyster reef in the array areas?	This is subject to further information being presented as set out above	Defer to Natural England	N/A	Not present	Agreed	<u>EIFCA</u> Should the creation of an oyster reef within the MCZ have an adverse impact upon current fishing activities, Eastern IFCA will consider this option to be their preferred

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
							option, as this location is unlikely to conflict with current fishing activity.
7.3	Do you agree that given that the subtidal sand feature which will potentially be lost does not support a diverse community, oyster reef would provide an enhanced function in terms of biodiversity e.g. potential nursery grounds for fish etc?	Not agreed as the cable protection could also impact on reef like areas. This is really two separate points.	Defer to Natural England	N/A	Not present	Agreed	<p><u>EIFCA</u></p> <p>Whilst we agree that a future oyster reef would likely provide higher biodiversity than an equivalent area of subtidal sand, it should be noted that the two habitats are not directly comparable. It is not the case that oyster reef provides a higher “score” on the same scale than subtidal sand, but rather that they provide different habitat services.</p>
7.4	In terms of defining the stage at which the oyster reef could potentially be sustainably fished, do you agree that this should be discussed post consent in consultation with the steering group and would form part of the existing review of fisheries management measures in the MCZ?	Natural England believe that realistic high level criteria should be agreed as early as possible given interested party concerns	Defer to Natural England	N/A	Not present	Not agreed	<p><u>EIFCA</u></p> <p>This must be considered pre consent. The approach to be taken in connection with this will shape Eastern IFCA’s position on the proposed MEEB measure.</p> <p>Eastern IFCA suggests that the potential to fish the oyster bed should be set out in the MEEB plan (i.e. for agreement in the DCO) as an additional, planned benefit of the measure, in recognition that MCZs are sustainable-use sites, not no-take zones. The same plan should include criteria for when the oyster bed could be fished, for example when the bed is recognised as being “established” (based on density? Age composition? Self-stocking? Extent?), and make it clear that any fishing activity on the bed would be subject to it being managed in alignment with the MCZ’s conservation</p>

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
							<p>objectives as well as with fishery sustainability goals. Although we will not know in advance when the bed will be deemed suitable for fishing, and it could be a long time (25 years +), we can and should state (in the MEEB plan) these criteria that would need to be met before it could be fished.</p> <p>N.B. Eastern IFCA has an agreed position (see comment in 7.1 above).</p> <p>Disagree that this “would form part of the existing review of fisheries management measures in the MCZ”. Over time, if the measure is successful, the oyster bed and a potential fishery for it would be incorporated into the local fisheries regulator (Eastern IFCA)’s routine work of managing fisheries within marine protected areas. But initially the placement of the bed and potential need for fisheries restrictions over it represents an additional work burden for Eastern IFCA and we would seek for this work to be funded by Equinor, including the ongoing monitoring of the bed.</p>
7.5	Do you agree that the area of search for determining feasibility of oyster reef planting should focus on the areas identified in Plate 2-1 (see below) of Natural England’s advice broadening out to the	Agreed	Defer to Natural England	N/A	Not present	Not agreed	<p><u>EIFCA</u></p> <p>Concerns raised that the ‘previous oyster bed evidence’ relates to historic fisheries shell deposit grounds. In this context, we don’t agree that Plate 2-1 should be titled “...<i>evidence of previous native oyster</i></p>

ID	Agreement	Natural England	MMO	Cefas	The Wildlife Trusts	EIFCA	Notes
	<p>wider north western portion of the MCZ and focus on subtidal sediment features avoiding potentially sensitive habitats e.g. chalk, reef etc.?</p>						<p><i>beds..”.</i></p> <p>Any potential site should be selected based on current environmental factors that are most agreeable to support the success of the MEEB.</p> <p>An effective appraisal of all environmental factors, to gain an understanding as to why native oysters have not re-established naturally should be undertaken. It would also be beneficial to find out whether native oyster beds were present in the MCZ historically – although it could be difficult to find any evidence for this. It should not be assumed that fishing is the only cause of decline in oyster stocks and distribution, and all relevant environmental factors must be considered.</p> <p>As this is an MCZ social and economic factors should be considered when evaluating any intervention, even those for conservation benefits such as MEEB.</p>

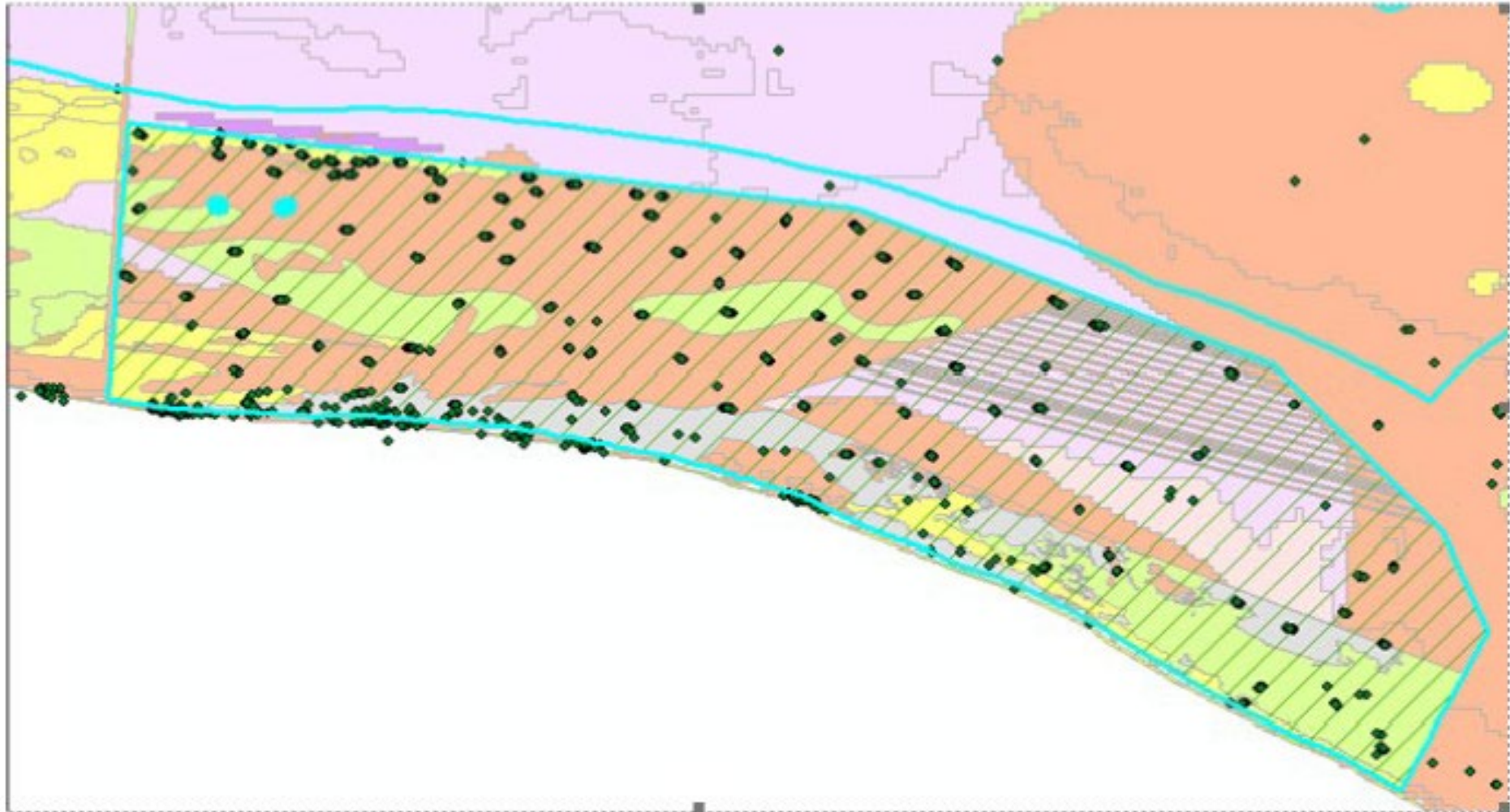


Plate 2-1: Location (Light Blue Dots) of Evidence of Previous Native Oyster Beds within Cromer Shoal Chalk Beds (CSCB) MCZ

1.10 HRA Compensation Expert Topic Group Agreement Log

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Evidence Plan Agreement Log
Habitats Regulations Assessment Offshore
Ornithology Compensation ETG

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Glossary of Acronyms

AONB	Area of Natural Beauty
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEP	Dudgeon Offshore Wind Farm Extension Project
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries and Conservation Authorities
MCZ	Marine Conservation Zone
MEEB	Measures of Equivalent Environmental Benefit
MMO	Marine Management Organisation
MPA	Marine Protected Area
RSPB	Royal Society of the Protection of Birds
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCG	Statement(s) of Common Ground
UK	United Kingdom

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP offshore site	The Dudgeon Offshore Wind Farm Extension consisting of the DEP wind farm site, interlink cable corridors and offshore export cable corridor (up to mean high water springs).
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
DEP North array area	The wind farm site area of the DEP offshore site located to the north of the existing Dudgeon Offshore Wind Farm
DEP South array area	The wind farm site area of the DEP offshore site located to the south of the existing Dudgeon Offshore Wind Farm
DEP wind farm site	The offshore area of DEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area. This is also the collective term for the DEP North and South array areas.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Offshore cable corridors	This is the area which will contain the offshore export cables or interlink cables, including the adjacent Offshore Temporary Works Area.
Offshore export cable corridor	This is the area which will contain the offshore export cables between offshore substation platform/s and landfall, including the adjacent Offshore Temporary Works Area.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.

Offshore scoping area	An area presented at Scoping stage that encompassed all planned offshore infrastructure, including landfall options at both Weybourne and Bacton, allowing sufficient room for receptor identification and environmental surveys. This has been refined following further site selection and consultation for the PEIR and ES.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbine generators and convert it into a more suitable form for export to shore.
Offshore Temporary Works Area	An Offshore Temporary Works Area within the offshore Order Limits in which vessels are permitted to carry out activities during construction, operation and decommissioning encompassing a 200m buffer around the wind farm sites and a 750m buffer around the offshore cable corridors. No permanent infrastructure would be installed within the Offshore Temporary Works Area.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP offshore site	Sheringham Shoal Offshore Wind Farm Extension consisting of the SEP wind farm site and offshore export cable corridor (up to mean high water springs).
SEP wind farm site	The offshore area of SEP within which wind turbines, infield cables and offshore substation platform/s will be located and the adjacent Offshore Temporary Works Area.
The Applicant	Equinor New Energy Limited

1 Introduction

1. This document serves as a record of agreements and key decisions between Equinor New Energy ('the Applicant') and stakeholders through the Evidence Plan Process. Several Expert Topic Groups (ETGs) have been established to facilitate discussion and agreement on key issues where possible. ETGs and their membership are listed in **Table 1-1**. This Agreement Log documents agreements between the Applicant and stakeholders on the Habitats Regulations Assessment (HRA) - Offshore Ornithology Compensation ETG.

Table 1-1: ETGs and Members

ETG	Members
Offshore Ornithology	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Marine Mammal Ecology	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, The Wildlife Trusts
Seabed (including benthic and fish ecology, and marine physical processes);	Equinor, Royal HaskoningDHV, Natural England, MMO, Cefas, Eastern IFCA, The Wildlife Trust
Terrestrial Ecology and Ornithology	Equinor, Royal HaskoningDHV, Natural England, Norfolk Wildlife Trust, Environment Agency, Norfolk County Council
Seascape, Landscape and Visual	Equinor, Royal HaskoningDHV, Norfolk County Council, North Norfolk District Council, Broadland District Council, Norwich City Council, Natural England, Historic England, North Norfolk AONB/Coastal partnership
Traffic	Equinor, Royal HaskoningDHV, Norfolk County Council, Highways England
Archaeology (both onshore and offshore)	Equinor, Royal HaskoningDHV, Historic England, Norfolk County Council
HRA - Offshore Ornithology Compensation	Equinor, Royal HaskoningDHV, Natural England, MMO, RSPB
Cromer Shoal Chalk Beds Marine Conservation Zone MEEB	Equinor, Royal HaskoningDHV, Natural England, MMO, The Wildlife Trusts

2. This log of agreements will enable an iterative approach to be taken to generating the Statement(s) of Common Ground (SoCG). In this way during the DCO examination period it will be possible to trace the decision-making process back through a clear and agreed audit trail without the requirement for unnecessary reiteration of the discussions.
3. HRA Compensation ETG meetings were held on:
 - 26th January 2022 (ETG1)
 - 25th April 2022 (ET3)
 - 29th June 2022 (ETG3) Agreement Log

2 Agreement Log

Table 2-1: Agreement Log

ID	Agreement	Natural England	MMO	RSPB	National Trust	Notes
2	ETG2 25 April 2022					
Sandwich tern						
2.1	It is agreed that the creation of an inland pool at Loch Ryan is stakeholders' most preferred measure for Sandwich tern compensation.	See notes	Defer to Natural England	No response	No response	We advise that this option has ecological merit for sandwich tern, and could function as a primary compensation measure as part of a wider package of works benefitting sandwich tern. However, in the absence of information regarding the location, size and design of inland pool this support is provided in principle only.
2.2	It is agreed that the installation of a pontoon structure at Loch Ryan may benefit breeding Sandwich terns but given the lack of evidence indicating that breeding Sandwich terns would use a pontoon structure, this measure should be considered as part of a	Natural England doesn't support the creation of a pontoon for breeding sandwich tern as a compensation option.	Defer to Natural England	No response	No response	

ID	Agreement	Natural England	MMO	RSPB	National Trust	Notes
	'package' owing to the risk that it - may not sufficiently deliver compensation for Sandwich tern in isolation.					
2.3	It is agreed that a pontoon structure in the region 20x30m (i.e. bigger than those used for common tern) is an appropriate size of structure on which to form the basis of proposals.	See above.	Defer to Natural England	No response	No response	
2.4	It is agreed that a pontoon would be subject to less human disturbance and would allow predator pressure to be more easily mitigated when compared to an inland pool.	See above.	Defer to Natural England	No response	No response	
2.5	It is agreed that putting forward a package of measures (e.g. nest boxes / terraces, additional resource for wardening) which are not currently proposed within Management Plans at Sandwich tern SPA sites provides additionality and ensures resilience in the proposals.	Natural England doesn't agree because demonstrating the additionality of such measures beyond required site management would be difficult. Such measures may provide resilience for the overall sandwich tern compensation package, however we do not consider these would in any way represent a primary measure.	Defer to Natural England	No response	No response	

ID	Agreement	Natural England	MMO	RSPB	National Trust	Notes
Guillemot and razorbill						
2.6	It is agreed that if it could be demonstrated that there is gill net fishery in the area in reach of the FFC SPA then it's likely there's bycatch happening and therefore there could be some potential for compensation	Natural England considers that there is major uncertainty regarding whether 1) there is a local gill net fishery that is impacting FFC SPA and 2) that there are effective bycatch reduction mechanisms available for gill-netting that could provide compensation opportunities.	Defer to Natural England	No response	N/A	
2.7	It is agreed that predator eradication and bycatch is best suited to a collaborative approach with other developers.	There may be ecological benefits from taking a collaborative approach. However, this does preclude the ability to bring forward project-specific compensation if needed.	Defer to Natural England	No response	N/A	
2.8	It is agreed that bycatch reduction compensation measures would be on a 1 to 1 ratio.	Not agreed.	Defer to Natural England	No response	N/A	
Gannet						
2.9	It is agreed that whilst a like for like measure is preferred for gannet, bycatch reduction measures are likely to be very challenging to implement and there are no other measures to	Natural England agrees that it is challenging to provide meaningful compensation for gannet and consider that, of the limited suite of options available,	Defer to Natural England	No response	N/A	

ID	Agreement	Natural England	MMO	RSPB	National Trust	Notes
	those already discussed that the Applicant should be pursuing.	by-catch is probably the best option to pursue.				
2.10	It is agreed that where impacts are modest there may be some more flexibility in the type of measures that can be considered such as bycatch reduction trials.	Natural England will be in a better position to comment on the potential acceptability of less traditional measures to offset potential impacts once full review of the ES has taken place and the level of impacts understood.	Defer to Natural England	No response	N/A	
2.11	Based on the Defra (2021) draft guidance and following the compensation hierarchy, it is agreed that the Loch Ryan measure could represent a potential non like-for-like approach for gannet however, where available a like-for-like measure is preferred.	Natural England observes that 'non- like-for-like' is at the bottom of the compensation hierarchy and therefore all other options should be exhausted first.	Defer to Natural England	No response	N/A	
2.12	It is agreed that bycatch reduction compensation measures would be on a 1 to 1 ratio.	Not agreed.	Defer to Natural England	No response	N/A	
Kittiwake						
2.13	It is agreed that modification of the existing Gateshead kittiwake tower represents the most	Natural England's overarching advice to OWF developers is that further artificial structures	Defer to Natural England			

ID	Agreement	Natural England	MMO	RSPB	National Trust	Notes
	suitable option for modification of existing artificial structures	should be considered offshore rather an onshore due to the level and timing of consented kittiwake compensation measures onshore. With specific reference to extending the existing Gateshead tower, Natural England would require more information on what is proposed before we can comment on its merits. However, those comments would be in the context of the overarching advice above.				