East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Comments on Suffolk Energy Action Solutions' (SEAS) Deadline 5 Submissions

Applicant: East Anglia TWO and East Anglia ONE North Limited
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Applicable to East Anglia ONE North and East Anglia TWO

Revision Summary				
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Glossary of Acronyms

ACoW	Arboricultural Clerk of Works
AMS	Arboricultural Method Statement
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CoCP	Code of Construction Practice
DCO	Development Consent Order
dDCO	Draft Development Consent Order
DMO	Destination Management Organisation
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EEEGR	East of England Energy Group
EFT	Emissions Factors Toolkit
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
ES	Environmental Statement
ESC	East Suffolk Council
HDD	Horizontal Directional Drilling
HGV	Heavy Good Vehicle
JNCC	Joint Nature Conservation Committee
LGV	Light Goods Vehicles
LMP	Land Management Plan
MoU	Memorandum of Understanding
NO_2	Nitrogen dioxide
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRMM	Non-Road Mobile Machinery
OLEMS	Outline Landscape and Ecological Management Strategy
ONS	Office of National Statistics
PM	Particulate Matter
PPM	Parts Per Million
SBIS	Suffolk Biodiversity Information Service
SCC	Suffolk County Council
SEAS	Suffolk Energy Action Solutions
SoCG	Statement of Common Ground
SPA	Special Protected Area
SSSI	Site of Special Scientific Interest
SZC	Sizewell C
µg	Microgram

Glossary of Terminology

Applicants	East Anglia TWO Limited / East Anglia ONE North Limited
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia TWO / East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia TWO / East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO / East Anglia ONE North project Development Consent Order.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore substation	The East Anglia TWO / East Anglia ONE North substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia TWO / East Anglia ONE North project.

1 Introduction

1. This document provides the comments of East Anglia TWO Limited and East Anglia ONE North Limited (the Applicants) on Written Representations received from Suffolk Energy Action Solutions (SEAS) regarding the East Anglia TWO project and the East Anglia ONE North project (the Projects).

2. SEAS' Written Representations (REP5-108, REP5-109, REP5-110 and REP5-113) relate to various materials submitted by the Applicants at or before Deadline 4, including:

    - Air Quality Representation (REP5-109);
    - Health Impact Assessment (REP5-110);
    - Habitats and Biodiversity (REP5-108); and
    - Roads, Traffic and Tourism (REP5-113).

3. The Applicants' response to SEAS' Deadline 5 representations are provided in ***Section 2***.

4. This document is applicable to both the East Anglia ONE North and East Anglia TWO applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again for the other project.

2 Applicants' Comments

5. ***Section 2.1*** to ***Section 2.4*** provide the Applicants' comments on SEAS' Written Representations submitted at Deadline 5.

2.1 Air Quality Representation (REP5-109)

ID	SEAS' Deadline 5 Comment	Applicants' Response
Introduction - author		
1	1.1.1 My name is Jethro Redmore and I am a Director at Redmore Environmental Ltd. I hold a BEng in Energy Engineering from Leeds University and a MSc in Environmental Pollution Control, also from Leeds University. I am a Chartered Environmentalist (CEnv), a Member of the Institute of Air Quality Management (MIAQM), a Member of the Institute of Environmental Sciences (MIEnvSc) and a Practitioner of the Institute of Environmental Management and Assessment (PIEMA). I have previously sat on the council of the IAQM and been involved in working groups for the production of technical guidance. In my role as Director at Redmore Environmental I am responsible for directing the air quality assessments undertaken by the company. I was previously employed as Associate Director by Resource and Environmental Consultants Ltd, Senior Air Quality Consultant by Hyder Consulting, Senior Air Quality Consultant by WYG and Air Quality Technician by RPS.	The Applicants note these points.
2	1.1.2 I have worked as a professional environmental scientist for approximately 16 years. I have been responsible for conducting environmental studies for major road improvement and construction schemes, power stations, oil refineries and other large industrial complexes. In addition, I have carried out numerous air quality assessments of mineral, residential and retail proposals, as well as providing specialist advice in the field of air quality and odour to Local Authorities and National Environmental Agencies.	
3	1.1.3 I have undertaken air quality assessments for a wide variety of energy projects, from single diesel generators to advanced thermal	

ID	SEAS' Deadline 5 Comment	Applicants' Response
	treatment plants. These studies have been carried out for Environmental Statements, planning applications and to investigate potential nuisance issues, and have often made reference to relevant industry guidance produced by the Department for Environment, Food and Rural Affairs (DEFRA) and the IAQM, amongst others.	
Introduction - Scope of Report		
4	1.2.1 Redmore Environmental Ltd was commissioned by SEAS to comment on the application for development consent for the East Anglia ONE North and East Anglia TWO Offshore Windfarms.	The Applicants note these points.
5	1.2.2 The proposals have the potential to cause atmospheric emissions with associated impacts on existing air quality. These have been considered by Royal HaskoningDHV in the following main documents: • Preliminary Environmental Information - Chapter 19: Air Quality; • Environmental Statement Chapter 19: Air Quality and associated appendices; • Clarification Note dated 2nd November 2020; and, • Air Quality Deadline 3 Clarification Note dated 15th December 2020.	
6	1.2.3 Air quality matters are also covered by submissions by East Suffolk Council (ESC), Suffolk County Council and SEAS, amongst others.	
7	1.2.4 The relevant documents were reviewed in order to provide consideration of the robustness of the air quality assessment and to	

ID	SEAS' Deadline 5 Comment	Applicants' Response
	identify any areas of concern. Our findings are detailed in the following report.	
8	1.2.5 It should be noted that all Royal HaskoningDHV submissions are intrinsically linked, with the specific issues being explored in differing levels of detail throughout the various documents. They have therefore been considered as one for the purpose of this review (the Air Quality Assessment). Additionally, although separate applications have been made for East Anglia ONE North and East Anglia TWO, the Air Quality Environmental Impact Assessments (EIAs) cover both proposals and therefore have not been considered separately.	
Areas of Concerns – Introduction		
9	2.1.1 Following review of baseline conditions throughout the study area and the submitted Air Quality Assessment, the following five areas of concern have been identified which are relevant to both applications: • Issue 1 - Air quality impacts associated with vessel emissions have not been considered; • Issue 2 - Air quality impacts associated with ammonia (NH3) emissions from road traffic and non-road mobile machinery (NRMM) have not been considered; • Issue 3 - Optimistic assumptions have been adopted in regards generator exhaust positioning within the assessment of NRMM and haul road emissions; • Issue 4 - The results of the sensitivity analysis of exhaust emission reduction and how these affect predicted pollutant concentrations have not been given any weight when determining the significance of air quality effects; and,	Responses to each of the issues raised are provided in detail in the following sections.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	• Issue 5 - As covered separately by SEAS, a number of cumulative developments have not been considered within the Air Quality Assessment. 2.1.2 The above issues are discussed further in the following Sections.	
Areas of Concerns – Issue 1		
10	2.2.1 Air quality impacts associated with vessel emissions have not been considered. Shipping is a significant source of atmospheric emissions, particularly oxides of nitrogen (NOx), sulphur dioxide (SO2) and particulate matter with an aerodynamic diameter of less than 10µm (PM10). As such, the additional movements associated with the transport of materials to allow construction of the wind turbines in offshore locations have the potential to impact on air quality at both human and ecological receptors. However, as these have not been considered, it is not possible to determine whether the effects are likely to be significant in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations (2017).	The scoping reports produced for the Projects considered that the impacts of vessel emissions operating offshore would be unlikely to significantly impact air quality at onshore human and ecological receptors and were therefore scoped out. This was agreed by the Planning Inspectorate in its Scoping Opinion (APP-573). As such, no further assessment of vessel emissions was undertaken as impacts were considered to be insignificant.
Areas of Concerns – Issue 2		
11	2.3.1 Air quality impacts associated with NH3 emissions from road traffic NRMM have not been considered.	The quantity of ammonia emissions from vehicles and plant is dependent on the vehicle or plant type and the method of operation, and will also vary based on whether engines are warm or cold. Currently, the UK government has not provided emission factors for ammonia from road vehicles or Non-Road Mobile Machinery (NRMM) for use in air quality assessments. The fuel type, and therefore the type of catalyst used, influences ammonia emissions. Research indicates that petrol cars have the
12	2.3.2 In petrol vehicles, NOx emissions are typically controlled using a three-way catalyst, which is designed to oxidise hydrocarbons and carbon monoxide to form water and carbon dioxide while reducing NOx to form unreactive nitrogen. However, if the conditions for these reactions are not optimal, then nitric oxide (NO) can be reduced to NH3, which is emitted via the exhaust gases. This typically occurs	

ID	SEAS' Deadline 5 Comment	Applicants' Response
	when an engine runs with a high fuel to air ratio, which is often when engines are cold and/or under particularly heavy load. In diesel vehicles, NOx emissions are typically controlled using either a Lean NOx Trap (LNT) or Selective Catalytic Reduction (SCR). The LNT requires the periodic removal of stored NOx by operating with excess fuel. This can result in NO being reduced to NH3. SCR relies on deliberately generating NH3. For example, the additive AdBlue is composed of urea in water, which is injected into the exhaust system. The NH3 then reacts with NOx, but it is possible for unreacted NH3 to 'slip' and join the exhaust gases.	highest emissions of ammonia[1]. The Projects would utilise predominantly diesel vehicles and plant, and these are most likely to be utilised in the vicinity of ecological receptors. It is possible to prevent ammonia emissions by good management of the NOx control systems or by fitting an ammonia slip catalyst. 70% of HGVs used by the Projects will be Euro VI standard; the Euro VI standard sets an emission limit for ammonia of 10 parts per million (ppm). In order for these engines to meet the Euro VI ammonia emission standard, they must be fitted with an ammonia slip catalyst. This would significantly reduce or eliminate ammonia emissions from the majority of vehicles used by the Projects. Furthermore, concentrations of ammonia from vehicles decrease with distance away from the road. The rate at which ammonia deposits from the atmosphere (the deposition velocity) is an order of magnitude higher than NO_2. As such, ammonia deposits more rapidly closer to the emission source, and therefore, with increased distance, ammonia deposition reduces. As shown on the figures included in the Deadline 3 Air Quality Clarification Note, the haul road would not be located within the immediate vicinity of designated sites, other than at the Sandlings Special Protected Area (SPA) crossing if a trenched technique is used, which would be a short-term, temporary impact due to seasonal restrictions. Additional ammonia contributions from vehicles used whilst these works are undertaken are therefore unlikely to have a significant effect in the context of annual average emission concentrations and deposition. The good management of NOx control systems would be encompassed within the plant maintenance requirements secured
13	2.3.3 Emissions of NH3 have been shown to contribute between 40% and 70% of the road increment of nitrogen deposition1. This is likely to increase in the future as NOx emission standards are tightened in accordance with current legislation and a greater number of vehicles use the methods outlined above to control releases.	
14	2.3.4 Without consideration of road vehicle and NRMM emissions in the assessment, impacts at ecological receptors in terms of increased NH3 concentrations, nitrogen deposition and acid deposition, may be significantly underestimated. This is of particular concern in relation to results presented within the Air Quality Deadline 3 Clarification Note produced by Royal HaskoningDHV2, which indicates exceedences of the relevant critical loads for the protection of sensitive habitats at the Leiston-Aldeburgh Site of Special Scientific Interest (SSSI) and Sandlings Special Protection Area (SPA) without NH3 emissions included within the results. Should these emissions be considered then substantially greater exceedences of the relevant standards would be predicted. This may affect both the conclusions of the EIA	

[1] https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=d73793b2-5fd7-43f5-acab-7e659eb05777

ID	SEAS' Deadline 5 Comment	Applicants' Response
	and Habitats Regulations Assessment. As such, without this information, it is not possible to determine whether the effects are likely to be significant.	within ***Section 10.1.6*** of the ***Outline Code of Construction Practice*** (CoCP) (an updated version has been submitted at Deadline 6, document reference 8.1), which would minimise the emissions of ammonia from NRMM. In addition to the above, further ecological analysis was undertaken to consider the quality of the habitats in the areas closest to the worst-case locations of the works (REP3-060). This identified that the receptor locations were predominantly within the fringes of habitat areas and were therefore considered to be of a lower quality than the core habitat itself, principally due to their being more exposed and susceptible to changing weather conditions. As such, the greatest magnitude of impacts would be experienced outside areas of core habitat. In conclusion, whilst emissions of ammonia may occur, these would be minimised insofar as possible by good management techniques and the use of Euro VI (70%) vehicles. Works in the vicinity of ecological receptors would be temporary and are necessary for the construction of the Projects. As explained in the ***Deadline 3 Onshore Ecology Clarification Note*** (REP3-060), the habitat within the Sandlings SPA and Leiston-Aldeburgh Site of Special Scientific Interest (SSSI) in the immediate vicinity of emission sources is not considered to be of the highest quality, and therefore the core designated habitat would be affected to a lesser degree. As such, it is considered that predicted concentrations and deposition which would occur over a short-term period would have a **non-significant effect** and not prevent the long-term recovery of the habitats in the designated sites, and impacts are therefore considered to be insignificant.

ID	SEAS' Deadline 5 Comment	Applicants' Response
Areas of Concerns – Issue 3		
15	2.4.1 Optimistic assumptions have been adopted in regards generator exhaust positioning within the assessment of NRMM and haul road emissions. Within the Air Quality Deadline 3 Clarification Note3 it has been assumed that all generator exhausts emit vertically. This is often not the case, with horizontal flues fitted on many units. Emissions at this angle disperse poorly, with considerably greater ground level impacts than vertical discharges. Given that the actual plant to be used on site is unknown at this stage of the project, worst-case assumptions should be adopted to ensure a robust assessment. As this was not the case, and coupled with the non-inclusion of NH3 emissions, effects on the Leiston-Aldeburgh SSSI and Sandlings SPA may be significantly underestimated	The assessment of emissions from NRMM was undertaken using conservative assumptions with regard to the location of generators in relation to designated ecological sites. The ADMS 5 modelling software does not allow the user to specify horizontal emissions from point sources. The generators operating closest to designated sites would typically be larger units associated with Horizontal Directional Drilling (HDD) works. The exhausts for these units, even if oriented horizontally, would still be located at height, and the high emission temperature would facilitate plume rise and the associated dilution and dispersion of pollutants. As such, it is not expected that the consideration of horizontal emission sources would materially affect the conclusions of the assessment.
Areas of Concerns – Issue 4		
16	2.5.1 The results of the sensitivity analysis of exhaust emission reduction and how these affect predicted pollutant concentrations have not been given any weight. As outlined in Appendix 19.4 of the Environmental Statement, exceedences of the annual mean Air Quality Objective (AQO) for nitrogen dioxide (NO2) are predicted at residential properties when more conservative assumptions are adopted. This would lead to impacts classified as significant using the methodology outlined within the IAQM guidance 'Land-Use Planning & Development Control: Planning for Air Quality'4, as adopted for use by Royal HaskoningDHV throughout the Air Quality Assessment.	Evidence was published in 2020[2] which stated that the performance of Defra's Emissions Factors Toolkit (EFT) was suitably robust in the prediction of vehicle emissions into the future. The sensitivity test presented in the Environmental Statement (ES) (APP-493) was provided for comparison purposes, but it is considered to be overly conservative to assume that there would be no improvement in either future vehicle emissions or background pollutant concentrations between 2018 and 2023. Recent monitoring undertaken within the Stratford St Andrew Air Quality Management Area (AQMA) shows that

[2] https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=7fba769d-f1df-49c4-a2e7-f3dd6f316ec1

ID	SEAS' Deadline 5 Comment	Applicants' Response
17	2.5.2 It is understood that previous research has shown better correlation between vehicle emission performance and the DEFRA Emissions Factor Toolkit (EFT) in recent years. However, there is always uncertainty when predicting future conditions and a precautionary approach should be adopted when undertaking environmental assessment. This position is supported by Appeal Decisions APP/V2255/W/15/3067553 & APP/V2255/W/16/3148140 which indicate that although it is accepted that emissions will reduce in the future, the rate of improvement is difficult to predict and should therefore be viewed with caution.	pollutant concentrations have reduced in recent years which supports this position (East Suffolk Council, 2020). Discussions have been ongoing between the Applicants and East Suffolk Council (ESC) with regard to ensuring that impacts, particularly within the Stratford St Andrew AQMA, would not be significant in light of future uncertainties in emissions reductions. This includes a commitment to proportions of Euro VI vehicles (70%) used by the Projects to minimise emissions. As such, significant impacts would be avoided by implementation of these mitigation measures.
18	2.5.3 Robust assumptions regarding future emissions are particularly important due to the effects of COVID-19 on vehicle purchasing habits and associated impact on fleet mix. As fewer new cars are purchased a greater proportion of older models with higher emissions are likely to be utilised in the future than previously anticipated. By disregarding the results of the sensitivity analysis, this eventuality has not been considered. As such, effects on human receptors and ecological designations may be underestimated.	
Areas of Concerns – Issue 5		
19	2.6.1 As covered separately by SEAS within 'SEAS Campaign Group Deadline 1 Submission - Written Representation' 5 (reference: REP1-328), specifically ExQ1-1.14.5 – Potential use of National Grid Substation and ExQ1-1.14.6 – Other Projects, a number of cumulative developments have not been considered within the Air Quality Assessment. Of particular note is Sizewell C, where only a qualitative analysis was provided despite the substantial size of the scheme.	A qualitative assessment was undertaken in the absence of finalised data from Sizewell C, as explained in the ***Sizewell Projects Cumulative Impact Assessment (Traffic and Transport) Clarification Note*** submitted at Deadline 2 (REP2-009). With regard to the potential for other future projects, the Applicants' position is that the Planning Inspectorate's Advice Note 17 was followed in the selection of cumulative projects for consideration, and that should any

ID	SEAS' Deadline 5 Comment	Applicants' Response
20	2.6.2 Traffic associated with the proposals, as well as Sizewell C and any other relevant committed developments not considered within the Air Quality Assessment, will travel through the Air Quality Management Area (AQMA) located along the A12 in Stratford St Andrew. This has been declared by ESC due to exceedences of the statutory AQO for annual mean NO2 concentrations. Additional vehicle emissions in this area will increase pollutant concentrations and potentially affect how quickly compliance with the AQO can be achieved. This contradicts the requirements of paragraph 181 of the National Planning Policy Framework (NPPF)6, which states: *"181. Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas."*	of the identified projects come forward, each would require its own EIA and consent application and would therefore be required to undertake its own cumulative assessment with reflects the development status of the Projects. Discussions have been ongoing with ESC and SCC with regard to cumulative impacts in the Stratford St Andrew AQMA and the appropriate mitigation measures to prevent significant impacts from occurring within the AQMA. This includes a commitment to an agreed percentage of Euro VI (70%) vehicles.
21	2.6.3 When considered in the context of the potentially overly optimistic representation of future emissions and the sensitivity of human receptors within the Stratford St Andrew AQMA, the utilised future traffic flows may have led to a significant underestimation of cumulative air quality impacts within the vicinity of the access route.	
Summary		
22	3.1.1 Redmore Environmental Ltd was commissioned by SEAS to comment on the application for development consent for the East Anglia ONE North and East Anglia TWO Offshore Windfarms.	Responses to each of the identified issues is provided in the previous rows. The identified issues are not anticipated to make a material difference to the assessment conclusions. The mitigation measures identified by the Projects are considered to be sufficient to prevent significant
23	3.1.2 The following five areas of concern have been identified which are relevant to both applications:	

ID	SEAS' Deadline 5 Comment	Applicants' Response
	• Issue 1 - Air quality impacts associated with vessel emissions have not been considered; • Issue 2 - Air quality impacts associated with ammonia emissions from road traffic and NRMM have not been considered; • Issue 3 - Optimistic assumptions have been adopted in regards generator exhaust positioning within the assessment of NRMM and haul road emissions; • Issue 4 - The results of the sensitivity analysis of exhaust emission reduction and how these affect predicted pollutant concentrations have not been given any weight; and, • Issue 5 - A number of cumulative developments have not been considered within the Air Quality Assessment.	impacts from occurring, and additional commitments such as the specification of the use of Euro VI vehicles (70%) will further minimise any potential impacts.
24	3.1.3 As outlined above, the review of the Air Quality Assessment indicated a number of areas which have not been considered in sufficient detail to allow a conclusion on potential effects to be reached. As such, without submission of additional detailed analysis, it is not clear how the planning authority can be confident that significant air quality impacts will not occur at human and ecological receptors based on the evidence provided to date. It is therefore considered that without this information and the incorporation of any required effective mitigation into the proposal, the application should be refused.	

2.2 Health Impact Assessment (REP5-110)

ID	SEAS' Deadline 5 Comment	Applicants' Response
Background		
1	I am an academic general medical practitioner. I have been a GP for 36 years. During construction of the Sizewell B nuclear power plant, I worked as a GP at Leiston, Suffolk and acted as the medical officer supervising the medical centre on the construction site. I therefore have personal experience of the impact of a major construction project on a small population. I am an Appointed Doctor to the Health and Safety Executive under the Ionising Radiation Regulations and have relevant experience in assessing environmental influences on health. I am currently Professor of Family Medicine with a special interest evidence-based medicine directing an online MSc in based at the University of Nicosia, Cyprus.	The Applicants note these points.
Health effects of a major construction project		
2	1.1. It is my intention to assess the effects on the health of the local population. The health effects can be categorised as 1.2. Direct such as the effect of air pollutants. These may be • short term or acute, during the period of exposure, • long term or chronic, continuing after the exposure 1.3. Indirect, arising from changes in the social as well as physical environment 1.4. Effects on the health service	The Applicants note these points.

ID	SEAS' Deadline 5 Comment	Applicants' Response
Direct Health Effects		
3	2.1. The presence of pollutants are the most easily recognisable hazard. They have been given the most attention by SPR and by responses to the consultation. Assessing the health effects requires data from several sources: • The known effects of the pollutants • The quantitative relation between concentration of pollutants and health outcomes • The predicted change in the concentration of pollutants 2.2. The effects are not uniform across the whole population, with some effects mostly falling on children while others mostly on the elderly.	The Applicants note these points.
The known effects and quantitative relation of pollutants to health outcomes		
4	3.1. Table 1 shows the known effects of pollutants created by road traffic and by excavation. Not all effects have been quantified. 3.2. Table 2 shows the effects of several that have been quantified in terms of the increase in risk for each incremental change in exposure.	The Applicants note these points.
5	3.3. The hazard ratio (HR) is the ratio of the risk of developing a condition as a result of exposure to the risk without the exposure. To illustrate how to interpret it, let us take the last condition, incidence of chronic bronchitis in adults. The HR of 1.117 means that for every 10 µg/m3 increase in PM10 w there will be a 10% increase in chronic bronchitis. To apply that to the local circumstances, we need to relate the HR to the predicted increase in concentrations of pollutants.	

ID	SEAS' Deadline 5 Comment	Applicants' Response
The predicted increase in the concentration of pollutants		
6	4.1. SPR has commissioned an air quality assessment (3). Having modelled changes in concentrations of dust, nitrous oxides and particulate matter at several sites, the conclusion was that the exposures will not be significant. There are three lines of reasoning to consider why this conclusion is unjustified: potential underestimation of the changes, failure to consider differential impact, and failure to consider cumulative effects over time	The UK government has not adopted an air quality Standard or Objective in relation to ammonia; this pollutant is typically considered in relation to its effects on ecological habitats and is therefore not considered to be of relevance in a human health context, as per the Air Quality Standards Regulations (2010). [3] With regard to the underestimation of impacts due to horizontal exhausts on generators, technical consideration of this issue is presented in ***Section 2.1*** of this response. However, in the areas of most intensive generator use, i.e. at HDD sites, there would be no human receptors in the immediate vicinity. As such, there would be expected to be sufficient dilution and dispersion of pollutants between source and receptor to prevent any significant human health impacts from occurring. Along the rest of the cable corridor, smaller generators would be used which are unlikely to significantly contribute to air pollution in the locale. As stated in ***Section 2.1***, it is considered that the future emissions forecasts used in the assessment are suitably robust, and local monitoring data indicates that air quality is improving in the Stratford St Andrew AQMA. As stated above, cumulative impacts with Sizewell C will be managed via commitment to a percentage of Euro VI (70%) vehicles as agreed with ESC and SCC. Discussions have been held with ESC and EDF on this matter to secure mitigation measures which will ensure that the projects would not lead to significant cumulative impacts in this area.
7	4.2. Potential underestimation. A separate assessment (4) commissioned by SEAS has commented that these may be underestimates because • NH3 emissions from road vehicles and NRMM; • Additional proposals in relation to the cumulative and In-Combination Assessments; • The potential for horizontal exhausts on generators; and, • The potential for emissions not reducing in accordance with current forecasts.	
8	4.3. Differential impact. Pollution does not affect all groups equally. The proportion of people over the age of 60 is 44%, higher than the average for England(5). Therefore the HRs for all cause mortality, hospital admissions and chronic bronchitis in the local population would to be higher than those in table 2.	
9	4.4. Children attending Coldfair Green and Snape schools are another group differentially affected. The B1069 on the approach to the B1353	

[3] https://www.legislation.gov.uk/uksi/2010/1001/contents/made

ID	SEAS' Deadline 5 Comment	Applicants' Response
	will be a hotspot for traffic exposing a concentrated gathering of children. The problem will be magnified by the temporal concentration of car emissions from employees' private cars going to and from work at the time that children are arriving and leaving school. One hundred and thirty children at Coldfair Green and 70 at Snape will be affected.	Air quality impacts were considered in the assessment in relation to the UK government's health-based air quality Standards and Objectives, in accordance with the Overarching National Policy Statement (NPS) for Energy (EN-1). The air quality Standards were derived from epidemiological studies which took into account vulnerable population groups. Impacts of air pollution must also be considered over the appropriate averaging times; air quality Standards for pollutants of relevance to the Projects are measured over annual average and short term (1-hour and 24-hour) exposure periods. Outside of the Stratford St Andrew AQMA, pollutant concentrations in the study area are very low due to the lack of significant emission sources in the area; concentrations of NO_2, PM_{10} and $PM_{2.5}$ were predicted to be less than 50% of their respective air quality Objectives in 2023, the earliest year of construction of the Projects. This is also true at almost all receptor locations for the sensitivity test presented in ***Appendix 19.4*** of the ES (APP-493), which assumed no improvement in air quality into the future. Air quality effects must only be considered in the context of the appropriate exposure periods, as described above. Very short-term increases in pollution levels at peak times would not, therefore, have significant effects over an annual average time period. As explained in ***Chapter 19 Air Quality*** (APP-067), for road traffic, consideration of the likelihood of exceedances of the short-term air quality Objectives is determined in relation to the annual mean concentration (i.e. where the annual mean NO_2 concentration is greater than 60 $\mu g \cdot m^{-3}$, exceedances of the 1-hour Objective are likely - this is 150% of the annual mean Objective). Given that air quality in the area is very good, and there is a very low risk of any exceedances of the health-based
10	4.5. Cumulative effect. The HRs in table 2 relate to annual risk increases. The projects will run for 12-15 years so the effects on chronic diseases will be accumulative. This is of concern for all groups but especially for children who will be at Coldfair Green school for much of the formative period of their lives when they are at risk from developing lung disease and neurodevelopmental delay.	
11	4.6. The SPR submission has made its case on the grounds that the predicted concentrations of PM2.5 PM10 and NO2 will be below the proscribed limits. However, this case overlooks the fact that there are no accepted safe lower limits	

ID	SEAS' Deadline 5 Comment	Applicants' Response
		annual mean air quality Objectives, it is also unlikely that the short-term Objectives would be breached during peak periods. The quoted hazard ratios are based on a 10 $\mu g \cdot m^{-3}$ increase in either PM_{10} or $PM_{2.5}$ concentrations. This would constitute a significant increase; for context, in the case of $PM_{2.5}$ this would represent a doubling of the total concentration. Under the worst-case scenario of the Projects being constructed in parallel, the Projects were predicted to contribute 0.21 $\mu g \cdot m^{-3}$ and 0.13 $\mu g \cdot m^{-3}$ of PM_{10} and $PM_{2.5}$ respectively, a very small fraction of the increases which would generate the cited health effects. It should also be noted that the Project contributions of PM_{10} and $PM_{2.5}$ mentioned above were derived based on the worst-case traffic generation, i.e. the Projects being constructed in parallel, and the shortest possible construction period. This results in a greater annual mean impact as the construction period is more intensive where both Projects are constructed in parallel. If the Projects were constructed sequentially, the total traffic flows would be lower. As noted in the ***Applicants' Responses to Examining Authority's Written Questions Volume 6 – 1.4 Construction*** (REP1-109), the worst-case scenario in terms of the duration of construction of both Projects' is six years in total, therefore effects would not be experienced for 12 – 15 years in either a parallel or sequential scenario. Nevertheless, the predicted worst-case annual mean pollutant concentrations were predicted to be below the health-based air quality Objectives, with only negligible increases in concentrations generated by the Projects. As such, significant health effects are not expected to occur. As previously discussed, the air quality Standards and Objectives were derived based on levels at which health effects are likely to occur. It is acknowledged that particulate matter is a non-threshold

ID	SEAS' Deadline 5 Comment	Applicants' Response
		pollutant, i.e. health effects can occur with any level of exposure, however construction activities of any scale would generate emissions of particulate matter. Those predicted to occur as a result of the Projects were found to be negligible and would occur temporarily over a short duration to establish a significant source of renewable energy (APP-067). This would contribute in the long term to the government's targets of overall exposure reduction to $PM_{2.5}$, as set out in its Clean Air Strategy. The Projects therefore have wider air quality and associated health benefits nationally.
Indirect health effects		
12	5.1. Indirect effects have so far not been considered. Plausible predictions have been made on the likely unemployment that will arise as a loss of tourism.	The Applicants note that ***Chapter 30*** of the ES (APP-078) assesses a major beneficial impact for local businesses and their employees during the construction of the Projects due to increased accommodation demand associated with the accommodation requirements for the personnel involved in the construction of the Projects. A major beneficial impact upon long term regional employment has also been assessed for the operation of the Projects, through employment opportunities for operation and maintenance activities. The predictions referred to regarding a loss of tourism relate to adverse impacts cumulatively with Sizewell C (SZC). SZC Co. have provided a package of mitigation measures including a Tourism Fund and Accommodation Strategy to alleviate their potential impacts on this sector (see ***section 9.8*** of ***Volume 2 Main Development Site Chapter 9 Socio-economics*** (SZC APP-195)).

ID	SEAS' Deadline 5 Comment	Applicants' Response
13	5.2. Unemployment can cause mental health problems (6) and physical problems including an increase in mortality (7). Such effects would continue after construction is completed.	As above, there are no predicted significant impacts upon the tourism sector from the Projects alone. SZC Co, have recognised the potential for significant impacts from SZC and have provided a series of mitigations for their impacts.
Effects on the health service		
14	During the construction of Sizewell B, there were periods of gridlock in Leiston town as workers attempted to drive home at the end of the working day. Such gridlocks occurring on the smaller roads in the area are likely to pose an obstacle to home visiting by primary care practitioners and an obstacle to emergency vehicles	The Applicants note that reports of gridlock currently experienced in Leiston at the end of the working day, but that any such gridlock currently experienced is not caused by the construction or operation of the Projects. The Applicants note that construction traffic associated with the Projects shall be subject to control measures set out within the final Construction Traffic Management Plan, which must accord with the ***Outline Construction Traffic Management Plan*** (an updated version has been submitted at Deadline 6, document reference 8.9) and must be submitted to and approved by the relevant highway authority in consultation with the relevant planning authority, in line with Requirement 28 of the ***draft Development Consent Order*** (***DCO***) (REP5-003).
Summary		
15	• The changes in concentration of air pollutants cannot be considered insignificant • The long term exposure of pollutants needs to be taken into account when direct impact on health is assessed • Exposure will have both acute and chronic effects, the latter continuing after completion of the construction	In summary, air quality impacts were considered in relation to the UK government's health-based air quality Standards and Objectives; these Standards take into account vulnerable groups. The changes in pollutant concentrations predicted to arise as a result of the Projects are negligible, and concentrations across the majority of the study area, including in the locations of local schools, are sufficiently below

ID	SEAS' Deadline 5 Comment	Applicants' Response
	• There will be differential impact on groups: children and older adults will be affected more • There are likely to be indirect effects on health and on the health service.	the health-based Standards that it is considered that significant health effects would not occur.

2.3 Habitats and Biodiversity (REP5-108)

ID	SEAS' Deadline 5 Comment	Applicants' Response
Location and recording errors in applicant's survey of Work Area **Hairy Dragonfly**		
1	1.1 Reference: the Applicants' Comments on NE Deadline 2 Submissions Document: ExA.AS-18.D3.V1 SPR Reference: EA1N_EA2-DWF-ENV-REPIBR-001149 15th December 2020	Noted.
2	1.1.2 Hairy dragonfly (*Brachytron pratense*) Natural England had requested information on any potential effects to this invertebrate due to the planned river crossing. They wrote: 'We note that, as it is intended to entirely avoid the bird breeding season, this will incorporate avoidance of the time when the hairy dragonfly is active, between May and July. […] However, we consider that it is important to ensure that all aspects of the hairy dragonfly's (*Brachytron pratense*) life cycle have been considered. This species remains in the larval stage for approximately 2 years. When it reaches the final stage of development it crawls out and can be found amongst vegetation on the banks of its water body, where it is very susceptible to injury for a short while until it emerges as the adult.'	Natural England's comment at Deadline 2 (REP2-055) related to the works at the onshore landfall entry/exit pit that is located within Work No.8. Whereas, SEAS' comment refers to the planned river crossing which is assumed to be the Hundred River and is within Work No.19. No evidence of suitable habitat for hairy dragonfly within the onshore development area at the Hundred River was recorded during the 2018 Extended Phase 1 Habitat Survey (APP-503 and APP-504). The Applicants have since revisited the site of the Hundred River crossing (15th – 16th February 2021) and assessed the habitat conditions at the Hundred River itself and the adjoining grazing field (the meadow as referred to by SEAS). No emergent vegetation was identified during the site visit and limited bankside vegetation (key species being bramble (*Rubus spp.*), nettle (*Urtica dioica*), teasel (*Dipsacus*) and perennial rye grass (*Lolium perenne*)) was recorded. The grazing field had cattle present at the time of the survey and key species noted comprised perennial rye grass, Yorkshire fog and open muddy areas. It is therefore concluded that hairy dragonfly is unlikely to be present due to the absence of its habitat requirements.

ID	SEAS' Deadline 5 Comment	Applicants' Response
		The full survey findings of the recent site visit (15th – 16th February 2021) have been submitted at Deadline 6 (document reference ExA.AS-26.D6.V1). Irrespective of the findings from the updated ecological survey, the Applicants committed to the implementation of mitigation measures within the Applications (embedded mitigation) (***Table 22.4, Chapter 22*** of the ***ES*** (***APP-070***)) which would reduce impacts to all invertebrates if any are present. In addition to embedded mitigation measures, the Applicants have committed to undertake pre-construction surveys, and should the presence of invertebrates or suitable habitat for invertebrates be identified from the pre-construction surveys, appropriate mitigation measures (if required) will be implemented through the final Ecological Management Plan (EMP).
3	1.2 The Applicant's response confused the location of the Hundred River with Work No. 8 — at the time of the Extended Phase 1 Habitat Survey (APP-277), Work No. 8 was recorded as being predominantly arable land. The Applicant pointed out that arable land is not considered a likely habitat for the larval stage of this species given their required habitat is well vegetated unpolluted waterbodies.	As noted above, Natural England's comments related to the works at the onshore landfall entry/exit pit and not at the Hundred River. The Hundred River crossing works are within Work No.19 and at the time of the Extended Phase 1 Habitat Survey was recorded as semi-natural broadleaved woodland. As stated in ID2, no evidence of suitable habitat to support invertebrates within the onshore development area at the Hundred River was recorded during the Extended Phase 1 Habitat Survey or the recent ecological survey. The full survey findings of the recent site visit (15th – 16th February 2021) have been submitted at Deadline 6 (document reference ExA.AS-26.D6.V1). Irrespective of the findings from the updated ecological survey, the Applicants committed to the implementation of mitigation measures within the Applications (embedded mitigation) (***Table 22.4, Chapter 22***

ID	SEAS' Deadline 5 Comment	Applicants' Response
		of the ES (APP-070)) which would reduce impacts to invertebrates if any are present.
4	1.3 The River Hundred is work area No. 19. Although not recorded at P1, to the west there is non-intervention, wet, riparian woodland which is a priority habitat, and to the east is riparian meadow.	The area of woodland to the east and west of the Hundred was not recorded as wet woodland during the Extended Phase 1 Habitat Survey. It was classified as semi-natural broadleaved woodland. The key ground fauna species included bramble, bracken, gorse and tree species include oak, silver birch, hawthorn, holly, creeping willow and horse chestnut. The Applicants have since revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following their recent independent site visit they are in agreement with the Applicants that it is not wet woodland. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
5	1.4 This image shows the eastern bank of the River Hundred at the trenching point. The date of the photo is Sunday 17 January 2021. We can see lush meadows grazed by cattle east of the river. There has been no ploughing and it is perfect habitat for *Brachytron pratense* with a variety of vegetation on both sides of the river. The unspoiled structure in the form of a rising ridge heading south and topped by Birch and Scots Pine is of complex archeological interest and illustrates that ploughing has not touched this land for many years. It is a typical location for basking reptiles, and the top soil breaking through grass cover is a favourable foraging area for Turtle Dove. In the foreground is the species-rich east bank. Barn Owl hunt here regularly	As presented in ***Table 22.15*** of ***Chapter 22 Onshore Ecology*** (APP-070), the area of woodland adjacent to the Hundred River was identified as one of the areas suitable for common reptile species. Appropriate mitigation measures (i.e. habitat manipulation works) to ensure compliance with the protections relevant to reptiles will be adhered to during construction related activities, as outlined within ***Section 22.6, Chapter 22*** (APP-070) and ***Section 6.9*** of the ***Outline Landscape and Ecological Management Strategy*** (***OLEMS***) (an updated version has been submitted at Deadline 6, document reference 8.7). No turtle doves were recorded utilising this area during baseline surveys, however temporary losses of potential turtle dove habitat

ID	SEAS' Deadline 5 Comment	Applicants' Response
		within the onshore cable route as a whole would be addressed by the provision of Work No. 14 which will be managed for turtle dove feeding during the construction period. The barn owl population in Suffolk is in favourable conservation status and according to the Suffolk Community Barn Owl Project[4], hosts some of the highest densities in Britain. Birds are likely to utilise suitable foraging habitat throughout the local area, and any temporary loss of habitat at this location is unlikely to substantially impact any individual's breeding or survival or affect the population status.
Unrecorded: this notable or champion oak tree		
6	2.1 This notable Oak has a girth of 369cm, making it around 200 years old. It is on the east side of the River Hundred and at risk in the trench corridor	As per section 5.2.3 of the ***OLEMS*** (document submitted at Deadline 6, document reference 8.7), a pre-construction walkover survey would be undertaken by the Arboricultural Clerk of Works (ACoW), Ecological Clerk of Works (ECoW) and an engineer to assist in micro-siting of the onshore works to minimise woodland, tree and scrub loss. Any veteran trees present within the onshore development area would be identified during this survey. The surveys would show actual position of trees, their condition and value and indicate the extent of root protection zones. This survey can be conducted at any time of year. The ACoW would produce an Arboricultural Method Statement (AMS) to be provided as part of the EMP. The final EMP will set out specific mitigation measures applicable to trees within the onshore development area, including this mature Oak. Where micro-siting of the works allows this oak to be avoided, the root

[4] https://www.suffolkbirdgroup.org/scbod-barn-owls

ID	SEAS' Deadline 5 Comment	Applicants' Response
		protection area of this tree (as identified during the pre-construction arboricultural survey) will be fenced off during construction.
Unrecorded: wet, riparian woodland		
7	3.1 As SEAS established in our last written representation, the Applicant's map omits a section of the pinchpoint area (the narrow strip to the east of the A1122 of about 2.5 acres). This wooded area is not clearly recorded in the proposal.	The Applicants assume this comment by SEAS refers to the B1122, Aldeburgh Road. The Applicants note that this area of broadleaved woodland is identified within the ***Extended Phase 1 Habitat Survey Results*** (***Figure 22.4c*** of the ES (APP-277). The Applicants have since revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
8	3.2 It is a non-intervention, wet woodland in a rewilded state and is therefore of priority importance. It provides connectivity along the riverside and to the SSSI wetlands and fen immediately south and east.	
9	3.3 Mitigation. The Applicant states: "*It should be noted that all important connecting habitats lost during construction (i.e. hedgerows) will be reinstated to an equal or improved standard to what has been removed (see Section 5.3 of the OLEMS (an updated version has been submitted at Deadline 3, document reference 8.7)).*"	Noted. All hedgerows that require removal will be reinstated on completion of works on a like or like basis or with landowner agreement, with an improved species specification.
10	3.4 Area offered for mitigation. Worryingly, as this wet woodland in works area 19 is omitted from Phase 1, no plans have been made for its reinstatement. The Applicant's own works diagram here shows the size of the woodland that would need to be reinstated (roughly outlined in turquoise by us) and the size of the area offered. The area offered in mitigation is work area No. 24 (outlined in yellow by us). Work area 24 is a compound and so will not be planted until after the construction is over. The area is much too small. The merit of its situation is that it stands adjacent to a mixed, managed covert TM 43936 60201 (Long Covert) but the characteristics are dry and sandy soil rather than	The Applicants wish to clarify that Work No. 24, in line with the ***draft DCO*** (REP5-003), is an area for '*permanent ecological mitigation works in accordance with the ecological management plan and associated access*' and cannot be used as a construction compound. It should also be highlighted that, whilst the grid reference provided by SEAS is approximately the right location, Work No. 24 is adjacent to Crackland's Covert and not Long Covert. The area of woodland to the east and west of the Hundred River was not recorded as wet woodland during the Extended Phase 1 Habitat

ID	SEAS' Deadline 5 Comment	Applicants' Response
	alluvial and wet. The connectivity and diversity afforded by the wet riparian woodland in works 19 will be sacrificed.	Survey. It was classified as semi-natural broadleaved woodland. The key ground fauna species included bramble, bracken, gorse and tree species include oak, silver birch, hawthorn, holly, creeping willow and horse chestnut. A revisit of the site by the survey team on 15th – 16th February 2021 has confirmed this. The findings of this additional site visit have been submitted at Deadline 6 (document reference ExA.AS-26.D6.V1). Within ***Chapter 22*** of the ES (APP-070), the Applicants calculate that approximately 0.9ha of woodland will be lost at the site of the Hundred River crossing and west of Aldeburgh Road. The area of Work No. 24 totals 1.01ha, and so provides the required area to plant the equivalent area of woodland to that lost between the Hundred River crossing and west of Aldeburgh Road. ***Section 3.5.10*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) explains the constraints of planting directly over buried electrical cables and ***Plate 3.4*** sets out the required setback distances of different types of planting based on the extent of the associated root systems.
Aldringham's wet, rewilded, riparian woodland, by Kinna Mosely		
11	4.1 The actual ecological impacts of sacrificing the riparian wood cannot be ascertained from the Applicants' surveys.	The Applicants disagree with this statement, noting that all surveys and assessments have been undertaken in accordance with all relevant guidance and regulations, as explained in ***Section 22.4*** of ***Chapter 22 of the ES, Onshore Ecology*** (APP-070).
12	4.2 Kinna Mosely's visit to the woodland on 19th January 2021 produced the following record.	Noted.

ID	SEAS' Deadline 5 Comment	Applicants' Response
13	4.3 The government, the Woodland Trust and many charities are currently on a quest to plant literally billions of trees due to having realised their urgent necessity to the health of humanity and the planet. This has become so urgent that the government is in the midst of changing all farmers' grants to "public money for public goods," giving incentive to farmers who can provide the country with clean air, carbon capture, clean water and wild nature both for people and wildlife. They are finally acting along the lines that we must urgently restore lost vital habitats to aid us in this current climate change crisis.	The Applicants note current efforts by the UK Government and various Non-Governmental Organisations with respect to reforestation and planting schemes. Woodland loss associated with the Projects is offset through the proposed planting within the ecological mitigation area provided by Work No. 24, as referred to above. ***Section 3.5.10*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) explains the constraints of planting directly over buried electrical cables and ***Plate 3.4*** sets out the required setback distances of different types of planting based on the extent of the associated root systems.
14	4.4 It is known in the Arboriculture world that planting trees actually has a surprisingly low success rate. Especially on sandy, dry sites! We mainly currently exist with two extremes: of new plantations (often unsuccessful with low biodiversity), versus minimal preserved ancient woodland, which often presents as an ancient upper canopy without many self-regenerating canopy layers remaining underneath.	The Applicants note that Requirement 15(2) of the ***draft DCO*** (REP5-003) requires the one-to-one replacement of removed, dead, seriously damaged or diseased (in the opinion of the relevant planning authority) trees or shrubs planted within Work No. 24 (an ecological mitigation area) and Work No. 33 (the onshore substations) for a period of 10 years. The Applicants have also amended the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) since the original Applications to include provision for an adaptive management scheme intended to achieve the optimum levels of plant growth and establishment.
15	4.5 The River Hundred valley in Aldringham holds that rare environment, a wet woodland, and in a state of self-regeneration. All layers of canopy are present: upper, middle and lower.	The area of woodland to the east and west of the Hundred is not wet woodland. The Applicants' Extended Phase 1 Habitat Survey classified it as semi-natural broadleaved woodland. The key ground fauna species included bramble, bracken, gorse and tree species include oak, silver birch, hawthorn, holly, creeping willow and horse chestnut.

ID	SEAS' Deadline 5 Comment	Applicants' Response
		The Applicants have revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following a recent site visit they are in agreement with the Applicants that it is not wet woodland.. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
16	4.6 Image 8 shows the edge of the woodland with both mature native trees and naturally regenerating saplings. Adjacent is a pony field: Grass Snake lays eggs in horse manure and residents have spotted the animal on the ground and in the river	As presented in ***Table 22.15*** of ***Chapter 22 Onshore Ecology*** (APP-070), the area of woodland adjacent to the Hundred River was identified as one of the areas suitable for common reptile species. Appropriate mitigation measures (i.e. habitat manipulation works) to ensure compliance with the legislation afforded to reptiles will be developed and adhered to during construction related activities where required.
17	4.7 Flooding spreads fertile silt. Even quite small seepages may support Craneflies such as *Lipsothrix errans* and the endemic *Lipsothrix nervosa*. A large number of invertebrates are associated with Alder, Birch and Willow (all found on this riverside), including the priority species, Sallow Guest Beetle (*Melanopion Minimum*), and Jumping Weevil (*Rhynchaenus testaceus*), which I would seek out in summer months.	Noted. No evidence of suitable habitat to support invertebrates within the onshore development area at the Hundred River was recorded during the Extended Phase 1 Habitat Survey. However, in light of the information submitted by SEAS (and Natural England), the Applicants recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1).The Applicants can confirm that the survey upheld previous findings; that the original habitat identification of this broadleaved semi-natural woodland is correct. Irrespective of the findings from the updated ecological survey, the Applicants committed to the implementation of mitigation measures within the Applications (embedded mitigation) (***Table 22.4, Chapter 22***

ID	SEAS' Deadline 5 Comment	Applicants' Response
		of the ES (APP-070)) which would reduce impacts to invertebrates if any are present. The Applicants note that no vehicle crossing of the Hundred River is required. The Projects may require the use of a temporary bridge or culvert to allow personnel access across the Hundred River, however this will be adequately designed and sized to avoid impounding flows of water bodies and therefore maintain the habitats as they currently are. Should a temporary crossing solution for site personnel be installed, all bed and bank habitats will be reinstated and where possible improved following completion of the Projects. The methodology for crossing the Hundred River (and other relevant watercourses) will be agreed post-consent with the relevant planning authority through a Watercourse Crossing Method Statement secured under Requirement 22(2) of the draft DCO (***APP-023***). Following the implementation of the agreed and embedded mitigation measures, the magnitude of effect on invertebrates is expected to reduce from low to negligible on a high importance receptor representing a temporary residual impact of minor adverse significance.
18	4.8 There are several monolith trees as well as standing deadwood and stumps, which support thousands of species and are valuable as habitat, roost, nest and forage (Image 11). The invertebrates support a multitude of other wildlife higher up the food chain. Bat, Martin, and Swift hunt above the water along the river and Hedgehog have been seen on the ground.	Noted. The area around the Hundred River was identified within the ***Extended Phase 1 Habitat Survey*** (APP-503 and APP-504) and ***Chapter 22*** of the ES (APP-070) as providing suitable opportunity for foraging and commuting bats and therefore a suite of surveys was undertaken between June and October 2018. As presented in ***Appendix 22.6*** (APP-507), a range of different bat species have been recorded throughout this area, with common pipistrelle being the most abundant species recorded. However, soprano pipistrelle *Pipistrellus*

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		pygmaeus, nathusius' pipistrelle *Pipistrellus nathusii* and barbastelle *Barbastella barbastellus* were also recorded. Furthermore, bats were observed along the public footpath immediately adjacent to the woodland, as well as within the woodland area to the east of this transect area.
19	4.9 Wet woodland combines elements of other ecosystems, and as such can be important for many species groups. The high humidity favours Bryophyte growth.	The Applicants have revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following a recent site visit they are in agreement with the Applicants that it is not wet woodland. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
20	4.10 Dead wood within wet woodland is common, and its association with water provides specialised habitats not found in dry woodland types. The cranefly *Lipsothrix nigristigma*, for example, is associated with log jams in streams.	The Applicants can confirm that the reference to wet woodland here is incorrect. No evidence of suitable habitat to support invertebrates within the onshore development area at the Hundred River was recorded during the Extended Phase 1 Habitat Survey. However, considering the information received from SEAS (and Natural England), the Applicants have recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1). The Applicants can confirm that the survey upheld previous findings; that the original habitat identification of this broadleaved semi-natural woodland is correct. Irrespective of the findings from the updated ecological survey, the Applicants committed to the implementation of mitigation measures within the Applications (embedded mitigation) (***Table 22.4, Chapter 22*** of the ES (APP-070)) which would reduce impacts to invertebrates if any are present.

ID	SEAS' Deadline 5 Comment	Applicants' Response
		The Applicants note that no vehicle crossing of the Hundred River is required. The Projects may require the use of a temporary bridge or culvert to allow personnel access across the Hundred River, however this will be adequately designed and sized to avoid impounding flows of water bodies and therefore maintain the habitats as they currently are. Should a temporary crossing solution for site personnel be installed, all bed and bank habitats will be reinstated and where possible improved following completion of the Projects. The methodology for crossing the Hundred River (and other relevant watercourses) will be agreed post-consent with the relevant planning authority through a Watercourse Crossing Method Statement secured under Requirement 22(2) of the ***draft DCO*** (APP-023). Following the implementation of the agreed and embedded mitigation measures, the magnitude of effect on invertebrates is expected to reduce from low to negligible on a high importance receptor representing a temporary residual impact of minor adverse significance.
21	4.11 Wet, decaying wood and seepages make good habitat for invertebrates, and wet woodland in general supports many rare species including the Netted Carpet Moth.	Refer to response to comment ID.20.
22	4.12 This woodland has the twin advantages of the silt-rich soil of the ancient river bed and the current river's seasonal flooding (Image 12).	Refer to response to comment ID.20.
23	4.13 Alder (*Alnus Glutinous*), grows all along the river's edge. From their regular spacing and coppicing, these trees were most likely planted long ago along the river bank. They support a huge diversity of wildlife while also acting as a natural flood defence. Their roots absorb huge amounts of water, give strong, hard structure to the bank and are	As presented in ***Section 22.5.3.4, Chapter 22 of the ES (APP-070)***, the Hundred River was assessed as providing suitable habitat for both otter and water vole and therefore was subject to presence/absence surveys. Despite suitable habitat being present, no evidence of otter or water vole was recorded during the surveys undertaken at that time or

ID	SEAS' Deadline 5 Comment	Applicants' Response
	also known to be the perfect nesting base, in their mature coppiced form seen here, for Otters. Otters are known in the River Hundred. Bat and Water Shrew are known to benefit from these invertebrate-rich environments.	provided by SBIS during the desk study. Therefore, these species were assumed to be absent for purposes for the Ecological Impact Assessment (EcIA) undertaken to inform the Application. The Applicants recognise these species are mobile and therefore, given the presence of optimal habitat for these species at this location, a pre-construction survey (within the optimal survey window) for both species will be undertaken to inform the requirement for mitigation measures and/or licensing requirements. The commitment to pre-construction surveys for otter and water vole is specified within ***Section 6.10*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7).
24	4.14 The mix of trees includes invertebrate-supporting species like Beech, Birch, Willow, and Alder. Birch seed and Alder catkins are food for the threatened Willow Tit, and for Lesser Redpoll and Siskin. Birch alone supports around three hundred species (Woodland Trust). Such clearings are habitat for the endangered Woodlark. Our approach disturbed a Deer and a Snipe and the air was full of birdsong.	The nests of all bird species would be safeguarded from damage via the implementation of a Breeding Bird Protection Plan (an outline of which is provided within ***Section 7.4*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7)) for the duration of the construction period. No willow tits were recorded within the study area during baseline surveys, and the closest woodlark record was around 500m away. Any woodlark nests would be afforded additional protection from disturbance, as a Schedule 1 species. For other species, the extent of any loss of habitat is unlikely to be felt at a population level.
25	4.15 This majestic Beech tree is a treasure to preserve. A local resident (178cm) is pictured with it to give an idea of its huge scale.	Noted.
26	4.16 A newly planted woodland on compacted sandy soil could not begin to compensate for this fertile soil and biodiversity rich, mature site.	The Applicants note that Work No. 24 is an ecological mitigation area and therefore the main construction activities associated with installing cable ducts will not be undertaken in this area. As such, the woodland planting within Work No.24 would not be within an area of compacted

ID	SEAS' Deadline 5 Comment	Applicants' Response
		soil. The ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) notes that the final LMP must set out a detailed scheme of tree and shrub planting together with details of their aftercare. Such a scheme will include details of appropriate ground preparation to be undertaken in advance of planting. Similarly, the final LMP will provide details on ground preparation measures with respect to the reinstated areas within the working width.
27	4.17 Its richness owes a great deal to non intervention, enabling rewilding.	Noted.
28	4.18 Stands of bramble are excellent habitat for the wood's Nightingale pairs, and are food for Pollinators and Invertebrates throughout the summer and into autumn. They provide also nutritious berries into early winter for birds and mammals.	The final Breeding Bird Protection Plan which must be prepared in accordance with the Outline Breeding Bird Protection Plan within the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) would ensure that any breeding nightingales in this area would be unaffected by construction activities, including required foraging habitat surrounding the nest.
29	4.19 It is rare these days to find properly wilded, regenerating woodland, which this is. In most local, protected woodland, the deer tend to damage the low and mid canopy layers, thus stifling natural regeneration.	Noted. The Applicants have committed to undertaking a suite of pre-construction surveys within the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7) and the findings of these surveys will inform the required mitigation measures that will subsequently be implemented prior to the commencement of construction works at the Hundred River.
30	4.20 This self-regenerating habitat, at this specific age, cannot be replaced. If lost, the biodiversity it supports would, without question, be lost also, with devastating repercussions and species loss.	The Applicants have committed to mitigation measures and all working areas will be reinstated on completion of construction works at the Hundred River. Furthermore, ecological mitigation work areas have

ID	SEAS' Deadline 5 Comment	Applicants' Response
		been identified where works to replace lost habitat will be undertaken (***Section 5.1.1*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7)).
31	4.21 The forest floor is species rich. A network of Fungus and Mycorrhyzal Fungi is present, supported by undisturbed and standing deadwood. These two views are taken in midwinter 2021.	Noted. The Applicants have recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1).
32	4.22 The wet conditions favour plants such as Opposite-Leaved Golden Saxifrage, Veilwort, Marsh Marigold, Fern and native Black Poplar. The most common plants are Grey Willow, Common Marsh-Bedstraw, Common Reed, Downy Birch, Purple Moor Grass, Alder, Greater Tussock Sedge and Common Nettle, with some invasion by Himalayan Balsam (which nonetheless is beneficial to pollinators). The high humidity and presence of damp bark supports a range of Mosses (e.g. Spagnum fimbriatum) and Liverworts.	Noted. The Applicants have recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1).
33	4.23 The sunlight makes visible the pooling of water on the forest floor.	Noted.
34	4.24 I cannot stress enough the irreplaceable importance of the rich, fertile soil here. Dry, sandy soil on the proposed mitigation site cannot begin to compare to the vast biodiversity and ecological haven that this soil and this land support. In these sandy parts, it is rare indeed.	Noted.
35	4.25 Wet woodlands are found on flat, fertile land, on floodplain, and have been an obvious target for clearance and agricultural intensification in Suffolk. Little remains of them today. This example is very rare and to be treasured.	The Applicants have revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following a recent site visit they are in agreement with the Applicants that it is not wet

ID	SEAS' Deadline 5 Comment	Applicants' Response
		woodland. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
36	4.26 The British Biodiversity Database has recorded around 900 species in this area. Natural England have designated it as a wet, non-intervention, broadleaved woodland and therefore requiring protection. Some of the rare species here are on the edge of extinction, so that even to lose just a few nesting sites of Woodlark, Nightingale, Turtle Dove, could be catastrophic.	Noted. Whilst it is acknowledged that MAGIC.gov.uk does not differentiate the different types of priority deciduous woodland, the area of woodland to the east and west of the Hundred was not recorded as wet woodland during the Extended Phase 1 Habitat Survey. It was classified as semi-natural broadleaved woodland. The key ground fauna species included bramble, bracken, gorse and tree species include oak, silver birch, hawthorn, holly, creeping willow and horse chestnut. Furthermore, it is the understanding of the Applicants that Natural England has not designated this area of woodland as wet woodland. The Applicants have revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following a recent site visit they are in agreement with the Applicants that it is not wet woodland.. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
37	4.27 This precious wetland habitat is a life-line which feeds the SSSI area just a few hundred metres further down stream. If the river is stopped, blocked, and this ecosystem destroyed, it will debilitate the entire specially-protected area which it feeds.	The Hundred River will be crossed using a trenched technique, whereby temporary dams (composed of sandbags, straw bales and ditching clay, or another suitable technique) will be installed upstream and downstream of the crossing point. The cable trench will then be excavated within the area of dry riverbed between the dams, with river flow maintained throughout the works through the use of a temporary pump, pipe or flume.

ID	SEAS' Deadline 5 Comment	Applicants' Response
		The Hundred River crossing works will take approximately 2 months. Any impacts will be temporary as the bed and banks will be reinstated on the completion of the works, to their original level, position, planform and profile. In addition, the Applicants have committed to the implementation and adherence of the following mitigation measures for all works associated with the Hundred River crossing: • Works will be undertaken during times of low flow; • Erosion control measures (e.g. coir matting) will be installed and maintained throughout the works; • Sediment interception measures will be in-situ during all works; • Water quality monitoring will be undertaken throughout the works; • No materials will be stored within Flood Zone 2 or 3; • Spoil from excavation works will be stored outside of the Hundred River and beyond the extent of Flood Zone 2 and 3 to minimise the risk of silt runoff into the river and displacement of water in the event of a flood; • Over-pumping will be undertaken using non-consumptive operations to ensure that the flow rate downstream of the crossing location remains the same as the upstream rate and channel capacity will remain unchanged in the event of a flood event; • Monitoring to ensure flow rate up and downstream of crossing location will be undertaken; • No vehicles will cross the Hundred River;

ID	SEAS' Deadline 5 Comment	Applicants' Response
		• Temporary bailey bridge will be used to allow pedestrian access by the workforce; • All required permits and licences will be obtained and adhered to during the works; • All works will be completed during daylight hours and no night-time working will be undertaken; • All waste will be removed from the working area and disposed of in accordance with the approved site waste management plan; and • On completion of works, the area will be reinstated to its pre-construction condition, including the restoration of the river channel to its original level to minimise potential impacts of flooding and in-channel and riparian habitats.
Invertebrates		
38	5.1 The Applicant, in its response to SEAS' first representation on Biodiversity, dismisses the importance of B-Lines and IIA and questions their status.	The Applicants have not dismissed the importance of B-Lines and IIA, their response (REP3-075) was purely to highlight that this is not an existing receptor which requires consideration as part of the EcIA reported in ***Chapter 22 Onshore Ecology*** (APP-070). Furthermore, it should be noted here that the Projects are reinstating all important connecting habitats lost during construction (i.e. hedgerows) to an equal or improved standard to what has been removed (see ***Section 5.3***, ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7)).
39	5.2 The status of these designations is not statutory, but designation is significant. In any surveys, B-line and IIA designations should be considered as connecting and including the best remaining habitats, and therefore, significant invertebrate populations should be recorded	Refer to response to ID38.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	as potentially present. We know that they are present from the British Biodiversity Database. The B-lines affected by this project in this area are among the oldest in the UK.	
40	5.3 The Applicant's cable route significantly disrupts the coastal invertebrate population and also manages to cut through the east-west B-Line corridor, which benefits invertebrates from its situation within, adjacent to, and connecting this area's SPA and SSSI.	No evidence of suitable habitat to support significant invertebrate populations within the onshore development area at the Hundred River was recorded during the Extended Phase 1 Habitat Survey. However, considering the information received from SEAS (and Natural England), the Applicants have recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1). The Applicants can confirm that the survey upheld previous findings; that the original habitat identification of this broadleaved semi-natural woodland is correct. Irrespective of the findings from the updated ecological survey, the Applicants committed to the implementation of mitigation measures within the Applications (embedded mitigation) (***Table 22.4, Chapter 22*** of the ***ES*** (APP-070)) which would reduce impacts to invertebrates if any are present.
41	5.4 Our assessment of the Work Area 19 (at 4) shows that the habitat is present for a rich variety of important Invertebrates.	Noted. The Applicants have recently revisited the site (15th – 16th February 2021) and have submitted the full findings from this site visit at Deadline 6 (document reference ExA.AS-26.D6.V1).

ID	SEAS' Deadline 5 Comment	Applicants' Response
River Hundred		
42	6.1 The River Hundred has not been surveyed adequately so the impacts on the river as medium and habitat are not properly addressed.	The ecological surveys undertaken as part of the Extended Phase 1 Habitat Surveys were carried out in line with the 'Extended Phase 1' methodology as set out in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment (IEMA) 1995), by experienced professionals. Categorisation of habitats was undertaken using the system set out within the Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 habitat survey: A technique for environmental audit (2010). It is noted that, through the Statement of Common Ground (SoCG) process, East Suffolk Council and Suffolk County Council (the Councils) as well as Natural England agree that sufficient ecological survey data has been collected to characterise the baseline environment and that the assessment methodologies used are appropriate (see REP1-072 and REP1-058).
43	6.2 For instance, the phase 1 report discounts the presence of Otter and Water Vole. The extended phase 1 report actually stated that no further surveys were necessary. Yet, the river is a well-vegetated, unpolluted waterbody. Indicator species of rich habitat are present along the river, from fishing birds to fishing mammals, plus insectivores, as we have seen.	As presented in ***Section 22.5.3.4, Chapter 22 of the ES (APP-070)***, the Hundred River was assessed as providing suitable habitat for both otter and water vole and therefore was subject to presence/absence surveys. Despite suitable habitat being present, no evidence of otter or water vole was recorded during the surveys undertaken at that time or provided by Suffolk Biodiversity Information Service (SBIS) during the desk study. Therefore, these species were assumed to be absent for purposes for the EcIA undertaken to inform the Application. The Applicants recognise these species are mobile and therefore, given the presence of optimal habitat for these species at this location, a pre-construction survey (within the optimal survey window) for both species will be undertaken to inform the requirement for mitigation

ID	SEAS' Deadline 5 Comment	Applicants' Response
		measures and/or licensing requirements. The commitment to pre-construction surveys for otter and water vole is specified within ***Section 6.10*** of the ***OLEMS*** (an updated version has been submitted at Deadline 6, document reference 8.7).
44	6.3 The Applicant did perform some Otter and Water Vole surveys after initially dismissing their presence, but the omission means that baseline information necessary for the decision on the river crossing is still not complete. There is scant information about vegetation, invertebrate, amphibian, bird or crustacean in the survey, neither in, nor by, the river.	Refer to response for ID43.
45	6.4 This image (from video) shows the ring of bubbles (bottom right) from an aquatic mammal that dived into the river at my (Horrocks) approach in July 2020. This ring of bright water is about midway between the bisection point and the SSSI. The summer river bank is mined with holes.	Noted.
46	6.5 Natural England remind us that the river is directly, immediately and intimately connected to the Sandlings SPA and SSSI. The river should be properly assessed as a receptor before any decision can be made on crossing the river. Direct and indirect impacts should be considered.	The Applicants refer to ***Appendix 2*** of the ***Outline Watercourse Crossing Method Statement*** (an updated version has been submitted at Deadline 6, document reference ExA.AS-5.D6.V2), which presents a Habitats Regulations Assessment screening assessment of potential likely significant effects arising from the crossing of the Hundred River on the Sandlings SPA downstream.
47	6.6 As SEAS established in our last written representation, riparian, wet woodland also needs assessing as a receptor.	The area of woodland to the east and west of the Hundred was not recorded as wet woodland during the Extended Phase 1 Habitat Survey. However, it was classified as semi-natural broadleaved woodland. The key ground fauna species included bramble, bracken,
48	6.7 Far-reaching impacts on a Priority Habitat should be weighed carefully. This does not appear to have been done.	

ID	SEAS' Deadline 5 Comment	Applicants' Response
49	6.8 In fact, both the woodland and the river environment and its connectivity will be sacrificed.	gorse and tree species include oak, silver birch, hawthorn, holly, creeping willow and horse chestnut. The Applicants have revisited the site (15th – 16th February 2021) and verified that the woodland within the Order limits west of the Hundred River does not comprise of species associated with wet woodland. During ISH7, ESC and SCC also confirmed that following a recent site visit they are in agreement with the Applicants that it is not wet woodland.. As such, the Applicants maintain its original identification of this habitat as broadleaved semi-natural woodland.
Conclusion		
50	7.1 We suggest that the surveys as they stand are flawed and therefore unsafe as a basis for organising the cable crossing of the B1122 and of the River Hundred.	All of the ecological surveys undertaken to date have been undertaken by suitably qualified ecologists and in accordance with industry guidance and species-specific guidance.
51	7.8 Least-invasive crossing techniques such as microtunnelling should be employed if an alternative site or solution cannot be found.	The Applicants provide a commentary as to why a trenchless technique at the Hundred River and B1122 Aldeburgh Road crossing would not be appropriate within ***Appendix 2*** of the ***Outline Watercourse Crossing Method Statement*** (an updated version has been submitted at Deadline 6, document reference ExA.AS-5.D6.V2.

2.4 Roads, Traffic and Tourism (REP5-113)

ID	SEAS' Deadline 5 Comment	Applicants' Response
Introduction		
1	• Requested by SEAS to do some mathematical modelling on the effects of building the East Anglia Power Hub just north of Friston. • Resident in Cambridgeshire, so no declaration of interest, although I know some people in the area. • There is a need for an electricity collection and distribution site in East Suffolk, and the problem before us is where to locate it. The number of jobs created in East Suffolk is independent of the location. • The A1094 is overwhelmingly the entry to, and exit from Aldeburgh and Thorpeness. • A feature of the East Suffolk coast is that there is no coastal road, as for example on the North Norfolk coast, and in almost all locations one has to travel inland to the A12 and then coastward even if the locations are one mile from each other as the crow flies, but separated by a river. The map in Figure 1 on the following page shows access to Aldeburgh, primarily along the A1094; the map in Figure 2 on the next page shows the many access roads around Sheringham, North Norfolk, where a recent onshore distribution centre for an offshore wind farm was built.	The assessments contained in ***Chapter 26 Traffic and Transport of the ES*** (APP-074) and ***Appendix 26.2*** of the ES (APP -528) and the subsequent modelling of Friday Street junction (***Traffic and Transport Clarification Note*** (REP4-027)) have been undertaken in accordnace with current DfT Transport Assessment Guidance which directs that the assessment should be based on normal conditions (i.e.not during school holidays). This is in keeping with highway network management practice across the UK and was confirmed by SCC during their verbal representation at ISH4. From an EIA perspective, normal ('neutral') conditions represent a robust baseline as they provide a better indicator of the magnitude of effect of the Projects' traffic, whereas an elevated baseline, would inadvertenly reduce the magnitude of effect based on the percentage incerase in traffic. (Neutral) baseline traffic conditions were discussed and agreed with SCC and Highways England during pre-application scoping and are confirmed as acceptable in the respective SoCG submissions (ExA.SoCG-2.D1.V2).

ID	SEAS' Deadline 5 Comment	Applicants' Response
Traffic on the A1094		
2	Some modelling of the current traffic density and an estimate of the additional traffic generated by the construction of the East Anglia Hub at Friston.	The Applicants refer to their response at ID 1 of this table.
Data on present usage of vehicles on the A1094		
3	I have been sent data recorded by the Speed Indicator Device (SID) at Green Heyes (on the A1094 between Friday Street and Snape Church) from Monday 31 August to Sunday 1 November 2020; the numbers recorded are for incoming traffic, i.e. going eastwards. I have chosen this location, as it is more indicative of the traffic coming from the A12 along the A1094; the other measuring points at Snape church and in the main road in Snape, the B1069, show similar data. The SID measures the passing of all vehicles, be they cars, vans, HGVs or tractors. Note that these data are during the pandemic year, so may not be representative of normal years. However, the period observed is when there was a brief return to near-normality. First, to illustrate the variability of traffic density from week to week, I have taken Sundays in September and Wednesdays in October as a representation. In all these traffic data graphs, the values along the horizontal axis represent the end of the time period; e.g. for the point '11' the number of vehicles per hour is that recorded from ten to eleven o'clock in the morning. Second, to illustrate variations during weekdays, Figures 5 and 6 show the daily traffic density for the weekdays averaged over the whole month. Third, Figures 7 and 8 illustrate the daily traffic flow on Saturdays, Sundays and compare this to an average weekday for the months of September and October. The daily traffic density values are confirmed by the Government website: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/808555/road-traffic-estimates-in-great-britain-2018.pdf from which I have taken the graphs in Figure 9.	The Applicants refer to their response at ID1 of this table. The Applicants highlight that traffic data captured during the global pandemic are not representative of 'normal' travel patterns and behaviours, with notable changes in travel by sector, mode and quantum of trips. Therefore, any conclusions drawn from such data should be viewed with extreme caution and cannot be relied on to assess 'typical' traffic conditions.

ID	SEAS' Deadline 5 Comment	Applicants' Response
4	Statistics about temporal variation in traffic flow are compiled using data from DfTs network of automatic traffic counters (ATCs). ATCs count and classify vehicles passing over them 24 hours a day, on every day of the year, so are well suited to provide data on flow variation across a range of timescales. There is a spread of values from one week to the next, but there are some general and significant observations to be made from the data: 1. Figures 3 on page 2 and 4 on page 2 show that there is considerable variability for the same days in the week over a period of a month; this may be due to good weather, or the staging of a popular event in Aldeburgh; 2. the averages for a day when taken over a month are remarkably similar to each other (see Figures 5 on the previous page and 6 on the preceding page); 3. for most weeks the traffic density on Friday afternoon (see Figures 5 on the previous page and 6 on the preceding page) is marginally the highest, which is the same for England as a whole (see Figure 9(c) on the previous page; 4. there is a marginal increase in traffic density corresponding to the conventional rush hours as shown in the UK data in Figure 9(a) on the preceding page and 9(b) on the previous page (the traffic due to HGVs is even more marked to drop off during the weekend than for vans), but 5. throughout the week there is a peak in the late morning, not during the conventional rush hours; 6. Saturday and Sunday traffic is about the same as traffic on weekdays, apart from the morning and afternoon rush hours; this is different to the norm for England as a whole as seen in Figure 9(c) on the preceding page; 7. the highest hourly rate recorded during this period is 1,222 vehicles per hour;	The Applicants refer to their response at ID1 of this table.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	8. the highest recorded speed was 95 mph, in a 30 mph speed limit area; the average speed was 32 mph (not relevant to the argument, but an interesting fact); 9. the average traffic density on a weekday is 600 vehicles per hour from eight in the morning to eight o'clock at night.	
5	Conclusions from the data are: 1. At peak periods the traffic is very heavy — 1200 vehicles per hour is equivalent to one vehicle every 3 seconds, and at 30 mph, there will be a distance of approximately 40 m between vehicles; this is not nose to tail, but almost, and rarely giving an opportunity to do a right-hand turn from a side road onto the main road; 2. there is confirmation that this road is used for leisure — the distribution of traffic density peaks around late morning, not two peaks (for the two rush-hours which is the norm for the country); there is evidence that there are morning and afternoon rush hours on weekdays, but this is swamped by the leisure traffic; 3. the traffic density fluctuations from day to day and week to week indicate casual, not routine, travel for leisure.	***Chapter 26 Traffic and Transport of the ES*** (APP-074), ***Table 26.26*** confirms the Applicant's traffic data for the A1094 (and other routes) shows a good correlation with traffic counts undertaken by SZC and SCC and therefore has been independently validated. It can be observed from ***Appendix 26.7 - Summary of Commissioned Traffic Counts, Count Site 14*** (APP- 533) that during normal traffic conditions, the maximum hourly traffic flow would be less than 700 movements per hour. This is local evidence that COVID restrictions are leading to unusual traffic patterns that cannot be relied on for highway network appraisal. It can be noted that traditional morning and evening peaks are observed during normal conditions, noting that traffic levels remain fairly constant through the working day. Noting ***Count Site 14*** was undertaken during a neutral weekday period, it is questionable if this pattern is attributable to lesiure traffic.
Construction Vehicle Movement Modelling assumptions		
6	1. Estimate of 300 HGVs a day leaving and entering the construction site, 2. over a period of 12 hours;	The modelling assumptions that have informed SEAS' study are not consistent with the metrics presented in ***Chapter 26 Traffic and Transport*** of the ES (APP-074) and ***Appendix***

ID	SEAS' Deadline 5 Comment	Applicants' Response
	3. besides the HGVs, there will also be other vehicles (cars and goods vehicles) travelling to the site, but there is no assessment of how many there will be; 4. not considering the transport of four (or six if scaled up from data on Blackhillock site, let alone the requirements for all the other enhancements such as Nautilus, Eurolink, Galloper, etc.) 254 ton transformers on 50-metre-long transporters that will require road closure to strengthen bridges and roads, rounding of bends to accommodate the length of the convoy, besides the actual transportation at 5 mph (there are very good videos on YouTube of the transport of these transformers — just search for '245t transformer ' or see a specific one on https://www.youtube.com/watch?v=GjPWZH_-FYg)	***26.2*** of the ES (APP -528). Therefore, the study conclusions are not representative of the assessed impacts. The following clarifications are provided on specific matters: Point 3. ***Table 26.23*** of ***Chapter 26 Traffic and Transport*** and ***Table A26.3*** of ***Appendix 26.2*** (APP-528) provides details of the numbers of construction traffic movements, with Light Goods Vehicles (LGV) included within the general classification of LCVs. Points 4 and 5. No HGVs will be permitted to turn left onto the B1121 from the A1094. The approach to assessing the potential impacts upon road safety was determined with the Councils and Highways England during pre-application engagement. The approach involves detailed consideration of accident clusters (technically referred to as collision clusters) and collision rates utilising Police (Stats 19) records to determine user groups (including cyclists and HGVs) and causation factors. This is detailed within ***section 26.5.4*** of ***Chapter 26 Traffic and Transport*** (APP-074). Engagement with Highways England and the Councils during the development of the application identified areas that were susceptible to congestion and therefore particularly sensitive to changes in traffic flow. Accordingly, these areas were subject to detailed capacity assessment as presented in ***sections 26.6.1.11*** and ***26.7.2.1.1.3*** of ***Chapter 26 Traffic and Transport*** (APP-074) and ***26.1.3.6 of Appendix 26.2***. Following mitigation, no residual

ID	SEAS' Deadline 5 Comment	Applicants' Response
		significant adverse Driver Delay impacts are forecast as a result of the Projects' traffic demand.
7	Conclusions from this data: 1. one HGV every 2.4 minutes, in one direction, and the same returning having unloaded; 2. the extra HGV construction traffic is about one-tenth of the average traffic density; 3. there is no estimate of the construction traffic generated by smaller vans and cars; is there an assumption that the Park and Ride sites will provide parking for all the workers, and that they will be bussed to the construction site from these Park and Ride sites each day? there is mention of a caravan park for workers — where will it be located? this needs to be explored, since this traffic may well be more than the road can bear; 4. no modelling of the traffic slowing down behind HGVs turning left onto the Friston Road from the A1094, nor at the right turn from the A12 onto the A1094; 5. travelling from Snape to Aldeburgh, requiring access from the B1069 onto the A1094 at the junction by Snape church, will be even more problematic. The additional construction traffic will affect travel times along the A1094, and become a deterrence to tourists; given that the average stay is of 3 nights, comprising both weekend and weeklong stays, any detriment to travel will deter some visitors, for which there is evidence in the next section.	The Applicants refer to their response at ID6 of this table.
Employment in Aldeburgh, Leiston, Thorpeness and smaller habitations		
8	There is very little industry in the area served by the A1094; most of the employment is services and tourism; based on both anecdotal evidence and the lack of rush-hour traffic.	The Applicants refer to their response at ID5 of this table.

ID	SEAS' Deadline 5 Comment	Applicants' Response
Effect on Tourism Modelling Assumptions		
9	Sources are: [I] Tourism: jobs and growth, a report from Deloitte, November 2013; https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/Tourism_Jobs_and_Growth_2013.pdf [II] UK Tourism Statistics 2019: https://www.tourismalliance.com/downloads/TA_408_435.pdf [III] The Energy Coast: https://www.thesuffolkcoast.co.uk/shares/The-Energy-Coast-BVA-BDRC-Final-Report-2019. pdf; [IV] https://themovemarket.com/area/employmentclassification/leiston-suffolk-coastal/suffolk-coastal-004c, . . . -004d, . . . -004e	Noted.
10	Some data from these sources (with references to the above numbered sources in brackets); where different sources have given different values, I have taken the one with lesser impact : 1. every £54,000 spent by tourists generates a job, and the converse should hold as well ([I] page 3); 2. the multiplier effect of employees generating more employment due to their spending locally, with a value of about 2, so every job generated (or lost) in tourism engenders (or curtails) another job ([I] page 28); 3. average spend per residential visitor from the UK is £257 in a seaside or coastal location ([II] page 5); 4. the average length of stay is 3.1 nights ([II] page 5); since this is both for week-long (seven days) and weekend (two days) stays, the conclusion is that most stays are for weekends;	Noted.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	5. tourism businesses have 39% of their staff aged under 30, compared to an average of 21% for other businesses; with many older people in the area, this provides a better age spread in the district and employment for younger people ([II] page 7); 6. the average spend per day visitor is £22 ([II] page 5); 7. the Suffolk Coast has a lot of repeat visitors who come regularly ([III] page 15); 8. based on a survey of visitors, it is estimated that the potential net annual loss during the construction phase is £24,000,000 for the whole of the Suffolk Coast, approximately a reduction by 15% ([III] page 39); 9. estimated (conservatively) that the potential net annual loss after the construction phase is about £20,000,000 ([III] page 41); 10. employment in Leiston, for example, is quite buoyant, with less unemployment than the East of England as a whole ([IV] averaging out all three areas in Leiston).	
Conclusions from the data		
11	The figures above are for the whole Suffolk Coast; a reasonable assumption would be that the major impact, at least half, would be on the stretch of coast between Aldeburgh to Sizewell for which the total loss of income from tourism over the 15 years of construction is about £360,000,000. This sum is not insignificant compared to the cost of the whole project, and it is highly significant for the area with threat of any temporary loss being a permanent legacy.	The calculations are based upon the monetised conclusions of the Destination Management Organisation (DMO) report, no detailed modelling has been undertaken for section 3 of the document. Given that the calculations are based upon the DMO Report, any conclusions are based on that report's conclusions regard the cumulative case with SZC, not the Projects (either alone or together). The Applicants do not consider that the economic conclusions of the DMO Report are valid (for reasons stated in the Tourism Impact Review (REP1-102)). In addition to relying on invalid assumptions from the DMO report, the analysis itself is wrong for the following reasons;
12	The estimate is over 440 job losses (12,000,000/54,000 with a multiplier of 2) in Aldeburgh, Leiston and Thorpeness area during the construction phase; it could be followed by a possible resurgence of employment by 70 after all the construction has finished.	
13	Although employment in the Aldeburgh, Leiston, and Thorpeness area is buoyant, albeit somewhat directly and indirectly (the multiplier effect) dependent on the thriving and	

ID	SEAS' Deadline 5 Comment	Applicants' Response
	successful (but volatile and mercurial) tourist industry, there are indications (from evidence that more benefits are claimed) that unemployment is rising possibly in consequence of the loss of visitors during the 2020 pandemic year. There is also anecdotal evidence that part-time work, which for many households is attractive, is becoming even less part-time; such shortfall will not be recorded in official statistics.	• The author has misunderstood and misapplied the multiplier effects for the source that it references (Deloitte, 2013, Tourism: jobs and growth – The economic contribution of the tourism economy in the UK). The author states that for every 1 tourism job directly created or lost in Aldeburgh, Leiston and Thorpeness another 1 job is either created or lost in the same small area. That is not what the reference says. The reference states that for every job created/lost in the tourism sector 0.7 of a job is created/lost across the UK. At a local level, the multiplier is significantly smaller. By applying a local multiplier of 2 the author has inflated the employment impacts significantly. The inappropriate use of multiplier effects indicates a lack of understanding of economic analysis; and • The author assumes that 50% of any change in tourism activity in the Suffolk Coast and Heaths AONB would occur within the Aldeburgh, Leiston and Thorpeness area. No basis is given for this assumption. Reported employment in the Accommodation and Food service activities (ONS, 2020, Business Register and Employment Survey) in the ward of Aldeburgh and Leiston was equivalent to 37% of the sectors employment in wards within the AONB. Use of this more accurate estimate would further reduce the impacts estimated by Cllr Trapp.

ID	SEAS' Deadline 5 Comment	Applicants' Response
		The Applicants do not predict any job losses during the construction phase, as detailed in ***Section 30.6.1*** of ***Chapter 30*** of the ES, ***Tourism, Recreation and Socio-economics*** (APP-078).
14	One of the attractions of Aldeburgh is the diversity of shops, activities and refreshment facilities, catering for a range of tastes and purses; it is the variety and diversity, besides the attractiveness of the seafront, that tempts visitors to return. Examples of the diversity that the Aldeburgh region offers includes Festivals (Literary, Food and Drink, Documentary Film, Music, Poetry, Art etc.), ornithologists, ramblers, cyclists, botanists, sailors, golfers, swimmers, joggers, canoeists, fishermen, kite flyers, kite surfers, along with family bucket and spade holiday makers, couples looking for romantic breaks, etc.	Noted.
15	How many tourist venues, shops and refreshment venues will survive this Covid year is not clear, but the impending downturn of visitors forecast because of the construction phase may well persuade some outlets to close; if spending outlets close from having fewer visitors during the construction phase, it is unlikely that they will reinstitute themselves later. The town will be less diverse in its offerings to visitors, and so less attractive.	The Applicants note this conclusion, and although recognise that COVID-19 will have an effect on all communities UK-wide, still deem the conclusions reached within ***Section 30.6.1*** of ***Chapter 30*** of the ES, ***Tourism, Recreation and Socio-economics*** (APP-078), to be relevant and correct.
Modelling Cost to Residential and Business		
16	There have been some studies on the costs incurred through roadworks or infrastructure construction to established businesses. Here is a selected list, but many others will be found through internet searches: [I] https://www.acs.org.uk/advice/roadworks gives an example of a village shop losing 10% of its custom and profit through months-long roadworks affecting access to the shop. [II] https://researchbriefings.files.parliament.uk/documents/SN00200/SN00200.pdf gives a brief summary of possible compensation for construction work, and in summary:	The Applicants are unclear as to the exact point being made but would highlight some of the economic benefits to the region. ScottishPower Renewables is committed to supporting local business and using the local supply chain and is continuing to work with East of England Energy Group (EEEGR) to provide regular project updates, promote local opportunities and support local events. The local supply chain has been integral to the delivery of the East Anglia ONE project.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	• No compensation for loss of trade due to road works; • the compensation from works undertaken by a utility company is enshrined in the legislation drawn up when each was privatised, and compensation is only payable where the relevant statute authorises it; • compensation can be claimed if a new highway affects a property value depreciation. As far as I can judge there is no compensation for a new infrastructure project such as this. [III] file:///C:/Users/JOHN~1.TRA/AppData/Local/Temp/The_Effect_of_Road_Traffic_on_Residential_Property.pdf is a study on the effect of Road Traffic on Residential Property Values that argues that noise increase is a good marker for determining compensation for new road traffic. [IV] https://www.sciencedirect.com/science/article/pii/S1877050917309584 is an interesting article in which the authors discuss the financial implications of Accelerated Bridge Construction compared to conventional bridge construction. They produce a model that quantifies the financial penalty per day for delays due to construction; their conclusion is that a more expensive bridge that reduces the construction phase is overwhelmingly more economic for the whole area than a cheaper, conventional bridge. The interesting part is that they model the economics of delay to traffic flow, and other considerations. Losses due to construction can be quantified, and incorporated in any proposal for an infrastructure project.	During the construction phase of East Anglia ONE, investment in companies working locally in East Anglia exceed £76m. The range of local suppliers engaged on the project were in the form of established engineering companies and also companies transitioning in from a traditional Oil and Gas background – such as JFMS, 3Sun etc. In addition to construction services the local investment on supporting services including media support, catering, office supplies, resources totals to date at £13.79m. EA1 is now in its operational phase and the value of contracts awarded to organisations working in East Anglia is above £24m. In July 2020 a Memorandum of Understanding (MoU) was signed by East Suffolk Council, Suffolk County Council and ScottishPower Renewables. The MoU demonstrates a commitment from the three parties and aims to: • promote employment and re-skilling opportunities; • work in collaboration to maximise the benefit of education, skills and employment; and • support local suppliers with the potential to enter the offshore wind supply chain.
Other qualitative observations		
17	• Having watched the YouTube video of a 245t transformer travelling through France on its convoy of length 50 m, I am surprised that it is conceived possible to transport these transformers to north of Friston without altering the roundabouts on the A12, around Woodbridge in particular, and the right turn from	As mentioned above, no HGVs will be permitted to turn left onto the B1121 from the A1094.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	the A12 to the A1094, and from the A1094 to the country lane to Friston; has an evaluation of the transportation been considered in detail? • It is ironic that the construction of a green energy site is so dependent on very many HGVs travelling across the countryside, and wonder whether the cost of such transport has been factored in. Using a site nearer the source of the materials would be more efficient, less disruptive and less expensive. • Similarly, the site at Friston necessitates the creation of two Park and Ride sites, and their eventual dissolution; hardly an energy efficient operation, and an extra cost. • Not only will the A1094 be laden with goods vehicles, but also the A12. • One can't help but notice the existence of a freight line from Saxmundham to Leiston, and thence onto Sizewell	The site selection process was based upon the requirements for a suitable connection to the electrical grid, not upon the supply chain supporting construction. The Applicants note that many developments, renewables or otherwise, depend on many suppliers based across a large geographic area and therefore require deliveries to site. It is anticipated that the different components of the Projects (for example, the electrical equipment for the onshore substations), will be sourced from varying locations and so constructing the Projects nearer to a supplier of one component could lead to increased journey distances from other suppliers. The Applicants clarify that a park and ride scheme for the onshore substations at Friston does not form part of the Applications.
Conclusions		
18	1. Every community in East Suffolk will be saying why the East Anglia Hub should not be in its vicinity, but a site has to be chosen that minimises the disruption to the community over its construction phase and is not too costly. 2. My experience as a District Councillor on the Planning Committee is that planning decisions are based on the evidence in front of the committee, and that the committee is not able to decide between various alternatives or make suggestions; this may be different for an ISH, and it may have powers to give partial planning permission, accepting the offshore construction, but asking for a re-assessment of the onshore location (or vice-versa).	See detailed responses above.

ID	SEAS' Deadline 5 Comment	Applicants' Response
	3. The A1094 road is the primary artery to communities whose main income is from casual, but intense, tourism that is the mainstay of the local economy, as well as used by farm traffic with farms along its entire length from the A12 to Aldeburgh; 4. The A1094 is near to capacity for some periods of the day, and that the addition of slow accelerating HGVs will impact on the traffic, leading to avoidance of the road by casual and volatile users. 5. Over the construction period it is estimated that job losses in Aldeburgh, Leiston and Thorpeness will be of the region of 440, and that this particular region will lose more than £180,000,000. Other locations in East Suffolk may lead to a loss of jobs and business, but not to the extent that will be incurred by the region served by the A1094 since it is the main access route to a primary tourist destination. 6. Section 4 on the previous page refers to studies on losses sustained from infrastructure projects. This loss should be factored in when deciding the location of the site, together with the extra cost of so many HGVs bringing materials far from their source, the cost of construction (and subsequent demolition) of the Park and Ride sites, the changes to the road layout to accommodate the transport of the massive transformers, the extra traffic from employees' cars and smaller delivery vehicles. 7. When comparison is made to a previous and seemingly similar construction project, the similarity and differences must be evaluated objectively, and with reference to the actual features in the two projects, not the final infrastructure.	

3 References

East Suffolk Council (2020) 2020 Air Quality Annual Status Report (ASR) – In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management [Online] Available at https://www.eastsuffolk.gov.uk/assets/Environment/Environmental-Protection/Air-Quality/East-Suffolk-Council-ASR-2020.pdf [Accessed February 2020]

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