



Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

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Appendix B.1

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.10. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

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Glossary of Acronyms

AC	Alternating Current
AOD	Above Ordnance Datum
ASV2	Transformer 2
DC	Direct Current
DCO	Development Consent Order
DAS	Design and Access Statement
DEL	Dudgeon Extension Limited
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
ETG	Expert Topic Group
ES	Environmental Statement
LVIA	Landscape and Visual Impact Assessment
NPS	National Planning Statement
NSIP	National Significant Infrastructure Project
OEMP	Outline Ecological Management Plan
OLMP	Outline Landscape Management Plan
OnSS	Onshore Substation
RWCS	Realistic Worst-case Scenario
PRoW	Public Right of Way
SEL	Scira Extension Limited
SEP	Sheringham Offshore Wind Farm Extension Project
SNC	South Norfolk Council
SoCG	Statement of Common Ground
SVC	Static Var Compensators
SWQ	Second Written Questions

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
The Applicant	Equinor New Energy Limited. As the owners of SEP and DEP, Scira Extension Limited and Dudgeon Extension Limited are the named undertakers that have the benefit of the DCO. References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.
The Projects	Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Technical Note: The Design of the Onshore Substation

1 Introduction

1. On 12th April 2023, the Examining Authority issued their 'Second Written Questions' ('SWQ'); raising several questions regarding Design Principles and Design Processes in respect of the Onshore Substation ('OnSS'). This follows the Examining Authority issue of their 'First Written Questions' (issued on 27th January 2023) and the corresponding topics put forward at Issue Specific Hearing 4 ('ISH4') on 23 March 2023.
2. This document provides a comprehensive response to these matters.

2 Level of Design Information

3. The Examining Authority is concerned about the level/detail of design information available in respect of the OnSS in the context of the requirement for 'Good Design', and, in the absence of fuller design information, how the Applicant can demonstrate that adverse effects, particularly landscape and visual, have been minimised wherever possible as required by the National Policy Statement (NPS) for Energy (EN-1) ('EN-1') paragraphs 5.9.8 and 5.9.17.
4. The Applicant maintains that the level of detail submitted is appropriate at this stage of the Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects ('Projects') and typical of a development project of this nature. The Applicant's position is that sufficient information has been provided to assess the effects and to demonstrate that these effects have been minimised in so far as possible at this stage of the Projects; and the Applicant has committed to appropriate and adequate safeguards to deliver the Projects via the defined parameters and the requirements of the DCO; all of which meet the requirements of EN-1.
5. EN-1 paragraph 5.9.8 directs that projects need to be designed carefully, taking account of the potential impact on the landscape and, with consideration to siting, operational and other relevant constraints, that the aim should be to minimise harm to the landscape, providing reasonable mitigation where possible and appropriate. This has been achieved by the Applicant.
6. EN-1 paragraphs 4.5.1 – 4.5.3 also acknowledges there is a limit to the extent to which energy infrastructure can contribute to quality of the area, noting that applicants may not have any or very limited choice in the physical appearance of some energy infrastructure, but there may be opportunities to demonstrate Good Design in terms of siting relative to existing landscape character, landform and vegetation. The Projects, through its iterative environmental assessment and design process, has sought to minimise adverse effects wherever possible, with residual effects clearly identified within the relevant chapters in the Environmental Statement ('ES'). These adverse effects are to be balanced against the benefits of the scheme.
7. The OnSS site was carefully selected following a process that worked to avoid key sensitive receptors and minimise potential adverse effects on the local landscape

- and environment. The overarching site selection process is explained fully in ES **Chapter 3 Site Selection and Assessment of Alternative** [APP-089] and ES **Appendix 3.1 Onshore Substation Site Selection Report** [APP-175].
8. The selected OnSS site is not generally overlooked, being contained naturally by an undulating topography and surrounding vegetation, such that landscape and visual effects are minimised as far as possible, recognising that the nature of the infrastructure means that avoiding all impacts is not possible (EN-1 paragraph 5.9.8).
 9. The village of Swainsthorpe is located approximately 500m south of the OnSS; and the nearest isolated residential property (along Gowthorpe Lane) is located approximately 670m to the west of the OnSS. The OnSS is located adjacent to the existing Norwich Main Substation, with high voltage pylon and overhead wires crossing and leading away from the OnSS site, with the Norwich-Ipswich Railway and A140 road to the east. Thus, its character and views from some of the local footpaths are already influenced by the presence of infrastructure.
 10. The level of design development reached is considered by the Applicant to be appropriate, and indeed similar to many other recently consented projects of this nature. The National Significant Infrastructure Project ('NSIP') process is underpinned by a parameter based, Rochdale envelope approach, as set out in paragraph 2.6.43 of NPS EN-3 ; reflecting the needs of the industry where technology continues to advance and detailed design work is only appropriate where the certainty provided by a consent has been established, in order to provide the necessary flexibility in projects with a long timescale.
 11. This is the case for the Projects, which has been: designed carefully within defined Order Limits and depicted on the numerous plans produced to support the application; with outcomes shaped by a series of 'Design Principles; undertaken extensive stakeholder and public consultation; and will be secured through requirements in the DCO. Furthermore, if the design was to be developed in greater detail or 'fixed' now, this would be premature and prejudice what may be appropriate at the time of development/construction, which still needs to factor in further surveys, micro-siting to address technical constraints/requirements, and other factors as determined by the relevant local authorities through the Development Consent Order ('DCO') Requirements.
 12. The **Design and Access Statement (Revision B)** [document reference 9.3] ('DAS') provides a robust framework and process to guide detailed design decisions, such that what is ultimately built is entirely appropriate within its environmental context. The Applicant and its designers will be guided by the **DAS (Revision B)** [document reference 9.3], seeking approval from South Norfolk Council ('SNC') through the discharge of the DCO Requirements in the normal way. Requirement 10(4) (Detailed design parameters onshore) of the **draft DCO (Revision F)** (document reference 3.1) sets out the details that will be approved and includes layout, scale, finished ground levels, external appearance and materials, hard surfacing materials and minor structures, such as furniture, refuse or other storage units, signs, and lighting. The **DAS (Revision B)** [document reference 9.3] and other documents, such as the **Outline Landscape Management Plan (Revision C)** ('OLMP') [document reference 9.18] and **Outline**

Ecology Management Plan (Revision C) ('OEMP') [document reference 9.19] set out the approaches the Applicant will adopt throughout the detailed design stages of the OnSS; noting how colour studies will be undertaken to choose the most suitable colour of the OnSS's buildings; and how current illustrative planting proposals development will be developed in detail and consulted upon with SNC to ensure that the final scheme strengthens and reflects the existing landscape character.

3 Landscape and Visual Effects

13. The Applicant acknowledges that, on the basis of the realistic worst-case scenario ('RWCS') (which assumes the maximum parameters are built out), there will be some residual visibility of the electrical equipment despite being located in a dip and the mitigation planting as described in paragraph 467 of ES **Chapter 26 Landscape and Visual Impact Assessment** ('LVIA') [APP-112] states:

"...whilst the proposed planting would reduce visibility of the onshore substation [...] views to part of the buildings, outdoor equipment, electrical equipment and access road are likely to remain above new planting, and during the winter months, views through the leafless vegetation would be possible. [Therefore,] users of the PRow, permissive bridleway and Gowthorpe Lane would potentially experience partial views to components of the onshore substation through the vegetation."

14. Within the context of the wider landscape, these adverse effects would affect a very limited proportion of the overall landscape, being broadly contained to the fields immediately surrounding the site. The Applicant also notes that whilst major and adverse effects have been assessed to be present from publicly accessible routes within the immediate context of the OnSS site, the proposals which the **OLMP (Revision C)** [document reference 9.18], which is secured by Requirement 11 of the **draft DCO (Revision F)** (Document Reference 3.1), seeks to deliver are, as stated in the **LVIA** [APP-112] *"...more than just visual mitigation alone. Landscape proposals set out plans to create new areas of habitat and ecological enhancements; strengthen green infrastructure across the site and its surroundings; and enhance some of the key landscape characteristics of the surroundings."* [paragraph 468].

15. The affected routes traverse all four sides of the OnSS, namely:

- The Public Byway (Swainsthorpe BOAT6), located (at its closest point) approximately 55m to the south of the OnSS's boundary, with an existing woodland belt between.
- The Public Footpath (Swainsthorpe BR7), located (at its closest point) approximately 580m to the west of the OnSS's boundary, beyond a hedgerow. Viewpoint 1 is representative of available views from this PRow [APP-157 and APP-158].
- The permissive path located (at its closet point) approximately 145m to the east, beyond the Norwich-Ipswich Railway. Viewpoint 2 is representative of available views from this PRow [APP-159 and APP-160].

- The Public Footpath (Swardeston BR12/Stoke Holy Cross BR3), located (at its closest point), approximately 275m to the north of the OnSS's boundary, with mature vegetation/hedgerow along the boundary in places. Viewpoint 3 is representative of available views from this PRow [APP-161 and APP-162].
16. The assessment of visual effects is taken in the round for a particular receptor, and thus not sensitive to a particular viewpoint from a particular PRow, with all users of all routes considered to be of high sensitivity.
 17. An additional viewpoint is provided, as requested by the Examining Authority in **SWQ 2.17.1.2**, from the Public Footpath (Swardeston BR12/Stoke Holy Cross BR3), which is located approximately 160m to the west of VP3. When walking this route in either direction, the Norwich Main Substation is located approximately 30m to north (at its closest point), separated by an established tree belt with some understorey vegetation and defined, on its northern side, by a hedgerow. Together, this vegetation largely screens/filters views towards the Norwich Main Substation such that it is barely discernible or fully screened. Elsewhere, where trees or the hedgerow are absent (there has been some thinning since the LVIA was undertaken, particularly in the vicinity of the overhead cables), more open views to Norwich Main Substation are available, which will coincide with views of the OnSS. This will occur for approximately 250m of the length of the footpath, representing approximately 28% of its total length (the total length of the footpath is approximately 910m). The presence of Norwich Main Substation in the baseline was acknowledged in the original Representative Viewpoint's descriptions (See ES **Appendix 26.1 Landscape and Visual Impact Assessment Annexes** [APP-275]) and taken account of in the LVIA, and particularly the assessment of visual effects from the Public Rights of Way ('PRow') network in the locality of the OnSS.
 18. Walkers or riders on these four routes will experience major adverse effects; with the visual impact reducing over time as proposed woodland, hedgerow and shrubby vegetation establishes (in the areas shown on Figure 1: Illustrative Landscape Proposals included in the **OLMP (Revision C)** [document reference 9.18]) along all four boundaries and screens the OnSS to varying degrees.
 19. As discussed above in paragraph 19 above, the character of the landscape and users of these routes are already affected by the presence of infrastructure in this particular location, with the composition of the OnSS' elements changing as users move along the routes, around the OnSS site. The electrical equipment will have vertical and horizontal emphases, will likely cover much of the platform evenly, and display a symmetry which is a typical feature of substations. The proposed buildings will appear as elements on the outer edges of the platform, their location being dictated by operational and safety matters, which precludes a central location. The larger the building (up to the limits of the parameters), the more dominant it potentially could be. However, overall, it is considered that no one element of the substation will be particularly dominant, given the density of the electrical equipment and the likely height of the externally located electrical infrastructure (i.e. similar or greater than buildings). The overall development will be largely perceived as an electricity substation in totality.

20. When fixing the buildings' locations at the next stage of design, the relative sensitivity of the platform edges to the presence of a building is a factor to be considered in the brief to the OnSS designers to minimise visual impacts. As a consequence of distance and availability of views (both in the short- and long-term), the eastern edge is considered most sensitive in landscape and visual terms; the western edge least sensitive, with the northern and southern boundaries being similar and between the east and west in terms of sensitivity. Thus, the western edge of the platform is considered to be the most appropriate location for the OnSS's buildings; and if visual impacts from the four nearby PRow's is considered in isolation. However, wherever the buildings are, major visual effects from the substation (in totality) will be experienced from the surrounding PRow's, and other potentially critical factors and constraints will need to be considered in order to determine the final buildings' locations.
21. Significantly, effects will only be experienced in the immediate locality, reflecting the appropriateness of the OnSS's site, and the screening effects of the surrounding local woodland belts, hedgerows and undulating topography.
22. Regarding **SWQ 2.10.1.1** and **2.10.1.2**, the location and height of the development platform within the OnSS site has been designed to primarily minimise visual and landscape harm by being set down as far as possible to reduce visibility of the final OnSS; but also takes account of the need to minimise the offsite export of material in the proposed balance of cut and fill; and to avoid local flooding issues.
23. The maximum platform height of 28.23m AOD (See **Figure 1** below) was selected for assessment purposes; balancing all the factors listed above, although a slightly lower height is likely to be achieved when the OnSS is constructed. It will be achieved through a cut and fill operation, whereby material from the western part of the site will be removed to reduce levels and placed in the eastern area to raise areas to achieve a flat operational platform at 28.23m AOD. As confirmed on the second ASV 4.06m of fill will be required at the lowest point of the existing site. A terraced platform, following the existing contours of the land is not possible, as a single flat area is required operationally, and the need to lift the platform out of the flood risk area at the lowest point of the site.

Appendix B.1 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions



Figure 1 Initial Cut and Fill Proposals

24. Given the residual visibility of the substation, the **DAS (Revision B)** [document reference 9.3] focuses on those elements which are more in the control of the Applicant and thus highlights the importance of the buildings' form; their colour and materials; fencing and landscape which are also those which stakeholders and the discharging authority (SNC) will have an interest in, and influence over, as part of the approval process. Thus, design guidance is provided, for use at the next stage of design in the **DAS (Revision B)** [document reference 9.3], post consent. Due regard has been given to these matters, reflecting their importance, but also acknowledging more design at this stage is inappropriate and unnecessary, for this particular project. The Applicant is aware of a few projects where a greater level detail has been provided and only where particular project circumstances have dictated that it is necessary; but the Applicant does not accept these as precedents. For instance, the Hornsea 3 DCO application included different design information in respect of its substation and converter station, driven by its more visible and sensitive location in the Norwich Southern Bypass Landscape Protection Zone, and the size of building required by a DC substation. Hornsea 3 didn't provide a DAS but provided Design Principles during its examination, which have been reviewed as discussed below (paragraph 40). Similarly, the examination of the Norfolk Boreas substation included more design detail, and information regarding building zones,

again related to the much larger and more impactful building required for a DC substation.

25. The overall Projects will deliver environmental enhancements, for example through biodiversity net gain (see ES **Appendix 20.6 - Initial Biodiversity Net Gain Assessment (Revision B)** [document reference 6.3.20.6] and **Outline Biodiversity Net Gain Strategy** [APP-306]) and additional native woodland planting in the vicinity of the OnSS which will, over time, provide a degree of screening and valuable habitats that are reflective of the local landscape character and existing habitats.

1 The Parameter Based Approach

26. A parameter based approach, based on worst-case, is best practice, as recognised in paragraph 2.6.43 of NPS EN-3. **Section 26.3.2** of the **LVIA** [APP-112] sets out in more detail the LVIA's approach. As a parameter based application, the assessment of effects on landscape character presented in the **LVIA** [APP-112] is not specific to any particular substation layout(s) or the siting of specific integral elements required for operation. SNC are content with this approach and is the normal approach to major infrastructure projects where flexibility needs to be maintained given technology changes, the maturity of technical design, programme and commercial factors. The Applicant's approach to the **LVIA** is clear and is based on the maximum parameters described in ES **Chapter 4 Project Description (Revision B)** [document reference 6.1.4]), REV B. **Table 26-2** of the **LVIA** set out the relevant parameters that would result in the greatest potential effects on landscape and visual receptors; making clear that the maximum parameters would occur as a result of the following:

- The maximum land take;
- The longest duration of construction, operation and decommissioning; and
- The maximum height/size of the development.

27. The parameters accommodate all potential scenarios and reflect the RWCS. If when developed, the development comprises structures which are smaller or shorter, landscape and visual receptors could be affected to a lesser degree. The parameters were informed by 'proof of concept' proposals by substation contractors which mainly tested the minimum size of the platform needed to deliver a 400kV Substation to link to the Norwich Main substation and accommodate the potential need by National Grid of harmonic filters, which is yet to be confirmed. Early decisions in the project included the rejection of Gas Insulated and DC technologies, both of would have required far larger buildings, thus reducing potential impacts. These concepts are commercially confidential to the contractors and in no way represent the final technical solution to the substation. An early 3D model of one was used to base the illustrative visualisations to represent one way of delivering a substation.

28. The Onshore Substation parameters are confirmed in ES **Chapter 4 Project Description (Revision B)** [document reference 6.1.4, paragraph 336] including an operational compound (platform) size of up to 6ha for SEP and DEP concurrent and sequential scenarios, or up to 3.25ha for SEP or DEP in isolation. The 6ha

platform would allow for either one 50m x 25m control/switchgear building in the concurrent and integrated scenario (although it could be two buildings) or two 30m x 14m wide buildings in a sequential scenario (or it could be achieved by adding to the first building). The Project Description also indicates the potential need for a building to accommodate relays (Static Var Compensators (SVC) building). Whilst not stated in the Project description either one or two building may be required. There is thus no certainty about precisely what buildings will be required, and numbers of buildings, and thus aligned with the use of a parameters based approach.

29. The concept designs were sought to test the minimum platform size to accommodate all scenarios and allowed 15m and 30m parameters to be fixed for the equipment, to provide flexibility for future design work to be undertaken later on in the project. It should be noted that the maximum heights included in the concept designs for electrical equipment was 12.4 m rather than the assessed worst case of 15m. Similarly, the likelihood of 15m building in respect of the control and SVC buildings is low, with single storey buildings more likely, subject to available space on the platform. An AC substation contrasts markedly with a DC substation which requires buildings substantially higher (20m or more).
30. It is not possible to fix any other aspects of the substation design at this stage as it will all be subject to technical design, which will not commence until after a supplier has been selected, which will be after the close of the Examination and potentially post DCO award. A technical brief, with input from National Grid will then be agreed and technical design will follow, and it is only at that point will there be greater certainty including, e.g. location, size, number and form of any buildings. Should the Applicant's application be consented, the supplier/contractor of the OnSS will come forward with design options and the resultant detailed design will be submitted for approval and discharged by the Local Authority, mindful of requirement 10,11 and 14, including the design intent and approach set out in the **DAS (Revision B)** [document reference 9.3], and the consented parameters, which the local authority will test against the design aspirations set out in the **DAS (Revision B)** [document reference 9.3]. The extent of design dialogue with the local authority can be agreed at that time as part of the post consent process. Whilst SNC may undertake a 'sense test' of potential effects of the detailed design, the post consent role is one of approving detailed designs, not assessing impacts, which takes place at the application stage.

4 The DAS and Design Development

31. The **DAS (Revision B)** [document reference 9.3] sets out how the Projects will fulfil the requirement for 'Good Design', as set out within the Overarching National Policy Statement for Energy (2011) and the emerging drafts Overarching NPS for Energy (2021 and 2023). The **DAS (Revision B)** [document reference 9.3] explains the design evolution of the onshore works to date, proportionate to the application stage of an NSIP, and the considerations that will inform the design of the final onshore works in a clear and structured way. As referred to above the selected site is not particularly sensitive and is well suited to its use for a substation.

32. The **DAS (Revision B)** [document reference 9.3] sets out Design Principles and guidance in section 7. The **DAS (Revision B)** [document reference 9.3] includes an illustrative masterplan (Figure 7.4) based upon a RWCS which is the larger platform. The platform will be formed through cut and fill and whilst the worst case in EIA terms assumes export of surplus fill, it is the intention to sustainably reuse excess material to soften engineered gradients to create smoother landforms to assist blending the platform into the existing landscape. The photomontage visualisations show the engineered slopes as a RWCS, pre-‘smoothing’. The creation of semi natural grasslands and habitats, as well as new native woodlands to supplement the existing woodland framework which defines the site will also assist in making the substation as attractive as it can be, recognising there are limits related to the functionality of the electrical equipment. Existing, and in time new woodland, will ensure the OnSS structures are screened as far as possible, helped by the local topography, in that the site is set down. Given the functional nature of the substation, and juxtaposition of the existing Norwich Main Substation, these matters will help with visual and landscape integration, which will be a matter which SNC will no doubt consider.
33. The guidance in relation to building materials and colour, as well as fencing and other materials will be important to help shape the next stage of design and assist in making the substation as attractive as it can be, again recognising there are limits. Importantly the local planning authority will be involved in the process and will be responsible for discharging Requirements 10, 11 and 14 using the **DAS (Revision B)** [document reference 9.3] (which is a certified document) as the basis for their professional planning judgement and decisions.
34. The reuse of excavated materials, use of native species, the infiltration proposal for flood risk, and habitat creation all reflect the overarching sustainability principles which are embedded in the Design Framework at Vision Level, the Design Objectives and the Design Principles. These same objectives are embedded in the Applicant's supply chain processes.
35. Guidance is provided within the **DAS (Revision B)** [document reference 9.3], to include visual information regarding layout (Figure 7.4), precedent images (Figures 7.2 and 7.3), visualisation (Figures 7.5) and cross sections (Figures 7.6 and 7.7), at an appropriate level of detail for a project of this nature at this stage of development to ensure the substation is fit for purpose, has a clear sense of identity and an aesthetic which contributes to the area as far as possible, given its function.
36. Its siting, landform and peripheral landscape treatment beyond the platform is particularly important in this regard. Those elements for which there is design choice, and over which the local authorities ultimately have control, through requirements, are as follows:
- Platform edge ground modelling/integration into existing landform to ensure the best fit possible in terms of existing landscape character – proposals for ground contouring can be developed once the platform level is fixed (at or below the parameter level of 28.23m AOD).

- Buildings/structures – simple and cuboid, functional and in keeping with Norwich Main Substation. Colour will be important. The Project Description [APP-090] refers to the likely use of steel frame/insulated panelling as the likely building material, but other options could be considered. The number, footprint size, configuration, height, roof pitch, no of floors, internal arrangement and window and access requirements will all reflect function and cannot be determined at this stage and will be set by technical requirements, and of course be no larger than the parameters. The location of the buildings within the platform will be driven by technical and safety requirements, but visual sensitivity is also a factor to be considered, as discussed above.
 - Fencing – palisade or grid, 3m high, to meet safety and regulatory requirements at the time of application, but colour can be informed by colour studies as for buildings. Electric charged deterrent will be an element of the fencing to meet security requirements.
 - Hard surfacing within compound, to include parking – simple durable gravel, slab or asphalt. Locally sourced gravel/stone will be the more sustainable option, unless other materials are dictated by functional requirements.
 - Substation surrounds, including habitat creation and woodland planting. Native species and habitats to reflect and enhance local character, as referred to in **DAS (Revision B)** [document reference 9.3], Section 6. These items are also covered in the **OLMP (Revision C)** [document reference 9.18] and **OEMP (Revision C)** [document reference 9.19], which is subject to final approval under Requirements 11 and 13 of the DCO respectively.
 - Reuse of topsoil – this is covered in the **OLMP (Revision C)** [document reference 9.18] which is subject to final approval under Requirement 11 of the DCO;
 - Access track to substation – compacted local stone/gravel to blend in, soft verges.
37. These are all items subject to approval under Requirement 10(4) of the **draft DCO (Revision F)** [document reference 3.1] (which requires approval of details relating to layout, scale, external appearance and materials), and, for fencing Requirement 14.
38. Notwithstanding this, further design guidance by way of additions to the Design Principles is suggested as follows, in response to **Q2.10.1.3**. These are similar to those used for Hornsea 3, given these were agreed with the SNC, as follows:
- Where possible, buildings will be located in the least visually sensitive locations of the platform, whilst recognising the potential impact of externally located electrical equipment, and orientated and articulated to minimise the perceived bulk and massing of the buildings particularly if multiple buildings are proposed;
 - Consider the merits of smaller buildings against fewer larger buildings.

- Consider using building to act as visual screens for switchgear to reduce apparent visual complexity;
- Exterior colour design will seek to minimise the visual appearance of the building(s) as opposed to creating a design feature. Muted earth or grey colouring may be appropriate, with a matt finish, subject to colour studies undertaken at the time;

39. The Applicant confirms that there are no preliminary designs available at this time for the reasons explained earlier in this document. The use of steel frame and coated insulated panels is put forward in the **DAS (Revision B)** [document reference 9.3] as an appropriate material, but this will be subject to review during the design development process, post consent, and approval by the local planning authority. Fencing type is largely governed by security and safety requirements but will be mesh or palisade type and the Applicant has little control over this. Examples were seen on the Transformer 2 (ASV2) at Norwich Main Substation. A degree of screening will be achieved by landscape mitigation planting from most locations from which the OnSS will be viewed. Whilst the focus is on buildings, the following additional matters could also be considered:

- Where possible, avoid the use of prominent insulators by consideration of available colours appropriate to the background;
- Where feasible, seek to enclose electrical gear within a building, without unduly adding to their mass;
- Outdoor equipment should seek to retain as low a profile design, with low height structures and silhouettes, as possible;
- Seek to make use of lightweight, narrow section materials for taller structures (especially for gantries over 6 m in height);
- Space should be used effectively to limit the area required for development within the parameters established for the project; and
- It is noted that the design of outdoor equipment is typically fixed by its function and there is little that can be done to alter its appearance. In this regard, the external high voltage equipment is likely to be provided in grey.

40. The approval process will include consultation with the local authority to ensure solutions are appropriate to place and local character, and to minimise effects, as far as possible, guided and by the **DAS (Revision B)** [document reference 9.3], which is a certified document under Article 38 of the DCO. The Applicant intends to continue its constructive dialogue with the local authority, to include regular involvement in the design development progress and review of options as they emerge. This could include a formal independent Design Review if required by the SNC. The Applicant is happy to engage with such a process if it is thought to add value to the design discussions with the local authority which are planned.

41. In response to **Q2.10.2.1a**, the Applicant did consider taking independent professional design advice on the Projects but concluded that it would only be desirable to do this, if felt helpful by SNC, post consent, for the reasons explained

earlier in the examination. Design was a specific topic at landscape and seascape Expert Topic Groups (ETG), including the substation site, platform options, flooding matters and landscape mitigation with the proposals developed with input from SNC officers. None of the relevant local authorities requested Design Review pre-application. The Applicant considers the approach taken pre- and post-application fully aligns with NPS EN-1, section 4.5.

Appendix B.2

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.14.1.1. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

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Glossary of Acronyms

AEoI	Adverse Effect on Integrity
DEL	Dudgeon Extension Limited
DEP	Dudgeon Offshore Wind Farm Extension Project
LSE	Likely Significant Effect
RIAA	Report to Inform Appropriate Assessment
SEL	Scira Extension Limited
SEP	Sheringham Offshore Wind Farm Extension Project
SPA	Special Protection Area

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, potential Special Protection Areas, Special Protection Areas, Ramsar sites, proposed Ramsar sites and sites compensating for damage to a European site and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017, although some of the sites listed here are afforded equivalent policy protection under the National Planning Policy Framework (2021) (paragraph 176) and joint Defra/Welsh Government/Natural England/NRW Guidance (February 2021).
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
The Applicant	Equinor New Energy Limited. As the owners of SEP and DEP, Scira Extension Limited and Dudgeon Extension Limited are the named undertakers that have the benefit of the DCO. References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

1 Introduction

1. This document provides a joint response from the Applicant and Natural England to second written question Q2.14.1.1:

[Adverse Effect on Integrity] AEoI Conclusions

The Applicant assessed a number of designated sites and features within their HRA screening and assessment processes [APP-059] on a project alone and in-combination basis. The Applicant concluded that the project, alone, would not have an AEoI on any feature of any designated site. The Applicant concluded that for the project, in combination with other plans and projects, an AEoI could be ruled out on all features of all designated sites except for sandwich tern and kittiwake.

The ExA require confirmation that this is a common and shared position with NE. Applicant and NE submit a jointly produced table (see Annex A), listing all relevant sites and all features from the [Habitats Regulations Assessment] HRA process [APP-059] and submit it to the Examination either as a standalone document or as an appendix to the SoCG. Refer to the extract from the East Anglia One North Recommendation Report and provide similar colour coding.

2. This document provides the Applicant's and Natural England's joint position in relation to conclusions of AEoI and the requirement for HRA derogation and compensation in relation to:
 - Offshore Special Protection Areas (SPA) (including Ramsar Sites with migratory waterbird features at potential risk of collision on passage) (**Section 2**);
 - Offshore Annex I habitats (**Section 3**); and
 - Onshore National Site Network Sites (**Section 4**).
3. Regarding marine mammal Special Areas of Conservation (SAC), Natural England and the Applicant propose to provide the necessary detail at Deadline 5 or 6 since the Applicant has submitted at Deadline 3 a **Marine Mammals Technical Note and Addendum** [document reference 16.14] which provides updated assessments with respect to the Southern North Sea SAC (harbour porpoise), The Wash and North Norfolk Coast SAC (grey seal) and the Humber Estuary SAC (harbour seal). Following review of this document Natural England anticipates being able to provide an updated position on conclusions.

2 Offshore Special Protection Areas (including Ramsar Sites with Migratory Waterbird Features at Potential Risk of Collision on Passage)

4. **Table 1** provides the Applicant's and Natural England's joint position in relation to conclusions of AEoI and the requirement for HRA derogation and compensation for offshore SPAs (including Ramsar Sites with migratory waterbird features at potential risk of collision on passage). The assessments on which these conclusions are based are provided within the **Report to Inform Appropriate Assessment (RIAA)** [APP-059] with updates to the assessments for some sites and species presented

in the **Apportioning and Habitats Regulations Assessment (HRA) Updates
Technical Note (Revision B)** [REP2-036].

Table 1 Joint Applicant and Natural England position in relation to conclusions of AEoI for offshore SPAs (including Ramsar Sites with migratory waterbird features at potential risk of collision on passage)

European Sites and Qualifying Feature(s)	Likely Significant Effect (LSE) Identified from...	AEoI Alone Excluded	AEoI In-combination Excluded	HRA Derogations Engaged	Compensation Required
Greater Wash SPA					
Breeding Sandwich tern	Collision risk	Yes	No	Yes	Yes
Breeding common tern	Collision risk	Yes	Yes	No	No
Nonbreeding little gull	Collision risk	Yes	Yes	No	No
Nonbreeding red-throated diver	Construction phase displacement / barrier effects	Yes	Applicant: Yes Natural England: No	TBC - further discussion on avoidance / mitigation measures required.	
	Operational phase displacement / barrier effects	Yes	Applicant: Yes Natural England: No		
	Operational phase displacement / barrier effects due to operation and maintenance vessel activity	Yes	Applicant: Yes Natural England: No		
Common Scoter	Construction phase displacement / barrier effects	Applicant: Yes	Applicant: Yes	The Applicant will update the screening assessment for common scoter to confirm that there will be no LSE for this species for all impact pathways. Natural England to confirm following review of more recent (unpublished data).	
		Natural England: TBC	Natural England: TBC		
	Operational phase displacement / barrier effects	Applicant: Yes	Applicant: Yes		
Natural England: TBC		Natural England: TBC			
Operational phase	Applicant: Yes	Applicant: Yes			

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European Sites and Qualifying Feature(s)	Likely Significant Effect (LSE) Identified from...	AEol Alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
	displacement / barrier effects due to operation and maintenance vessel activity	Natural England: TBC	Natural England: TBC		
North Norfolk Coast SPA (see Table 4-1 for conclusions of onshore assessments on this SPA)					
Breeding Sandwich tern	Collision risk	Yes	No	Yes	Yes
Breeding common tern	Collision risk	Yes	Yes	No	No
All qualifying migratory waterfowl (nonbreeding): dark-bellied Brent goose, pink-footed goose, knot, wigeon and wildfowl assemblage.	Collision risk	Yes	Yes	No	No
Alde-Ore Estuary SPA					
Breeding lesser black-backed gull	Collision risk	Yes	Yes	No	No
Flamborough and Filey Coast SPA					
Breeding gannet	Collision risk	Yes	Anticipated yes	Anticipated No	Anticipated No
Breeding kittiwake	Collision risk	Yes	No	Yes	Yes
Nonbreeding guillemot	Operational phase displacement / barrier effects	Yes	Applicant: Yes	Yes, on a without prejudice basis	Applicant: No
			Natural England: No		Natural England: Yes
Nonbreeding razorbill	Operational phase displacement / barrier effects	Yes	Applicant: Yes	Yes, on a without prejudice basis	Applicant: No
			Natural England: No		Natural England: Yes
Seabird assemblage	Effects on abundance, diversity and supporting habitats due to collision risk (operation and	Yes	Applicant: Yes	N/A – where individual species compensatory measures are agreed to be appropriate, further compensation will not be needed for assemblage.	
			Natural England: TBC		

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European Sites and Qualifying Feature(s)	Likely Significant Effect (LSE) Identified from...	AEol Alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
	maintenance) and disturbance/displacement (construction and operation and maintenance)				
Puffin (as a component of the seabird assemblage)	Operational phase displacement / barrier effects	Yes	Yes	No	No
Outer Thames Estuary SPA					
Nonbreeding red-throated diver	Operational phase displacement / barrier effects due to operation and maintenance vessel activity	Yes	Applicant: Yes	TBC - further discussion on avoidance/mitigation measures needed.	
			Natural England: HOLD TBC		
All other Offshore SPAs (including Ramsar Sites with Migratory Waterbird Features at Potential Risk of Collision on Passage) screened into the RIAA [APP-059]					
N/A	N/A	Yes	Yes	No	No

3 Offshore Annex I Habitats

5. **Table 2** provides the Applicant's and Natural England's joint position in relation to conclusions of AEol and the requirement for HRA derogation and compensation for offshore Annex I habitats. The assessments on which these conclusions are based are provided within the **Report to Inform Appropriate Assessment (RIAA)** [APP-059].

Table 2 Joint Applicant and Natural England position in relation to conclusions of AEol for offshore Annex I habitats

European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
The Wash and North Norfolk Coast SAC					
Sandbanks which are slightly covered by	Changes to tidal currents affecting	Yes	Yes	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
sea water all the time	sediment transport				
Inner Dowsing, Race Bank and North Ridge SAC					
Sandbanks which are slightly covered by sea water all the time	Increased Suspended Sediment Concentration (SSC) and deposition	Yes	Yes	No	No
	Changes in physical processes (effecting sediment supply)	Yes (no impact) ¹	Yes (no impact) ²	No	No

4 Onshore National Site Network Sites

6. **Table 3** provides the Applicant's and Natural England's joint position in relation to conclusions of AEol for onshore National Site Network Sites. The assessments on which these conclusions are based are provided within the **Report to Inform Appropriate Assessment (RIAA)** [APP-059] with updates to the screening and assessments for the River Wensum SAC being presented within the **RIAA (onshore) Technical Note** [REP2-050].

¹ As described in Section 7.4.1 of the RIAA [APP-059]: *The closure depth is inshore of the HDD exit point, therefore where the net direction of sediment transport is wave driven and to the west there is no cable protection and therefore there will be no interruption to sediment supply inshore to the sandbank features of the Wash and Norfolk Coast SAC. Further offshore of the HDD exit point where there may be cable protection, the net sediment transport is tidally driven and to the south-east, and is travelling away from the Wash and North Norfolk Coast SAC. Consequently, there will be no interruption of sediment supply to the Annex I sandbanks of the Wash and North Norfolk Coast SAC, which will be supplied by sediment further up the coast from the north west.*

² Since there will be no impact to the subtidal sandbanks of the Wash and North Norfolk Coast SAC from potential changes to physical processes from the project-alone, there is no impact pathway for in-combination effects with other plans and projects

Table 3 Joint Applicant and Natural England position in relation to conclusions of AEol for Onshore National Network Sites

European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
River Wensum Special Area of Conservation (SAC)					
Ranunculus fluitantis and Callitriche-Batrachion vegetation	Direct effects on Ranunculus fluitantis and Callitriche-Batrachion vegetation present within ex-situ habitats / functionally linked land of the SAC during the construction phase.	Yes	Yes	No	No
	Indirect effects on Ranunculus fluitantis and Callitriche-Batrachion vegetation present within the SAC boundary arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	Yes	No	No
	Indirect effects on Ranunculus fluitantis and Callitriche-Batrachion vegetation present within ex-situ habitats / functionally linked land of the SAC arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	Yes	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
Desmoulin's Whorl Snail	Direct effects on Desmoulin's whorl snail present within ex-situ habitats of the SAC during the construction phase.	Yes	Yes	No	No
	Indirect effects on Desmoulin's whorl snail present within the SAC boundary arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	Yes	No	No
	Indirect effects on Desmoulin's whorl snail present within ex-situ habitats / functionally linked land of the SAC arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	Yes	No	No
White-clawed crayfish	Direct effects on white-clawed crayfish present within ex-situ habitats / functionally linked land of the SAC during the construction phase	Yes	Yes	No	No
	Indirect effects on white-clawed crayfish present within the SAC boundary	Yes	TBC	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
	arising from geology / contamination and groundwater / hydrology effects during the construction phase.				
	Indirect effects on white-clawed crayfish present within ex-situ habitats / functionally linked land of the SAC arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	TBC	No	No
Brook lamprey	Direct effects on brook lamprey present within ex-situ habitats of the SAC during the construction phase.	Yes	Yes	No	No
	Indirect effects on brook lamprey present within the SAC boundary arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	TBC	No	No
	Indirect effects on brook lamprey present within ex-situ habitats / functionally linked land of the SAC arising from geology / contamination and	Yes	TBC	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
	groundwater / hydrology effects during the construction phase.				
Bullhead	Direct effects on bullhead present within ex-situ / functionally linked land habitats of the SAC during the construction phase.	Yes	Yes	No	No
	Indirect effects on bullhead present within the SAC boundary arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	TBC	No	No
	Indirect effects on bullhead present within ex-situ habitats of the SAC arising from geology / contamination and groundwater / hydrology effects during the construction phase.	Yes	TBC	No	No
North Norfolk Coast Ramsar					
Nonbreeding pink-footed goose	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	TBC	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats /	Yes	Yes	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
	functionally linked land of the Ramsar Site				
Nonbreeding dark-bellied brent goose	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
Nonbreeding wigeon	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
Nonbreeding knot	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No

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European Sites and Qualifying Feature(s)	LSE Identified from	AEol alone Excluded	AEol In-combination Excluded	HRA Derogations Engaged	Compensation Required
Nonbreeding pintail	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the Ramsar Site	Yes	Yes	No	No
North Norfolk Coast SPA					
Wintering birds (dark-bellied Brent goose, pink-footed goose, knot, wigeon and wildfowl assemblage).	Direct Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the SPA	Yes	TBC	No	No
	Indirect Effects on Wintering Birds Present in ex-situ Habitats / functionally linked land of the SPA	Yes	Yes	No	No

Appendix B.3

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.6.4. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Table 1 WQ2.6.4 Applicant's Responses to Corpusty and Saxthorpe Parish Council's Deadline 1 Oral Submission Questions

ID	Question	Applicant Response
A	How has Equinor's exploration of the direct and indirect health and well-being costs considered as externalities to the project used a methodological framework and appropriate methods to capture both financial and hedonic costs to the local communities across the region affected by the project?	<p>The assessment follows the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations). This is applied to each of the topics listed in Regulation 5(2) of the EIA Regulations 2017. As set out in ES Chapter 28 Health [APP-114, Section 28.4.3], the assessment on human health presents a framework to determine the 'likelihood' of a project having an effect on health, and the 'significance' of an effect in terms of the EIA Regulations.</p> <p>The EIA Regulations, nor associated guidance, do not require financial and hedonic costs of the Project to be captured and as such, these assessment methodologies have not been adopted.</p>
B	How does Equinor respond to the detailed critique of their approaches outlined in the preceding?	<p>Corpusty and Saxthorpe Parish Council critiqued the Applicant's approach [REP1-073]. The Applicant responded in REP2-043. The Applicant attended ISH3 which allowed for exchange on the questions posed by the Examining Authority (Agenda item 3.3.iv). This is recorded in The Applicant's Response to Issues Raised at the Open Floor Hearing 2 [document reference 16.13].</p> <p>The Applicant sets out the main points made in REP1-073 with which it disagrees.</p> <p>The Applicant does not accept the accusations of cynicism which Corpusty and Saxthorpe Parish Council level at it and at the local authority (paragraph 2).</p> <p>The Applicant does not agree with REP1-073's interpretation of the way in which the Dahlgren and Whitehead figure [APP-114, Plate 28.1] is used (paragraph 4). This is a model of health and wellbeing which establishes how health is defined. This point is made in paragraph 61 immediately above Plate 28.1. It is clear that this is not intended as a model of the specific impacts of this development.</p> <p>The Applicant does not agree that the assessment commits an ecological fallacy (paragraph 4), i.e. that it ascribes the characteristics of a group to an individual (for example, an area has high levels of poverty therefore all who live in that area are poor). ES Chapter 28 Health [APP-114, Section 28.4.3.1.1]</p>

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ID	Question	Applicant Response
		<p>expressly states that the assessment does not reach conclusions on individual effects on human health.</p> <p>The Applicant does not accept the accusations of bias (page 4, paragraphs 3 and 4) nor of shortcomings and limitations (page 4, paragraph 5). REP1-073 comments that secondary data is chosen, that it is used at the wrong scale, that it is dated and that it is an example of confirmatory bias. Table 29-9 [APP-114] gives sources used for population data and shows the spatial coverage and the year the dataset was released.</p> <p>REP1-073 (page 2) states how the critique is informed by an economic/project planning perspective and offers examples of ways in which costs could be identified, specified, considered over time and compensated (page 3).</p> <p>ES Chapter 28 Health [APP-114] has not been approached from an economic/project planning perspective. It has been approached through the requirements of UK legislation, policy and guidance as set out in 4.1 Policy, Legislation and Guidance, ES Chapter 28 Health [APP-114].</p> <p>The focus in ES Chapter 28 Health [APP-114] is on the likely significant effects on human health, as required under the EIA Regulations. These are identified, specified and considered over time and mitigation is identified. This is the same structure as identified in REP1-073 but applied to likely significant effects and not to costs. The temporal scope is set out in Table 28-3 and Table 28-12 shows how the duration of an effect influences the score for magnitude.</p> <p>Paragraphs 75 and 76 of ES Chapter 28 Health [APP-114] state that the EIA human health assessment is a qualitative analysis, following the IPH (2021) guidance approach, which draws on qualitative and quantitative inputs from other EIA topic chapters. This is considered the most appropriate methodology for assessing wider determinants of health proportionately, consistently and transparently. ES Chapter 28 Health [APP-114] conclusions are both EIA scores, such as major, moderate, minor or negligible; and a narrative explaining this score with reference to evidence, local context and any inequalities. ES Chapter 28 Health [APP-114, para 79] describes the sources of information that inform the professional judgement on the likely significant effects on human health. The sources are described as follow:</p> <ul style="list-style-type: none"> scientific literature;

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ID	Question	Applicant Response
		<ul style="list-style-type: none"> • baseline conditions; • health priorities; • consultation responses; • regulatory standards; and • policy context. <p>In summary, the Applicant notes the difference between the approach taken in ES Chapter 28 Health [APP-114] and that which is set out in REP1-073. While the difference between the approach suggested in REP1-073 and that taken in ES Chapter 28 Health [APP-114] is of academic interest the Applicant is confident in the analysis that has been conducted and the conclusions that have been reached and that its assessment is compliant with the requirements of the EIA Regulations.</p>
C	<p>What population fractions, differentiated by standard socio-economic indicators, have the project related community consultations engaged?</p>	<p>Relevant legislation, and guidance in relation to the consultation process is provided in the Consultation Report [APP-029, Section 3.2]. To ensure that its consultation was comprehensive and representative, the Applicant undertook the following measures. The core consultation zone consisted of a minimum buffer of 1,000 meters on either side of the project search area, as presented at the Phase One consultation. This ensured that all individuals and stakeholders identified within a minimum distance of 1,000 meters from any associated underground or overground infrastructure were consulted. Prior to the Phase Two consultation, the core consultation zone included properties situated at least 1,000 meters away from any shortlisted main compound locations. In addition, the broader consultation zone encompassed the host local authorities, with all neighbouring local authorities also notified. The Applicant proactively informed selected "hard to reach" groups of the consultations, including charities, schools, and community groups. The full list of these groups can be found in 'Table 5-1' of the Consultation Report [APP-029].</p>
D	<p>With regard to disruption of traffic movements associated with project traffic movements along the B1149 and B1145 roads:</p> <p>What is the assessment of the increased 100 metre particulate emission plumes along both sides of the B1149 and B1145 during the project's life and over the following 30 years taking account of:</p>	<p>Bullet points 1 and 2 refer to air quality. Bullet point 3 relates to traffic and potential effects of construction work on ambulance response times. These are addressed in turn below.</p> <p>Air quality</p>

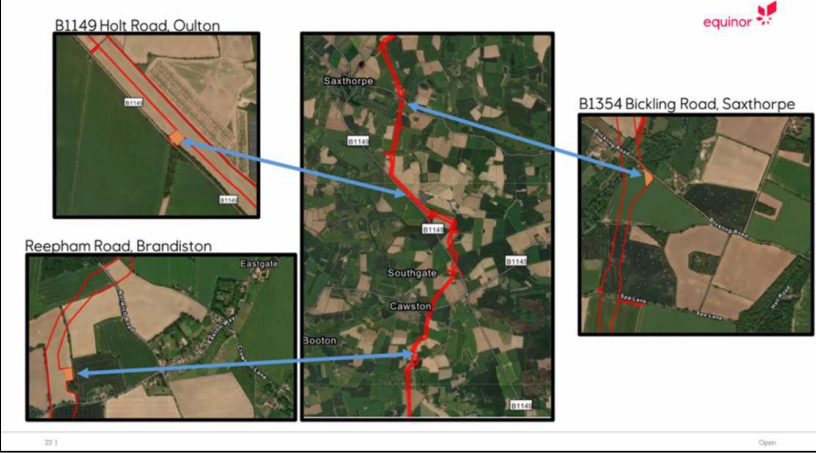
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ID	Question	Applicant Response
	<ol style="list-style-type: none"> 1. the particular susceptibility of the ageing population characteristic of the area; 2. the child population in the area; 3. the effects of this additional traffic on ambulance response times in North Norfolk during the construction period once again taking into consideration the ageing population in this area and its special needs in relation to emergency responses as between the coast and the Norfolk and Norwich Hospital; 	<p>ES Chapter 22 Air Quality [APP-108] includes an assessment of potential impacts from Project-generated construction road vehicle exhaust emissions (including particulates) at sensitive human receptor locations. As detailed in Table 22.1 of ES Chapter 22 Air Quality [APP-108], the Planning Inspectorate agreed to scope out operational impacts on air quality as they were unlikely to be significant. As such, any impact of the Projects would be temporary. The B1149 and B1145 were not explicitly included in the detailed modelling assessment presented in ES Chapter 22 Air Quality [APP-108], because Project-generated construction traffic (in both the 'isolation' and 'concurrent' scenarios) on these roads did not exceed the screening criteria provided by the Institute of Air Quality (IAQM) and Environment Protection UK (EPUK) (see ES Chapter 22 Air Quality [APP-108, Section 22.4.3.3.1]). Therefore, the impact of Project-generated traffic on these roads can be considered to be insignificant. Furthermore given the rural nature of the study area and in Corpusty and Saxthorpe parishes, pollutant concentrations are very low (see ES Appendix 22.3: Air Quality Background Pollutant Concentrations [APP-261]) and no greater than 50% of the relevant health-based air quality Objectives in 2025, the earliest year of construction for the Projects.</p> <p>Air quality impacts are considered 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 specifically took into account vulnerable groups (such as the elderly and young).</p> <p>It is acknowledged that particulate matter is a non-threshold pollutant, i.e. health effects can occur with any level of exposure, however temporary 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 insignificant in this particular area, and negligible elsewhere within the study area, and would occur temporarily over a short duration to establish a significant source of renewable energy [APP-108]. This would contribute in the long term to the government's targets of overall exposure reduction to PM2.5, as set out in its Clean Air Strategy and recently published 'Environmental targets consultation summary of responses and government responses' document published by</p>

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ID	Question	Applicant Response
		<p>Defra in December 2022. The Projects, once operational, therefore have wider air quality and associated health benefits nationally.</p> <p>Traffic and potential effects of construction work on ambulance response times</p> <p>ES Chapter 24 Traffic and Transport [APP-110] includes an assessment of the impact of SEP and DEP traffic upon driver delay and identifies that with the application of mitigation measures (as required) residual impacts would not be significant. The assessment of driver delay applies to all vehicle users of the highway network including emergency services.</p> <p>The Applicant has undertaken an extensive programme of stakeholder engagement with NCC who have a statutory duty under the Traffic Management Act, 2004 to ensure the expeditious movement of traffic on their road network. The Draft Statement of Common Ground: Norfolk County Council (Revision B) [REP2-033] between the Applicant and NCC identifies the parties agree upon the assessment conclusions.</p> <p>Furthermore, the Applicant has also met with the East of England Ambulance Service NHS Trust (EEAST). The Applicant considers that following this meeting all matters are agreed and will submit a SoCG at Deadline 3 to confirm this.</p>
E	<p>The impact of additional traffic generated by the extensive housing developments planned over the next several years at Corpusty and Saxthorpe on project-related and other traffic movements including that generated from the many additional homes recently constructed in Holt, some for people who commute to Norwich daily and whose movements have already increased the burden of traffic on a narrow country road? The following screen shot shows the key choke points which will be affected and the ExA might want to request of Equinor updates as to the most recent assessment of the effects, over the life of the project, of their work programme on the choke points indicated in Figure 1.</p>	<p>The Transport Assessment (TA) [APP-268] outlines that baseline traffic flows have been captured for all 140 links forming the traffic and transport study area. To take account of changes in traffic flows related to new development (e.g. new housing and employment) and changes in travel patterns the Section 24.1.2.3 of the TA outlines the agreed approach to forecasting future traffic growth using the Trip End Model Presentation Programme (known as TEMPro). The Draft Statement of Common Ground: Norfolk County Council (Revision B) [REP2-033] between the Applicant and NCC (local highway authority) confirms that the baseline has been adequately characterised.</p> <p>The Parish Council have highlighted three areas within Figure 1 of [REP1-073] as 'choke points'. These are:</p>

Appendix B.3 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

ID	Question	Applicant Response
		<ul style="list-style-type: none"> • The B1149 Holt Road, Oulton (link 54); • Reepham Road, Brandiston (link 137); and • B1354 Bickling Road, Saxthorpe (link 57). <p>ES Chapter 24 Traffic and Transport [APP-110] includes an assessment of the impact of SEP and DEP traffic upon these links and identifies that with the application of mitigation measures (as required) residual impacts would not be significant.</p> <p>The Applicant has undertaken an extensive programme of stakeholder engagement with NCC and the Draft Statement of Common Ground: Norfolk County Council (Revision B) [REP2-033] between the Applicant and NCC identifies the parties agree upon the assessment conclusions.</p>
F	<p>The impact of project related traffic on transport to and from the proposed broiler farm at Edgefield (NNDC planning application PF/22/1753) and the proposed layer farm at Lime Kiln Farm, Oulton (NNDC planning application PF/21/0317)?</p>	
G	<p>How many social scientists and/or public health scientists were employed by Equinor, and for how long, and what was the total budget line allocated to their work in the preparation of this report on health and well-being aspects of the proposal?</p>	<p>The priority is to ensure that the Health Assessment and wider Environmental Impact Assessment are completed in accordance with the EIA Regulations 2017 and in this context, the Applicant refers to its response to item a) above. The Applicant also refers to paragraph 20 of ES Chapter 5 EIA Methodology [APP-091] which confirms that the Applicant has appointed experienced and competent EIA consultants to undertake the assessment work. Further information on the companies that undertook the assessment is available in The Applicant's Comments on Post-Hearing Submissions [REP-043].</p>
H	<p>Who were the social / public health scientists who were employed on this proposal, and may we have sight of their (if necessary, anonymised) curricula vitae?</p>	
I	<p>What total budget was allocated to exploring the impact of the proposed project in preparation of each of the volumes of evidence prepared by Equinor?</p>	<p>Neither cost and budgetary information nor number of social scientists working on the project or details of individuals' curricula vitae are considered relevant as these would not change the results of the assessments that were completed.</p>
J	<p>More specifically, what size budget was allocated to understanding the health and welfare impacts of the project and what was the size of the</p>	

Appendix B.3 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

ID	Question	Applicant Response
	budget allocated to understanding the impact of the project on non-human animals and birds?	
K	In Table 28-6: NPS Assessment Requirements, Row 2 column 3, the following statement appears “Employment is considered within this chapter, as well as Chapter 27 Socio-Economics and Tourism. Well-being is considered throughout this chapter.” It would be very helpful if Equinor could provide a clear definition of what they mean by well-being, how they have derived this definition from the literature, and what conceptual and in particular operational definitions have they deployed in understanding the impacts of their proposed work on well-being.	At ISH3, the Applicant confirmed that the approach to defining and then assessing health and wellbeing has been informed by Public Health England’s (PHE) Section 42 response [APP-114, page 16]. The dimensions of human health and wellbeing identified by PHE are Access; Traffic and Transport; Socioeconomic and Land Use. These were taken into consideration in ES Chapter 28 Health [APP-114, Section 28.6].
L	In the same table, row 2, column 1, Equinor point to NPS requirements that they are to consider “the potential effects, including benefits, of a proposal for a project, the Infrastructure Planning Commission (IPC) will find it helpful if the applicant sets out information on the likely significant social and economic effects of the development, and shows how any likely significant negative effects would be avoided or mitigated. This information could include matters such as employment, equality, community cohesion and well-being.” In these connections, is Equinor able to provide clear definitions of what they mean by equality, community cohesion and well-being and help us to understand the conceptual and operational definitions they have deployed to understand and measure these concepts in relation to the impact of their proposed work?	In paragraph 4.2.2 of EN-1 (DECC, 2011; BEIS, 2021) the NPS requires the Applicant to set out information on the likely significant social and economic effects of the development. The NPS refers to ‘employment, equality, community cohesion and well-being’ as a suggestion of the type of information that could be included and does not state that these matters must be investigated. Section 5.12 of EN-1 sets out the information that is to appear in the Applicant’s assessment. Bullet point 4 of paragraph 5.12.3 refers to “the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure.” This bullet point concludes with the following statement “There could also be effects on social cohesion depending on how populations and service provision change as a result of the development”. The NPS reference to social cohesion, and any resulting requirement to assess it, is dependent upon there being an effect on service provision. The Applicant considered the potential effects on service provision of an influx of workers into a local area. These were found to be negligible and not significant in EIA terms [ES Chapter 28 Health , APP-113, Sections 27.6.4, 27.6.5 and 27.6.6].
M	Equinor have allocated a budget to compensate communities in the region impacted by their project. It would be very helpful if Equinor could tell us the total size of this budget together with the purpose of line items within it and to elucidate the size of their total budgets and their modus operandi for calculating each of the following items:	Any mitigation measures proposed and associated costs are derived from assessment set out within each individual topic areas in the Environmental Statement. Where a residual impact exists, suitable mitigation measures are proposed, normally in consultation with the stakeholders affected. Mitigation is thus impact rather than cost lead. Providing costs for mitigation would be

Appendix B.3 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

ID	Question	Applicant Response
	<ul style="list-style-type: none"> i. total compensation to all landowners affected by the project. ii. mitigation of adverse impacts on non-human populations such as birds and animals. iii. mitigation of adverse traffic impacts on affected through routes, particularly but not exclusively the B1149 and the B1145? 	<p>misleading, particularly given a) the confidential nature of some of the discussions including with landowners; b) final mitigation is subject to detailed design and c) that there are a number of pre-construction surveys yet to be undertaken which would also inform final mitigation.</p> <p>With respect to compensation to landowners, the Applicant refers to Appendix 3 of the Funding Statement (Revision B) (document reference 4.2) which includes a Property Cost Estimate that details financial compensation payable to landowners.</p>
N	<p>Why has Equinor adopted a market-based compensation framework for landowners affected by the project but in stark contrast has adopted what might be described as a “largesse” framework (sometimes referred to as a “community benefit fund”) whereby communities are invited to compete with each other for local communities’ compensatory funding?</p> <p>It seems that Equinor has no knowledge of the theory of public goods (Barnett & Sorenson, 2011; Besley & Ghatak, 1999; Bruno S. Frey, Simon Luechinger, & Alois Stutzer, 2004; Cornes & Sandler, 1996; Inge Kaul et al., 2003; I. Kaul & Faust, 2001).</p> <p>Such knowledge would have re-framed the problem of compensation in a more balanced and less biased and more equitable way. The result would be that rather than the “largesse” approach they have adopted for compensating communities, Equinor would have realised that a more just and correctly costed approach would have resulted in an offer recognising the true quantum of compensatory payments to impacted communities over time. For example, such an arrangement might have resulted in all present and future households in the affected region benefitting from reduced price electricity for the life of the project. This approach could come near to applying costing compensation correctly.</p>	<p>The Applicant is keen to work with local partners including the LPAs to ensure that local benefits are delivered to the area where opportunities exist. Of note and as set out within its response to Q1.22.4.1 in the Applicant’s Responses to the Examining Authority’s First Written Questions [REP1-036], the Applicant has developed an Outline Skills and Employment Plan (Revision B) [document reference 9.23], which is secured by Requirement 26 of the draft DCO (Rev F) (document reference 3.1). Developing strategic and carefully planned skills development, careers and jobs through the project is an outcome of significance to communities and of long term importance to the applicant</p> <p>Item 6.v in the Applicant’s Summary of Oral Submissions at Issue Specific Hearing 4 [doc reference 16.4] references the experience the Applicant has in developing and managing community benefit funds within the area in respect of the existing Sheringham Shoal and Dudgeon offshore wind farms and confirms that the Applicant is considering an equivalent fund for SEP and DEP. Post DCO award the applicant will begin to consult on this – taking into consideration the many years of experience it has had with running the two successful funds via Norfolk Community Foundation. Information about the impact and outcomes of the existing funds can be found on the Sheringham Shoal website, the Dudgeon Website. Meanwhile the funds can be accessed by communities and organisations that are eligible - through the Norfolk Community Foundation Website.</p>

Appendix B.3 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

ID	Question	Applicant Response
	<p>The ExA is encouraged to enquire of Equinor why they have neglected to consider adopting this technique by completing a proper cost-benefit analysis, thus arriving at a satisfactory and informed recognition of the impact of the proposed project on the health and well-being of the population of this region over the life of the project. This would enable them (and all interested parties) to make estimates of the proper quantum required for compensation, applying a social license to operate approach as recommended by Professor Glasson and his team?</p>	

Appendix B.3 of Appendix B - Supporting documents to the Applicant's Responses to the Examining Authority's Second Written Questions

References

DECC, (2011) Overarching National Policy Statement for Energy (EN-1). Available at: [1938-overarching-nps-for-energy-en1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/101523/1938-overarching-nps-for-energy-en1.pdf) (publishing.service.gov.uk)

BEIS, (2021) Draft Overarching National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/101523/3/en-1-draft-for-consultation.pdf

Appendix B.4

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.9.1. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

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Orsted says huge UK Hornsea 3 wind project at risk without government action

By Susanna Twidale



Electric power transmission pylon miniatures and Orsted logo are seen in this illustration taken, December 9, 2022. REUTERS/Dado Ruvic/Illustration

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LONDON, March 3 (Reuters) - Development of what would be the world's largest wind farm off the coast of Britain is in doubt, with developer Orsted saying it needs more support from the government such as tax breaks to proceed with the project after costs soared.



The 8 billion pound (\$9.6 billion) Hornsea 3 project is expected to have a capacity of almost 3 gigawatts (GW) when built, enough to power around 3.2 million homes, and is seen as vital to Britain's push to increase energy security and rapidly increase its renewable power output to meet climate targets.

The project, due to begin production in 2026, won a government contract at auction with a minimum price guarantee, called a contract-for-difference (CfD), worth 37.35 pounds per megawatt hour (MWh) in 2012 prices, around 45 pounds/MWh today.

Although the contract is index-linked to inflation it is now worth significantly less than current electricity prices of around 130 pound/MWh.

"Since the auction there has been an extraordinary combination of increased interest rates and supply chain prices," Duncan Clark, Head of Orsted UK & Ireland said in a statement.

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Feedback

"Industry is doing everything it can to manage costs on these projects but there is a real and growing risk of them being on hold or even handing back their CfDs," he said.

Clark is calling on the government to offer targeted support for the renewable sector, such as tax breaks on investments similar to those seen in the oil and gas sector, at the upcoming Spring budget on March 15.

Britain has a target of 50 GW of offshore wind capacity by 2030, up from almost 14 GW currently and is aiming for net zero emissions by 2050.

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Reporting By Susanna Twidale; Editing by Kirsten Donovan



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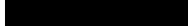
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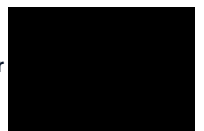
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Orsted 'needs time' to analyse impact of Budget on Hornsea 3

Danish developer disappointed by lack of support in UK Chancellor's Spring Statement amid warnings project is at risk

📅 16 March 2023 📁 Offshore Wind (/offshore-wind)

(Image: Orsted)

Orsted has said it is disappointed by the UK government’s Spring Budget and will need to take time to analyse its impact on the 2852MW Hornsea 3 offshore wind farm in the North Sea.

The Danish developer warned earlier this month that plans to build the project are “at risk” unless the government offers tax breaks to offset soaring costs.

Orsted head of UK and Ireland Duncan Clark told The Times that the project “would have to go on hold” if it did not receive the additional support by the end of April.

Hornsea 3 received a 15-year strike price of £37.35 per-megawatt hour in the government’s 2022 Contracts for Difference auction, though some of the winning developers now claim the bids did not factor in rising inflation and supply chain pressures.

Chancellor Jeremy Hunt’s Budget did not contain any new incentives for offshore wind, although it left the door open for further net zero announcements before the end of March.

An Orsted spokesperson said: "It is disappointing that the Government has not put in place a full package of support for the renewables industry in the Spring Budget. Under the government's proposals, we understand long-life infrastructure projects such as offshore wind farms would only qualify for a 50% capital allowance for three years. Furthermore, the lion's share of capital expenditure on Hornsea 3 and other forthcoming offshore wind projects will come outside the qualifying cycle and therefore

(/)
 "We will now need to take some time to analyse the anticipated impact of these proposals on our future projects. We remain committed to doing all we can to reach Final Investment Decision on Hornsea 3, a project Orsted has been developing for more than a decade and which will deliver up to 2.8GW of clean, secure affordable power for UK homes and businesses.

"Our Hornsea 3 project team, together with our supply chain partners, will continue to seek creative solutions that we hope will allow us to green-light Hornsea 3 in the future, realising an £8bn investment in the UK with thousands of jobs during construction and billions invested in the UK supply chain."

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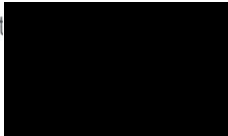
Hornsea 3 project 'challenging' after budget, says wind farm developer

The £8bn wind farm would generate enough electricity to power more than three million UK homes, but the company behind it says the budget has made the next step unclear.



annah Thomas-Peter

climate change and energy correspondent



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The head of environment for major wind farm developer Orsted says the chancellor's budget is a "real disappointment" and has made the company's planned Hornsea 3 development off the coast of Norfolk "challenging".

Benj Sykes said his industry is being squeezed by rising costs and interest rates, and needed a more comprehensive and generous tax incentive and industry growth package than the small improvements offered by the chancellor.

He told Sky News: "We were really hoping that we would see a response to what we and other project owners have been looking for from the chancellor and he's focused his efforts in other areas.

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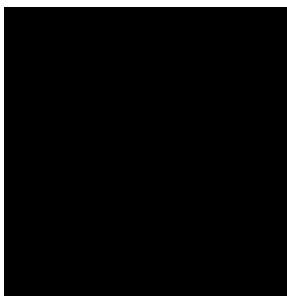
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"It's a real disappointment.

"It certainly makes (Hornsea 3) challenging.

"We've been very clear that this is a project that brings fantastic jobs, through construction and through decades of operations, and we really want to make sure we can realise that, but the chancellor has certainly not made that easier.

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Five-fold increase in offshore wind capacity by 2030

If it goes ahead, Hornsea 3 will be the largest wind farm in the world.

Located about 75 miles off the Norfolk coast, the £8bn project would generate enough electricity to power more than three million UK homes.

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It is due to begin production in 2026 and is crucial to the government's ambitions to deliver a five-fold increase in offshore wind capacity by 2030.

After years as a world leader in wind power, the UK is now facing fierce competition from both the US and EU, both of which have agreed substantial subsidy packages in the global race to become a clean energy superpower.

'Other countries are really hot on our heels'

Ana Musat, executive director of policy for industry body Renewable UK, said: "We're one of the largest investors in UK infrastructure, generating jobs right across the country.

"But I think we can't really take that position for granted.

"It's not just us now, leading the way with minimal competition from abroad.

"Other countries are really hot on our heels.

"So we really need to make sure that we don't just stick a plaster on a problem and that we don't announce piecemeal measures.

"We need to make sure that all of that is integrated within a comprehensive strategy to enable growth of the sector.



How does the UK keep the lights on?

"We can't really emphasise enough the pressures that the sector is facing.

"We can't really afford to wait anymore."

The government is due to set out further measures to encourage investment in the UK's wind power and clean energy industry, including

nuclear generation.

It has committed to decarbonising power generation by 2035.

A government spokesperson said: "We are taking significant action to encourage investment in renewable generation, including our renewable energy auctions, which just last year contracted record capacity of almost 11GW of clean energy.

"Today we published the budget for the next auctions - which will now run annually to attract further investment.

"We are working together with the sector, including all offshore wind developers, on how we can further increase our energy security and independence through greater renewable deployment."

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Appendix B.5

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.20.2.2. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Appendix B.5 Other Nationally Significant Infrastructure Projects

Project name	Applicant	Summary of significant construction noise effects, pre-mitigation	Mitigation	Environment Management Plan/CoCP/DCO Summary
A417 Missing Link	Highways England	<p>ES Noise and Vibration Chapter states:</p> <p><i>“11.12.6 Direct temporary likely significant adverse construction noise effects have been assessed at 45 residential properties during the daytime only (see Table 11-19). These are direct effects above the SOAEL threshold, as described in Government Policy.</i></p> <p><i>11.12.7 Likely daytime noise impacts are also assessed as direct temporary significant adverse effects at a number of non-residential receptors”</i></p>	<p>ES Noise and Vibration Chapter states:</p> <p><i>“11.9.2 The construction noise and vibration assessments assume that the works would be undertaken following the principles and processes set out in ES Appendix 2.1 EMP (Document Reference 6.4). The EMP includes a commitment for a Noise and Vibration Management Plan (NVMP) to be prepared. The EMP outlines that the NVMP must include the requirement to undertake noise and vibration monitoring, to ensure compliance with agreed threshold levels...</i></p> <p><i>11.10.60 Further mitigation detail is included, where relevant, in ES Appendix 2.1 EMP (Document Reference 6.4). The EMP includes details of the monitoring regime and stakeholder communication strategy.”</i></p>	<p>The EMP includes various noise related commitments, including NV3 which states <i>“The contractor will prepare a noise and vibration management plan, as detailed in Section 4.3 EMP (construction) Management Plans. The provisions of the Noise and Vibration Management Plan will be monitored (see NV5).”</i></p> <p>Section 4.3 of the EMP outlines the proposed contents of the NVMP, similar to the DEP/SEP CoCP, but an outline NVMP is not provided.</p> <p>Requirement 3 of The A417 Missing Link Development Consent Order 2022 required an EMP to be submitted to the Secretary of State for approval post-consent.</p>

Project name	Applicant	Summary of significant construction noise effects, pre-mitigation	Mitigation	Environment Management Plan/CoCP/DCO Summary
Abergelli Power	Abergelli Power Ltd	<p>ES Chapter 7 Noise and Vibration states:</p> <p><i>“7.7.19 The predicted daytime noise levels have been compared against the lower limit values for evening, weekend and night-time periods... During the night time period, the magnitude of impacts based on Table 7-8 would be low/ very low at all NSRs apart from NSR6 during gas connection works when the magnitude of impacts is High adverse and at NSR5 during the electrical substation and connections works. Therefore there is the potential for Major/Moderate adverse (significant) effects to occur at NSR5 and NSR6 during the evening/ night time periods if the same intensity of working as for the daytime is assumed.”</i></p>	<p>ES Chapter 3 Project and Site Description states:</p> <p><i>“3.11.23 Construction noise mitigation measures are included in the Outline CEMP (Appendix 3.1)...</i></p> <p><i>3.11.27 A detailed noise assessment would be carried out once the contractor is appointed and further details of construction methods are known, in order to identify specific mitigation measures for the Project”</i></p>	<p>Outline CEMP submitted with the application does not provide any further information on the detailed noise assessment to be submitted to identify specific mitigation measures.</p> <p>Requirement 17 of The Abergelli Power Gas Fired Generating Station Order 2019 required a CEMP to be submitted to the planning authority for approval prior to commencement of works. Sub-paragraph (1) required this to be substantially in accordance with the outline CEMP and required it to include, amongst other things, <i>“nuisance management including measures to avoid or minimise the impacts of construction works (covering dust, noise, vibration and lighting)”</i>.</p>

Project name	Applicant	Summary of significant construction noise effects, pre-mitigation	Mitigation	Environment Management Plan/CoCP/DCO Summary
Eggborough CCGT	Eggborough Power Limited	<p>ES Chapter 9 Noise and Vibration states: “9.6.17 <i>The cumulative noise effect of the construction of the Proposed Development ... is predicted to be moderate adverse (significant)...</i></p> <p>9.6.16 ... <i>potential short term major adverse (significant) effects are predicted to occur during breaking out of concrete at the existing cooling water abstraction structure... If breaking out is identified as being required as a result of the initial investigation phase (instead of full excavation and replacement of the structure), detailed consideration will be given to mitigation methods to minimise noise from breaking out (for example localised temporary screening, where practical).”</i></p>	<p>ES Chapter 9 Noise and Vibration states: “9.5.4 <i>As mentioned above, the draft DCO Requirement for the control of noise during construction requires a scheme to be submitted prior to construction to ensure that the noise impacts relating to construction activities are minimised through appropriate mitigation. A detailed noise assessment will be carried out once the contractor is appointed and further details of construction methods are known, in order to identify specific mitigation measures for the Proposed Development (including construction traffic).”</i></p>	<p>No outline version of the proposed scheme for the control of construction noise (including the detailed assessment) was submitted in the application or examination. Requirement 23 of the Eggborough Gas Fired Generating Station Order 2018 states:</p> <p>23.—(1) <i>No part of the authorised development may commence, save for the permitted preliminary works, until a scheme for the monitoring and control of noise and vibration during the construction of that part of the authorised development has been submitted to and approved by the relevant planning authority.</i></p> <p>(2) <i>The scheme submitted and approved must specify—</i></p> <ul style="list-style-type: none"> (a) <i>each location from which noise is to be monitored;</i> (b) <i>the method of noise measurement;</i> (c) <i>the maximum permitted levels of noise at each monitoring location to be determined with reference to the ABC Assessment Method for the different working time periods, as set out in BS 5228-1:2009+A1:2014, unless otherwise agreed in writing with the relevant planning authority for specific construction activities;</i> (d) <i>provision as to the circumstances in which construction activities must cease as a result of a failure to comply with a maximum permitted level of noise; and</i> (e) <i>the noise control measures to be employed.</i> <p>(3) <i>The scheme must be implemented as approved unless otherwise agreed with the relevant planning authority.”</i></p>

Project name	Applicant	Summary of significant construction noise effects, pre-mitigation	Mitigation	Environment Management Plan/CoCP/DCO Summary
Norfolk Boreas Offshore Wind Farm	Vattenfall	<p>ES Chapter 25 Noise and Vibration Section 25.8.5.7 states:</p> <p><i>“269. During the daytime period (Scenario 2), the predicted impact significance (including standard mitigation) at onshore cable route receptors CRR1E, CRR3F and CRR10 during pre-construction works were moderate to major adverse; at CRR1E, CRR3F, CRR10 during duct installation works were minor to major adverse; and at CRR1E, CRR3F, CRR10 during cable pulling, jointing and commissioning were moderate to major adverse.</i></p> <p><i>270. During the night-time period (Scenario 2), the predicted impact significance (including standard mitigation) at onshore cable route receptors CRR1, CRR2, CRR3, CRR5, CRR26, CRR30 and CRR31 during duct installation works at trenchless crossings were minor to major adverse.</i></p> <p><i>271. During the daytime period (Scenario 1), the predicted impact significance (including standard mitigation) at onshore cable route receptors CRR1E, CRR3F and CRR10 during cable pulling, jointing and commissioning were moderate to major adverse.”</i></p>	<p>ES Chapter 25 Noise and Vibration Section 25.8.5.7 states:</p> <p><i>“273. In order to ensure these impacts are mitigated as far as reasonably possible, the aforementioned standard mitigation will be augmented by a suite of enhanced mitigation measures. The detail of the enhanced mitigation measures will be drawn up and agreed as part of the CNMP.</i></p> <p><i>274. The enhanced mitigation measures will include the selection and deployment of particularly low noise plant near the identified receptors. It is also likely that the use of noise barriers and the use of temporary bunds would be suitable mitigation measures to reduce the residual noise levels of a negligible impact as defined in significance matrix Table 25.29.”</i></p>	<p>Code of Construction Practice Section 9 Noise and Vibration states:</p> <p><i>“100. A Construction Noise (and vibration) Management Plan (CNMP) will be included in the final CoCP, as required under Requirement 20 (2)(e) of the DCO. The CNMP will apply throughout that stage of construction and will detail standard mitigation (best practical means) and where applicable, enhanced mitigation measures.”</i></p> <p>No CNMP was submitted in the application or during Examination.</p> <p>Requirement 20 of the Norfolk Boreas Offshore Wind Farm Order 2021 required a code of construction practice to be submitted to and approved by the planning authority prior to commencement of construction for each stage of the onshore works. Sub-paragraph (2) required the code of construction practice to be based on the outline code of construction practice and include, amongst other things, details of <i>“construction noise and vibration”</i>.</p>

Appendix B.6

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.20.4.1. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Appendix B.6 Trenchless Crossing Works Durations and Mitigated Impacts

NSR	Obstacle (Trenchless Crossing ID)	Crossing Length (m)	Duration of one drill profile (days)	Total duration of works (days)	Preferred drill direction	Assumed crossing design	Distance from closest pit edge to NSR (m)	Predicted noise level, distance mitigation (L_{Aeq} , dB)	Magnitude of effect (daytime)	Predicted noise level, distance + screening mitigation (L_{Aeq} , dB)	Magnitude of effect (daytime)
CCR2	A149 The Street, Weybourne (RDX001)	80	2.0	15	Unknown	Trefoil	38	69	Low	59	Negligible
CCR2C							36	70	Medium	60	Negligible
CCR8	The Street, Bodham (RDX005)	80	2.0	15	South to north	5m spacing	66	63	Negligible	53	Negligible
CCR25	Colton Road, Marlingford (RDX041)	80	2.0	15	North-east to south-west	5m spacing	82	61	Low	51	Negligible
CCR26	Chapel Street, Barford (RDX042)	100	2.5	18	North to south	5m spacing	41	68	Negligible	58	Negligible
CCR26A							77	61	Low	51	Negligible

Appendix B.7

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q 2.23.5.1. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Appendix B.8

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.6.4.2. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Minutes

**HaskoningDHV UK Ltd.
Industry & Buildings**

Present: Jane Locke (Prevention Policy Manager NCC), Prof Andy Jones (Public Health Expert Advisor NCC), Jon Allen (JA), (Royal HaskoningDHV), Isabel O'Mahoney, (Royal HaskoningDHV), Ryngan Pyper (RP), (RPS - advising Royal Haskoning DHV), Senuri Mahamithawa, (RPS - advising Royal Haskoning DHV)

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

From: Ryngan Pyper

Date: 06 April 2022

Location: Online

Copy:

Our reference: PB8164-RHD-ZZ-ON-Z-0037 Health Assessment Meeting Apr22

Classification: Confidential

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

Subject: EIA health methods

Number	Attendee	Details	Action
Agenda / Purpose the meeting			
1		Agenda: 1) Introductions (All) 2) Project and application process overview (JA) 3) Health assessment (RP) 4) Q&A (All) 5) Next steps in the process (JA/RP) 6) AOB (All)	
2		<ul style="list-style-type: none"> ■ The meeting formed part of formal consultation offered by Royal HaskoningDHV, on behalf of Equinor, to the NCC. ■ The meeting discussed the forthcoming Environmental Impact Assessment (EIA) for an offshore windfarm project at Dudgeon and Sheringham Shoal. ■ An overview of the application was provided, including the main features of the project, the onshore works and the Development Consent Order (DCO) process. ■ The port implications of the project were discussed including that a specific port and manufacturing site for the turbines has not currently been identified. NCC Public Health representatives noted the potential benefits to the local economy and jobs from skilled employment relating to the offshore wind industry, including the Energy Coast initiative. It was noted that it is usual for a windfarm project to not fix the 	

Number	Attendee	Details	Action
		<p>manufacturing and port locations till after the planning consent.</p> <ul style="list-style-type: none"> ■ The onshore cable route was discussed including its connection to the Norwich Main substation. It was noted that wider strategic electricity grid network constraints dictate the cable route length. ■ The transitory nature of the cable burying works was discussed. It was noted that when appropriate construction practices are used, such works are unlikely to result in significant public health effects. ■ There was a discussion of relevant health in EIA guidance. This showed the methods proposed for the Environmental Statement (ES) health chapter align with international and national good practice, as published by the Institute of Public Health (2021) and International Association for Impact Assessment and European Public Health Assessment (2020), and as referenced as good practice by the World Health Organization (2022) and Public Health England (2020). ■ It was discussed that the methods presented in the preliminary environmental information report (PEIR) health chapter were an earlier iteration of those methods and would now be updated to reflect the recent publications. ■ A revised methods statement was talked through, this was a set of tables for sensitivity, magnitude and significance based on the Institute of Public Health (2021) figures T09, T11 and T12. ■ It was agreed that the health assessment should follow guidance in taking a public health, population health, approach to determining the likely significant health effects of the project, including articulating any significant health inequalities. ■ The methods proposed for the ES health chapter were agreed by NCC public health team. NCC Public Health representatives welcomed the methods as providing a consistent and transparent basis for explaining the public health implications of the project. 	
Actions/Next Steps			
		<p>The next steps were discussed, including the publication of the ES health assessment based on the agreed methods. The opportunity for further engagement was offered to discuss the ES findings and develop a statement of common ground.</p>	

Appendix B.9

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.2.2.1. This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

14th November 2018

Dear Industry Colleague,

Open Letter Update on the Connection and Infrastructure Options Note (CION) Process

This letter provides an update to the Connection and Infrastructure Options Note (CION) process guidance note that was published on the National Grid website on 4th March 2015.

This latest version of the guidance note aims to provide clarity and transparency to the industry on the CION process as it currently stands following the publication of Ofgem's Integrated Transmission Planning and Regulation (ITPR) final conclusions and introduction of a new licence obligation on National Grid in its role as System Operator. In summary, the changes to affected sections of the guidance note as result of these are:

Section 1: Revised text as a result of ITPR's final conclusions and National Grid's new licence condition. Further clarification on connections that will follow the CION process and with the requirement included as part of a Developer's BCA with NGENSO.

Section 4.2: Revised text detailing how the economic assessment will be undertaken.

Old Section 10: This has been deleted following ITPR's final conclusions that the CION process will be applied for the assessment of interconnector connection applications.

New Section 10: This section now provides an overview of the legal obligations on Developers, TOs and NGENSO as System Operator supporting the CION process.

We have attached the latest version of the guidance note to this letter and also published it on National Grid's website¹.

We are always open to discussion on how the CION process guidance note can be further developed in order to remain relevant in the evolving connection and regulatory framework. Please send your comments, suggestions and questions to **transmissionconnections@nationalgrid.com** and we will get back to you.

Yours sincerely,

Sade Adenola
GB Connections Assessment Manager
Network Capability, Electricity

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National Grid Electricity Transmission plc

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¹ <https://www.nationalgrideso.com/connections/registers-reports-and-guidance>

The Connection and Infrastructure Options Note (CION) Process

Guidance Note V4.0

14th November 2018

Guidance Note Change Control History

Issue	Date	Reason for Change	Author(s)
Issue 001	06/10/2014	First Issue	Faith Natukunda, Sheriff Ilesanmi
Issue 002	04/03/2015	Comments from the industry have been incorporated into relevant sections	Sheriff Ilesanmi
Issue 003	30/10/2015	Update to relevant sections following publication of ITPR final conclusions and introduction of new "Enhanced SO" Licence conditions.	Sheriff Ilesanmi
Issue 004	14/11/2018	Update to reflect the SO and TO separation and minor corrections.	Christopher Phiri, Mark Worsley

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1 Introduction

The purpose of this guidance note is to explain the CION process which will provide clarity and transparency on the process. The CION process evaluates the respective transmission options required which leads to the identification and development of the overall efficient, coordinated and economical connection point, onshore connection design and, where applicable, offshore transmission system / interconnector design in line with obligation to develop and maintain an efficient, coordinated and economical system of the electricity transmission network.

This guidance describes how developers, TOs and NGENSO collaborate as part of the CION process. For the purpose of this guidance note;

- **Developers** refers to developers of offshore transmission under the generator build arrangements or developers of interconnectors,
- **TO(s)** refers to **Onshore TO(s)** and/or **Offshore TO(s)**
 - **Onshore TOs** refers to National Grid Electric Transmission (NGENSO) in its role as a Transmission Owner (TO), Scottish Hydro Electric Transmission (SHE-T) and Scottish Power Transmission (SPT).
 - **Offshore TOs (OFTOs)** refers to Offshore Transmission Owners
- **NGESO** refers to National Grid Electric System Operator (NGESO) in its role as a System Operator (SO).

As part of the Ofgem’s Integrated Transmission Planning and Regulation (ITPR) final conclusions, the importance of the CION in the connections process was recognised² and as such, Ofgem has included, as part of the NGENSO’s “Enhanced SO” role upon completion of the ITPR project, a new licence condition¹. In light of this obligation, we have made some minor updates to this guidance note. Further, going forward for any connection application requiring a CION, this will be provided for in the connection agreements.

NGESO will be applying the CION process as part of the connection and modification application process for connection offers received from Developers. This guidance note has been developed to provide an overview of the CION process including the roles and responsibility of each CION party.

NGESO will keep the CION process and this guidance note under review as the regulatory framework changes and in light of practical experiences of the parties during the application and evolution of the process and update as appropriate. In the event that any change(s) is/are required will inform the industry through an open consultation. Stakeholders will be invited to provide input into any proposed change before publication of an updated version of the CION process guidance note.

NGESO will also be open to discussions on how to ensure that the CION process guidance note remains relevant. Please send your comments, suggestions and questions to transmissionconnections@nationalgrid.com.

¹ Condition C8: Requirement to offer terms – item 5A

² <https://www.ofgem.gov.uk/publications-and-updates/integrated-transmission-planning-and-regulation-itpr-project-final-conclusions> - Final Conclusion 1.44

2 What is the CION?

The Connection and Infrastructure Options Note (CION) is the document where the output of the CION optioneering process is recorded. It provides a joint record of the rationale for the selection of the overall preferred connection option from the technical, commercial, regulatory, environmental, planning and deliverability aspects.

For the purpose of this guidance note, **connection option** refers to;

- The onshore connection point, the onshore transmission design and
- The offshore transmission system design for offshore transmission or interconnectors.

The CION is a live document and evolves over time to inform the TO and Developer's investment decisions on the respective transmission infrastructure and the associated planning/consenting processes.

The CION requires input from NGESO as System Operator, TOs and Developers. NGESO as System Operator coordinates this input.

Within the CION;

- The Onshore TOs record details of their assessment of all feasible onshore connection points together with the required transmission construction works
- The Offshore TOs record details of their assessment of all feasible offshore connection designs together with the required offshore transmission construction works
- During the pre-offer CION process, NGESO records any initial offshore design assumptions made about the offshore transmission design.
- During the post-signature CION process, the developer of the offshore transmission system or OFTO records the offshore design and cost assumptions during the development of the project.
- During the post-signature CION process, the developer of an interconnector records the interconnector design and cost assumptions during the development of the project.
- NGESO records the economic assessment undertaken to determine the most economic connection option.
- NGESO records the overall economic, efficient and deliverable connection option, together with the selection rationale as agreed by the Parties to the CION process

The form of the CION is that set out in Appendix B2 of STCP 18-1 of the System Operator Transmission Owner Code (STC) and is included in **Appendix B** of this guidance note for reference.

2.1 What is the purpose of the CION?

The CION records the output of the work between the Developers, TOs and NGESO to identify the overall economic, efficient and coordinated connection option.

2.2 Who owns the CION?

The CION is a document developed and jointly owned by the parties to the CION process. NGESO is responsible for coordinating the development of the CION, however, each party is responsible for the accuracy of any information they provide to the CION as part of the CION process. The CION parties shall send email confirmation to NGESO to agree on the CION version for sign off.

3 What is the CION process?

The CION process is an optioneering process to identify the overall economic and efficient connection option. It provides a clear, transparent, repeatable and non-discriminatory process to ensure all relevant developers are treated in a consistent manner.

This optioneering process involves Developers, TOs and NGESO and takes place both pre-offer and post-signature as further explained within this note.

The output of the CION process is recorded in the CION and this informs the offer to the developer and specifically the works to be provided for in accordance with the CUSC and STC codes.

4 Basic CION Process

4.1 Overview

The CION process occurs both in the pre-offer and post-signature project stages;

- The **pre-offer CION process** is the optioneering process that takes place as part of the initial connection application process to identify the preferred connection option and transmission works for new offshore generation or interconnector connections.
- The **post-signature CION process** is the optioneering process that takes place after the developer has signed a connection offer. It covers any subsequent CION process reviews by the parties to the CION process as a result of material trigger(s) in line with Modification Applications or Modification Notices as defined within the CUSC and STCP 18-1.

The flow charts showing the CION process is shown in **Appendix A**.

4.2 Pre-Offer CION Process

NGESO informs developer of clock start

The Pre-Offer CION process is initiated when NGESO informs the Developer and the TO(s) of the clock start date. This clock start date is dependent on NGESO receiving the Developer's application fee and the application being technically deemed competent following submission of requested data in accordance to the Data Registration Code (DRC). Once the clock starts, the TO(s) and NGESO initiate their different assessments to facilitate identification of the most economic and efficient connection option as described below.

Onshore TO(s) assess onshore connection options

In order to identify the most economic and efficient transmission works to deliver the connection, the Onshore TO(s) undertake an optioneering process to assess a range of onshore connection options in order to identify a preferred connection point. The Onshore TO(s) assess the onshore connection options in accordance with STCP 18-1 in the STC and take into consideration the Developer's preferred onshore connection point as outlined in the Developer's Connection Application.

As part of the Pre-Offer CION process, the Onshore TO(s) provide NGESO with the details of the assessed onshore connection points which include;

- a list of the required transmission works,
- the cost of the transmission works,
- and a high level appraisal of technical, environmental, planning consent and deliverability issues related to each onshore connection point

The TO(s) provide NGESO with details on the onshore connection points and designs within the CION (Provided as Appendix B2 of STCP 18-1). The details would be available to other CION parties except subjected any confidentiality clause(s).

Development of the offshore transmission designs

The offshore transmission designs can be developed using two approaches. These two approaches are applied during the pre-offer CION process while only option B is applicable during the post-signature CION process.

A). NGESO makes assumptions on the offshore transmission designs

As allowed for in CUSC section 2.13.8, in order to make the connection offer, NGESO makes initial assumptions about the offshore transmission design. These assumptions are recorded by NGESO within the CION and used by NGESO (and the onshore TOs) to identify the preferred connection option reflected in the Construction Agreement.

- NGESO takes into account any design information submitted by the developer as part of the Connection Application such as connection voltage and technology in line with the Planning Code (PC).
- NGESO develops a range of offshore transmission design options, taking into account available technology as published in the annual Electricity Ten Year Statement (ETYS) and records the offshore transmission design options within the CION.
- NGESO costs the offshore transmission design option(s) based on generic costs published within the latest available ETYS and records these costs within the CION.

B). Developer or OFTO provides offshore transmission designs to NGESO

The Developer or OFTO provides the details of the Offshore Transmission System Designs and Costs to NGESO in the form of the CION in the pre-offer CION process.

- NGESO provides the Developer with the range of onshore connection options under consideration by the TO(s) in the form of the CION. The Developer investigates onshore and offshore transmission connection routes, develops offshore transmission design options, and costs the different options. The Developer provides all these details to NGESO in the form of the CION.
- The Developer also provides NGESO with a high-level appraisal of the technical, environmental, planning consent and deliverability issues related to each transmission design option within the CION.
- The Developer may also provide NGESO with Cost Benefit Analysis (CBA) related to each connection option which NGESO might take into account in its economic assessment of the connection options.

In the event that the Developer is not in position to provide the above mentioned information on the offshore transmission designs during the pre-offer CION process, then NGESO will make assumptions on the offshore transmission design as described above for offshore generation (i.e. Option A) and record these assumptions within the CION.

NGESO undertakes economic assessment of the options

In order to identify the most economic and efficient connection option, the TO(s), Developer(s) and NGESO will analyse all connection designs covering the offshore transmission/ interconnector designs and the onshore connection point transmission designs. These are then short-listed from a design and power system analysis perspective to identify a suitable range of options to assess in a Cost Benefit Analysis (CBA).

The Developer(s) and TO(s) provide NGESO with project capital costs for each design solution and connection point, along with other economic and system parameter data as requested by NGESO including but not limited to, wider system boundary capability impacts, capital cost phasing and Weighted Average Cost of Capital (WACC).

NGESO undertakes a lifetime Present Value based CBA on the options taking into account the capital cost as well as the associated forecast operational constraint cost and Cross Border Balancing costs

attributable to the connection option. Regret analysis is then used to rationalise the different connection options.

Following the CBA, NGESO records the result of the economic assessment within the CION and lists the connection options starting with the most economic design option.

Selection of the overall preferred connection option

NGESO sets up meeting(s) with representatives from each of the parties involved within the CION process. The purpose of this meeting is for all parties to select the overall preferred connection option.

The main objective in selecting the overall preferred connection option is **to ensure that the most economic and efficient design connection option is developed for the overall benefit of the Great Britain (GB) consumer.**

In order to select the overall preferred connection option, the parties consider;

- The CBA results provided by NGESO
- The technical, environmental, planning, consenting and deliverability issues associated with each connection option as highlighted within the CION.

NGESO records the selected preferred connection option together with the selection rationale within the CION.

The selected preferred connection option forms the basis of the connection offer issued to the developer in accordance with the CUSC.

4.3 Post-Offer Negotiation

On receipt of a connection offer, the CUSC provides the developer with a 90 day post-offer period to review and sign their connection offer.

For a new offshore connection, as part of the post-offer period, NGESO will coordinate the review of the CION with the developer or OFTO and onshore TO(s).

The purpose of this CION review is to allow the developer to review the offshore transmission design assumptions initially made by NGESO as provided within the CION issued with the connection offer. This will provide an opportunity for the developer to review/update the cost assumptions for the offshore transmission design or any other relevant information within the CION. However, in the event that the information provided at this stage indicates a possible change in connection point or design, then NGESO will advise the developer of the timescales for a revised offer or whether a new application is required as stated in STCP 18-1.

4.4 Post-Signature CION Process

The post-signature CION process is the optioneering process that takes place after the developer has a signed connection offer which has within it the works associated with the preferred connection option.

A post-signature CION process can be initiated by NGESO, the developer or the TO(s), following a material trigger which could result in a change to the onshore connection point, the onshore transmission design or the offshore transmission design. The CION optioneering process will be revisited to re-assess whether the preferred connection option remains or whether an alternative option is the overall economic and efficient option.

The material trigger(s) generally require a Modification Application or a Modification Notice as defined within the CUSC and STCP 18-1.

The review of the impact of the trigger on the connection options will follow the process as described for the pre-offer CION process, although in this case, the offshore transmission design assumptions and costs will be updated and documented within the CION by the respective developer or OFTO rather than NGESO (i.e. As described in 'Development of Offshore Transmission designs - Option B'). The onshore TO(s) will also provide any available updates on the onshore connection point and onshore transmission design.

Any changes to the preferred connection option, together with the selection justifications will be recorded in the CION, which is saved as an incremental version.

5 Triggers for the review of the CION process

Material triggers are any changes that affect the overall design or connection point that will require for the need to review the connection option. If these changes are deemed material by the CION parties, then any re-assessment of the design option will fall under the Modification Process as defined in the CUSC and STCP 18-1. The process can be initiated by NGENSO, the developer or the TO(s) and this shall take the form of a Modification Application or a Modification Notice as appropriate. In an event that the CION parties can't agree that a change is material then this is refer to Ofgem for determination.

The CION review following a material trigger will need to consider the deliverability of the connection options by taking into account the impact and cost of any project developments undertaken so far such as planning status, consenting status, cost of preliminary works by the CION parties and where applicable, a risk assessment to capture sunk costs.

Examples of material changes which could affect the onshore connection point, or the onshore or offshore transmission designs include:

- Changes in SO assumptions – such as significant changes in the Construction Planning Assumptions (CPA) or generation background.
- Changes in TO assumptions – such as changes in generation background that impact on TO investments and affects the Construction Planning Assumptions that form the basis for the TO Construction offer to NGENSO.
- Changes to the developer assumptions – such as changes in Transmission Entry Capacity (TEC), changes in offshore technology, etc.
- Planning decisions
- Changes to the electricity regulatory framework.
- Changes to key fundamental economics inputs for CBA – such as FES, ETYS, ELSI model etc.

6 What criteria are considered in selection of the preferred connection option?

A number of considerations are taken into account in order to select the overall preferred connection option. The main objective for the parties to the CION process in selecting the preferred option is **to ensure that the most economic and efficient connection option is developed for the overall benefit of the GB consumer.**

The selection of the preferred connection option does not only look at the most economic option from the Cost Benefit Analysis (CBA) exercise but also considers the following criteria; environmental impact, deliverability, time of market, technology risk, PCI status, planning and consenting risk. It should be noted that the listed criteria is not a conclusive list. The parties to the CION process will also consider other criteria alongside those listed criteria which they deem relevant to the project during the selection of the preferred connection option.

7 Do we “freeze” the CION?

The CION is a live document which evolves with the project both pre-offer and post-signature to reflect any changes and/or updates to the preferred connection option. The CION will continually be reviewed throughout the development of the project with reviews initiated periodically or by material triggers to ensure that the preferred connection option is the still the most economic, efficient and deliverable option. Any CION review will take into account the project's development at that point in time. The CION will continue to be revised until there is no further enhancement of benefit to the GB consumer.

8 What happens if parties do not agree with the preferred connection option?

NGESO will work with developers to agree the connection option in line with the developer's preferred connection/landing point as outlined in the connection application. NGESO will also consider other options based on an economic and efficient assessment working with the relevant TO's. Where the parties to the CION process cannot agree on a connection option, then NGESO will make an offer on the connection option NGESO considers to be the overall economic and efficient option for the benefit of the GB consumer in compliance with NGESO's licence requirements.

The developer then has three options available within the CUSC in respect of this offer; to accept, to refer or to lapse the offer. Where agreement cannot be reached through post offer discussions, and the terms of the offer are in dispute, the developer would be able to refer the offer to Ofgem for determination.

9 How can coordinated/ integrated offers be treated as part of the CION process?

We propose that coordinated options should be considered as part of the CION process, following receipt of connection applications where there is opportunity for coordination/integration to provide benefit. Coordinated/integrated options should also be investigated following system reinforcement drivers as identified in the Electricity Ten Year Statement (ETYS).

- In the pre-offer and post-signature CION process, NGESO, the developers or TOs can indicate to the parties involved in a CION process, any known opportunities for coordination/integration. NGESO and the parties shall agree whether there is sufficient time within the CION process duration to review the coordinated/integrated options and if necessary request an extension from Ofgem.
- One separate CION should be developed to investigate and develop Coordinated/Integrated options and this CION should be expanded to include additional parties as and when necessary.

Within the CION for coordinated/integrated projects, NGESO shall coordinate the completion of the CION so as to respect the confidentiality and non-disclosure undertakings associated with confidential or commercially sensitive information that it received from CION parties. For example NGESO will only provide summary cost information to the other parties, while keeping detailed unit cost information for individual parties confidential.

With regards to wider network benefit or anticipatory investment reinforcements, NGESO shall utilise the Future Energy Scenarios (FES) and adopt the least regret analysis identified in Network Options Assessment (NOA) to reduce risk of stranded assets with any arising wider network benefit or anticipatory investment requirements being supported by NGESO.

In proposing coordinated/Integrated options, the development stages of the different projects involved will be considered, and options will be assessed in line with the criteria described in the earlier sections of this note.

It should be noted however, that further commercial and regulatory clarity on how coordinated/integrated options can be treated will be provided by Ofgem.

10 Legal obligations supporting the CION process

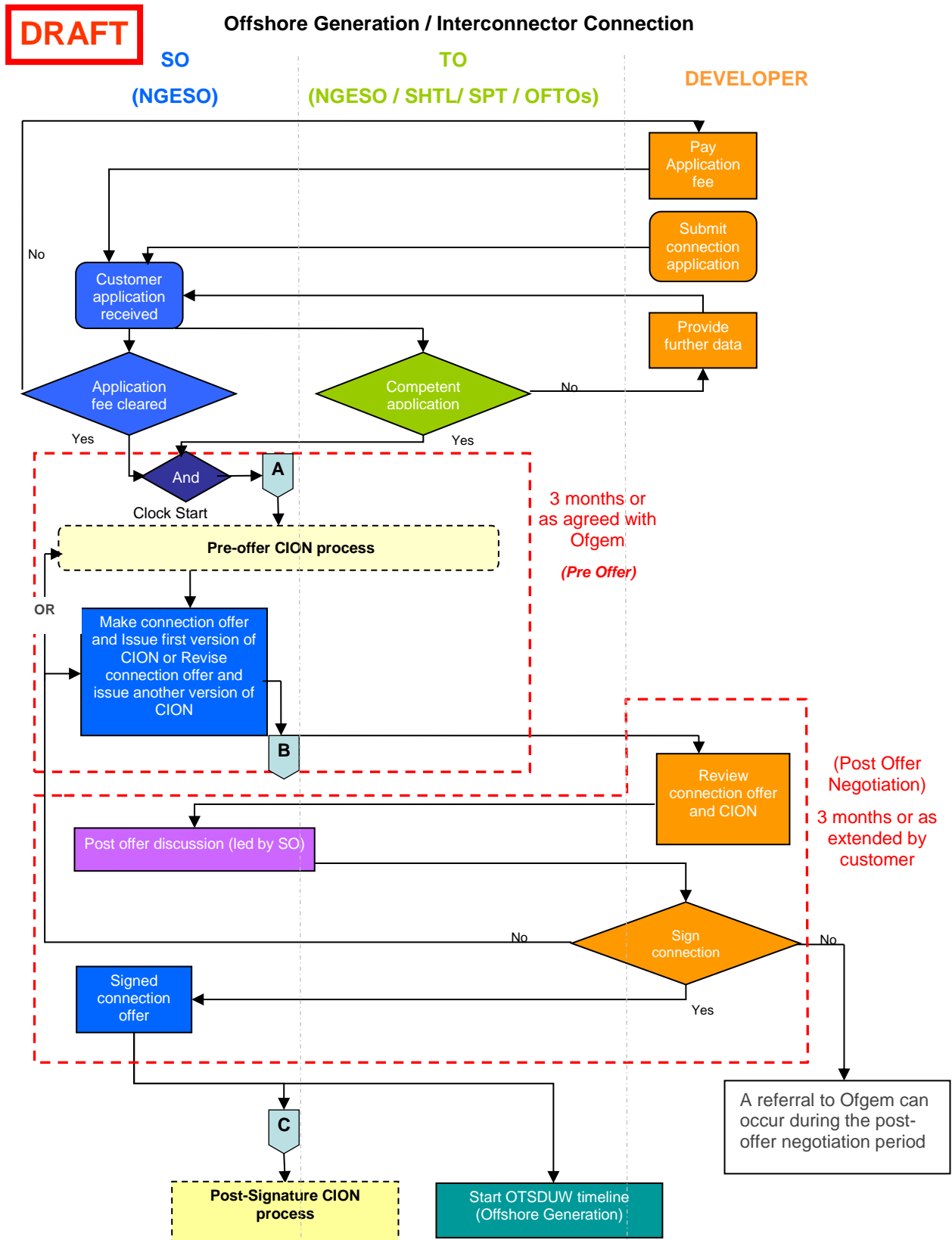
NGESO and onshore TOs have a statutory licence obligation as contained in section 9 of the Electricity Act 1989 (as amended by the Utilities Act 2000) to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and this is reflected in the specific requirement of the transmission licences.

In the context of the onshore TOs and NGESO delivering connections, STCP 18-1 and the CION process within it is the "tool" used by those parties to identify and record the connection options

considered and the overall economic and efficient connection option. The CION process is embedded as part the connection and modification application as defined in STCP 18-1.

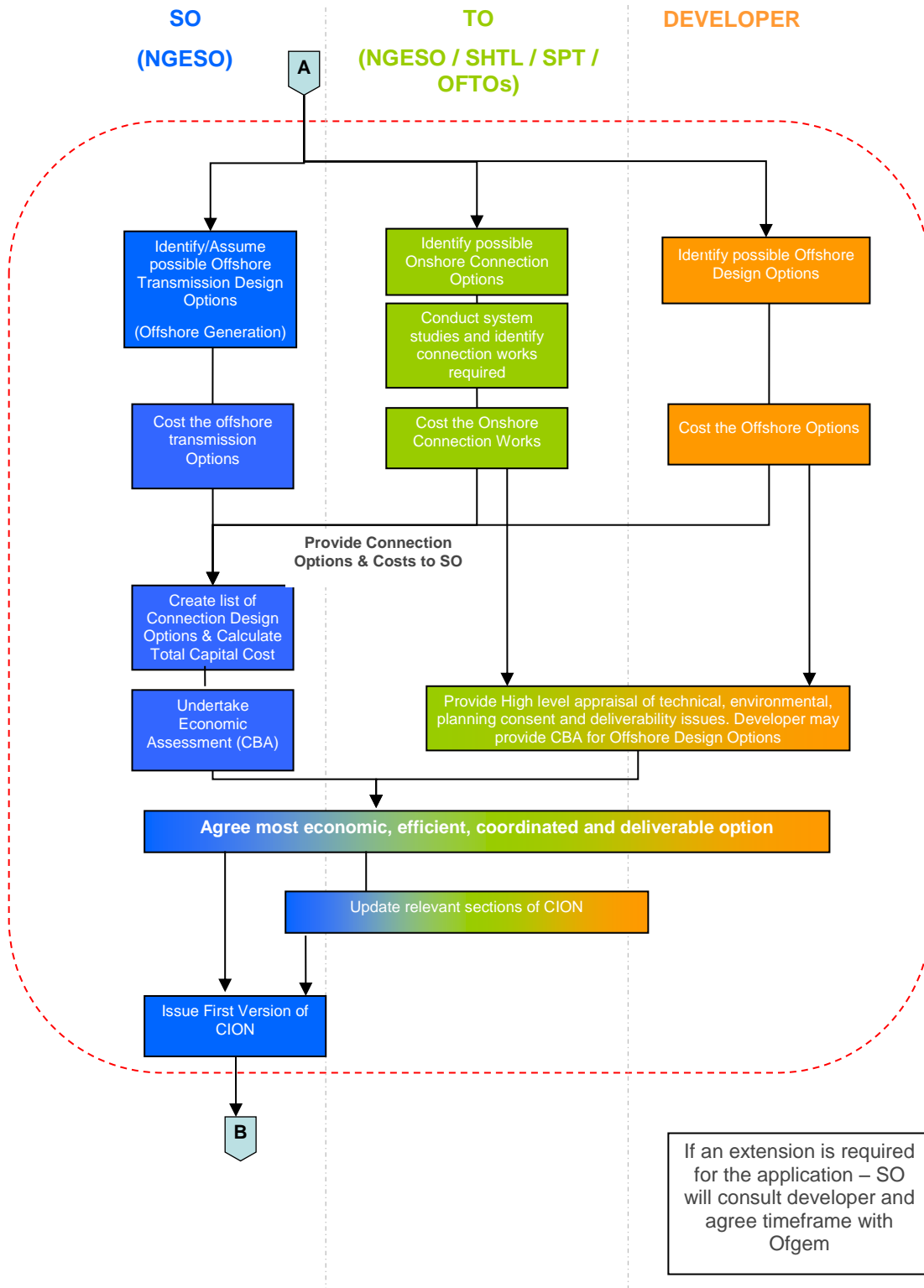
As Developers are developing transmission systems that will form part of the National Electricity Transmission System (NETS), for the connection agreements will provide for participation in the CION process, by reference to this guidance note. Developers are obligated to fulfil their roles and responsibilities as highlighted in this guidance note. The initial offshore assumptions made by NGEN as part of the Pre-Offer CION process enable it to identify the connection point/design which meets the statutory duty referred to above based on those assumptions. The Post-Signature CION process then enables the developers, onshore TOs and NGEN to further evaluate, using actual information about the offshore transmission system and any material triggers, to validate or update the assumptions to identify a preferred connection option which meets the statutory duty referred to above. The CION process then informs the developers and onshore TOs works in the construction agreement.

APPENDIX A: CION PROCESS CHARTS



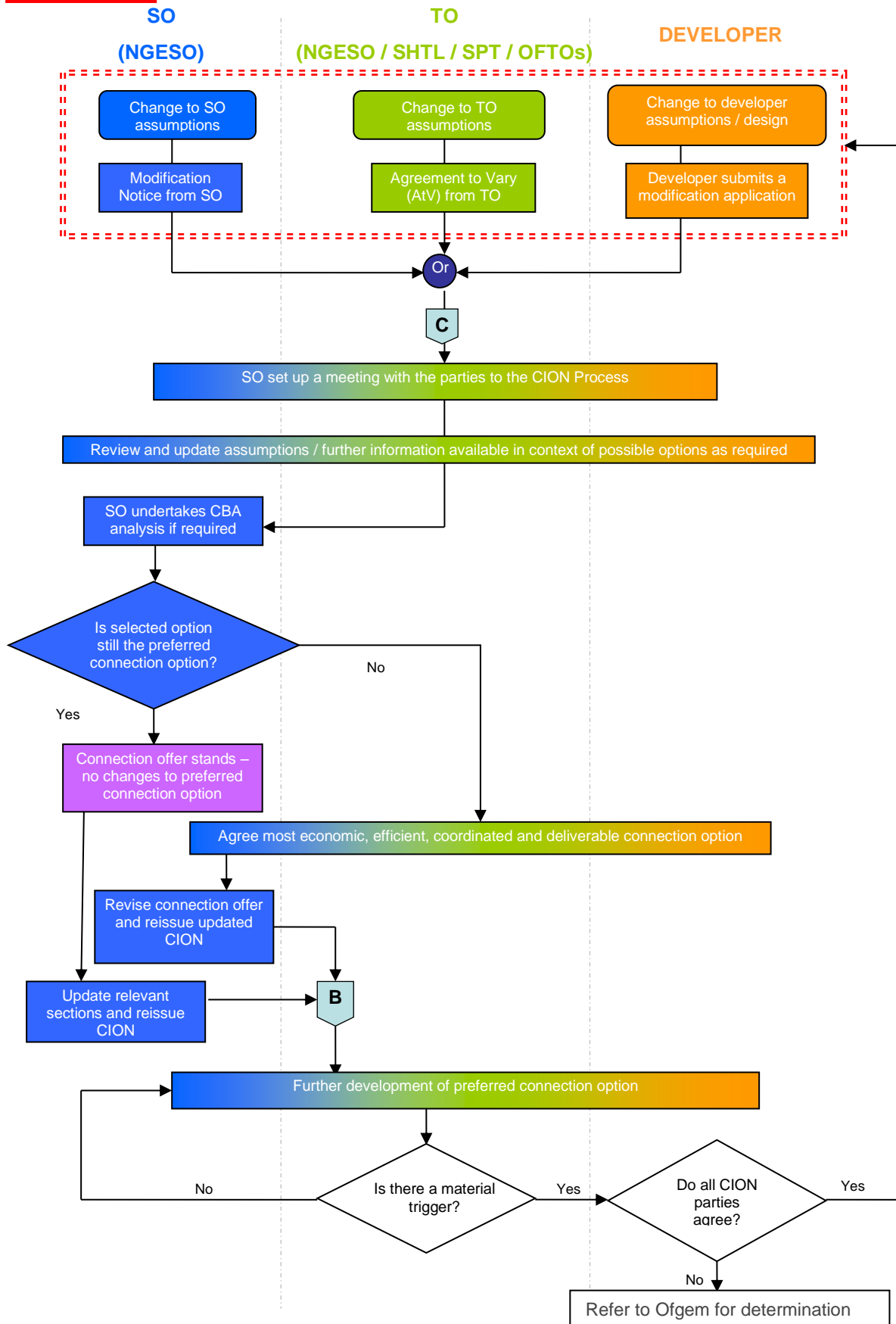
DRAFT

Pre-Offer CION Process



DRAFT

Post-Signature CION Process



APPENDIX B: The CIION Template

Please delete or type over any red text, which is guidance on how to fill in this document.

STCP 18-1 Appendix B2 – Offshore Connections and Infrastructure Options Note

Connection and Infrastructure Options Note				
User	Insert Developer's name			
Site Name	Insert site name			
Application Steering Group Members (Add / Delete As Applicable)	NGESO as SO	NGESO	Lead details Name: Contact No: Email:	
	Host TO	Insert	Lead details Name: Contact No: Email:	
	Affected TO 1	Insert	Lead details Name: Contact No: Email:	
	Affected TO 2	Insert	Lead details Name: Contact No: Email:	Add additional rows as required
Application Type	New Generation Connection Application			
Overview of the application (Short description of the application)	Provide a short description of the connection using information provided within the customer connection application; <ul style="list-style-type: none"> ▪ Capacity of the connection (CEC, TEC) ▪ Type of generation ▪ Coordinates of generation site ▪ Ownership boundary ▪ Connection date requested ▪ Whether customer has requested a NETS SQSS design variation ▪ If this is an offshore connection and thus whether the Applicant is undertaking an OTSDUW Build 			

Revision Number	Date of Revision	Reason for Revision	Revised by
001	Day/Month/Year	First Draft	Person 1 (NGESO)
002	Day/Month/Year	Final V1.0: Issued with Grid Connection offer	Person 1 (NGESO)

Notes for Completion:

1. Please complete the tables above when the document is first used for a scheme and when any subsequent revisions are made to any of the information in the live document.
2. Please insert the site name and document version number in the header.
3. This page should be retained throughout the life of the document and remain with the final version.

CION Executive Summary

In this section, provide an overall summary of the CION highlighting what the preferred Connection and Infrastructure option is and how it has been selected.

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Purpose of CION

The aim of this document is to provide a record of the assessment undertaken in considering the connection of [Insert project name] to the National Electricity Transmission System. The document facilitates an appraisal of a variety of options and identifies the preferred onshore connection points and offshore transmission network configuration.

The Connection and Infrastructure Options Note (CION) has been developed to initially make a representative Connection Offer to an applicant and subsequently develop the most economic and efficient design option. The purpose of the CION is;

- To provide a joint process to centrally record decisions and design rationale from the technical, commercial, regulatory, environmental, and socio-economic aspects of a project as it progresses
- To document the clear reasoning why a specific design option has been chosen
- To provide visibility of the decision making process and to record the underlying assumptions

As part of the economic assessment, the CION will consider the total life cost – assessing both the capital and projected operational costs (over a project's lifetime) to determine the overall economic and efficient design option.

The CION supports the initial customer connection offer and is issued together with the customer offer - **it is however a working document and is subject to periodic review until a final preferred design solution is reached.**

Following the initial customer connection offer, all the parties undertake more detailed assessments which take into account (but are not limited to) deliverability, construction complexity, land issues, consents, technology, costs, and Environmental issues. These detailed assessments will either reconfirm the initial preferred design option or trigger the need for a modification application. Also, these assessments will feed directly into an Interface Selection Report which is used to support planning applications.

Further development of the costs, updates in technology and the commercial frameworks will continue to be edited into the CION as existing and alternative options are further explored. It is customary that once the preferred design option (i.e. the most economic and efficient) is reached this document will be finalised and signed-off by all Steering Group Members.

Overview of Options Appraisal Process

The appraisal process assists the assessment of the optimal way to connect [Insert project name]. This process enables NGEN and the Affected Parties to identify and balance technical, environmental and cost considerations in selecting options, while also documenting the information on which judgements have been based. The options appraisal process is carried out in three stages and decisions are made based on the best available information at the time. A description of the appraisal process is given below and identifies the respective filters applied at each stage:

Stage 1 captures the onshore TO's assessment of the potential locations for connecting the generation. As part of the initial connection application process, technical, environmental and benefit filters are applied to narrow the onshore interface sites; options are assessed against distance from the generation site, the extent of onshore reinforcements, NETS SQSS compliance, technical limitations and high level environmental issues. At this stage, options can be Discounted, Parked or Taken Forward. Within the subsequent iterations of the CION, the onshore TOs will undertake more detailed assessments of the options 'Taken Forward'. This detailed assessment will cover NETS SQSS compliance, deliverability, construction complexity, Land issues, Technology, Costs, and Environmental issues.

Stage 2 captures the offshore TO's assessment of various offshore transmission network design concepts to connect the generation to the onshore interface sites. Technical and benefit filters are applied to narrow the transmission network design concepts; options are assessed against chosen interface points for compliance with NETS SQSS, for various transmission technologies and network flexibility. Integrated options are also considered as part of the offshore design options. At this stage, options can be Discounted, Parked or Taken Forward. Within the subsequent iterations of the CION, the offshore TOs will undertake more detailed assessments of the options 'Taken Forward'. This detailed assessment will cover NETS SQSS compliance, Deliverability, construction complexity, Land issues, Offshore consents, Technology, Costs, and Environmental issues.

At **Stage 3**, the shortlisted options from Stage 1 & 2 are appraised in more detail to determine the most economic and efficient solution and therefore identify the preferred option. Shortlisted options are

Offshore CION – [Insert project name]
Version X.X

economically assessed by taking into account the capital costs and operational costs with major risks highlighted. The offshore TO costs used in the economic assessment are initially based on published costs within the National Grid Electricity Ten Year statement; however, these are subsequently revised by the relevant parties in subsequent CION revisions.

Common Assumptions for Options

[Expand as appropriate]

The following assumptions are common across all listed options within this document and are agreed as of [Insert date].

- Onshore and offshore cable routes are estimated and have been chosen to avoid known constraints, e.g. existing wind farms in the area. Cable routes may be subject to revision following detailed survey works.
- There remains significant uncertainty around some costs, particularly HVDC converter station costs and of offshore cable installation. All costs used are estimated from past projects and market intelligence at the time of writing.
- Onshore converter station to be located near to MITS substation.
- Cable parameters are estimated on a set of generic assumptions. May be subject to revision following detailed design works. [Please insert any cable assumptions made]
- Detailed dynamic reactive compliance studies have not been performed and the reactive compensation provided is simply indicative. The sizing of reactive compensation plant will be subject to detailed studies undertaken by the developer in line with Grid Code requirements.
- Harmonic studies have not been performed and at present no allowance has been made for harmonic filtering plant.
- Costs of cable sealing ends have not been included at this stage.
- Onshore works are based upon contracted generation background as of [Insert date]
- The changes in generation background are the following:
 - X terminated on Day/Month/Year
 - Y terminated on Day/Month/Year
- Environmental and consenting risks have been assessed qualitatively; no financial weighting has been applied.
- No consideration has been given to the lifetime cost of electrical losses in this analysis.
- Offshore turbine details and location of substations is based upon information within the grid connection application submitted by the Developer as of dd/mm/yy ref XXXXX
- No consideration in this analysis has been given to developer sunk costs with respect to the X connection option, or the impact repeating survey works would have on the deliverability of the project for Year.Day/Month/Year and accepted Day/Month/Year
- Electrical plant for the OFTO onshore substation has been costed as installed.
- The onshore costs are attributed only to [Insert project name]. Cost sharing with other generators was not taken into consideration

SECTION 1 – Project Overview
Introduction

In this section provide an overview of the proposed project covering the following key pieces of information. Provide a historic background to the project where necessary;

- Location
- Type of project, e.g. offshore wind, interconnector, etc.
- Capacity
- Number of phases / platforms (if applicable)

SECTION 2 – Stage 1: Onshore TO Interface Points Appraisal

Onshore and Offshore Distances

In this section, provide the assumed onshore and offshore distances within the table provided. Include a geographical map showing the project location with reference to the onshore interface points under consideration.

MAP
Insert Map

Table 1: Summary of project distances

Site	Distance (km)		
	Onshore	Offshore	Total distance
SITE A 132kV			
SITE B 275kV			
SITE C 400kV			

Onshore TO Interface point appraisal Matrix

In this section, provide a summary of the appraisal of all the onshore connection points considered. Include descriptions of the connection, assumed landing points, technical limitations, assessment of required transmission works, and environmental issues. Provide an overall option appraisal together with a justification for the appraisal. The onshore TO should cost all the options ‘**taken forward**’ and provide the capital cost to NGEN for the stage 3 economic assessment.

Connection Point	Connection Route Distance from XX to Interface point on GB MITS (km) ³	Connection Issues and Technical Limitations (to include Thermal/Voltage/Stability/Fault Level)	Onshore TO / DNO Transmission Works (Minimal/Local/ Moderate/Extensive) ⁴	Environmental Issues	Overall Options Appraisal ⁵
SITE A 132kV	[Insert distance from Table 1]	Describe any technical / connection issues	<p>Minimal / Local/Moderate / Extensive (Delete as appropriate and include a short summary of the required works) E.g.</p> <ul style="list-style-type: none"> ▪ A new substation is required ▪ New xxkm OHL 	Provide high level summary of environmental issues where applicable	<p>Discounted / Parked / Taken Forward (Delete as appropriate and include reasoning for the overall appraisal)</p>
SITE B 275kV	[Insert distance]				
SITE C 400kV	[Insert distance]				

³ Distances have been estimated using Google Earth; direct routes have been used with some high level engineering judgement.

⁴ For guidance the Transmission Works are defined as: **Minimal** = limited to works to satisfy Chapter 2.6 of NETS SQSS (i.e. additional bay at a connection point); **Local** = requiring circuit uprating and compensation up to and including the next adjacent substation (in any direction); **Moderate** = requiring circuit reconfigurations, some reconductoring and compensation in local vicinity (i.e. up to 3 substations away); **Extensive** = new circuits or upgrading 275 kV to 400 kV or widespread re-conductoring and compensation.

⁵ Definition of terms is included in Appendix A.

SECTION 3 – Stage 2: Offshore TO design concepts Appraisal

In this section, provide the variety of Offshore Transmission design concepts under consideration including the future OFTO network and onshore substations. Consider integrated design options. Include single line diagrams and apply technical and benefit filters to narrow the transmission network design concepts: assess options against compliance with NETS SQSS, cable technology and network flexibility. The Offshore TO should cost all the options **'taken forward'** and provide the capital cost to NGENSO for the stage 3 economic assessment.

Option A – [Include short description]	
[Insert Single Line Diagram]	Pros: Cons: <u>Discounted / Parked / Taken Forward</u> (Delete as appropriate and include reasoning for the overall appraisal)
Option B – [Include short description]	
[Insert Single Line Diagram]	Pros: Cons: <u>Discounted / Parked / Taken Forward</u> (Delete as appropriate and include reasoning for the overall appraisal)
Option C – [Include short description]	
[Insert Single Line Diagram]	Pros: Cons: <u>Discounted / Parked / Taken Forward</u> (Delete as appropriate and include reasoning for the overall appraisal)

SECTION 4 – Stage 3: Overall economic and efficient options Appraisal

In this section, NGENSO will combine the options taken forward from stage 1 and stage 2 to provide a list of options for economic assessment. NGENSO will use the capital costs provided by the onshore and offshore TOs to assess the total cost of the options. The economic assessment will consider both the capital cost and operational cost associated with each option. Major risks associated with the options will also be highlighted.

Option	Summary	Major Risks	Capital Cost		Operational Cost ⁶	Total Cost (£m)
			Onshore Network Costs (£m)	Offshore Network Costs (£m)	Constraint cost / Cost of Energy not supplied	
1	Provide a summary of the design option – connection point, technology, voltage	<ul style="list-style-type: none"> Highlight any major risks – technological, environmental, regulatory 				
2		•				
3		•				
4		•				
5		•				
6		•				
7		•				

⁶ See Appendix C: Cost Benefit Analysis Methodology

SECTION 5 – The Preferred Option

This section aims to capture the reasoning behind the selection of the preferred option and to provide a record of any changes to the preferred option at any point and the rationale at the time for the change.

Current preferred option	Option name, e.g. Option 4 – Sensitivity 03
Brief Description	Brief description of the option design
Reasoning	Reasoning behind decision to select as the preferred option
Preferred option within initial connection offer	Preferred option at the initial connection offer acceptance
Reason for change (if applicable)	Brief description of the reason of change of preferred option from connection offer acceptance to now, i.e. what assumptions have changed to make a different option preferred
Previous preferred option (if applicable)	Any other options which were preferred options, CION version & date when investigated and reasons for change

This section provides the details of the preferred option including onshore and offshore works, single line diagrams and any risks and outage requirements.

Option X – [Insert short description, connection point] (Preferred Option)		
Offshore Works (completed by Relevant TO/OTSDUW)	Description of Works (Detailed description of the works)	Offshore Works:
	Cost	[Insert cost breakdown for the offshore TO works] Cables – £m Onshore Substation – £m Offshore Platform – £m TOTAL – £m
	Completion Date	Assumed to be completed prior to connection date
	Issues, Risks & Comments	TBC
	Outage Requirements	
Onshore Works (completed by Affected TO)	Description of Works (Detailed description of the works)	Onshore Works:
	Cost	[Insert total cost of onshore TO works] TOTAL - £m
	Completion Date	[Insert completion date from contract]
	Issues, Risks & Comments	[Insert any potential issues which may impact on the delivery of the work]
	Outage Requirements	[Insert comment on outage programme required for works to be completed]

Option X – [Insert short description, connection point] (Preferred Option)	
Single Line Diagram	[Insert single line diagram]

SECTION 6 – Alternative Options

This section provides the details of the alternative options which have **NOT** been taken forward following the stage 3 assessment. It describes the onshore and offshore works, single line diagrams and any risks and outage requirements.

Option X – [Insert short description, connection point]		
Offshore Works (completed by Relevant TO/OTSDUW)	Description of Works (Detailed description of the works)	Offshore Works:
	Cost	[Insert cost breakdown for the offshore TO works] Cables – £m Onshore Substation – £m Offshore Platform – £m TOTAL – £m
	Completion Date	TBC
	Issues, Risks & Comments	TBC
	Outage Requirements	
Onshore Works (completed by Affected TO)	Description of Works (Detailed description of the works)	Onshore Works
	Cost	[Insert total cost of onshore TO works] TOTAL - £m
	Completion Date	TBC
	Issues, Risks & Comments	
	Outage Requirements	

Option X – [Insert short description, connection point]	
Single Line Diagram	[Insert single line diagram]

Appendix A – Glossary of Terms

Discounted: An option can be discounted after it has been demonstrated sufficiently that it is not technically feasible to implement.

Parked: An option can be parked when it is demonstrated sufficiently that it does not provide additional benefit in comparison to all other options as part of the ‘benefit filter’. It can however be revisited and re-appraised again should circumstances change.

Preferred: An option is categorised as preferred when it is demonstrated to be the most optimal design (i.e. Economic, efficient & coordinated) considering all criteria (i.e. Technical, Cost, Environmental & Deliverability).

Taken Forward: Means that an option is being progressed for economic assessment

Within the Stage 1 onshore assessment, Transmission Works levels were defined as follows;

Minimal = limited to works to satisfy Chapter 2.6 of NETS SQSS (i.e. additional bay at a connection point);

Local = requiring circuit uprating and compensation up to and including the next adjacent substation (in any direction);

Moderate = requiring circuit reconfigurations, some reconductoring and compensation in local vicinity (i.e. up to 3 substations away);

Extensive = new circuits or upgrading 275 kV to 400 kV or widespread re-conductoring and compensation.

Appendix B– Unit Cost Assumptions

[Insert summary of unit cost assumptions]

Appendix C – Cost Benefit Analysis (CBA) methodology

[Insert specific cost benefit assumptions where appropriate]

As part of the economic assessment, NGESO will undertake a cost benefit analysis to account for the total life cost of the options. As part of this assessment;

- NGESO will utilise the capital costs of the options as provided by the Transmission Owners
- NGESO will calculate the constraint costs by taking into equipment unavailability due to failure and maintenance. Assumptions on the cost of energy, failure rates, Mean time to repair (MTTR), Mean time between failure (MTBF), mean time between planned maintenance (MTBM) will be based on industry agreed figures were available or Transmission Owner assumptions based on existing practice.
- For wind generation, **Expected Energy Curtailed per year** = Wind Farm Output X Constrained Energy Factor X Load factor X failure/maintenance rate X number of circuits X duration of failure/maintenance
- NGESO will calculate the Net Present Value using the Spakman approach which is used in discounting CBAs that involve private investment for public benefit⁷

⁷ <https://www.ofgem.gov.uk/publications-and-updates/discounting-cost-benefit-analysis-involving-private-investment-public-benefit>

Appendix B.10

*This appendix has been produced to support the Applicant's response to the Examining Authority's Second Written Questions – Q2.11.2.2 (a). This document should be read alongside **The Applicant's Responses to the Examining Authority's Second Written Questions** [document reference 16.2]*

Appendix B.10 – Response to WQ2.11.2.2(a) – Pre-commencement Works

	Pre-commencement Works (excluded from the definition of commencement)	Development/Permitted Development	How secured?
1	Site clearance	<p>Depends on scope of works but there are elements of site clearance would be classed as development as either 'building operations' or 'other operations normally undertaken by a person carrying on a business as a builder' (see s.55 of the Town and Country Planning Act 1990). Site clearance would usually be authorised under the overarching planning permission for a development or under the relevant permitted development rights.</p>	<p>Appropriate controls are included within the dDCO.</p> <p>Requirement 13(2) (which has been slightly amended for clarity in the draft DCO (Revision F) [document reference 3.1] requires a specific pre-commencement Ecological Management Plan to be approved prior to undertaking pre-commencement site clearance works. Any pre-commencement ecological management plan must accord with the outline ecological management plan (APP – 304) which includes pre-construction mitigation measures.</p>
2	Demolition	<p>Demolition is usually classed as development. Demolition of buildings is covered by permitted development rights under Part 11 of the Town and Country Planning (General permitted Development) (England) Order 2015 (GPDO). Generally this requires prior approval from the local planning authority. Some demolition works, such as buildings within a conservation area, require planning permission.</p> <p>No application for planning permission or prior approval is required to demolish any building with a volume under 50 cubic metres or to demolish the whole or part of any gate, fence, wall or other means of enclosure.</p>	<p>It is not proposed to demolish any buildings and as such, additional controls on these activities are not required.</p>

3	Early planting of landscaping works	Planting and re-planting of landscaping works are not classed as development requiring planning permission.	Additional controls on these activities are not required. Subsequent agreement of species and size of planting can be covered under Requirement 11 (Provision of landscaping)
4	Archaeological investigations,	Non-intrusive archaeological investigations such as walkover surveys are not classed as 'development' and can be carried out without planning permission.	Additional controls on these activities are not required.
		Intrusive archaeological investigations which require the breaking open of the surface of the ground, such as digging of excavation trenches, are classed as development.	<p>The intention of Requirement 18 is for intrusive archaeological investigations to be controlled through the submission of a Written Scheme of Investigations (WSI) for each phase of the onshore works. The outline WSI covers intrusive archaeological investigations. For clarity, the Applicant has therefore amended the draft DCO (Revision F) [document reference 3.1] as follows:</p> <p>(a) Included a definition of 'intrusive' as follows:</p> <p>'intrusive' means an activity that requires or is facilitated by breaking the surface of the ground (but does not include the installation of fence or signage posts); and</p> <p>(b) Added sub-paragraph (6) to Requirement 18 to confirm that for the purposes of Requirement 18 "commence" includes intrusive archaeological investigations so that a WSI is required before intrusive archaeological investigations take place.</p>
5	Environmental surveys,	Non-intrusive surveys are not classed as 'development' and can be carried out without planning permission. Non-intrusive environmental surveys involve observations, measurements, notes and photographs and surface samples.	Additional controls on these activities are not required.

		Intrusive ground investigations and geotechnical surveys would ordinarily require planning permission; but electricity undertakers have relevant permitted development rights under Part 15 of the GPDO.	Additional controls on these activities are not required.
6	Ecological mitigation	Depends on the scope and intrusive or non-intrusive nature of the mitigations.	This is linked to the controls around site clearance which require pre-construction ecological mitigation measures to be delivered in accordance with the outline Ecological Management Plan pursuant to Requirement 13.
7	Investigations for the purpose of assessing ground conditions (i.e. boreholes)	Intrusive investigations would ordinarily require planning permission; but electricity undertakers have permitted development rights under Part 15 of the GPDO to undertake ground investigations.	Additional controls on these activities are not required.
8	Remedial work in respect of any contamination or other adverse ground conditions	Depends on scope of works but there are elements of remedial works that would be classed as development in a similar way to site clearance and demolition.	<p>An additional Requirement 32 has been included in the draft DCO (Revision F) [document reference: 3.1] as follows:</p> <p>(1) Pre-commencement remedial work in respect of any ground contamination or other adverse ground conditions must only take place in accordance with a scheme to deal with the contamination of any land (including groundwater) that is likely to cause significant harm to persons or pollution of controlled waters or the environment which has been submitted to, and approved by, the relevant planning authority in consultation with the Environment Agency.</p> <p>(2) Each scheme submitted under sub-paragraph (1) must include an investigation and assessment report, prepared by a specialist consultant to identify the extent of any contamination and the remedial measures to be</p>

			<p>taken for that stage to render the land fit for its intended purpose, together with a management plan which sets out long-term measures with respect to any contaminants remaining on the site.</p> <p>(3) Such remediation as may be identified in each approved scheme must be carried out in accordance with that approved scheme.</p>
9	The diversion and laying of services	The laying and diversion of services which is generally permitted for statutory undertakers under Parts 13, 15 and 16 of the GPDO.	Additional controls on these activities are not required.
10	The erection of any temporary means of enclosure	There are permitted development rights under Part 2 of the GPDO for the erection of fences but these are subject to restrictions on height which would apply here.	Requirement 19(4) secures commitments contained within the outline Code of Construction Practice (Revision C) [document reference 9.17] for pre-commencement screening and fencing.
11	The erection of welfare facilities,	As noted in the Applicant's response to WQ 1.11.2.2 set out in The Applicant's Response to the Examining Authority's First Written Questions [REP1-036], erection of welfare facilities would be permitted pursuant to Part 4, Class A of the GPDO which permits 'the provision on land of buildings, moveable structures, works plant or machinery required temporarily in connection with and for the duration of operations being or to be carried out on, in, under of over that land or on land adjoining that land.' This is subject to conditions within Part 4 that require removal of any temporary buildings, structures, works, plant or machinery after construction is complete and re-instatement of adjoining land. The Applicant notes that the draft DCO (Revision F) [document reference 3.1] already reflects the GPDO in this regard as Requirement 25	Additional controls on these activities are not required.

		requires land used temporarily for construction to be re-instated to its former condition.	
12	Creation of site accesses	There are PD Rights relating to the creation of accesses under Part 2 of the GPDO.	Requirement 16 also requires access plans for any new permanent or temporary means of access to a highway or alteration of an existing access.
13	Temporary display of site notices or advertisements	Not generally classed as development.	Additional controls on these activities are not required.