



SCOTTISHPOWER
RENEWABLES

East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Comments on National Grid Electricity Transmission PLC's Deadline 11 Submissions

Applicant: East Anglia TWO and East Anglia ONE North Limited

Document Reference: ExA.AS-20.D12.V1

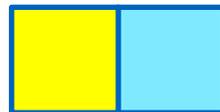
SPR Reference: EA1N_EA2-DWF-ENV-REP-IBR-001134

Date: 28th June 2021

Revision: Version 01

Author: Royal HaskoningDHV

Applicable to **East Anglia ONE North** and **East Anglia TWO**



Revision Summary

Rev	Date	Prepared by	Checked by	Approved by
01	28/06/2021	Paolo Pizzolla	Lesly Jamieson	Rich Morris

Description of Revisions

Rev	Page	Section	Description
01	n/a	n/a	Final for Submission

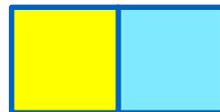
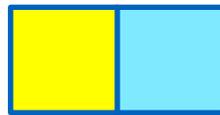


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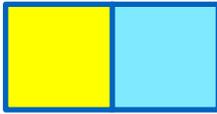
Glossary of Acronyms

DCO	Development Consent Order
ExA	Examination Authority
ISH	Issue Specific Hearing
NGET	National Grid Electricity Transmission
PD	Procedural Decision



Glossary of Terminology

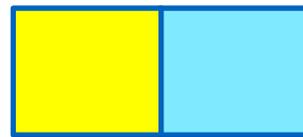
Applicant	East Anglia TWO Limited / East Anglia ONE North Limited
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
East Anglia ONE North project	The proposed project consisting of up to 67 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia TWO / East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia TWO / East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO / East Anglia ONE North project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.



1 Introduction

1. This document presents the Applicants' comments on National Grid Electrical Transmission PLC's (NGET's) Deadline 11 submissions as follows:
 - NGET's Deadline 11 Submission – Response to ExA's dDCO commentaries (REP11-118)
 - NGET's Deadline 11 Submission – Response to ExA's Issue Specific Hearing 16 (ISH16) Hearing Action Points (REP11-117).

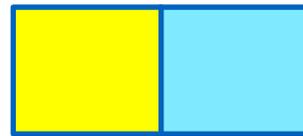
2. This document is applicable to both the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications, and therefore is endorsed with the yellow and blue icon used to identify materially identical documentation in accordance with the Examining Authority's (ExA's) procedural decisions on document management of 23rd December 2019 (PD-004). Whilst this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it for the other project submission.



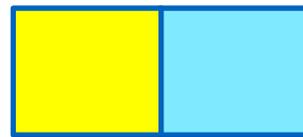
2 Comments on National Grid Electricity Transmission's Deadline 11 Submissions

2.1 Applicants' Comments on NGET's Deadline 11 Submission – Response to ExA's dDCO commentaries [REP11-118]

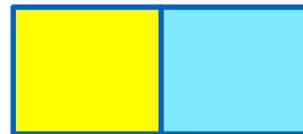
ID	ExA's Question	NGET's Comment	Applicants' Comments
Schedule 1 – Authorised Project			
1	<p>Pt 3 R 12</p> <p>R12: Defining onshore operational land for purposes of the 1990 Act</p> <p>Concerns have been expressed about the extent of operational land that would benefit from substation permitted development rights under the Town and Country Planning (General Permitted Development) Order 2015, Schedule 2, Part 15, Class B (a), (d) or (f). ESC has submitted that the potential adverse effects of permitted development could be such that removal of those rights would be justified. The Applicants in turn have submitted that removal of operationally normal permitted development rights for a substation would unduly burden the proposed substation facilities once operational and would not be justified. In this context, a possible alternative mechanism is to provide that the extent of onshore operational land</p>	<p>a) Operational land is defined by law by virtue of section 263 and 264 of the Town and Country Planning Act 1990. NGET therefore do not feel that it is necessary to define operational land for the purposes of the DCO. If ExA feel differently, NGET feel that the proposed approach to identification of the extent of Operation Land post commissioning of the substation is appropriate, given that this cannot be ascertained at this stage prior to construction,</p> <p>b) Yes if this approach is taken, the scope of the works are correct subject to our response to R44 below,</p> <p>c) N/A</p>	<p>a) Noted</p> <p>b) Noted.</p>



ID	ExA's Question	NGET's Comment	Applicants' Comments
	<p>benefiting from substation permitted development rights is reduced to the minimum necessary and clearly defined. An 'onshore operational land plan' is a potential mechanism whereby that could be achieved.</p> <p>The Applicants responded to the February 2021 Commentaries [PD031] highlighting their view that it was not possible to submit an onshore operational land plan during the Examinations but set out its view that the operational land could be limited in extent and identifying that R12 could be amended to ensure that such a plan could be provided after the relevant operational areas had been commissioned.</p> <p>On that basis, the ExAs have proposed amendments to R12 to secure the production of an onshore operational land plan after commissioning and a new R44 providing that permitted development rights can only be exercised within the land defined as operational land on the plan.</p> <p>a) Does the proposed amendment set out below and at R44 add sufficient certainty about the extent of onshore operational land and clarify that the exercise of permitted development</p>		



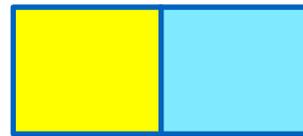
ID	ExA's Question	NGET's Comment	Applicants' Comments
	<p>rights on that land would be appropriate?</p> <p>b) Are the correct Works within scope?</p> <p>c) If not, what alternative measures should be provided for?</p> <p>Add the following paragraphs to R12 after current paragraph (21)</p> <p>(22) The undertaker must submit a plan for approval by the relevant planning authority showing the extent of the completed works that comprises operational land onshore for the purposes of the 1990 Act ('the onshore operational land plan') no later than three months from the completion and commissioning of {Work No. 30, Work No. 38 or Work No. 41}.</p> <p>(23) The extent of the operational land shown on the onshore operational land plan provided by the undertaker pursuant to paragraph (22) must accord with the substations design principles statement and be within the Order limits.</p> <p>It should be noted that the timescale for approval and circumstances where the relevant planning authority did not approve a submitted onshore operational land plan would be matters addressed or capable of being resolved under Schs 16.</p> <p>See also R44 (proposed).</p>		



ID	ExA's Question	NGET's Comment	Applicants' Comments
2	<p>Pt 3 None – additional requirement R 44</p> <p>Additional Requirement (R44) – Onshore Operational Land Plan</p> <p>See R12 above.</p> <p>The Commentary on R12 above proposes the preparation of and provides security for an onshore operational land plan. One of the purposes of that plan is to clarify where substation permitted development rights might be enjoyed. Please comment on the ExAs' proposed drafting below:</p> <p>44. Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) Order 2015 (or any Order revoking or re-enacting that Order), no development shall be carried out under Schedule 2, Part 15, Class B (a), (d) or (f) other than on land shown as onshore operational land on the onshore operational land plan.</p>	<p>Class B(a)</p> <p>NGET do not think that Class B (a) should be included in the wording proposed. Class B (a) relates to</p> <p><i>(a) the installation or replacement in, on, over or under land of an electric line and the construction of shafts and tunnels and the installation or replacement of feeder or service pillars or transforming or switching stations or chambers reasonably necessary in connection with an electric line</i></p> <p>Class B (a) is not a Permitted Development right that is linked in legislation to being exercised on operational land, unlike Class B (d) and (f) which are limited to being carried out on operational land, as set out below:</p> <p><i>(d) the extension or alteration of buildings on operational land; and</i></p> <p><i>(f) any other development carried out in, on, over or under the operational land of the undertaking</i></p> <p>It is NGET's understanding that the main concern was to control use of PD rights to extend the NGET sub station. The inclusion of Class B(a) would unduly and unreasonably limit NGETs PD rights.</p>	<p>The Applicants note the comments made by NGET. The comments are similar to those submitted by the Applicants at Deadline 11 within ID20 of the <i>Applicants' Comments on the ExA's Commentary on the draft DCO</i> (REP11-081).</p>

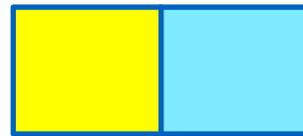


ID	ExA's Question	NGET's Comment	Applicants' Comments
		<p>Requirement 44 is also not drafted sufficiently precisely. It is not clear to which area the removal of pd rights applies.</p> <p>If ExA however feels that Requirement 44 is appropriate, it should as a minimum be limited to for instance the Order Lands or Order Limits and as above, reference to Class B(a) should be removed.</p>	

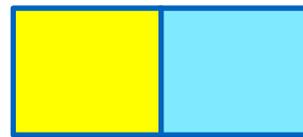


2.2 Applicants' Comment on NGET's Deadline 11 Submission – Response to ExA's ISH 16 Action Points (REP11-117)

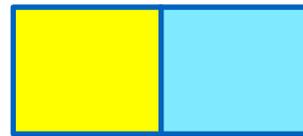
ID	ExA's Question	NGET's Comment	Applicants' Comments
1	<p>National Grid Substation</p> <p>Your answer to ExQ 2 10.6 [REP 6-110] seems to state that it is highly unlikely that the proposed NG substation would be gas insulated for various reasons including lower operational costs, climate change and meeting government targets.</p> <ul style="list-style-type: none"> • Is this a fair summary? • Detail any potential reasons why a GIS substation may be chosen and the likelihood of such reasons occurring in this instance. • How important are your Electricity Act 1989 s9 duties when choosing technology for your substations 	<p>In REP6-110 NGET said:</p> <p><i>“NGET’s current preference is to pursue AIS technology for the NGET substation as the AIS technology is easier to operate, maintain and repair and as such has lower operational costs which is important in meeting its s.9 duties.</i></p> <p><i>The GIS technology produces SF6 which has the equivalent impact of ten times the carbon equivalent of AIS technology. NGET’s current policy is to reduce its greenhouse gas emissions by 80% in advance of the target date 2030 set by the UK government.</i></p> <p><i>Where appropriate, NGET has pledged not to carry out procurement of any 275kV or 400kV gas insulated switchgear containing SF6 (excluding circuit-breakers) from 2024.</i></p> <p><i>However, NGET recognises that GIS technologies are evolving and there may be potential options for greener GIS in the future. As such NGET is keeping the GIS option open to allow for its use in the future if it is a greener option to AIS”.</i></p> <p>Accordingly NGET would comment as follows on ExA’s question:</p>	Noted.



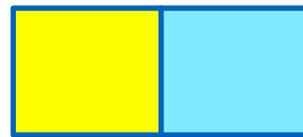
ID	ExA's Question	NGET's Comment	Applicants' Comments
		<ul style="list-style-type: none"> • NGET agree that ExA's summary of what NGET said in REP6-110 is a fair summary. The government's climate change targets are the primary driver in addition to NGET's commitments to Ofgem to reduce its SF6 inventory. • In this instance NGET's strong preference is to construct an AIS substation, essentially a GIS substation would only be constructed if the DCO, if approved, restricts the type of substation to be constructed. NGET consider it is relatively unlikely that non-SF6 technology will be available in the time frames for the construction of the substation for this Project. NGET's approach in relation to the construction of new GIS substations is that they shall only be considered where lifetime related conditions (such as pollution, permanent space restriction or public visual amenity) preclude the use of open terminal equipment. • NGET must comply with its s9 duties at all times, to develop and maintain an efficient, co-ordinated and economical system of electricity transmission. In deciding which technology to use NGET therefore consider the solution that would offer the lowest lifetime cost solution, taking a balanced view of safety, environmental implications, project 	



ID	ExA's Question	NGET's Comment	Applicants' Comments
		<p>delivery and whole life costs. Considering the environmental implications and whole life costs would involve factoring in the SF6 implications and will mean in practice that NGET will only construct GIS technology (in the absence of non SF6 technology) where AIS technology is not an option for the reasons identified in bullet 2.</p>	
2	<p>National Grid Substation</p> <p>The Applicants have provided plans to the examination showing a range of site designs in response to a request from the ExA [AS122].</p> <p>Would the size of the proposed NG Substation be the same regardless of whether one or both projects (East Anglia One North and East Anglia Two) were to be approved?</p> <ul style="list-style-type: none"> Is the location of the proposed NG Substation tied to its location as shown on the plans whether in AIS or GIS form. For instance could the GIS proposed be moved west or eastwards for environmental purposes? 	<p>NGET have previously confirmed in REP6 -108 (CA2 Post Hearing Submission) that:</p> <ul style="list-style-type: none"> NGET confirmed that only the customer connection bay will be removed from the substation if only one of the EA1N/EA2 projects proceeds and these are small elements of the overall substation design which do not therefore reduce the extent of the footprint required. As per NGET's written response REP3-111 (see page 7), the NGET elements of the DCO do not change if only one of the projects is built because both overhead lines will still need to be connected into the new substation which due to its component parts will remain the same size whether or not both projects are connected. <p>This has also been explained in REP3-111 (linked above).</p>	Noted.



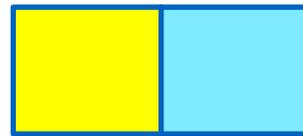
ID	ExA's Question	NGET's Comment	Applicants' Comments
		<ul style="list-style-type: none"> In light of the response above, the size of the NG Substation would be the same regardless of whether one or both of the projects (East Anglia One North and East Anglia Two) were approved. The size of the NG Substation will be established through the detailed design process within the parameters set out and controlled within the DCO. In relation to AIS technology given its size and the need for the NG substation to sit between the EA1N and EA2 substations and the existing overhead line, there is very little opportunity to amend the location of the NG substation. In relation to GIS technology the most efficient way to connect the substation to the proposed EA1N and EA2 substations is to locate the NG substation centrally between the EA1N and EA2 substations, although the NG substation could be located anywhere within Work Area 41 this would increase the length of cable runs and could potentially necessitate another CSEC if moved too far from the 400kv pylon, which would result in an inefficient design and additional impacts. Obviously, any movement east or west would need to be within Work Area 41 and the parameters assessed. 	



ID	ExA's Question	NGET's Comment	Applicants' Comments
		<ul style="list-style-type: none"> The question of site location for the NG Substation is not as simple as considering whether the NG Substation can be moved eastwards or westwards because the siting is determined by many factors including the existing and proposed OHL locations, the sealing end compound locations and the location of the EA1N/2 substation(s). As mentioned, if only one of the EA1N or 2 projects is consented the NG substation will not change in size and therefore could not be moved eastwards or westwards to align with the single consented scheme. Detailed design will establish the optimal location for the NG Substation and this will be based on the locations of the OHLs, the Sealing End Compounds and the EA substation(s). 	
3	<p>National Grid Substation</p> <p>The Applicants Substation Design Principles Statement [REP8-082] documents how the East Anglia One Substation and ancillary works evolved through the design process. • Outline how the NG Substation for East Anglia One evolved in design terms through the lifetime of the project (through to built substation), if at all?</p>	<p>There isn't a dedicated NG Substation for EA1, the connection of EA1 was incorporated as part of the design solution developed as part the reconfiguration of existing National Grid Bramford 400kV Substation to serve a number of transmission system needs including both asset replacement and connections.</p> <p>The National Grid Bramford Substation is a GIS substation and it wasn't consented via the EA1 DCO and accordingly NGET cannot compare parameters against final design in the same way that the</p>	Noted.



ID	ExA's Question	NGET's Comment	Applicants' Comments
		applicants have in their Substations Design Principles Statement.	
4	<p>Location of National Grid Substation</p> <p>As per Action 4, during ISH16 the Applicants referred to the efficiencies inherent in siting the proposed National Grid Substation (whether AIS or GIS) in the position shown on their R17QE response [AS-122]. Please describe and quantify any efficiencies to NGET of placing the Substation in the shown location.</p>	<p>The location of NGET's substations is determined by many factors including costs of design, operation and construction, minimising environmental impacts, minimising visual impacts, ensuring proper design and safety principles are adhered to and other determining factors which are taken into account as part of NGET's s9 obligations to maintain an efficient, co-ordinated and economical system of electrical distribution and other statutory obligations.</p> <p>In principle, NG substations are more cost efficient when sited as close as possible to the transmission network (i.e. the Overhead lines) and the current siting of the NG Substation reflects this. The primary efficiencies for the location are cost and electrical efficiency.</p> <p>Cost</p> <p>For every extra 10 metre of cable there is a significant cost increase. As there are 4 circuits that connect the OHLs into the NG Substation any increase of distance between OHL and NG Substation has an associated 4x increase in cost.</p> <p>As there are 2 underground circuits between the EA1N/2 Substations and the NG Substation any increase in distance between the two substations has an associated 2x cost increase. There are</p>	Noted



ID	ExA's Question	NGET's Comment	Applicants' Comments
		<p>trenches laid in the ground for these cables which also increase costs.</p> <p>As such, it is most efficient to locate the NG Substation close to both the OHLs and the EA1N/2 Substations to ensure cost efficiencies are achieved and the current proposed siting reflects this. As the length of cabling is reduced this also minimises construction and environmental impacts.</p> <p>Electrical Efficiency</p> <p>In principle, the shorter the cable or circuit the more electrically efficient the cable is. As such the NG Substation is positioned to ensure that the cables will allow for correct and safe spacing between the OHLs, the sealing end compounds and the EA substation(s) whilst ensuring the cables are as electrically efficient as possible. Further, the close location of the EA substation(s) and the NG Substation ensures that a fourth sealing end compound is not required.</p>	