



## SPR EA1N and EA2 PROJECTS

### DEADLINE 8 – SASES COMMENTS ON APPLICANTS D7 RESPONSES TO SASES D5 SUBMISSIONS

Interested Party: SASES PINS Refs: 20024106 & 20024110

Date: 25 March 2021 Issue: 4

#### Introduction

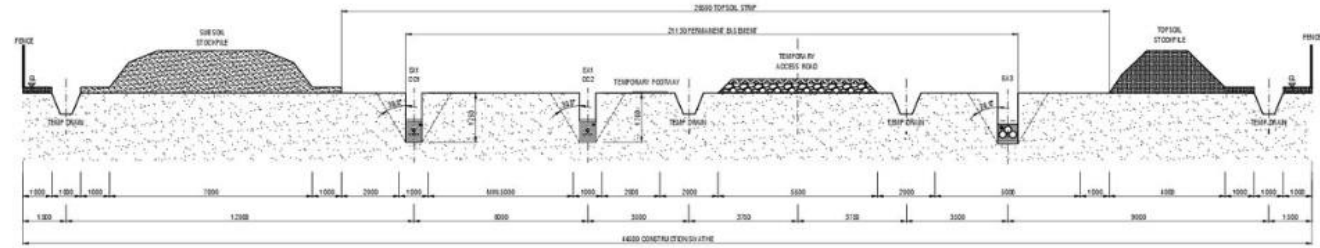
1. The following comments are made on the Applicants Responses [\[REP7-054\]](#) submitted at D7 to SASES D5 submissions to which SASES has only responded by exception.
2. The fact that SASES has not responded to any particular comment made by the Applicant does not mean that SASES agrees with the comment. SASES will continue to rely on its Written Representations and its subsequent submissions.

ID	Topic/Document	SASES Comments
<b>2.1 – Post hearing submission (ISH5)</b>		
2	Bramford Comparison	a. The Applicants dispute that Bramford is a brownfield location based on the fact that former farmland had to be acquired to develop the substation site. Bramford is an existing substation site which is the context in which the “brownfield” comment was made.
		c. The Applicants indicate that Bramford and Friston are comparable in flood risk terms. They do not acknowledge the serious surface water flood risk at Friston as has been evident from the extensive hearings and submissions on this issue.
		d. The Applicants’ answer seems to be suggesting there is some heritage comparability between Bramford and Friston. From the Applicants’ response it is clear that the heritage impacts at Friston are far more severe than at Bramford not least the existence of a Grade II*listed building overlooking the substation site at Friston

		<p>e. The Applicants find the comment <i>“relative to Friston, Bramford is easily accessible by road”</i> unclear. A cursory look at the map near Bramford shows the proximity of the A14 and that after leaving the A14 via a slip road only one junction needs to be negotiated before arriving at an existing access road to the substation site.</p>
		<p>f. The Applicants contest that Friston is a tourist destination. This is not the point being made which is that Friston is in an area where tourism is a key part of the local economy, although it should be noted that there is a significant number of second homes and holiday cottages in Friston - second homes weekend /holiday homes 21; Investment / holiday lets 31.</p> <p>The Applicants also show themselves to be very unfamiliar with the area by relying upon Expedia stating that <i>“a review of the Expedia pages for both locations (a natural potential starting point for visitors) shows similar places to visit including Snape Maltings, Sutton Hoo and Framlingham Castle, none of which are located close to either village”</i>. Aside from the fact that Snape Maltings is located close to Friston, the Applicants fail to mention the immediate proximity of the AONB, the beaches at Aldeburgh, Thorpeness, Sizewell, Dunwich, the RSPB nature reserve at Minsmere, the National Trust site at Dunwich Heath, the close proximity of the seaside town of Aldeburgh and village of Thorpeness plus other facilities attractive to visitors including the PRoW network, cycle routes and camping and caravan sites. Only a little farther afield are the towns of Southwold and Orford. This lack of knowledge after years of proposing developments in this area is disturbing.</p>
<p><b>2.2 - Item 10 – Leiston Airfield, Harrow Lane, near Abbey Lane, Theberton</b></p>		
5	<p>Leiston (Old) Airfield, Harrow Lane (two sites)</p>	<p>For its East Anglia ONE project the Applicant used a 5km radius from Bramford NGET substation as its site selection investigation area, and this is consistent with NGET guidance as the distance within which reactive compensation for cable distance is not required at the NGET substation (see previous SASES submissions). National Grid Ventures (NGV) have taken a 5km radius approach to site selection for their projects and both the two sites near Leiston Old Airfield are documented for consideration in public NGV Nautilus material, with the Harrow Lane site (which has extensive tree screening) understood to have been suggested by a Local Authority. And of course Friston residential property at 250m is much closer to the proposed Grove Wood site than Theberton village is to the Leiston Airfield sites at 1km..</p> <p>The Electricity Act 1989 does require project consideration of efficiency, coordination and economy but also (Schedule 9) proper regard for the preservation of a wide range of environmental features. SASES view is that the Applicant has failed to give sufficient weight to the value of the environmental damage potentially caused by substation construction at Grove Wood and that this should have been considered more broadly and in more</p>

		<p>detail in the context of the overall project efficiency and economy. The lack of investigation of possible cable route to Leiston Old Airfield was a choice for which the Applicant was responsible, with NGV having taken a more positive approach.</p> <p>SASES reiterates that it does not accept that the Grove Wood site is the most suitable of those available to the Applicant, and that the site selection investigation area was incorrectly restricted to sites in close proximity to the 400kV overhead lines when it is only the NGET substation itself that needs to be so located.</p>
<b>2.5 Deadline 5 – BEIS OTNR Pathfinder Clarification Note</b>		
1	<p>BEIS OTNR Pathfinder Clarification Note</p> <p>Use of Bipole technology and EA1 trench configuration</p>	<p>SASES is concerned that the Applicants comments on Bipole cable technology are based on the original EA3 documentation which may no longer be fully applicable.</p> <p>The Discharge documentation for EA1 shown on page 24 of <a href="http://content.yudu.com/web/2it8t/0A4226m/CMS/html/index.html?page=24">http://content.yudu.com/web/2it8t/0A4226m/CMS/html/index.html?page=24</a> clearly shows the cable configuration for EA3 as being that shown in Figure 1 below, with a total of three ducts/cables in one trench, which SASES understands to be indicative of a Bipole connection for the EA3 windfarm.</p> <p>The earlier EA1 and EA3 documentation did refer to Symmetric Monopole connections for EA3 using a trench configuration as shown in Figure 2, with two of the four trenches reserved for ‘future projects’ allocated to EA3, and each trench containing two ducts/cables as is understood appropriate for Symmetric Monopole. But following relaxation of the Regulation 29 requirement in the EA1 DCO the total number of trenches to be built by the project was reduced to three, as shown in Figure 1, and this would seem to be incompatible with the use of Symmetric Monopole for EA3 as only one trench remains available for this project.</p> <p>The Bond Dickinson letter to BEIS of 27 June 2016 (copy below) clearly states on page 2 (SASES emphasis) that “<i>East Anglia ONE propose to lay six onshore cables, in two groups of three, within two trenches and <b>three ducts within a further trench that will be used by East Anglia THREE</b> when that project comes to lay its onshore cables.</i>”</p> <p>SASES has been unable to find any further details in the published EA3 documentation and would welcome clarification of the means of connection to be used by EA3.</p> <p>Figures 3 and 4 below, taken from a report prepared for Ofgem <a href="https://www.ofgem.gov.uk/ofgem-publications/59247/skm-report-calculating-target-availability-figures-hvdc-interconnectors.pdf">https://www.ofgem.gov.uk/ofgem-publications/59247/skm-report-calculating-target-availability-figures-hvdc-interconnectors.pdf</a> support SASES understanding of the cabling requirements for HVDC Symmetric Monopole and Bipole.</p>

VIEW FROM SHORE LANDING TOWARDS SUBSTATIONS OPTION 1



VIEW FROM SHORE LANDING TOWARDS SUBSTATIONS OPTION 2

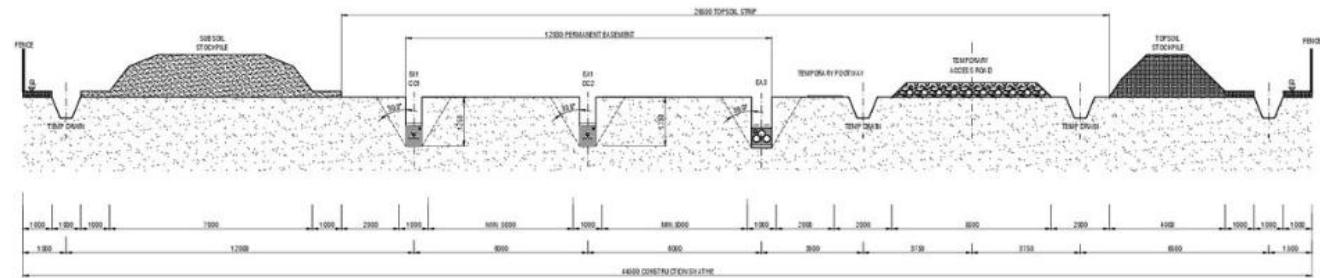
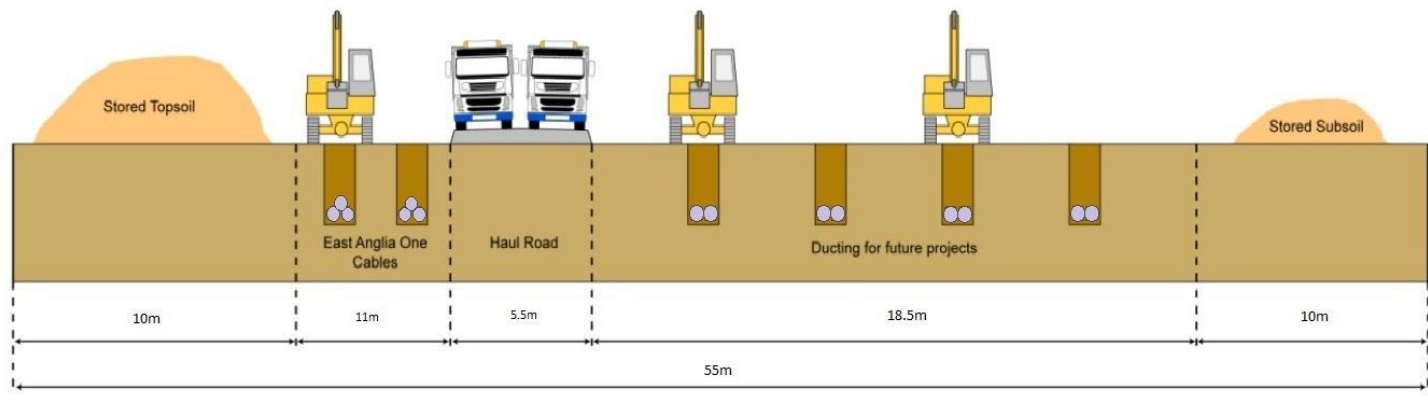


Figure 1 – Discharge documentation

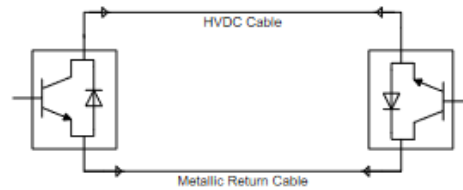


**Figure 2 – As originally planned**

## 5. HVDC Configurations

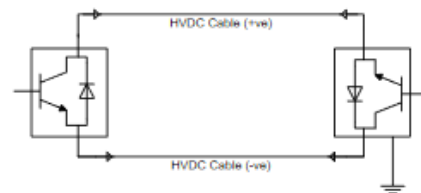
### 5.1. Converter Topology

Both LCC and VSC converters can be assembled into various configurations as shown in Figure 2 and Figure 3 below. For long distance transmission, the bipolar arrangements shown in Figure 3 are generally considered to be more suitable; the poles are designed to be independent of each other. During an outage of a transmission line or station for one pole, the second pole should still be capable of monopolar operation, with the metallic return providing the return current path for the dc current.



#### Monopole, metallic return

If there are constraints against using earth electrodes (there are issues with corrosion of pipelines, production of chlorine and ship navigation) then such a metallic cable can be installed instead

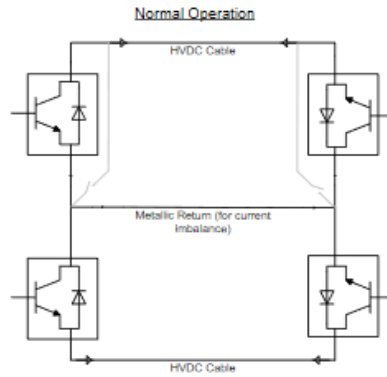


#### Symmetrical Monopole

If a fully rated HVDC cable is installed instead of a return conductor, then two converters per pole can be utilised to double the power transferred using opposing voltage polarities. However, if a cable or converter is faulted then the whole transfer capability is lost.

■ Figure 2 - Monopole Converter Arrangements

Figure 3 – Showing Symmetric Monopole with two cables per link (x 2) as for original EA3 design)



**Bipole, metallic return**

The bipole arrangement utilises a single return path for two poles. An equal and opposing voltage from each pole means that the return path will carry only minor current due to any imbalance between the two poles. The return path can be provided by either a metallic conductor or sea/earth electrodes if consent can be gained for their use.

- **Figure 3 - Bipole Converter Arrangements**
- **Table 2 Summary of Converter Arrangements**

Arrangement	Converter Requirements	Cable Requirements	Availability
Monopole Metallic Return	1 x Rectifier, 1 x Inverter	1 x HVDC 1 x LVDC	Zero output during cable or pole outages. Increased losses.
Symmetric Monopole	2 x Rectifier, 2 x Inverter	2 x HVDC	Zero output during cable or pole outages
Bipole Metallic Return	2 x Rectifier 2 x Inverter	2 x HVDC 1 x LVDC	Half capacity during cable or pole outages.
Bipole without Earth Return	2 x Rectifier 2 x Inverter	2 x HVDC	Half capacity during pole outages. Zero output during cable outages

Table 2 provides a summary of the main converter arrangements and a high level indication of availability during a cable or pole outage.

The options identified in Table 2 could be increased if it is considered that a system reliant on ground return through the earth or sea could be viable on an environmental basis. Whilst such schemes are operating successfully in Scandinavia and New Zealand the assumption made here is not to consider a ground-return system making use of earth or sea return.

**Figure 4 – Showing Bipole Metallic Return with three cables in total for revised EA3 design as understood**

2	<p>BEIS OTNR Pathfinder Clarification Note</p> <p>Infeed Loss limit and CfD restrictions</p>	<p>NGESO has indicated to SASES that if Bipole technology is being used (this requires clarification of ID1 above) then subject to suitable converter design such that a single failure did not cause a loss of more than 1320MW of power, then 1700MW could be landed. Such a design is understood to be technically feasible either now or in the very near future. And in any case relaxation of the 1320MW limit to the 1800MW applicable to interconnectors is known to be under discussion within NGESO.</p> <p>In addition the note in Figure 4 of ID1 above confirms that with a Bipole Metallic Return configuration half capacity remains during cable or pole outages, which should ensure adherence to NGESO Infeed Loss limits with a 1700MW system.</p> <p>SASES view is that the principal objective of a Pathfinder should be to explore the limits of technology and regulation, and points out that SSE and NGET have recently announced two North East Scotland to North East England domestic Interconnectors, each with a power rating of 2GW, described as using Bipole technology. So the technology required for the suggested EA1N/EA2 Pathfinder should be within reach.  <a href="https://www.sse.com/news-and-views/2020/11/power-firms-unite-to-deliver-underwater-energy-super-highway/">https://www.sse.com/news-and-views/2020/11/power-firms-unite-to-deliver-underwater-energy-super-highway/</a>  and <a href="https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_4_-_Strategic_Reinforcements.pdf">https://www.spenergynetworks.co.uk/userfiles/file/RIIO-T2_Annex_4_-_Strategic_Reinforcements.pdf</a></p> <p>SASES continues to believe that there a realistic opportunity for creating an OTNR Pathfinder project as previously described, with a Bipole cable connection to SPR's existing substation land at Bramford and that this opportunity justifies serious consideration.</p>
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**Copy of Bond Dickinson letter of 27 June 2016 referred to in ID1 above follows:**



27 June 2016

Bond Dickinson LLP

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Temple Back East  
Bristol  
BS1 6DZ

Giles Scott  
Head of National Infrastructure Consents and Coal Liabilities  
Department of Energy & Climate Change  
3 Whitehall Place  
London  
SW1A 2AW

Dear Sir

**East Anglia ONE Offshore Wind Farm Order 2014 (as amended by the East Anglia ONE Offshore Wind Farm (Corrections and Amendments) Order 2016 ("the Order"))**

We are writing on behalf of East Anglia ONE Limited to apply for confirmation from the Secretary of State for the purpose of Requirement 29 of the above Order.

**Requirement 29**

The onshore connection works under the Order comprise up to 4 cables and up to 8 additional cable ducts between Bawdsey Cliffs and Bramford.

Under Requirement 29(1), save in respect of specified plots in the book of reference, all cable ducts forming part of the onshore connection works must be installed simultaneously, together with the onshore cables for the authorised project forming part of the onshore connection works, unless subparagraph (2) applies.

Subparagraph (2) provides that if the Secretary of State shall confirm in writing that other generation projects which would otherwise use the ducts to connect to the National Grid have been abandoned or will not come forward within a reasonable timeframe, there will be no requirement to install the ducts pursuant to subparagraph (1).

Subparagraph (3) then sets out the matters to which the Secretary of State shall have regard in considering any application to her under subparagraph (2).

**The ExA's Report**

In the Examining Authority's Report of findings and conclusions and recommendation to the Secretary of State, paragraph 2.16 states:

*"2.16 The onshore associated development set out in Work Nos. 3B to 41 inclusive, will principally consist of underground cables running from mean low water at Bawdsey, Suffolk to a new onshore converter station adjacent to the National Grid substation at Bramford and an underground connection between the two substations at Bramford. It would also include the laying alongside the cables of ducts for future offshore wind farm projects, East Anglia THREE and FOUR, from the landfall at Bawdsey to the location of the future onshore converter stations for East Anglia THREE and FOUR also at Bramford, Suffolk."*

With regard to the simultaneous installation of ducts with onshore cabling, paragraphs 4.529 – 4.531 of the Report state:

*"4.529 Requirements in the recommended Order are considered in detail throughout this Report. One requirement relating to the general powers of construction of the authorised project is Requirement 29 "installation of cable ducts". In the course of examination it became plain that although the only option for the laying of the ducts for future wind farms East Anglia THREE and FOUR, that had been environmentally assessed, was the laying of them simultaneously with the cables for East Anglia ONE, this would not be secured in the application version of the DCO.*

*4.530 The application version of the DCO appeared to leave open the programme and period over which cables and perhaps later, the ducts could be laid. This was emphasised by the applicant's Cable Statement [REP – 181] which described only "the option" to lay the ducts for the future wind farms. At the heart of the Panel's concerns was that a short term operational decision could be taken by an undertaker that the ducts were unnecessary and that only the cables for East Anglia ONE would be laid, only for the same cable corridor across Suffolk to be dug up again at a later date to put ducts in to satisfy a later, different operational decision.*

*4.531 The LAs and in general terms the applicants, understood the risks involved here and agreed, and the applicant proposed Requirement 29 as now within the recommended Order. This Requirement would provide that the ducts could only be dropped from the scheme upon successful application to the SSECC. The Panel recognises that any dispensation granted by the SSECC from installing the ducts could in due course be followed by a reversal at another stage perhaps under a different SSECC or statutory process. However, the SSECC would be in a position to consider all the risks of such an outcome in making a decision pursuant to any application under this Requirement."*

#### **East Anglia ONE works**

As matters presently stand the draft Order for East Anglia THREE is about to commence examination. The draft Order makes provision for the onshore cables for East Anglia THREE to be pulled through ducts laid by East Anglia ONE.

East Anglia FOUR, to which reference was made by the Examining Authority in paragraph 2.16 and in paragraph 4.529 of its Report, has now been abandoned in the form as was presented to the Examining Authority. Confirmation of this has been given by EAOWL to the Planning Inspectorate and the agreement for lease for East Anglia FOUR (AfL) with the Crown Estate has been terminated.

East Anglia ONE propose to lay six onshore cables, in two groups of three, within two trenches and three ducts within a further trench that will be used by East Anglia THREE when that project comes to lay its onshore cables.

In view of the abandonment of East Anglia FOUR, East Anglia ONE will not lay any further ducts beyond those for East Anglia THREE. A written method statement showing the programme for laying the onshore cables for East Anglia ONE, and the cable ducts for East Anglia THREE as part of a single cable laying operation, is currently being prepared by East Anglia ONE for submission to the relevant planning authority for their approval for the purposes of Requirement 29(1)(b).

#### **Other generation projects – East Anglia ONE North and East Anglia TWO**

With regard to the obligation on EAOWL (under Requirement 29(2)) to demonstrate that other generation projects, which would otherwise use the ducts to connect to the National Grid, will not come forward within a reasonable timeframe, the position is as follows:

- It is expected that a DCO application for East Anglia TWO will be submitted no earlier than January 2019 and a DCO application for East Anglia ONE North will be submitted no earlier than January 2020.
- East Anglia ONE North and East Anglia TWO have entered into Agreements for Lease (AfLs) with the Crown Estate for the windfarm areas but have not entered into AfLs for the associated cable route corridors.

- East Anglia ONE North and East Anglia TWO currently have grid connection offers to connect to the National Grid substation at Bramford. However, the grid connection dates in the agreements do not reflect the current development programmes and require to be revised in line with proposed programmes and project capacities, which may result in an alternative grid connection point being offered.
- Confirmation of any change to the grid connection points for East Anglia ONE North and East Anglia TWO cannot be confirmed at this time. However should it be confirmed that Bramford will be the grid connection point for East Anglia ONE North and East Anglia TWO, the order limits within the East Anglia ONE consent are considered to be insufficient to allow for the installation of two additional projects. There are physical pinch points along the cable route that restrict the number of cables and ducts that can be installed and there are technical constraints associated with horizontal directional drilling that make this unfeasible. Accordingly, cable corridors to accommodate the cables and ducts associated with the East Anglia ONE North and East Anglia TWO projects will require to be assessed, examined, consented and constructed in their own right.
- As East Anglia ONE North and East Anglia TWO are at the early stages of development, a decision regarding the type of transmission technology that will be used for these projects has yet to be made and therefore engineering design associated with these projects is currently unrefined. Consequently, it is not feasible for ducting required for East Anglia ONE North and East Anglia TWO to be installed during the construction of East Anglia ONE due to the uncertainty of the technology to be used and subsequently, the type of ducting required.

As such it is clear that neither East Anglia ONE North or East Anglia TWO will come forward within a reasonable timeframe to enable East Anglia ONE to lay ducts on their behalf, and in any event those ducts could not be accommodated within the limits of the East Anglia ONE Order.

**Confirmation from the Secretary of State**

East Anglia ONE has made contact with the Crown Estate, National Grid and the relevant planning authorities to advise them that they may, in due course, be consulted by the Secretary of State and asked to confirm their understanding of the position set out in this letter.

We should be grateful for your confirmation of receipt of this letter by way of application under Requirement 29. If you require any further information, please do not hesitate to contact us further, otherwise we look forward to receiving the confirmation from the Secretary of State as soon as possible.

Yours faithfully

**Bond Dickinson LLP**