The Parish Councils of Assington, Bures St Mary, Leavenheath, Little Cornard, Polstead & Stoke by Nayland

Additional Supporting Information and responses to Deadline 6 submissions

1. Context

1.1 As part of its submissions to the ExA, the Applicant has provided reports entitled **Alternatives Considered** [EN02002-00577, APP-017 Document 6.2.3] and **Strategic Options** {EN02000-00, APP-162 Document 7.2.2]. While these documents focus in the main on route corridors, they also contain considerations of technological alternatives.

1.2 The purpose of this note is to bring to ExA's attention a recently developed alternative conductor technology which, if our understanding of this application is correct, **could entirely obviate the need for the new 400kV pylon route with its attendant disruption and environmental impact.**

1.3 The new conductor technology involves little more than replacing the existing conductors on existing pylons, a relatively routine activity for the Applicant (along with, presumably, works similar to those already anticipated at grid supply point substations). The whole scheme would, we understand, continue to operate at 400kV but with system reinforcement capacity even higher than that presently proposed.

1.4 Given the scale of works currently under examination, it seems reasonable to assert that by adopting this new approach, the required network reinforcement could also be delivered at a fraction of the current scheme cost. If we are proven to be correct, then the Applicant's many references to its obligations under its Transmission Licence and to Ofgem to ensure value for money for consumers should apply equally in the case of the application of a cheaper alternative technology, given that *"the cost of projects will ultimately be borne by electricity consumers."*

1.5 Furthermore, we are bewildered by the absence of references to this conductor technology in the Applicant's consideration of alternatives, since, if our understanding is correct, **National Grid is a major investor in the US company that has developed this conductor technology and is bringing it to the market.**

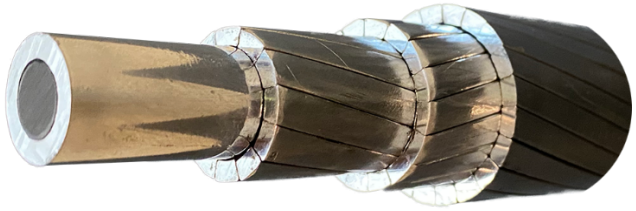
1.6 Given the foregoing, we believe that the Applicant should be required to explain why it has failed to notify the ExA and the authorities of this alternative as part of its application and to provide for it in its consideration of strategic options. It should now be instructed to provide a detailed evaluation of this emerging new technology as a solution to meeting the emerging demand for network reinforcement.

2. TS Conductor (www.tsconductor.com)

2.1 This US-based company has developed an advanced alternative to the aluminium conductor steel supported (ACSS) or the earlier aluminium conductor steel reinforcement (ACSR) overhead line conductors that are in current general use. It uses a carbon fibre core fully encapsulated in a sheath of seamless aluminium. The company claims that, for example:

- "*The carbon fibre is super strong, ultra lightweight, and has essentially no sag. In tandem, the encapsulating aluminium keeps out moisture and other elements. This prevents corrosion and other problems that plagued earlier generations of advanced conductors, while also allowing line crews to work with the conductor using tools and techniques with which they're already familiar.*

- *Beyond the core, like their predecessors, advanced conductors make extensive use of aluminium stranding, although with some upgrades. Thanks to the high-strength, lightweight core, advanced conductors like that of TS can be wound with trapezoidal strands of the highest-conductivity annealed aluminium. This translates to advanced conductors with triple the ampacity and half the line losses vs. like-for-like traditional ACSR/ACSS conductors."*



2.2 If our understanding of the literature is correct – and the company is currently winning industry innovation awards for this development – the key claims here are that the new carbon reinforced conductors can provide at least three times the capacity of those that they replace whilst continuing to operate at the same high voltage and, importantly, without the need to reinforce the existing pylons.

2.3 We understand that this advanced conductor technology was developed over the period 2017-2020 or thereabouts and should have been known to the Applicant when it stated in its Strategic Options report (APP-162) that:

- *"The broad technologies available to National Grid remain similar to those considered in 2011 – including onshore overhead lines, underground cables and offshore cables. The technical considerations that informed the selection of the Bramford to Twinstead strategic proposal remain relevant, and this project remains the most effective way to satisfy the initial need in the East Anglia area"* (para1.3.6), and
- *"There have been no changes identified to the relevant technical or cost considerations that suggest that the outcome of the SOR 2011 does not remain valid on technical grounds. Similarly, no project decisions (including confirmation of additional sections of underground cables) taken since 2011 have changed the assumptions on which the strategic option was chosen"* (para 1.3.7).

2.4 We have endeavoured to verify these assumptions with TS Conductor (TSC) but it has yet to respond beyond acknowledging our communication.

2.5 We have no knowledge of the company's capacity or plans for production of this conductor, but it would not be unreasonable to assume that sufficient conductor for the purposes of B2T could be produced and delivered within 4-5 years, perhaps sooner. Since National Grid is a shareholder/investor in TSC, this would be reasonable timescale for establishing a production facility in UK if the conductor cannot be provided earlier from the US.

2.6 In summary, we urge the ExA to require the Applicant to provide detailed reasons to the relevant authorities and to the public as to why this technology should not be immediately adopted.