SPR EA1 N AND SPR EA 2 FOR DEADLINE 5

Alde and Ore Association- the following covers the points made at the **ISH 4 on 19 January 2021**:
points for which the opportunity did not arise to say are shown in italics.

(I hope this is helpful as sometimes the oral automatic text loses words)

In this Issue Special Hearing which includes examining the proposed landfall, the Association's concerns relate to the integrity of the Suffolk Heritage Coast which has evolved over millennia. Any damage to the cliffs could impact on the longshore coastal evolution of the entire coast. Briefly, the coast has seen in the north, Dunwich losing its port in the Middle Ages and falling into the sea with further south Aldeburgh town losing 2-3 streets 3 centuries ago but the Alde and Ore Estuary being formed by the growth of the uniquely long Orfordness shingle spit, mostly between 1200 and 1600, but thinning now. Such longshore processes could be dramatically changed by manmade changes further north.

The Applicant has chosen around a kilometre of coast as the site for the landfall of the offshore cables. The reasoning behind this is that it is essential to meet the need to avoid constructions in the sea related to the Sizewell power stations and a concern for not disturbing the seabed rock of coralline crag which is a strong influence of coastal transport and sediment flows. *The selected landfall site is simply what is left on that stretch of coast where the cables might come in, with no reference to its suitability.* But the whole cliff on this coastal stretch is really nothing more than a slightly hardened sand dune *and is at one of the coast's most visibly obviously fragile points*.

The Applicant's papers go into considerable detail about the coastal processes and marine geology but apart from a reference in Chapter 4 of the Environmental Statement to Thorpeness being an area with high cliff instability, the plans had little mention of the exact nature of the cliffs, until questions were posed by the Examining Authority and others.

This may be the result of all the work so far being desk studies**.** The problem in this area is that a lot of on-the- ground research work has been done but mostly in relation to the immediate area of land and sea surrounding the Sizewell developments - *both at sea, but even there it is still far from complete focussing on the limited environs of the Great Sizewell Bay, and the land abutting the coast on which Sizewell A and B sits and Sizewell C could be built.* There is relatively little desk study material on the nature of the land forming the coast between Sizewell and Thorpeness.

<u>What does this cliff land bordering the sea consist of?</u> It is an area of very confused and broken sedimentary layers, reflecting the coming and going of the sea in geological times on the edges of a marine basin, complicated further by some uplift. On the top is a modest layer of glacial till and sand and gravel. This overlies what is called the Norwich Crag Formation. Crag is a 19th century term which misleadingly suggests it might be a solid rock formation, like limestone, but it is the name given to a deposit of fossil shells and any shelly sand or gravel - here it is in fact a mix of yellow and brown sand bands with occasional clay bands. It has no strength against a crashing surge sea as is evident from its collapse in 2017 after a series of storms which sadly killed someone, with some 20 feet of the cliff from inland to its edge slumping down in an instant with no warning. Below the Norwich Crag in places is some Red Crag, *often little more than a mix of coarser gravel and sand*. In places the Norwich Crag then lies, in unconformity, on the Coralline Crag- this is a harder material, partially indurated (BGS*)-but is not that robust as is evident on the ground as it is easy to pick up smalls slabs on the beach. It does indeed affect sea flows but is also quite brittle.*

<u>Comments on Horizontal Direct Drilling</u>. Landfall is proposed through this slightly hardened sand dune area of mainly sand and gravel layers, using horizontal direct drilling. The plan for the HDD cores to come up at 85m inland is understandable: the coast is moving inland by an average of 0.1m a year, *but the actual*

amount varies considerably and in recent years visual observation suggest the rate has been much faster. Whether the distance inland is far enough is not the issue. The issue is can this soft ground structure withstand the tunnelling of a series of ducts through it, the volume of ground to be extracted from the tunnels, the impact of tunnelling and the time taken.

Documents differ as to the number of cables and ducts expected but the original ES 4.1 provided for 4 ducts for each of the two EA windfarms for *the export and fibre optic cables plus two Distributed Temperature Sensing cables. There is no information on how much material underground will have to be extracted but each cable will need a duct 50 % larger than its size*. **The cables will involve a substantial removal of the friable sediments**.

The Applicant undertakes that HDD methods will be adapted for the local area, using data yet to be collected by making boreholes. Provision for monitoring and managing vibration is to be made, *as it will occur in the drilling/reaming process or pulling cables through the ducts.* But the drilling operations will take a long time, sometimes in continuous 24 hour working periods and spread over two years. Given the non-rock like composition of the land, even modest or small vibration, *let alone remote but possible bentonite mud problems*, over a long period is likely weaken the natural loosely packed ground.

If the area is de-compacted and loosened in this way, the advance inland of the sea may not be an average of 0 .1 m pa, but could be accelerated as landslips will occur very easily when the shore is attacked and shuddered by waves on top of the not infrequent winter surges.

Given the highly variable nature of the Crag Formation, it cannot be assumed*, as the Applicant appears to,* that the HDD that worked for the onshore cables of the Galloper/Gabbard project will work here and furthermore, greater depth and length of drilling are envisaged.

The concern is that scale of the operations on this fragile area is such that there could be a dramatic change in the coast and alongshore flows.

At the Hearing in December the Applicant's expert explained that there were studies still to be made of the land soil structure to judge how the operations would be planned and these would take a good number of months, beyond the date when the examination has to be completed. But evidence that no substantial harm will occur is not available yet and it appears that it will not be before the end of the Examination.

The impression has been given that HDD is the simple solution to a land fall which can be managed. But given the nature of the land forming the cliffs, interference with its very composition could lead to a huge step change in the rate of erosion, with dramatic changes to the coast shape and coastal flows for which Thorpeness and the areas to the south will have no time to adjust. There is no way, once lost, that cliff line can be restored.

Cumulative impact: On top of that, as has been pointed out by others, is the likely cumulative impact as that there are some 7 other wind farm projects with plans to come in on the back of EA One North and EA Two. How many more ducts to be tunnelled under and up into the cliff? *Note: the additional wind farm projects which appear to have been directed to follow the ScottishPowerRenewables projects have been listed by many interested parties including Councillor Marianne Fellowes in her submission of 6 November 2021.*

These fears could be dismissed as not proven. But the respected company, Mott MacDonald, said in a report of December 2014 on coastal management strategy that Thorpeness is located in a zone of relatively high wave energy. An improved understanding between the features is required. *Given the incomplete understanding of the coastal processes great care must be exercised for coastal management strategy. Understanding of local coastal processes is not yet well enough established to inform coastal defence designs.*

Paragraphs 111-113 of the Applicant's Environmental Statement, Appendix4.6, indicate that more detailed geophysical survey data would be collected in the cable corridor April /May 2018 to inform HDD onshore (and offshore) constraints but any results seem not to be in the Planning Application papers. Further, there appears to be no answer to the question posed by Natural England asking whether HDD is possible at this location.

To conclude, the Applicant's documents state clearly that the projects ''will not result in any direct or physical changes to the coastal cliffs''- it seems open to question that that is a sustainable conclusion.

References

Mott MacDonald: Shoreline Management Plan: Thorpeness Coastal Erosion Appraisal, Final Report December 2014

Descriptions of Norwich and Red Crag: Suffolk Coast and Heaths, Suffolk geological society- GeoSuffolk, various documents related to Sizewell C planning applications.

Further wind farm developments which may come onshore following EA1N and EA2 – listed by Councillor Fellowes, 6 November 2020

British Geological Survey documents for the area.

Applicant's documents

Alison Andrews

Chairman of the Alde and Association

3 February 2021