From:	[redacted]
To:	East Anglia ONE North; East Anglia Two
Subject:	Deadline 7 Written Representation. Comments on The Applicants' Deadline 6 Landfall Hydrogeological Risk Assessment (REP6-021)^.pdf
Date:	04 March 2021 17:51:08
Attachments:	Deadline 7 Written Representation. Comments on The Applicants' Deadline 6 Hydrogeological Risk Assessment (REP6-021)^.pdf

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To the Examining Authority and team,

Please find attached in pdf form my Deadline 7 Written Representation, Comments on The Applicants' Deadline 6 Landfall Hydrogeological Risk Assesment.

There are images to accompany this WR which I will send separately, namely:

1. Map, Conceptual Geological Profile, Figure 1 of Landfall Hydrogeological Risk Assessment (REP6-021) with potential additional boreholes near Ness House marked A and B in black by me.
2. Photograph of potential additional borehole near Ness House (A).
3. Photograph of potential additional borehole near Ness House (A, detail)
4. Photograph of potential additional borehole near Ness House (B).

Please also note that In view of the limited time for response between the publication of documents submitted at Deadline 6, and the opportunity to respond at Deadline 7 , I would like to reserve the right to comment on other material submitted at Deadline 6 at Deadline 8.

With thanks,

Kind Regards,

Tessa Wojtczak.

[redacted]

To the Planning Inspectorate. **4 March 2021. Deadline 7.**

Unique PINS Reference Numbers: EA1N IP: 20024031/AFP 132.
EA2. IP: 20024032/ AFP0134.

These remarks are made in relation to both East Anglia One North and East Anglia Two.

Deadline 7 Written Representation.
Comments on The Applicants Deadline 6 Landfall Hydrogeological Risk Assessment(REP6-021).
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Introduction.

1. Scope of Risk Assessment.
2. The Coralline Crag.
3. Risks posed during construction.
4. Boreholes.
5. Water supply at Ness House and Wardens.

Figures 1-3 (submitted separately.)

1. Map, Conceptual Geological Profile, showing two potential additional boreholes.
2. Photograph of potential additional borehole near Ness House (A).
3. Photograph of potential additional borehole near Ness House (B).
4. Photograph of potential additional borehole near Ness House (B2).

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Introduction.

In the Introduction to the Landfall Hydrogeological Risk Assessment (REP6-021), the Applicants refer, at 1.1.4 and 2.1.9, to my Deadline 1 submission (REP1-377). I'd also like to draw their attention to remarks made in my Deadline 2 submission, Comments on Written Responses at Deadline 1 (REP2-155) , and in my Deadline 3 submission (REP3- 168) in relation to the aquifer, to which I will refer in this written representation.

At 1.1.5, The Applicant states the purpose of this Risk Assessment:

"in particular, consideration is given to HDD and its potential impact on the underlying aquifer, local hydrogeology and private water supplies to five properties [redacted] *north of the likely location of the bores".* (Please note that livestock is also dependent on the water supply at the site, as has been made clear in many earlier representations).

Within the Risk Assessment, The Applicant confines remarks to the potential for harmful effects of HDD on the aquifer, and only on construction work specifically at the Landfall Location. I believe the risks assessed should cover wider aspects of construction and terrain where work is likely to interact with the aquifer. These interactions are not likely to be confined to Landfall, and may not be caused exclusively by HDD.

1. I believe that there may be risk of toxicity to the aquifer from Non Road Mobile Machinery at the HDD site discussed in ISH 4, Onshore Environment Construction Transport and Operational Effects. Furthermore, given the likely duration of works, (Landfall HDD works would have a duration of approximately up to 20 months, with a further 36 months for each project), consider the potential effects upon the aquifer of the operations of mechanical excavators, drill rigs, pumps, generators, office containers, welfare containers, transition bays, construction consolidation sites, lay-down, and all the machinery required to service the construction of the cable corridor across the entire area where groundwater drains into the water table which feeds the aquifer.

2. Concerns about toxicity arising from haul road construction and vehicle movement have been expressed by East Suffolk Council. (Draft SoCG ESC and SCC LA 02.15)

3. Richard Reeves, Dr. Alexander Gimson for Wardens Trust and I have made clear that the extent of the aquifer is such that risk is posed by Work undertaken along the Cable Corridor route and not only at Landfall. This is not addressed in the Risk Assessment.

4. What is the exact geographical definition of Landfall as described in this document ? It is not clear exactly how much land is being referred to here. To the many who are familiar with the locale, and those who live within it, it would be useful to know precisely what land the Applicant means to denote in using this term.

1. Scope of Risk Assessment.

In my Deadline 3 Submission, (REP3-168) at Point 1, I address the Applicants Comments on Written Representations Volume 4 Land Interests ExAWR-4.D2.V1. (with reference to ExAQ1.7.17). (REP2-018).

In response to concerns raised about the aquifer on behalf of Elspeth Gimson, and by Christopher and Wendy Orme and Richard Reeves, the Applicant responds:

" with regard to the aquifer……..as outlined in the Draft Statement of Common Ground with the Environment Agency agency (REP 1–077), the applicants have committed to undertake a hydrological risk assessment for works that require excavations below 1 m within 250 m of boreholes or springs.

In The Draft Statement of Common Ground referred to, at EA109, (Wording of Requirements) , with reference to a " written scheme to mitigate the potential for release of contaminants," the Applicants agree that an updated CoCP will include:

" a commitment to undertake a hydrogeological risk assessment for works that could cause changes for aquifer flow or affect aquifer quality within 500m of groundwater dependant ecological sites…. "A screening exercise will be undertaken (utilising desk- based information such as BGS borehole records, solid and superficial geological mapping and OS mapping, site citations, Natural England's Priority Habitats Inventory and Phase 1 Habitat survey data where available) ,to determine whether or not ecological sites have features/ habitats that are likely to be groundwater fed. Where features/ habitats that are likely to be groundwater fed are within 500 m of works that require excavations below 1m, a hydrogeological Risk Assessment will be undertaken."

The underlining here is mine.

To my understanding, the undertakings made in the Draft Statement of Common Ground are entirely relevant to the question of potential contamination of the aquifer and should be included in this Hydrogeological Risk Assessment. The Risk Assessment before us does not address any of these issues. It does not address changes caused to aquifer flow, which would be significant for the water supply to Wardens, or groundwater contamination. To that extent it does not adequately answer the question of potential risk to the wider aquifer underlying the construction site.

2. The Coralline Crag.

It has been my understanding that throughout this Examination, in response to representations outlining the sensitivity and significance of the Coralline Crag, the Applicants have undertaken to avoid the Crag when undertaking HDD.

In the Outline Landfall Construction Method Statement, at 1.3.12, "Rationale for use of HDD at Landfall", one of the reasons given is to *avoid direct physical disruption to the outcrop of Coralline Crag.*

However, at 3.15 of the Risk Assessment, The Applicant states:
"The HDD is expected to be within the Coralline Crag beneath the cliffs, and the strength of the Coralline Crag is expected to prevent any drilling fluid breaking out at this point." (my underlining).

This appears to contradict undertakings made elsewhere by SPR.

At ISH 4, Session 2, at around 35.03, SPR stated that HDD would be taking place under the Coralline Crag, and that they would be moving south to avoid the Coralline Crag.

At 39.46 Caroline Jones queried, *you do rely on HDD to avoid the Coralline Crag?*

At 1.40, Nick Cooper for SPR confirms that HDD *enables the Coralline Crag to be avoided.*

At 1.08.10, Ms Abraham's for EDF requests that:
Protection afforded to the site offshore by the Coralline Crag between Sizewell and Thorpeness should not be compromised……..to ensure the continued safe operation of the Sizewell B Power Station.

This is picked up again by Paul Paterson of ESC. at 1.15.22, where he seeks to clarify that EDF are *seeking an agreement from SPR that the Punch Out will be 100m away from the Coralline Crag.*

At that same session of ISH 4, Alison Andrews for the Alde and Ore Association drew attention to the fact that the Crag is not a solid rock formation, but:
A name given to a deposit of fossil shells and any Shelly sand or gravel (with) *no strength against the crashing sea.*

This same feature is now being presented as a robust, " strong" structure that will be utilised in preventing polluting drilling fluid from escaping.

It may be a failure in my understanding of the terms used in this Risk Assessment, but the nature of the direct interaction with the Crag that is described within the document does not seem consistent with these undertakings.

3. **Risks posed during construction.**

At 5.41 The Applicant states:
No pollutant linkages have been identified for the projects during their operational phase. As such, there is not considered to be a risk to Groundwater during the operation of the Landfall.

Again, my concerns are not limited to the operational but also the construction phase, in respect of cable laying, high volumes of traffic, foul and other waste and chemical contamination.

There is still no clear idea, with EA1 and EA2 potentially being constructed sequentially, how long these repeated periods of construction will be. In addition, the other energy projects, including Nautilus, which we believe are likely to engage with the coast at the same point, will potentially extend these periods of construction and their effects on the aquifer for an indefinite period of time. This is why we believe that the " foot in the door" effect of these projects should they obtain consent is so significant.

At 5. 45 to 5.49 The Applicant outlines risks and " inevitable " losses of drilling fluid to the surrounding ground.

At 5.48 – 5.49 it states:
" The HDD is likely to be within the Coralline Crag from 110m until 1300m of the drilling distance. ***The Crag is expected to provide ideal conditions for HDD….***

*… Previous studies for the area note the presence of vertical joints within the coralline Crag. Some of the fractures appear to have remained open. These will not pose a problem for bore stability, being vertically oriented, but there might be temporary fluid losses as the drilling bit passes through them.****When then it has passed, the drilling fluid in the fractures will gel to seal the fractures. If persistent losses occur there is a wide range of stop- loss materials that can be added to the drilling fluid or seal the fractures*** *.* (My emphases).

Here we seem to have made a definitive move from an understanding of the Coralline Crag as a sensitive and fragile receptor to be protected and avoided, to one in which the Crag itself becomes a useful part of the engineering process, absorbing escaping fluids, whose existing fractures will usefully be mended with the application of additional chemical materials within the drilling fluids.

Again, in earlier submissions put to the ExA, emphasis has been laid upon the importance of the stability of the Coralline Crag, not only for ecological reasons but in safety considerations around Sizewell B and C, as referenced above.

How can it be certain that the utilitarian and invasive procedures as described in the Risk Assessment will not have a detrimental effect on the structure and operation of the Crag?

Further, could the " previous studies " referred to above be identified?

Moving on Table 5.2, "Hydrological" Risk Assessment, I note that only one Risk is rated **High;** the significant one of *"Fuel or oil spills from machinery on site" .*

Within the terms of the Risk Assessment, **High** Risk, according to Table 5.1, constitutes the following:

1. *Contaminants very likely to represent an unacceptable risk to identified receptors.*

2. *Site probably not suitable for current/future use*

3. *Enforcement action possible.*

4. *Urgent action required.*

These are clearly crucial topics within this Examination. However, after proposed mitigation this **High** risk is reduced to **Negligible.**

The mitigation proposed is:

1. *No refuelling in or in close proximity to Landfall site*.

What is " *close proximity* ? And what exactly is meant by the Landfall site? Should distances not be specified? Where then will refuelling take place? Is it likely to be moved closer to Ness House and other dwellings? I'd ask that certainty is given that it will not. And is there not a risk to Groundwater wherever refuelling takes place? Are vehicles to be deployed in this process, causing further pollutants? This seems a vague solution to a risk assessed by the Applicant themselves as High.

2. *No storage of any potentially contaminative materials in or close Landfall site(* sic).

Again, please define " *close proximity ".*Where then are potentially contaminative materials to be stored? Again, will the Applicant undertake that they will not then be brought into closer proximity to Ness House, the dwellings, and Wardens? And is there not an equal potential risk to the Aquifer wherever they may be stored?

3. *No welfare facilities in or in close proximity to Landfall sites.*

Again, what is "*close proximity "*? Is this realistic? Where are welfare facilities to be? I'd ask for a clear undertaking that all these measures taken to remove aspects of construction from the Landfall doesn't simply result in them being brought closer to Wardens and the dwellings.

A **medium** risk of contaminated surface water is identified in Table 5.2, caused by over-pumping in the area of the entry pits. The mitigation proposed to reduce this risk to **negligible** is " *no discharge to ground of any over- pumped water" .*

How is this water to be disposed of? It is not clear.

All of these measures suggest a great deal of unnecessary additional movement of machinery, vehicles and personnel, this increasing the ecological, noise and environmental damage and health risks of the construction work at this site. With the inevitable time pressure on contractors, I'd question the enforceability of these key proposals throughout construction. How is it proposed that they will be enforced? If these measures are deemed acceptable by the Panel, should they not be formalised in the CoCP or where appropriate, and subject to monitoring by an independent body?

I believe that in addressing concerns that have been raised about danger to the aquifer posed by construction here merely in relation to HDD at the Landfall site, the Risk Assessment is offering inadequate mitigation to only a part of the problem.

4. Boreholes.

At 4.1.22 The Applicant refers to existing BGS boreholes surrounding the Landfall. According to Figure 1 Appendix 1, two boreholes feature in varying proximity to Ness House. One of the boreholes marked TM46SE39 is 502 metres from Ness House Cottage (not Ness House, as identified on the map).

This is a much shorter distance than the 750 metres suggested at 3.10:

The Landfall HDD bores are likely to be located north of Thorpeness (approximately 750 metres south of the Wardens Trust site) ,

and at 4. 4.36, which cites the same distance of 750 metres. The greater distance has no less significance for potential contamination. In fact TM46SE39 is only 2 metres in excess of the undertaking made in the Draft Statement of Common Ground with the EA (Rep1-077) (EA109):

"*A commitment to undertake a hydrogeological risk assessment for works that could cause changes to aquifer flow or affect aquifer quality within 500m of Groundwater dependent sites"*

At 4.2.30, The App states
It is understood that the Ness House well is located in a locked building within the bounds of the property over 400 m north of the likely location of the HDD bores.

I think the assessment of a 400 metre distance of the well from the likely location of the HDD bores that the Applicants supply at 4.2.30, is particularly significant in relation to the undertaking made in the Draft Statement of Common Ground with the Environmental Agency (Rep1-077) as referenced above.

Given the disparity in these three sets of figures, 502, 750, and 400 metre distances and the fact that they all connect with the same aquifer, I'm not able to understand their significance within this Risk Assessment.

I note also that at 3.10, the Applicant makes it clear that throughout this assessment, we are only considering the " likely " location of boreholes; which implies that, should locations change, the figures given here will have no relevance.

I believe that there may be two additional boreholes in close proximity to Ness House and Wardens which do not appear on the map at Figure 1 of the Risk Assessment. I have indicated the locations on the same map and attached photos to aid identification in a separate WR at this Deadline 7. Their presence emphasises the significant and constant use to which the water supply here is put.

If these are indeed boreholes, why have they not been marked? Given that they are directly adjacent to land sought for cable corridor construction, and in much closer proximity to Ness House, can the Applicant guarantee that there will be no significant interaction with them creating greater risk?

5. Water supply at Ness House and Wardens.

At 6.55 The Applicants:

Propose to implement a water quality and levels monitoring regime at the Ness House well, and a temporary portable water supply tied into the well will be provided for the duration of the HDD activities.

The Panel have seen the location of the well, which is situated within an old courtyard comprising part of one of the private residences [redacted]. Bearing in mind that location, the extent of water required for a busy community resource, the possible duration of the HDD work over the two projects, and Dr Gimson's specific stipulation that bowsers should not be put forward as an alternative, I ask the Panel to recognise that this is not suitable or adequate mitigation.

END.