



SCOTTISHPOWER  
RENEWABLES

# East Anglia ONE North and East Anglia TWO Offshore Windfarms

## Applicants' Comments on Environment Agency Deadline 11 Submissions

Applicant: East Anglia TWO and East Anglia ONE North Limited

Document Reference: ExA.AS-17.D12.V1

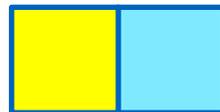
SPR Reference: EA1N\_EA2-DWF-ENV-REP-IBR-001117

Date: 28<sup>th</sup> June 2021

Revision: Version 01

Author: Royal HaskoningDHV

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

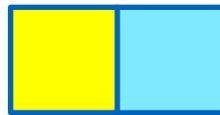


### Revision Summary

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

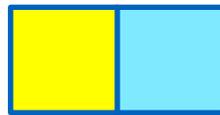
### Description of Revisions

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



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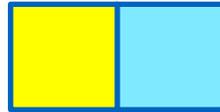
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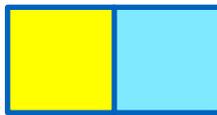
## Glossary of Acronyms

CoCP	Code of Construction Practice
DCO	Development Consent Order
dDCO	Draft Development Consent Order
ExA	Examination Authority
HDD	Horizontal Directional Drilling
OCoCP	Outline Code of Construction Practice
PD	Procedural Decision



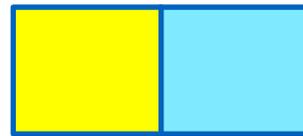
## Glossary of Terminology

Applicant	East Anglia TWO Limited / East Anglia ONE North Limited
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.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.



# 1 Introduction

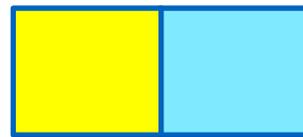
1. This document presents the Applicants' comments on Environment Agency's Deadline 11 submissions -Post hearing submissions including written submissions of oral case (REP11-112).
2. This document is applicable to both the East Anglia TWO and East Anglia ONE North Development Consent Order (DCO) applications, 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 23<sup>rd</sup> 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.



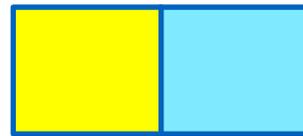
## 2 Comments on Environment Agency's Submission

### 2.1 Applicants' Comments of the Environmental Agency's Post Hearing Submission Including Written Submissions of Oral Case (REP11-112)

ID	Environment Agency's Comment	Applicants' Comments
<b>Landfall Hydrogeological Risk Assessment</b>		
1	<p>We are aware of the continuing correspondence in respect of the previously submitted Landfall Hydrogeological Risk Assessment (REP6-021), and concerns raised regarding the potential for impacts on groundwater and abstractors. This has included further comments submitted at Deadline 10, and responses from the Applicant at Deadline 10 to submissions made at Deadline 9.</p> <p>We also note Examining Authorities' written questions issued 20 May 2021, and specifically questions ExQ3.7.1 &amp; ExQ3.7.2 addressed to the Applicant in relation to this matter.</p>	No further comment.
2	<p>We felt that it may therefore assist the Examination if we were to assess and provide comment on the submitted Landfall Hydrogeological Risk Assessment (HRA) for the Horizontal Directional Drilling (HDD) activities proposed at the landfall location.</p> <p>The comments below initially address the potential for wider effects on the aquifer and also consider the abstraction at Ness House. Whilst we have no objection to the work completed to date, further study and explanation regarding protection of water supplies will be required prior to the commencement of construction. We note that additional detail is proposed to be submitted by the Applicant</p>	Noted.



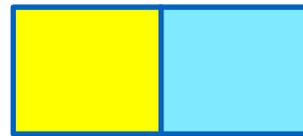
ID	Environment Agency's Comment	Applicants' Comments
	<p>following further ground investigations, prior to construction activities commencing.</p>	
3	<p>Horizontal Directional Drilling (HDD) is a fairly widely used technique, and may be proposed to avoid disruption to surface water features or designated ecological sites.</p> <p>The HRA proposes the use of environmentally friendly drilling fluids and stop-loss additives during the HDD operation. This means that there should not be any significant adverse water quality impacts.</p> <p>The proposed monitoring of the drilling fluid and use of stop-loss additives will seal the HDD bore where necessary. This should preclude significant losses of groundwater from the aquifer to the borehole; such losses would be confined to the period between drilling and sealing.</p>	<p>The Applicants welcome the Environment Agency's confirmation that there should not be any significant adverse water quality impacts as a result of the horizontal directional drilling (HDD) operation and significant losses of groundwater from the aquifer to the borehole should be precluded.</p>
4	<p>Prior to the commencement of the works, the Applicant will need to provide further information on how sea water entry will be precluded and to indicate whether the inflow of saline water would in any way reduce the capacity to seal the HDD bore. It would also be useful for the Applicant to provide an assessment of the impact on the aquifer should saline water enter the bore and move into the surrounding aquifer. Given that the bore will not be pumped the impact of any saline intrusion should be minimal and localised.</p>	<p>The Applicants welcome the Environment Agency's confirmation that the impact of any saline intrusion should be minimal and localised.</p> <p>As noted in <b>Landfall Hydrogeological Risk Assessment</b> (REP6-021), and by the Applicants in various other submissions to the Examinations, a tiered approach has been taken to assessing potential hydrogeological risks posed by the landfall works. REP6-021 present a Tier 1 assessment using the available desk study information. Such an assessment is sufficient to provide a robust appraisal of potential risks, noting that no potential impact pathways have been identified and as such the proposed activities are considered to be low risk.</p> <p>The Applicants will revisit and refine the risk assessment post consent as part of the HDD detailed design process. This will inform the final Landfall Construction Method Statement which must be approved by the relevant planning authority before construction of the landfall can commence. The Applicants will consult</p>



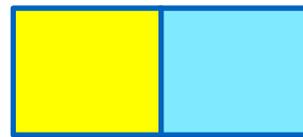
ID	Environment Agency's Comment	Applicants' Comments
		the Environment Agency during the preparation of the final Landfall Construction Method Statement.
5	<p>The potential for the HDD bore to affect groundwater flow within the sand &amp; gravel or Crag aquifer will be highly localised. This is due to a number of factors:</p> <ul style="list-style-type: none"> <li>• The constructed bore will only form a barrier to flow immediately around it. The size of the barrier will be limited to the bore itself plus any areas around it where drilling fluids and stop-loss additives plug the aquifer along its length. These sealed areas should not be significant.</li> <li>• There will be no barrier to flow above or below the HDD bore such that flow in the aquifer will not be affected throughout its entire thickness. The Applicant should assess what proportion of the local saturated aquifer depth the HDD bore diameter will comprise, providing details of the dimensions of the HDD bore along with the depth along the route, and compare these with the depth of the Ness house well and the horizons from which it draws water (see later point on expanded HRA).</li> <li>• The direction of groundwater flow within the shallow sand &amp; gravel and Crag aquifers is likely to be controlled by the topography such that it is likely to be from west to east in the area of the Ness House well. Given the distance from the Ness House well, any barrier caused by the HDD bore should not have any significant adverse impact.</li> <li>• While it is possible that the HDD bore will act as preferential flow pathway, this will be a localised effect and</li> </ul>	The Applicants welcome the Environment Agency's confirmation that the potential for the HDD bore to affect groundwater flow within the sand and gravel or Crag aquifer will be highly localised.



ID	Environment Agency's Comment	Applicants' Comments
	<p>will not exert a significant influence on the direction or rate of groundwater flow in the wider aquifer. Furthermore, if the HDD bore is orientated east-west it will have no potential to influence groundwater flow to the north or south of it in terms of either a barrier or a preferential pathway.</p>	
6	<p>The HRA should be refreshed and expanded prior to the commencement of construction. At present it focuses on the HDD works, but it would be useful to look more directly at the potential for impacts at the Ness House well. This would involve including an assessment of the area from which the well draws water, which can then be compared with the distance to the HDD bore and its depth. Given that the Ness House well is unlicensed, the owner(s) may only pump a maximum of 20 m<sup>3</sup>/day. This is a very low rate, being taken from a granular aquifer with high storage, albeit with a low saturated thickness (based on the information provided in the public representations). The fact that the saturated thickness is low does not necessarily make the well any more vulnerable: if the supply is resistant to natural extremes of groundwater level such as drought then that implies that it is robust; this is as would be expected given that it is located towards the discharge area of the aquifer. Groundwater abstractions from granular aquifers with high storage typically draw water from a very localised area; at the very low abstraction rate the area of drawdown on pumping is likely to be within 1- 200 m, and may be significantly less. Therefore no changes to groundwater flow in the area from which the water supply is taken would be expected due to the HDD drilling at a minimum distance of 400 m away. We would recommend that the applicant substantiates this overview assessment with available data from the literature and local logs and the use of appropriate</p>	<p>With excavations along the cable route typically being 1.2m, and with a suite of pollution prevention measures being implemented on-site during construction to prevent such events as the spillage of fuels or chemicals, the Applicants consider it highly unlikely that installation of the onshore cables will adversely impact local hydrogeology and groundwater in the vicinity of Ness House well.</p> <p>However, as noted within the <b>Outline Code of Construction Practice (OCocP)</b> (document reference 8.1), the Applicants will undertake hydrogeological risk assessments for all works that require excavations greater than 1m depth within 250m of boreholes and springs (e.g. the Ness House well). The Environment Agency will be consulted on the findings of all hydrogeological risk assessments undertaken prior to the relevant works commencing.</p> <p>As noted by the Environment Agency, the appropriate time for the expansion of the hydrogeological risk assessments is prior to the commencement of construction.</p> <p>The Applicants note the Environment Agency's comment that groundwater abstractions from granular aquifers (such as that at Ness House) with high storage typically draw water from a very localised area; at the very low abstraction rate the area of drawdown on pumping is likely to be within 1 – 200m, and may be significantly less, therefore no changes to groundwater flow in the area from which the water supply is taken would be expected due to the HDD activities.</p>



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	groundwater flow equations. A more detailed description of the physical characteristics of the Red Crag and Coralline Crag (with references) may also help allay the concerns of the local residents in due course.	
7	Regarding the potential for land contamination to be present across the landfall site; historically, old pits were often filled with waste from communities and/builders etc. before regulations on landfill existed. This means that there were no controls on what was put in them and typically no records. As a result sometimes such infilled pits have been found to contain polluting materials. It is therefore precautionary for the Applicant to assess infilled pits as potentially containing contaminated waste in order to avoid increasing pollutant transport. This is the approach we would require to be protective of water resources.	The Applicants note the Environment Agency's comments and confirm such sites will be accounted for during pre-construction investigations (see <b>Section 6</b> of the <b>OCoCP</b> (document reference 8.1)) and in detailed design of the HDD.
8	As highlighted above, further work is required in due course to inform the detailed design, and we are satisfied that we will have the opportunity to review this when it comes forward. The Outline Landfall Construction Method Statement (REP08-054) confirms that we are to be consulted during the preparation of the final Landfall Construction Method Statement. The Outline Code of Construction Practice (REP8- 018) confirms that we will be consulted on the findings of all HRAs undertaken, prior to the relevant works commencing.	The Applicants welcome the Environment Agency's confirmation that it is satisfied that it will have the opportunity to review the detailed design through the process of finalising the Landfall Construction Method Statement and the CoCP.
<b>The Examining Authorities' Commentaries on the draft Development Consent Orders (dDCO)</b>		
9	<p><b>Arts 16 - Discharge of water</b></p> <p>Suffolk County Council (SCC) as lead local flood authority was not content with these provisions as drafted. It sought the inclusion of a</p>	Noted.



ID	Environment Agency's Comment	Applicants' Comments
	<p>provision equivalent to Art 16(7) providing that land drainage consent under the Land Drainage Act 1991 for works to ordinary watercourses is not overridden. The Applicants have not adopted this proposed amendment.</p> <p>Art 16 in its current form uses well-established drafting (see for example the made Hornsea 2 DCO Art 15). It is an underlying principle of DCO drafting that as close to a unified consenting mechanism as possible should be provided. If consent under the Land Drainage Act 1991 is to be excepted from the general granting of consent under these provisions, then the consent provided by Art 16(1) to 'use any watercourse ... for the drainage of water in connection with ... the authorised project' is potentially circumscribed by the need for multiple individual consents and potentially becomes of quite limited application.</p> <ul style="list-style-type: none"> <li>a) SCC is asked to describe the specific concerns about works to ordinary watercourses that underlie its request to retain this consenting power?</li> <li>b) Are there any mechanisms other than the determination of individual applications under the Land Drainage Act 1991 for each instance of such works that could be used to ensure that the works are delivered appropriately?</li> <li>c) A general question about the appropriateness and timescale for a deemed consent provision has been raised above and should be addressed in relation to this provision.</li> </ul> <p><b>EA's Comments</b></p> <p>We can confirm that we have no further comments on Article 16.</p>	