



East Anglia ONE North and East Anglia TWO Offshore Windfarms

Applicants' Responses to Examining Authority's Written Questions

Appendix 7 Onshore Crossing Schedule

Applicants: East Anglia ONE North Limited and East Anglia TWO Limited

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Applicable to East Anglia ONE North and East Anglia TWO





Responses to ExA WQ1: Appendix 7 Onshore Crossing Schedule

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Annex 1: Onshore Crossing Schedule







Glossary of Acronyms

ES	Environmental Statement		
ExA	Examining Panel		
PRoW	Public Right of Way		
SPA	Special Proetction Area		
SSSI	Site of Special Scientifc Interest		





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.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.





1 Onshore Crossing Schedule

1.1 Introduction

- The purpose of this document is to provide a schedule of all obstacles within the onshore development area of the East Anglia TWO project and the East Anglia ONE North project ('the Projects') which may be crossed by the onshore cables. Sections 1.2 to 1.8 below describe the type of obstacle to be crossed and the proposed crossing method. It should be noted that the suitability of particularly crossing methods is subject to further review including ground and groundwater conditions (from ground investigation), as well as the depth and height of utilities above and below ground, land availability and other matters.
- 2. This schedule is accompanied by an onshore crossing schedule plan, provided in *Annex 1*, which displays the locations of the obstacles being crossed.
- 3. This document is applicable to both the East Anglia ONE North and East Anglia TWO 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) procedural decisions on document management of 23rd December 2019. Whilst for completeness of the record this document has been submitted to both Examinations, if it is read for one project submission there is no need to read it again for the other project.

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1.2 Woodland Crossings

4. This section details the woodland area which may be crossed by the onshore cables.

Table 1 Woodland to be Crossed

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
WL1	Sheet 3 (Figure 1c)	Woodland West of Aldeburgh Road	Open trench	The proximity of this Woodland to the Aldeburgh Road and to the Hundred River will necessitate a single crossing technique of these three features. Insufficient space exists in this area to accommodate a trenchless technique crossing given the proximity and alignment of residential properties. The Applicants have reduced the onshore cable route at this location from 32m to 16.1m and retained a buffer between the Order limits and the properties at Fitches Lane to the south.





1.3 Important Hedgerow Crossings

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Width of Crossing	Justification of Method
IH1	Sheet 2 (Figure 1b)	Intact Hedge - Species- Poor	Open trench	16.1m	An open trench technique is proposed as use of a trenchless technique, whilst avoiding direct impact to the hedgerow, would result in increased land take at either side of the hedgerow to accommodate an entry and exit pit, increased duration of time taken to complete the crossing and additional disturbance to the local environment. It is also noted that the temporary haul road would require to be routed through this hedgerow where a trenchless technique was adopted. All hedgerows will be reinstated post-construction.
IH2	Sheet 2 (Figure 1b)	Defunct Hedge - Species- Poor	Open trench	16.1m	As per IH1.
IH3	Sheet 2 (Figure 1b)	Hedge with Trees - Species-Poor	Open trench	16.1m	As per IH1.
IH4	Sheet 2 (Figure 1b)	Hedge with Trees - Species-Poor	Open trench	16.1m	As per IH1.
IH5	Sheet 2 (Figure 1b)	Intact Hedge - Species- Poor	Open trench	16.1m	As per IH1.







ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Width of Crossing	Justification of Method
IH6	Sheet 3 (Figure 1c)	Intact Hedge - Species- Poor	Open trench	16.1m	As per IH1.
IH7	Sheet 3 (Figure 1c)	Defunct Hedge - Species- Poor	Open trench	16.1m	As per IH1.
IH8	Sheet 3 (Figure 1c)	Hedge with Trees - Species-Poor	Open trench	16.1m	As per IH1.
IH9	Sheet 3 (Figure 1c)	Hedge with Trees - Species-Poor	Open trench	16.1m	As per IH1.
IH10	Sheet 4 (Figure 1d)	Defunct Hedge - Species- Poor	Open trench	16.1m	As per IH1.
IH11	Sheet 4 (Figure 1d)	Intact Hedge - Species- Poor	Open trench	16.1m	As per IH1.
IH12	Sheet 4 (Figure 1d)	Intact Hedge - Species- Poor	Open trench	16.1m	As per IH1.





1.4 Designated Sites

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
D1	Sheet 1 (Figure 1a)	Leiston - Aldeburgh Site of Special Scientific Interest (SSSI)	Trenchless	The environmental benefit of trenchless techniques at the landfall removes any possible interaction with the Sizewell Beach SSSI and reduces potential risks associated with coastal cliff erosion in the Thorpeness area. Trenchless techniques also allow for an offshore cable route to the south of the offshore Coralline Crag thereby avoiding impacts upon coastal processes.
D2 and D3	Sheet 2 (Figure 1b)	Leiston - Aldeburgh SSSI / Sandlings SPA	Open trench or trenchless	Both open trench and trenchless techniques are considered within the Environmental Statement (ES). An <i>Outline Special Protection Area (SPA) Crossing Method Statement</i> has been submitted to the Examinations at Deadline 1 (document reference ExA.AS-3.D1.V1) which sets out a range of mitigation measures associated with both crossing techniques. The Applicants preferred crossing technique is open trenching.
				An open trench crossing of the SPA/SSSI retains inherent benefits over the trenchless technique. The trenchless technique requires two additional laydown areas (entry and exit pit locations) in comparison to the open trench technique crossing; and works associated with the additional setup and decommissioning of the trenchless technique laydown areas (as well as the complexity of the technique) mean that the duration of the works for the trenchless technique to cross the SPA/SSSI significantly exceed the duration of the works than that required for the open trench technique.





1.5 River Crossings

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
RW1	Sheet 3 (Figure 1c)	Hundred River	Open trench	It is noted that due to the proximity of the Hundred River to the woodland west of Aldeburgh Road and to Aldeburgh Road itself it will be necessary to adopt a single crossing technique for these three features.
				The Applicants considered that there was insufficient lateral space and insufficient confidence in trenchless techniques at this location in order to include it as a viable means of crossing these obstacles.
				In all cases, trenchless crossing techniques would require specific plant and equipment deliveries and operation; additional work compounds and infrastructure; additional water supplies; additional waste generation and disposal; potentially caisson installation (depending on technique); and a considerably longer construction duration.
				Sufficient space and confidence exists however to accommodate a wet or dry open trench crossing of the Hundred River and adjacent obstacles, allowing a clear plan for the works (including diversion/over pumping of the Hundred River and environmental mitigation measures) to be clearly set out within the final Watercourse Crossing Method Statement which will submitted post consent (which requires approval from the relevant planning authority).
				Further information on the options considered will be presented within the <i>Outline Watercourse Crossing Method Statement</i> which will be submitted to Examination at Deadline 3.





1.6 Road Crossings

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
R1	Sheet 3 (Figure 1c)	B1353 (Thorpeness Road)	Open trench or trenchless	The Applicants' design basis for the crossing of roads is to use traffic signal control to reduce traffic down to one lane, allowing works to be undertaken on the closed lane. Once completed, open and closed lanes will be reversed allowing works to be undertaken on the newly closed lane. This process will be followed on the five public roads that the onshore cable route crosses. The Applicants therefore do not consider that trenchless techniques are necessary to cross these roads.
R2	Sheet 3 (Figure 1c)	B1122 Aldeburgh Road	Open trench or trenchless	As per R1.
R3	Sheet 4 (Figure 1d)	Sloe Lane	Open trench or trenchless	As per R1.
R4	Sheet 4 (Figure 1d)	B1069 Snape Road	Open trench or trenchless	As per R1.
R5	Sheet 4 (Figure 1d)	Grove Road	Open trench or trenchless	As per R1.





1.7 Public Rights of Way (PRoW) Crossings

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
PRoW1	Sheet 1 (Figure 1a)	E-106/033/0	Trenchless	By virtue of the Applicants selecting a trenchless technique at the landfall to bring the offshore export cables ashore, this PRoW is also crossed by the landfall trenchless technique works.
PRoW2	Sheet 1 (Figure 1a)	E-106/031/0	Trenchless	As per PRoW1.
PRoW3	Sheet 2 (Figure 1b)	E-106/025/0	Open trench	A temporary PRoW Diversion is proposed for a short period during construction and subsequent reinstatement. The PRoW will therefore be available at all times via either the temporary diversion or its original route.
PRoW4	Sheet 2 (Figure 1b)	E-363/026/0	Open trench	As per PRoW3.
PRoW5	Sheet 2 (Figure 1b)	E-363/026/0	Open trench or trenchless	The means of crossing the Sandlings SPA will dictate the means of crossing this PRoW. If open trench is adopted, a temporary PRoW Diversion will be proposed for a short period during construction and subsequent reinstatement. The PRoW will therefore be available at all times via the temporary diversion or its original route.
PRoW6	Sheet 2 (Figure 1b)	E-363/023/0	Open trench	As per PRoW3.
PRoW7	Sheet 2 (Figure 1b)	E-363/024/0	Open trench	As per PRoW3.
PRoW8	Sheet 2 (Figure 1b)	E-363/022/0	Open trench	As per PRoW3.
PRoW9	Sheet 2 (Figure 1b)	E-363/015/0	Open trench	As per PRoW3.







ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method	
PRoW10	Sheet 2 (Figure 1b)	E-363/014/0	Open trench	As per PRoW3.	
PRoW11	Sheet 3 (Figure 1c)	E-363/014/A	Open trench	As per PRoW3.	
PRoW12	Sheet 3 (Figure 1c)	E-106/065/0	Open trench	As per PRoW3.	
PRoW13	Sheet 3 (Figure 1c)	E-260/030/0	Open trench	As per PRoW3.	
PRoW14	Sheet 3 (Figure 1c)	E-260/007/0	Open trench	As per PRoW3.	
PRoW15	Sheet 3 (Figure 1c)	E-260/009/0	Open trench	As per PRoW3.	
PRoW16	Sheet 4 (Figure 1d)	E-354/036/0	Open trench	As this PRoW is affected by the onshore cable route and substation construction haul road, a temporary PRoW Diversion is proposed for the duration of the onshore construction works and subsequent reinstatement. The PRoW will therefore be available at all times via the temporary diversion or its original route.	
PRoW17	Sheet 4 (Figure 1d)	E-354/020/0	Open trench	As per PRoW3.	
PRoW18	Sheet 4 (Figure 1d)	E-354/003/0	Open trench	As per PRoW3.	
PRoW19	Sheet 4 (Figure 1d)	E-354/007/0	Open trench	A short section of this PRoW (by Grove Road) is affected by the onshore cable route and substation construction haul road. A temporary PRoW Diversion is proposed for the duration of the onshore construction works and subsequent reinstatement. The PRoW will therefore be available at all times via the temporary diversion or its original route	





1.8 Utility Crossings

ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method		
U1	Sheet 1 (Figure 1a)	BT Openreach	Trenchless	By virtue of the Applicants selecting a trenchless technique at the landfall to bring the offshore export cables ashore, this utility is also crossed by the landfall trenchless technique works.		
U2	Sheet 1 (Figure 1a)	Plancast [Interoute] (underground)	Open trench or trenchless	Depending on the final layout of the landfall transition bays and trenchless technique alignment which bring the offshore export cable ashore, this utility may be crossed by trenchless technique within Work Nos. 8 or 6. This utility will also be crossed by the onshore cables using open trench technique which is a conventional means of crossing such a utility. Subject to the detail design of the landfall works, this utility may also require diversion with the agreement of the utility owner.		
U3	Sheet 1 (Figure 1a)	UK Power Networks (Overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution.		
U4	Sheet 2 (Figure 1b)	UK Power Networks (Overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution.		
U5	Sheet 2 (Figure 1b)	Plancast [Interoute] (underground)	Open trench	Open trench to minimise land take requirements and vehicle movements.		
U6a	Sheet 2 (Figure 1b)	Cadent Gas (Above 7 bar and 2 bar) (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		







ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
U6b	Sheet 2 (Figure 1b)	National Grid Electricity Transmission (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution.
U7	Sheet 2 (Figure 1b)	Plancast [Interoute] (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U8	Sheet 2 (Figure 1b)	Cadent Gas Ltd (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U9	Sheet 2 (Figure 1b)	UK Power Networks (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U10a	Sheet 2 (Figure 1b)	Cadent Gas (Above 7 bar and 2 bar (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U10b	Sheet 2 (Figure 1b)	National Grid Electricity Transmission (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution.
U11	Sheet 2 (Figure 1b)	Plancast [Interoute] (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U12	Sheet 3 (Figure 1c)	BT Openreach (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.

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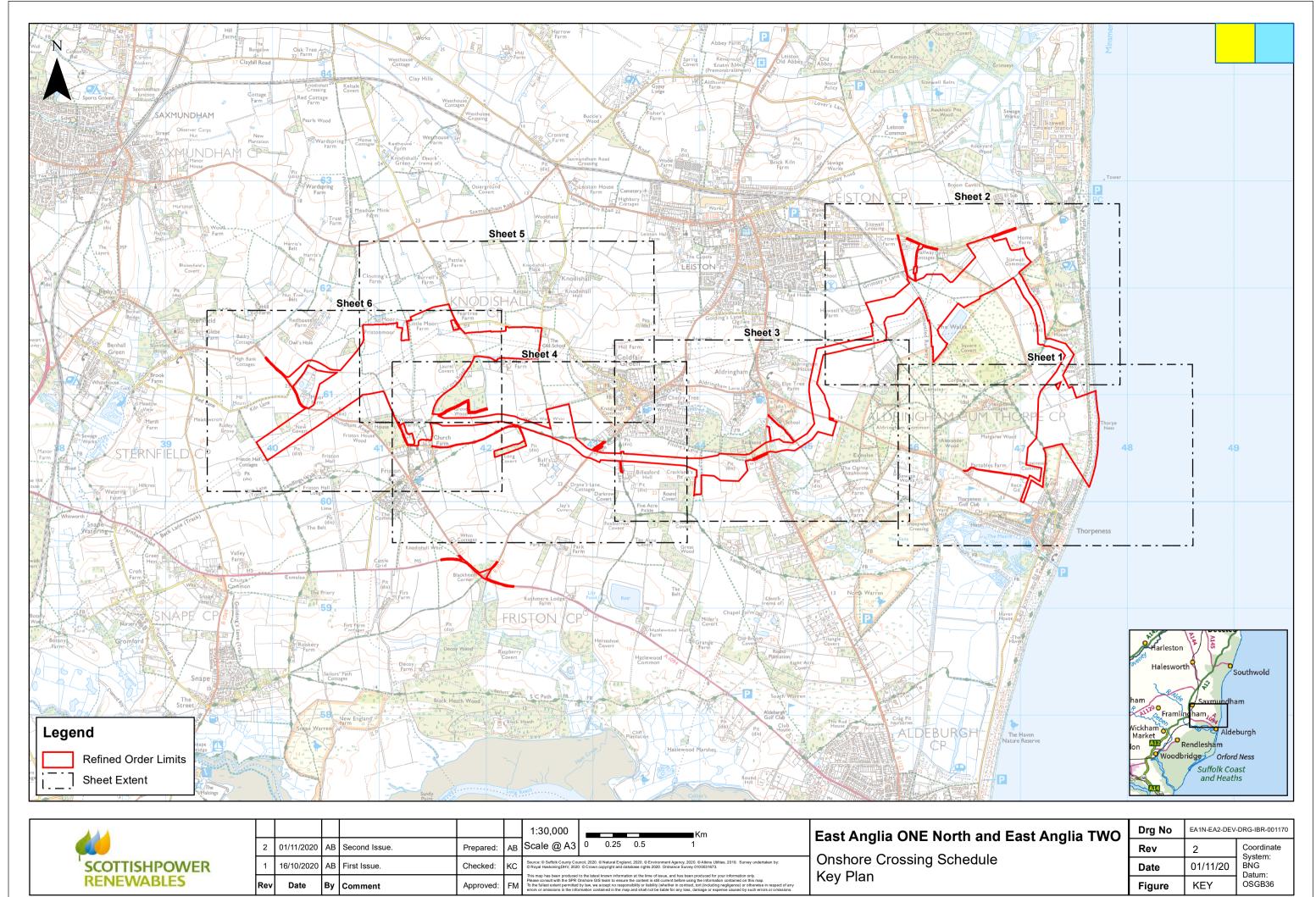
ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method		
U13	Sheet 3 (Figure 1c)	Cadent Gas Ltd (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U14	Sheet 3 (Figure 1c)	Essex & Suffolk Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U15	Sheet 3 (Figure 1c)	UK Power Networks (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution		
U16	Sheet 3 (Figure 1c)	Anglian Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U17	Sheet 3 (Figure 1c)	Vodafone (underground)	Open trench	Crossing via open trench given the crossing technique adopted for the Hundred River, Aldeburgh Road and woodland west of Aldeburgh Road		
U18	Sheet 3 (Figure 1c)	BT Openreach (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U19	Sheet 3 (Figure 1c)	Virgin Media (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U20	Sheet 3 (Figure 1c)	Cadent Gas Ltd (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U21	Sheet 3 (Figure 1c)	Anglian Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		
U22	Sheet 3 (Figure 1c)	Essex & Suffolk Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.		

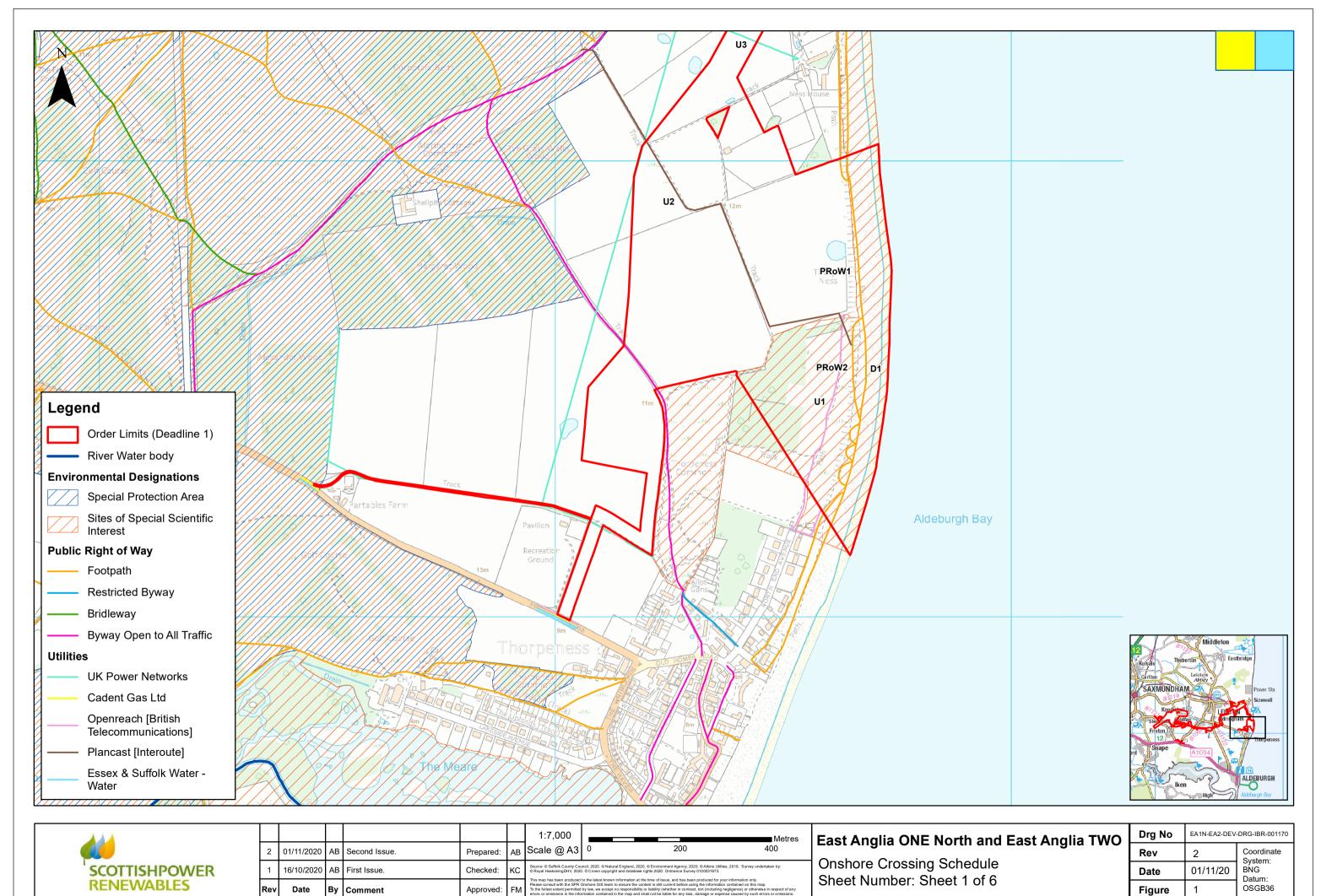






ID	Sheet Number in Annex 1	Description of Obstacle	Proposed Crossing Method	Justification of Method
U23	Sheet 3 (Figure 1c)	UK Power Networks (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U24	Sheet 3 (Figure 1c)	Essex & Suffolk Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U25	Sheet 4 (Figure 1d)	BT Openreach (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution
U26	Sheet 4 (Figure 1d)	Plancast [Interoute] (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.
U27	Sheet 4 (Figure 1d)	BT Openreach (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution
U28	Sheet 4 (Figure 1d)	UK Power Networks (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution
U29	Sheet 4 (Figure 1d)	UK Power Networks (overhead)	Open trench	Utility is mounted overhead and open trenching under the utility is an appropriate solution
U30	Sheet 4 (Figure 1d)	Essex & Suffolk Water (underground)	Open trench	Utility crossing by open trench technique is a conventional means of crossing such a utility.





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