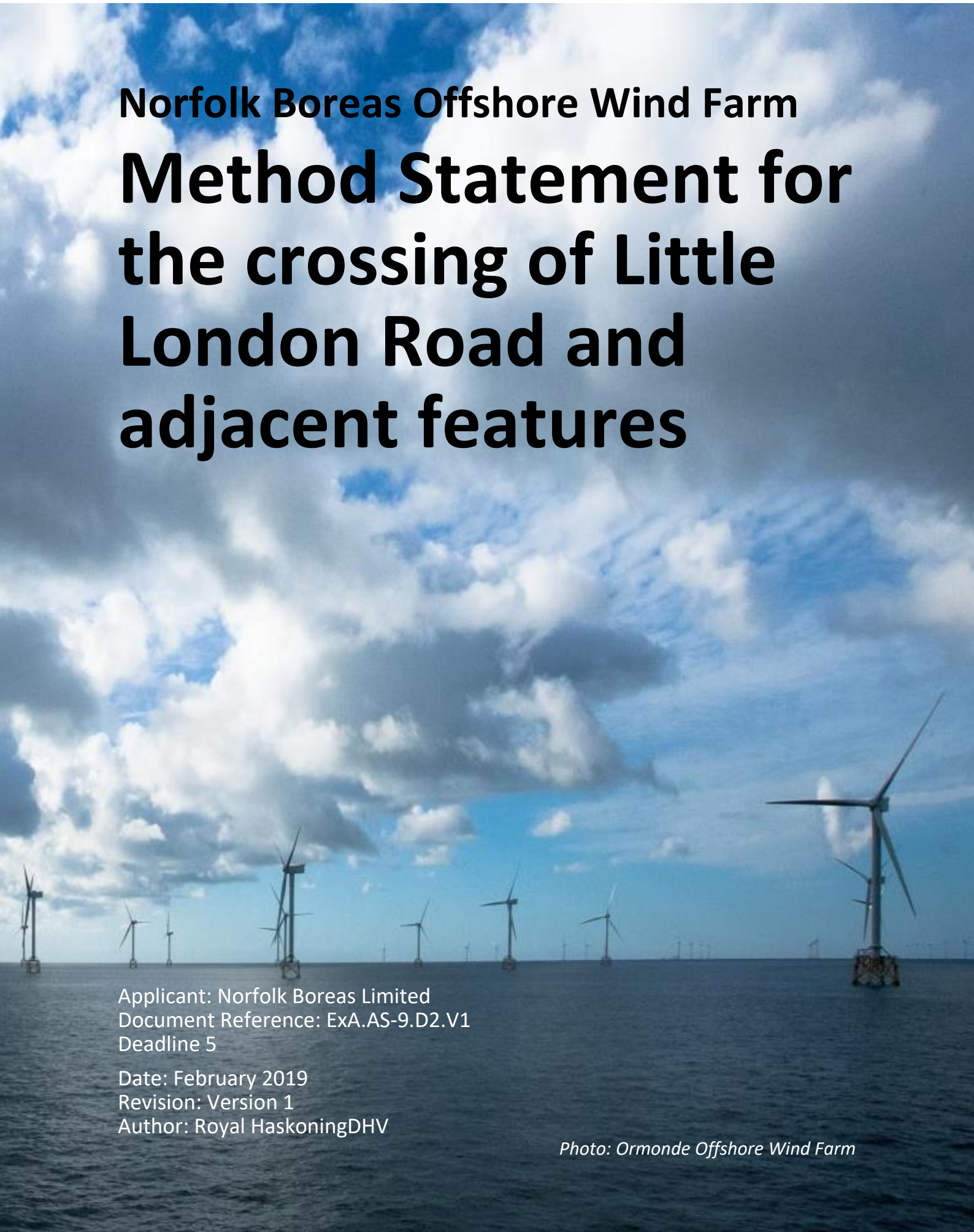
Royal HaskoningDHV
Enhancing Society Together

VATTENFALL

Norfolk Boreas Offshore Wind Farm

Method Statement for the crossing of Little London Road and adjacent features



Applicant: Norfolk Boreas Limited
Document Reference: ExA.AS-9.D2.V1
Deadline 5

Date: February 2019
Revision: Version 1
Author: Royal HaskoningDHV

Photo: Ormonde Offshore Wind Farm

Date	Issue No.	Remarks / Reason for Issue	Author	Checked	Approved
20/02/20	01D	First draft for Deadline 5	AH/CD	VR	JL
25/02/20	01F	Final draft for Deadline 5	AH/CD	VR	JL

Table of Contents

Glossary of Terminology

Ducts	A duct is a length of underground piping, which is used to house electrical and communications cables.
Onshore cable route	The up to 35m working width within a 45m wide corridor which will contain the buried export cables as well as the temporary running track, topsoil storage and excavated material during construction.
Onshore project area	The area of the onshore infrastructure (landfall, onshore cable route, accesses, trenchless crossing zones and mobilisation areas; onshore project substation and extension to the Necton National Grid substation and overhead line modifications).
Running track	The track along the onshore cable route which the construction traffic would use to access work sites.
Trenchless crossing compound	Pairs of compounds at each trenchless crossing zone to allow boring to take place from either side of the crossing.
Trenchless crossing zone	Areas within the onshore cable route which will house trenchless crossing entry and exit points.

1 Introduction

1. This document has been produced in response to the Examining Authority's Second Written Questions Q2.14.3.11 and provides an explanation of the cable crossing of Little London Road and the adjacent features including land drainage. The crossing of Little London Road to install ducts is only required under Scenario 2, under Scenario 1 the ducts would have already been installed by Norfolk Vanguard.

2. This method statement will inform a future construction method statement to be developed post consent, secured under dDCO Requirement 20(2)(g).

2 Committed Trenchless Crossings

3. The Applicant has committed to installing ducts underneath the Paston Way and Knapton Cutting County Wildlife Site (TC14a/b) and the North Walsham and Dilham Canal (TC15) using a trenchless method in this area, as secured in Requirement 16 of the dDCO.

3 Trenchless Crossing Method

4. For clarity, the trenchless crossing zone is an area within which the trenchless crossing compounds can be sited. The maximum footprints of the trenchless crossing compounds were secured in the updated dDCO Requirement 16 (15) submitted at Deadline 1 [REP1-008]; 7,500m^2 at each drill entry site and 5,000m^2 at each drill exit site. Flexibility in the location of the trenchless crossing compound within the trenchless crossing zone is required until detailed design of the crossing is completed. The detailed design will include consideration of the final cables to be installed, as this will inform the final drill alignment, size, method and location of entry and exit sites. All duct installation will be conducted within the onshore cable route, with adjacent trenchless compound areas being included to provide storage for materials, welfare facilities and other functions as described in Section 5.7.2.4.3 of ES Chapter 5 Project Description (APP-218).

4 Paston Way and Knapton Cutting County Wildlife Site Crossing

5. Three trenchless crossing zones have been included in the Application to accommodate up to three trenchless crossing compounds (TC14a, TC14a/b, TC14a/b). This facilitates the trenchless duct installation underneath Paston Way and Knapton Cutting County Wildlife Site, the B1145 at North Walsham and potentially Little London Road as there are two drill profiles under consideration. The locations of the trenchless crossing zones are secured by document 2.4 Work Plans (Sheet 8) [REP1-005] and illustrated in Figure 5.4 of ES Chapter 5 Project Description [APP-268].

4.1 Drill Profile 1 and Access

6. As indicated, there are two potential trenchless crossing installation profiles under consideration. The first profile under consideration, is a single trenchless crossing profile from a location adjacent to the indicative crossing compounds of TC14a/b to the east of Little London Road and to the west of the B1145 at North Walsham. Under this crossing profile, TC14a would not be required. This crossing profile would only be achievable where the trenchless crossing method allows for a curved drill alignment which follows the cable route between these locations.

7. Access to the west of the B1145 would be via the running track within the onshore cable route from MA10 or via AC38 (as identified on sheet 8 document 2.5 Access to Works Plan, APP-011 and Table 3.2 of Outline Traffic Management Plan, REP1-022). Access to the east of Little London Road would be via AC37 (as identified on sheet 8 document 2.5 Access to Works Plan, APP-011 and Table 3.2 of Outline Traffic Management Plan, REP1-022).

8. To mitigate transport impacts so far as possible and as detailed in Table 4.3 of the OTMP, the drill entry will be located at TC14a/b (west of the B1145 at North Walsham) with the drill exit at TC14a/b (east of Little London Road). This minimises the material requirements to be transported down Link 69 (Little London Road) as the drill exit compound is of a smaller size to the drill entry compound.

4.2 Drill Profile 2 and Access

9. The second profile under consideration is from TC14a/b (west of B1145 at North Walsham) to TC14a. This profile has been included to allow a straight trenchless crossing alignment, mitigating the requirement for a curved drill alignment. In this profile, a trenchless crossing would be made to cross Paston Way and Knapton Cutting County Wildlife Site, with a subsequent trenched crossing of Little London Road. Under this crossing profile, TC14a/b (east of Little London Road) would not be required. Access to the TC14a/b compound would be as per the above profile with access to TC14a being from AC37 (as identified on sheet 8 document 2.5 Access to Works Plan, APP-011).

10. Similar to drill profile 1, to mitigate transport impacts so far as possible and as detailed in Table 4.3 of the OTMP, the drill entry will be located at TC14a/b (west of the B1145 at North Walsham) with the drill exit at TC14a (west of Little London Road). This minimises the material requirements to be transported down Link 69 (Little London Road) as the drill exit compound is of a smaller size to the drill entry compound.

11. The final trenchless crossing profile will be determined post consent following detailed design of the trenchless crossing and an understanding of the capability to

conduct a curved drill profile and subsequent technical capabilities of the final cable design for cable pull through, or the requirement for a straight drill alignment.

5 North Walsham and Dilham Canal Trenchless Crossing

12. The North Walsham and Dilham Canal trenchless crossing may incorporate adjacent watercourses within the TC15 trenchless crossing zone to the east and west of the canal, dependant on the final siting of the drill entry and drill exit which will be determined during detailed design once final cable sizes and technical capabilities are understood. Where adjacent watercourses are not incorporated into the trenchless crossing, temporary dam and divert or culverting methods as described in Section 5.7.2.3.3 and Section 5.7.2.3.4 of ES Chapter 5 Project Description [APP-218] would be employed.

13. The duct installation between TC14a/b and TC15 will be via trenched installation methods.

14. Access to TC15 (west of North Walsham and Dilham canal) will be achieved from AC37. To mitigate transport impacts so far as possible and as detailed in Table 4.3 of the OTMP, the drill entry will be located at TC15 (east of the North Walsham and Dilham Canal) with the drill exit at TC15 (west of North Walsham and Dilham Canal). This minimises the material requirements to be transported down Link 69 (Little London Road) as the drill exit compound is of a smaller size to the drill entry compound.

6 Road Closures and Traffic Management

15. Closure of Little London Road would only be temporarily required to tie in new access points (AC37) to the North (under drill profile 1) or to the North and South (under drill profile 2) of Little London Road to the public highway. Such access establishment tie in's requiring a full road closure would typically be completed within a day. Where practicable and safe to do so, local residential access will still be provided through the road closures. Through traffic will utilise signed diversion routes to circumnavigate the road closure. During open trench crossing of Little London Road (under drill profile 2) it is likely that road closures would be required for a maximum of one week during which time a diversion route would be in place. The diversion route can be achieved from the B1145 via Lyngate Road, Mundesley Road, Crow Road and onto Bacton Road before re-joining Little London Road from the east of the road closure. The reverse of the route would allow access to the west of the road closure on Little London Road. This route is likely to require a delay of approximately 4 minutes and therefore not considered significant in terms of additional journey time.

16. It is not anticipated that road closures would be required for the establishment, construction or demobilisation of trenchless crossing compounds (TC14a, TC14a/b, TC15) accessed from AC37 or for duct installation from AC37 to TC15. During this time the enhanced traffic management plan measures as outlined in Table 3.7 of the OTMP, mobile traffic management (pilot vehicle) and specific managed traffic demand as detailed in Table 4.3 of the OTMP would be employed, including:

- No concurrent infrastructure component construction
- Increased construction programme for route section 16a of duct installation
- Splitting HGV payloads into smaller 10t vehicles
- Locate reception sides of trenchless crossings to area served by Link 69 (Little London Road.

7 Summary

17. The Applicant is committed to using a trenchless crossing of the Paston Way and Knapton Cutting County Wildlife Site and North Walsham and Dilham Canal. Two drill profiles are under consideration for the Paston Way and Knapton Cutting County Wildlife Site and the final drill profile will be determined post consent following detailed design of the trenchless crossing and an understanding of the capability to conduct a curved drill profile and subsequent cable pull through, or the requirement for a straight drill alignment. To facilitate these alternate profiles at this location, three trenchless crossing zones are identified within the Application at this location. Under both profiles the Paston Way and Knapton Cutting County Wildlife Site and B1145 at North Walsham will be crossed using a trenchless method. Only two of the three trenchless crossing compounds will be required.

18. Access to the trenchless crossing zones from Little London Road (TC14a, TC14a/b (east of Little London Road) and TC15) will be via AC37. Access to the trenchless crossing zones to the west (TC14a/b) will be via AC38 or via the running track.

19. Temporary road closures may be required to tie in new accesses (AC37) off the public highway at Little London Road (typically less than 1 day) and for the trenched crossing of Little London Road under drill profile 2 (typically less than 1 week). All other construction works would not require road closures and enhanced mitigation measures as detailed in Table 4.3 of the OTMP would be employed.

20. A summary of the two drill profiles in consideration is provided in Table 1.

Table 1: Summary of drill profiles under consideration for crossing of Little London Road and adjacent features

	Drill Profile 1	Drill Profile 2
Trenchless crossing	TC14a/b (west) to TC14a/b (east) - including B1145, Paston Way and Knapton Cutting CWS and Little London Road. Trenchless crossing compound TC14a not required.	TC14a/b (west) to TC14a – including B1145 and Paston Way and Knapton Cutting CWS. Trenchless crossing compound TC14a/b (east) not required.
Open cut trenching	TC14a/b (east) to TC15 (west) through agricultural land	TC14a to TC15 (west) through agricultural land and under Little London Road
Road closures	1 day for tieing in of accesses to the public highway (diversion route available with 4 minute delay).	Approximately 1 week for open cut trenching of Little London Road and 1 day for tieing in of accesses to the public highway (diversion route available with 4 minute delay).
Technical limitations	Requires the feasibility of a curved drill profile and associated feasibility of cable pulling through such drill profile.	No technical limitations – straight drill profile.
Access	TC14a/b (east) from Little London Road via AC37 and onto TC15 (west) via the running track. TC14a/b (west) via AC38 or the running track. No access to TC14a required.	TC14a from Little London Road via AC37 and TC14a/b (east) then onto TC15 (west) via the running track. TC14a/b (west) via AC38 or the running track.