

East Anglia ONE North Offshore Windfarm

Scheme Implementation Report

Applicant: East Anglia ONE North Limited
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Appendix 1

The figures in this report are listed in the table below and are presented in Appendix 1.

Figure number	Title
Figure 1	Sandlings SPA Crossing Options
Figure 2	Onshore Substation Location
Figure 3	Illustration of Increased Onshore Cable Route Width at Landfall

The following appendices associated with this report are listed in the table below.

Appendix number	Title
Appendix 1	Figures

Glossary of Acronyms

CfD	Contract for Difference
DCO	Development Consent Order
ES	Environmental Statement
HDD	Horizontal Directional Drilling
OLEMS	Outline Landscape and Ecological Management Strategy
SIR	Scheme Implementation Report
SPA	Special Protection Area

Glossary of Terminology

Applicant	East Anglia ONE North Limited.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
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 ONE North windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
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.
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia ONE North project Development Consent Order but will be National Grid owned assets.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia ONE North project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia ONE North project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Offshore development area	The East Anglia ONE North windfarm site and offshore cable corridor (up to Mean High Water Springs).
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.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore substation	The East Anglia ONE North substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia ONE North project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

1 Scheme Implementation Report

1.1 Introduction

1. East Anglia ONE North Limited (the Applicant) is planning to develop the East Anglia ONE North Offshore Windfarm (also known as the proposed East Anglia ONE North project).
2. This Scheme Implementation Report (SIR) has been prepared by the Applicant in support of the proposed East Anglia ONE North project's Development Consent Order (DCO) application and considers the following aspects for which flexibility has been incorporated into the DCO application and supporting environmental statement (ES):
 - Onshore cable route crossing of the Sandlings Special Protection Area (SPA);
 - Onshore substation micrositeing;
 - Early implementation of sections of the onshore cable route;
 - Landscaping at onshore substation and National Grid infrastructure; and
 - Increased onshore cable route width at landfall.
3. The purpose of this SIR is to provide a clear narrative for the benefit of the Examining Authority and interested parties explaining (in relation to the above mentioned aspects):
 - What key flexibility is being applied for within the DCO application;
 - Why this flexibility is necessary for the implementation of the East Anglia ONE North project and attainment of its goals;
 - What benefits this flexibility brings; and
 - How the flexibility achieved will be refined and when.
4. Figures referred to within the SIR are provided within Appendix 1. Where appropriate, reference has been made to the relevant Work Number as per the DCO application.

1.2 Onshore Cable Route Crossing of the Sandlings SPA

1.2.1 Flexibility Applied for Within the DCO Application

5. The onshore cable route must cross the Sandlings SPA in order to connect the landfall with the onshore substation. The Applicant has selected the narrowest section of the SPA as the crossing location (as shown in Figure 1) in order to reduce the potential impacts on this designated site. Two methods of crossing the SPA have been identified and incorporated within the DCO application and supporting ES:
 - Trenching; and
 - Horizontal Directional Drilling (HDD).
6. The Order Limits are sufficiently broad in the area of the SPA crossing so as to accommodate either a trench or a HDD crossing of the SPA. Figure 1 illustrates the onshore cable route width (or working width) required for both crossing options.
7. Mitigation measures associated with these crossing options are presented within the ES (see **Chapter 22 Onshore Ecology** and **Chapter 23 Onshore Ornithology**) and include the undertaking of works outside the breeding bird season (typically mid-February to August inclusive but confirmed by pre-construction ornithological survey) in order to minimise potential impacts to the qualifying features of the SPA.

1.2.2 Requirement for Flexibility

8. Flexibility in crossing the SPA is required within the DCO and Order Limits for the following reasons:
 - To ensure a crossing of the SPA can be undertaken which (acknowledging the results of pre-construction ecological and ornithological surveys) limits the impacts on amenity and the environment, and does not compromise the integrity of the SPA;
 - To ensure that a crossing of the SPA remains possible in the event that the Secretary of State does not consent one of the crossing solutions; and
 - To ensure that the most economical and efficient SPA crossing solution can be achieved.

1.2.3 Benefits of Flexibility

9. In securing flexibility for the crossing the SPA, the crossing can be undertaken without compromising the integrity of the SPA and ensuring the necessary balance is achieved between construction risk, cost and environmental impact.

10. The trenching and HDD crossing options are both considered acceptable in environmental terms (with both assessed as having minor adverse impacts on nightjar and woodlark, as per **Chapter 23 Onshore Ornithology** of the ES). However, the Applicant considers that there are inherent benefits associated with the trenching option which lead to it being the Applicant's clear preference for the SPA crossing, such as:

- A shorter construction period¹, (with disturbance, lighting and impacts experienced over a reduced period);
- Avoidance of 24 hour working/lighting which would otherwise be required for the HDD crossing;
- Construction works undertaken within a single period (rather than potentially two periods over two years for a HDD crossing); and
- Reduced construction risk (due to a less complex crossing solution) and reduced costs.

1.2.4 Refinement of Flexibility

11. Should the DCO be granted with both the trenching and HDD crossing flexibility, the crossing technique selected will be identified post consent, based on the following:

- Pre-construction ecological surveys to establish any additional or modified ecological constraints which may influence the trenching or HDD crossing design;
- Pre-construction walk-over survey to establish any additional physical constraints which may influence the trenching or HDD crossing design;
- Potentially small ground investigations to confirm the nature of the underlying ground and potential contamination risk; and
- Cost effectiveness, construction risk and programme risk of the trenching and HDD techniques.

12. Based on the above information, the Applicant will identify the most environmentally acceptable, economical and efficient means of crossing the SPA post consent.

¹ Open trench works associated with crossing the SPA (including works within 200m of the SPA boundary that are associated with the crossing works) will be undertaken within approximately three months of excavation works commencing (comprising approximately one month within the boundary of the SPA and approximately two months within 200m of the boundary of the SPA). HDD works associated with crossing the SPA (including the establishment and subsequent removal of HDD entry pit and exit pit working areas) will be undertaken over a two year period with works restricted to up to six months per year due to the seasonal restriction.

13. This means of crossing will be detailed in the SPA Crossing Method Statement presented within the Ecological Management Plan which is required to be submitted to and agreed in writing with the LPA in accordance with the conditions of the DCO. This plan must be approved before the SPA crossing works can commence.

1.3 Onshore Substation Micrositing

1.3.1 Flexibility Applied for Within the DCO Application

14. As outlined in **Chapter 4 Site Selection and Assessment of Alternatives** of the ES, the Applicant has proposed the co-location of proposed East Anglia ONE North onshore substation and the proposed East Anglia TWO project onshore substation.
15. The East Anglia ONE North onshore substation is located within Work No. 30 (see Figure 2). The boundary of Work No. 30 is sufficiently large so as to encompass the development footprints of both the East Anglia ONE North and the East Anglia TWO onshore substations.
16. The DCO application therefore provides the flexibility for the East Anglia ONE North onshore substation to be developed to the east or the west of Work No. 30 (with the East Anglia TWO substation benefiting from this same flexibility) and provides flexibility to allow for micrositing of the onshore substation as part of its detail design. Final positioning of the East Anglia ONE North substation will be undertaken at the detailed design stage (post consent) and will be positioned to ensure the development of the East Anglia TWO project is not compromised.

1.3.2 Requirement for Flexibility

17. During pre-application discussions, the local planning authorities expressed a preference that, in the event the East Anglia ONE North and East Anglia TWO projects are constructed sequentially, the first project to proceed should be constructed on the eastern most area of the onshore substation development area (rather than the eastern area being allocated for one specific project).
18. In response to this request, the Applicant has assessed this flexibility within the ES and made provision for this flexibility within the DCO application.

1.3.3 Benefits of Flexibility

19. In providing the flexibility to locate the East Anglia ONE North onshore substation to the east or the west of Work No. 30, the local planning authority's request for such flexibility has been incorporated within the project.

1.3.4 Refinement of Flexibility

20. The results of the Contract for Difference (CfD) auction(s) will determine the delivery strategy for the East Anglia ONE North and East Anglia TWO projects, which in turn will influence the final positioning of the East Anglia ONE North onshore substation within Work No. 30.
21. The final positioning of the East Anglia ONE North onshore substation will be detailed in a scheme detailing the layout, scale and external appearance of the onshore substation, which must be submitted to and agreed in writing with the relevant planning authority in accordance with the DCO. This scheme must be approved before the East Anglia ONE North onshore substation works can commence.

1.4 Early Implementation of Sections of the Onshore Cable Route

1.4.1 Flexibility Applied for Within the DCO Application

22. The DCO includes a requirement that the transmission works may not commence until a written scheme setting out the stages of the transmission works has been submitted to, and approved by, the relevant planning authority. Any other requirements of the DCO which require the submission of detailed plans or documents for approval prior to the commencement of works must therefore be discharged for each of the stages set out within the written scheme.

1.4.2 Requirement for Flexibility

23. Within the East Anglia ONE North scoping request, the Applicant stated its commitment to exploring synergies between the proposed East Anglia TWO and East Anglia ONE North projects by proposing where possible, and subject to regulatory certainty, to install ducting for the East Anglia ONE North windfarm onshore electrical cables during the East Anglia TWO windfarm construction, thereby potentially reducing the construction impacts for the proposed East Anglia ONE North project.
24. In the scenario where the East Anglia ONE North project is constructed later than the East Anglia TWO project, this flexibility allows for the consideration of discrete section(s) of the East Anglia ONE North onshore cable route to be constructed in isolation to the rest of the East Anglia ONE North project following approval of pre-commencement plans and documents in respect of that section of the cable route.
25. This staged construction could be implemented in discrete areas at the discretion of the Applicant where it is considered to be of benefit in the

constructability of the East Anglia ONE North project, and where the definition of the East Anglia ONE North project is sufficiently developed.

1.4.3 Benefits of Flexibility

26. This flexibility ensures that the Applicant can undertake selected onshore cable works for the East Anglia ONE North project at the time of East Anglia TWO construction where it is of benefit to the Applicant to do so (such as where it is considered to be of benefit in the constructability of the East Anglia ONE North project).

1.4.4 Refinement of Flexibility

27. A decision on the early implementation of sections of the onshore cable will be taken by the Applicant post consent. Where early implementation is proposed, the staging of works will be submitted to and agreed in writing with the relevant planning authority in accordance with the conditions of the DCO. Any other requirements of the DCO which require the submission of detailed plans or documents for approval prior to the commencement of works will be submitted to and agreed in writing with the relevant planning authority in accordance with the conditions of the DCO before the relevant early implementation stage of works can commence.

1.5 Onshore Substation and National Grid Infrastructure Landscaping

1.5.1 Flexibility Applied for Within the DCO Application

28. The Outline Landscape and Ecological Management Strategy (OLEMS) presents a viable and effective landscape mitigation solution for the onshore substation and National Grid infrastructure based on the Rochdale envelope adopted for these works.
29. The DCO provides for landscaping works within the substation area through Work No. 33 and provides for bunding and planting together with drainage works, SUDS ponds, surface water management systems, formation of footpaths and access.

1.5.2 Requirement for Flexibility

30. Given that the onshore substation and National Grid infrastructure is subject to detail design, a number of refinements may occur to these elements during their detailed design which may require refinement of the landscaping presented within the OLEMS.

31. Such refinements may include a reduction in footprint of the onshore substation or National Grid substation; a reduction in height or the positioning of equipment within the substations.

1.5.3 Benefits of Flexibility

32. Flexibility in the specification of the landscaping allows for the development of an optimal landscaping scheme to provide screening of the onshore substation and National Grid infrastructure which reflects the final design of the onshore substation and National Grid infrastructure.

1.5.4 Refinement of Flexibility

33. Finalisation of the landscaping plans will be undertaken post consent and agreed with the relevant planning authority through the Landscape Management Plan.

1.6 Increased Onshore Cable Route Width at Landfall

1.6.1 Flexibility Applied for Within the DCO Application

34. The DCO allows for a wider cable route within Work No. 9 of up to 190m where the onshore cables are within 418m of a transition bay forming part of Work No. 8 (as shown on Figure 3).

1.6.2 Requirement for Flexibility

35. Flexibility in the width of the onshore cable route in this area is required in the event that the transition bays are located to the north of Work No. 8 (landfall) and are spatially separate. The 'funnel effect' of the onshore cable route in Work No. 9 allows the onshore cable to transition from a 190m wide route to a 32m wide cable route (as shown on Figure 3).

1.6.3 Benefits of Flexibility

36. In adopting a wider onshore cable route in this area, the Applicant will ensure that the onshore cables can be designed without compromising their operational performance and integrity, whilst reflecting environmental or technical constraints identified during pre-construction surveys.

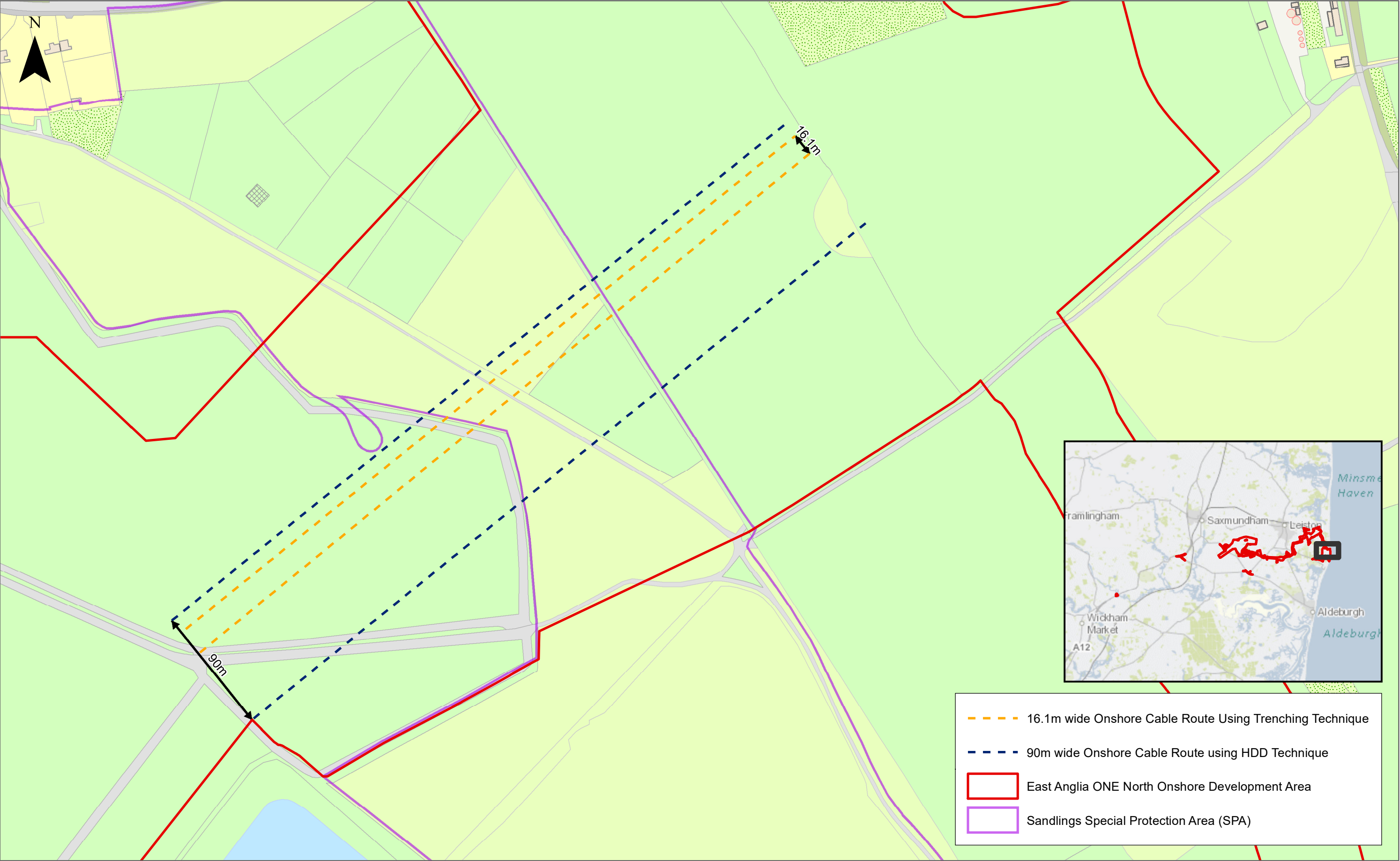
1.6.4 Refinement of Flexibility



37. Refinement of the onshore cable routing within Work No. 9 will be undertaken post consent as part of the detail design process.

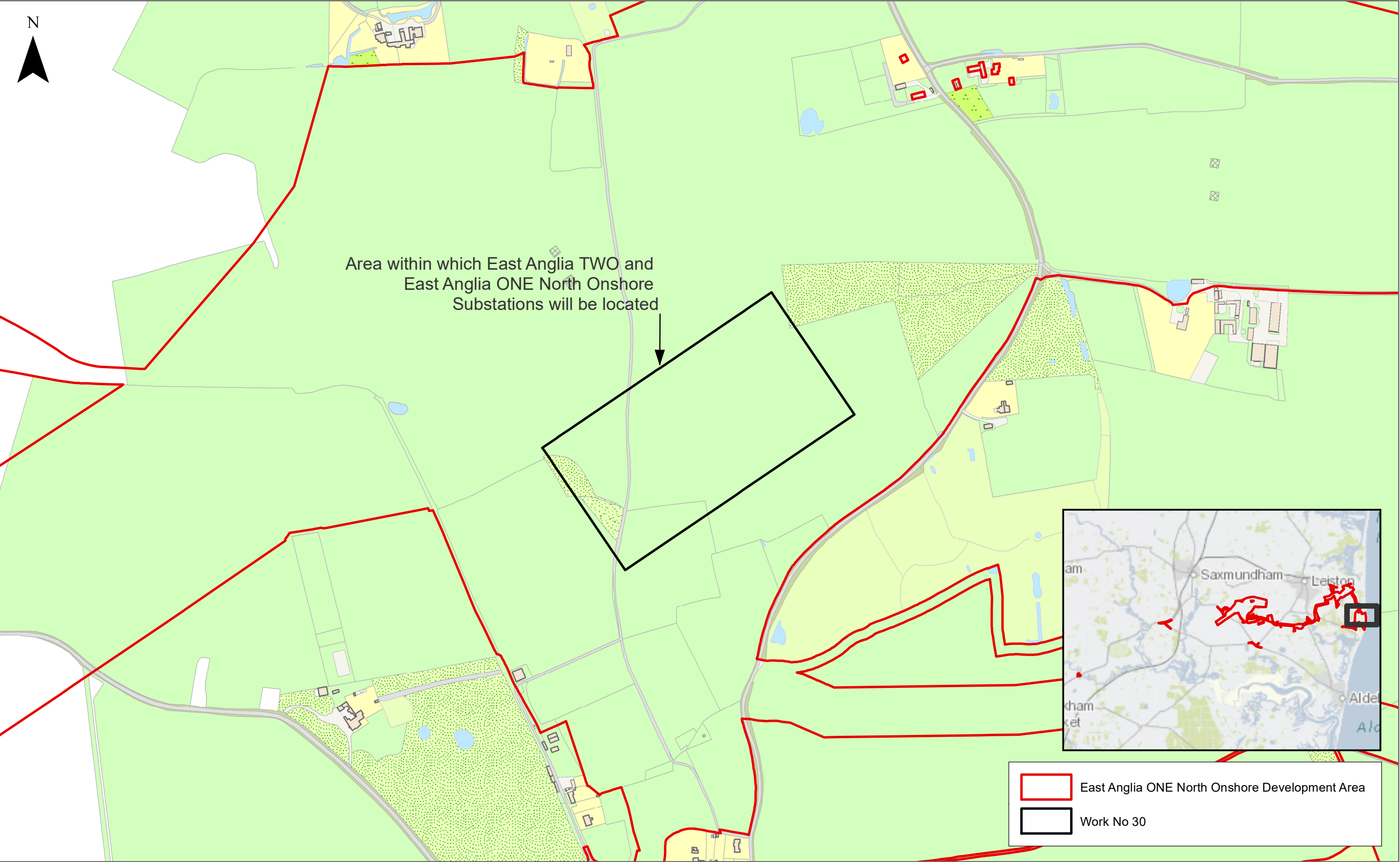
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Appendix 1

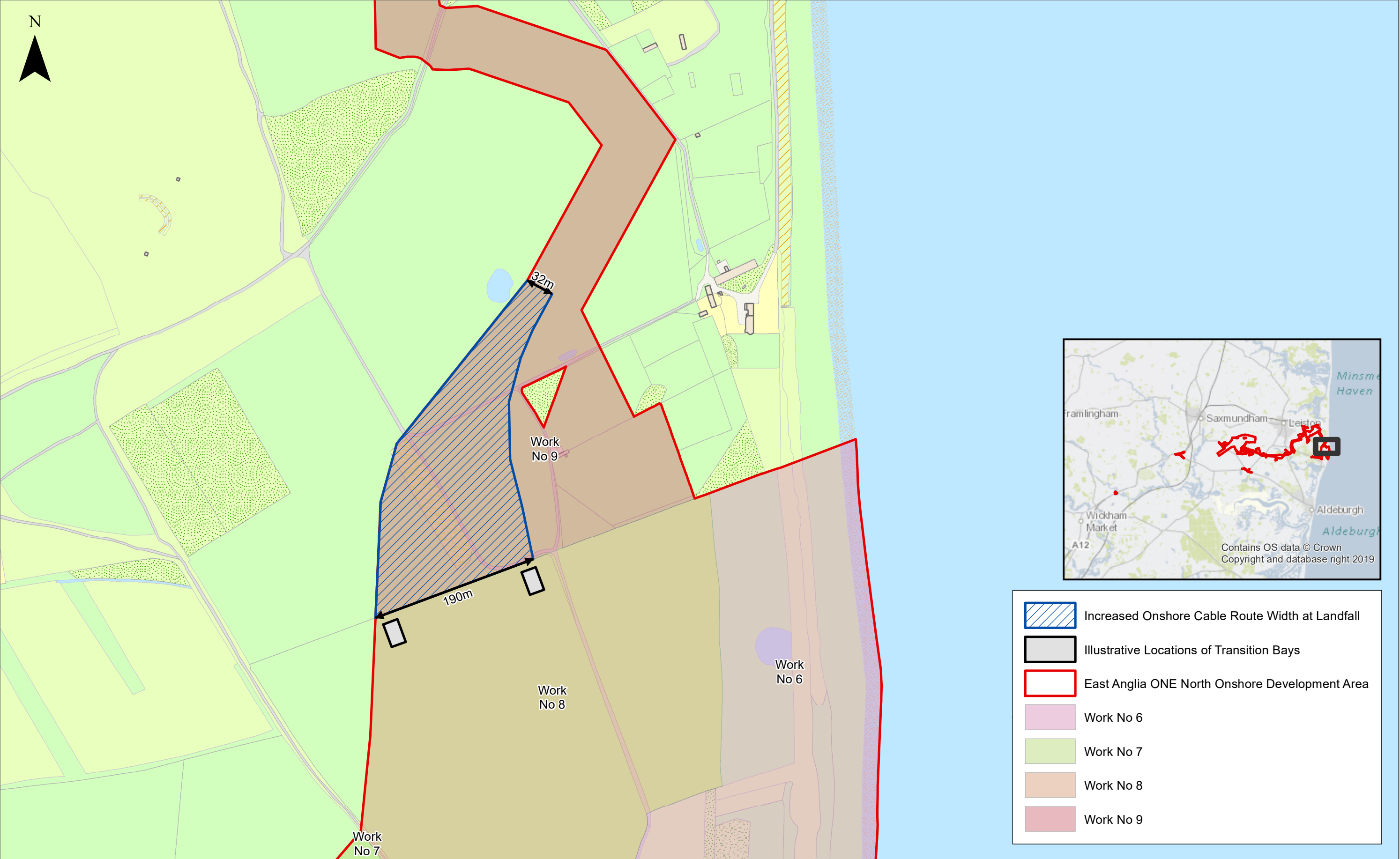
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	Rev	Date	By	Comment	Approved:	BM	<small>© Crown Copyright 2019. All rights reserved. Ordnance Survey Licence 0100031673.</small>			Figure	1 of 3		
										Figure 1 - Sandlings SPA Crossing Options			



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East Anglia ONE North
Figure 3 - Illustration of Increased Onshore Cable Route Width at Landfall

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