



AQUIND Limited

AQUIND INTERCONNECTOR

Consultation Report – Appendix 1.5C
Statutory Consultation – Non-Technical
Summary of PEIR

The Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 – Regulation 5(2)(q)

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AQUIND Limited
AQUIND INTERCONNECTOR
Non-Technical Summary (NTS)
of the Preliminary Environmental
Information Report (PEIR)



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AQUIND INTERCONNECTER

PEIR Volume 4 – Non-technical Summary

Document Ref.: PEIR Volume 4 - Non-technical Summary

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ABBREVIATIONS

Abbreviation	Term in full
AC	Alternating Current
BMV	Best and Most Versatile agricultural land
CDM	Construction, Design, Management
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
DC	Direct Current
DCO	Development Consent Order
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
EMF	Electromagnetic Field (or Force)
ES	Environmental Statement
FOC	Fibre Optic Cable
GHG	Greenhouse Gas
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IEMA	Institute of Environmental Management and Assessment
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone

Abbreviation	Term in full
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
MMO	Marine Management Organisation
MW	Megawatt (1,000,000 watts)
NGET	National Grid Electricity Transmission
nmi	Nautical Miles
NO₂	Nitrogen dioxide
NSIP	Nationally Significant Infrastructure Project
NTS	Non-technical Summary
ORS	Optical Regeneration Station
PCZ	Primary Consultation Zone
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
SAC	Special Area of Conservation
SoCC	Statement of Community Consultation
SoS	Secretary of State
WFD	Water Framework Directive
ZoI	Zone of Influence

1 INTRODUCTION

1.1 OVERVIEW

1.1.1 This document presents the Non-technical Summary ('NTS') of the Preliminary Environmental Impact Assessment ('PEIR') for the UK elements of the AQUIND Interconnector (the 'Proposed Development'). This report has been produced to help inform the public and other stakeholders of the early findings of the Environmental Impact Assessment ('EIA') process.

1.1.2 The information presented within the NTS reflects a summary of the initial findings of the ongoing environmental assessments presented in the PEIR. These findings reflect the position as of February 2019, before the full EIA process has been completed. This is a requirement under the Planning Act 2008 (as amended) and will assist in the statutory consultation. All comments made by consultees during the consultation period will be taken into account by AQUIND (the 'Applicant') and addressed as necessary prior to the Proposed Development being finalised.

AQUIND INTERCONNECTOR - PROJECT DESCRIPTION

1.1.3 The Applicant is proposing to construct and operate an electricity interconnector between France and UK (the 'Project') as illustrated in Plate 1.1. This will include a new marine and onshore High Voltage Direct Current ('HVDC') power cable transmission link between Normandy in France and the south coast of England, which will also include fibre optic data transmission cables and associated infrastructure. Converter stations will be required in both England and France.

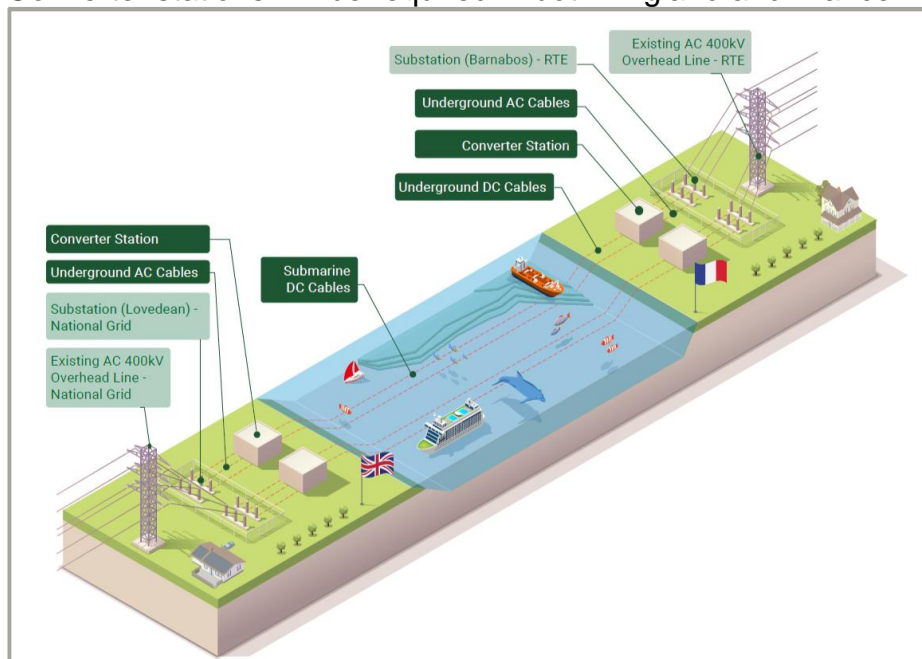


Plate 1.1 - AQUIND Interconnector Project Components

1.1.4 With a net capacity of 2,000 megawatts ('MW'), the Project will significantly increase the cross-border electricity capacity between the UK and France, increasing competition and improving security of the electricity supply for both countries. To enhance the security of supply and the availability of its power transfer capability, the Proposed Development is being designed as two independent pairs of cables.

1.1.5 The French and UK components of the Project will be consented within their respective authorities. Consents and licencing for the UK elements will cover that part of the Project located in England and the UK marine area. Both elements within the UK onshore and UK marine area make up the 'Proposed Development'.

1.2 THE DEVELOPMENT CONSENT ORDER ('DCO') PROCESS

1.2.1 The Proposed Development is a Nationally Significant Infrastructure Project ('NSIP') under the Planning Act 2008 (as amended). Therefore, prior to construction and operation, the applicant must make an application under the 2008 Act for a permission, known as a Development Consent Order ('DCO').

1.2.2 The application for a DCO will be submitted to the Secretary of State ('SoS'), who will examine the application using appointed inspectors from the Planning Inspectorate (known as the Examining Authority). The Examining Authority will make a recommendation to the SoS on whether a DCO should be granted, and the SoS will make the final decision.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT ('EIA')

1.3.1 EIA is a process that identifies the likely significant environmental effects of a development and suggests ways that those effects that are classed as adverse can be avoided, reduced or managed. EIA is a requirement of EU and UK law for developments that are likely to cause significant environmental effects.

1.3.2 This PEIR has been prepared in compliance with Regulation 12(2) of the 2017 EIA Regulations.

1.3.3 The key steps of the EIA Process to be followed by the Applicant are presented below:

- **Scoping:** A Scoping Report was submitted to PINS on 29 October 2018, with a Scoping Opinion received from PINS on 7 December 2018;
- **PEIR:** A publicly available report, establishing the baseline data and carrying out a preliminary evaluation of potential impact of the development proposal (this is the current stage of the EIA process); and
- **Environmental Statement ('ES') and ES Submission:** Detailed assessment of the likely significant effects and mitigation measures for the Proposed Development and to be reported in the ES. The ES will be formally submitted to the SoS (as part of the DCO application).

- 1.3.4 In October 2018, AQUIND Limited submitted a request for a Scoping Opinion to the SoS to seek an opinion on the scope and level of detail of the information to be included in the ES as part of the DCO application. This request was accompanied by a Scoping Report (AQUIND Limited, 2018) which set out the proposed scope of the ES. A Scoping Opinion was provided to the Applicant in December 2018 by the Planning Inspectorate on behalf of the SoS. The comments and recommendations contained in the Scoping Opinion have been incorporated into the EIA process.
- 1.3.5 For the purpose of consultation, the initial findings (as of February 2019) of the ongoing EIA process have been reported within the PEIR. The PEIR is presented in four volumes, including:
- Volume 1: Main Text;
 - Volume 2: Figures;
 - Volume 3: Technical Appendices; and
 - Volume 4: Non-technical Summary.
- 1.3.6 This document is the non-technical summary of the PEIR.

2 CONSIDERATION OF ALTERNATIVES

2.1 OVERVIEW

- 2.1.1 In accordance with the EIA Regulations 2017 an ES should provide a description of the reasonable alternatives considered as part of the Proposed Development along with an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.
- 2.1.2 As part of the iterative design process, a number of options were identified for the components of the Proposed Development and this process took into account environmental constraints and design / engineering feasibility. See Figure 2.1 of the NTS for environmental constraints in the vicinity of the Site Boundary.

2.2 GREAT BRITAIN GRID CONNECTION LOCATION

- 2.2.1 Following studies which confirmed that it would be preferable to connect onto the existing 400 kV transmission network in the south coast of England, National Grid Electricity Transmission ('NGET') identified ten substations in the region. Further investigations assessed these substations for available capacity, upgrade requirements, length of cable route and cost-benefit analysis. The results of this assessment confirmed Lovedean substation as the preferred connection location.

2.3 UK CONVERTER STATION

- 2.3.1 A preliminary converter station site identification exercise (within a 2 km radius around Lovedean substation) was conducted in April 2016, and shortlisted five suitable locations. Further appraisal and assessment work over the next year reduced this to two options.
- 2.3.2 During 2017, comparison of the two options took place, which involved a desktop study to inform the environmental constraints, as well as early engagement with the Local Planning Authorities ('LPAs') and public consultation in January 2018.
- 2.3.3 On the basis of analysis of both options (see Plate 2.1), Option B was selected in late 2018 as the preferred Converter Station location. This decision was informed by environmental constraint data including in relation to landscape and visual amenity, ecology, arboriculture and ancient woodland, ground conditions and noise and vibration.

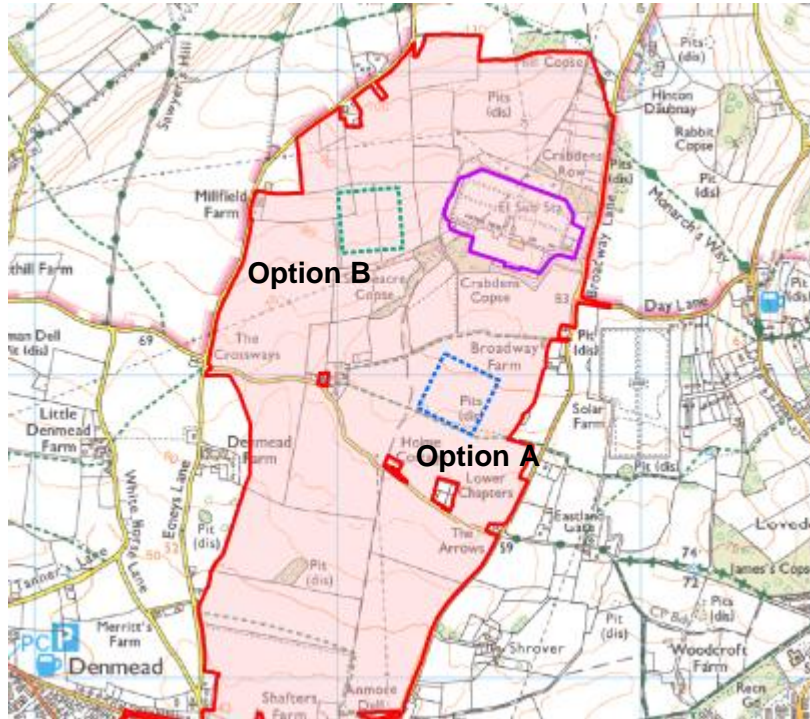


Plate 2.1 - Shortlisted Converter Station Locations

2.4 UK LANDFALL LOCATION

2.4.1 A preliminary desktop study to select a UK Landfall location (the area comprising an underground structure where the Marine Cables come ashore and connect to an onshore cable) was undertaken in April 2015. The desk top study identified 29 preliminary potential landing locations. The identification of Lovedean as the preferred substation, narrowed the assessment of an associated Landfall location down to nine and then just six sites, on the basis of a number of characteristics.



Plate 2.2 - Substation Location Search Area and Potential Landfall Sites

2.4.2 After further studies were undertaken (including the consideration of onshore cable routes and workshops on possible Landfall locations) it was concluded that the Landfall location at Eastney was preferable.

2.5 UK ONSHORE CABLE ROUTE

2.5.1 Desktop studies were undertaken during Summer 2016 and Spring 2017. Through the use of GIS modelling, potential routes from the shortlisted Landfall locations of Eastney, Hayling and East Wittering were identified (see Plate 2.3). This resulted in eleven route variations, of which four were identified as being constructible. Of the four routes, '3D' was selected as the preferred route.

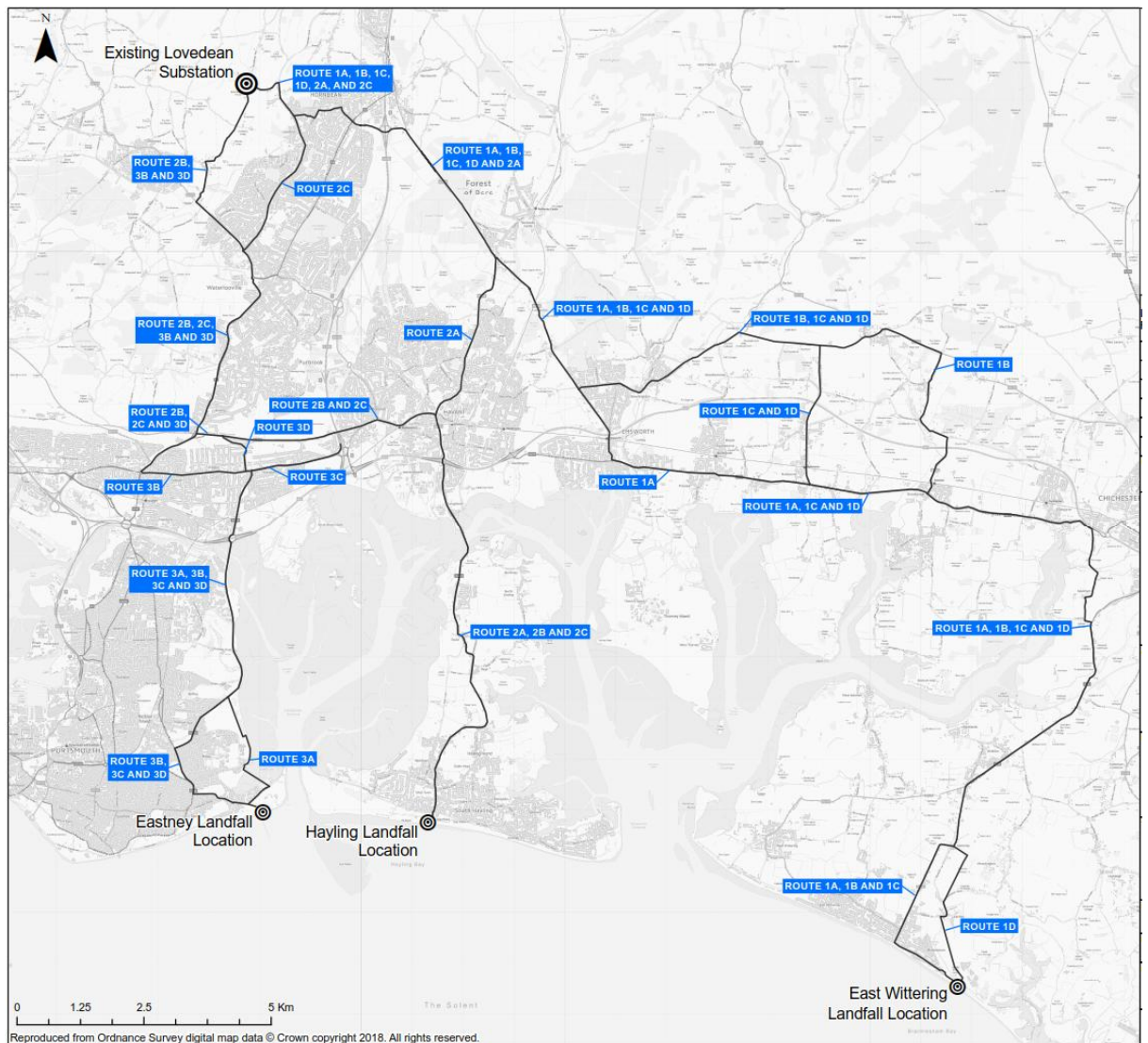


Plate 2.3 - DC Cable Routes Investigated in Desktop Study

- 2.5.2 Feedback from the public consultation in January 2018 led to deviations and alternative routes within route 3D being considered in locations where concerns had been raised. Route 3D predominately followed the existing road network to avoid impacting the greenfield land, which is often public open space, open countryside or an area of ecological value. However, due to concerns regarding traffic congestion during construction raised by local authorities, deviations into greenspace were subsequently considered. The Onshore Cable Route for the PEIR includes the route used at consultation, as well as alternative deviations identified since. Further appraisal is ongoing and will be informed by feedback from stakeholders as part of this consultation, as well as environmental information identified during the assessment process.

2.6 UK MARINE CABLE CORRIDOR

- 2.6.1 Due to their inter-related nature, the Marine Cable Corridor selection process was undertaken in parallel alongside the UK and French Landfall selection process. Following the selection of the two landfall sites, the Marine Cable Corridor between Eastney in the UK and Pourville in France was identified.
- 2.6.2 The Marine Cable Corridor was refined as part of optioneering and feasibility studies, which included discussion with stakeholders and site visits to the Landfall locations. The final detailed route within the Marine Cable Corridor will not be determined until a construction contractor undertakes their design, which may lead to minor alterations based on the findings of the pre-installation survey, seabed preparation and final actual installation operations.
- 2.6.3 The blue baseline route represents the Marine Cable Corridor that is presented for assessment within this PEIR (see Plate 2.4).

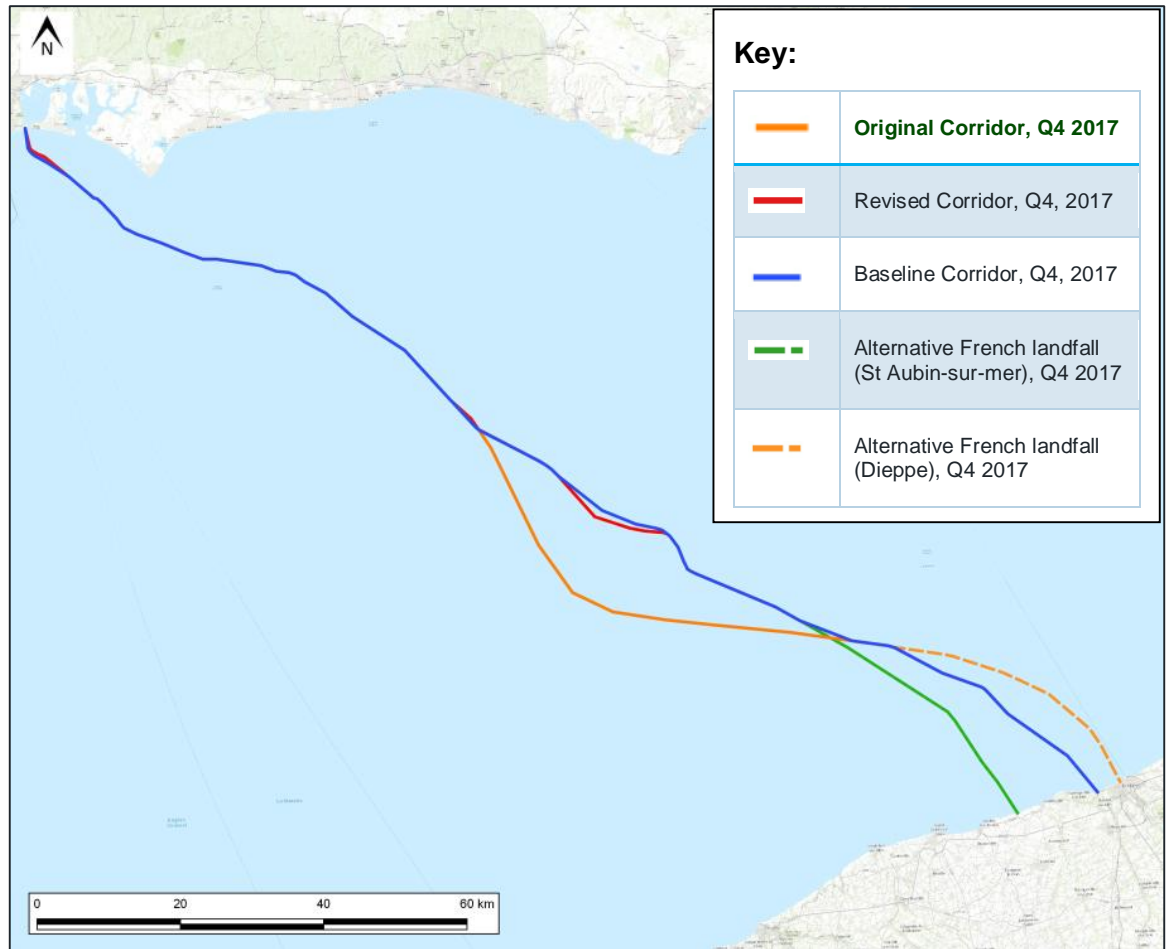


Plate 2.4 - Marine Cable Corridor Alternatives Considered

2.7

CONTINUING DESIGN

- 2.7.1 The design of the Proposed Development will continue to be refined, taking into account environmental considerations such as landscape and visual impacts, sensitive habitats, ecological designations, human factors and the status of agricultural land. This will also consider the feedback obtained during the consultation on the PEIR.

3 PROPOSED DEVELOPMENT DESCRIPTION

3.1 SITE LOCATION AND DESCRIPTION

3.1.1 AQUIND Interconnector is comprised of three principal elements, being the onshore elements in the UK, the marine elements between the UK and France and the onshore elements in France.

3.1.2 A Site Boundary has been defined for the Proposed Development and represents the maximum extent of all potential permanent and temporary works within the UK onshore and UK marine area. This comprises the Marine Cable Corridor, Landfall location, Onshore Cable Corridor, Converter Station Area and potential temporary laydown areas/construction compounds. The Site Boundary will be refined following the statutory consultation and as a result the Site Boundary included in the DCO application may differ to the Site Boundary shown in Plates 3.1 and 3.2.

3.2 UK ONSHORE ELEMENTS

3.2.1 UK Onshore Elements of the Proposed Development are as follows:

- Works at the existing National Grid Lovedean substation in Hampshire where AQUIND Interconnector will connect to the existing Great Britain electricity grid;
- Underground alternating current cables, connecting Lovedean substation to the proposed Converter Station;
- The construction of a Converter Station comprising a mix of buildings and outdoor electrical equipment. The building roofline will vary in height but is likely to be approximately 22 m at its peak and may also include lightning masts. The maximum height of the building may be increased to up to 26 m, dependent on the preferred architectural and roof design solution;
- Up to two Telecommunication buildings associated with the Fibre Optic Cable ('FOC') (one for each circuit) are anticipated to be located outside the main Converter Station security fence, so that they can be accessed by third parties;
- Two pairs of underground HVDC cables together with smaller diameter fibre optic cables for data transmission from the proposed Landfall site in Eastney (near Portsmouth) to the Converter Station at Lovedean, approximately 20 km in length. The intention is to locate the cables within existing highway or road verges, where practicable; and
- Up to two Optical Regeneration Stations ('ORS') associated with the FOC (one for each circuit) are anticipated within approximately 1 km of the Landfall. Each ORS would be housed in a separate building with dimensions of approximately 4 m x 5 m long x 3 m high (20 m² footprint). Each ORS may be contained within a security fence, which may also include equipment associated with an auxiliary power supply to the ORS.

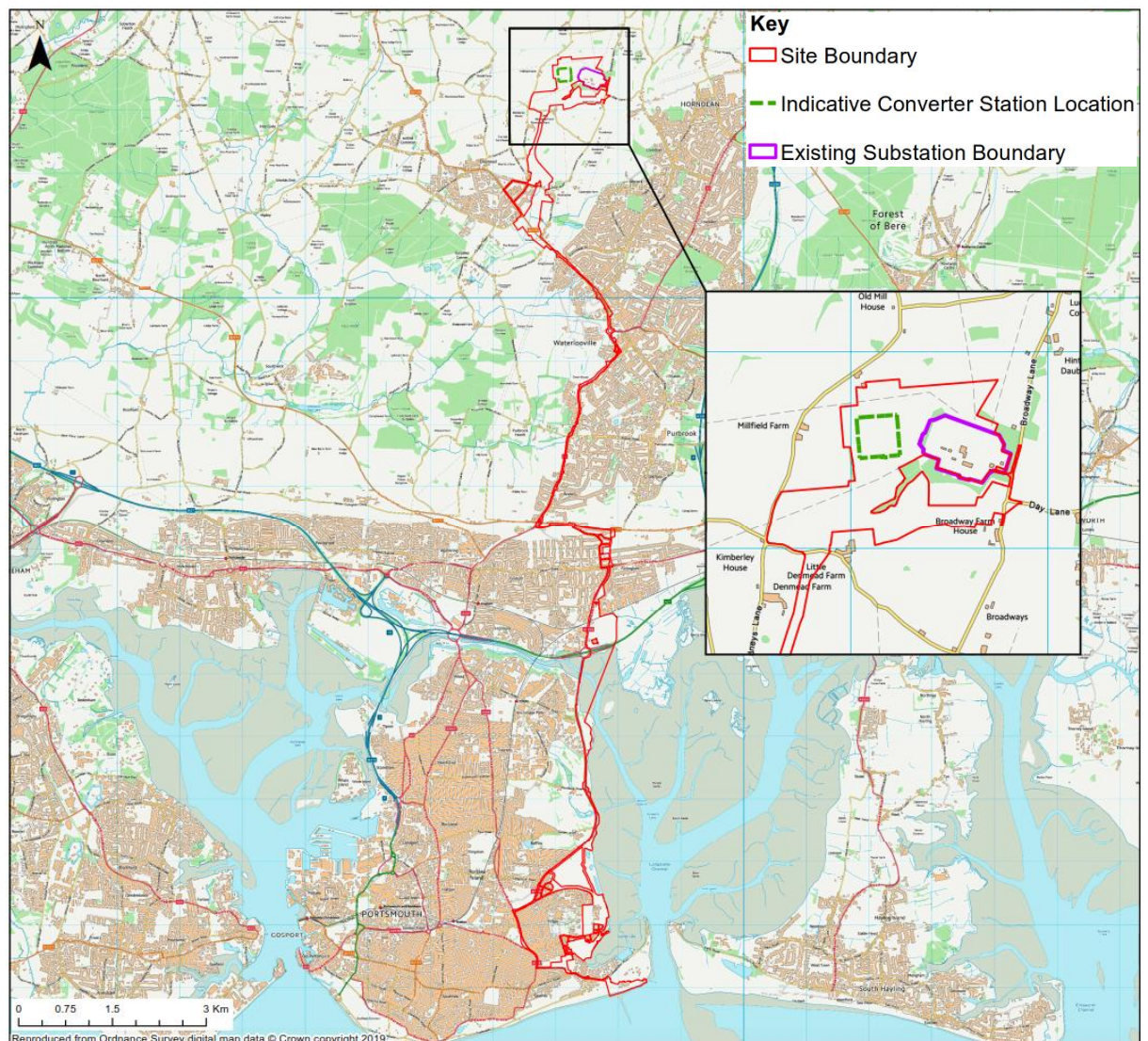


Plate 3.1 - Onshore Site Boundary

3.2.2 The Onshore Cable Corridor is described in sections, with some sections providing an element of optionality for this stage of the development which is to be consulted on as part of the current consultation exercise. Those sections are broken down further to provide a description of different options under consideration. The sections are shown on Figure 3.1 and are summarised below:

- Section 1 – Lovedean (Converter Station Area);
- Section 2 – Anmore;
- Section 3 – Denmead/Kings Pond Meadows;
- Option 3a) Kings Pond Meadows (i) and (ii)
 - § (i) From the land north of Anmore Road to the field south-east of the SINC in ducts installed by HDD;

- § (ii) From the land north of Anmore Road to the field south-east of the SINC in ducts installed in open-cut trenches;
 - Option 3b) Anmore Road;
 - Option 3c) Highways Route;
- Section 4 – Hambledon Road to Burnham Road;
- Section 5 – Farlington;
 - Section 5a) Farlington Avenue;
 - Section 5b) Farlington Water Works (i) to (iv);
 - § (i) via Burnham Road and Ainsdale Road;
 - § (ii) via Blake Road;
 - § (iii) via the recreation ground;
 - § (iv) via Eveleigh Road;
 - Option 5c) Portsdown Hill Road;
- Section 6 – Zetland Field and Sainsbury’s Car Park;
 - Option 6a) A2030 and Fitzherbert Road;
 - Option 6b) Zetland Field and Fitzherbert Road;
- Section 7 – Farlington Junction to Airport Service Road;
- Section 8 – Great Salterns Golf Course to Velder Avenue/Moorings Way;
 - Option 8a) Eastern Road;
 - Option 8b) Minor Roads and Moorings Way;
 - Option 8c) Milton Common;
 - § (i) installing ducts within the path that forms part of the sea defences on the eastern side of Milton Common, and which consist of imported, compacted, material, which is stable and thermally suitable. Following installation, the flood defences would be restored to their original condition. The Cable Corridor would then cross the eastern extent of Moorings Way.
 - § (ii) Utilising the western edge of Milton Common, which ground investigations have indicated might suffer less from the issues associated with Milton Common being a historic landfill e.g. settlement and contaminated land. From Eastern Road, the proposed Onshore Cable Corridor would run south along the western edge and then follow Moorings Way eastwards, either in the highway or in the southern edge of Milton Common.
- Section 9 – Velder Avenue/Moorings Way to Bransbury Road;

- Option 9a) Highways Route;
- Option 9b) Allotments;
 - § (i) The Cable Corridor would utilise Locksway Road and then into the southern-most car park of the Thatched House public house. From here, the cables would be installed under the allotments using HDD, with the exit point located in the open space between the allotments and Kingsley Road;
 - § (ii) The Cable Corridor would utilise Waterlock Gardens/Seaway Crescent and/or Meryl Road to enter the allotments. This option uses a trenching technique within the allotment pathways. The two cable circuits would be installed in different roads.
- Option 9c) Ironbridge Lane (i) to (iii);
 - § (i) via the footpath opposite the south end of Ironbridge Lane;
 - § (ii) via Redlands Grove and Tideway Gardens, back onto Ironbridge Lane and the footpath;
 - § (iii) via Redlands Grove, Tideway Gardens, Kingsley Road and Yeo Court;
- Section 10 – Eastney (Landfall).

3.2.3 There will be four marine cables between England and France for the whole Project, which can be bundled in pairs, as well as smaller diameter fibre optic cables for data transmission. The Entire Marine Cable Corridor between UK and France can be divided into the following sections:

- Approximately 47 km within the UK territorial waters limit, i.e. 12 nautical miles ('nmi') from the Mean High Water Springs ('MHWS');
- Approximately 53 km from the UK territorial waters limit to the Exclusive Economic Zone ('EEZ') boundary line;
- Approximately 58 km from the UK/France EEZ boundary line to the French territorial waters limit; and
- Approximately 29 km within the French territorial waters limit i.e. 12 nmi from the MHWS.

3.2.4 The Marine Cable Corridor from MHWS out to the UK/France EEZ boundary line comprises the marine elements of the Proposed Development as illustrated in Plate 3.2.

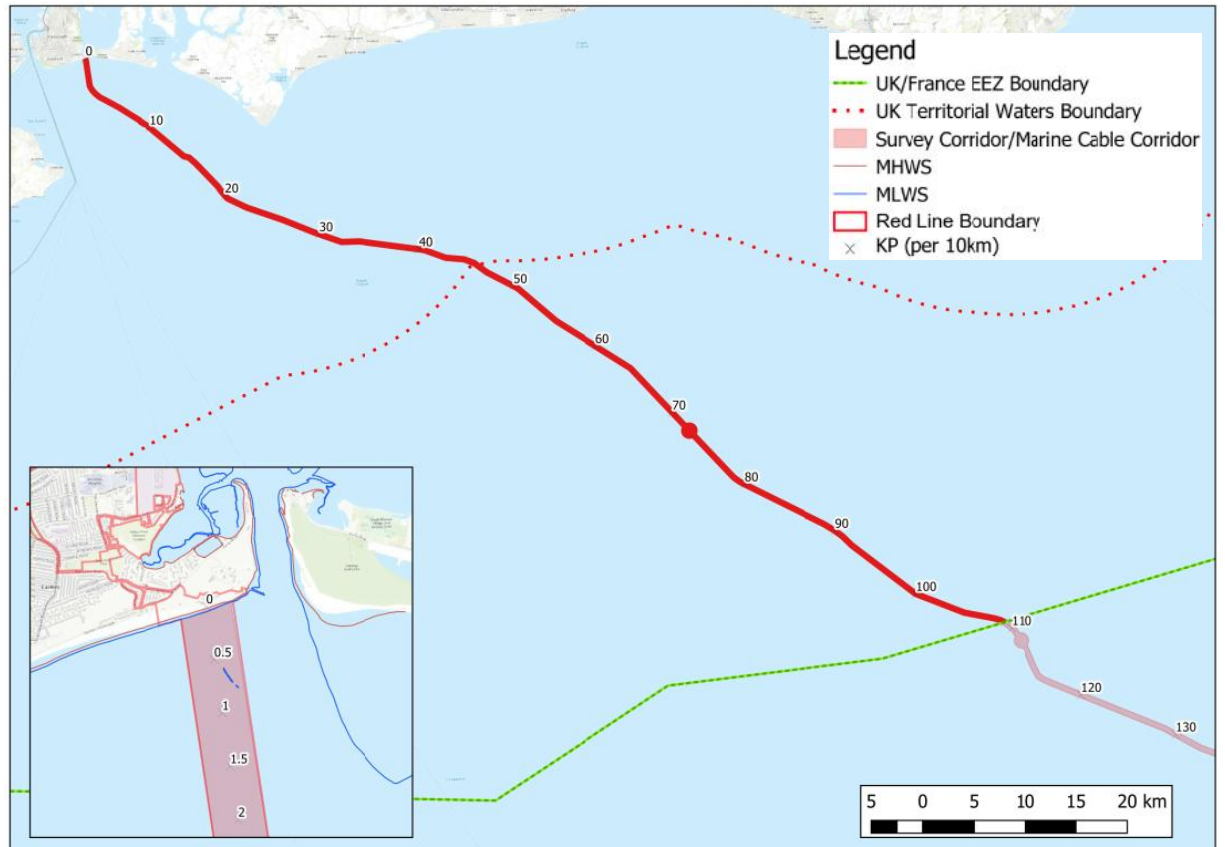


Plate 3.2 - UK Marine Cable Corridor

3.3 CONSTRUCTION

3.3.1 In broad terms, the Proposed Development will comprise the following components:

- HVDC marine cables;
- HVDC onshore underground cables;
- Converter Station and associated equipment, including access road;
- High Voltage Alternating Current ('HVAC') cables; and
- Fibre optic data transmission cables and associated infrastructure.

3.3.1.1 Table 3.1 outlines the indicative programme for the construction works associated with the installation of the marine and onshore elements.

Table 3.1 - Indicative anticipated schedule of works for the Proposed Development

Activity	Indicative Programme
DCO Determination	Q4 2020
Onshore and Marine Cable Manufacture	Q1 2021 – Q3 2022
Converter Technical Equipment Manufacture	Q1 2021 – Q1 2022
Marine Cable Pre-Installation Works	Q2 2021 - Q4 2021
Marine Cable Installation	Q1 2022 - Q3 2023
Converter Station Enabling Works	Q2 2021 - Q3 2021
Converter Station Civils and Construction Works	Q4 2021 - Q3 2023
HDD landfall installation	Q2 2022 - Q3 2022
Onshore HVDC Duct Installation	Q2 2021 - Q3 2022
Onshore HVDC Cable Installation	Q4 2022 - Q2 2023
Onshore HVAC Duct and Cable Installation	Q1 2023 - Q3 2023
Commissioning (Both Poles) and Energisation	Q3 2023 - Q4 2023

3.4 OPERATION AND MAINTENANCE

- 3.4.1 The Proposed Development within the UK marine area has been designed so that routine maintenance to the marine cables will not be required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works, for example due to mechanical/electrical failure or exposure of, or damage to, the cables as a result of fishing activities and/or vessel anchoring.
- 3.4.2 The proposed Converter Station will be designed for unmanned operation, but a small team of maintenance staff (typically 3-4) will be responsible for maintaining the plant and will be on 24/7 callout if required. The design life of all equipment, buildings and infrastructure would be 40 years, which is common practice for this type of development, with the update of some equipment anticipated approximately half way through this period.
- 3.4.3 There are no operational requirements associated with the Onshore Cable Route. However, cable failures or damage are possible (albeit rare in occurrence) and would require repair.

3.5 DECOMMISSIONING

- 3.5.1 The Applicant is seeking consent to install and operate an Interconnector for an indefinite period. The marine cables and the onshore components (e.g. transformers, circuit breakers, reactors) will be designed, manufactured and installed to meet the lifetime of the Proposed Development of 40 years.
- 3.5.2 In the event that the Proposed Development becomes obsolete, all the equipment will be decommissioned in an appropriate manner, agreed with relevant stakeholders and all materials reused and recycled where possible.

4 EIA METHODOLOGY

4.1 GENERAL IMPACT ASSESSMENT APPROACH

- 4.1.1 The objective of the EIA process is to anticipate the changes (or ‘impacts’) that may occur to the environment as a result of the Proposed Development (for example changes to air quality). The changes are compared to the environmental conditions that would have occurred without the Proposed Development (defined as ‘the baseline conditions’).
- 4.1.2 The EIA process identifies potentially sensitive ‘receptors’ that may be affected by the predicted changes (e.g. local residents living near the Proposed Development, local flora and fauna, etc.) and defines the extent to which these receptors may be affected by the predicted changes.
- 4.1.3 The interaction between the sensitivity or importance of a receptor and the potential scale of the impact produces the ‘significance’ of the environmental effect which ranges from ‘negligible to ‘major’. The description of the impact assessment methodology adopted for the Proposed Development is set out in Chapter 4 of the PEIR, and also in each of the technical chapters of the PEIR.
- 4.1.4 Where possible, the PEIR uses standard methodologies, based on legislation, definitive standards, and accepted industry best practice and criteria including:
- National Infrastructure Advice Notes in relation to the Planning Act 2008 process e.g. PINS Advice Note seventeen (Planning Inspectorate, 2015) which provides guidance on cumulative effects assessment (‘CEA’), outlining the types of projects that should be considered, as well as identifying a four-stage process to assess Cumulative Effects;
 - Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change, 2011);
 - Relevant guidance issued by other government and non-governmental organisations;
 - Environmental topic specific guidance documents, for example Chartered Institute of Ecology and Environmental Management (‘CIEEM’) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (CIEEM, 2016);
 - Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment (‘IEMA’), 2004);
 - Special Report – The State of Environmental Impact Assessment in the UK (IEMA, 2011);
 - Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017); and

- Environmental Impact Assessment Guide to: Delivering Quality Development (IEMA, 2015).

4.1.5 In general, the terminology used for classifying significance of an effect (unless indicated otherwise) is set out in below:

- **Major positive or negative effect;**
- **Major/Moderate positive or negative effect;**
- **Moderate positive or negative effect;**
- **Minor positive or negative effect;** or
- **Negligible.**

4.1.6 Effects can be deemed to be ‘Significant’ adverse where one or more receptors are predicted to have a **major** or **major/moderate** adverse effect, as well some that are predicted to have ‘**moderate**’ effects. Mitigation measures are identified, if possible, to avoid or reduce the effect identified, or to reduce the likelihood of occurrence. Residual effects are those effects that remain from the predicted impacts of the Proposed Development once mitigation and any enhancements have been implemented.

4.1.7 Cumulative effects of the Proposed Development with “other developments”, as well as the combined effect of different types of environmental effects from the Proposed Development on the same receptors, are also considered in the PEIR.

4.2 RESULTS OF THE SCOPING STAGE

4.2.1 The ‘Scoping’ stage of the EIA identified the environmental topics where there is potential for significant effects. These are included in the PEIR and summarised in Chapters 6 to 27 of this NTS.

4.3 SCHEME DESIGN, IMPACT AVOIDANCE AND MITIGATION

4.3.1 The Applicant has worked with environmental specialists at WSP and Natural Power to ensure that the design of the Proposed Development avoids or reduces environmental effects on receptors where possible. A number of measures have been incorporated into the concept design to avoid or minimise environmental impacts. These measures include those required for legal compliance and also include current industry best practice guidance, which would be adopted during construction and operation of the Proposed Development.

4.3.2 The construction mitigation measures recommended during the EIA process will be reported in a Construction Environmental Management Plan (‘CEMP’), which will be prepared and implemented during the construction of the Proposed Development by the construction contractor. A draft of the CEMP will accompany the Environmental Statement and the DCO application.

5 CONSULTATION

- 5.1.1 The Applicant is committed to ensuring that the local community, residents, those persons with an interest in the land that may be affected by the Proposed Development, local interest groups, businesses, local authorities, visitors and local highway users, have the opportunity to consider the Proposed Development and comment on its proposals.
- 5.1.2 Public consultation events were held in January 2018, which sought to provide information to the local communities and seek their views on the evolving proposals for the Proposed Development. As part of that consultation, more than 10,000 households and businesses were invited to attend consultation events in Milton, Waterlooville and Lovedean, with 239 people attending in total.
- 5.1.3 The formal consultation is open to all with an interest in the Proposed Development who feel directly or indirectly impacted or who have a view that they would like to be considered. This NTS and the PEIR form part of the consultation materials, and the local community's views on the information contained within this PEIR are being sought as part of the consultation.
- 5.1.4 The Statement of Community Consultation ('SoCC') provides further information on the consultation process and is available to view alongside the PEIR. The local community will be made aware of the consultation via the consultation website, local newspaper advertisements and social media advertising.
- 5.1.5 A Primary Consultation Zone ('PCZ'), shown on maps appended to the SoCC, has been identified around the Proposed Development and direct communications have been sent to households and businesses within that area. Measures are also being employed to ensure that the local community outside of the PCZ are also made aware of the consultation, including seeking the views of parish councils, community and interest groups.

6 PHYSICAL PROCESSES

- 6.1.1 The physical environment assessment in Chapter 6 of the PEIR considers the potential impacts associated with construction, operation (including maintenance and repair) and decommissioning activities associated with the Marine Cable Route in the marine environment, for example on the shallow geology, water movement (hydrodynamic) and wave regime, seabed sediments, sediment transport, and geomorphology (bathymetry). The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction.
- 6.1.2 The following construction (and decommissioning) and operation (including repair/maintenance) impacts were assessed:
- Physical disturbance to seabed geology and structure through alteration of seabed features (e.g. sand waves) and impacts on wave and tidal flow patterns;
 - Impacts to local sediment regimes (e.g. sediment transport) through impacts on flow patterns and increases in Suspended Sediment Concentrations; and
 - Impacts upon coastal and marine processes and the sediment transport regime.
- 6.1.3 From the resources and guidance consulted, and the analyses conducted to date, the potential impacts on the marine and coastal physical environment at Eastney and along the Proposed Development out to the EEZ boundary line likely to occur during construction, operation and decommissioning stages are considered to be generally localised to the Marine Cable Corridor, temporary and of short duration. Therefore, impacts are assessed as low or negligible magnitude, and thus of **minor** or **negligible** significance.
- 6.1.4 It is anticipated that post construction, the physical environment including local coastal and physical processes, and the seabed sedimentary environment, would revert broadly to their natural state, and that a return to the normal conditions experienced pre-development would ensue.
- 6.1.5 No additional mitigation measures to minimise impacts upon the physical environment are therefore proposed and no potentially significant effects are predicted.
- 6.1.6 This assessment is largely complete, however, there will be some further assessment and modelling presented within the ES, including further consideration of sediment movement, and sedimentary effects of dredging.

7 MARINE WATER AND SEDIMENT QUALITY

- 7.1.1 Chapter 7 of the PEIR considers the potential impacts on marine water and sediment quality as a result of activities associated with the construction, operation (including repair and maintenance) and decommissioning of the Proposed Development. The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction.
- 7.1.2 Overall, marine water and sediment quality in the study area is good. Within 1 nmi of the coast near Eastney, water bodies are achieving good/moderate quality despite being heavily modified by activities along the coast. Beyond 1 nmi, the Channel is supplied with oxygen-rich water originating from the Atlantic, and the waters are characterised as shallow and well mixed a result of seasonal changes.
- 7.1.3 The following impacts on marine water and sediment quality were assessed:
- Temporary increase in suspended sediment concentrations; and
 - Resuspension of contaminated sediment.
- 7.1.4 Detailed outputs of the sediment modelling i.e. for suspended sediment concentrations plumes and sediment deposition depth and locations, were not available at the time of writing this PEIR. When modelling data is available this will help inform and update the assessment undertaken and will be presented in the final ES. Accordingly, further information is required to make conclusions on effects within 1 nmi and this assessment will be provided within the ES.
- 7.1.5 At this stage, the approach to assessment in this chapter assumes that mitigation measures embedded within the design (e.g. routing the cable to avoid constraints, use of appropriate construction techniques, marine pollution prevention measures) or which constitute industry standard environmental plans and best practice will be in place. No further mitigation has been proposed to date.
- 7.1.6 Based on information to date, beyond the 1 nmi limit, there is potential for short term negative impacts to water quality as result of increased Suspended Sediment Concentrations, however effects are considered as not significant due to the high resilience and recoverability of the coastal waters in the area, and the low magnitude of the effect. There is potential for the transport of low levels of contaminants, however due to the high rate of flushing in the Channel, any low levels of contaminants will be readily diluted.
- 7.1.7 Effects on marine water and sediment within the jurisdiction of the Water Framework Directive ('WFD') (<1 nmi) and WFD Protected Areas will be assessed prior to finalisation of ES. This will be based on the conclusions of the WFD Assessment which will also be completed as part of the DCO application.

8 INTERTIDAL AND BENTHIC ECOLOGY

- 8.1.1 The intertidal and benthic ecology assessment in Chapter 8 of the PEIR considers the potential impacts on benthic ecology receptors (i.e. species and habitats that exist on (and in) the seabed) associated with the construction, operation (including repair/maintenance) and decommissioning of the Proposed Development. The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction/installation.
- 8.1.2 A comprehensive baseline has been developed describing the ecology of the seabed along the Marine Cable Corridor and in the surrounding area, including through use of data collected via project specific marine surveys and intertidal survey work.
- 8.1.3 Intertidal habitats at Eastney beach include shingle banks, sedimentary habitats, rocky shore habitats, and vegetated shingle. Subtidal habitats present further offshore within the Marine Cable Corridor include mobile fine sands, mixed sediments, coarse sediments, and subtidal rock.
- 8.1.4 A single area of potential Annex I reef habitat was identified near to the EEZ boundary line, although this habitat is not within any designated or proposed protected area.
- 8.1.5 The following impacts on the seabed environment were assessed:
- Construction (and decommissioning):
 - Direct seabed disturbance;
 - Temporary increase in suspended sediment concentrations;
 - Deposition of sediment (smothering); and
 - Impacts from the resuspension of contaminated sediment.
 - Operation (incl. repair/maintenance):
 - Disturbance due to repair/maintenance activity; and
 - Habitat loss.
- 8.1.6 **No potentially significant effects** are currently predicted to arise from impacts on the benthic ecology features assessed as a result of the construction, decommissioning and operation of the Proposed Development.
- 8.1.7 A number of additional assessments will be undertaken for submission with the ES, including:
- Assessment of impacts from increased suspended sediment concentrations on nearshore protected and/or sensitive features in proximity to the Marine Cable Corridor;
 - Cumulative Effects Assessment;

- Habitats Regulations Assessment ('HRA') for Special Area of Conservations ('SAC') with benthic interest features; and
- Marine Conservation Zone ('MCZ') Assessment.

9 FISH AND SHELLFISH

- 9.1.1 The assessment in Chapter 9 of the PEIR considers the potential impacts of activities on natural fish and shellfish associated with the construction, operation (including repair/maintenance) and decommissioning of the Proposed Development. The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction.
- 9.1.2 Due to the mobile nature of many fish species, the study area and baseline information encompasses the UK and French Marine Cable Corridor.
- 9.1.3 Fish and shellfish species vary within the Channel. Within the UK marine area, there are areas important as spawning grounds for herring. A number of fish and shellfish of conservation importance to the UK are also present which include salmon, black bream, sea horses, European eel, sea lamprey and both allis and twaite shad.
- 9.1.4 Langstone Harbour and the surrounding area is also important for oysters and juvenile fish, especially bass.
- 9.1.5 The following impacts on fish and shellfish were assessed:
- Construction (and decommissioning):
 - Temporary habitat disturbance/loss;
 - Temporary increase in suspended sediments (and smothering); and
 - Noise and vibration.
 - Operation (including repair and maintenance):
 - Electromagnetic fields ('EMF'); and
 - Permanent habitat loss.
- 9.1.6 **No potentially significant effects** are predicted to arise as a result of the information considered to date for the Proposed Development.
- 9.1.7 A number of additional assessments will be undertaken for submission with the ES, including:
- Assessment of impacts from increased suspended sediment concentrations on protected and/or sensitive features in proximity to the Marine Cable Corridor;
 - Assessment of potential impacts from driven ducts as part of the HDD works at Eastney on protected and/or sensitive features;
 - Cumulative Effects Assessment;
 - HRA for SACs with fish/shellfish interest features; and
 - MCZ Assessment.

10 MARINE MAMMALS AND BASKING SHARKS

- 10.1.1 Chapter 10 of the PEIR presents assessment of the potential impacts associated with the construction, operation (including repair and maintenance) and decommissioning of the Proposed Development on marine mammals and basking sharks. The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction.
- 10.1.2 In comparison with the rest of the UK, species richness and abundance of marine mammals and basking sharks in the eastern Channel is low. The main species present include harbour porpoise, bottlenose dolphin, common dolphin, minke whale, grey seal and harbour seal. Population density estimates are only available for harbour porpoise and minke whale.
- 10.1.3 Potential effects to marine mammals and basking sharks from collision with vessels, increased vessel noise, increased noise from geotechnical investigations, construction activities and EMF have been given consideration and information has been provided evidencing that the potential effects from these impacts are not considered to be a significant risk to these species as to warrant further investigation.
- 10.1.4 Disturbance and onset of auditory injury to marine mammals from noise impacts resulting from use of geophysical survey and positioning equipment occurring during construction, operation and decommissioning stages were assessed.
- 10.1.5 This assessment concluded that there was **negligible** potential for the sound to induce the onset of auditory injury. Therefore, this effect was considered to be not significant.
- 10.1.6 The potential for disturbance from noise impacts was also considered to be **not significant** due to the small number of animals estimated to have the potential to be disturbed, and the fact that any disturbance is likely to be temporary and suitable alternative habitat for marine mammals and basking sharks is available.
- 10.1.7 Further assessment which is ongoing, to be presented in the ES, includes consultation; consideration of potential impacts on features of French Special Areas of Conservation ('SACs') designated for harbour porpoise, bottlenose dolphin and grey seal; and updating the assessment to respond to new design information or guidance as it becomes available.

11 MARINE ORNITHOLOGY

- 11.1.1 Chapter 11 of the PEIR considers the potential impacts on marine birds/ornithology associated with construction, operation (including repair and maintenance) and decommissioning of the Proposed Development. The potential effects of decommissioning are considered to be equivalent to or potentially lower than those associated with construction/installation.
- 11.1.2 Marine birds present seaward of the mean low water spring ('MLWS') mark are considered. Intertidal birds present landward of MLWS are considered separately in PEIR Chapter 16 Onshore Ecology.
- 11.1.3 Overall abundance of seabirds and inshore wintering waterfowl in UK waters within the Channel is relatively low. However, species diversity is high, and the Channel is an important area during migration.
- 11.1.4 While there is little suitable habitat for cliff-nesting seabirds in the region surrounding the Proposed Development, there are a number of nationally and internationally important tern and gull colonies present on the sand and shingle beaches, saltmarshes and offshore islets of the southern English coastline. A number of nationally important estuarine and coastal wintering sites are also present for inshore wintering waterfowl.
- 11.1.5 Potential effects to marine ornithology resulting from disturbance and displacement from construction machinery and support vessels, in addition to indirect effects as a consequence of prey disturbance and/or habitat loss were assessed.
- 11.1.6 Industry standard and best practice embedded mitigation measures were assumed within the assessment, and no further mitigation requirements were identified.
- 11.1.7 **No potentially significant effects** were predicted for marine ornithology, with minor impacts predicted at most, due to the short-term and localised nature of predicted effects compared to species abundance and distribution in the vicinity of the Marine Cable Corridor.
- 11.1.8 Further assessment will be undertaken and completed for the ES. This will include further consultation, as required; undertaking a HRA for marine birds; and updating the assessment to respond to new design information or guidance as it becomes available.

12 COMMERCIAL FISHERIES

- 12.1.1 Chapter 12 of the PEIR outlines information regarding the potential impacts on commercial fisheries associated with the construction, operation (including repair and maintenance) and decommissioning of the Proposed Development, as known at the time of publication. The potential effects of decommissioning are, in the worst case, considered to be equivalent to the effects associated with construction and are assessed on this basis, though may potentially be less than those associated with construction depending on the decommissioning activities undertaken, for instance where the marine cable is left *in situ*.
- 12.1.2 The fishing practices vary considerably within the footprint and vicinity of the Proposed Development.
- 12.1.3 Inshore areas (within the UK 12 nmi limit) are dominated by potting for crab, lobster and whelk. These vessels are small with a limited operational range and operate a range of gear types including potting, longlining, and netting.
- 12.1.4 The offshore areas (beyond UK 12 nmi limit up to the UK/France EEZ boundary line) is fished by a number of nationalities including French, Belgian and Dutch vessels. These vessels use a range of gear types including dredges, seine nets, and demersal trawls targeting a number of fish species such as scallops, herring and flatfish.
- 12.1.5 The following impacts on commercial fisheries were assessed:
- Complete/temporary loss or restricted access to established fishing grounds;
 - Complete/temporary displacement of fishing activity into other areas;
 - Interference to normal fishing activities;
 - Navigational safety issues for fishing vessels;
 - Increase in steaming times; and
 - Obstacles on the seabed.
- 12.1.6 As well as the embedded mitigation measures identified, additional mitigation measures are proposed to minimise impacts which include, but not limited to the potential use of guard vessels, minimising the period of time the cable is left exposed, where possible, and establishment of an Inshore Fisheries Working Group.
- 12.1.7 **No potentially significant effects** are predicted to arise on commercial fisheries assessed as a result of the construction, decommissioning and operation of the Proposed Development.
- 12.1.8 Prior to the next stage, further assessment will be undertaken to include CEA and updating the assessment to respond to new design information as it becomes available.

13 SHIPPING AND NAVIGATION AND OTHER MARINE USERS

- 13.1.1 Chapter 13 of the PEIR presents the shipping and navigation and other marine users' assessment. This considers the potential impacts on activities in proximity to the Marine Cable Corridor during construction, operation (including repair and maintenance) and decommissioning of the Proposed Development. The activities include:
- Shipping;
 - Anchoring;
 - Fishing; and
 - Any other third-party activity.
- 13.1.2 No impacts were assessed to be unacceptable (major risk). Of the impacts considered in the construction (and decommissioning) stage, ten were considered to be tolerable (moderate risk) with embedded mitigation:
- Vessel-vessel collision risk;
 - Disruption to vessel routeing/timetables;
 - Disruption to port arrivals/departures;
 - Disruption to fishing activities;
 - Disruption to recreational activities;
 - Anchor dragging onto exposed cables;
 - Emergency anchoring onto exposed cables;
 - Vessel foundering onto exposed cables;
 - Dropped object onto exposed cables; and
 - Fishing gear snagging onto exposed cables.
- 13.1.3 The remaining two potential impacts (disruption to marine aggregate dredging activities and disruption to military exercises) were considered to be broadly acceptable (low risk).
- 13.1.4 Within the operational (including repair/maintenance) stage, six impacts were considered as tolerable (moderate risk):
- Anchor dragging;
 - Emergency anchoring;
 - Grounding due to reduced under keel clearance;
 - Vessel-vessel collision risk;
 - Fishing gear snagging; and
 - Magnetic compass deviation.

- 13.1.5 The remaining two potential impacts (vessel foundering, dropped objects) were evaluated as broadly acceptable (low risk).
- 13.1.6 Additional mitigation measures identified were the potential use of guard vessels, minimising the period of time the cable is left exposed, targeted circulation of information to ferry operators and local sailing clubs, avoidance of key sailing races and further communication with the Maritime and Coastguard Agency ('MCA').
- 13.1.7 The assessment will be updated following responses from the PEIR and further consultation that will be undertaken as part of the DCO application process.

14 MARINE ARCHAEOLOGY

- 14.1.1 Chapter 14 of the PEIR outlines the potential impacts on marine archaeology associated with the construction, operation (including repair and maintenance) and decommissioning of the Proposed Development, as known at the time of publication.
- 14.1.2 Currently, no maritime or aviation sites within the Proposed Development are subject to statutory protection. From data collected from the marine surveys, two features have been identified as records of wreck sites, whilst another two features may be of anthropogenic origin. The two wrecks consist of steamship Corbet Woodwall (UKHO_20073) and a broken up unidentified steamship (UKHO_20024).
- 14.1.3 The PEIR identifies archaeological potential for seabed prehistory within the Marine Cable Corridor. Through the process of geoarchaeological assessment new information has been gathered, highlighting one core location which preserves a peat unit, which may be of palaeoenvironmental and archaeological interest.
- 14.1.4 As archaeological and cultural heritage receptors are finite and cannot recover, any physical impacts to them upon them would be permanent and potentially significant. However, it is expected that significant effects can be mitigated through a series of embedded and additional mitigation strategies, including avoidance of known sites. Residual effects of impacts are likely to be of **minor** or **negligible** significance.
- 14.1.5 Adequate and appropriate mitigation measures have been recommended to ensure that the archaeological value of the baseline is maintained. All known wreck sites will be avoided and features of possible archaeological interest will be avoided where possible. A protocol will be agreed with the Archaeological Curator and Marine Management Organisation ('MMO') to mitigate construction effects in the event of any unexpected archaeological discoveries during installation of the marine cables.

15 LANDSCAPE AND VISUAL AMENITY

- 15.1.1 Chapter 15 of the PEIR sets out the preliminary landscape character baseline information for the assessment of potential landscape and visual effects. This includes the landscape character areas of the South Downs National Park, the urban rural fringe surrounding the indicative Converter Station location, and the townscape character areas through which the Onshore Cable Corridor runs and within which the Landfall Site is located.
- 15.1.2 The study area for the assessment has been agreed with the statutory consultees as 8 km radius, with a 3 km radius detailed study area around the indicative Converter Station location. The Landscape and Visual Impact Assessment ('LVIA') study area for the Onshore Cable Route and Landfall area includes a 100 m buffer alongside each of the working widths.
- 15.1.3 The Converter Station is proposed within a landscape of low-medium value and sensitivity, which has capacity to accommodate change as the landscape already contains an electricity substation, pylons with overhead lines. The scale of the proposed Converter Station would have a great influence within the 3 km radius detailed study area identified, and is anticipated to result in minor, to moderate to major significant landscape and visual effects.
- 15.1.4 Beyond a 3 km radius, and within the 8 km study area, potential significant landscape and visual effects are reduced due to intervening tree cover and hedgerow screening the Converter Station in the wider landscape, and reducing the potential for indirect landscape effects and medium – long distance views for residential and recreational receptors. The indicative mitigation planting for the indicative Converter Station location considers a mix of planting ranging from woodland and tree belts connecting with Crabden Copse, an ancient semi natural woodland adjacent to the Converter Station, native hedgerows with hedgerow trees to small copses in specific locations.
- 15.1.5 It is not anticipated that there would be any direct landscape effects on the existing landscape elements and physical characteristics within the South Downs National Park ('SDNP') because the proposed Converter Station lies outside the boundary of the national park. Given the proximity, high sensitivity and high value of the landscape of the SDNP, there is the potential for significant and non-significant indirect landscape effects to arise from the proposed Converter Station within the boundary area of the SDNP, and up to 3 km from the proposed Converter Station.
- 15.1.6 Given that the location of the proposed Cable Route and Landfall Area is predominantly through residential and recreational areas within Havant and Portsmouth, there is potential for **significant adverse** landscape and visual effects. However, these would be temporary effects, and on completion the landscape and townscape areas will be reinstated to their previous use, and the significant effects reduced.

16 ONSHORE ECOLOGY

- 16.1.1 Chapter 16 of the PEIR provides the preliminary results of the onshore ecology assessment, summarises surveys undertaken to date and the remaining surveys to be carried out in order to inform the ES. Appendix 16.1 Preliminary Arboricultural Report provides the preliminary impacts and baseline arboricultural conditions within the Site Boundary.
- 16.1.2 A Preliminary Ecological Appraisal was undertaken in 2017 and will be updated in 2019 following further survey work. The following study areas were used:
- 10 km for European and Ramsar Sites;
 - 2 km for UK Statutory Sites (e.g. Sites of Special Scientific Interest);
 - 1 km for non-statutory Sites (e.g. local wildlife sites);
 - 2 km for bat records; and
 - 1 km for other species records.
- 16.1.3 The Study Area for Phase 1 survey and great crested newt survey extended to 250 m from the Site Boundary. Surveys for breeding birds, wintering and migratory birds, bats and ████████ and hazel dormouse have been undertaken along the Proposed Development. Intertidal birds present landward of the MLWS are considered in the onshore ecology assessment, while marine birds seaward of the MLWS mark are considered in Chapter 11 Marine Ornithology.
- 16.1.4 Based on the current scheme design and Site Boundary, the onshore infrastructure is considered unlikely to impact on designated sites. It is also considered unlikely that the Proposed Development will affect any notable habitats or impact wintering and migratory birds based on the survey data collected to date. There is likely to be a low magnitude of change on non-statutory sites prior to mitigation and there is likely to be a direct, temporary, short-term effect on the non-statutory sites of **negligible or minor** significance prior to mitigation.
- 16.1.5 On completion of surveys to be carried out in 2019, conclusions for other species will be determined, including but not limited to, the following:
- Phase 1 Habitat Survey (ongoing);
 - Ground level tree assessment for bats;
 - Roosting bats;
 - National Vegetation Classification;
 - Great crested newt;
 - Hazel dormouse;
 - Hedgerow; and
 - Watercourses.

16.1.6

The design of the Proposed Development and Site Boundary will be refined ahead of the final DCO application. The effects which are minimised by final route selection and other mitigation measures will be reported in the ES.

17 SOILS AND AGRICULTURAL LAND USE

- 17.1.1 The preliminary soils and agricultural land use impact assessment of the Proposed Development is set out in Chapter 17 of the PEIR.
- 17.1.2 Agricultural land quality surrounding the indicative Converter Station location is a mixture of good quality Best and Most Versatile ('BMV') agricultural land (in Subgrade 3a), and moderate and poor-quality land in (Subgrade 3b and Grade 4). The soils are mostly medium clay loam topsoils over clay and heavy clay loam.
- 17.1.3 The siting of the Converter Station will involve the loss of land in Subgrade 3b and Grade 4, which is not considered to be BMV agricultural land. However, some Subgrade 3a land to the south of the existing Converter Station will also be required, giving rise to a likely **minor to moderate permanent adverse** effect on BMV agricultural land.
- 17.1.4 There are not anticipated to be any significant effects on BMV agricultural land or soil resources arising from the construction of the Onshore Cable Corridor, on the assumption that good practice is used in the handling and storage of soil resources.
- 17.1.5 A Soil Resources Management Plan will identify the existing soil resources that will be affected by the Proposed Development, based on existing and further detailed soil surveys.
- 17.1.6 Detailed soil and Agricultural Land Classification surveys will be required for the agricultural land and natural soil resources affected by the Onshore Cable Route, and any land required for the Converter Station Area where these have not already been surveyed in detail.

18 GROUND CONDITIONS

- 18.1.1 Chapter 18 of the PEIR provides the preliminary ground conditions assessment of the Proposed Development.
- 18.1.2 A review of the baseline environment has been provided for the Converter Station Area, the Landfall area, and each of the sections of the route in between, including alternate route options where required.
- 18.1.3 Impacts upon human receptors are considered likely during the Construction Stage without appropriate remediation and management of potential risks through the Construction Design and Management ('CDM') Regulations, the development of Method Statements and Risk Assessments and the use of good construction practices.
- 18.1.4 Impacts upon controlled water receptors (Principal, Secondary A and Secondary Undifferentiated Aquifers) are considered likely during the Construction Stage without appropriate remediation and management of potential risks through the CDM Regulations, the development of Method Statements and Risk Assessments and the use of good construction practices.
- 18.1.5 In view of the information currently available and following the implementation of the mitigation measures outlined above, it is considered that residual significant effects upon geology and land quality will be **negligible**.
- 18.1.6 With the application of the mitigation measures all the effects assessed are reduced to **negligible** and **not significant**.
- 18.1.7 A ground investigation at the Converter Station commenced in April 2018 and ground investigation along some of the Onshore Cable Route options commenced in July 2018 with the purpose of further informing the Onshore Cable Route options and to provide further information that has help to inform, this geology, soils and contamination assessment.
- 18.1.8 Further ground investigations along the Onshore Cable Corridor may be undertaken in 2019, if required, as well as an assessment of solution features and karst rock conditions, and further consultations with the relevant LPAs.

19 WATER RESOURCES AND FLOOD RISK

- 19.1.1 Chapter 19 of the PEIR provides the preliminary information regarding water resources and flood risk and how they will be taken into account. Effects on identified groundwater, surface water and flood risk receptors are considered.
- 19.1.2 Mitigation beyond the commitments described in the drainage strategy has still to be determined however it is expected that further mitigation as necessary will be incorporated into the design of the Proposed Development and that the CEMP will describe methods to mitigate risks associated with construction activities.
- 19.1.3 No potentially significant effects to groundwater bodies (water quantity, water quality and groundwater flooding) are anticipated either during the construction or operational stage.
- 19.1.4 When considering potential effects to surface water resources, the assessment identifies the following:
- **Minor to Moderate** and **significant** adverse effects to water quality during the construction and operational stages, affecting surface water drainage patterns, surface water bodies and public sewer networks; and
 - **Moderate** and **significant** adverse effects on flooding during the construction stage. These are associated with the development of the Converter Station, and the Landfall site, and would potentially affect construction workers, local residents and users of surrounding areas.
- 19.1.5 The following further assessments are either ongoing or will be reported in the ES:
- Further consultation to identify local abstractions;
 - Groundwater level monitoring;
 - A dewatering impact assessment, subject to confirmation;
 - Detailed assessment on the water environment (groundwater, surface water and flood risk);
 - Further drainage strategy for the operational and temporary works;
 - Onshore WFD Assessment;
 - Water Feature Survey; and
 - Flood Risk Assessment.

20 HERITAGE AND ARCHAEOLOGY

- 20.1.1 Chapter 20 of the PEIR considers the potential impacts associated with the Construction Stage and Operation Stage within proximity of the Converter Station Area.
- 20.1.2 There are 21 Grade II listed buildings and one Grade II* listed building in the 2 km study area around the Converter Station. Those that would be affected in terms of understanding and appreciation of their significance because of changes to their setting have been assessed. The Onshore Cable Route is otherwise entirely below ground and setting effects have been scoped out.
- 20.1.3 The Site has the potential for archaeological remains of all periods from the prehistoric to post-medieval to be present, with potential in places for palaeoenvironmental remains. The heritage significance of such remains can vary from low to high (potentially very high) depending on the nature, extent, and date of the remains.
- 20.1.4 During construction, the likely significant effect would be a partial or complete loss of buried heritage assets in areas where ground disturbance is proposed of minor negative to major negative significance. These effects include land associated with the development of the Converter Station, Cable Route, and Landfall. The main impact is topsoil stripping, which is assumed in the footprint of the Converter Station and in rural areas.
- 20.1.5 During operation, there is the potential for partial loss of significance resulting from permanent changes to the setting of designated assets. The likely permanent changes to the setting of designated assets has been assessed with only one concluded as being of **minor negative** significance and the rest of **negligible** significance.
- 20.1.6 Further surveys in the form of archaeological evaluation are required in greenfield areas, comprising archaeological trial trenches informed by geophysical survey. This will be carried out at the earliest feasible time, to inform the ES. Further consultation with LPA archaeological officers to agree the scope of works will be carried out following the publication of this PEIR.

21 TRAFFIC AND TRANSPORT

- 21.1.1 Chapter 21 of the PEIR assesses the preliminary traffic and transport impacts of the Proposed Development. This assessment has been undertaken only for the Construction Stage of the Converter Station and Onshore Cable Corridor given that the Operational Stage will generate a **negligible** volume of traffic for maintenance purposes only.
- 21.1.2 The baseline directly surrounding the Converter Station consists of mainly quiet rural lanes, with low volumes of traffic and little use by non-motorised users. As a result of these existing conditions, the peak construction stage is anticipated to generate a noticeable increase in traffic volumes along these links, although when considered across a typical day it is not anticipated to generate a significant adverse impact on all users.
- 21.1.3 Beyond the immediate vicinity of the Converter Station the Heavy Goods Vehicle construction traffic will use Lovedean Lane, A3 Portsmouth Road and B2150 Dell Piece Way to access the A3 (M). These routes will generally experience only a **minor** impact from the construction stage, as a result of the existing levels of traffic and suitable provision for non-motorised users.
- 21.1.4 The Onshore Cable Corridor passes through a range of different road types, from quiet rural lanes around Denmead to A3 London Road and A2030 Eastern Road, which form major highway links within the Hampshire County Council and Portsmouth City networks, and other residential roads/cul-de-sacs. It is anticipated that the Onshore Cable Corridor installation will have a **minor to negligible** impact across the Onshore Cable Corridor.
- 21.1.5 The Onshore Cable Corridor installation is predicted to result in a **significant adverse** impact on traffic delay on the major links such as A2030 Eastern Road and some sections of A3 London Road. This to a degree is unavoidable given the nature of these links and high volumes of baseline traffic but the Construction Traffic Management Plan and timing of works to avoid the busiest periods on the network will attempt to mitigate these impacts. The use of alternative routes that avoid sections of these key links is continuing to be considered further as part of the EIA.
- 21.1.6 Prior to completion of the ES, further traffic surveys will be completed at key links where traffic flows have not been available for inclusion in the PEIR. This will allow for a complete assessment of all links that form part of the study and specifically include additional analysis of traffic delay and accidents and safety.

22 AIR QUALITY

- 22.1.1 The preliminary information regarding environmental effects on air quality in connection with the Proposed Development is set out in Chapter 22 of the PEIR. A qualitative preliminary assessment of the potential impacts on both the amenity and health of human and ecological receptors as a result of air quality impacts from the following has been undertaken:
- Dust and particulate matter released during site preparation and the Construction Stage;
 - Changes in local pollutant concentrations (NO₂ and particulate matter) due to exhaust emissions from construction vehicles and plant; and
 - Changes in local pollutant concentrations (NO₂ and particulate matter) due to exhaust emissions from road vehicles delayed due to construction works and road closures.
- 22.1.2 It is anticipated that a **negligible** impact is likely from construction activities at the Converter Station, Onshore Cable Route and Landfall.
- 22.1.3 The latest iteration of the construction plan for the onshore cable works determine that significant numbers of on-road construction vehicles, such as those required to construct the Converter Station, will not traverse or run adjacent to sensitive ecological designations. Small numbers of construction vehicles could traverse or run adjacent to ecological receptors on the construction traffic route for the Cable Route and preferred Landfall but these are expected to be low in number and the impact will be **negligible**.
- 22.1.4 A key consideration in mitigating NO₂ emissions where the Onshore Cable Route is in or immediately adjacent to roads, is the installation of traffic management to prevent disruption to existing traffic, particularly in locations where NO₂ emissions are already elevated. Where measures are agreed and approved by the relevant local authority to minimise disruption, the impact on NO₂ is expected to be **negligible**.
- 22.1.5 Based on existing local air quality in each construction area, the proximity of sensitive receptors to the site where construction works are to take place and the roads likely to be used by construction vehicles, as well as the likely numbers of construction vehicles and plant that will be required, the impacts at each site are considered to be of **negligible** significance with the implementation of recommended mitigation measures.

23 NOISE AND VIBRATION

- 23.1.1 Chapter 23 of the PEIR provides the preliminary noise and vibration assessment of the Proposed Development.
- 23.1.1.1 Details of the existing noise climate around the Converter Station, Onshore Cable Route and Landfall are presented, along with the methodology and results from the baseline noise survey, which has been undertaken in proximity to the indicative Converter Station location. Existing noise sources in proximity to the Converter Station Area include the surrounding road network and the Lovedean substation. The existing noise climate in proximity to the Onshore Cable Route is anticipated to be dominated by traffic on the surrounding road network. At the Landfall area, road traffic is anticipated to include the noise climate close to the residential areas with relatively low noise levels being expected in the area of the proposed Optical Regeneration Station.
- 23.1.1.2 The sources of noise and vibration during construction of the Converter Station are likely to be the plant associated with substructure works within the Converter Station Area. Vibration impacts from the construction of the Converter Station are predicted to be **negligible**, and noise impacts are predicted to be short-term temporary and **minor negative**.
- 23.1.1.3 The sources of noise and vibration during construction of the Onshore Cable Route and at the Landfall are likely to be the plant associated with excavation. Noise impacts from construction are predicted to be short-term, temporary and up to **major negative**. Vibration impacts are predicted to be up to **moderate negative**. The dominant sources of noise during the operation of the Converter Station are anticipated to be the converter transformers; the cooling fan bank; the AC filter bank; and noise egress from the converter halls.
- 23.1.1.4 The preliminary assessment shows that during operation there will be a **negligible** effect at most residential receptors as a result of the Converter Station. However, at Hillcrest there will be a **minor negative** effect, at The Haven, a **moderate negative** effect and at Millfield Farm there will be a **major negative** effect.
- 23.1.1.5 As the design evolves additional mitigation will be explored in order to reduce negative effects identified in the preliminary assessment.
- 23.1.1.6 Construction methodology, programme and construction plant schedule are also to be determined. Upon receipt of the required information, the assessment of the construction noise and vibration for both the Converter Station and the Onshore Cable Route will be undertaken and included within the ES.

24 SOCIO-ECONOMICS

- 24.1.1 Chapter 24 of the PEIR considers effects on community resources, amenity, and accessibility, and businesses which may suffer disruption during the Construction Stage.
- 24.1.2 Businesses closest to the Proposed Development have been identified on the basis that they have the potential to experience disruption due to highway and footway changes during construction.
- 24.1.3 Socio-economic characteristics are compared between the four Local Authority Areas. The variables considered were:
- Population and working age population;
 - The Indices of Multiple Deprivation; and
 - Local and Regional economy statistics (job density and industry sector statistics).
- 24.1.4 The predicted effects from the Proposed Development are as follows:
- Although no land take from commercial properties is envisaged, the proposed construction works are likely to temporarily disrupt businesses along the Cable Route due to potential access restrictions to roads and footways and associated reduction in vehicle traffic and footfall;
 - There is the potential for beneficial effects during construction on the local economy as expenditure within the local supply chain is likely to increase;
 - During construction, the Proposed Development would likely require temporary land take and changes to the access of recreational and open spaces and pedestrian public routes (including Public Right of Way and non-designated public routes); and
 - During construction, potential changes to the amenity value of open spaces, Public Right of Way and access routes. During operation, depending on the final design, there is also potential for there to be an impact on access and amenity of these spaces, primarily at the Converter Station.
- 24.1.5 An integral part of understanding the potential temporary impacts on businesses, open space and recreational areas and Public Right of Way will be ascertaining the duration of construction activities. Therefore, as the design evolves, the identification of sensitive receptors and associated potential impacts will be revisited. This will take into consideration the proximity of these sensitive receptors to the Proposed Development and the nature and duration of construction activities.
- 24.1.6 In the EIA the potential economic impacts will be quantified in terms of both indirect and direct employment opportunities that will result during construction of the Proposed Development.

25 HUMAN HEALTH

- 25.1.1 An initial assessment of human health effects is provided in Chapter 25 of the PEIR.
- 25.1.2 Of the settlements considered within the study area, Portsmouth has the largest population. Age profiles show that East Hampshire, Winchester and Havant have generally older populations, while the population in Portsmouth is generally younger than both regional and national age profiles. In terms of overall deprivation, Winchester and East Hampshire are both significantly less deprived than the national average, while Portsmouth is considered to be more deprived. This trend is also seen with life expectancy, with the life expectancy in Portsmouth being observed to be significantly lower than the national average. Havant is the only local authority area that has a lower percentage of the residents considering themselves to be in 'very good health' compared to the national level.
- 25.1.3 There are formal and informal recreational/public open spaces within proximity of the Onshore Cable Route and Landfall, and these will provide a health benefit to surrounding communities.
- 25.1.4 The construction assessment for the Converter Station, Onshore Cable Route and Landfall has identified that there is the potential for **moderate** temporary adverse effects arising from noise disturbance caused to those living nearby. There is also the potential for **minor** temporary adverse effects arising from change in amenity value due to indirect effect associated with disruption or reduced connectivity, visual amenity and tranquillity effects; and potential human health effects associated with soil/land contamination. **Neutral to minor** beneficial health effects are likely as a result of increased employment opportunities and income levels during construction.
- 25.1.5 During operation of the Proposed Development, there is the potential for perceived health effects associated with electro-magnetic fields and effects on human health associated with any changes to landscape and greenspace. The calculated prospective maximum electromagnetic field strength, due to the DC Cables, is well below the limit for public exposure to static magnetic fields (approximately 1,000 times lower than the limit of 40,000 microtesla (μT)). Though cabling will be buried, a residual public apprehension of EMF exposure amongst the population locally to the EMF installation could remain, thereby resulting in a **minor adverse** health effect upon the population from both fear and anxiety.
- 25.1.6 Effects from changes to landscape and greenspace associated with the proposed Onshore Cable Route and Landfall following land reinstatement along the Onshore Cable Route are expected to be **Neutral**.
- 25.1.7 As the design is refined further, the assessment of potential effects on human health during construction and operation will be revisited and reported in the ES.

26 WASTE AND MATERIAL RESOURCES

- 26.1.1 Chapter 26 of the PEIR considers the potential for impacts associated with the consumption of materials and products to arise, including the generation and use of arisings recovered from the whole Proposed Development, and production and disposal of waste to landfill.
- 26.1.2 South East England has, in general, a higher availability of construction materials by comparison with other regions in England. The sensitivity of materials required for the Proposed Development is, accordingly, assessed to be **low**.
- 26.1.3 Baseline data indicates that total and non-inert landfill capacity is likely to become an increasingly sensitive receptor over the life of the proposed development to the first full year of operation. Individually, the sensitivity of different landfill capacity types over the lifetime of the Proposed Development is assessed to be **medium** (for inert waste landfill capacity), **high** (for non-inert waste landfill capacity) and **high** (for total (all waste types) landfill capacity). On average, the sensitivity of landfill capacity is assessed to be **high**.
- 26.1.4 Specific design, mitigation and enhancement measures confirmed at the time of publication, include measures to divert waste from landfill during construction, use construction techniques to minimise material consumption, balance cut and fill at the Converter Station, use cables which are designed to reduce maintenance and consideration of end of life (decommissioning) techniques to minimise waste to landfill.
- 26.1.5 It is currently expected that the most significant material consumption will occur during the Construction Stage (as opposed to during site preparation, or operation). The most significant waste generation is likely to occur during site preparation and construction due to the inherent nature of those activities. Any impacts associated with material resource consumption and waste arising which cannot be diverted from landfill would be **adverse, permanent and direct**.
- 26.1.6 A waste and materials resources assessment will be undertaken as part of the ES, considering types and quantities of waste, cut and fill balance, and type and volume of waste to be sent or diverted to landfill.

27 CARBON AND CLIMATE CHANGE

- 27.1.1 Chapter 27 of the PEIR includes a summary of the Proposed Development's vulnerability to climate change. There are two components to the climate assessment: Greenhouse Gas ('GHG') emissions and climate resilience.
- 27.1.2 A vulnerability assessment has been carried out to identify climate variables to which the Proposed Development is vulnerable. This assessment is based on the sensitivity of the Proposed Development to climate variables and the exposure of the Proposed Development to changes in these variables over the 21st century.
- 27.1.3 The quantification of GHG emissions will be assessed as part of the EIA and described in the ES. The assessment will consider embodied emissions within the materials to be used in the Proposed Development, emissions from transporting materials to site, emissions from plant on site during construction (where data is available), materials, transport, and the escape of fugitive gasses during operation, and emissions (or avoided emissions) from the transfer of electricity between the UK and French electricity grids.
- 27.1.4 In terms of climate resilience, the current climate of the Study Area is warm and dry compared to the UK average. Projections of climate change for the UK (UKCP18) suggest that in future, the region will experience: warmer, wetter winters; hotter, drier summers; more extreme temperature and rainfall events; and rising sea levels.
- 27.1.5 Climate variables which have been assessed as low vulnerability will be scope out of further assessment. Climate variables to which the Proposed Development has been identified as being vulnerable to are scoped in:
- Sea level rise;
 - Storm surge and storm tide;
 - Drought;
 - Extreme precipitation events;
 - Extreme temperature events;
 - Gales and extreme wind;
 - Storms (including lightning and hail);
 - Soil moisture; and
 - Soil stability.
- 27.1.6 Risks to the Proposed Development from changes in these variables will be assessed further in the ES.

28 CUMULATIVE AND TRANSBOUNDARY EFFECTS

- 28.1.1 As part of the EIA Regulations 2017, the ES is required to include a project-level assessment of potentially Significant effects of the Proposed Development when considered cumulatively with “other developments”, and an assessment of the combination of all environmental effects of the Proposed Development on receptors.
- 28.1.2 For both onshore and marine assessments, the CEA has followed a staged approach (as recommended by the Planning Inspectorate in its Advice Note 17):
- Stage 1: Establishing a Zone of Influence (‘Zol’) for the Proposed Development and identifying a long list of other development;
 - Stage 2: Identify a shortlist of other development;
 - Stage 3: Information gathering; and
 - Stage 4: Assessment.
- 28.1.3 For some marine chapters (Chapters 6-9 and Chapter 12) of the PEIR, preliminary CEA which identifies a shortlist of other development that might give rise to cumulative effects has identified that the AQUIND Interconnector Project in French waters and the IFA2 Interconnector project will require further cumulative assessment with the Proposed Development. The cumulative assessment for these projects will be undertaken and will be detailed in the ES.
- 28.1.4 For the remaining marine chapters (Chapters 10, 11, 13 and 14), the CEA has not identified any projects/plans where significant cumulative effects on marine mammals, birds, archaeology or shipping, navigation and marine users are predicted. These assessments will be revisited and updated, where necessary for the final ES.
- 28.1.5 For onshore assessments, a Zol of 1 km from the Proposed Development was established. In order to establish a long-list of projects, the following threshold criteria has been applied:
- The scale and nature of other development: projects greater than 0.5 ha, used as a threshold for likely significant effects in Schedule 2 of the EIA Regulations. However, it is also acknowledged that some projects under this threshold may give rise to cumulative effects, so projects within 100 m of the Site Boundary are included due to their proximity to the Proposed Development.
 - Temporal scope: construction would need to fall within 1 year with the start of construction of the proposed development cumulative construction effects to be applied.
- 28.1.6 Consultation with the local planning authorities and relevant statutory consultees is ongoing to confirm the status of these developments.

- 28.1.7 The list of onshore committed developments will be reviewed following consultation, prior to the ES, and other developments for include that are not currently listed (will be considered for the CEA).
- 28.1.8 With regards to transboundary impacts in the marine environment in other European Member States (in this case France), it is currently considered that the potential impacts of the Proposed Development in the UK marine area are unlikely to lead to any significant transboundary effects. The PEIR marine chapters (Chapters 6-14) suggest that although there is the potential for a sediment plume (resulting from seabed preparation activities) to extend into French waters, transboundary impacts are not considered to have the potential to be significant. This will be reviewed once further assessment is undertaken and will be presented within the ES.
- 28.1.9 Potential transboundary impacts on any internationally designated sites will also be considered as part of the HRA process and presented within the ES.

29 CONCLUSIONS

- 29.1.1 The PEIR presents the preliminary findings of the EIA process for the Proposed Development based on the design information available at this stage.
- 29.1.2 The Marine Cable Corridor has been identified and the marine EIA assessments (with the exception of the WFD assessment and CEA) are largely complete but will be reviewed and updated for the ES to account for further ongoing assessment, potential changes to the design and consultation outcomes. Assessments have also yet to be undertaken for HRA and MCZs and will be presented within the ES.
- 29.1.3 For onshore components, operational noise, ecology and landscape and visual amenity particularly require further assessment and consultation, predominantly around the Converter Station Area where there is potential for adverse effects. Assessment for HRA and WFD have also yet to be undertaken.
- 29.1.4 The CEA is set out in Chapter 28 of the PEIR and the individual marine chapters and appendices. In the main, CEA has been progressed to Stage 2 of the assessment to date. The assessment within the ES will provide an update of the CEA, an assessment of the intra-project effects, a review of the proposed list of cumulative developments to be considered in the CEA and progression to Stages 3 (Information collation regarding developments identified at Stage 2) and Stage 4 (Assessment).
- 29.1.5 A number of design and additional mitigations measures have been identified to mitigate and control environmental effects during construction, operation and decommissioning of the Proposed Development.
- 29.1.6 The PEIR references both embedded mitigation and potential mitigation of resulting effects (to be secured through DCO Requirements), as identified at this stage of assessment.
- 29.1.7 Embedded Mitigation is inherent within the design of the Proposed Development, provided as routine or as a standard requirement for a development.
- 29.1.8 Mitigation of resulting effects differs from embedded mitigation insofar that it is defined in this assessment as being required as a result of the location and characteristics of the Proposed Development, and is subsequently not inherent within the design of the Proposed Development.
- 29.1.9 Plans outlining environmental management and best practice for construction of onshore and marine components of the Proposed Development will be prepared and agreed with relevant stakeholders. The mitigation measures recommended for the Construction Stage will be reported in a number of management plans e.g. a Traffic Management Plan. A CEMP will be prepared and implemented by the construction contractor(s) appointed for the construction of the Proposed Development. A similar approach would be adopted during the decommissioning stage.

29.1.10

The mitigation measures recommended for the Operational Stage will be integrated in specific management plans. These plans will be prepared and implemented by the Applicant (and sub-contractors) as part of their management systems.

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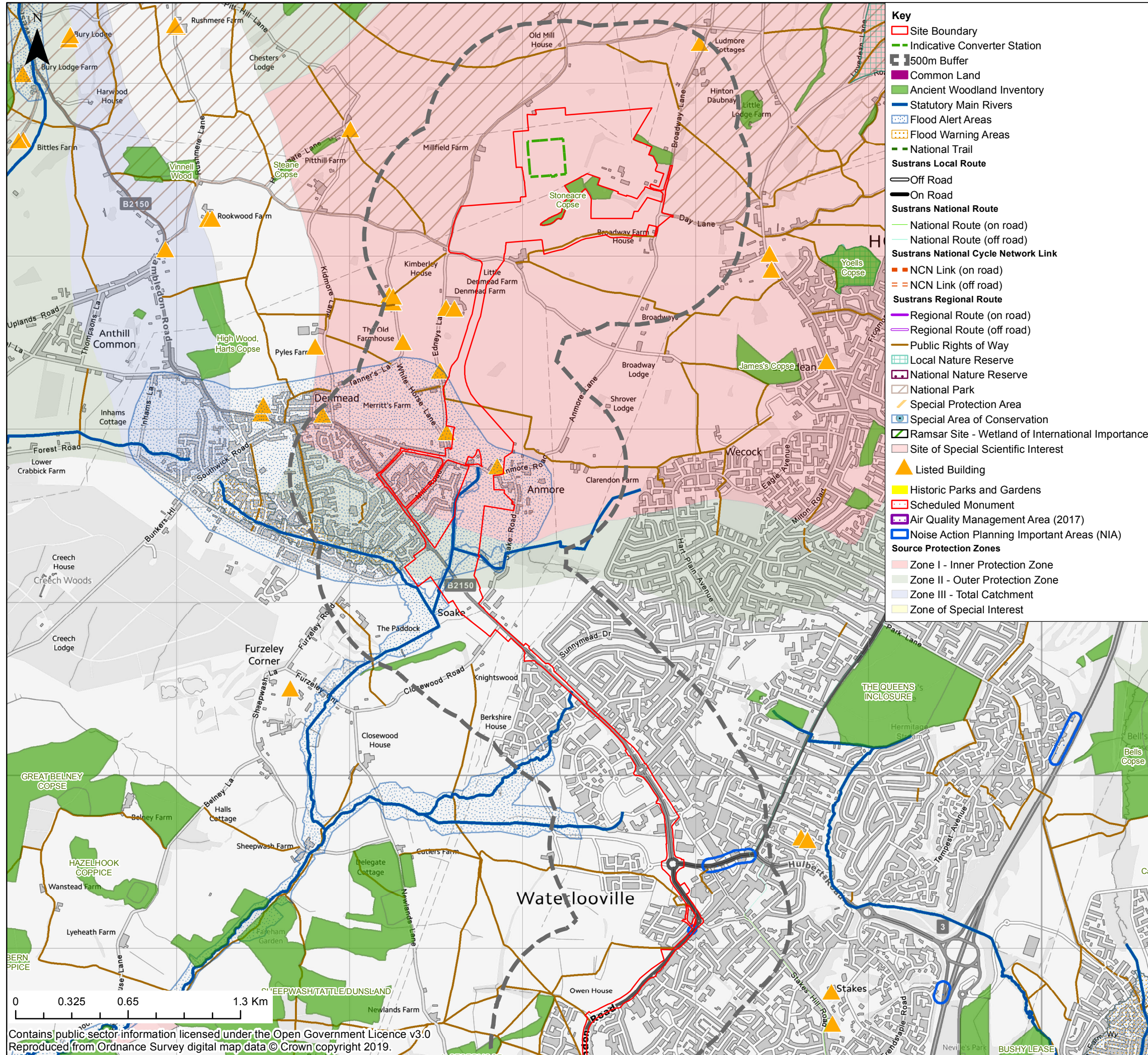
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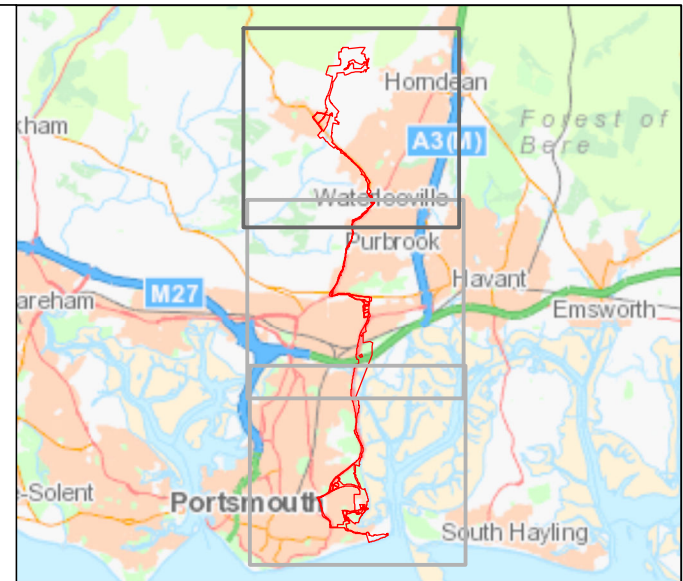
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- Key**
- Site Boundary
 - Indicative Converter Station
 - 500m Buffer
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 - Flood Alert Areas
 - Flood Warning Areas
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 - National Park
 - Special Protection Area
 - Special Area of Conservation
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 - Site of Special Scientific Interest
 - ▲ Listed Building
 - Historic Parks and Gardens
 - Scheduled Monument
 - Air Quality Management Area (2017)
 - Noise Action Planning Important Areas (NIA)
 - Source Protection Zones**
 - Zone I - Inner Protection Zone
 - Zone II - Outer Protection Zone
 - Zone III - Total Catchment
 - Zone of Special Interest



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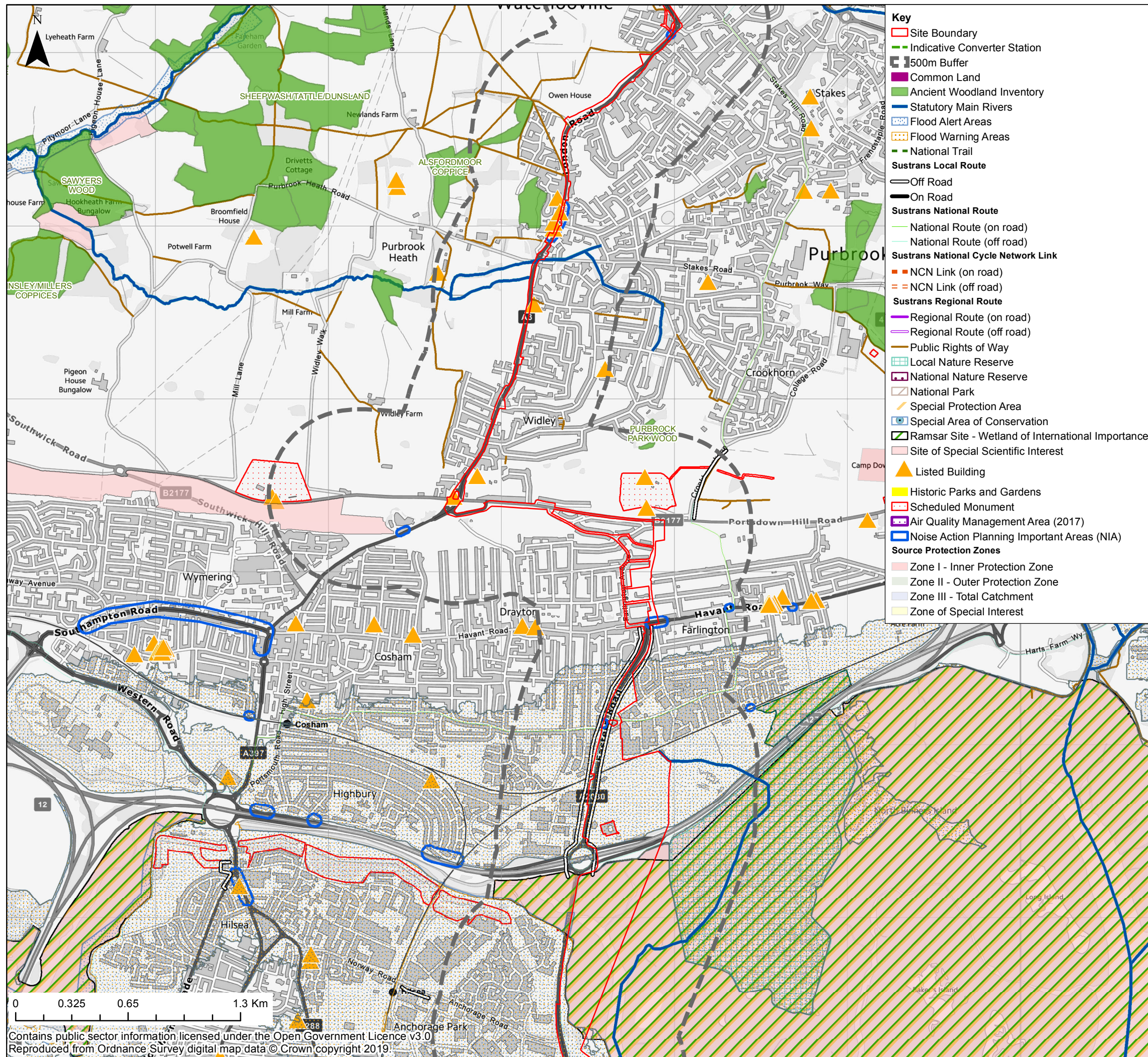
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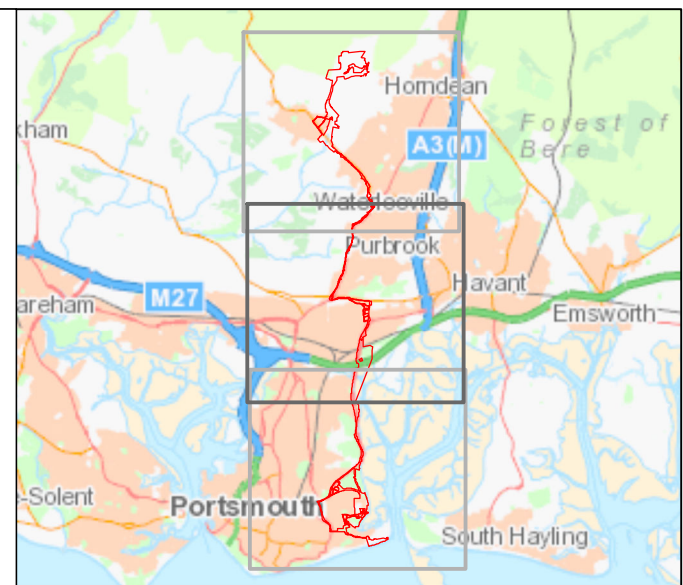
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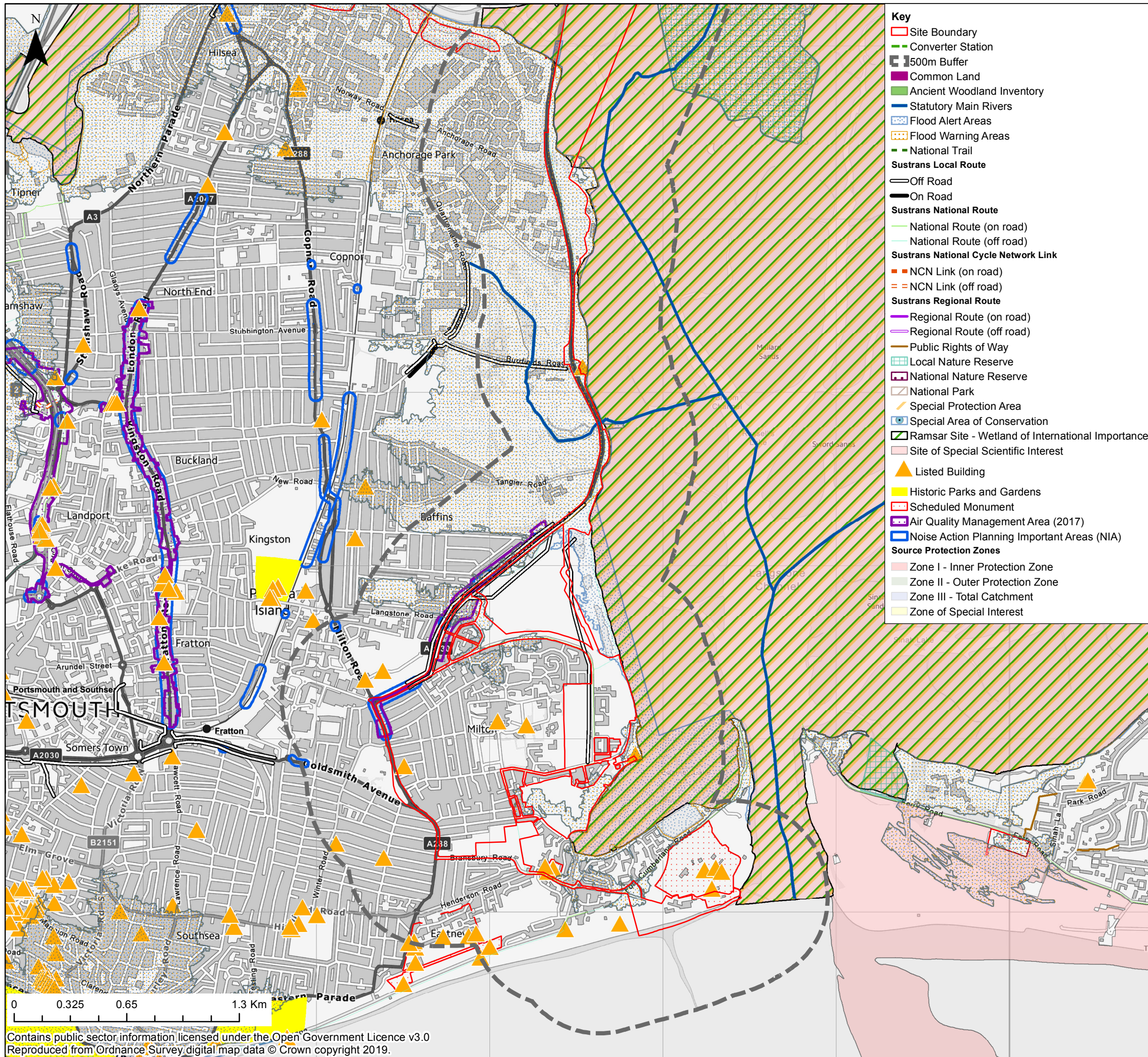
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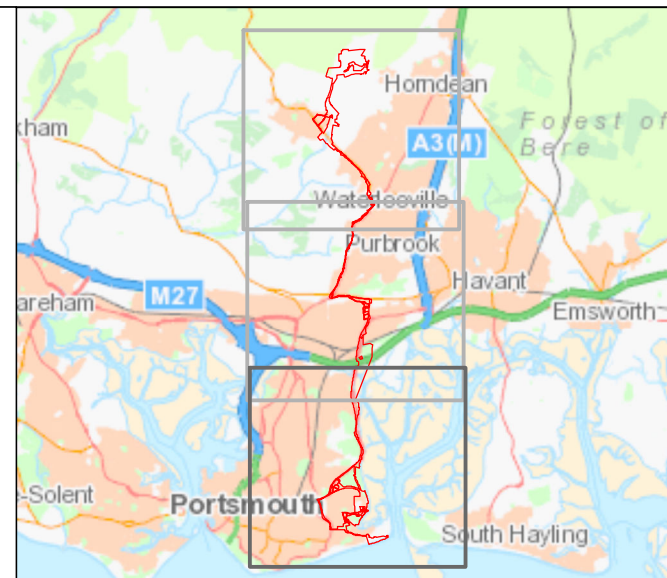
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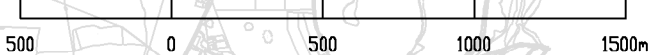
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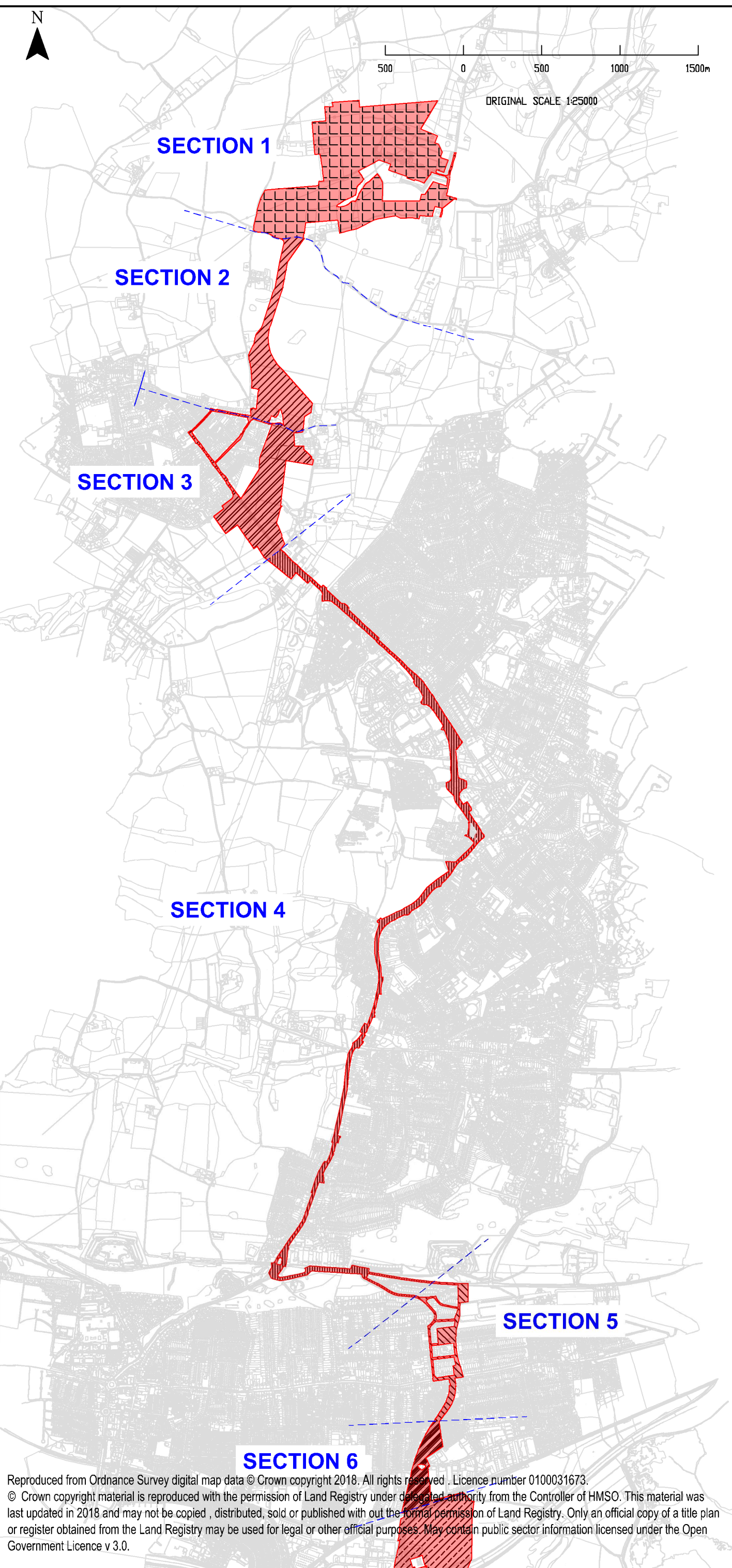
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- SECTION 2 - ANMORE
- SECTION 3 - DENMEAD / KINGS POND MEADOWS
- SECTION 4 - HAMBLEDON ROAD TO BURNHAM ROAD
- SECTION 5 - FARLINGTON
- SECTION 6 - ZETLAND FIELD AND SAINSBURY'S CAR PARK
- SECTION 7 - FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD
- SECTION 8 - GREAT SALTERNS GOLF COURSE TO VELDER AVENUE / MOORINGS WAY
- SECTION 9 - VELDER AVENUE, MOORINGS WAY TO BRANSBURY PARK
- SECTION 10 - EASTNEY (LANDFALL)

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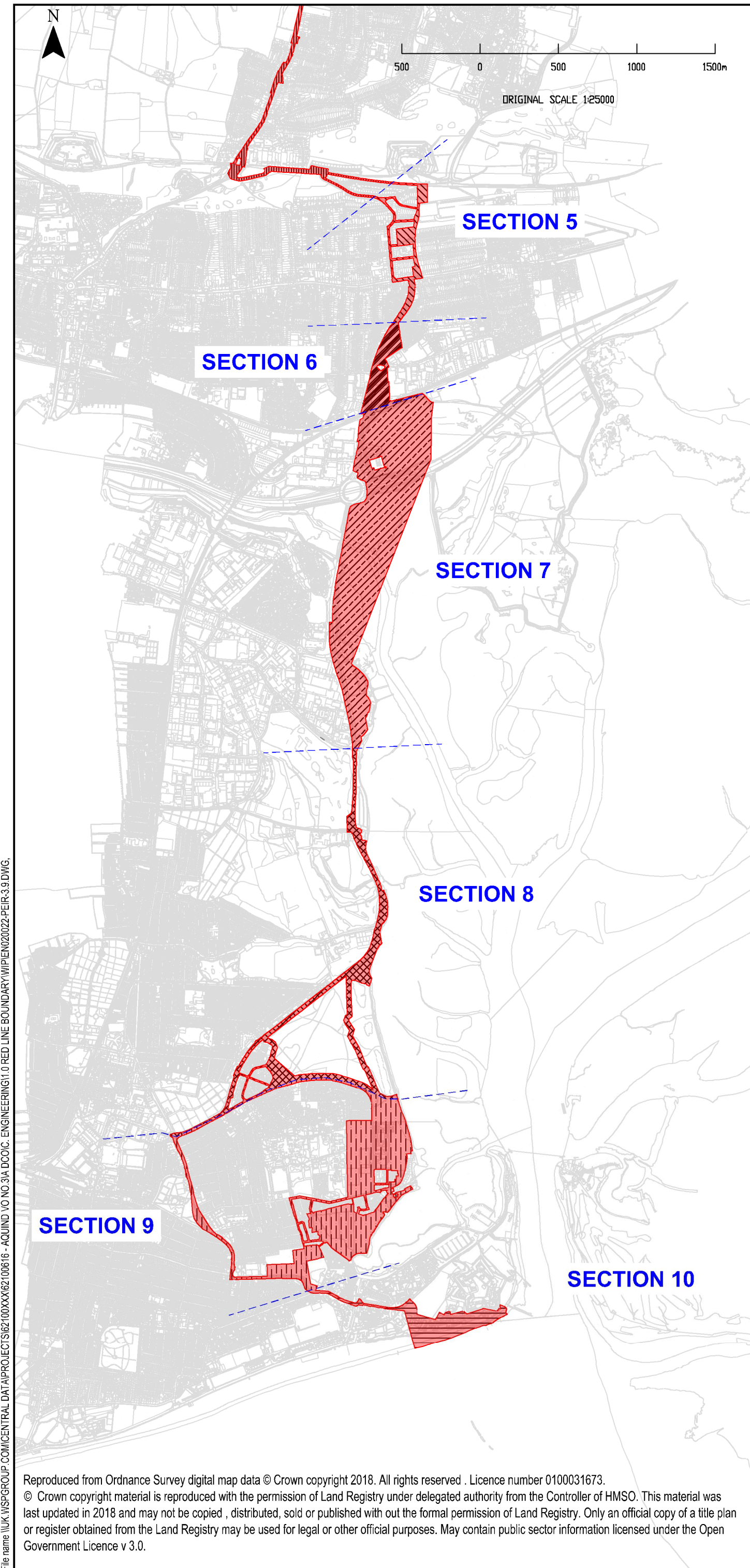
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










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ONSHORE CABLE CORRIDOR
Sheet 2 of 2

SCALE AT A3: 1:25000	CHECKED: M.M	APPROVED: M.Mc
PROJECT No: EN020022	DESIGNED: M.M	DRAWN: J.W
DATE: 14/02/2019		

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