AQUIND Limited

AQUIND INTERCONNECTOR

Consultation Report – Appendix 1.5A Statutory Consultation – Consultation Document

The Planning Act 2008

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

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WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

AQUIND Limited
AQUIND INTERCONNECTOR
Consultation Document


AQUIND Interconnector
will link the British and French electric power grids to make energy markets more efficient, improve security of supply and reduce carbon emissions.

CONTENTS

FOREWORD

I am pleased to present the emerging proposals for AQUIND Interconnector, a power transmission link between Great Britain and France.

AQUIND Interconnector will have the capacity to transmit up to 16,000,000 MWh of electricity or approximately 5% of Great Britain's total electricity consumption – enough to keep the lights on in up to 4 million British households. It will make a significant contribution to improving the security and sustainability of electricity supply and will help to make energy more affordable by improving competition and making Great Britain's energy market more efficient.

In 2018, the Government recognised the importance of AQUIND Interconnector and designated it as a Nationally Significant Infrastructure Project requiring consent from the Secretary of State under the Planning Act 2008.

We are carrying out this consultation on the UK elements of our proposals as they are refined in preparation for the submission to the Secretary of State for a Development Consent Order in 2019.

The proposals for AQUIND Interconnector are based on the extensive technical and environmental assessments that have been carried out to date, underpinned by a range of surveys and by feedback from stakeholders and local communities.

The feedback we receive from the local community and from stakeholders during this consultation will play an important role in the further development of our proposals, so I encourage you to take an active role in this consultation and respond to us by the deadline of 29 April 2019.

The AQUIND Interconnector project team will be available at our consultation events to discuss our proposals and answer your questions. We hope you can join us at those events and contribute to the refinement of our development plans.

Richard Glasspool
Director of AQUIND Limited

AQUIND Interconnector in Numbers

2,000 MW

NOMINAL CAPACITY

16 TWh

ELECTRICITY TRANSMITTED EACH YEAR

The actual utilisation rate of the interconnector depends on market conditions, limitations by national transmission system operators and other factors.

5%

OF BRITAIN'S TOTAL CONSUMPTION

3%

OF FRANCE'S TOTAL CONSUMPTION

Photo: Yuriy Kulik via shutterstock | sea scape at the morning

1.1 PROJECT OVERVIEW

1.1.1

AQUIND Limited ("AQUIND") is proposing to construct and operate an electricity interconnector between the south of England (Lovedean, Hampshire) and Normandy in France, to be known as AQUIND Interconnector. Electricity interconnectors are the physical links which allow the transmission of electricity across borders, improving competition in energy markets, security and flexibility of supply as well as helping to fight climate change by integrating more renewable energy sources like solar and wind. AQUIND Interconnector would enable electricity to be transmitted from France to Great Britain and vice versa, providing much needed benefits for the transmission of electricity in both countries.

1.1.2

AQUIND Interconnector would include three parts: onshore elements in the UK; marine elements between the British and French coastlines; and onshore elements in France.

1.1.3

Electricity would be transmitted between Great Britain and France as high voltage direct current ("HVDC"), using underground and marine cables. HVDC has been widely used for interconnectors since the 1960s and provides the most controllable and efficient means of transmitting electricity over the long distances between the electricity networks of the two countries. Within Great Britain and France, electricity is transmitted by national transmission network operators (National Grid in England and RTE in France) using high voltage alternating current ("HVAC"). It is therefore necessary for HVAC to be converted to HVDC at one end of the interconnector, and back to HVAC at the other end. This conversion of electricity from one type of current to another is carried out in a facility known as a converter station. A converter station is required to be located in both Great Britain and France as part of the project. Once the electricity has been converted to HVAC it must be fed into the grids operated by National Grid in England and Wales and RTE in France at substations, before it can be transmitted to customers via the existing transmission network. AQUIND Interconnector has purposefully been designed without any overhead lines. Figure 1 shows a schematic illustration of the components of the proposed AQUIND Interconnector (labelled in dark green) and how it would connect into existing electricity infrastructure (labelled in light green).

1.1.4

This consultation relates only to the elements of the interconnector which would be located in England and the UK Marine Area, for which development consent is to be sought (the "Proposed Development").

1.1.5

The Proposed Development has been recognised by the Secretary of State for Business Energy and Industrial Strategy as a Nationally Significant Infrastructure Project ("NSIP") under the Planning Act 2008. AQUIND must therefore submit an application for a Development Consent Order ("DCO") to the Secretary of State to obtain the necessary authorisation for the construction and operation of the Proposed Development.

1.1.6

AQUIND Interconnector has been awarded status of a Project of Common Interest ("PCI") and received a label of Priority Thematic Area Electricity Highway within the Northern Seas Offshore Grid Priority Corridor pursuant to the TEN-E Regulations ("EU 347/2013") in March 2018. In awarding the Project PCI status, the European Commission ("EC") and the European Parliament have acknowledged the project will help the EU achieve its energy policy and climate objectives: affordable, secure and sustainable energy for all citizens, and the long-term de-carbonisation of the economy in accordance with the Paris Agreement.

1.1.7

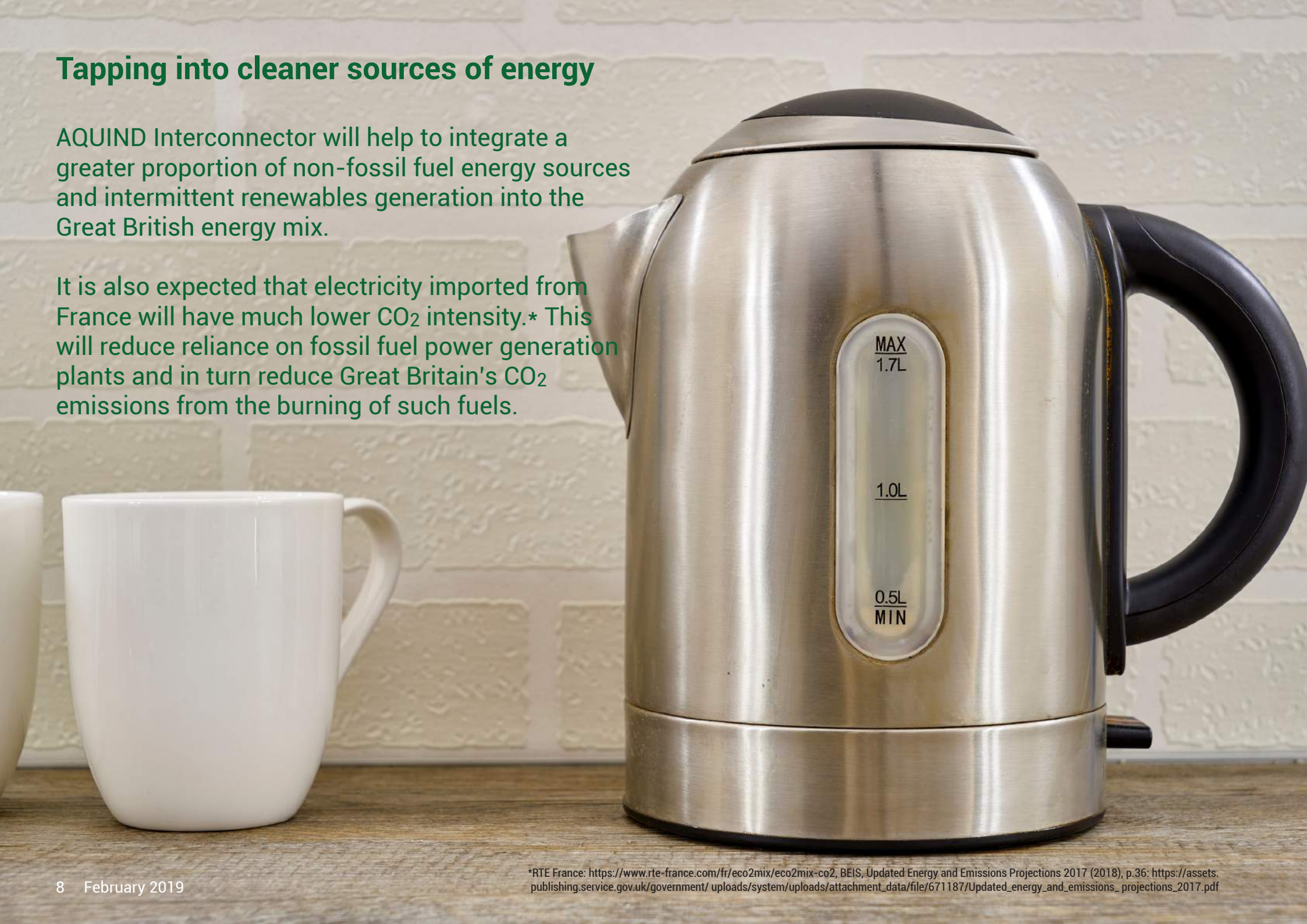
Further, AQUIND has obtained a licence to construct and operate an interconnector under Section 6 of the Electricity Act 1989. As a licence holder, AQUIND is subject to Schedule 9 of the Electricity Act 1989, which requires AQUIND in formulating proposals to:

- have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;
- do what they reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

Tapping into cleaner sources of energy

AQUIND Interconnector will help to integrate a greater proportion of non-fossil fuel energy sources and intermittent renewables generation into the Great British energy mix.

It is also expected that electricity imported from France will have much lower CO_2 intensity.* This will reduce reliance on fossil fuel power generation plants and in turn reduce Great Britain's CO_2 emissions from the burning of such fuels.



*RTE France: https://www.rte-france.com/fr/eco2mix/eco2mix-co2, BEIS, Updated Energy and Emissions Projections 2017 (2018), p.36: https://assets.publishing.service.gov.uk/government/ uploads/system/uploads/attachment_data/file/671187/Updated_energy_and_emissions_ projections_2017.pdf

1.1.8

AQUIND has been mindful of this duty throughout the production of the proposals for AQUIND Interconnector to date, and will continue to be during the refinement of those proposals.

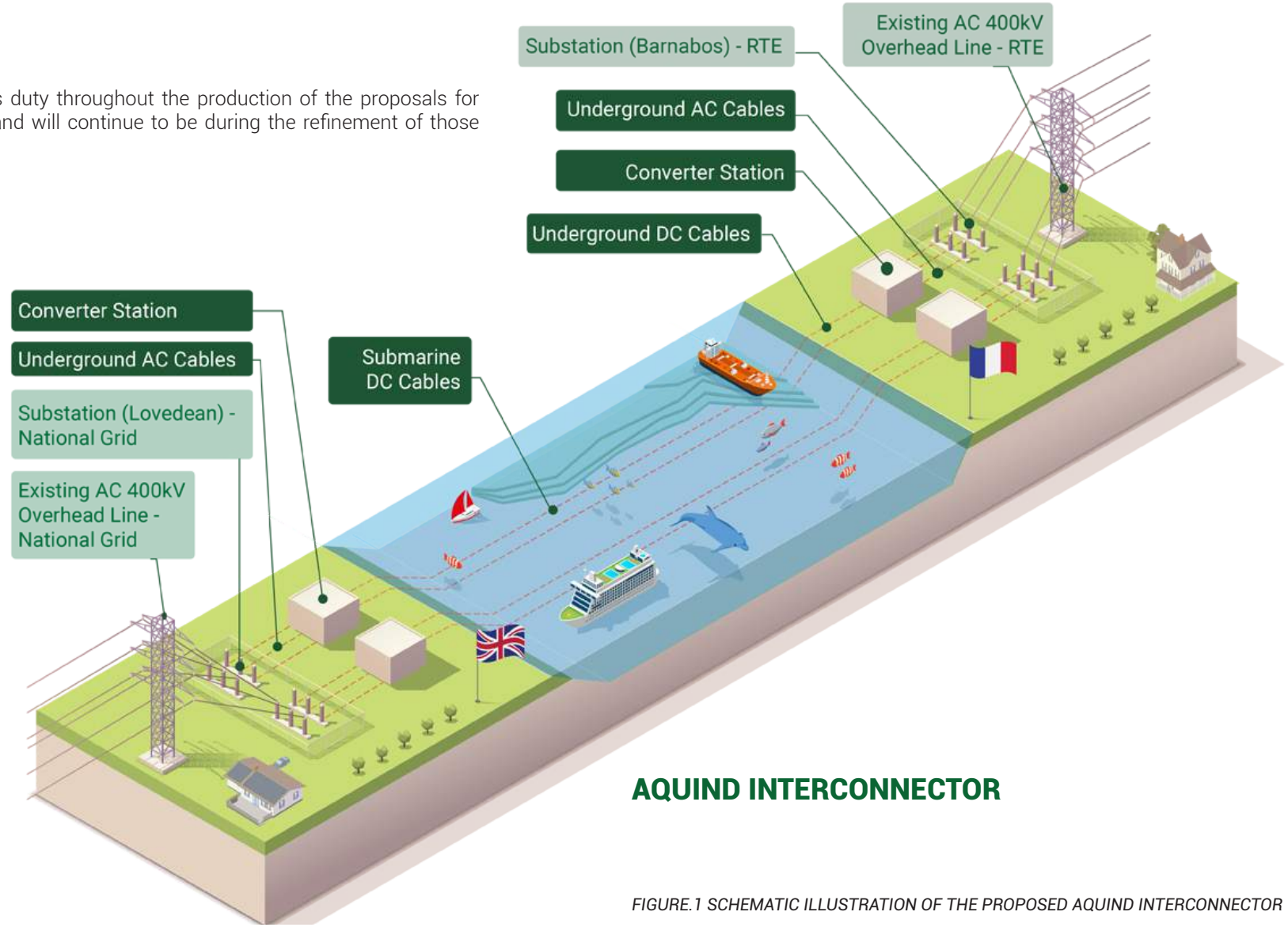


FIGURE.1 SCHEMATIC ILLUSTRATION OF THE PROPOSED AQUIND INTERCONNECTOR

1.2 STRUCTURE OF THIS DOCUMENT

This document is organised into the following sections:

- **Chapter 1: Introduction:** This chapter, which provides a brief overview of the Proposed Development and of the consultation that is being undertaken.
- **Chapter 2: The Converter Station Area:** This chapter explains the proposals for the Proposed Development at the northern end, where the Converter Station in Great Britain is to be located (the "Converter Station").
- **Chapter 3: The Onshore Cable Route:** This chapter explains the current proposals for the onshore cable route, including explaining the options for parts of the route that remain to be fixed and which your feedback is sought on.
- **Chapter 4: The Marine Cables:** This chapter explains the proposed corridor within which the HVDC marine cables are proposed to be located, and provides an explanation of the methods to be employed to lay those cables.
- **Chapter 5: Approach to Traffic Management:** This chapter sets out the types of measures that are going to be employed to seek to minimise the disruption to traffic when the onshore cable route is constructed in the highway.
- **Chapter 6: Operation, Maintenance and Decommissioning:** This chapter explains what happens when the Proposed Development is switched on, the maintenance that is likely to be required and how it may be decommissioned in the future.
- **Chapter 7: Legislation, Policy and Other Consents:** This chapter explains the process required by the Planning Act 2008, as well as providing a brief overview of other legislation and policy relevant to the assessment and determination of the DCO application for the Proposed Development.
- **Chapter 8: Approach to Land Acquisition:** This chapter sets out the approach to be taken to acquiring necessary land and rights required in connection with the Proposed Development.
- **Chapter 9: Responding to this Consultation:** This chapter sets out how you may respond to this consultation, how your feedback will be taken into account during the refinement of the proposals and how that will be reported as part of the application for the DCO.

1.3.1

AQUIND started work on the Proposed Development in 2014 and identified that an interconnector between the UK and France would be the most efficient and beneficial given market conditions, the long-term trends in European electricity supply and transmission, and France's proximity to the UK. In 2015 National Grid confirmed their substation at Lovedean, near Waterlooville in Hampshire as the preferred substation which would connect the Proposed Development to the national electricity network in Great Britain. In June 2016 AQUIND signed a grid connection offer with National Grid for connection to the existing Lovedean substation. Since then AQUIND has undertaken thorough site selection and optioneering work to identify preferred locations for the Converter Station, Landfall and Cable Route.

1.3.2

Work was undertaken to identify appropriate locations in the vicinity of Lovedean substation where the required Converter Station could be located. Four sites were initially identified, and reduced down to two following a first stage review. Further detailed work was then undertaken on the remaining two Converter Station site options, focusing on site suitability from an engineering perspective and the potential for impacts on the surrounding environment.

1.3.3

In parallel, AQUIND was undertaking an exercise to identify the preferred location for the Landfall, and considering the cable route options to the existing Lovedean substation from those locations. An initial exercise identified 29 preliminary potential locations for the Landfall. A feasibility study reduced this to nine, with further optioneering exercises then being undertaken to identify and assess the potential cable routes options. The outcome of these studies confirmed the most appropriate and preferred location for the Landfall to be at Eastney (the "Landfall").

1.3.4

Further detailed information on the selection process for all components of the proposed Development is provided at Chapter 2 of the PEIR.

1.3.5

In January 2018 AQUIND undertook consultation on the emerging proposals for the Proposed Development. At that stage this included:

- a marine HVDC cable corridor from the UK/France Exclusive Economic Zone ("EEZ") boundary line to a proposed Landfall area in Eastney; and
- an onshore HVDC cable route from Eastney to two potential Converter Station locations, both in close proximity to the National Grid substation at Lovedean.

1.4 EVOLUTION SINCE CONSULTATION IN JANUARY 2018

1.4.1

Based on the responses from the stakeholders and feedback received during the informal consultation in January 2018, the Proposed Development was further refined.

1.4.2

Feedback from the public and Portsmouth City Council identified concerns with traffic disruption in the Portsmouth area, in particular around Milton Road and Eastern Road. We have listened to the concerns and sought to identify alternative routes which take the cable installation away from these roads to seek to minimise traffic disruption. Feedback from Hampshire County Council and Havant Borough Council has also been considered. There are multiple options for the cable route presented as part of this consultation for comment, which are also subject to further assessment on feasibility and practicability. Feedback from the public and Winchester City Council and East Hampshire District Council have been considered in the selection of the preferred Converter Station location near to the existing Lovedean substation, and is detailed in Chapter 2 of the PEIR.

1.4.3

Over the last 12 months AQUIND has undertaken further technical work and environmental surveys, including ground investigations, traffic and ecology surveys. Engagement with local authorities and other key stakeholders has been ongoing, and attention has been paid to the environmental constraints in order to minimise potential impacts.

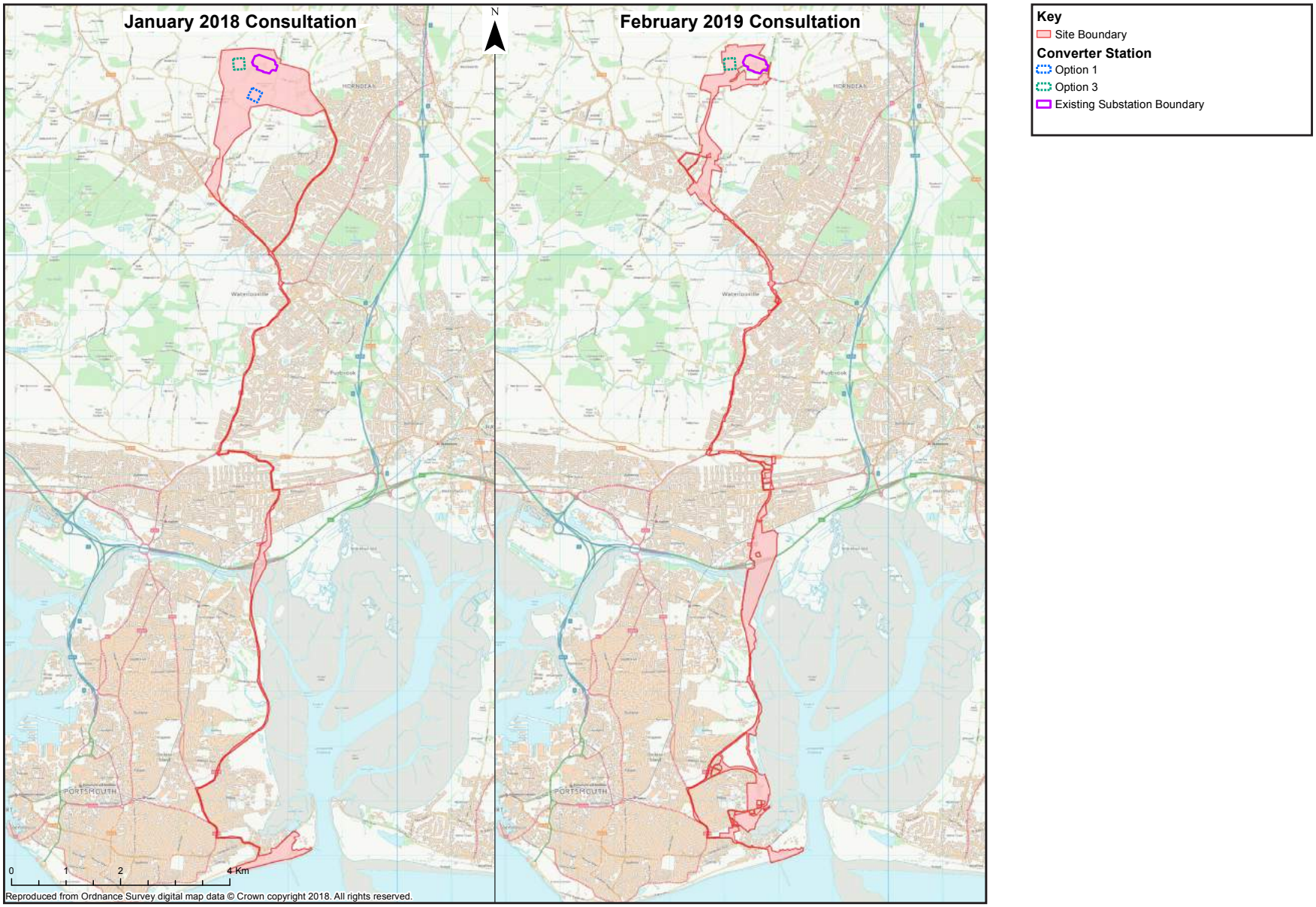
1.4.4

As a result, the Proposed Development now being consulted on identifies:

- A refined marine cable corridor;
- A preferred Landfall at Eastney;
- An onshore cable corridor for the HVDC underground cables from the Landfall to the Converter Station, which currently includes an additional number of potential route options which are still under consideration and which views are sought on as part of this consultation; and
- A single preferred location for the Converter Station, with greater detail about its proposed design and measures to mitigate its impact on the surrounding environment.

Figure 2 gives a high-level overview of how our proposals have been refined in terms of site selection and cable route optioneering since the previous consultation exercise in January 2018 proposals.

FIGURE 2. REFINEMENT OF CABLE ROUTE



1.5 THE PROPOSED DEVELOPMENT

1.5.1 The principal components of the Proposed Development are described below (sections 1 – 10), with further detail set out in the relevant chapters.

LOCATION	COMPONENT	CHAPTER	WHAT'S FIXED AND WHAT'S FOR COMMENT
UK Onshore: section 1 – Lovedean (Converter Station Area) (North West of the village of Lovedean, Hampshire).	**Lovedean substation connection works:** the provision of additional outdoor electrical infrastructure works at National Grid's existing substation at Lovedean, to enable AQUIND Interconnector to connect with the existing GB transmission system. **HVAC underground cables:** Two underground AC cable circuits, each consisting of three HVAC cables and one fibre optic cable, of up to 400m to be installed between National Grid's Lovedean substation and the Converter Station. **Converter Station:** A mix of buildings and outdoor electrical equipment, internal roads and car parking, with a footprint of approximately 200m x 200m, and up to 26m in height. The Converter Station is proposed to be located in the north-west corner of the Site Boundary, immediately west of Lovedean substation. **Other components:** The Converter Station Area is also proposed to include: An access track from Broadway Lane, approximately 1.2 km long and 7.3 m wide; Temporary construction compounds, laydown areas and haul roads; Attenuation Pond; Up to two Telecommunications building(s); and Space for mitigation measures, such as additional landscaping.	**Chapter 2**	The location of the proposed Converter Station is now fixed as being the area identified on Figure 5, though the exact location within the north-west area, adjacent to the Lovedean substation remains to be determined. The broad spatial parameters for the Converter Station are in general fixed by operational requirements. The parameters within which the Converter Station will be located are confirmed at section 2.4. The design of the Converter Station and associated mitigation is still to be determined. The approach to its design and associated mitigation is set out at section 2.4, and your feedback on the proposed approach is welcomed.

LOCATION	COMPONENT	CHAPTER	WHAT'S FIXED AND WHAT'S FOR COMMENT
	HVDC underground cables: Underground cables required to connect the Converter Station to the Landfall at Eastney, where it links to the marine cables to France. These will be installed in pairs to maintain necessary separation distances between cables. Each pair of HVDC cables is referred to as a circuit and will also include one fibre optic cable of small diameter for data transmission. There will be two circuits in total. Installation methods are discussed below in section 3.4. Where trenching has been identified as the installation method this means one circuit will be installed at a time in separate trenches. The precise location of the cable route within the Site Boundary is yet to be determined and will be subject to further feasibility consideration and consultation feedback. **Fibre Optic Cable:** Two fibre optic cables will be installed with the HVDC underground cables. These are required for communications between the Converter Stations in the UK and France and monitoring of the cables when operational. Spare fibres in these cables may also be used for commercial telecommunications purposes. The Telecommunications buildings mentioned above are required for the termination of these cables with secure fencing, access and parking for up to 2 vehicles.	**Chapter 2**	

1.5 THE PROPOSED DEVELOPMENT

LOCATION	COMPONENT	CHAPTER	WHAT'S FIXED AND WHAT'S FOR COMMENT
UK Onshore: **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 Road** **section 10 –Eastney (Landfall)**	**HVDC underground cables:** underground cables from the Converter Station through the urban areas of Waterlooville, Purbrook, Drayton and Portsmouth to the Landfall at Eastney, where it links to the marine cables (approximately 20 km). AQUIND has sought to route the HVDC cables as far as possible within existing highways and road verges. A number of routing options within the Site Boundary remain under consideration and are presented as part of this consultation. **Joint Bays:** required to joint together the individual sections of cables, which when joined together form the full extent of the HVDC underground cables between the Converter Station and the Landfall. These will be sited at appropriate locations along the HVDC cable route. **Link Boxes (also called link pillars or link cabinets):** required approximately every 6 km along the HVDC underground cable, typically located alongside a joint bay and accessed via a manhole cover. These will enable tests to be undertaken to establish the integrity of the cable. These are approximately 0.8 m x 0.8 m x 0.6 m. **Landfall:** works to connect the onshore HVDC underground cables to the marine HVDC cables, comprising two underground chambers to house the cable joints, known as transmission joint bays (TJBs). The location has been subject to detailed site selection and this is the preferred location.	**Chapter 3**	These are described in Chapter 3 by reference to the sections of the proposed route to which they relate. The location for the Landfall has been subject to detailed site selection and the preferred location presented as part of the consultation is now fixed. The location of the Fibre Optic Cable Infrastructure is yet to be determined although it is anticipated that it will be within the Site Boundary presented as part of this Consultation.

LOCATION	COMPONENT	CHAPTER	WHAT'S FIXED AND WHAT'S FOR COMMENT
	Fibre Optic Cable: two fibre optic cables will be installed with the HVDC underground cables, which are required for communications between the two Converter Stations in the UK and France monitoring of the cables when operational. Spare fibres in these cables may also be used for commercial telecommunications purposes. This is fixed. **Fibre Optic Cable Infrastructure:** up to two buildings (Optical Regeneration Stations) are required to house signal amplification and control equipment associated with the fibre optic cable to ensure signal strength is adequate between the two Converter Stations. This may be a new or existing structure of approximately 4 m x 5 m x 3 m high (20m² footprint) within a perimeter fence which may also include an auxiliary generator and fuel supply. This will be located within approximately 1km of the Landfall. The location of this has yet to be determined although it is anticipated that these will be within the Site Boundary presented as part of this Consultation.	**Chapter 3**	
UK Marine Cable Corridor	HVDC marine cables: HVDC cables required to connect the onshore elements of the Project in the UK with the onshore elements of the Project in France are to be laid within the UK Marine Cable Corridor. The UK Marine Corridor is illustrated in Figure 3 below.	**Chapter 4**	Extensive surveys have been undertaken to determine the most appropriate corridor within which the marine HVDC cable is to be located. The UK Marine Cable Corridor is now considered to be fixed.

1.5.2

Construction of the Proposed Development is anticipated to commence in 2021 and to be complete, with AQUIND interconnector anticipated to be commissioned and operational, in 2023.

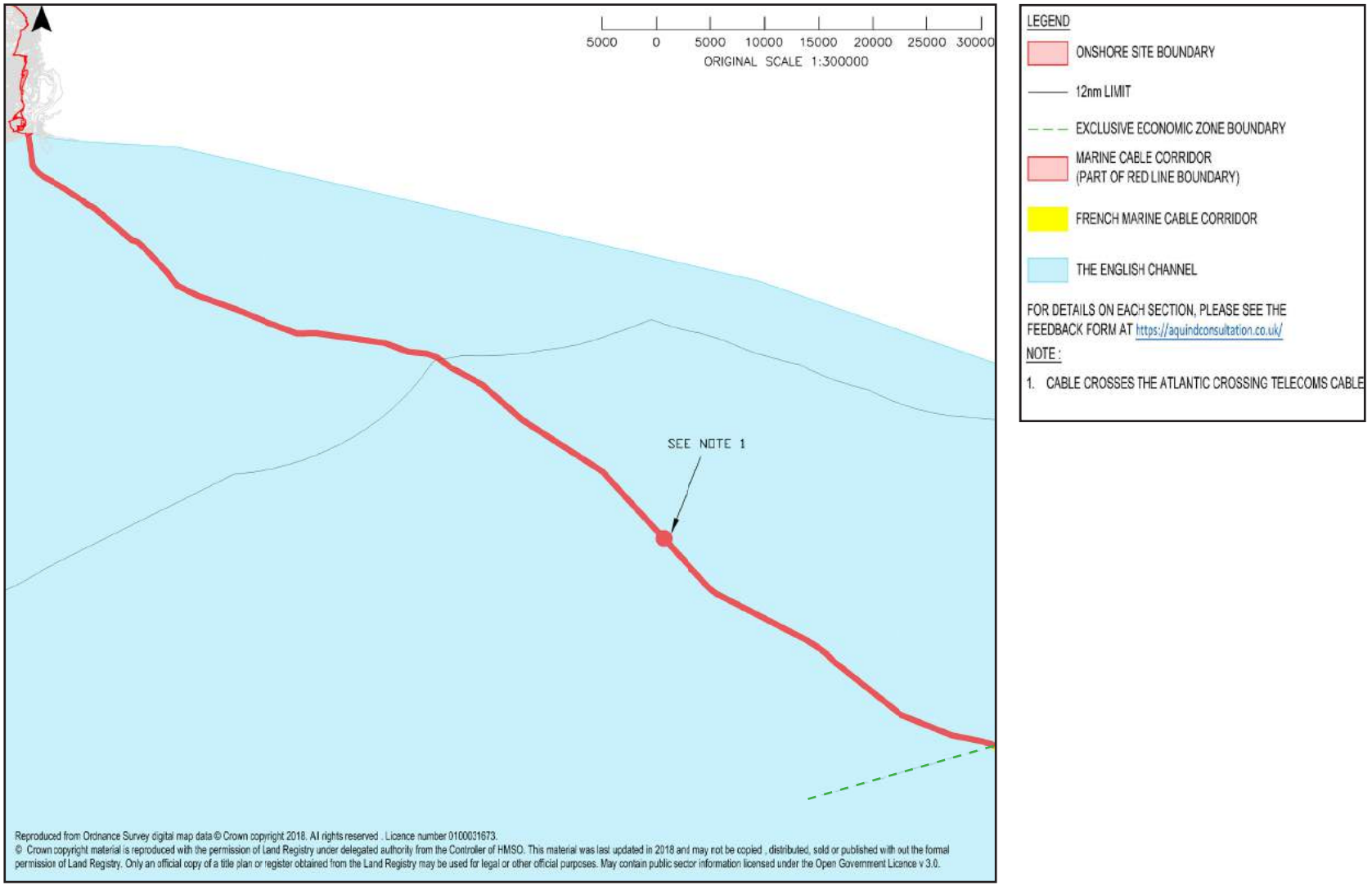
1.5.3

The maximum geographical extent of the Proposed Development is referred to as the Site Boundary and is outlined in red on Figure 2 above and in more detail in section 3.6. This is also referred to as the "Red Line Boundary" and it represents the areas we are considering for the Proposed Development.

1.5.4

As mentioned above multiple alternative options are being considered for parts of the onshore cable route and are presented in this consultation. The options being considered are described in section 3.6 of this document and your feedback is particularly welcomed on them. The final Site Boundary will be reduced prior to the application for the DCO being made, following consideration of consultation feedback and further technical and environmental studies and the subsequent discounting of the options for the onshore cable route which are not taken forward as part of the final route.

FIGURE 3 - UK MARINE CABLE CORRIDOR



1.6 APPROACH TO THIS DOCUMENT

1.6.1

The Proposed Development has been recognised by the Secretary of State for Business Energy and Industrial Strategy as a Nationally Significant Infrastructure Project ("NSIP") under the Planning Act 2008. AQUIND must therefore submit an application for a Development Consent Order ("DCO") to the Secretary of State to obtain the necessary authorisation for the construction and operation of the Proposed Development. The application will be examined by the Planning Inspectorate on behalf of the Secretary of State, who will produce a recommendation for the Secretary of State, and a decision on whether to grant the DCO will be made by the Secretary of State following the making of the recommendation. Before an application for the DCO can be made, AQUIND is required to undertake a consultation on the Proposed Development. The persons who are consulted are as follows:

- Prescribed consultees (such as relevant local authorities, and other statutory bodies including the Environment Agency, Natural England and the Marine Management Organisation) and persons with an interest in the land on which may be affected by the Proposed Development, as required by s42 of the Planning Act 2008;
- The local community living in the vicinity of the Proposed Development, as required by s47 of the Planning Act 2008; and
- The general public nationally, as required by Section 48 of the Planning Act 2008.

1.6.2 LOCAL COMMUNITY CONSULTATION

Government guidance on the consultation process prior to an application for a DCO explains that early consultation with local communities has several benefits, including:

- Enabling members of the public to influence proposed development by providing feedback on potential options;
- Encouraging the community to help shape the proposals to maximise local benefits and minimise any adverse impacts;
- Helping local people to understand the potential nature and local effects of the project, with the potential to dispel misapprehensions at an early stage;
- Enabling applicants to obtain important information from consultees about the economic, social and environmental effects of a scheme, which can help rule out unsuitable options; and
- Enabling potential mitigation measures to be considered and, if appropriate, incorporated into the project before an application is submitted.

1.6.3

As part of the formal pre-application process AQUIND have consulted on a Statement of Community Consultation ("SoCC") under Section 47 of Planning Act 2008, with Hampshire County Council, Portsmouth City Council, Havant Borough Council, East Hampshire District Council and Winchester City Council between 12th December 2018 and 9th January 2019. The SoCC sets out how AQUIND is to consult the communities living in the vicinity of the Proposed Development. The SoCC is available online at www.aquindconsultation.co.uk.

1.6.4

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.

1.6.5 LAND OWNER CONSULTATION

The majority of the onshore HVDC underground cables will be installed in public highway, minimising the need for land to be acquired for the Proposed Development. However, some private land interests will be required to deliver the Proposed Development and AQUIND is committed to acquiring all interests by private agreement. AQUIND will be seeking powers of compulsory purchase as part of its application for development consent in the event that negotiations with land owners are unsuccessful. More detail on AQUIND's approach to land acquisition is set out in Chapter 8.

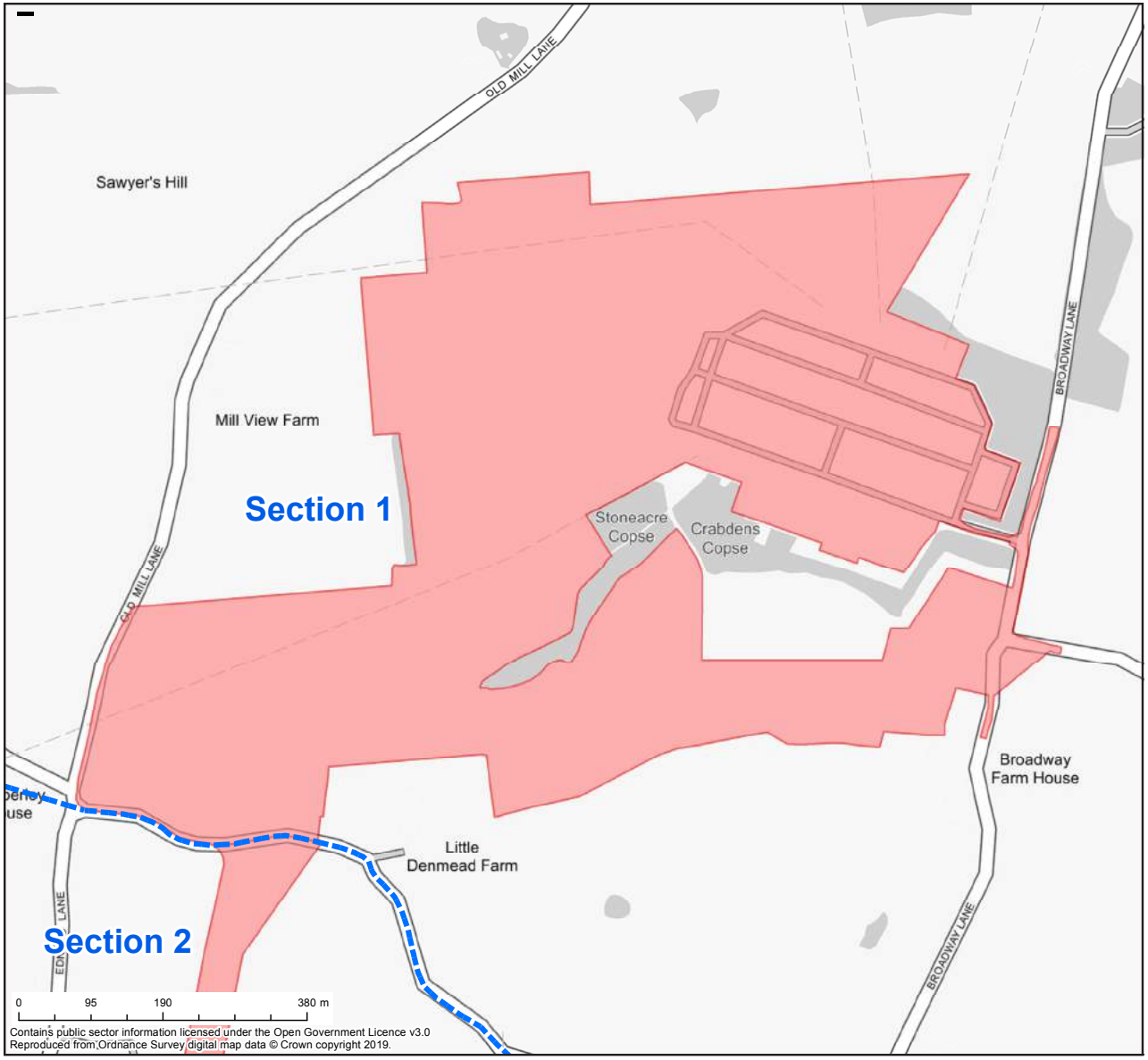
1.7 PRELIMINARY ENVIRONMENTAL INFORMATION

1.7.1

As part of this consultation, we have also prepared a preliminary environmental information report ("PEIR") and Non-Technical Summary ("NTS") of the PEIR which set out our current understanding of the potential environmental effects of the Proposed Development. This consultation document and the options proposed within it should be read in conjunction with the PEIR. An Environmental Impact Assessment ("EIA") of the Proposed Development is being progressed and in due course, the PEIR will be developed into a full Environmental Statement to report the findings of the EIA and to be submitted with the DCO. Further information about the EIA process is provided in Chapter 7 of this document.

2 LOVEDEAN - CONVERTER STATION AREA

FIGURE 4. SECTION 1 LOVEDEAN CONVERTER STATION AREA

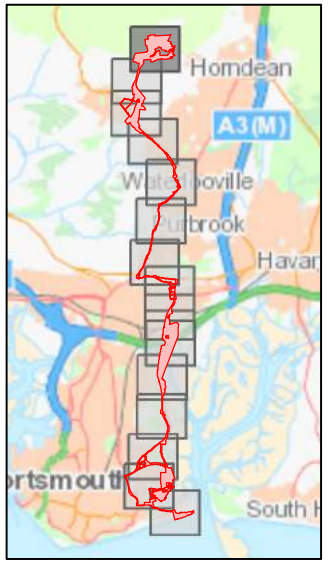


Proposed Site Boundary

Onshore Cable Corridor Section Boundaries (to be used alongside written description of cable corridor for ease of reference)

Proposed Cable Trench option

Proposed Cable Horizontal Directional Drill (HDD) option



DISCLAIMER:

An Ordnance Survey ("OS") basemap has been used to show the geographic location of the proposed Site Boundary (marked in red). This OS basemap is illustrative only and does not accurately reflect specific boundaries of highways or property.

2.1 INTRODUCTION

This Chapter provides information in relation to: (1) the proposed Converter Station, (2) works to the existing National Grid substation at Lovedean to enable the interconnector to connect with the existing GB transmission system, (3) the HVAC underground cables connecting the Converter Station and substation, the associated data transmission infrastructure and other related works. The works are located together within the area referred to as section 1 of the Site Boundary, shown in Figure 4, and described in section 2.3 below.

2.1.2

Taking each of these elements in turn, we explain the nature and purpose of the infrastructure, as well as the construction methodology to be used to carry out the works.

2.1.3

AQUIND recognises the sensitivities around the impact of the Converter Station and we set out in this chapter how we identified the proposed site as our preferred location, together with an explanation of the approach that is being taken in relation to the design of the building and landscape mitigation measures to minimise adverse impacts. We welcome feedback on the approach to the design of the Converter Station and landscape mitigation as part of this consultation.

2.1.4

We also recognise concerns about the potential noise impact of the Converter Station when operational and this chapter provides information on the current understanding of the potential for noise impacts local to the Converter Station and how these may be mitigated.

2.1.5

More detailed information on the site selection process (Chapter 2 - Alternatives), landscape and visual impact (Chapter 15 - Landscape and Visual Impact) and noise issues (Chapter 23 - Noise and Vibration) can be found in the PEIR. We strongly encourage you to consider the information in these chapters of the PEIR to inform any feedback to be provided on these matters.

2.2 DESCRIPTION OF THE CONVERTER STATION AREA

2.2 INTRODUCTION

2.2.1

The Converter Station Area is shown as Section 1 of the Site Boundary (shown in Figure 4). It is located within agricultural land on the edge of the village of Lovedean, Hampshire within the administrative boundaries of Winchester City Council and East Hampshire District Council. The location is approximately 13.5 km to the north of the Portsmouth city centre. The settlements of Lovedean and Cowplain lie approximately 2 km to the south east, Horndean 1 km to the east, and Denmead approximately 2 km to the south west.

2.2.2

The Converter Station Area spans a number of small fields divided by hedgerows and used for horse grazing and off-road vehicles and is a mixture of arable and grazing farmland. Individual farm properties are situated to the north, west and south of the Converter Station Area, connected by narrow lanes. The existing Lovedean substation, associated pylons and overhead lines are dominant elements in the landscape of the proposed location and immediate surrounding area. It is located approximately 180 m – 200 m from the South Downs National Park boundary at its closest point, to the north and west, and is surrounded by pockets of woodland including Ancient Woodland.

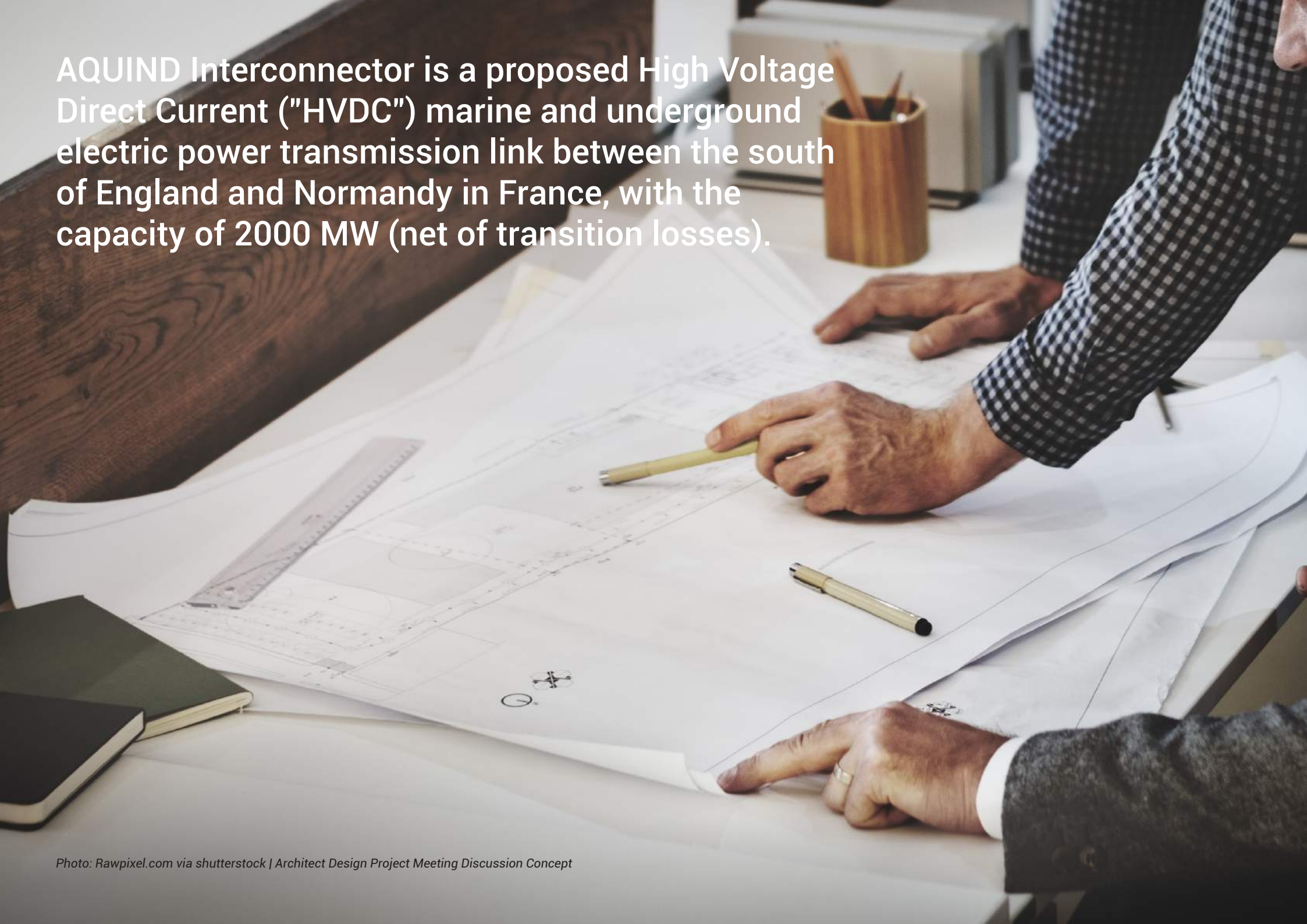
2.3.1

The works within the Converter Station Area for which consent is to be sought comprise the following.

- **Substation connection works:** The provision of additional outdoor electrical infrastructure at National Grid's existing substation at Lovedean to enable AQUIND Interconnector to connect with the existing UK transmission system;
- **HVAC underground cables:** two underground 400kV AC cable circuits (each with three power cables) of up to 400m to be installed in two trenches between National Grid's Lovedean substation and the proposed Converter Station. A fibre optic cable will be installed alongside the AC cables one per trench for control and cable monitoring purposes. Therefore, each circuit will hold 3 power cables and one fibre optic cable;
- **Converter Station:** The Converter Station buildings, located within an area adjacent to the existing Lovedean substation in the north-west corner of the Site Boundary, immediately west of Lovedean substation, as shown in Figure 5. The precise siting of the Converter Station has yet to be confirmed and the footprint shown in the figure is provided for illustrative purposes;
- **Access Track:** To allow access to the Converter Station a new access junction will be constructed in the vicinity of the existing Broadway Lane and Day Lane junction. The access road would be approximately 1.2 km in length, and is expected to be a standard width of 7.3 m. It will carry Converter Station related construction traffic, including Heavy Goods Vehicles ("HGVs") and Abnormal Indivisible Loads for some of the components of the Converter Station, during the construction phase of the project. Following the completion of construction, the road will be used for access during operation for maintenance purposes and in the event of operational outage. Traffic during operation will be minimal and consist of light vehicles, though larger vehicles may be required on rare occasions for any replacement of plant;
- **Mitigation Works:** Areas for proposed mitigation measures such as additional landscaping and an attenuation pond to capture surface water run-off from the Converter Station buildings and hardstanding and access road. The attenuation pond will be situated at a low point of the site;
- **Temporary Construction Areas:** Temporary laydown areas which will include car parking and site offices will be set up during the construction and commissioning stages and are likely to have a total footprint of approximately 4-5ha. These areas will be restored once construction has been completed and the Converter Station is operational;
- **Telecommunications buildings:** It is anticipated that up to two separate telecommunications buildings (one for each circuit), approximately 5m wide and 10m long (50 m²), will be located close to the main proposed access road adjacent the Converter Station perimeter fence. This will house the equipment necessary for the termination of the FOC at the Converter Station; and
- **HVDC underground cables:** The Converter Station Area also encompasses land required for the HVDC underground cable route (described in full in Chapter 3) which would run south from the Converter Station through land belonging to Winchester College and the field that lies to the east of Old Mill Lane. Four HVDC underground cables would be installed in pairs. Each pair is referred to as a circuit. There will be two circuits in total. Each circuit will also include a fibre optic cable. Construction associated with each circuit will be carried out separately. Further details are set out below in section 3.4. Trenching is proposed for their installation within the Converter Station Area and there will be two separate trenches – one for each circuit.

2.3.2

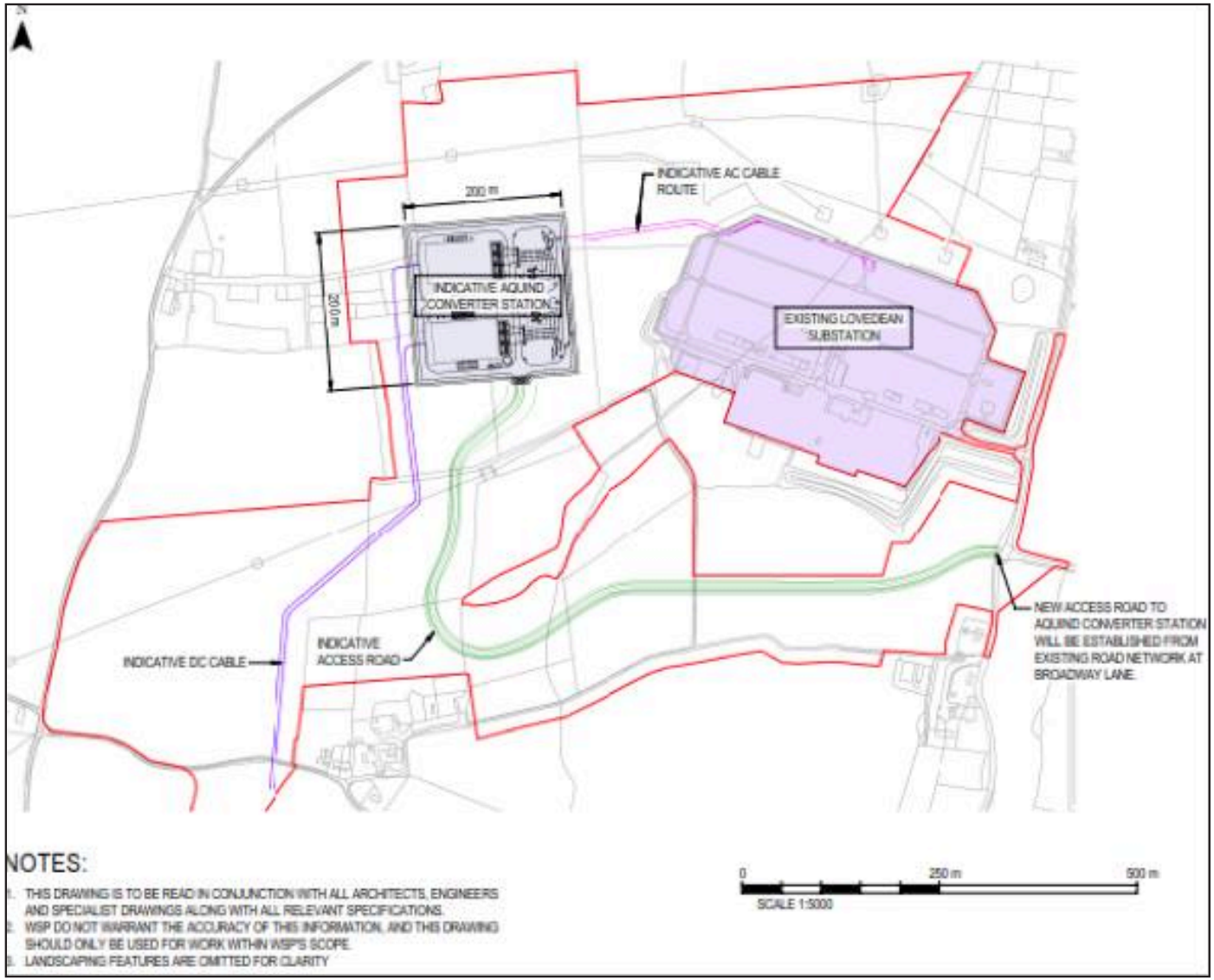
An indicative layout and arrangement for the Converter Station and other development within the identified Converter Station Area is show in Figure 5:



AQUIND Interconnector is a proposed High Voltage Direct Current ("HVDC") marine and underground electric power transmission link between the south of England and Normandy in France, with the capacity of 2000 MW (net of transition losses).

Photo: Rawpixel.com via shutterstock | Architect Design Project Meeting Discussion Concept

FIGURE 5 : INDICATIVE LAYOUT AND ARRANGEMENT OF OTHER DEVELOPMENT WITHIN THE IDENTIFIED CONVERTER STATION AREA



AQUIND Interconnector will increase competition across energy markets, improve security of supply and help foster greater renewable power integration.

2.4.1 FUNCTION AND COMPONENTS

The Converter Station is required to convert electricity between HVDC, used to transmit electricity between the UK and France, and HVAC, used to transmit electricity to households and businesses via the existing UK electricity transmission network. Figure 6 below, shows an indicative Converter Station layout, illustrating the equipment and structures required as part of a functioning Converter Station. To mitigate noise impact, some of these elements are likely to be repositioned through further detailed design work.

2.4.2

The proposed Converter Station will have a footprint of approximately 4.0 ha (200 m x 200 m) and will be within a security fenced compound. The outdoor equipment which forms part of the proposed Converter Station (shown in green on Figure 6) will be similar to the equipment that is found within typical electrical substations and includes: the 400 kV switchyard, transformers, AC/DC filters, lightning masts and lighting columns.

2.4.3

The buildings which will form part of the proposed Converter Station (shown in brown on Figure 6) comprise:

- Two converter hall buildings (item 1 in Figure 6) each will measure approximately 90 m in length, 50 m in width and 22 m in height. The maximum height of the building may be increased to up to 26 m, dependent on the preferred architectural and roof design solution;
- A control building, this would be at a reduced height compared to the converter hall buildings and is likely to be a two-storey arrangement (item 2 Figure 6); and
- A smaller spares building, similar in height to the control building (item 9 Figure 6).

2.4.4

Lightning masts which could be up to 4 m taller than the converter hall buildings, which are tall narrow structures, are also required to shield the outdoor equipment from direct lightning strikes.

2.4.5

Other buildings which are to be constructed at the Converter Station site include:

- Lighting columns, approximately 6 m and 15 m high are proposed to illuminate the outdoor areas of the Converter Station during emergency situations, such as an intruder or unplanned maintenance work. The lights will not be used during normal operation;
- Auxiliary power supplies will be provided in the event of a power failure at the Converter Station to ensure continuity of operation;
- Cooling systems will be required to remove heat generated within the Converter Station building; and
- Two telecommunications buildings (one for each circuit), which are required to house the telecommunications equipment needed for the termination of the fibre optic cable (which are not shown on Figure 6 below).

FIGURE 6 INDICATIVE CONVERTER STATION LAYOUT

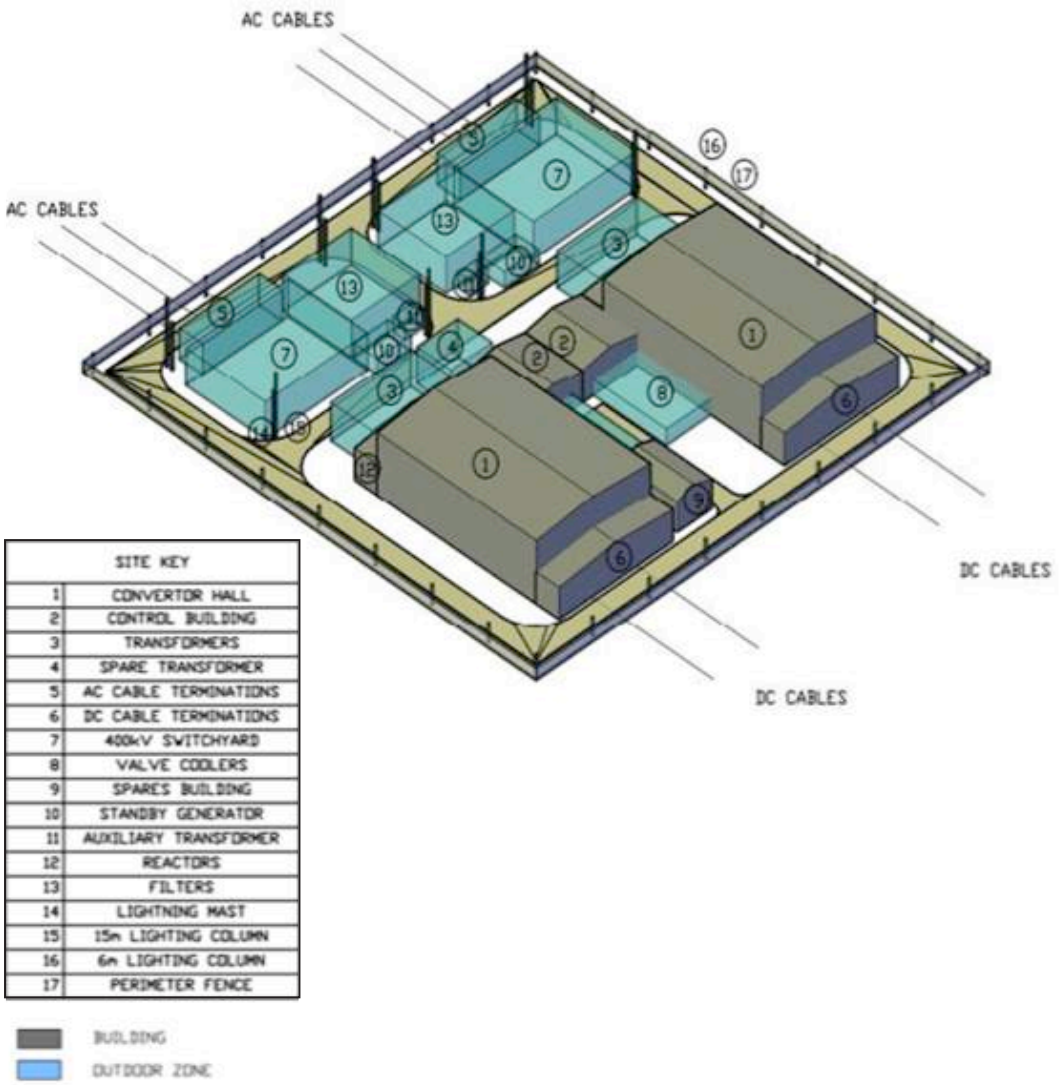
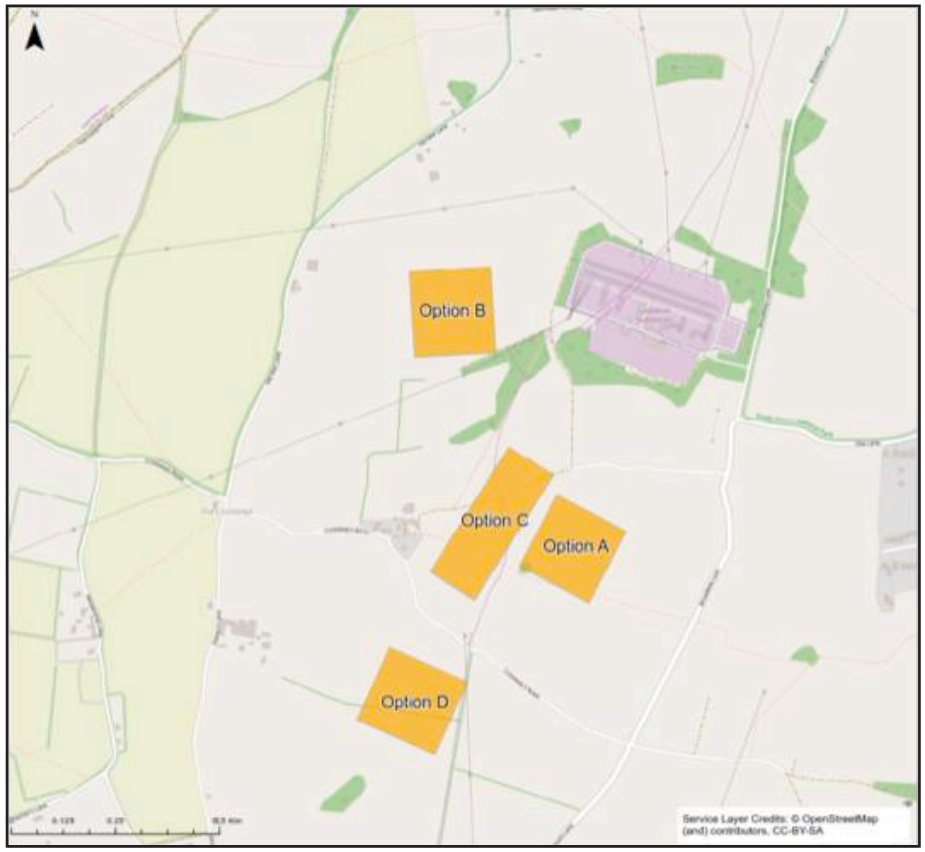


FIGURE 7 INITIAL CONVERTER STATION LOCATION OPTIONEERING



2.4.6 SITE SELECTION

AQUIND considered four options for the siting of the Converter Station following identification of the Lovedean substation as the most suitable grid connection point. Figure 7 shows these four options (A, B, C and D). A summary of why Options A, C and D were discounted is provided below, and a full explanation of the optioneering process which has led AQUIND to select Option B as its preferred proposal for the purposes of this consultation is set out in the Alternatives chapter of the PEIR (Chapter 2).

2.4.7

Option C was discounted on the basis that it was more challenging with regards to constructability, as the layout is constrained by both the nearby Ancient Woodland and underground cables approaching the Lovedean substation. In addition, the landscape and visual amenity study concluded that the option of siting the Proposed Development in this area could feature prominently in local views from the South Downs National Park ("SDNP").

2.4.8

Option D was proposed on the basis that it might improve the visual impact of the Proposed Development, however, the assessment undertaken concluded that this option had a more significant impact on the Denmead residents to the south due to its more southerly location. Also, as Option D was proposed at an increased distance from the substation than the other options, this in turn increased both the AC cable route length and the environment affected during construction. For these reasons Option D was discounted.

2.4.9

Options A and B were taken forward for further detailed investigation and assessed against a range of environmental, planning and technical considerations. The detailed investigations, coupled with feedback from the January 2018 consultation, concluded the Option B was preferable as it offers the best balance between an engineering solution and environmental impacts, while also taking into consideration the opinions of the local community. Two key considerations were the landscape and visual impact and noise impact:

2.4.10

Landscape and Visual Impact - Option B is sited further away from a higher number of nearby sensitive receptors (local residents and users of the Public Right of Way ("PRoW") and well-traversed highway network). In addition, the views of the site from the south would be partially screened by Stoneacre Copse, and views from the east are screened by the mature vegetation surrounding the existing substation. It has the greater potential for the site to be assimilated into the landscape, nestling between existing energy infrastructure (overhead lines) and making use of existing landscaping and topography to maximise existing screening, whilst landscaping mitigation measures may provide opportunities to supplement screening effects and provide a net gain in biodiversity, whilst protecting local distinctiveness.

2.4.11

Noise Impact - An appraisal of the potential noise and vibration impacts arising from Option A and Option B showed that Option B was the preferred option. With the inclusion of mitigation measures for both options such as orientation of noise sources, it is predicted that noise levels on the closest façade of the most exposed receptors are likely to be lowest for Option B.

2.4.12

The site proposed for the Converter Station (Option B) is located approximately 100m west of the existing Lovedean substation. The site is surrounded by agricultural fields and woodland, including areas of Ancient Woodland. Lovedean village is 1.3 km south-east with the town of Waterlooville 2.5 km south. A small cluster of residential properties are located on Broadway Lane approximately 0.3 km to the east of the proposed site. The boundary of the South Downs National Park is located in close proximity to the north and west. Views of the Converter Station from the SDNP are a key design consideration, taking into account its inherent sensitivity.

2.4.13 DESIGN PARAMETERS

The options for the building design of the Converter Station are constrained to a high degree by its operational requirements. AQUIND is nevertheless committed to ensuring good design, and architects (NORR) have been commissioned by AQUIND to contribute to the development of the external design of the buildings, with a focus on how the buildings will appear in the landscape. A proposed illustrative design has been used as the basis of the preliminary assessments on landscape and visual amenity impact, presented in Chapter 15 of the PEIR is/are shown at Figures 8 and 9.

2.4.14

In developing the illustrative design, NORR completed an architectural massing study to explore which roof type can be implemented to keep the buildings height to a minimum. A low pitch, hipped roof would be most effective in this regard.

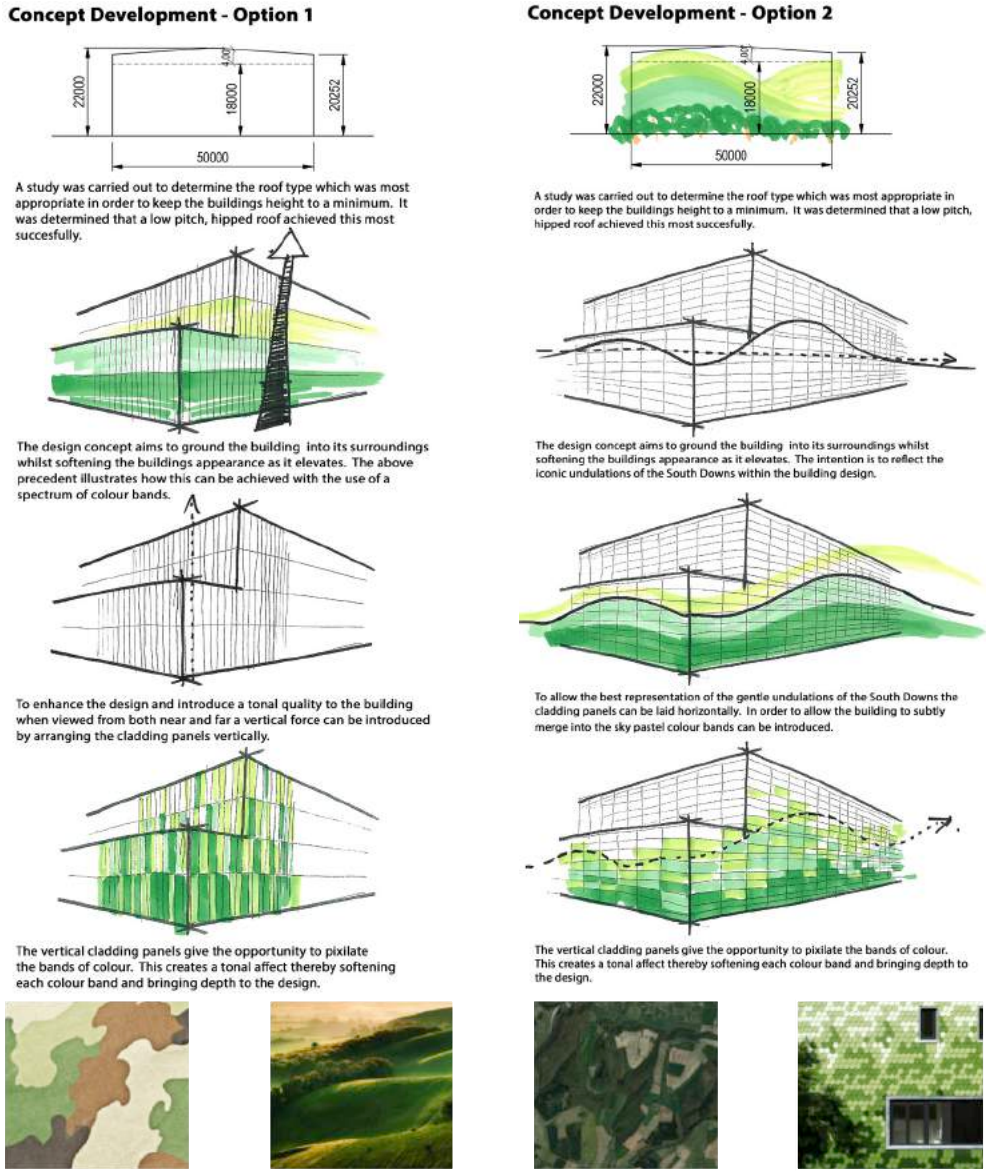
2.4.15

The design inspiration is the South Downs with its distinctive colour palette and undulations. Through creative treatment of the façade, the building could seemingly blend into its surroundings. This could be achieved in part through the implementation of a 'camouflage' technique. Selecting a colour palette which reflects the colours found in the surrounding environment will assist in blending the building into its location. Furthermore, pixilating and varying the colour palette will enable the building to reflect/represent the colours seen during the changing the seasons and weather.

2.4.16

A technique often used to help buildings blend in with the sky is employing horizontal colour bands which fade in colour from darker at the base of the building to light at the eaves. Strong bands of green have been considered for the lower section of the buildings thereby allowing them to respond to the greens of the ground and trees. As the building elevates the colour palette can fade to sit more harmoniously against the skyline. By varying the colours within each colour band a tonal quality can be introduced. The colour blends which have been explored are as follows: Dark Greens/Olives to the lower tier to 'ground' the form and blend it in with the surrounding landform and vegetation. Fern/Light Green and Mushroom colours to the higher tiers to lighten the form and create interest/ contrasting bands when viewed from further afield. These concepts are illustrated in Figures 8 and 9.

FIGURE 8 INDICATIVE DESIGN CONCEPT IMAGES FROM NORR



2.4.17

A construction contractor has yet to be appointed by AQUIND, and will not be appointed until after development consent has been granted. It is important that some design flexibility is retained until after that appointment has been made. Equally, AQUIND recognises the importance of setting clearly defined parameters around the type of design that can be submitted for approval post consent. It is therefore proposed that AQUIND will be bound by design principles as well as location and massing parameters set out in a condition (known as a "requirement") within the DCO. The requirement would require any detailed design to comply with the principles and parameters, which it is currently anticipated will be described (in words and images) in a design document which AQUIND will submit for approval as part of the DCO applied for.

2.4.18

The principles that are informing the development of the design principles and parameters which the final design of the Converter Station will be required to comply with include:

- Built form to be kept to a minimum to minimise visual impact - width, length and height to suit technical requirements i.e. 18m internal clear height across the 2 halls;
- The highest external roof point will be no higher than 26m, currently anticipated at 22m;
- Landscape mitigation will be provided in order to screen the building as effectively as possible. Locations for proposed mitigation will be confirmed, taking into account illustrative design information;
- Colours for the external façade of the Converter Station buildings will be selected from a limited and specified palette, informed by the local surrounding environment;
- Colours could be pixilated or banded horizontally or vertically to break up the built form and wherever possible reflect the changing colours of the seasons; and
- Colours for the upper section of the building may be selected to seemingly blend the building into the skyline.

2.4.19

Comments on the proposed approach to the design of the Converter Station are particularly welcomed as part of this consultation. In addition to considering the information presented in this Consultation Document, we strongly encourage you to review Chapter 15 of the PEIR, which provides the preliminary assessment of the landscape and visual impacts, to inform any responses to be provided on the design of the Converter Station.

2.4.20

Viewpoint B as detailed in Chapter 15 of the PEIR, with figure 9 illustrating an indicative Converter Station building design with a hipped roof (ridge at 22m) and horizontal cladding panels immediately post construction. Further post-construction figures can be found in Section 2.4.21 illustrating the Converter Station 10 and 20 years post construction.

2.4 CONVERTER STATION

FIGURE 9 ILLUSTRATIVE IMAGES SHOWING EXISTING BASELINE FROM VIEWPOINT B AND INDICATIVE IMAGE WITH CONVERTER STATION (HEIGHT AT 22M)

Baseline (existing)

0 years, post construction

2.4.21 MITIGATING THE LANDSCAPE IMPACT

Through an iterative design process and close consultation with the local planning authorities ("LPAs") and ("SDNPA"), a draft landscape mitigation plan for the proposed Converter Station location has been prepared, identifying measures to reduce potential landscape and visual effects and potential to create positive new habitats as well as improving connectivity and creating links to existing ancient woodland. The draft landscape mitigation plan is provided at Figure 10 below.

2.4.22

The following principles, which have been agreed with the LPAs and SDNPA, will be used to inform the micro-siting of the proposed Converter Station within the Converter Station Area and influence the scheme landscape design. These include:

- Considering as a whole the different effects of all elements of the development: proposed Converter Station, access track and cable connections;
- Integrating the development and associated infrastructure into the surrounding topography;
- Seeking to cut the proposed Converter Station construction platform into the gentle hill slope where possible, to reduce the ridge level of the building;
- Minimising the loss of existing vegetation of ecological value (particularly long-established hedgerows and veteran trees);
- Introducing new planting which is sympathetic to the surrounding landscape character and, mindful of local ecology, reflective of native species;
- Considering the soil types, seeding mixes and management regimes to create species-rich meadows and glades within areas of new screen planting;
- Considering the potential for introducing offsite planting in discussion with adjacent land owners to reduce effects of middle and long-distance views; and
- Considering height, mass, colour, texture and nature of materials for the buildings and associated infrastructure which is sensitive to the immediate surroundings.

2.4.23

The indicative mitigation planting around the proposed Converter Station (shown in Figure 10 and illustrated in post construction Figure 11) 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; and native hedgerows with hedgerow trees to small copses in specific locations. This vegetation would serve a number of purposes:

- Reinstating in some locations historic field boundaries;
- Providing partial visual screening through a layering of vegetation (existing and proposed);
- Integrating the Proposed Development into its surroundings;
- Improving connectivity in terms of biodiversity;
- Tying in with the adjacent ancient woodland (as far as reasonably practicable given the location of the overhead lines and associated easements);
- Reinforcing local landscape features;
- Offsetting vegetation lost as a consequence of the Proposed Development; and
- Helping to assimilate the Converter Station into the surrounding landscape, reducing its overall residual visual impact.

2.4 EXISTING LOVEDEAN SUBSTATION

FIGURE 10 INDICATIVE MITIGATION PLANTING AROUND PROPOSED CONVERTER STATION

FIGURE 11 ILLUSTRATIVE IMAGES OF CONVERTER STATION FROM VIEWPOINT B 10 AND 20 YEARS POST CONSTRUCTION

10 years post construction

20 years post construction

2.4.24 SETTING OF AND VIEWS FROM SOUTH DOWNS NATIONAL PARK

The proposed Converter Station is located outside the boundary of the SDNP. AQUIND recognises the need to ensure that the Converter Station design minimises any adverse impact on views from within the SDNP and the setting of the SDNP.

2.4.25

The extent to which the proposed Converter Station would be visible from the SDNP and how far it has an influence on the landscape character of the SDNP will be determined by the screening of the Converter Station and other visible infrastructure in views from within the SDNP to the north, north east and west. Localised screening is provided by existing tree and hedgerow cover. The development of a planting plan, with proposed tree and hedgerow planting, as part of the landscape mitigation plan will further reduce visibility.

2.4.26

The Converter Station would be visible from the SDNP, through a fragmented pattern of visibility to the north and north west. Greater visibility within the SDNP is afforded at the higher elevations, away from woodland, where there are clear, broad and open views towards Portsmouth and the south coast. Beyond the close vicinity of the Converter Station (beyond 3km), the landscape and visual effects associated with the Converter Station are reduced due to the topography of SDNP, intervening tree cover and hedgerows, the urban environment screening the proposed Converter Station in the wider landscape. The potential visual impact of the Converter Station would also reduce over time as the proposed mitigation planting matures, resulting in a 'cleaner' and more 'settled' appearance in the landscape.

2.4.27 MITIGATING NOISE IMPACTS

AQUIND recognises the importance of minimising noise impacts arising from the operation of the Converter Station and the sensitivities of the immediate vicinity to any such impacts. The dominant sources of noise during the operation of the Converter Station are anticipated to be the converter transformers; the transformer fans and the cooling fan bank.

2.4.28

Proposed mitigation includes careful consideration of the siting, orientation and internal layout of the Converter Station. Additional mitigation under consideration includes the use of acoustic enclosures (with acoustic attenuators and louvres) to the transformer and transformer fans, sound shields to the filter banks, acoustic lining to the converter halls, acoustic barriers, and other design considerations to reduce the effects on reflected noise on surrounding receptors. The proposed mitigation measures will be subject to further assessment prior to submission of the DCO application, to ensure that the noise criteria specified as being appropriate by the relevant LPAs are achieved.

2.4.29

Further information on the preliminary impacts of noise from the Converter Station whilst operational is contained in Chapter 23 of the PEIR. We strongly encourage you to review this chapter of the PEIR before providing feedback on noise impacts associated with the Converter Station.

2.4.30 CONSTRUCTION METHODOLOGY

Construction of the proposed Converter Station is expected to take two years (anticipated to be between 2021 and 2023). Construction works will comprise;

- Earthworks to create a building level platform;
- Earthworks to create a construction laydown area;
- Development of site drainage system;
- Construction of permanent access;
- Construction of internal roads;
- Construction of car parking;
- Construction of buildings; and
- Creation of landscape features.

2.4.31

Material excavated during earthworks will be reused in construction and screening where possible, minimising the movement of material off-site and reducing vehicle movements during construction. Landscaping measures will be implemented at the Converter Station site as described earlier.

2.4.32

During construction there will be a need for a temporary construction compound with a footprint of approximately 4-5 ha within the Converter Station Area. All vegetation will be removed in these areas and some earthworks may be required to create a level platform, these areas will be required for the duration of the construction and commissioning stages and will then be reinstated.

2.4.33

At the peak of construction, up to 45 two-way HGV movements per day are envisaged, with up to 10 telescopic cranes and approximately 150 personnel on site. It is likely that some abnormal loads will be required to deliver plant and heavy items to site. Measures to deal with these vehicles will be included in a Construction Traffic Management Plan to be developed with Hampshire County Council.

2.4.34

Electromagnetic fields from the AC cable will be contained by the cable's protective metal sheath. The calculated electromagnetic field strengths due to both the DC and AC cables and the conversion process are significantly below the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") guidelines and fully compliant with international health and safety standards.

2.5 LOVEDEAN SUBSTATION

2.5.1 NATURE OF PROPOSED WORKS

AQUIND will also be seeking consent as part of the DCO application for works required to Lovedean substation in order to facilitate the connection of the Converter Station to National Grid's electricity transmission network. National Grid is currently assessing the extent and location of the connection works required. It is currently anticipated that the required additional outdoor electrical infrastructure may be located within the operational boundary of the existing substation.

2.5.2 CONSTRUCTION METHODOLOGY

Subject to further discussion with National Grid, it is likely that the DCO would authorise National Grid, rather than AQUIND, to carry out works to the substation to facilitate the connection of the Converter Station to National Grid's electricity transmission network.

2.6 HVAC UNDERGROUND CABLES BETWEEN THE CONVERTER STATION AND LOVEDEAN SUBSTATION

2.6.1 FUNCTION AND COMPONENTS

Two underground AC cable circuits, each consisting of three HVAC cables and one fibre optic cable are required to connect the proposed Converter Station to the Lovedean substation. A separate fibre optic cable will be installed alongside the HVAC underground cables for control and protection and cable monitoring purposes only. Figure 12 below provides an illustrative cross section of HVAC circuit. A typical spacing of approximately 5 m will be maintained between the two circuits.

2.6.2 CONSTRUCTION METHODOLOGY

It is anticipated that the HVAC underground cables will be installed using a trenching method across the agricultural land between the Converter Station and the substation. During construction a temporary construction area will be required close to the HVAC cable route for construction and laydown purposes. Space will be required for excavated material which will generally be placed to the side of the cable route.

Image courtesy of Stockton Drilling

3.1 INTRODUCTION

3.1.1

This Chapter describes the proposed route of the onshore HVDC cable and identifies where there are options for certain parts of the route which AQUIND is still considering before finalising its proposals. Your views on these route options are particularly welcomed in response to this consultation.

3.1.2

The proposed 'corridor' within which the onshore HVDC underground cable will be located runs from the proposed Converter Station at Lovedean to the Landfall site on the coast in Eastney (south-eastern Portsmouth). It is proposed to pass through the urban areas of Waterlooville, Purbrook, Drayton and Portsmouth, a route of approximately 20 km. In doing so, the cable corridor would pass through four administrative areas: Winchester City Council; East Hampshire District Council; Havant Borough Council; and Portsmouth City Council.

3.1.3

The various options for parts of the route have been introduced subsequent to feedback received from the January 2018 consultation, further consideration of the potential impacts of the proposals on the environment and further technical work (including ground investigations).

3.1.4

With any development to be located in the highway a level of traffic disruption is inevitable. Traffic disruption from cable installation in the Portsmouth area was identified as a particular concern during the January 2018 consultation (for instance at Eastney Road and Milton Road). AQUIND is clear on the sensitivities in respect of traffic disruption and is, wherever possible, seeking to minimise such impacts. Having had regard to this feedback, AQUIND has sought to identify alternative options for parts of the route which lessen this impact, as well as considering further the measures that could be implemented to reduce the potential impact on traffic along the entire route.

3.1.5

The feasibility and practicability of these options is still being considered. Further technical and environmental work is needed in some locations together with ongoing stakeholder and landowner discussions. In parallel with those exercises, AQUIND is keen to receive further feedback from the communities that are local to the proposals to allow for a decision on the final design to be taken with that further feedback in mind.

3.1.6

The proposed cable corridor is shown in Figure 2. For ease of reference, the route has been split into numbered sections (1-10) described in this Chapter, with options clearly identified by reference to each section. The Site Boundary is identified by a red line as shown in Figure 2. This represents the extent of the land we are currently considering for the Proposed Development. Potential route options are presented within this boundary. In some areas the Site Boundary includes a larger area than the indicative cable route options suggests, this is either because the location of specific routes within that area have not yet been fixed or where HDD is proposed and final HDD routes have yet to be fixed.

3.1.7

AQUIND's intention is to locate the cables within existing highways or road verges wherever practicable. In certain locations, where there are constraints to using the highway or associated verge, it may be necessary to utilise land outside the highway. However it is not intended that the cables will be laid within the boundary of any homes or gardens along the proposed cable route.

3.1.8

The only exception to this which is being considered is the routing of the marine cable to the Landfall beneath Southsea Holiday Home, Lodge and Leisure Park via a trenchless HDD method, that should have no unacceptable impact on the residences or residents above. The necessary technical assessments are being undertaken to confirm that no such unacceptable impacts will arise as a consequence of those works.

3.1.9

The cable corridor also includes the areas required for storage or works compounds during cable installation.

3.1.10

The proposed strategy of installing the HVDC cables largely within the highway means that we have had to give careful consideration to ensuring that traffic can be managed around our works without unnecessary disruption. We describe our approach to traffic management in Chapter 5 of this document, and further information on the current understanding of the potential traffic and transport impacts associated with the installation of the HVDC underground cable is provided at Chapter 21 of the PEIR.

3.1.11

Due to the Cable Route being installed underground, with the land reinstated to its previous use, there are not considered to be any long term significant landscape and visual effects associated with it. Should any hedgerow or tree planting be lost during construction, replacement planting would be proposed.

3.2 DESCRIPTION OF THE HVDC UNDERGROUND CABLE

3.2.1

The HVDC underground cables will transmit electricity between the proposed Converter Station and the Landfall, where it will be connected to the marine cables to France. Four HVDC cables are to be installed, each approximately 115-150 mm in diameter. These cables will be laid in pairs, with each pair known as a circuit.

3.2.2

The basis apparatus associated with the HVDC cables to be installed within the Cable Corridor are:

- 4 x HVDC Cables (laid in pairs (circuits));
- 2 x Fibre Optic Cables (approximately 35 – 55 mm in diameter, one with each HVDC circuit) and Fibre Optic Cable Infrastructure;
- 2 x transition joint bays at the Landfall (to join the marine cables to the onshore cables, one transition joint bay for each circuit);
- joint bays long the cable route (located approximately every 600m to 2km along the cable route); and
- link boxes and link pillars or link cabinets at some joint bays (required approximately every 6km along the cable route).

3.3 TYPICAL CABLE ARRANGEMENT IN THE HIGHWAY

3.3.1

The HVDC underground cables are proposed to be installed between the Landfall in Eastney and the Converter Station. These would be installed in pairs (also referred to as circuits, two circuits in total). The two circuits, each including one smaller diameter Fibre Optic Cable, would be installed in separate trenches. Where possible, a typical spacing of approximately 5 m is maintained between the trenches. This spacing means the circuits are usually installed in trenches in opposite sides of the highway. Where there is insufficient space in the highway for both circuits, the circuits may take divergent routes or be routed outside the highway. Each excavated trench would be approximately 1m in depth (but may be deeper where the crossing of other services is required) and approximately 0.7 m in width (but could increase to 1 m).

3.3.2

Figure 12 shows a typical cross-section of the highway where cables are installed in trenches on either side of the highway. However, as stated above, where there is insufficient space in the highway for two pairs, the cable pairs may take divergent routes within the highway or be routed outside the highway boundary. Figure 13 and 14 show the assumed widths which are currently proposed for the installation.

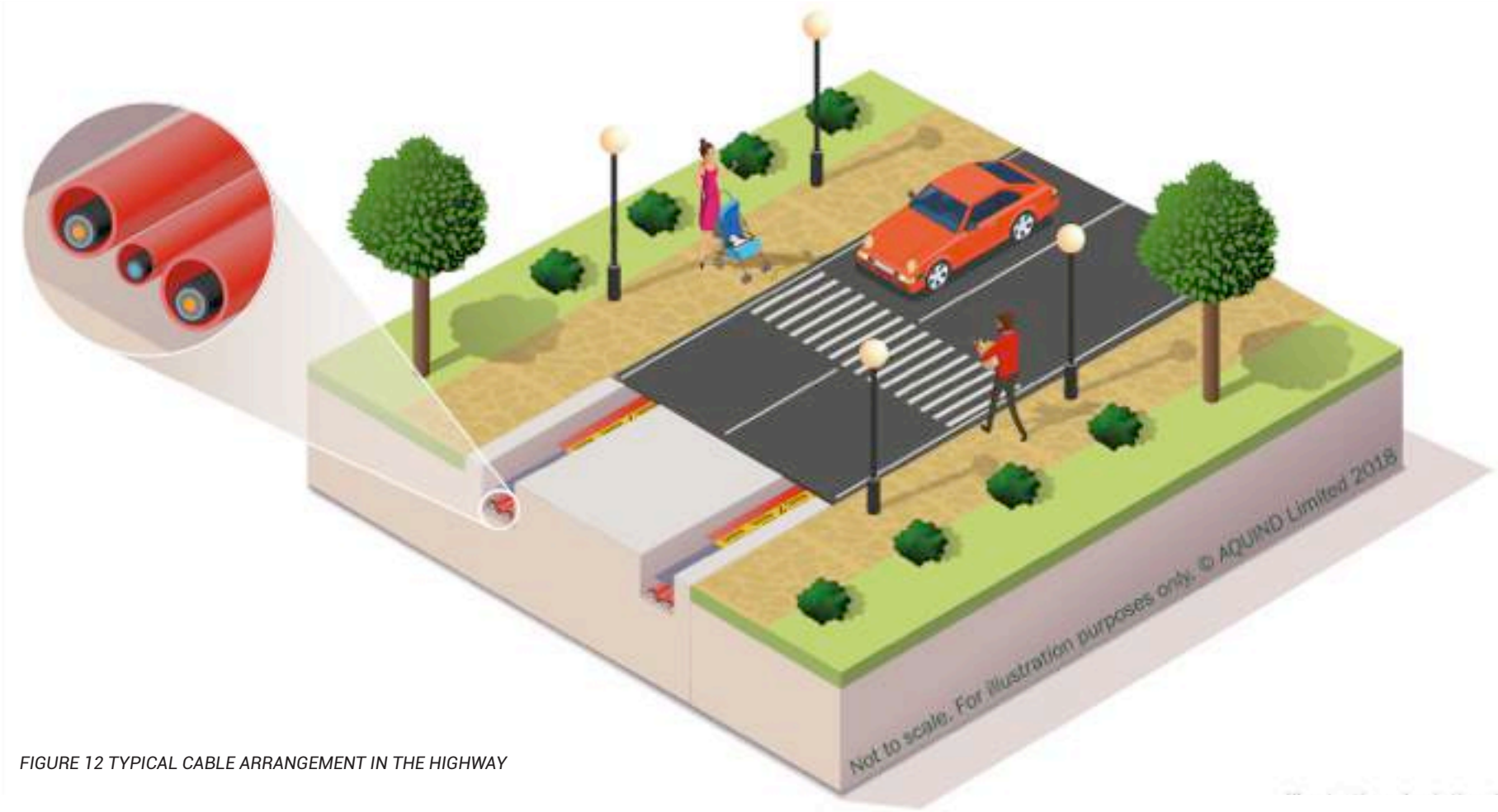


FIGURE 12 TYPICAL CABLE ARRANGEMENT IN THE HIGHWAY

3.3.3

For construction within the carriageway it is assumed that a construction corridor of 4 m will be required per cable trench (there will be two cable trenches).

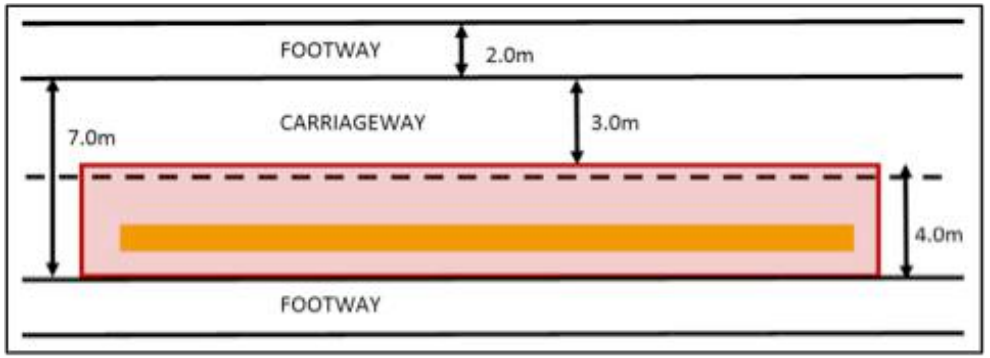


FIGURE 13 CONSTRUCTION ZONE ON CARRIAGEWAY

3.3.4

For construction within the footway it has been assumed that construction of one cable trench on a footway will require a minimum working width of 2 m within the footway / verge plus 3 m on the carriageway for access to construction vehicles.

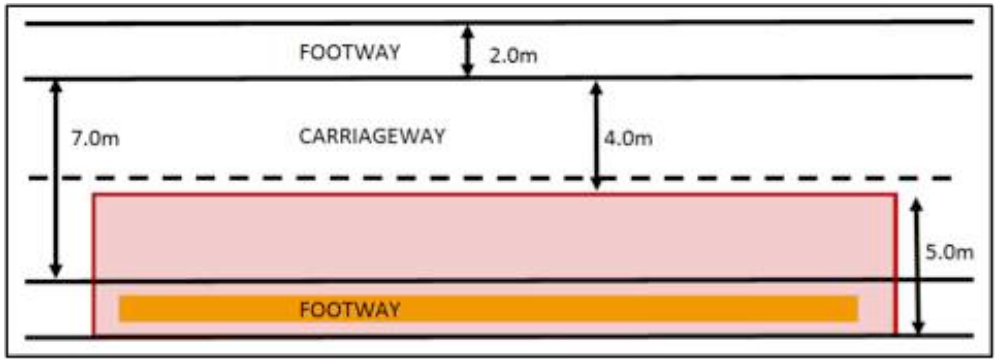


FIGURE 14 CONSTRUCTION ZONE ON FOOTWAY

3.4 CONSTRUCTION METHODOLOGY

3.4.1 Installation of the cables involves two stages:

(A) Installation of cable ducts

3.4.2

For the majority of the route cables will be installed in excavated trenches. Rather than being laid in the trench, a form of housing (known as cable ducts) will be installed in the trenches. The cable ducts will be installed in sections of approximately 100 m and following installation backfilled and the surface restored. Each excavated trench could be approximately 1 m deep, but may be deeper where the crossing of other services is required. Overall this installation of cable ducts is estimated to take approximately 18 months. It is anticipated that more than one (up to six) 100 m sections on the cable route may be constructed at the same time. Illustrative examples of what a cable trench could look like are provided below in Figures 15 and 16.

3.4.3

Typically, the installation rate for cable ducts for each of the two circuits is approximately 18 m to 30 m per day and typically in 100 m sections within urban areas, and approximately 50 m per day for areas of open land. Based on the above, is estimated that on average it will take 1 week to install the ducts and backfill and restore the surface for a 100m section.

3.4.4

Using cable ducts avoids the need to keep long lengths of trench open to lay the cables. It allows short sections of cable route to be worked on, the duct installed, and the highway or land reinstated to its previous use when finished. Where the cable route is in or immediately adjacent to a highway, the installation will clearly require traffic management measures - typically closure of a single lane of traffic. An overall philosophy has been to keep at least one lane of traffic flowing and road closures to a minimum. The use of bus lanes, footpaths and verges is required in some places to achieve this. More information on AQUIND's traffic management proposals is set out in Chapter 5 of this document.

(B) Pulling of cable through cable ducts



FIGURE 15 TRENCH DUCTS (TIMBERING, CROSSING EXISTING SERVICES, AND AUXILARY CABLE (consent from Prysmian Durkin & Sons).

3.4.5

A typical cable section is about 1 km long. At a later date after sections of ducts have been installed, lengths of cable will be pulled through the cable ducts along the route from the joint bays (these are described below). The cable pulling process can be done with relatively little impact or disruption to traffic. The cables would then be jointed and the joint bay excavations reinstated. This process for the pulling of the cable along the whole of the route is estimated to take approximately 6 months.

3.4.6

It is likely to be the case that the installation of cable ducts and the pulling of cables will happen in tandem with one another as the installation of the route progress, to minimise the overall construction programme, rather than as two separate phases of activity.

3.4.7

In certain circumstances it will be necessary to lay cables directly into an excavated trench, where necessary to more precisely navigate around existing services or obstacles.

3.4 ONSHORE CABLE ROUTE

FIGURE 16 TRENCH DUCTS BEING BACKFILLED WITHIN THE CARRIAGEWAY - DUCT BLOCK CAST, BACKFILL CABLE COVERS, AND PARTIAL BACKFILL (consent from Neary Construction).

3.4.8

As stated above, typically, the installation rate for cable ducts for each of the two circuits is approximately 18 m to 30 m per day (typically with only 100 m sections under construction at any one time) within urban areas, and approximately 50 m per day for areas of open land. It is anticipated that more than one (up to six) 100 m sections on the cable route may be constructed at the same time.

3.4.9

Joint bays will be required at points along the route, to join one section of cable to another and these will be used for pulling the cable through the cable ducts. Figure 17 shows a typical joint bay.

3.4.10

The number of joint bays along the length of the cable route is dictated by two factors: (1) the length of cable that can fit on a cable drum (the drum-shape reel on which the cable is stored prior to installation); and (2) limits to the pulling tension required to pull the cable through the ducts. For these reasons, joint bays are likely to be required every 600 – 2,000 metres along the route. The distance between joint bays will depend on the technique employed by the contractor appointed by AQUIND to execute the project, and some flexibility as to the number and location of joint bays will be sought in the DCO application to cater for this.

3.4.11

The excavation required for a joint bay is approximately 15 m x 3 m for each circuit. Cables will be pulled from one joint bay to the next through the cables ducts using cable winches. Once the cables and fibre optic cables are installed in all ducts, the joint bays will be backfilled and the land reinstated. Once completed, backfilled and reinstated, the joint bays, like the rest of the route, will not be visible. The only evidence of the presence of a cable route will be link boxes, link pillars or cabinets at joint bays along the route illustrated in Figure 17. Link boxes/pillars or cabinets area a box in which electrical connections may be tested to establish the integrity of the cable in the event of suspected damage. Joint bays and link boxes/pillars or cabinets will be positioned in highway verges, fields or car parks, where possible.

FIGURE 17 EXAMPLES OF JOINT BAY WITH LINK BOXES/ PILLARS AND CABINETS (Images courtesy of Prysmian).

3.4.12

Typically, it takes 20 working days to complete one joint bay. During this time the construction the area of each joint bay will be securely fenced. Typically, in addition to the excavated bay, there would need to be sufficient space for:

- One container for storage and a workshop;
- Welfare facilities;
- Generator and fuel;
- Temporary shelter installed over the joint bay, to provide a suitable environment for assembling the joints;
- Space at one or both ends of the joint bay for cable installation; and
- Space for parking operatives' vehicles.

3.4.13

During the installation of the cables along the whole of the onshore route, there will be a variety of construction zones depending on the phase of work. In addition to work areas required for the activities described above, it is anticipated that two temporary construction compounds at locations along the cable route of approximately 100 m x 50 m will be required for the cable drum, accessory deliveries and temporary storage of cable laying plant.

3.5.1

There are four potential locations along the proposed cable route which are unlikely to be suitable for installation via the laying of cable ducts and subsequent cable pulling. It is likely horizontal directional drilling ("HDD") will be required in four of those locations, set out below:

- the Eastney Landfall, including beneath Southsea Holiday Home, Lodge and Leisure Park (within section 10 of the cable route);
- the allotments north-east of Bransbury Park (within section 9 of the cable route);
- the Portsea Island crossing under Langstone Harbour (within section 7 of the cable route); and
- the King's Pond near Anmore (within section 3 of the cable route).

3.5.2

HDD is a trenchless installation method used to cross beneath areas where conventional construction methods cannot be used due to constraints (water ways, railways and environmentally sensitive areas), where other methods may cause damage, or where access is restricted. Where HDD is used, cable ducts will be installed and cables pulled through in the same way as where trenching is used to avoid sensitive land uses.

3.5.3

HDD operations require a suitable temporary construction area, which can be up to 50 m x 50 m depending on the length and size of the HDD works. The HDD temporary construction compounds will house the drilling rig, water bowser/pump, generator, layout of ducts/pipes and other construction equipment.

3.5.4

HDD is the most suitable installation method to bring the marine cable onshore to the proposed Landfall at Eastney, and this avoids the need for any trenching operations on Eastney Beach or in the nearshore area. This HDD will require four boreholes each approximately 1400 to 2000 m long and is proposed to be drilled from the proposed Landfall in the triangular car park described below in section 10 in Eastney.

3.5.5

The fifth location where installation via the method of cable ducts and subsequent pulling is where the able is required to cross beneath the railway line to the north of Farlington Playing Fields (within Section 7 of the cable route). A trenchless technique more suited than HDD to short crossings may be employed for the installation of the cables under the railway line. This alternative method of trenchless installation enables cables to be installed within ducts or pipes under a feature with minimal impact on any above ground infrastructure.

FIGURE 18 IMAGE OF A HDD RIG *(Images courtesy of Stockton Drilling).*

3.6 DESCRIPTION OF PROPOSED HVDC CABLE ROUTE AND OPTIONS

3.6.1

The proposed Onshore Cable Corridor is described below by reference to sections. The term "corridor" is used to reflect the fact that in some cases a larger area is shown than that through which the cable will ultimately be routed, and consent applied for.

3.6.2

The route and the options for parts of the route that are being consulted on are described below. Reference is made to the proposed construction methodology for each section (trenching or HDD). Where AQUIND is still considering options in relation to a particular section of the route, these are described and your feedback in response to this consultation is welcomed. The cable route and options illustrated within the section/option plans below are only for illustrative purposes to show the route within the respective option. Further detailed assessment of the constructability and routing is to be finalised within the onshore cable corridor.

3.6.3

Traffic management is a key part of the cable installation period. Indicative periods for traffic disruption against each section of route based on the current understanding and options to minimise this are set out below. This is based on an installation rate for the cable ducts of 20 m per day. All periods quoted are per circuit and are a worst case preliminary view, with the actual impact dependent on further assessment of the installation and mitigation in relation to this. The information on traffic disruption is principally presented to provide an understanding of the broad impacts likely to be associated with particular options, which may be used to inform comments on preferred options to be provided in response to this consultation.

3.6.4

The disruption is indicated in terms of full road closure, lane closure (maintaining two-way traffic) or shuttle working.

3.6.5

Shuttle working is where a lane closure is required on single carriageway roads two-way traffic flow will be maintained through the use of shuttle working traffic signals placed at either end of the construction zone. In peak periods these traffic signals will be manually controlled to minimise delay.

3.6.6

The approach to cable installation is very similar to any other utility installation, and it is inevitable when installing infrastructure like this that there will be traffic disruption for a temporary period. However, AQUIND is committed to identifying and employing all possible methods to reduce the impacts on users of the highway during the construction of the proposed development. Every effort has been made to ensure that at least one lane of traffic is open at any one time to enable a flow of traffic and minimise the potential impacts. Where a full road closure has been identified this is because the road is too narrow to fit a circuit within the highway boundary whilst safely keeping one lane open.

3.6.7

As described in section 3.4, the trenching for each circuit will be undertaken in approximately 100 m sections along the route, any disruption will be on a "rolling" basis. For example, where a road or lane closure is identified during trenching works would progressing up that road in a rolling 100 m section. Two circuits will be installed in all cases unless otherwise specified.

3.6.8

Chapter 5 below gives more information on traffic management and potential disruption and reference is also made to Chapter 21 in the PEIR on Traffic and Transportation. During the refinement of the proposals we will be developing the traffic management measures to minimise traffic disruption so far as possible.

3.6.9

Where options are proposed these are described by reference to an extract of the Site Boundary relating to that option. Indicative options are shown as different lines for illustrative purposes. At this stage the proposed cable route could be anywhere within that section of the Site Boundary shown in the red line area for each option. This is especially so where the cable corridor goes wider than the highways boundary. The route will be refined following further site investigation and consultation.

3.6.10

Vehicular access to properties may be restricted along certain parts of the route for the period when the section of open trench is outside properties. As stated this section would typically be 100 m at any one time, for the duration of that section being worked on which is typically 1 week. The extent of any restriction will depend upon the width of the road and the location of the trench in the road. Once a section has been worked on and the cable duct installed, the highway or land would be reinstated and vehicular access would be available again. Further technical studies are ongoing to fully identify the potential impact on residents along the final cable route and we will further engage with persons along the cable route where necessary to inform them of the impacts, as well work with them to manage this impact during the installation of the HVDC underground cable.

3.6 DESCRIPTION OF PROPOSED HVDC CABLE ROUTE AND OPTIONS

Section 1 – Lovedean (Converter Station Area)

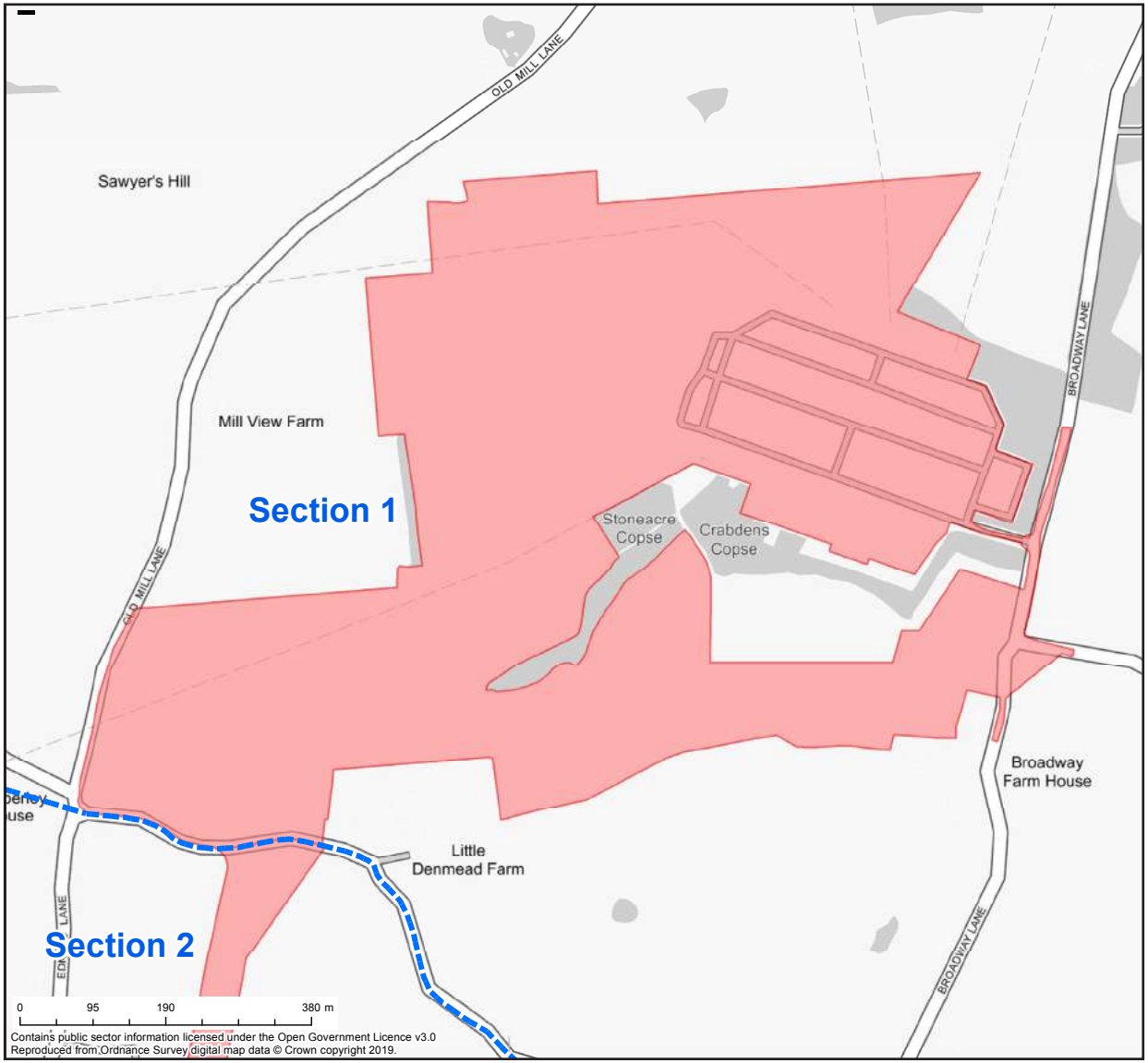
From the Converter Station the proposed cable corridor runs southwards through fields belonging to Winchester College and the field that lies to the east of Old Mill Road. The cables would be installed via two trenches in this section.

There are no alternative options presented for this part of the route.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Broadway Lane – 1 days full closure (for the highway works associated with the new access track junction).

FIGURE 19 SECTION 1



Proposed Site Boundary

Onshore Cable Corridor Section Boundaries (to be used alongside written description of cable corridor for ease of reference)

Proposed Cable Trench option

Proposed Cable Horizontal Directional Drill (HDD) option

DISCLAIMER:

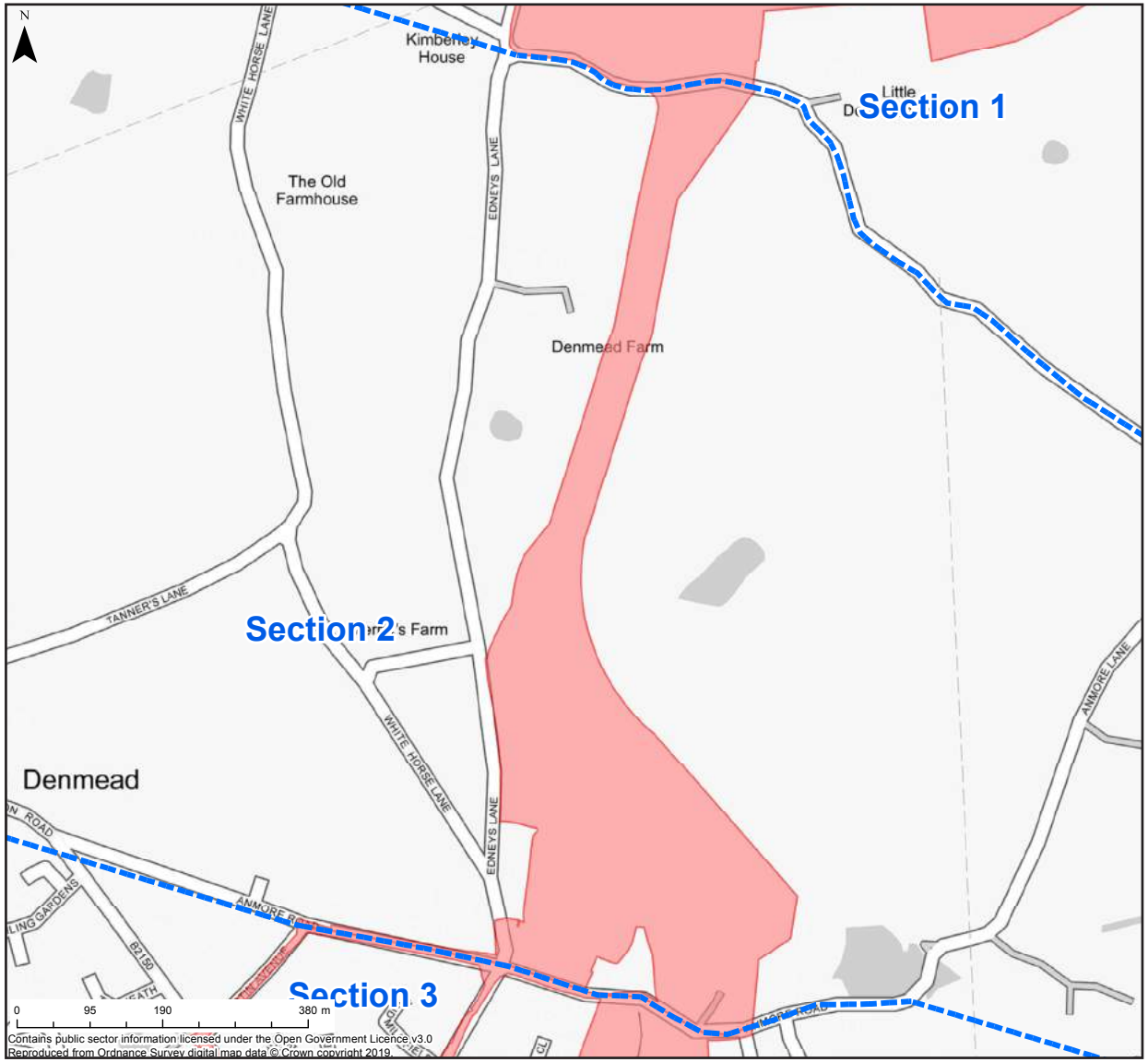
An Ordnance Survey ("OS") basemap has been used to show the geographic location of the proposed Site Boundary (marked in red). This OS basemap is illustrative only and does not accurately reflect specific boundaries of highways or property.

Section 2 – Anmore

The proposed cable corridor continues, through farmland to a point to the north of properties located along the northern side of Anmore Road. The cables would be installed via two trenches in this section. There are no alternative options presented for this part of the route.

No highway closures are anticipated with this section.

FIGURE 20 SECTION 2



SECTION 3 – DENMEAD/KINGS POND MEADOW

Section 3 of the cable corridor is shown in Figure 21. It contains options being considered between land to the north of properties located on the northern side of Anmore Road at Kings Pond and Hambledon Road (at its junction with Soake Road). Options for the cable route and appropriate installation methods are being explored whilst further technical investigations are undertaken to refine the route, and feedback is obtained via the consultation process.

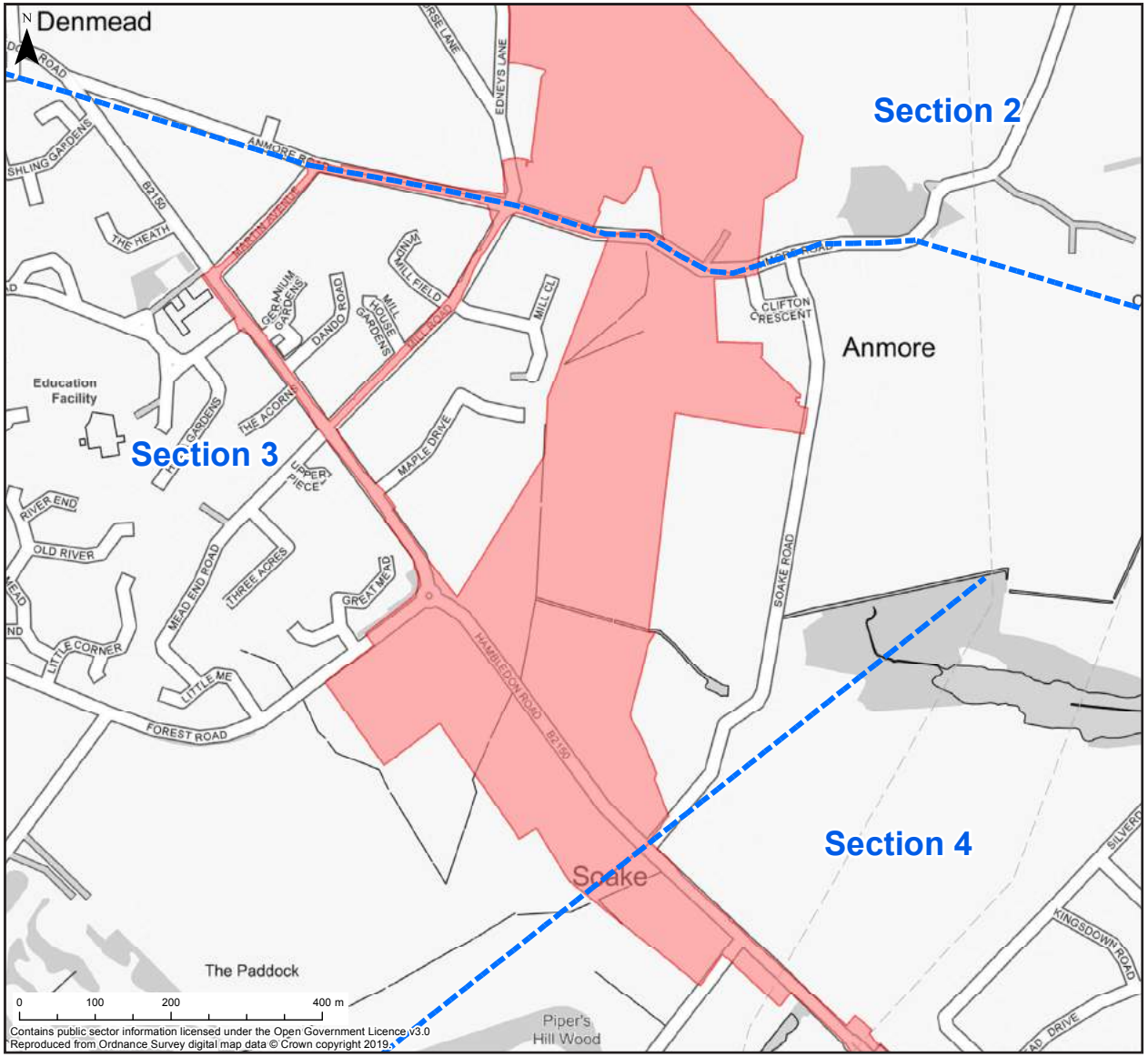
The use of HDD is being explored to cross this area and assessment of the feasibility of this method is still ongoing. This area is known to be the meeting point of two geological formations, with separate water tables, one being an SPZ1-protected aquifer. This is likely to mean two shorter HDDs are required in this area (with the entry/exit point located in one of the fields), rather than one long HDD from north to south.

The southern end of the HDD section would be in the field to the north of Hambledon Road. The intention would be for the northern HDD to reach fields to the north of Shafter's Farm. Trenching may be used to install the cables through these fields, if the HDD is not possible or if subsequent work identifies it to be a better solution. Alternatively, a solution which uses a combination of HDD and trenching may be utilised.

Three options are currently being considered between Anmore Road at Kings Pond and Hambledon Road.

Options 3a) (i) or (ii) and 3b) consider a mix of HDD and trenching. These are described on the next page:

FIGURE 21 SECTION 3



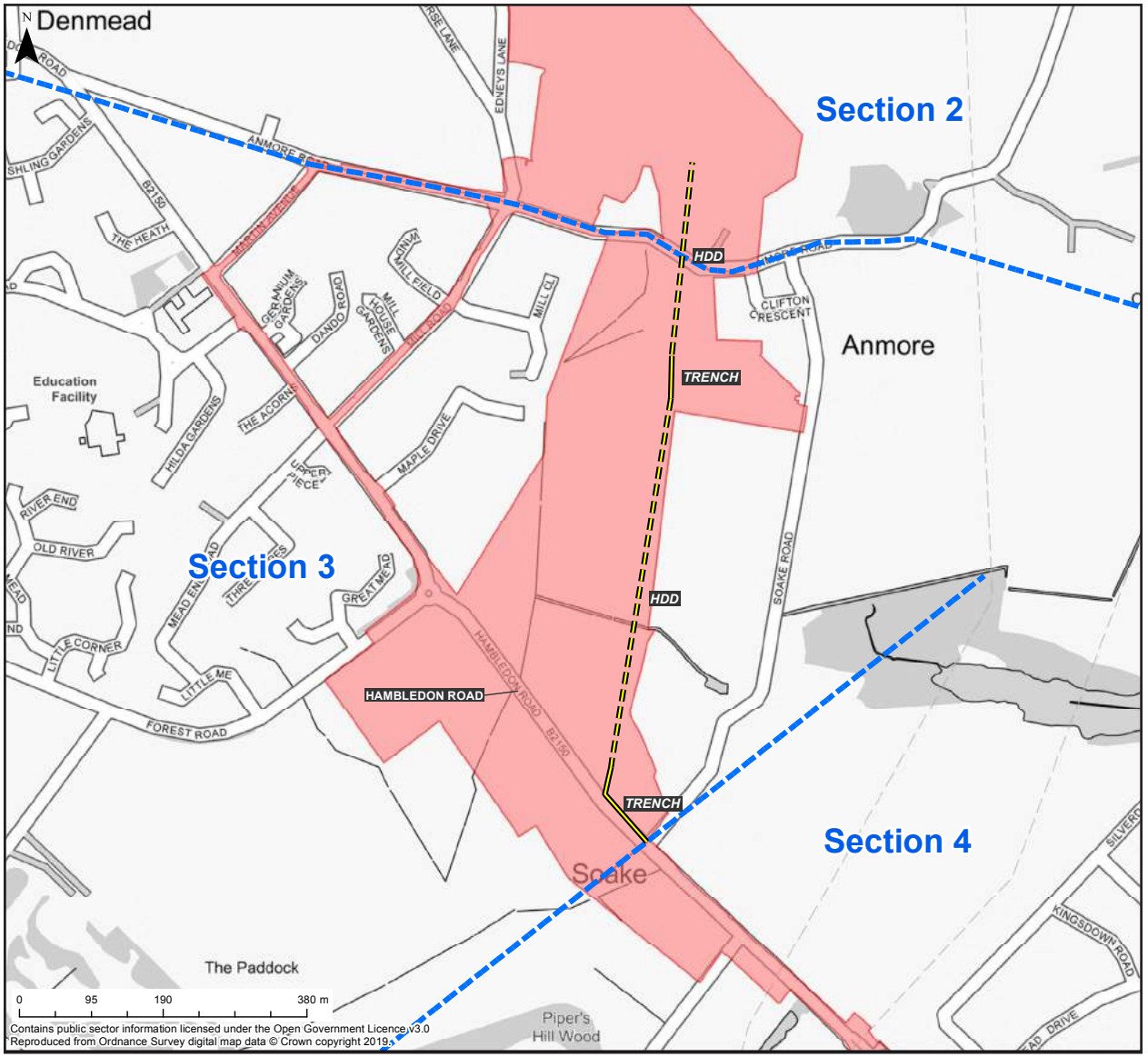
OPTION 3A(I) SUB-OPTION HDD UNDER ANMORE ROAD

The proposed route would run from land north of Anmore Road, crossing Anmore Road near Kings Pond, to Hambledon Road through the fields known as Kings Pond Meadow, via ducts installed by HDD. The field immediately to the south of Anmore Road is designated as a SINC. The field below the south-east corner of the SINC is not designated, and it is this field where it is anticipated that the HDD will resurface if two HDDs are to be used.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Hambledon Road – 6 days shuttle working

FIGURE 22 SECTION 3 OPTION 3A(I)



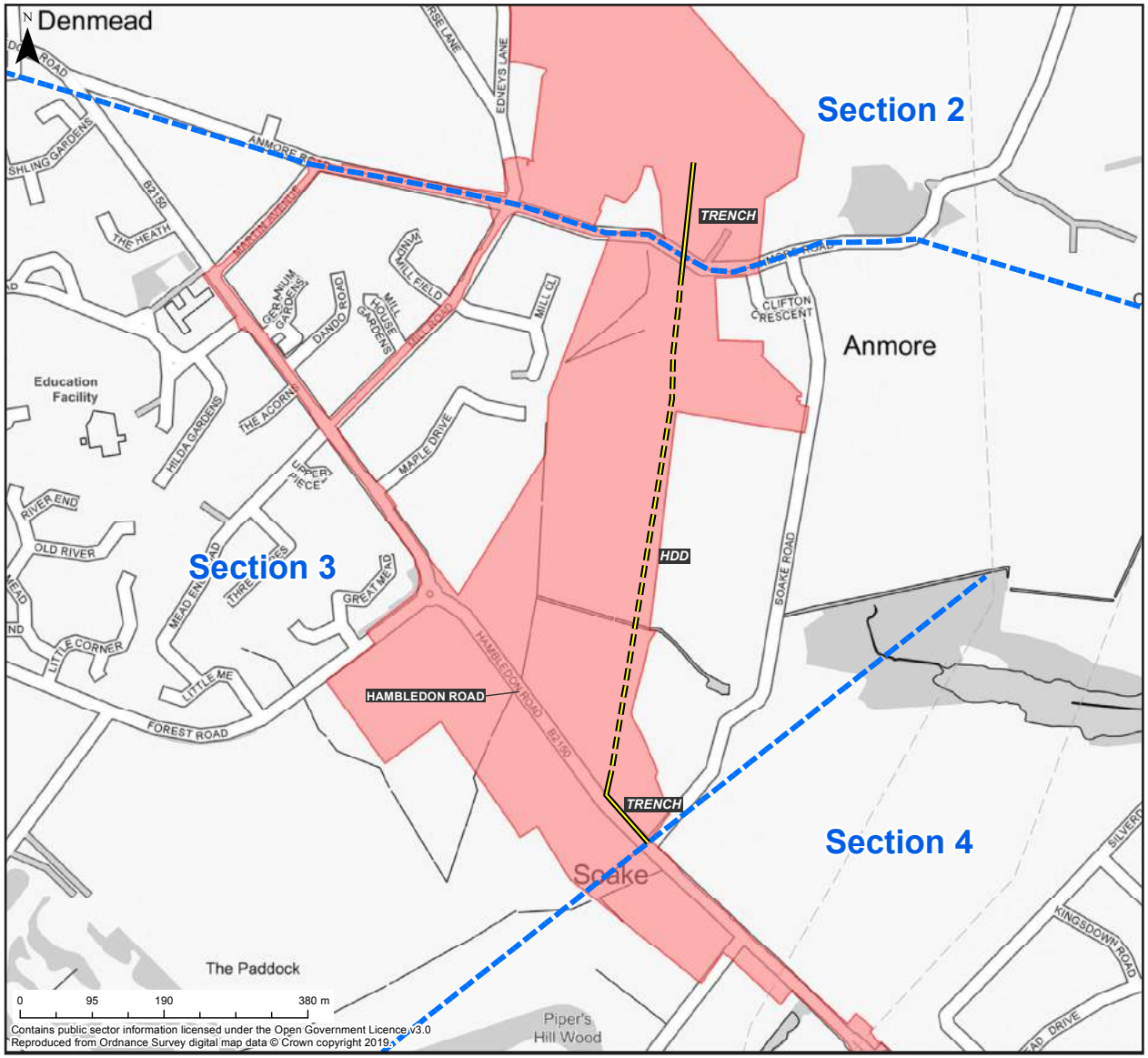
OPTION 3A(II) SUB-OPTION TRENCHING FROM NORTH OF ANMORE ROAD TO KINGS POND MEADOW, THEN HDD TO FIELD NORTH OF HAMBLEDON ROAD

The proposed route would run from land north of Anmore Road, crossing Anmore Road near Kings Pond, to Hambledon Road through the fields known as Kings Pond Meadow, via ducts installed by trenching. The field immediately to the south of Anmore Road is designated as a SINC. The field below the south-east corner of the SINC is not designated, and it is this field where it is anticipated that the HDD will commence to run south to the field north of Hambledon Road.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Hambledon Road – 6 days shuttle working
- Anmore Road – 1 day full closure

FIGURE 23 SECTION 3 OPTION 3A(II)



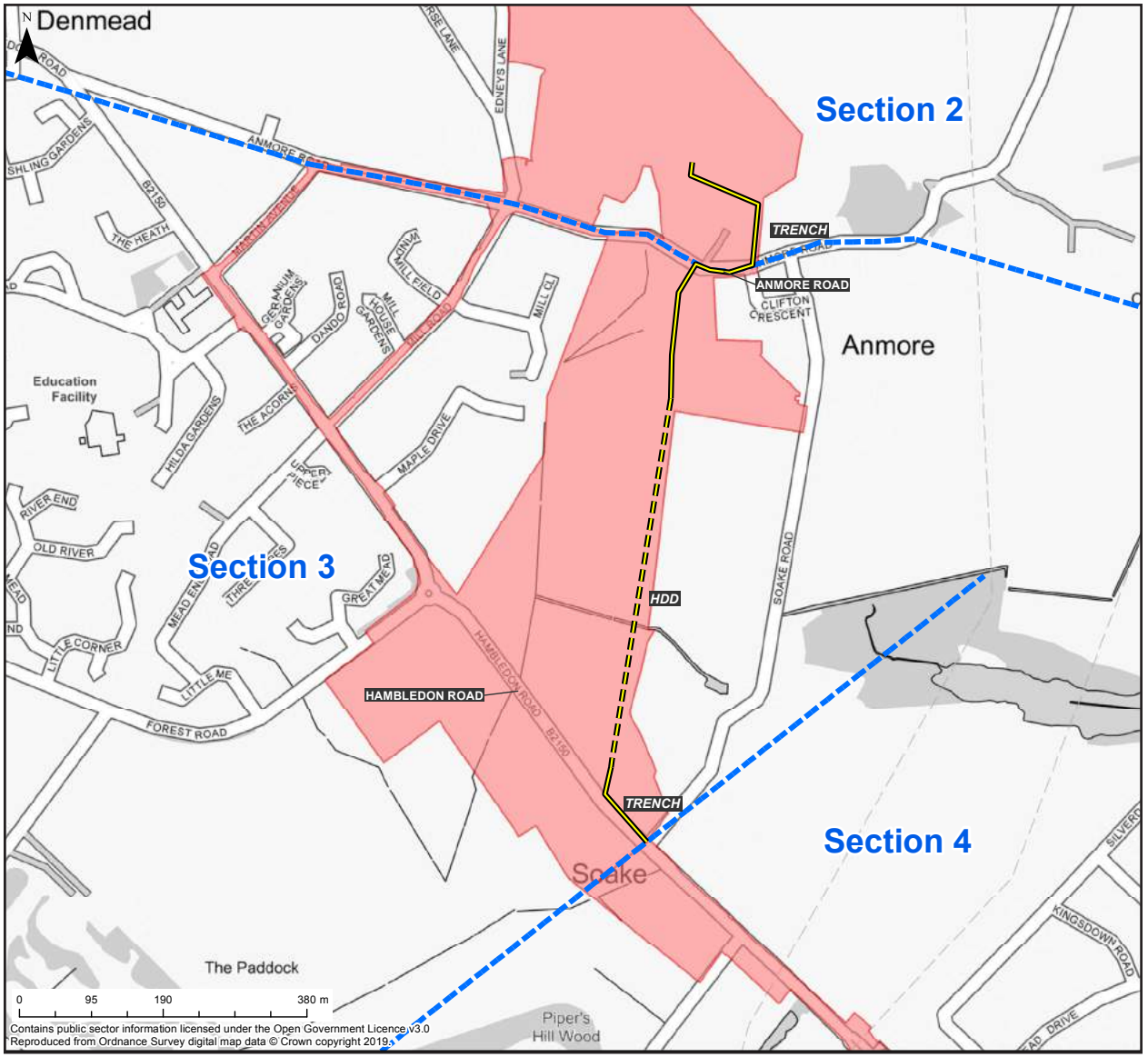
OPTION 3B ANMORE ROAD

The option would run east, to the north of the properties located to the immediate north of Anmore Road, then south in the field opposite Clifton Crescent, west along Anmore Road and south into the field south of the SINC at Kings Pond Meadow with all ducts installed in trenches. From this point southwards, to the field north of Hambledon Road it is anticipated that the cables would be installed via HDD. This increases the route length of the Cables and introduces more installation complexity but provides an alternative route for the cables to Anmore Road. This option would require trenching along approximately 100m of Anmore Road to reach Kings Pond Meadow. It would also trench through part of the SINC.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Hambledon Road – 6 days shuttle working
- Anmore Road – 4 days full closure

FIGURE 24 SECTION 3 OPTION 3B



OPTION 3C HIGHWAYS ROUTE

If HDD and/or trenching is not practicable for option 3A(I) and (II) and 3B a highways option which avoids Kings Pond Meadow has been identified. Out of all the options this one will give rise to the most traffic disruption and full road closures would be required. This option is included whilst the feasibility and practicability of either of options 3A and 3B are confirmed.

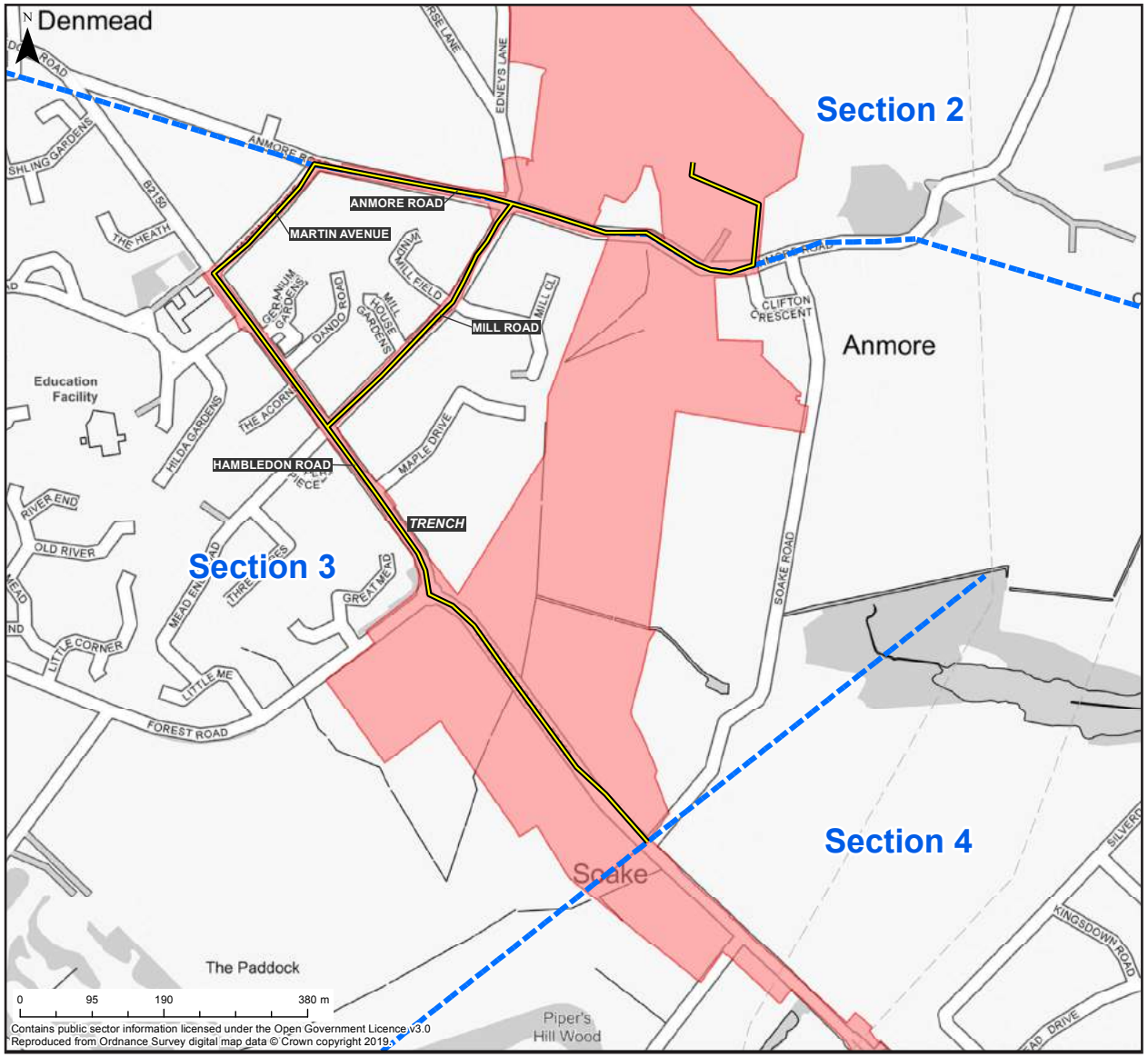
The Cable Corridor would run along Anmore Road heading westwards from Kings Pond. The two HVDC Cable circuits would then run separately: One circuit would run southwards down Mill Road and the other would continue further west along Anmore Road before running southwards along Martin Avenue before they converge and both continue south-eastwards along Hambledon Road.

Martin Avenue and Mill Road are both residential single carriageway roads and Hambledon Road is a single carriageway road. Between Martin Avenue and Forest Road, continuous footways are provided on both sides of the carriageway alongside some discontinuous advisory cycle lanes. Between Forest Road and Soake Road a shared-use path is provided on the northern side of the carriageway.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Anmore Road – 30 days full closure per circuit along the road as the cable ducts are installed in approximately 100 m sections
- Martin Avenue – 10 days full closure (one circuit only down this road)
- Mill Road – 19 days full closure (one circuit only down this road)
- Hambledon Road – 48 days with single lane closure and shuttle working

FIGURE 25 SECTION 3 OPTION 3C



SECTION 4 – HAMBLEDON ROAD TO BURNHAM ROAD

The proposed cable corridor runs within the highway boundary, along the B2150 Hambledon Road (from Soake Road Junction) and the A3, London Road, B2177 Portsdown Hill Road and Farlington Avenue (at its junction with Burnham Road).

No alternative options are presented for this part of the route.

The cable route would be constructed within the highways boundary and traffic impacts and temporary traffic management measures are being considered as the design evolves.

At the Forest End roundabout the cable corridor includes Forest End and minor roads to the south-west of the roundabout along which one of the circuits could be routed. These have been included to minimise traffic disruption at the roundabout around this busy area.

At a number of locations within the cable corridor the potential to move the cable route construction away from the main carriageways, minimising disruption to traffic flow, is being explored. Examples of locations currently being looked at include:

- Use of bus lanes and laybys including verges and footpaths;
- Use of fields adjacent to Hambledon Road between Denmead and Waterlooville;
- Exit via Hambledon Road (B2150) along the parallel (to the southbound carriageway) Southdown View and Hambledon Parade between Auger Row to the north of Charlesworth Drive;
- Use agricultural land immediately west of London Road between London Road (small spur road of the same name) and Milk Lane. In this location the route will either stay on the highway or move into adjacent in the field;
- Use of slip roads and side roads (e.g. just to the north of Bushy Mead and Landsdowne Avenue);
- Use of a car park on the southern boundary to the B2177 between the A3 and Hilltop Crescent; and
- The continuation of the Cable Route further east along Portsdown Hill Road, up to the field immediately north of the covered reservoirs south of Portsdown Hill Road and east of Burnham Road and Ainsdale Road. (See Option 5c at Figure 35, below).

The estimated worst case traffic disruption associated with the trenching of each circuit on this route is approximately:

- B2150 Hambledon Road between Soake Road and Milton Road - 66 days shuttle working
- B2150 Hambledon Road between Milton Road and Maurepas Way - 28 days single lane closure
- A3 Maurepas Way - 17 days single lane closure
- Forest End - 9 days full road closure
- A3 London Road between Maurepas Way and Ladybridge Road - 44 days bus lane closure, 28 days shuttle working and 1 day full closure north of Ladybridge roundabout
- A3 London Road between Ladybridge roundabout and Portsdown Hill Road - 61 days bus lane closure and 18 days shuttle working
- Boundary Way slip road - 4 days shuttle working
- London Road slip road - 12 days shuttle working
- B2177 Portsdown Hill Road - 18 days shuttle working
- Farlington Avenue between Portsdown Hill Road and Burnham Road - 23 days shuttle working

3.6 DESCRIPTION OF PROPOSED HVDC CABLE ROUTE AND OPTIONS

FIGURE 26 SECTION 4 PART 1

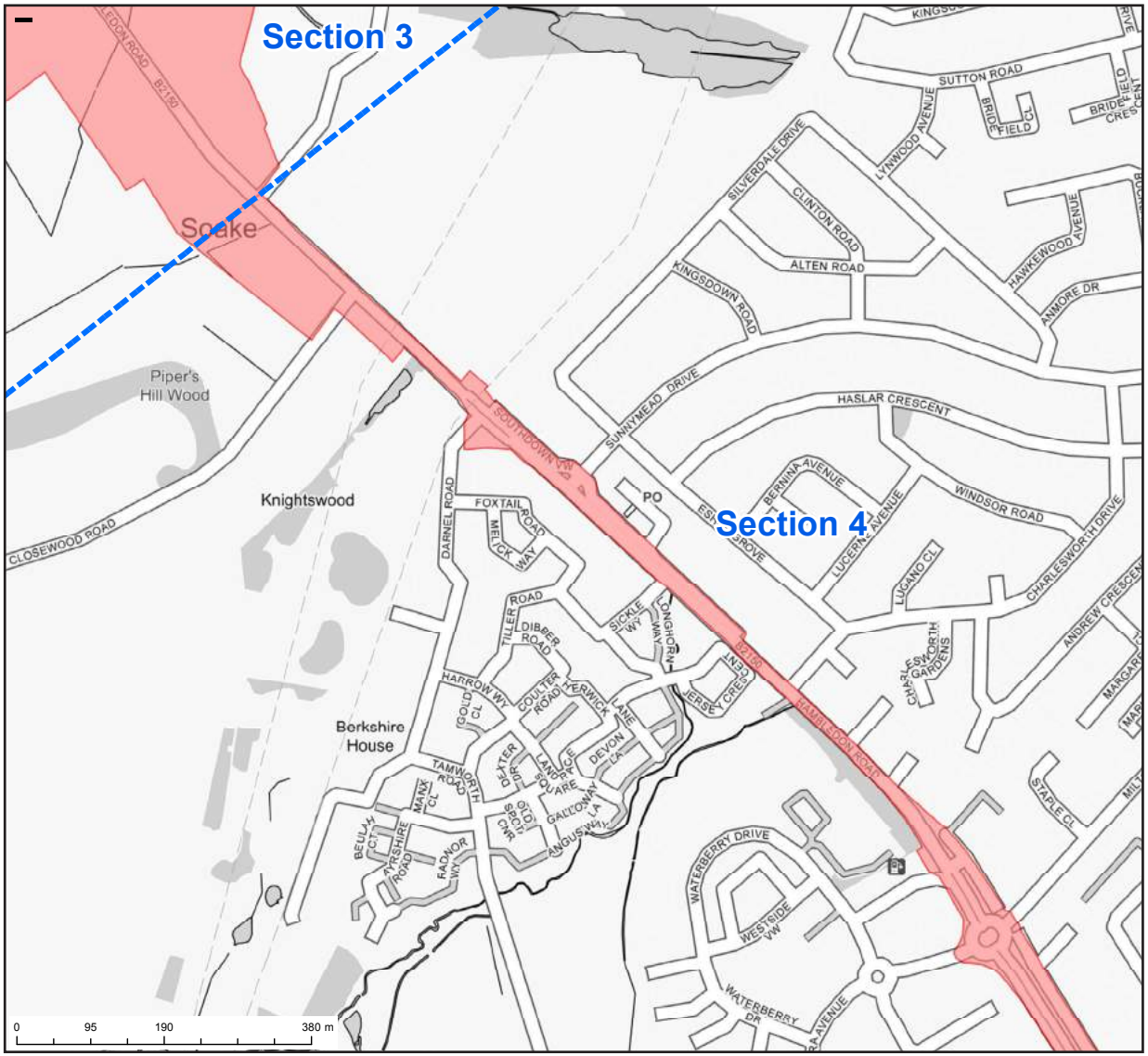
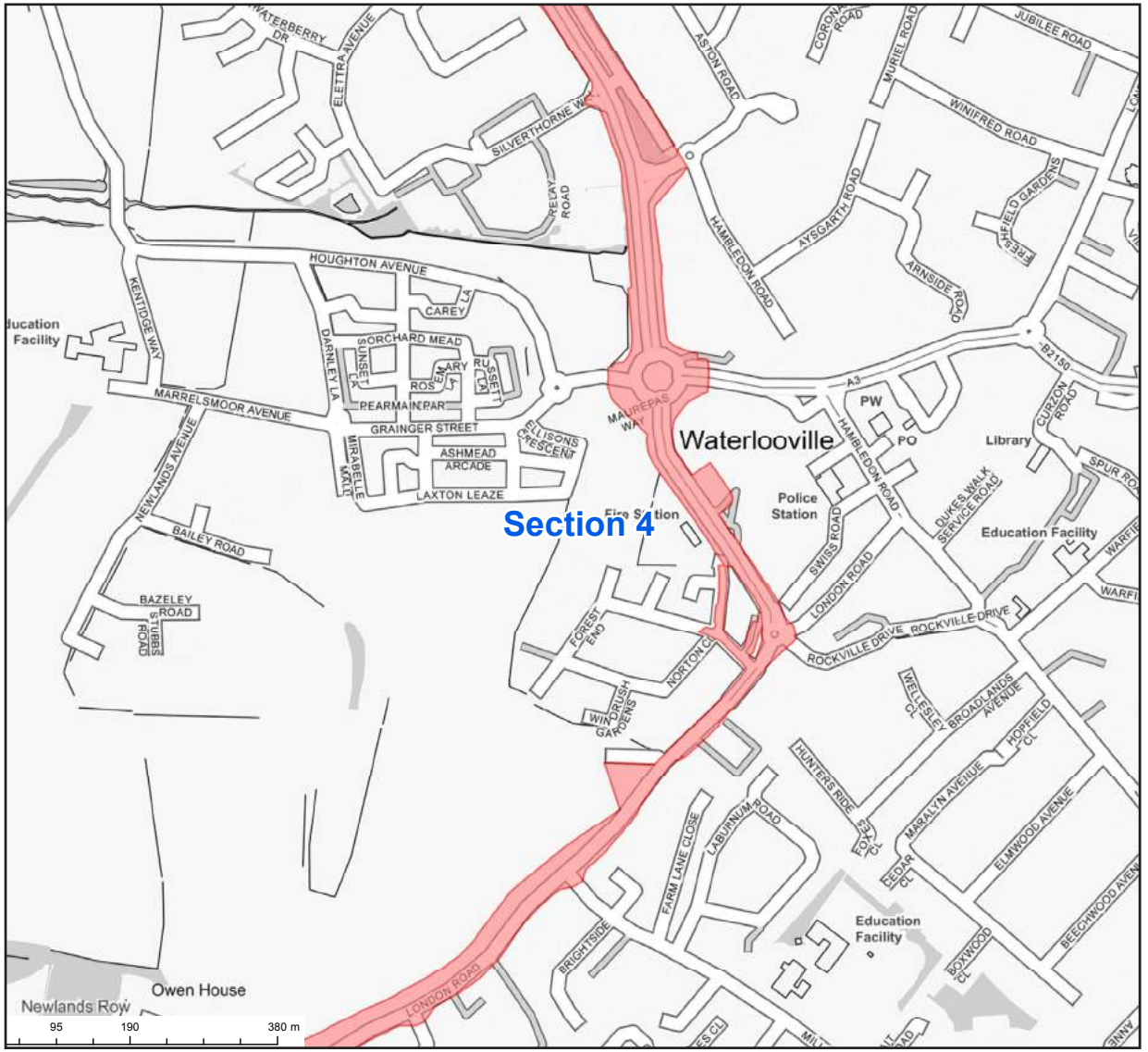
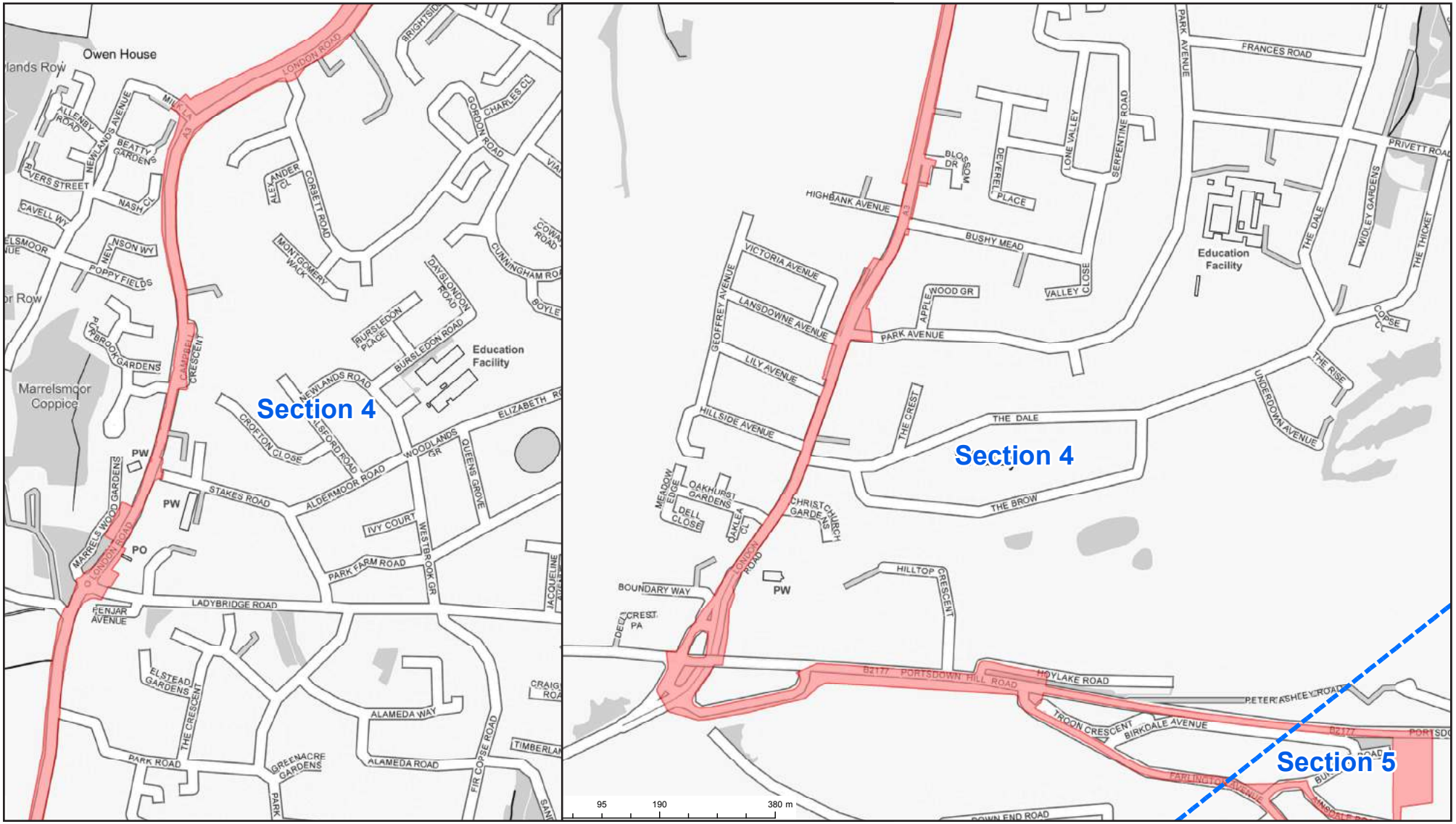


FIGURE 27 SECTION 4 PART 2



3.6 DESCRIPTION OF PROPOSED HVDC CABLE ROUTE AND OPTIONS

FIGURE 28 SECTION 4 PART 3 AND 4



SECTION 5 – FARLINGTON

The proposed cable corridor currently includes alternative options between Farlington Avenue and the Eastern Road. Options are being considered because the southern end of Farlington Avenue is narrow and presents technical constraints for cable installation as well as disruption to traffic. Full road closures would be required in that area.

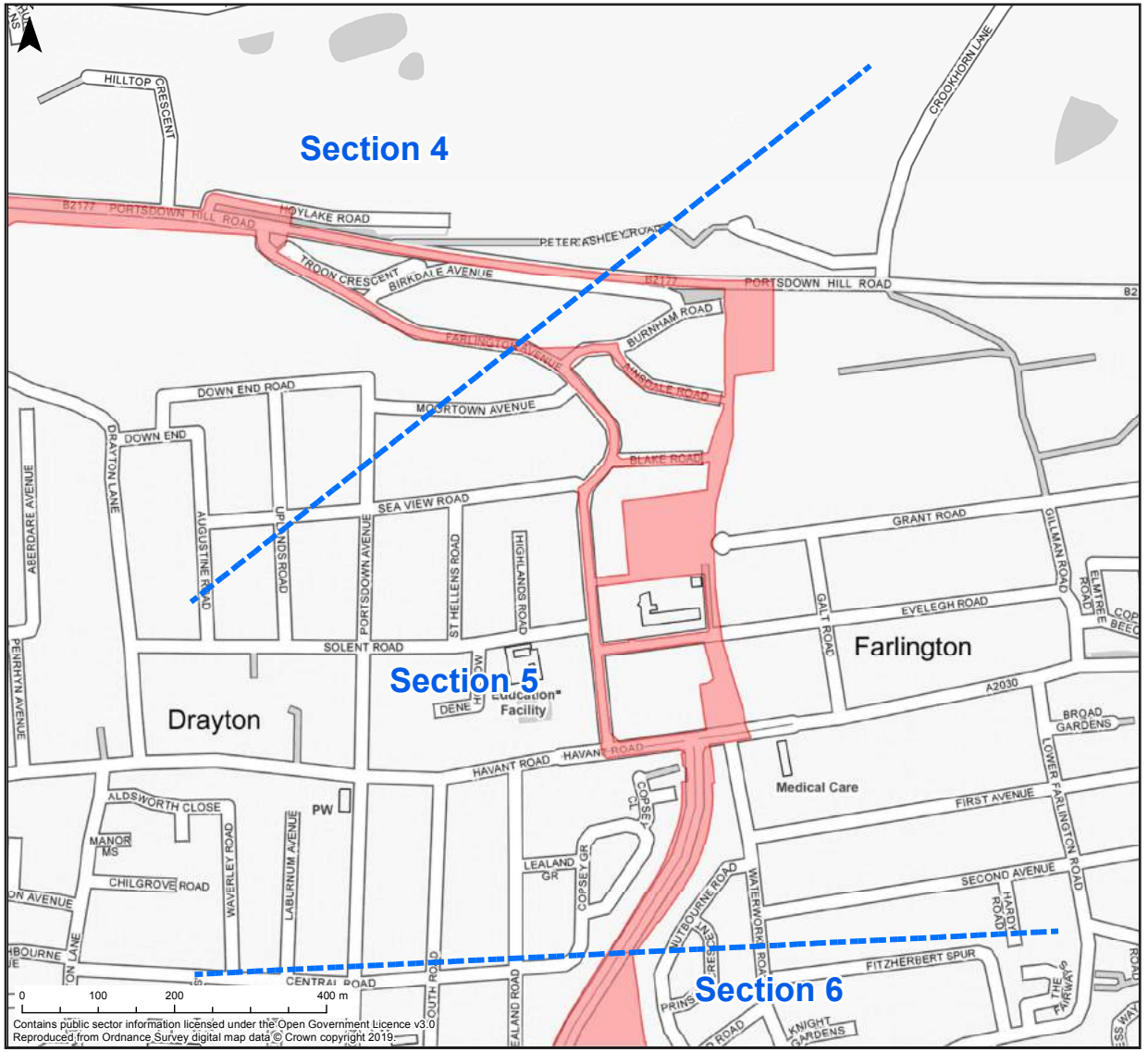
Options to avoid these impacts include the use of land owned by Portsmouth Water at Farlington Water Works. This land is a grass strip between Farlington Water Works and Havant Road (known as the Pump Station Route), to the East of Farlington Avenue.

The feasibility and practicability of using these options has not yet been fully determined, as discussions with Portsmouth Water and technical studies are still ongoing.

Four different route options are being considered to access the Portsmouth Water land and avoid the bottom of Farlington Avenue and are presented below.

It is currently anticipated that all options avoiding the southern end of Farlington Avenue will require a road closure for 1 day per circuit on Havant Road at the bottom of Farlington Avenue (near the junction with Eastern Road), though potential traffic management measures are continuing to be considered.

FIGURE 29 SECTION 5



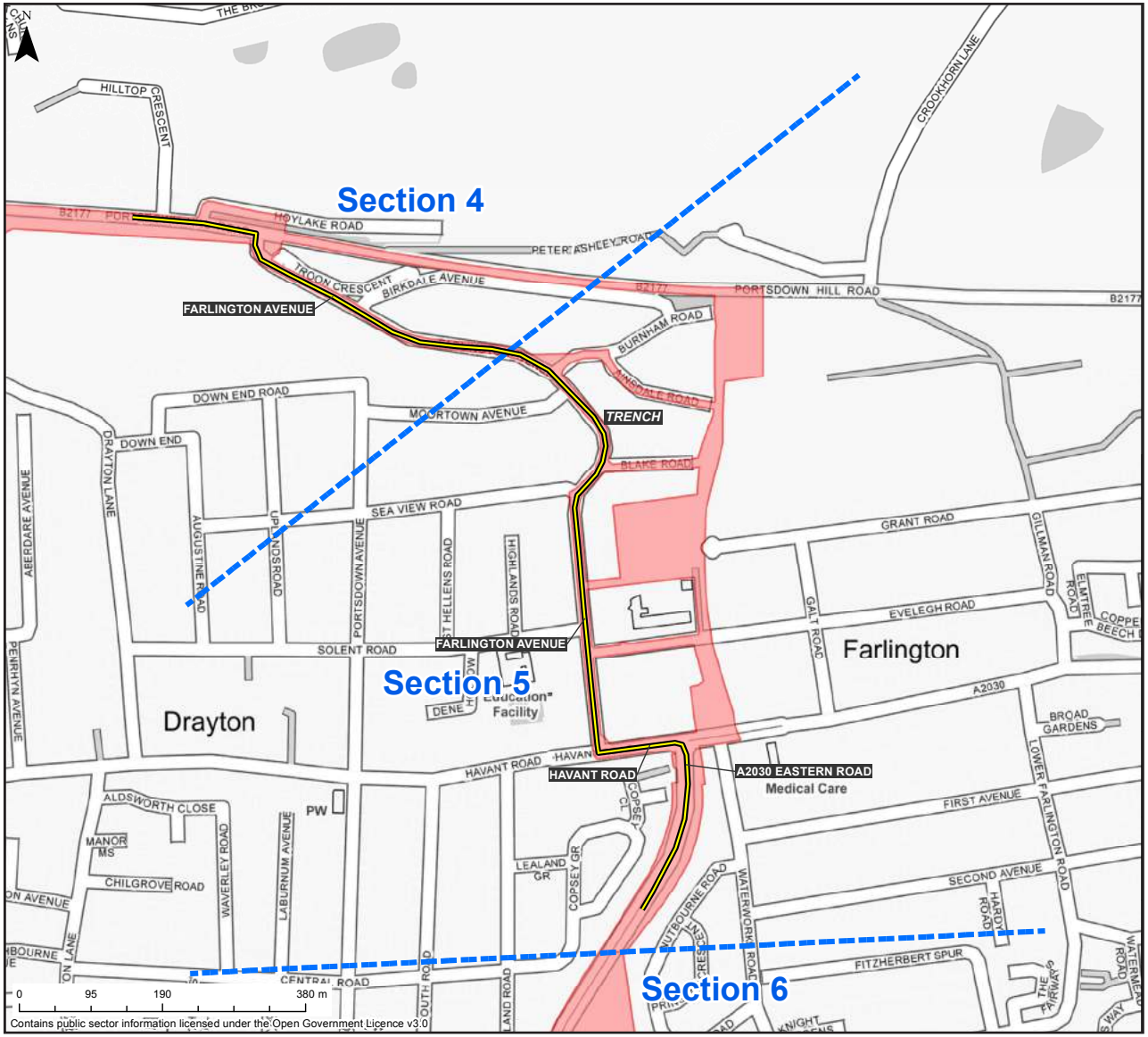
OPTION 5A FARLINGTON AVENUE

The proposed cable corridor would be installed within the highway boundary along the length of Farlington Avenue, before turning east along a short section of Havant Road and then heading south along the A2030 Eastern Road. This was the route presented at the January 2018 consultation and has been discussed above. Due to constraints further options below are being considered.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Farlington Avenue – 19 days shuttle working
- Farlington Avenue – 9 days full closure
- Havant Road/A2030 Havant Road – 7 days lane closure
- A2030 Eastern Road – 16 days lane closure

FIGURE 30 SECTION 5 OPTION A



OPTION 5B FARLINGTON WATER WORKS "PUMP STATION ROUTE" WITH SUB-OPTIONS (I) TO (IV)

This option uses the land belonging to Portsmouth Water to the east of Farlington Avenue related to Farlington Water Works discussed above.

Four different "sub-options" have been identified for routing the cables between Farlington Avenue and Havant Road, via Farlington Water Works. These are:

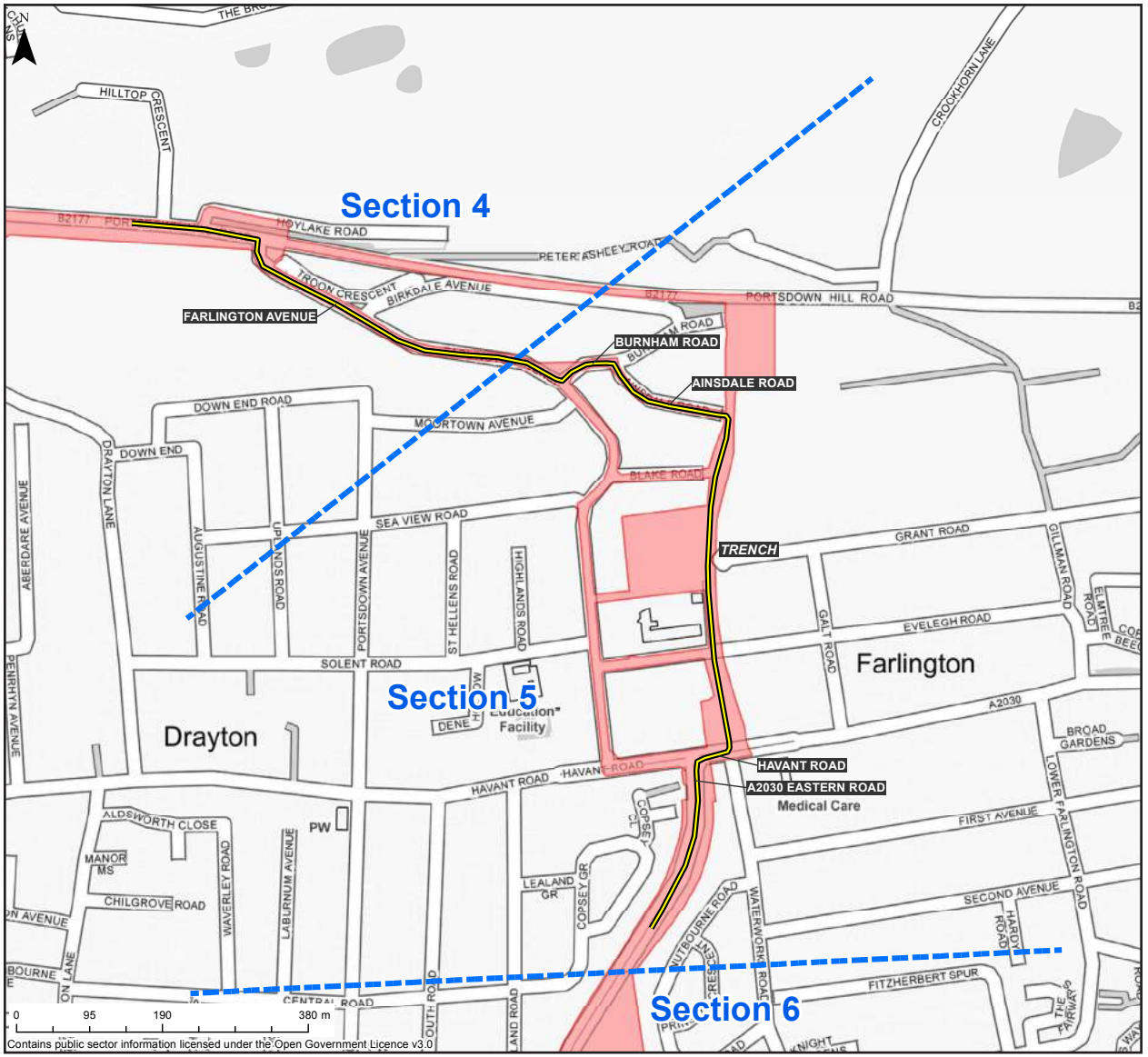
OPTION 5B(I) VIA BURNHAM ROAD AND AINSDALE ROAD

From Farlington Avenue, via Ainsdale Road/Burnham Road to the grassed strip, then via Havant Road to Eastern Road.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Burnham Road and Ainsdale Road – 12 days full closure
- A2030 Eastern Road – 16 days lane closure

FIGURE 31 SECTION 5 OPTION B(I)



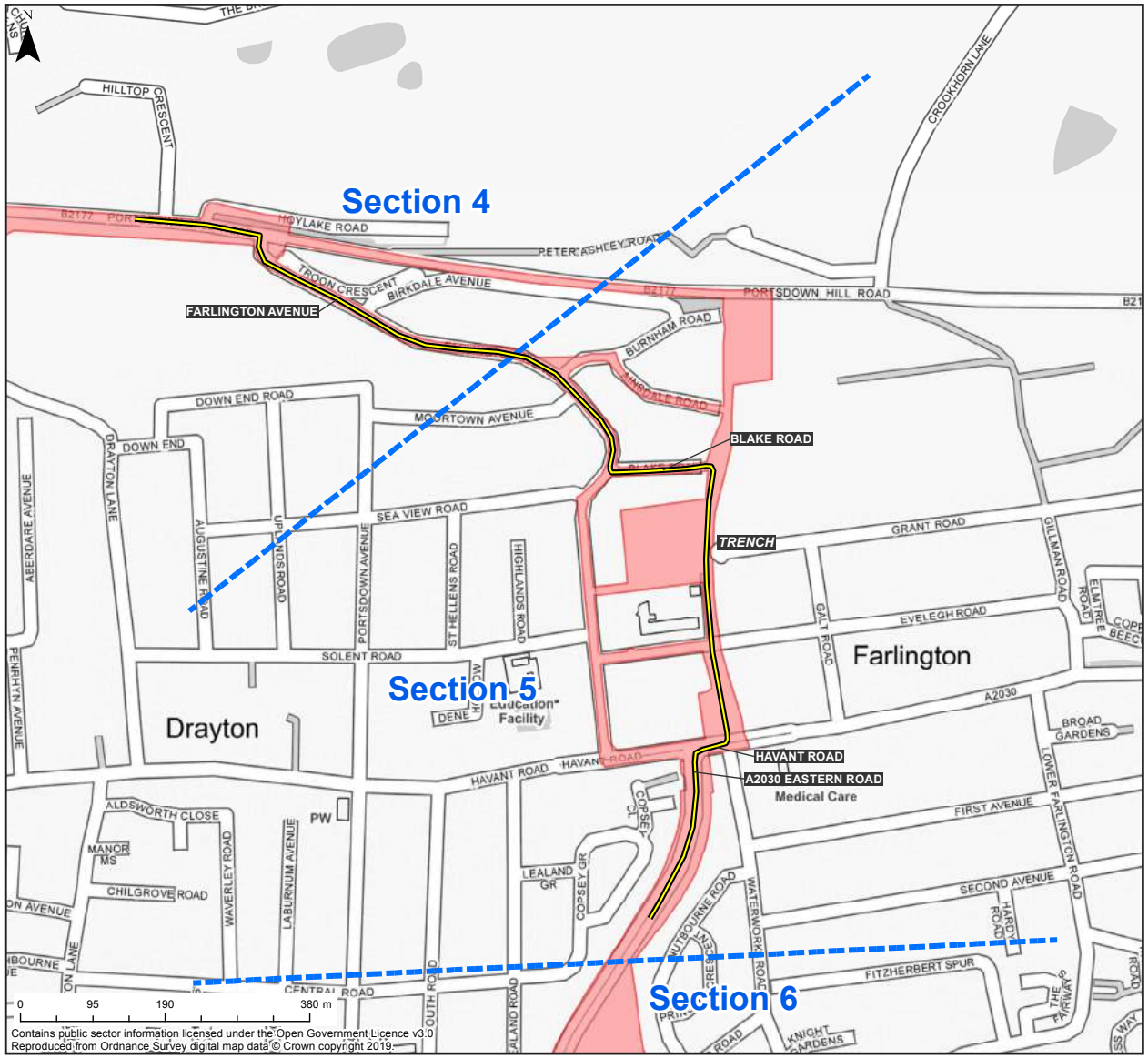
OPTION 5B(II) VIA BLAKE ROAD

From Farlington Avenue, via Blake Road to the grassed strip then via Havant Road to Eastern Road. This is the most direct route and is the most preferred of the sub-options from a cable installation perspective.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Farlington Avenue (to Blake Road) – 8 days shuttle working
- Blake Road – 6 days full closure
- A2030 Eastern Road (between Havant Road and Zetland Field) – 16 days lane closure

FIGURE 32 SECTION 5 OPTION B(II)



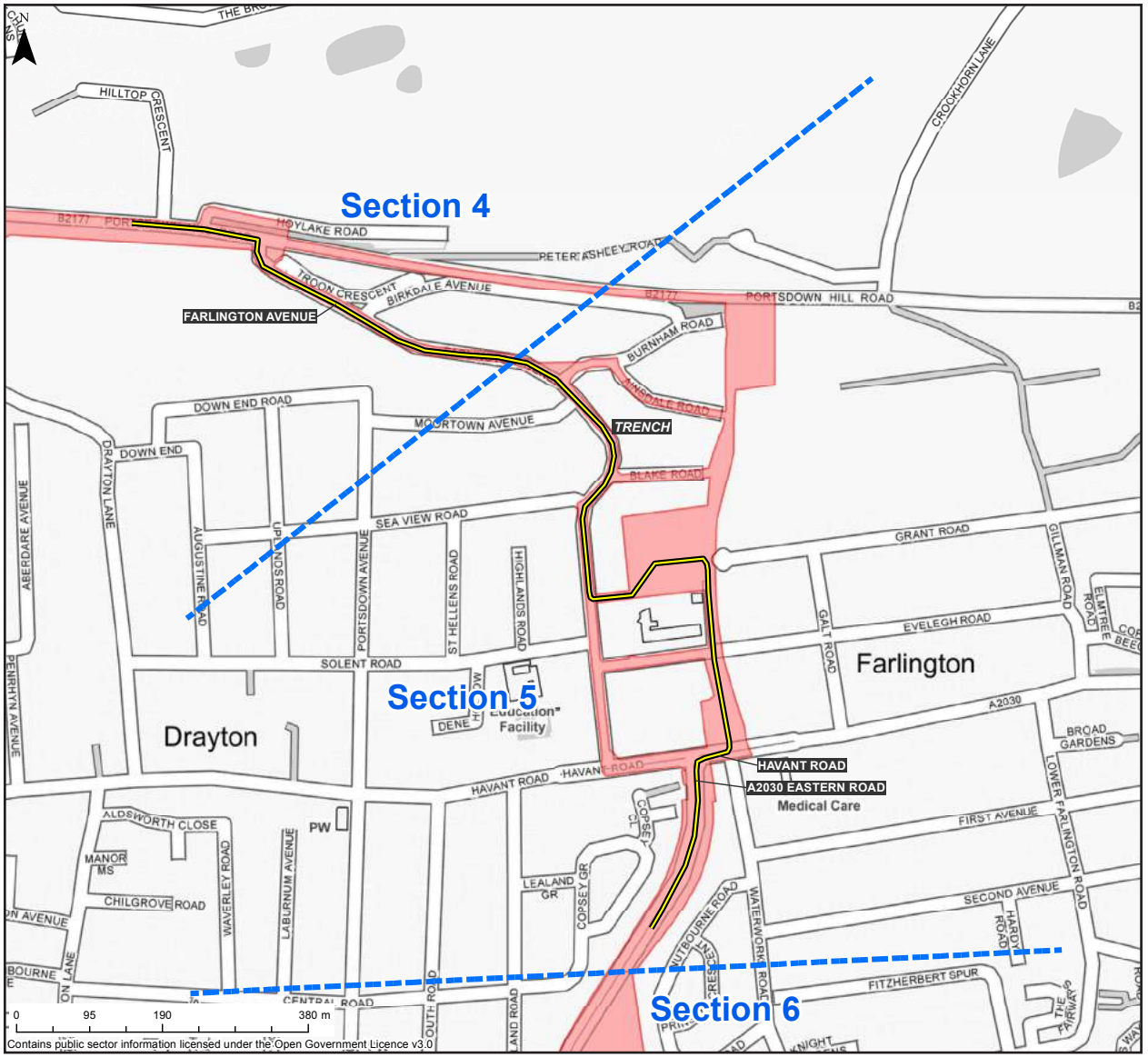
OPTION 5B(III) VIA THE RECREATION GROUND

From Farlington Avenue, via the pedestrian access to the recreation ground to the grassed strip and then via Havant Road to Eastern Road. This progresses close to Solent Infant School and through the recreation ground. Traffic management measures are discussed in Section 5. Should this option be selected consideration will be given to timing of cable installation works outside of school term time.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Farlington Avenue (to recreation ground accessed) – 16 days shuttle working
- A2030 Eastern Road – 16 days lane closure

FIGURE 33 SECTION 5 OPTION B(III)



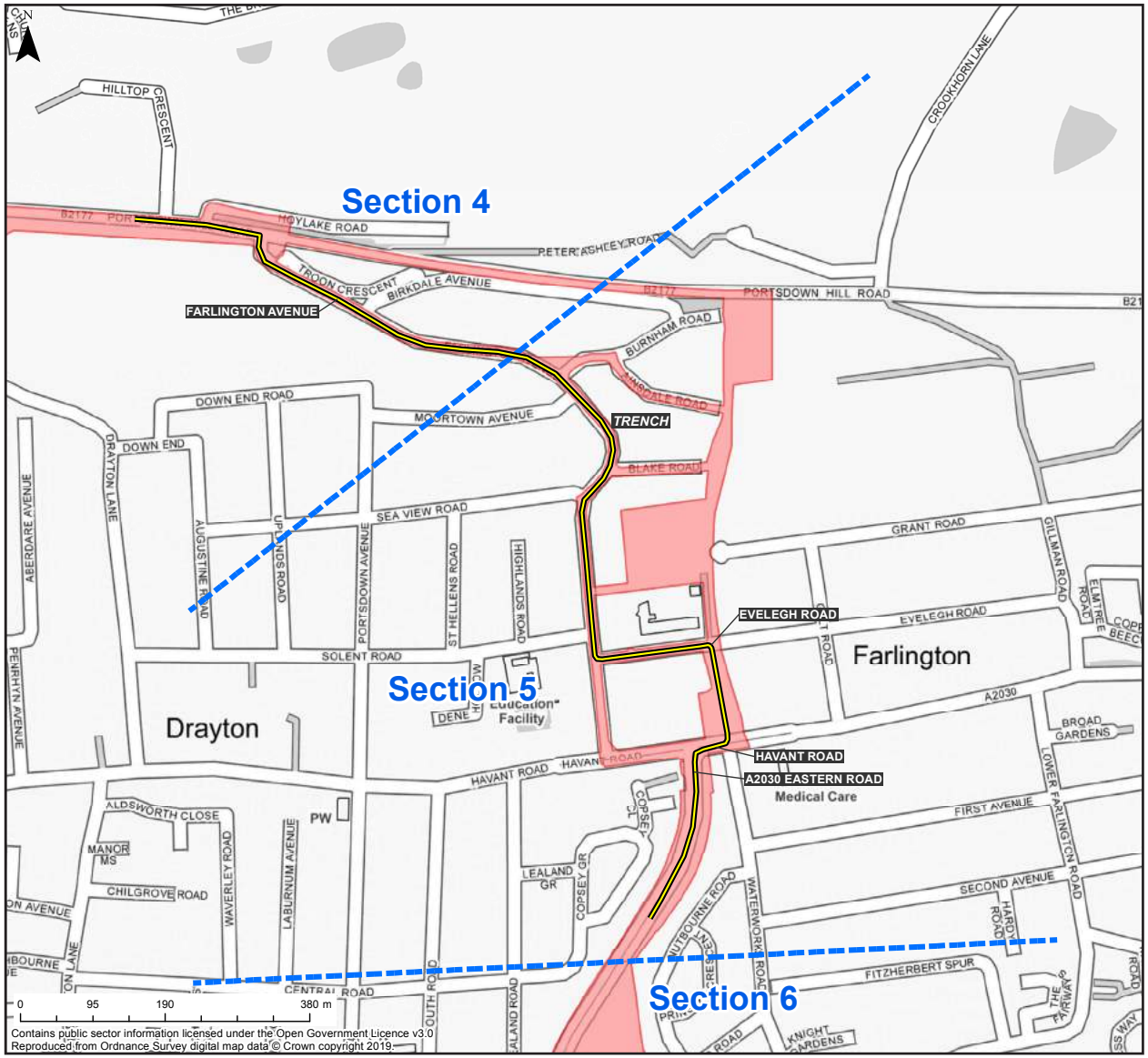
OPTION 5B(IV) VIA EVELEGH ROAD

From Farlington Avenue, via Evelegh Road to the grassed strip and then via Havant Road to Eastern Road. From a cable installation perspective this is the least favourite of the options as it is close to the bottom end of Farlington Avenue where the road starts to narrow. It is also close to Solent Infant School. Should this option be selected consideration will be given to timing of cable installation works outside of school term time.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Evelegh Road (between Farlington Avenue and Galt Road) – 8 days full closure
- A2030 Eastern Road (between Havant Road and Zetland Field) – 16 days lane closure

FIGURE 34 SECTION 5 OPTION B(IV)



OPTION 5C PORTSDOWN HILL ROAD

This option is proposed to present a means of avoiding Farlington Avenue altogether. The proposed cable corridor would remain in Portsdown Hill Road heading east, until running southwards through the field between Portsdown Hill Road and the covered reservoir, the edge of the recreation ground, the grassed strip and then via Havant Road to Eastern Road.

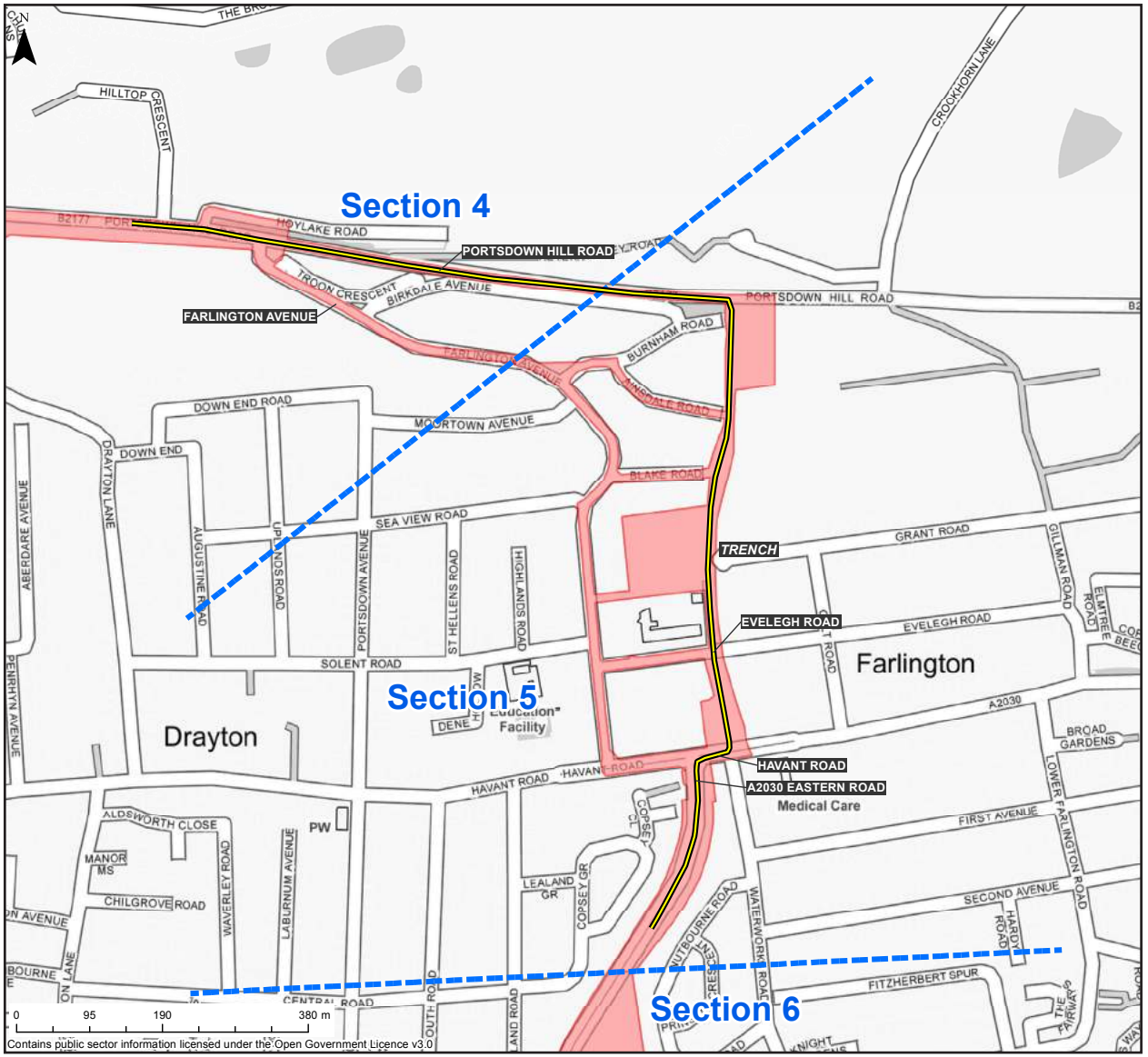
This option however involves trenching through a significant length of a busy major road and also adds to the cable lengths required.

It is currently anticipated that as a worst case full road closures would be required for approximately 30 days per circuit on Portsdown Hill Road east of the junction with Farlington Avenue.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- A2030 Eastern Road (between Havant Road and Zetland Field) – 30 days full closure

FIGURE 35 SECTION 5 OPTION C



SECTION 6 – ZETLAND FIELD AND SAINSBURY'S CAR PARK

The proposed cable corridor would proceed southwards along the A2030 Eastern Road and then either utilise Zetland Field or land within the existing highway boundary along the A2030 Eastern Road, until it diverts off into the Sainsbury's car park.

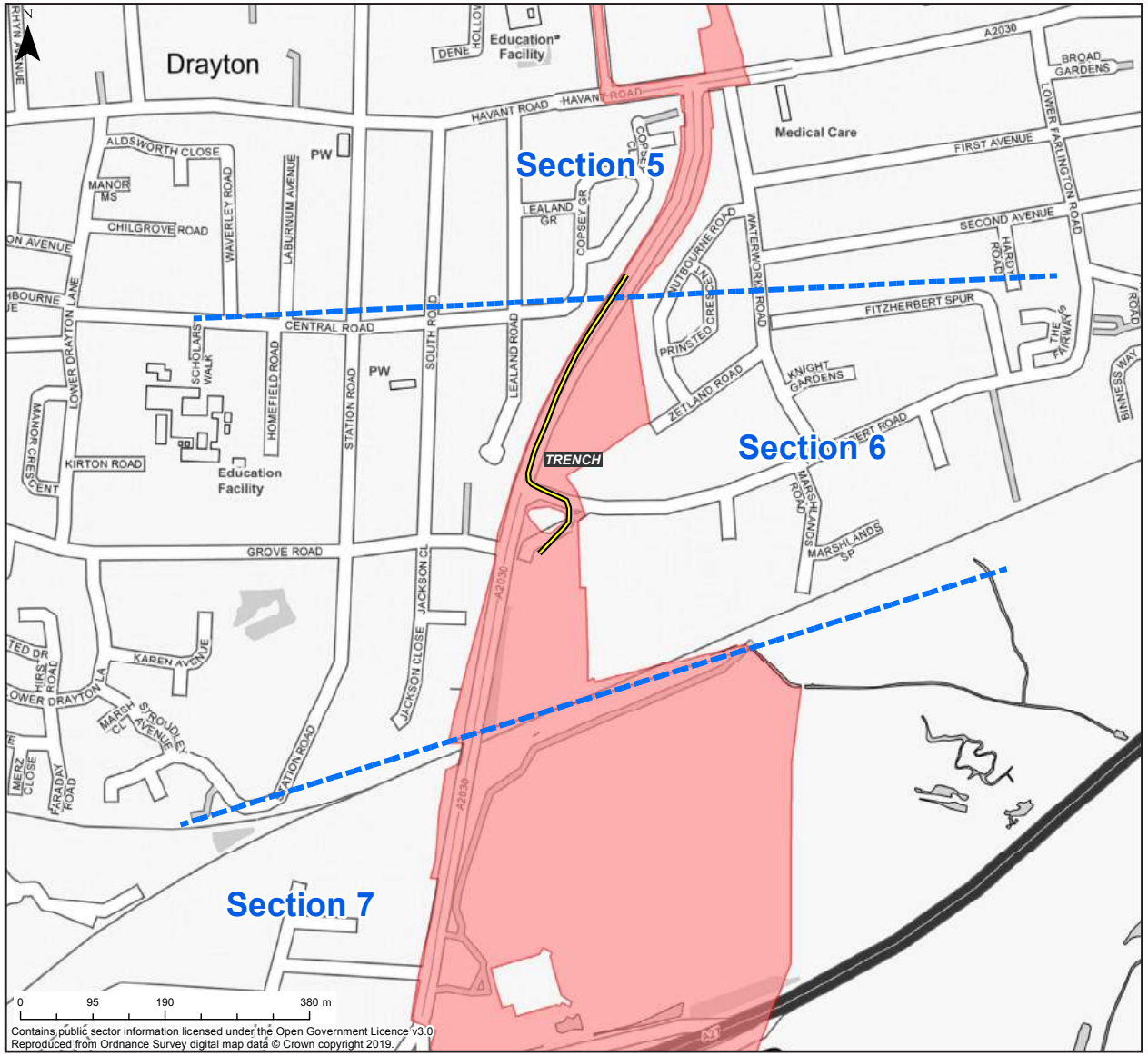
OPTION 6A HIGHWAY ROUTE

The route would come off the A2030, into Fitzherbert Road, east of the Sainsbury's petrol station, then down the western side of Sainsbury's car park.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- Fitzherbert Road – 2 days lane closure

FIGURE 36 SECTION 6 OPTION A



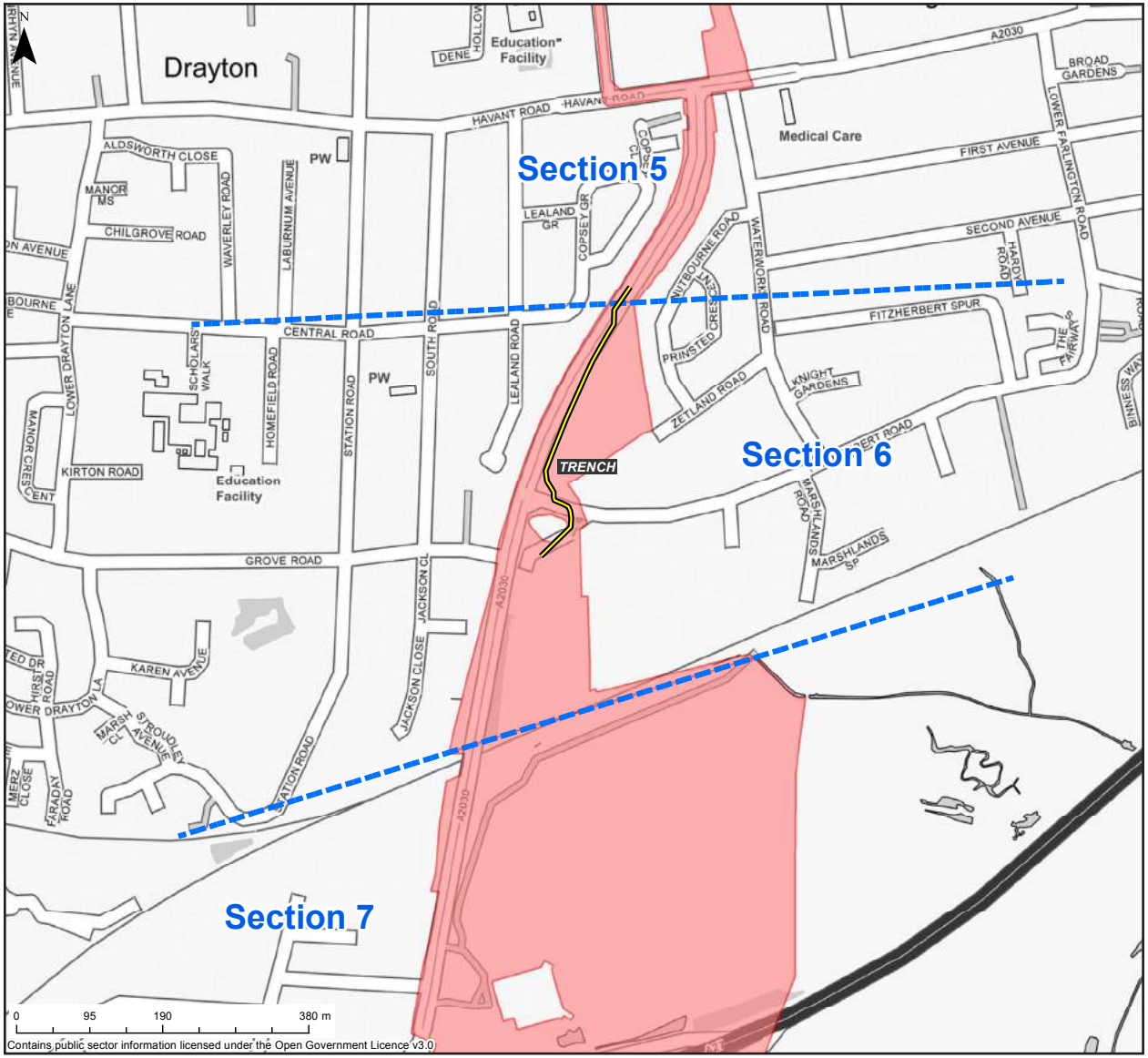
OPTIONS 6B ZETLAND FIELD

The route would continue along the A2030 and would pass through the south of Zetland Field, onto Fitzherbert Road, via the footpath entrance, then to the east of the petrol station and through the western side of the car park.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

- A2030 Eastern Road – 13 days lane closure
- Fitzherbert Road – 4 days lane closure

FIGURE 37 SECTION 6 OPTION B



SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

South of the Sainsbury's supermarket, the cable corridor crosses under the railway line. The cables are proposed to cross under the railway line via trenchless methods.

The cable corridor then runs to Farlington Playing Fields with the cable route installed in two trenches towards the southern end of the Playing Fields. HDD is proposed to be used to enable the cable route to continue broadly southwards, passing under the A27 and Langstone Harbour, and emerge on Portsea Island at a car park in Kendall's Wharf, to the east of the A2030 Eastern Road.

Work at Farlington Playing Fields would take place during the summer months due to the presence of Brent geese during the winter and the location of the trenching would be discussed with Portsmouth City Council.

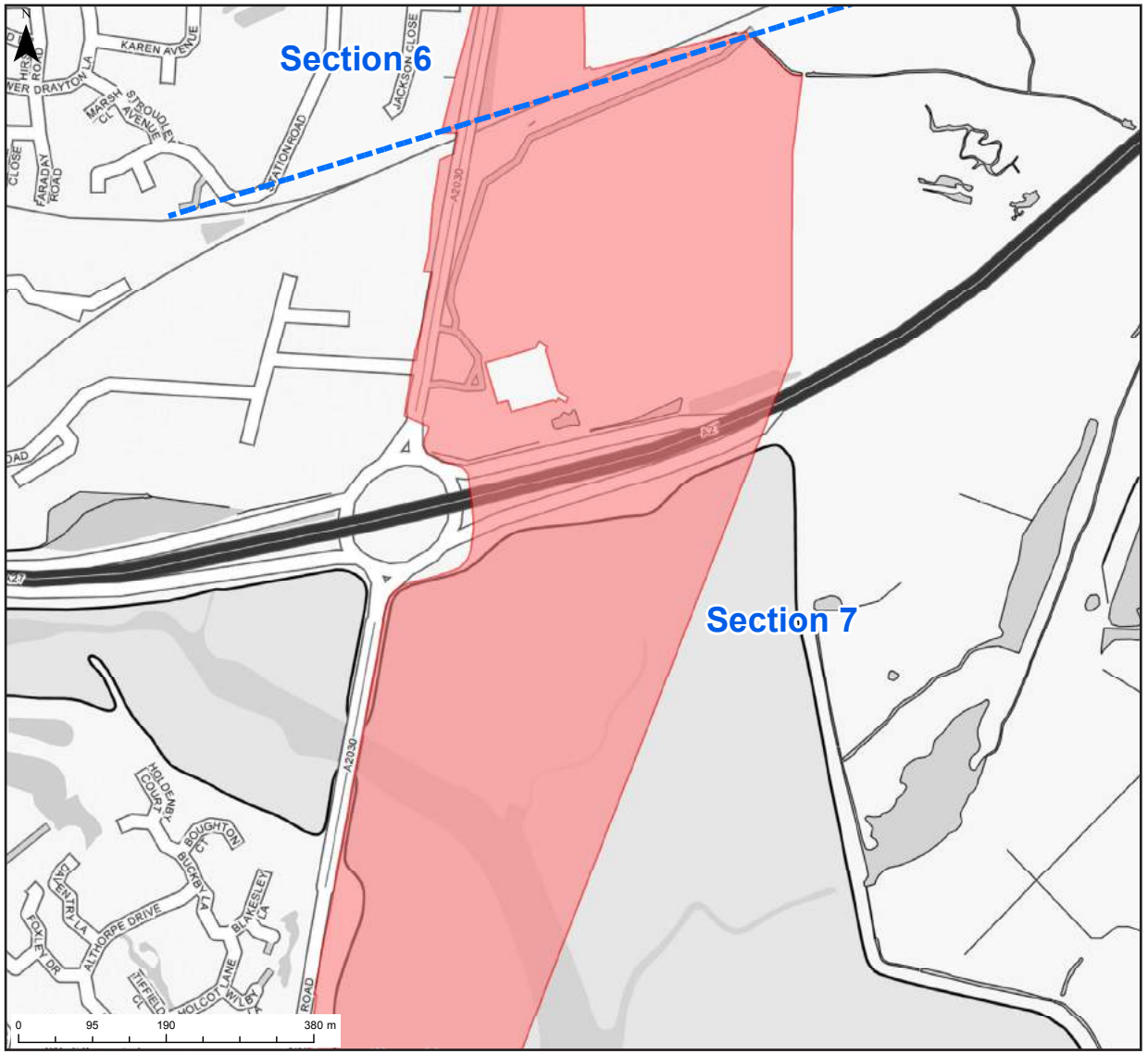
From the car park at Kendall's Wharf on the eastern side of the A2030 the two cable circuits would be installed in two trenches. The routes currently being considered envisage exit onto the A2030 Eastern Road via the access road to Kendall's Wharf or through a break in the trees to the west of the car park (some vegetation may need to be removed) to the south of the access road to Kendall's Wharf, to run south on Eastern Road. Alternatively the trenches in this area could run southwards through the western edge of Baffins Rovers FC football ground, and Langstone Harbour Sports Ground, onto Eastern Road at the southern end of the sports pitches to get back onto Eastern Road.

The cable corridor then runs southwards down Eastern Road. Here the cables may be installed in the footpaths and/or verges to minimise traffic disruption.

It is currently estimated that the worst case traffic disruption for this option would be approximately:

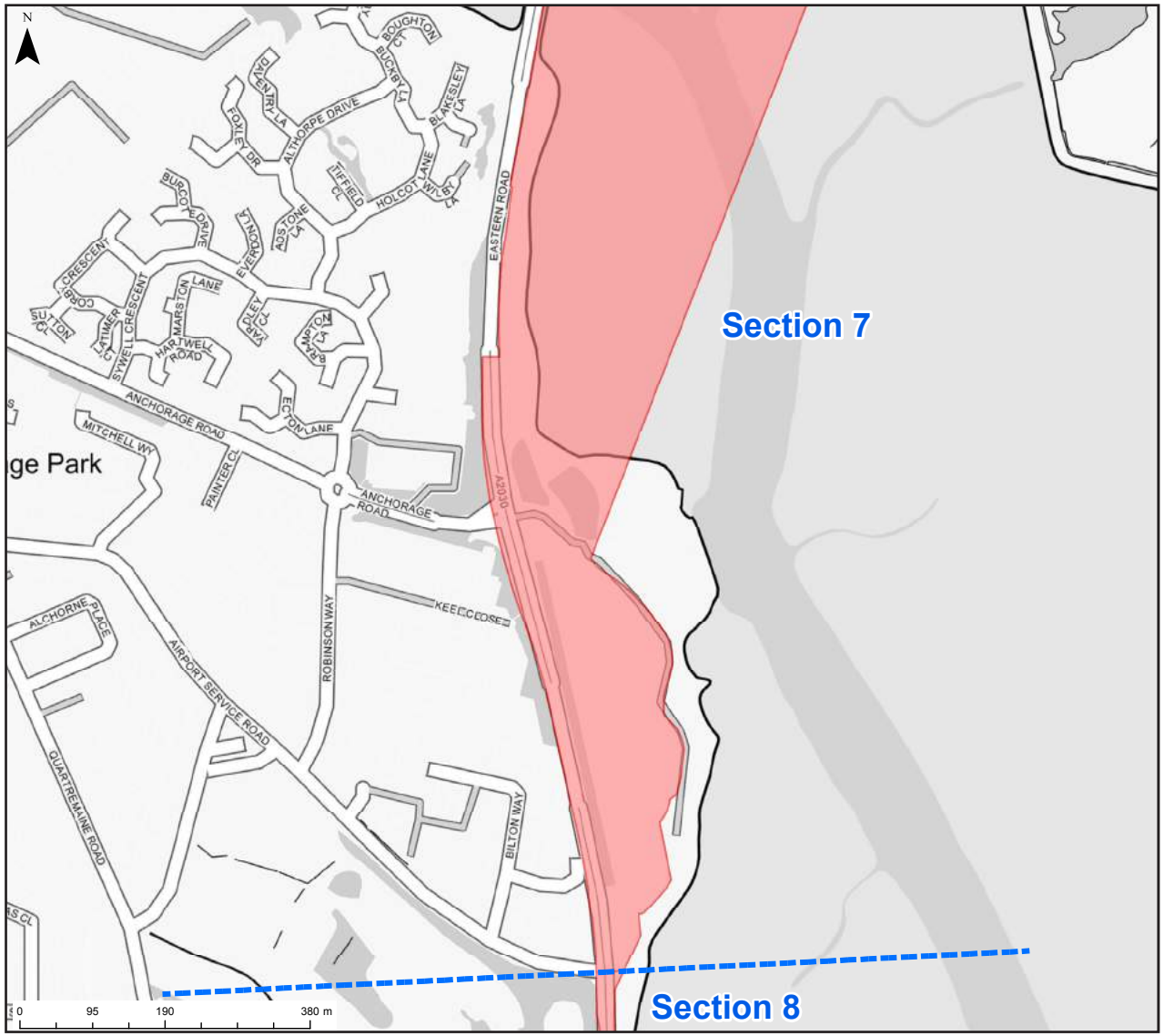
- A2030 Eastern Road (between Anchorage Road and Airport Service Road (through the western edge of Baffins Rovers FC and Langstone Harbour Sports Ground) – 5 days lane closure
- A2030 Eastern Road (between Anchorage Road and Airport Service Road (along highway) – 30 days lane closure

FIGURE 38 SECTION 7 PART 1



3.6 DESCRIPTION OF PROPOSED HVDC CABLE ROUTE AND OPTIONS

FIGURE 39 SECTION 7 PART 2



SECTION 8 – GREAT SALTERNS GOLF COURSE TO VELDER AVENUE/MOORINGS WAY

The proposed cable corridor runs southwards along the Eastern Road to the northern end of Milton Common. The cable route may be installed in the footpaths and/or verges to minimise traffic disruption.

In order to address concerns of Portsmouth City Council and residents regarding traffic disruption on Eastern Road and Milton Road new options have been considered south of the northern end of Milton Common to Velder Avenue/Moorings Way. These are still being assessed for feasibility and practicability therefore the route presented in the January 2018 consultation in this area is still under consideration.

The alternative options presented for this consultation are described below.

OPTION 8A EASTERN ROAD TO MILTON ROAD

The proposed cable corridor would run along Eastern Road A2030 (utilising the verge wherever possible), all the way to the junction with Milton Road (A288).

This is the original route from January 2018 consultation. It is anticipated that the worst case traffic disruption per circuit could be:

- A2030 Eastern Road (between Airport Service Road and Tangier Road) 59 days lane closure
- A2030 Eastern Road (between Tangier Road and A2030 Velder Avenue) 78 days lane closure although there is potential to run narrow lanes where space permits
- A2030 Velder Avenue (between A2030 Eastern Road and A288 Milton Road) 19 days lane closure

FIGURE 40 SECTION 8 NORTH

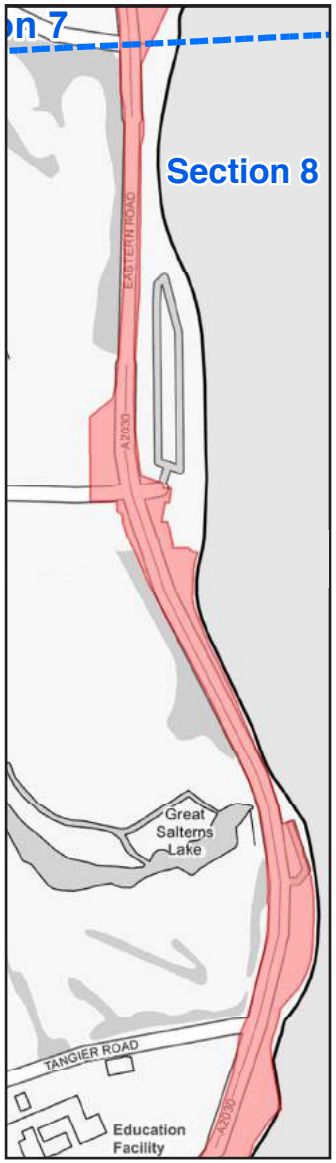
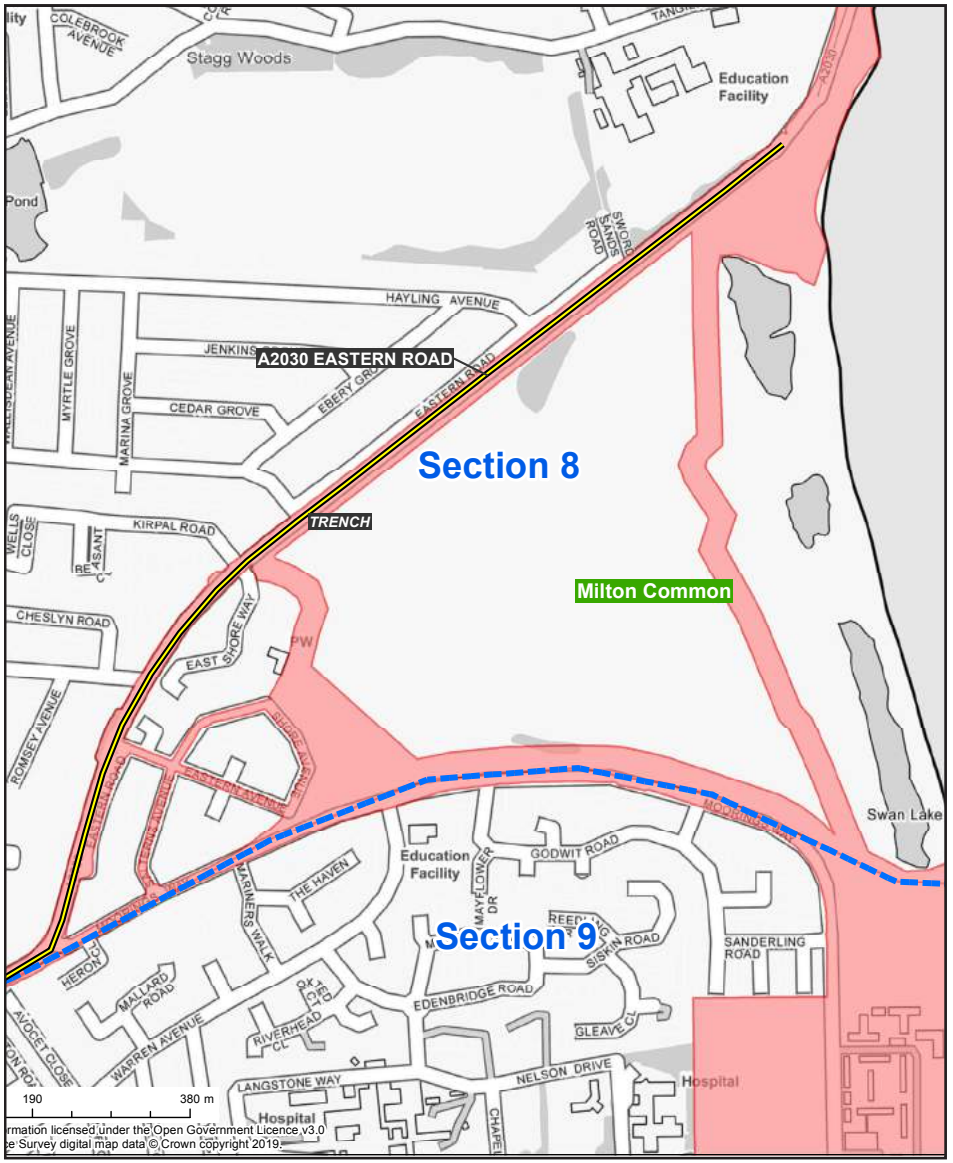


FIGURE 41 SECTION 8 OPTION A



OPTION 8B EASTERN AVENUE

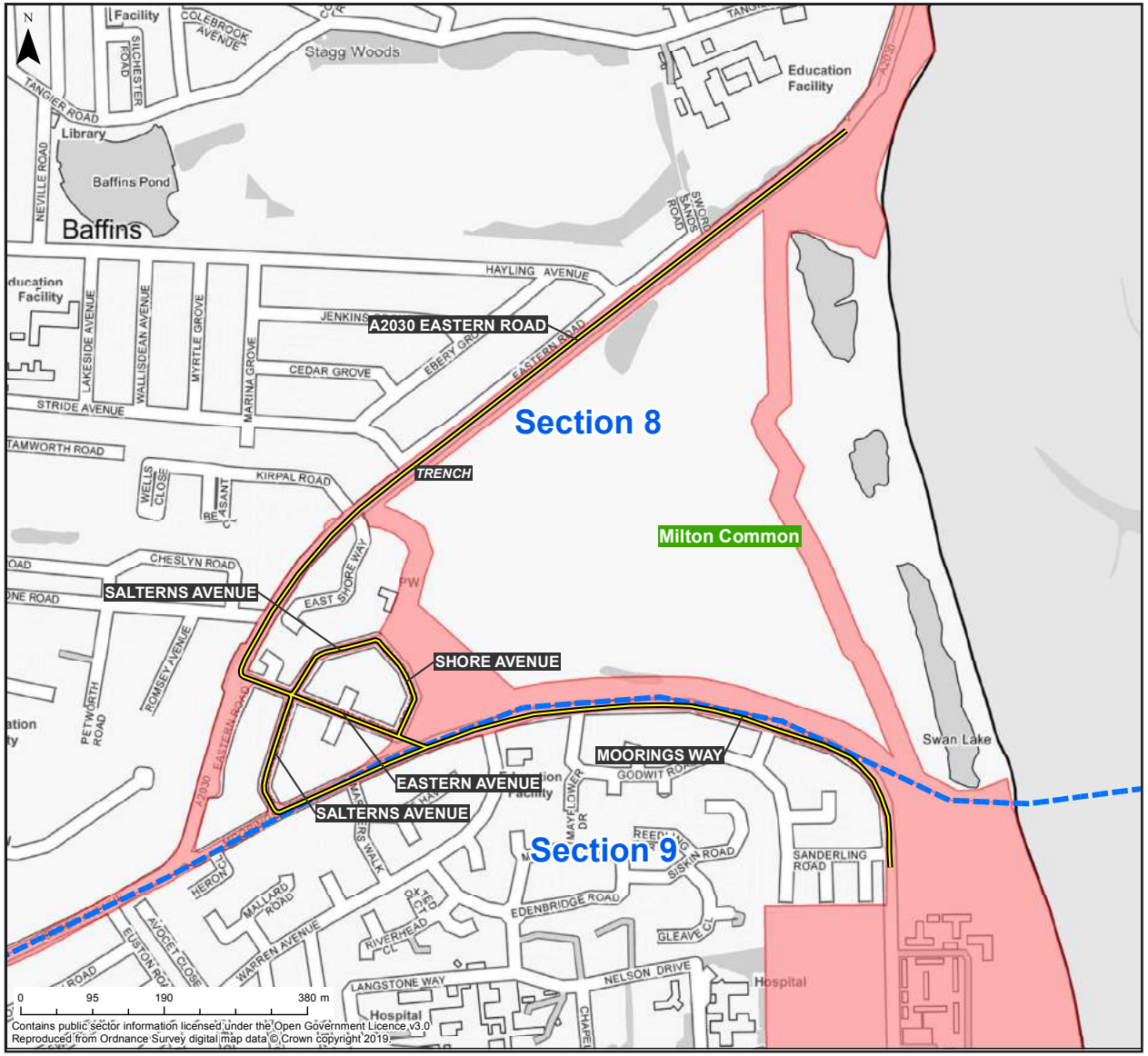
The proposed cable corridor would run along Eastern Road (utilising the verge wherever possible) with an anticipated single lane closure per circuit of 66 days. A route would then need to be found through a combination of some or all of the following roads:

- Eastern Avenue (anticipated 11 days full closure)
- Salterns Avenue (anticipated 7 days full closure)
- Shore Avenue (anticipated 7 days full closure)

As the above roads are narrow, each circuit may be installed in separate (different) roads. This route would reduce the traffic disruption on parts of Eastern Road and Eastern Avenue.

The route would then continue eastwards along Moorings Way, or in the southern edge of Milton Common which runs parallel to Moorings Way.

FIGURE 42 SECTION 8 OPTION B



OPTION 8C MILTON COMMON

Milton Common is known to be a historic landfill site. Ground investigation work has identified that land through the middle of the common is unsuitable for the installation of power cables. Excavation work could also introduce hazards to health in the environment which would need to be managed. There are two potential sub-options being considered in this area:

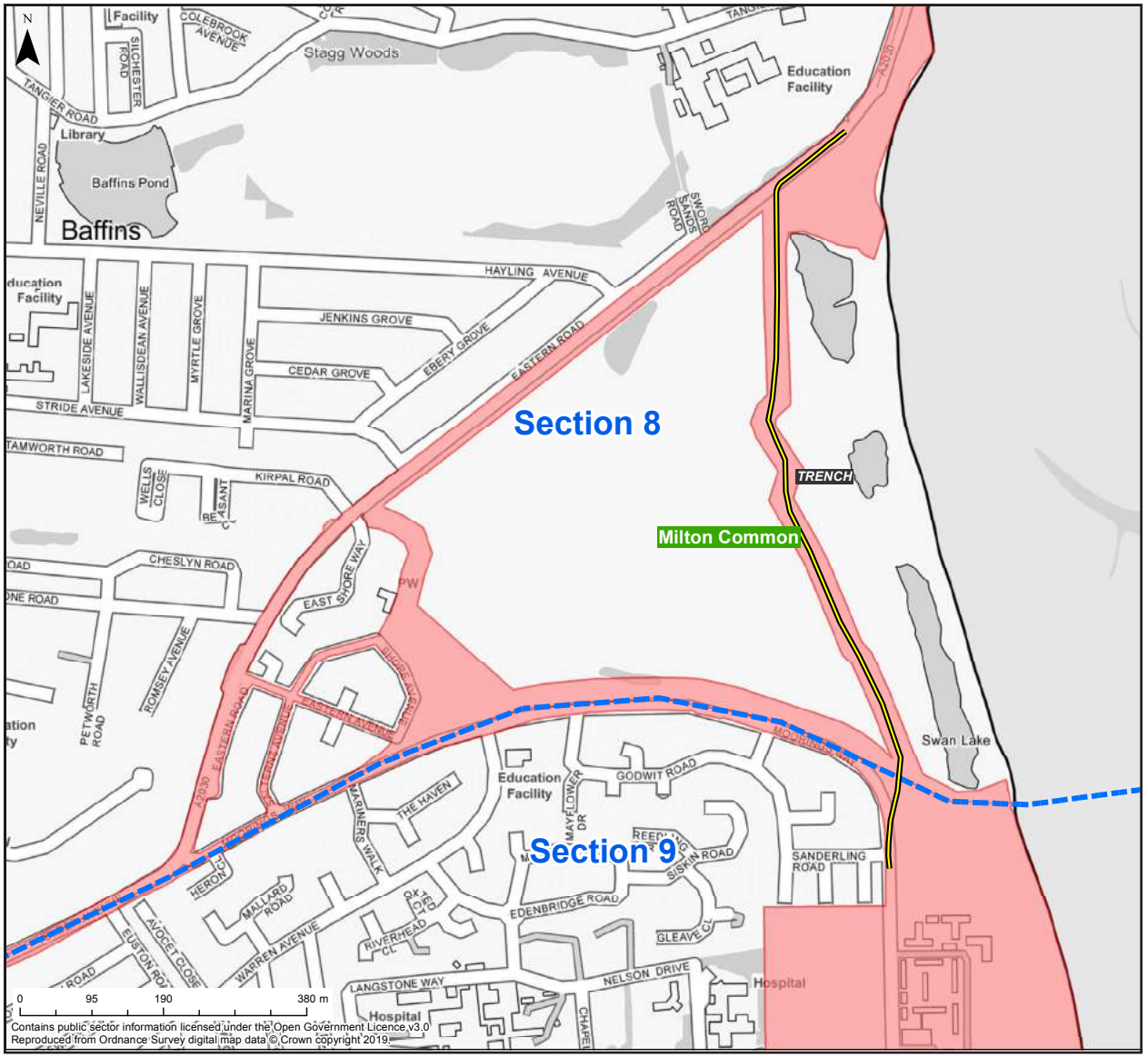
OPTION 8C(I) VIA THE FOOTPATH WHICH FORMS PART OF THE SEA DEFENCES

Cable installation would be within the path that forms part of the sea defences, and which consists of imported, compacted material. The integrity of the sea defences would need to be maintained during construction. Following installation, the path would then need to be restored to its original condition. The cable corridor would then cross the eastern extent of Moorings Way.

This route has been proposed because from a cable installation perspective it shortens and simplifies the cable route and also minimises traffic disruption by coming off roads completely. It is acknowledged that the path that forms part of the sea defences and the sea defences themselves have been recently installed. Further technical work is ongoing to confirm that works can be carried out in this location without any unacceptable adverse impacts on the integrity of the sea defences arising.

The anticipated worst case impact on traffic disruption associated with this option is a 17 day single lane closure per circuit on Eastern Road.

FIGURE 43 SECTION 8 OPTION C(I)

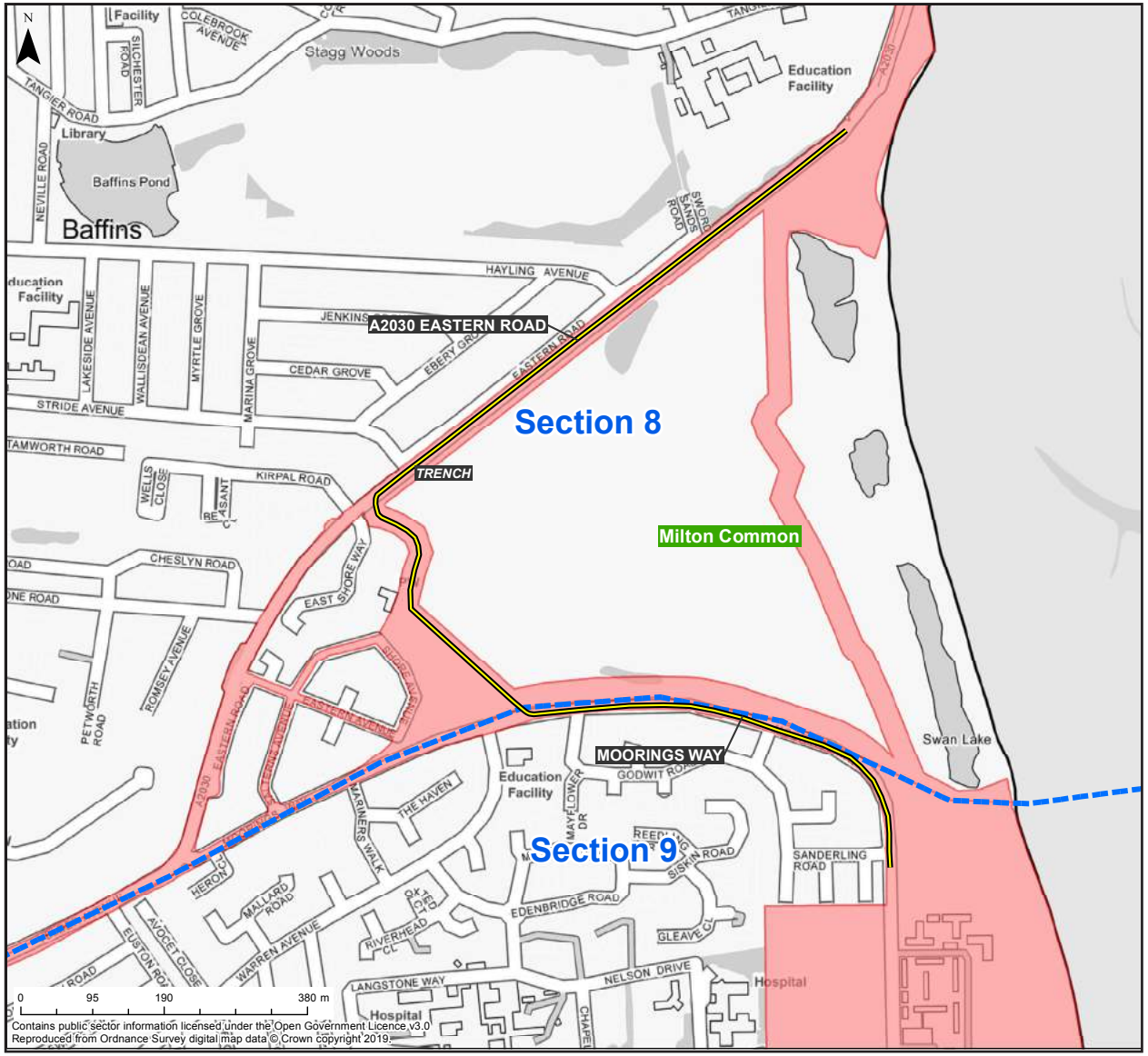


OPTION 8C(II) VIA WESTERN EDGE OF MILTON COMMON

Ground investigations have indicated this option might suffer less from the issues associated with Milton Common being a historic landfill, e.g. settlement and contaminated land. A significant quantity of ground would have to be excavated and replaced to enable the performance of the power cables. The feasibility and practicability of this option is still being considered. The cable corridor would run south along the western edge of Milton Common, and then follow Moorings Way eastwards, either in the highway or in the southern edge of Milton Common.

The anticipated worst case traffic disruption associated with this option is a 17 day lane single lane closure for each circuit on Eastern Road between Tangier Road and Milton Common and 54 days shuttle working on Moorings Way.

FIGURE 44 SECTION 8 OPTION C(II)



SECTION 9 – VELDER AVENUE/MOORINGS WAY TO BRANSBURY ROAD

Several options are being considered between the junction of Eastern Road/Velder Avenue or the south end of Milton Common and the southern side of Bransbury Park at Bransbury Road. As with section 8, the optionality has been introduced in response to feedback regarding the potential for traffic disruption on Milton Road and Eastern Road presented at the January 2018 consultation. As with the other options, some of these options are still subject to further assessment to identify their feasibility and practicability. With that in mind the original option of going down Eastern Road and Milton Road is still presented.

OPTION 9A HIGHWAYS ROUTE

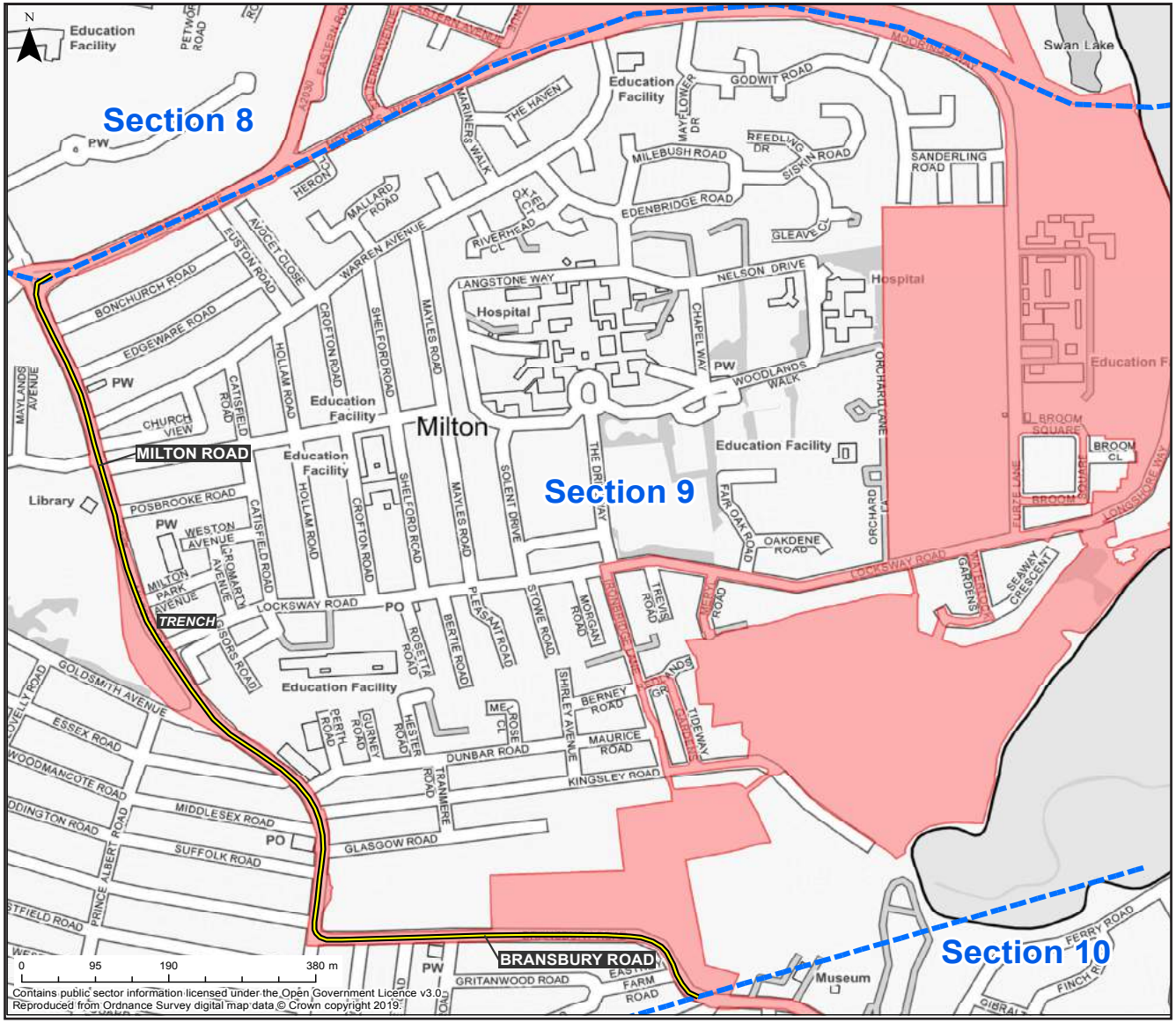
Starting from option 8A described above, the proposed cable corridor would continue running southwards along Milton Road and eastwards along Bransbury Road until the junction with Henderson Road. The corridor contains Bransbury Road and a section of the southern side of Bransbury Park adjacent to Bransbury Road, and the cable route could run in either of these locations.

Installing the cable route in Bransbury Park would significantly reduce disruption to Bransbury Road, although some tree removal may be necessary to facilitate cable installation within the grounds of the Park.

Anticipated worst case traffic disruption associated with this option would be approximately:

- A288 Milton Road/A288 Eastney Road (between Velder Avenue and Bransbury Road) – 50 days single lane closure or shuttle working
- Bransbury Road (between A288 Eastney Road and Henderson Road) – 28 days shuttle working
- Henderson Road (between Bransbury Road and Fort Cumberland Road) – 15 days shuttle working

FIGURE 45 SECTION 9 OPTION A

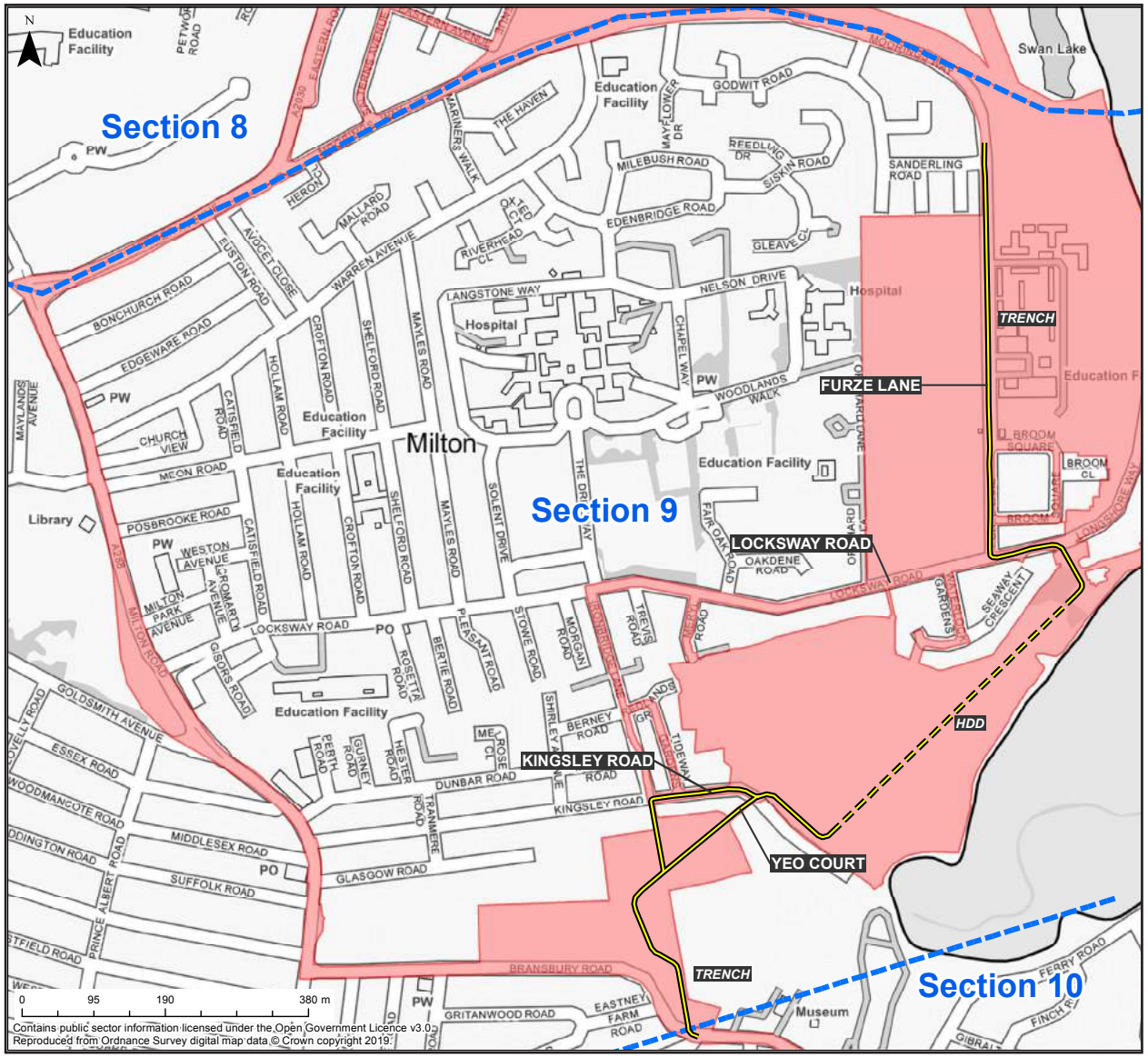


OPTION 9B ALLOTMENTS

Starting from the southern end of Options 8B or 8C, the cable route would head southwards, either through the University of Portsmouth Langstone Campus grounds or via a dedicated bus lane and Furze Lane. Furze Lane is a bus route that runs north-south through the campus and is adopted highway land. It is anticipated that a full closure of this bus lane would be required for approximately 19 days per circuit (precautionary estimate). The cables would then join Longshore Way and/or Locksway Road. From here, there are various options for accessing the allotments south of Locksway Road. Some options include utilising different paths for each cable circuit. These are described below.

Once through the allotment area from the open space south of the allotments, the proposed cable corridor includes Yeo Court or Kingsley Road as possible routes to Bransbury Park. In Bransbury Park the cable route would be west of the footpath/cycleway, avoiding the recreational space/ treeline where practicable. The cable route would then exit Bransbury Park and head eastwards along Bransbury Road to the junction with Henderson Road.

FIGURE 46 SECTION 9 OPTION B (I)



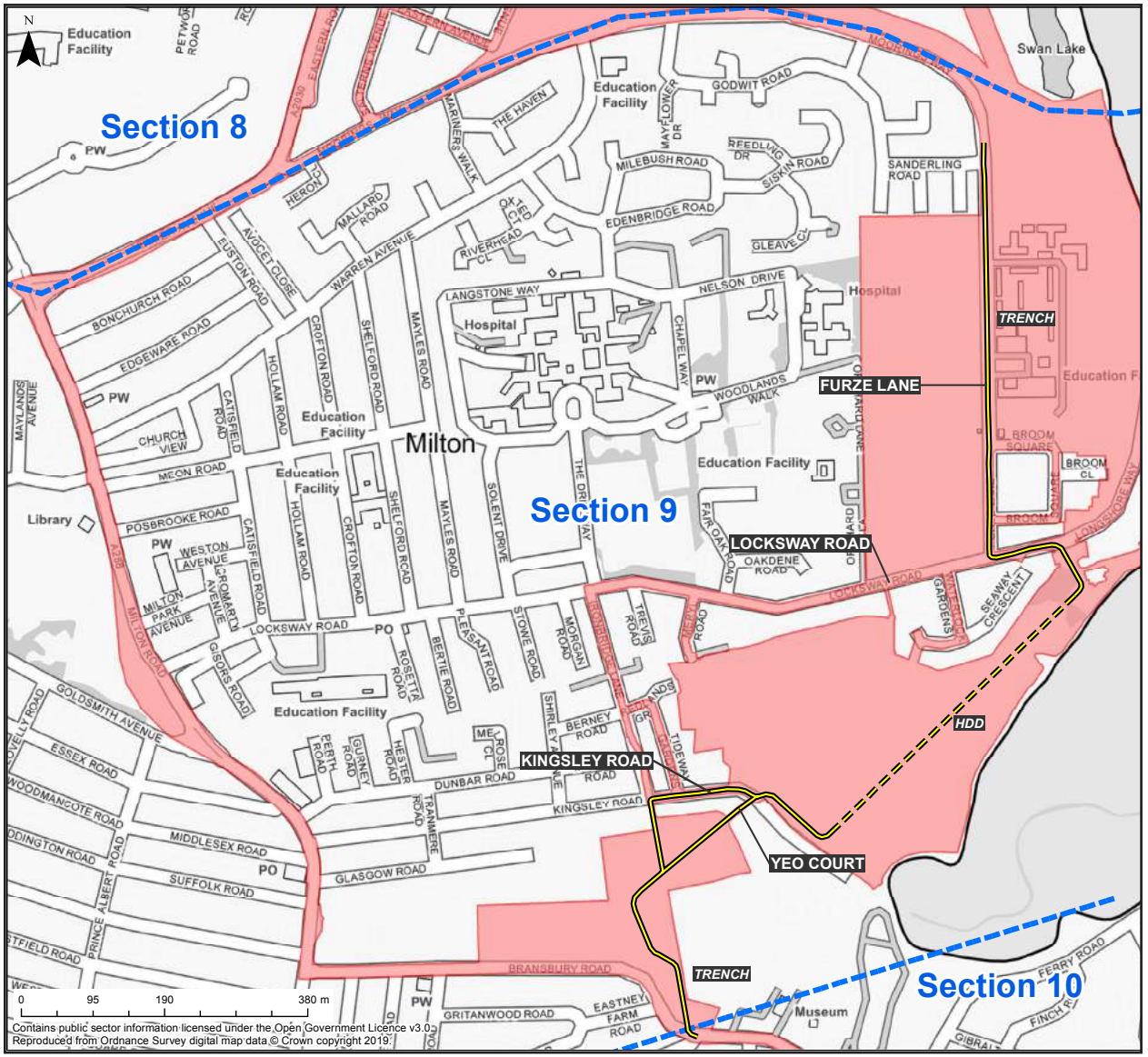
OPTION 9B(I) HDD UNDER ALLOTMENTS

The cable corridor would run along 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. This is the preferred technical option pending confirmation of technical feasibility and practicability. Landowner discussions are also ongoing.

The worst case anticipated traffic disruption per circuit would be approximately:

- Furze Lane (bus link) 19 days full road closure
- Furze Lane (between bus link and Locksway Road) 8 days shuttle working
- Locksway Road (between Ironbridge Lane and Thatched House Public House) 5 days shuttle working

FIGURE 47 SECTION 9 OPTION B(I)



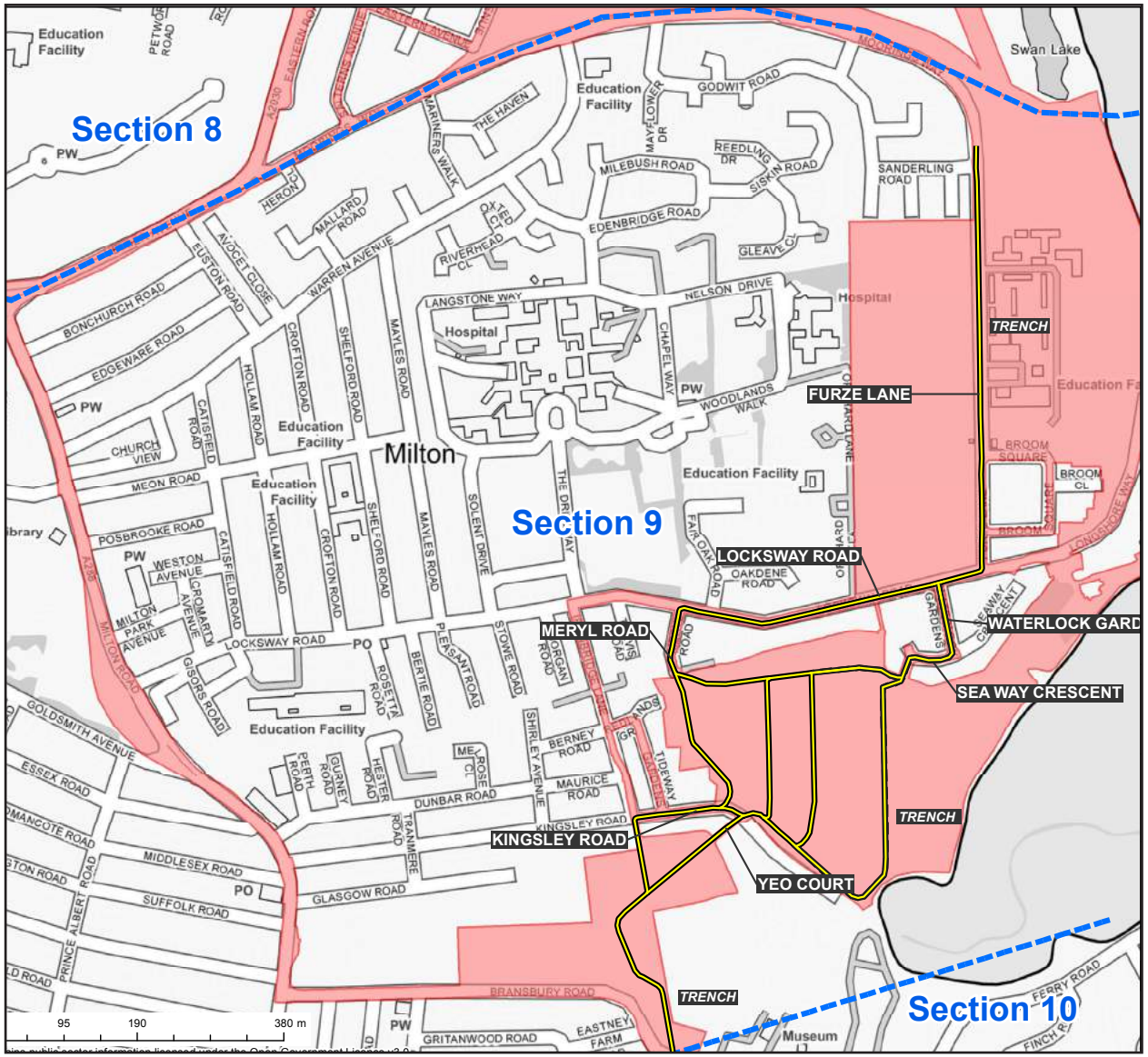
OPTION 9B(II) TRENCHING THROUGH ALLOTMENTS

Whilst the preference is to HDD under the allotments as mentioned above, practicability is still being confirmed. Therefore, an alternative which involves trenching through the allotments is presented. This still incorporates the shortest cable route and less disruption to Eastern Road and Milton Road but it does mean more disruption to the allotments. Two routes through the allotments have been considered, one which would not affect the allotment plots and one which would affect a limited number of plots. We want to minimise impact on the allotments as much as possible.

From Locksway Road, the proposed cable corridor would run through Meryl Road to enter the allotments. This option would use trenching within the allotment pathways and not affect allotment plots.

There is also a potential option which utilises Waterlock Gardens/Seaway Crescent in addition to/or as an alternative to the Meryl Road route. It is noted that the route via Seaway Crescent would impact a limited number of allotment plots located between the southern edge of Seaway Crescent and the allotment pathways. It is likely that the cable circuits would be installed in two different allotment pathways on the route through the allotment site.

FIGURE 48 SECTION 9 OPTION B(II)



OPTION 9C) IRONBRIDGE LANE (SUB-OPTIONS (I) TO (III)

This option is similar to Option 9A however upon exiting the University of Portsmouth grounds/Furze Lane, the corridor continues westwards on Locksway Road, until the junction with Ironbridge Lane, where the cable corridor turns southwards.

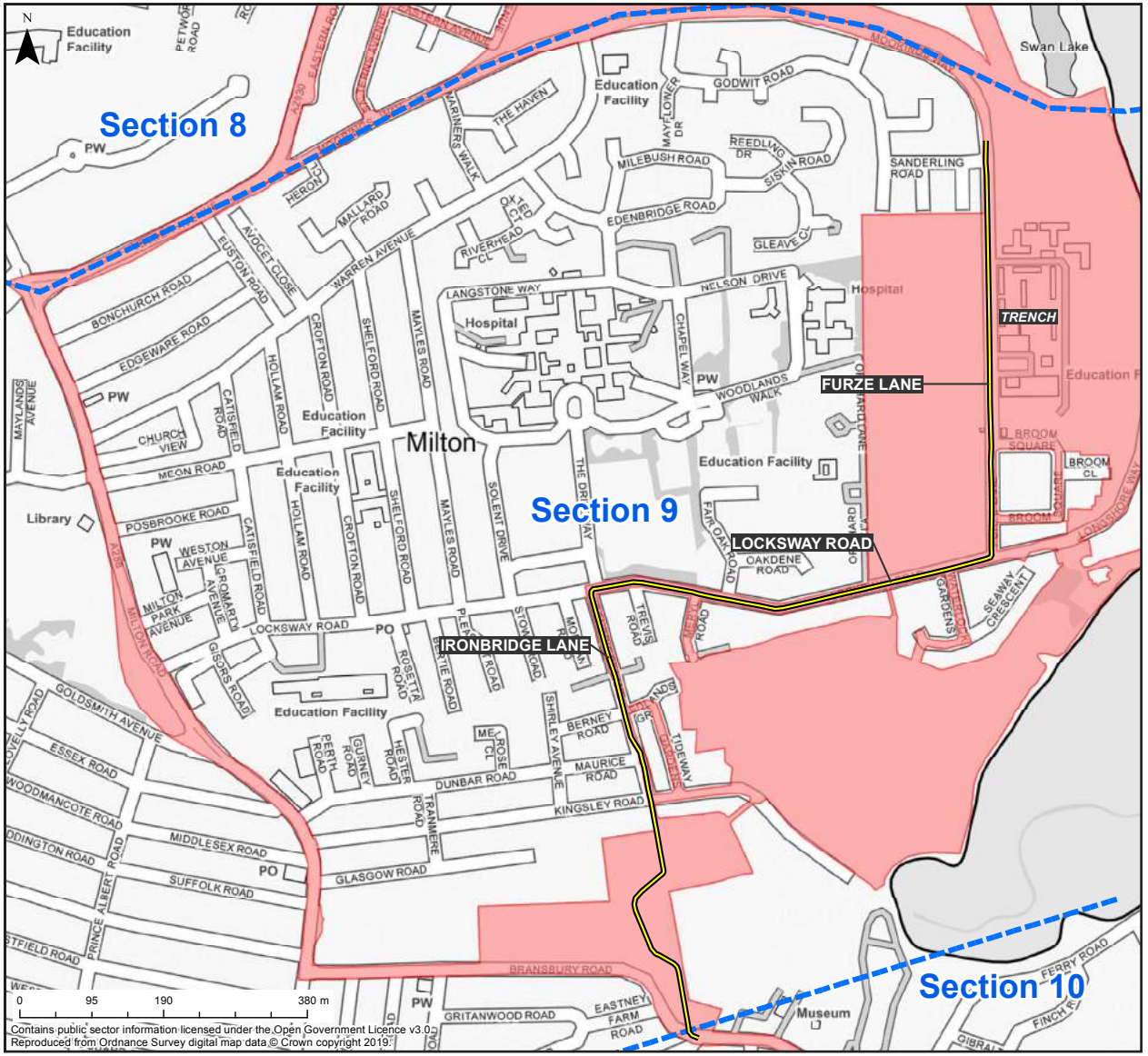
The cable corridor contains sub-options currently being considered between Ironbridge Lane and Bransbury Park.

OPTION 9C(I) VIA THE FOOTPATH OPPOSITE THE SOUTH END OF IRONBRIDGE LANE

Traffic disruption per circuit is anticipated to be approximately:

- Furze Lane (bus link) 19 days full road closure
- Furze Lane (Between bus link and Locksway Road) 8 days shuttle working
- Locksway Road between Furze Lane and Ironbridge Road 25 days shuttle working
- Ironbridge Lane (between Locksway Road and Kingsley Road) 15 days full road closure
- Kingsley Road (Between Ironbridge Lane and footpath) 1 day full road closure

FIGURE 49 SECTION 9 OPTION C(I)

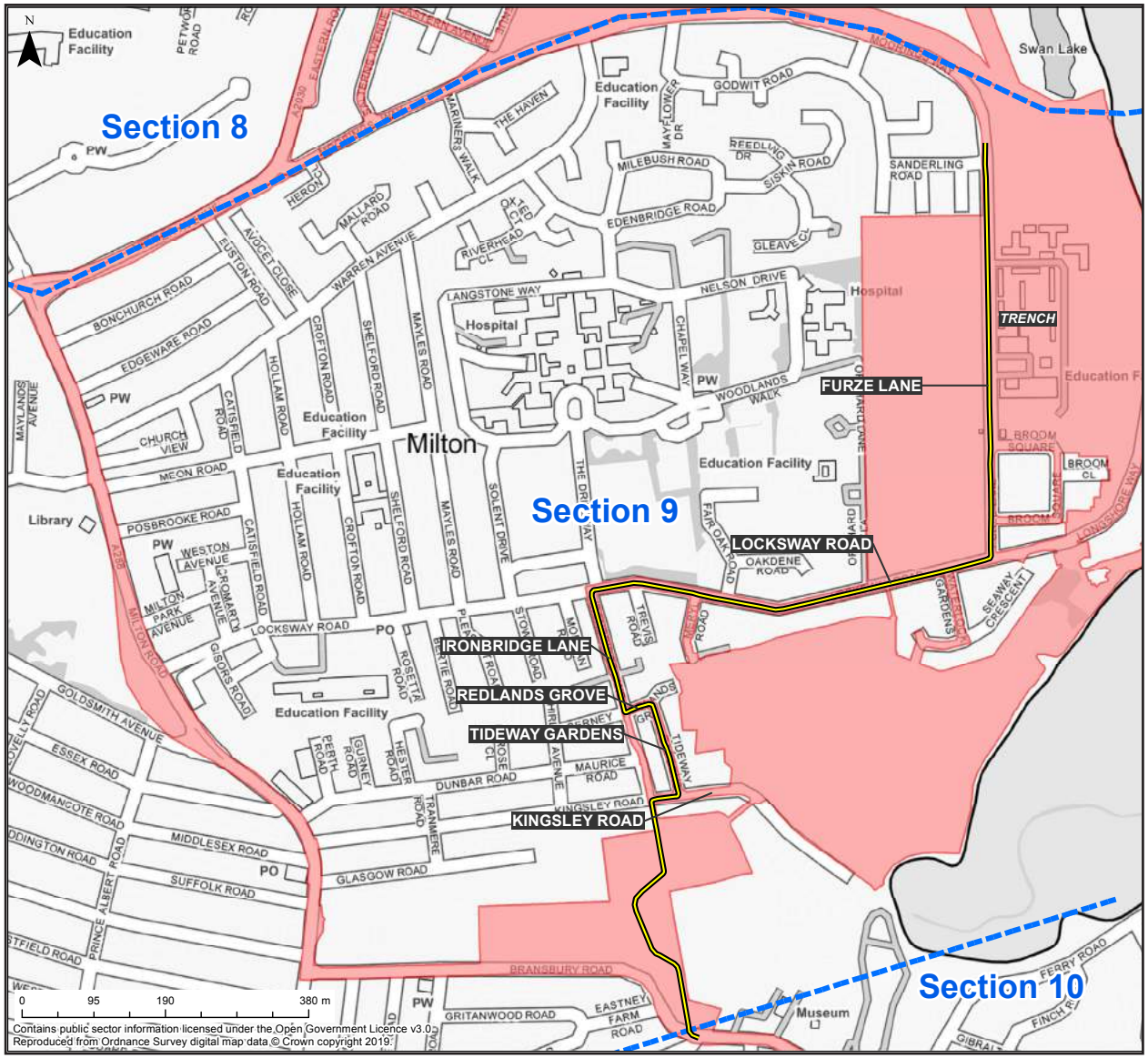


OPTION 9C(II) VIA IRONBRIDGE LANE, REDLANDS GROVE AND TIDEWAY GARDENS, IN TO BRANSBURY PARK VIA THE FOOTPATH

Traffic disruption per circuit is anticipated to be approximately:

- Furze Lane (bus link) 19 days full road closure
- Furze Lane (Between bus link and Locksway Road) 8 days shuttle working
- Locksway Road (between Furze Lane and Ironbridge Lane) 25 days shuttle working
- Ironbridge Lane between Locksway Road and Redlands Grove 8 days full road closure
- Redlands Grove and Tideway Gardens 8 days full road closure
- Kingsley Road (Between Ironbridge Lane and footpath) 1 day full road closure

FIGURE 50 SECTION 9 OPTION C(II)

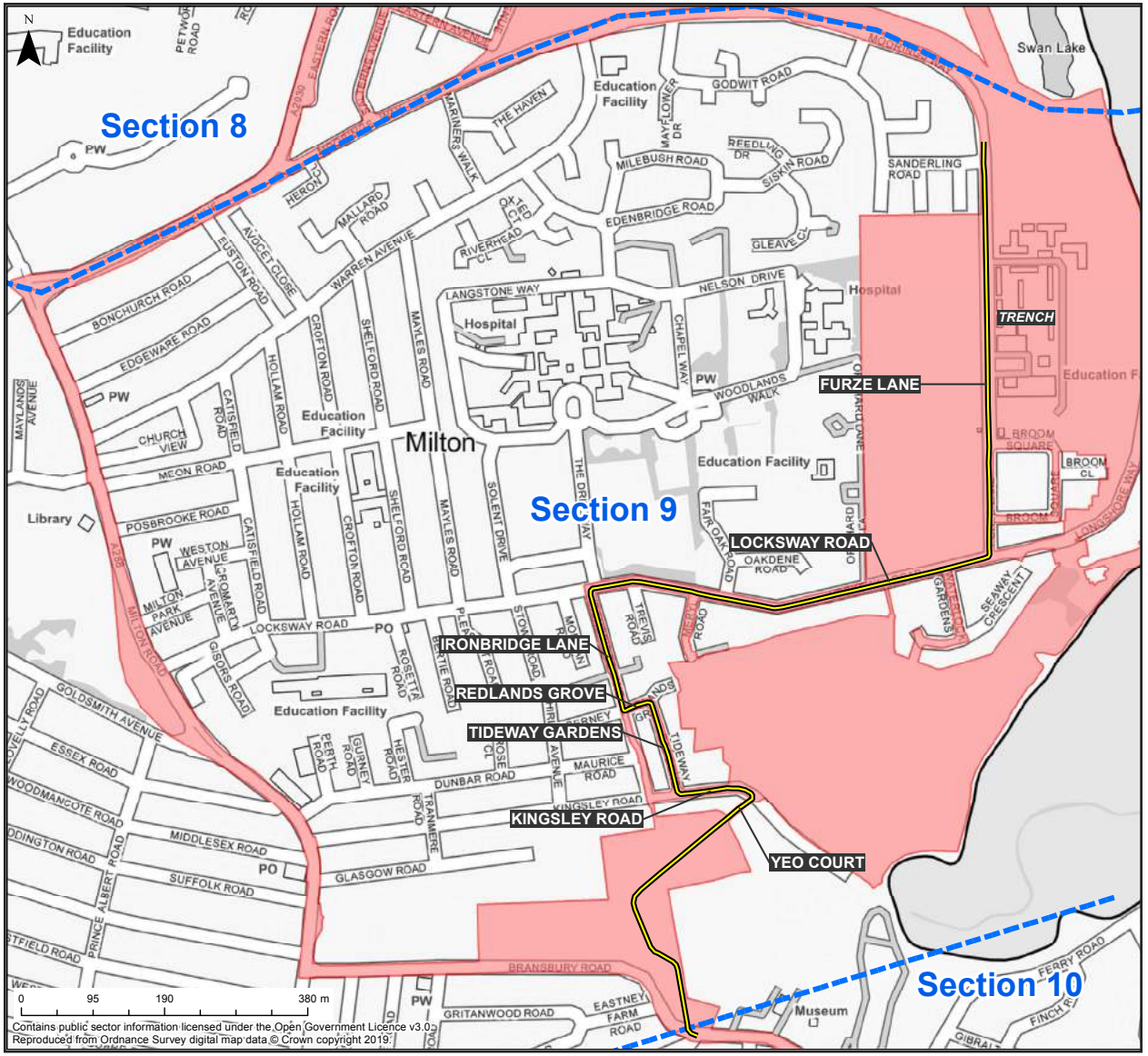


OPTION 9C(III) IRONBRIDGE LANE VIA REDLANDS GROVE, TIDEWAY GARDENS, KINGSLEY ROAD AND YEO COURT

Anticipated traffic disruption per circuit is approximately:

- Furze Lane (bus link) 19 days full closure
- Furze Lane (Between bus link and Locksway Road) 8 days shuttle working
- Locksway Road (between Furze Lane and Ironbridge Lane) 25 days shuttle working
- Ironbridge Lane between Locksway Road and Redlands Grove 8 days full road closure
- Redlands Grove and Tideway Gardens 8 days full road closure
- Kingsley Road (Between Ironbridge Lane and Yeo Court) 7 days full closure
- Yeo Court 2 days full road closure

FIGURE 51 SECTION 9 OPTION C(III)



SECTION 10 – EASTNEY (LANDFALL)

South of Bransbury Park, the proposed Cable Corridor runs eastwards along Henderson Road and Fort Cumberland Road to the car park south of Fort Cumberland Road and north of Fraser Range.

The triangular car park on Fort Cumberland Road owned by Portsmouth City Council will be where the marine cables will be joined to the onshore cables at the two transition joint bays.

HDD has been identified as the most suitable cable installation method to bring the cable into the car park at the Landfall. Information on the proposed construction works are set out in chapter 3. There are no options presented for this part of the route. This includes the proposed HDD beneath Southsea Holiday Home, Lodge and Leisure Park, with further work being undertaken to confirm there will be no unacceptable impact on the residences or residents above.

Infrastructure associated with the fibre optic cable is anticipated to be located within approximately 1 km of the Landfall. This may include up to two Optical Regeneration Stations (one for each circuit). Each station would likely be located within a securely fenced compound of a maximum size of 15 m x 15 m.

Each compound would also contain an auxiliary generator and a fuel tank. The location of this infrastructure has yet to be determined.

Each station would be housed in a separate building with dimensions of approximately 4 m x 5 m long x 3 m high (20 m² footprint).

These buildings house signal amplification and control equipment associated with the FOC and are required to ensure the signal strength is adequate between the two Converter Stations.

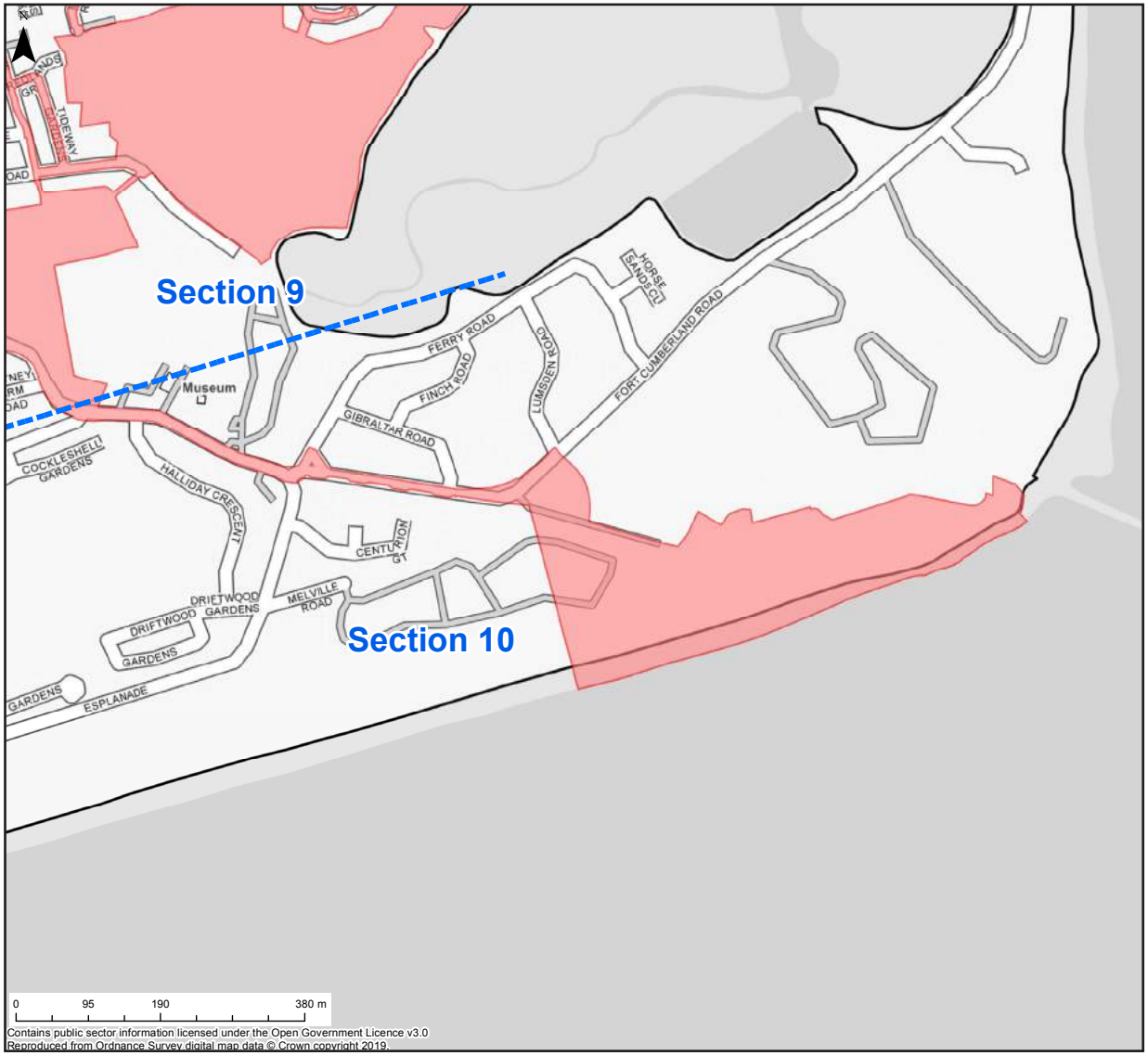
For operational purposes it is necessary for the two buildings to be located 10-20 m apart.

Following the works at Landfall, the only visual impact following reinstatement of the cable route will be the Optical Regeneration Stations and associated infrastructure which would result as a built feature in the landscape. The impact of the stations will be considered following detailed design considerations, and include for mitigatory planting where appropriate to screen the stations within the landscape.

The anticipated worst case traffic disruption per circuit is approximately:

- Henderson Road (Between Bransbury Road and Fort Cumberland Road) 15 days shuttle working; Fort Cumberland Road (between Henderson Road and car park south of Fort Cumberland Road, east of the access road to Fraser Range) 17 days shuttle working.

FIGURE 52 SECTION 10



4 THE MARINE CABLES

4.1 INTRODUCTION

4.1.1.

This Chapter describes the HVDC marine cable and cable corridor through which is the cables are proposed to be installed within the UK marine area. It also provides details of the construction methodology which would be used to install the cables.

4.2 THE MARINE CABLE CORRIDOR

4.2.1.

This corridor through which the HVDC marine cables are proposed to be installed within UK waters ("Marine Cable Corridor") is shown on Figure 3. It runs from the proposed Landfall site in Eastney (section 10 of the cable route, described in the previous Chapter) at the Mean High Water Spring ("MHWS") out to the UK/France EEZ boundary line. The total length of the marine cable corridor in UK waters is approximately 109 km from the UK/France EEZ boundary line to the Landfall at Eastney. The cable corridor is 500 m wide expanding to 520 m in certain locations. The cables will be laid in two bundled pairs approximately 50 m apart, with a works zone of approximately 15 m either side.

4.2.2

The marine cable route will be installed within the Marine Cable Corridor.

4.2.3

AQUIND is mindful of the importance of installing the cable in a way which is sensitive to the marine environment. The PEIR provides further details on the Marine Cable Corridor and the assessments AQUIND has undertaken to date to ensure that the marine environment is not adversely affected by the Proposed Development (Chapters 6 – 14).

4.3 DESCRIPTION OF THE HVDC MARINE CABLE

4.3.1.

AQUIND is proposing to use copper or aluminium conductors with Cross Linked Polyethylene ("XLPE") insulation for the marine cables. Each HVDC marine cable will have a diameter of approximately 140 mm and an overall approximate weight of 50 kg/m (in air) where a copper conductor is used. Aluminium conductor cables will likely have a larger diameter but will weigh less. Figure 53 below shows a cross-section of a typical marine XLPE cable.

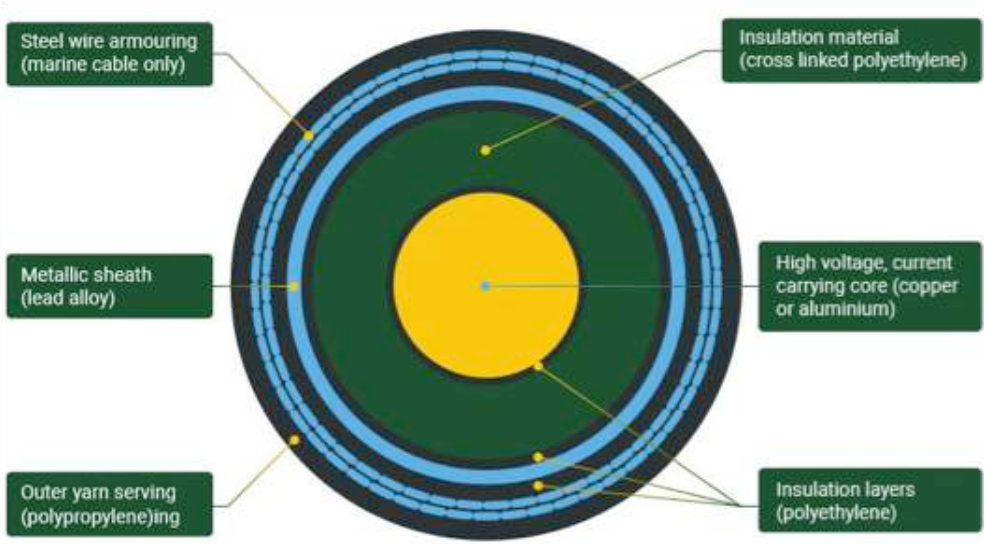


FIGURE 53 HVDC MARINE CABLE CROSS SECTION

4.3.2

In addition to the HVDC marine cables, two fibre optic data transmission cables, each 35-55 mm in diameter will be laid together with the marine cables within a shared trench (one per circuit).

4.4 CONSTRUCTION METHODOLOGY

4.4.1.

It is proposed that the four HDVC cables and two fibre optic cables will be installed along the majority of the Marine Cable Route as two bundled pairs (two circuits). The typical spacing between the two circuits will be approximately 50 m.

4.4.2

However, it is possible that the four cables may be laid individually for up to 200 m of the Marine Cable Route between the point where the marine cables exit from the Landfall on the seabed and the location where the trenching starts for the two pairs of bundled marine cables.

PREPARATION WORKS PRIOR TO INSTALLATION

4.4.3

Various preparation activities must be completed prior to the installation of the marine cable.

4.4.4

Unexploded ordnance ("UXO") surveys will be undertaken, and UXO either removed or detonated as appropriate.

4.4.5

Seabed debris will be cleared by a pre-lay grapnel run, comprising a grapnel hook towed by a vessel along the centre line of each bundled cable pair. Surface boulders will be removed by ploughing and/or grabs. Debris will be collected on board for recycling or disposal at a suitable onshore facility.

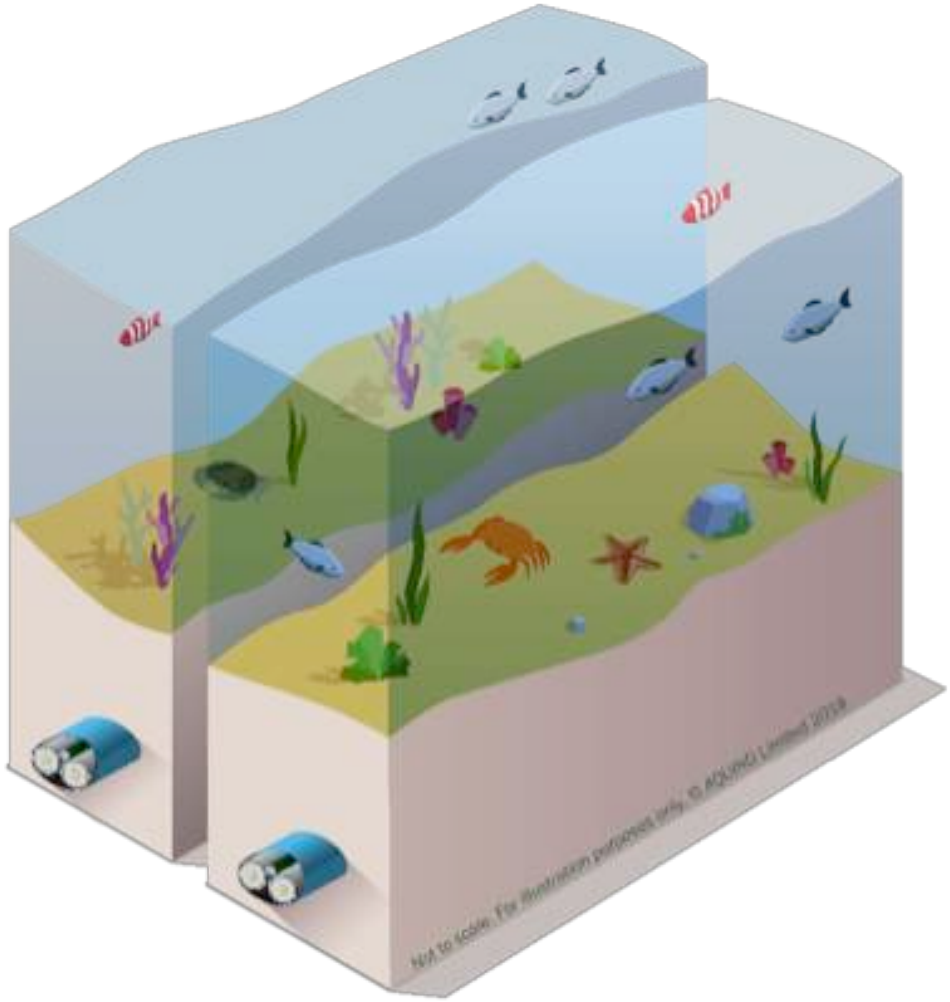


FIGURE 54 TYPICAL CABLE ARRANGEMENT IN THE CHANNEL

4.4.6

Where out of service cables are encountered, these cables will be cut at a length appropriate to the Marine Cable Corridor and disposed of at a suitable onshore waste handling facility. The remaining ends will be re-buried or covered with mattressing. Where cables that are still in service are encountered non-burial protection methods such as concrete mattressing and rock protection will be employed at the cable crossing.

4.4.7

Sandwaves and ripples are areas of mobile sediments, and installation of the marine cables will be routed to avoid such mobile bedforms and minimise the need for clearance following a pre-installation survey. Where clearance is required, this may be undertaken using a mass flow excavator, a form of jetting machine which uses high flows of water to displace and suspend sandwaves and ripples to allow for the installation of the cable. Alternatively, if mass flow excavation is not possible, dredging may be used using a trailing suction hopper dredger vessel.

4.4.8

Where the seabed is uneven due to the presence of gulleys, slopes and pits, levelling will be necessary to create a stable seabed surface for marine cable installation which may be carried out through the placement of rock and/or the installation of concrete mattresses.

INSTALLATION OF MARINE CABLE

4.4.9

Following the completion of the preparation works, the marine cables will be installed from a cable lay vessel (as illustrated in Figure 55). The cables will be pulled via tensioners, overboard the vessel and on to the seabed.

FIGURE 55 CABLE LAY VESSEL (image courtesy of DeepOcean)

4.4.10

Where the cable is buried, burial can be simultaneous to cable lay, pre-lay burial or post-lay burial:

- Simultaneous Cable Lay and Burial – This technique involves burying the cable at the same time as it is laid on the seabed. This is typical of a ploughed system, where the cable feeds through the plough to its burial point;
- Pre-lay Trenching – This technique involves a trench being created into which the cable is subsequently laid. This can be undertaken by V-shaped (displacement) ploughs and dredging techniques; and
- Post-lay Burial – This technique refers to burial which occurs after the cable has been laid on the seabed. This can apply to ploughs, trenchers and jet tools.

4.4.11

Where it is not possible to bury the cable under the seabed to the target depth, non-burial protection will be required to protect the cables from anthropogenic (i.e. fishing and vessel anchoring) and natural hazards (i.e. currents and mobile sediments) through one of the following techniques:

- Tubular protection - protective sleeves made of polyurethane or ductile iron are laid within which the marine cable is placed. This technique is commonly used in combination with mattresses or rock placement;
- Mattresses (frond and concrete) – pre-fabricated, flexible concrete coverings connected by polypropylene ropes are laid on top of the cable to stabilise and protect it;
- Rock placement – placement of rocks of varying size to form a protective barrier over the marine cable; and
- Grout / Rock bags – bags filled with grout, sand or rock and are placed over the marine cable, generally applied to smaller areas.

JOINTING

4.4.12

Cable Lay Vessels ("CLVs") are limited to the maximum quantity of cable they can carry on board (typically 40 km to 74 km of bundled cable pair). It will therefore be necessary to install the marine cables in sections which are connected together using cable joints. The final number and location of the cable joints is to be determined. Joints will be manufactured on board the CLV and will take approximately 5-6 days to complete and 1-2 days to deploy onto the seabed. Once installed on the seabed, the joints will be placed into a pre-dredged trench and/or placement of rock protection/concrete mattress will be required.

POST-LAY SURVEYS

4.4.13

Post installation, a survey will be undertaken along the final Marine Cable Route to ensure the marine cables are adequately buried and/or protected the risk to navigation reduced to as low as reasonable practical and that any crossing structures have been constructed as designed. The nature of this survey is driven by factors such as burial depth achieved, seabed conditions, risk to cable, and seabed mobility. If remedial works are required, further post-works surveys may be required.

UK LANDFALL

4.4.14

The UK Landfall forms the transitional area between onshore and marine environments and is where the Onshore Cable Route and Marine Cable Route will be joined together at the Transition Joint Bay ("TJB"). The marine cables will travel from the marine environment underneath the intertidal area to the TJB through ducts which will have been drilled through the seabed using a method called HDD. The HDD operations drill holes through the ground that will house ducts through which the cables will be pulled and avoids the need for any trenching operations on Eastney Beach or in the nearshore area. It is not determined yet whether the HDD direction of drilling will be onshore to marine, marine to onshore, or drilling from both ends.

5 APPROACH TO TRAFFIC MANAGEMENT

5.1 INTRODUCTION

5.1.1

It is inevitable that the installation of infrastructure in the highway will result in disruption to the transport users on those highways. With that in mind, AQUIND is committed to implanting traffic management measures to reduce in so far as is possible disruption to the transport network during the period of construction of the Proposed Development.

5.1.2

The options which are yet to be fixed along the cable corridor have principally been identified to minimise traffic disruption in constrained areas, following feedback received from the January 2018 consultation asking for this to be considered. In undertaking this further identification of options, AQUIND has sought to explore all the alternatives available for the installation of the cable route between the Landfall and the Converter Station.

5.2 CABLE INSTALLATION

5.2.1.

The cable installation technique has been discussed above in section 3.4. Where trenching is proposed the cable ducts will be installed in approximately 100 m sections.

5.2.2

Traffic management requirements in connection with the cable installation process are being considered, taking into account the proposed construction methodology and requirements of relevant government guidance regarding the same, Traffic Signs Manual (2009). The guidance sets out details such as safety clearance, minimum lane widths and traffic control options. It is not anticipated that the traffic management measures will vary from those implemented in relation to other utility works that take place within the public highway.

5.2.3

Assessment of the cable route will cover all roads within the Site Boundary that form a potential route option. The impact on these roads will mainly be during the cable installation phase and the associated traffic management measures.

5.2.4

The construction method for cable installation is described above in section 3.4. It assumes that installation of the cable will take place in 100 m sections at a rate of 18-30 m per day. It has been assumed that where possible, cables will be installed within the highways boundary, either in the carriageway itself of adjacent footpath and/or verge. For construction within the carriageway it is assumed that a minimum construction corridor of 4 m will be required per cable trench (there will be two sets of cable trenches as four HVDC cables (with fibre optic cable) will installed, one pair per trench).

5.2.5

For construction within the footway it has been assumed that construction of one cable trench on a footway will require a minimum working width of 2.0m within the footway / verge plus 3.0m on the carriageway for access to construction vehicles.

5.2.6

It is anticipated that one cable pair will be installed at a time, meaning that the construction zone will use one half of the carriageway, resulting in a single lane closure thus reducing the potential traffic impacts (though extending the period of installation on any particular section of road).

5.2.7

Vehicular access to properties may be restricted along certain parts of the route for the period when the section of open trench is outside properties. As stated this section would be typically 100 m at any one time. The extent of any restriction will depend upon the width of the road and the location of the trench in the road. This restriction would be for the duration of that section being worked on, which is typically about 1 week. Once a section has been worked on and the cable duct installed, the highway or land would be reinstated and vehicular access would be available again.

5.3 TRAFFIC MANAGEMENT METHODOLOGY

5.3.1

Where cable installation involves closure of one half of the carriageway, temporary traffic signals will be required to manage traffic through the construction zone. During peak hours, these traffic signals will be manually adjusted to ensure that delays are kept to a minimum. Three-way temporary traffic signals may be required where the construction zone impacts upon junctions but this will be defined individually and avoided where possible.

5.3.2

On dual carriageway roads (such as Eastern Road) the construction zone will close one lane to traffic where it is not possible to install the cable within the footway or verge without doing so. On wide single-carriageways (such as A3 London Road) it may be possible for two-way traffic to continue at a safe passing distance when the construction zone is located within the existing bus lane.

5.3.3

In some instances, the construction zone will leave insufficient width of the carriageway for traffic to pass and in these locations a full road closure will be required. On residential streets these restrictions would be kept to a minimum, with temporary access allowed where possible and outside of working hours. Where required diversionary routes will be identified and agreed with the local highway authority.

5.3.4

Where lane, or full road closures are required, and they would impact on pedestrian crossings, alternative crossing locations will be explored and provided.

5.3.5

Consideration will also be given for opportunities for extended construction hours and/or night working where no unacceptable impact on residential amenity of nearby dwellings arises as a result.

5.3.6

The installation of the cable will also be programmed mindful of the need to avoid major scheduled events (e.g. football matches), major shopping events (e.g. Christmas), and school term time as far as practicable where schools lie in proximity to, or along key highway routes.

5.3.7

The approach to formulating the traffic management strategy is included at this stage to give an indication of what type of measures will be employed during the cable installation process. A full traffic management strategy will be produced in connection with the DCO application.

6 OPERATION, MAINTENANCE AND DECOMMISSIONING

6.1 INTRODUCTION

6.1.1

This Chapter sets out how the Proposed Development will be operated and maintained, both onshore and offshore.

6.2 OPERATION

ONSHORE

6.2.1

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 interior roads (i.e. those associated with access to the Converter Station from existing highway network) will be used for access during the Converter Station's operational life. The Converter Station will be enclosed by a perimeter security fence and landscaping, likely to comprise an external steel palisade fence and inner electrified fence of approximately 2.4 m and 3.4 m in height, respectively.

6.2.2

Access to the Converter Station will be strictly controlled and only permitted to those with the appropriate training and authorisation. Directional lighting columns will be installed along the perimeter fence and around the outdoor equipment areas for emergency use. In normal night time operation there will be no illumination of the site.

6.2.3

While the Converter Station will generate some noise, predominantly from the converter transformers, transformer fans and cooling fan banks, the proposed mitigation measures will be subject to further assessment prior to submission of the DCO application for development consent, to ensure that the noise criteria specified as being appropriate by the relevant LPAs are achieved.

6.2.4

Further information on the preliminary impacts of noise from the Converter Station whilst operational is contained in Chapter 23 of the PEIR. We strongly encourage you to review this chapter of the PEIR before providing feedback on noise impacts associated with the Converter Station.

6.2.5 There are no operational requirements associated with the proposed cable route and the associated cable equipment along the cable route.

OFFSHORE

6.2.6

The Marine Cable Route and burial depths and/or non-burial protection will be designed to minimise the requirement for regular inspection surveys. However, some surveys may be required throughout the operational lifetime of the Proposed Development. The results of these surveys will be compared against the Post-Lay survey results (more particularly described in Chapter 3 of the PEIR). It is anticipated that inspection surveys would be undertaken every 6-12 months for the first 2-5 years, then reducing in frequency to every 1-5 years for the lifetime of the project. There may be other survey requirements relating to cable crossing agreements (where AQUIND Interconnector crosses other utility cables laid in the sea) and any requirements of relevant Port Authorities.

6.3 MAINTENANCE

ONSHORE

6.3.1

The design life of all equipment, buildings and infrastructure comprising the Converter Station would be at least 25 years, but in many cases such equipment may have useful life of up to 40 years or more, which is common practice for this type of development. After approximately 15-20 years, the control system and proposed converter technology is normally updated and overhauled.

6.3.2

Cable systems are reliable and require very little maintenance. The maintenance that is required includes, but is not limited to, cleaning of the air insulated terminations, visual inspection of pressure gauges at the cable terminations at the joint bays to check for oil leaks and visual inspection of the steel work at terminations to check for corrosion e.g. structure, cable cleats and link-boxes. At the link-box locations there will be periodic high voltage testing of the cable. These tests would be carried out every two years or before re-energisation of the interconnector after an outage period. Visual inspection of the output of the Distributed Temperature Sensing ("DTS") hardware which is located within the

Converter Station would be required. Changes in the temperature profile (either hot spots or cold spots) could indicate that changes have occurred along the cable route.

6.3.3

Cable failures are possible, albeit rare. Onshore cable damage could typically leave the interconnector out of service for 2 weeks while repairs are carried out.

6.3.4

Regular access to the telecommunication equipment at the proposed Converter Station and fibre optic cable amplification equipment near the coast will be required.

OFFSHORE

6.3.5

The Proposed Development has been designed so that routine maintenance to the marine cables is not required during their operational lifetime. However, there may be the requirement to undertake unplanned repair works, due to:

6.3.6

Mechanical or electrical failure of components within the cables;

- Exposure of, or damage to, the cables as a result of fishing activities or vessel anchoring; and
- Exposure of cables due to changes in seabed morphology or changes in hydrodynamics (such as increase in seabed erosion due to dredging works in the vicinity of the marine cables).

6.3.7

Typically, repair works would require exposure of the cable at the point where the fault is identified, cutting the cable where damaged, recovery to the surface, repair and re-deployment and re-burial to the seabed using methods similar to those employed during installation. Depending on the extent of cable damage, cable repair operations typically have a duration several weeks or months.

6.3.8

The fibre optic cable will have a role in monitoring the operational performance of the marine cables. DTS and vibration monitoring will be undertaken to assess the performance of the cable, particularly in areas known to be at risk from interference i.e. areas of known mobile sediment, shipping grounds, anchoring ground and commercial fishing areas. In the event that anomalies are recorded, further investigation and, if necessary, corrective action will be undertaken.

6.4 DECOMMISSIONING

ONSHORE

6.4.1

The Proposed Development is designed to provide permanent electrical infrastructure. However, there may come a time where it is appropriate to decommission the equipment. The decommissioning of the station would involve each item of equipment being removed for recycling or disposal, as appropriate. Many plant items contain metals such as copper, steel and aluminium which are valuable and would be recycled. Other material such as plastics and rubber will need to be disposed of, according to the relevant environmental legislation effective at the time. The Converter Station location would be reinstated to its previous use as far as practicable following decommissioning.

6.4.2

At the end of the cable's operational life, the options for decommissioning will be evaluated. In some instances, the least environmentally harmful option may be to leave the cable in-situ. The final cable decommissioning plan is still to be determined, and may depend on legal and policy requirements at the time. When decommissioning the onshore cables, every effort would be made to recycle as much material as possible. The fibre optic cable would be decommissioned in the same way as identified for the onshore cables.

MARINE

6.4.3

At such time as it is considered appropriate, the options for decommissioning the cable will be evaluated and will likely include consideration of leaving the marine cable in situ, removal of the entire marine cable or removal of sections of the marine cable. These options will be evaluated against the environmental implications, safe navigability of the area for other sea users and liability risks. Current best practice is to leave inert and environmentally benign cables in situ to avoid unnecessary disturbance of the seabed. Other decommissioning options including retrieval of buried cables and re-use/recycling of cables.

7.1 INTRODUCTION

7.1.1

This section provides a high-level summary of the legislative framework which is applicable to obtaining consent for the construction and operation of the Proposed Development, and the planning policy considerations that the Secretary of State is required to take into account when determining an application for that consent.

7.1.2

It also provides information on the other assessments and consents which must be carried out or obtained in relation to the Proposed Development.

7.2 PLANNING REGIME

7.2.1

The Planning Act 2008 ("the 2008 Act") established the legal framework requiring development consent to be obtained for nationally significant infrastructure projects ("NSIPs"). Under the 2008 Act, the Planning Inspectorate ("PINS") is responsible for progressing the examination of all applications. The appointed person or panel responsible for examining the application must make recommendation to the relevant Secretary of State, who will make the decision on whether to grant or to refuse development consent.

7.2.2

Consent for an NSIP takes the form of a Development Consent Order. Applications for development consent orders are determined within the context of relevant National Policy Statements ("NPS").

7.2.3

More information on the processes involved in the preparation, examination and decision of whether to grant a DCO is available at the Planning Inspectorate's website - https://infrastructure.planninginspectorate.gov.uk/. A flow diagram of the DCO process is included in Figure 56 below.

7.3 NATIONAL POLICY STATEMENTS – OVERVIEW OF NPS EN-1

7.3.1

NPSs produced by the UK Government, provide the policy framework for decision making on DCOs. Twelve NPSs covering different types of national infrastructure have been designated (adopted). Of these, EN-1 (Overarching Energy NPS) is relevant to the Proposed Development.

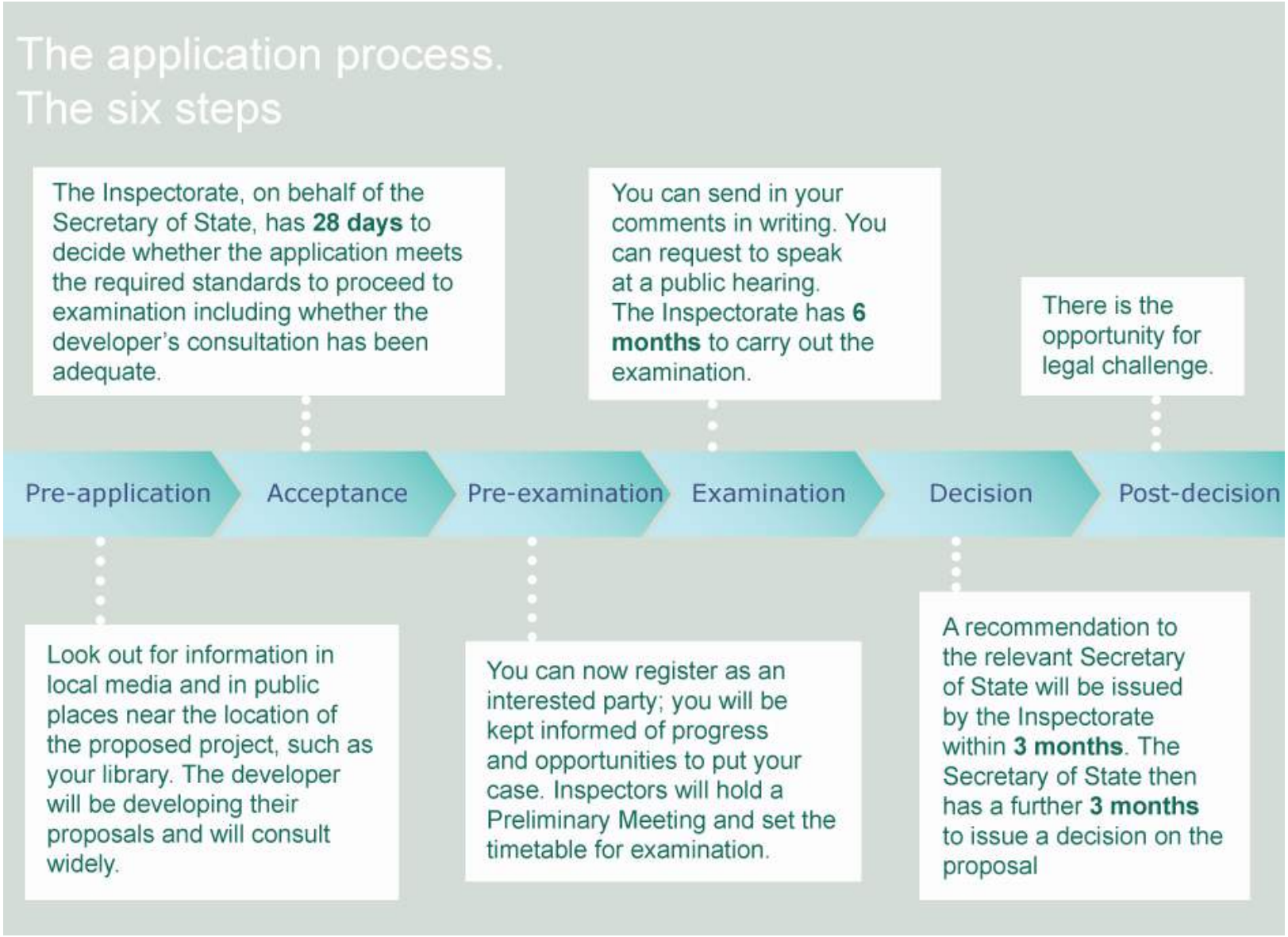
7.3.2

EN-1 was adopted in July 2011 and sets out policy for delivering nationally significant energy infrastructure. EN-1 will be the primary document used by the Secretary of State when determining the DCO application for the Proposed Development. EN-1 details government policy on energy and energy infrastructure development (Part 1 and Part 2); the need, and urgency for, new nationally significant energy infrastructure (Part 3); the principles which applications are to be assessed against, and determined in accordance with (Part 4); and the generic impacts that are likely to arise from the development of any form of energy infrastructure as well as the policy considerations in respect of those impacts (Part 5) being:

- Air quality and emissions;
- Biodiversity and geological conservation;
- Civil and military aviation and defence interests;
- Coastal change;
- Dust, odour, artificial light, smoke, steam and insect infestation;
- Flood risk;
- Historic Environment
- Landscape and visual
- Land use, including open space, green infrastructure and Green Belt;
- Noise and vibration;
- Socio-economics;
- Traffic and transport;
- Waste management; and
- Water quality and resources.

The Proposed Development has been developed and is being assessed with reference to all relevant issues identified in EN-1.

FIGURE 56 DCO PROCESS (source: https://infrastructure.planninginspectorate.gov.uk)



7.4 OTHER POLICY CONSIDERATIONS

7.4.1

Under the Planning Act 2008, in addition to the need to have regard to the relevant NPS, the Secretary of State must also have regard to:

- The relevant marine policy documents, in this case the UK Marine Policy Statement and South Marine Plan;
- Any local impact report submitted by relevant local planning authorities;
- Any other matters which the Secretary of State thinks are both important and relevant to their decision. This would include local planning policy documents, the National Planning Policy Framework ("NPPF"), consultation responses and the views of stakeholders.

7.4.2

However, as set out in paragraphs 4.1.5 and 4.1.6 of EN-1, in the event of a conflict between local planning policy, the NPPF, marine policy statements or marine plans and an NPS, the NPS should prevail in decision making given the national significance of the infrastructure.

7.5 ENVIRONMENTAL IMPACT ASSESSMENT

7.5.1

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require an Environmental Impact Assessment ("EIA") to be carried out and an Environmental Statement which reports the findings of that assessment to be submitted in relation to any DCO application for infrastructure of the type and scale listed in those Regulations, The Environmental Statement will identify the likely significant environmental effects associated with the Proposed Development during construction, operation and where relevant decommissioning.

7.5.2

Whilst electricity interconnectors are not infrastructure of a type which falls within the ambit of the Regulations, AQUIND has decided to carry out EIA on a voluntary basis, in recognition of the need to assess for likely significant environmental effects associated with it.

7.5.3

Where likely significant environmental effects are identified, the Environmental Statement will also seek to identify the measures that will be employed to mitigate those impacts.

7.5.4

AQUIND is in the process of carrying out an EIA for the Proposed Development. An Environmental Statement will be produced which will be submitted with the DCO application. The scope of the EIA to be undertaken in respect of the Proposed Development has been agreed with the Planning Inspectorate and the LPAs in whose area the Proposed Development is located in a Scoping Opinion, issued on 7 December 2018. A copy of the scoping opinion, and also of the scoping opinion request, can be located on the Planning Inspectorate's website – https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020022/EN020022-000059-AQUI%20-%20Scoping%20Opinion.pdf

7.5.5

The PEIR presented as part of this consultation contains a summary of the preliminary environmental information which AQUIND has collated and assessed to date. Further assessment will be carried out in order to develop the full environmental statement to be submitted alongside the application for DCO.

7.6 FLOOD RISK ASSESSMENT

7.6.1

A Flood Risk Assessment ("FRA") will be prepared to support the environmental statement. The FRA will demonstrate how flood risk will be managed now and over proposed developments lifetime, taking climate change into account. To the extent relevant an FRA must:

- be proportionate to the risk and appropriate to the scale, nature and location of the Proposed Development;
- consider whether the Proposed Development is likely to be affected by flooding from any source (river, sea, canal, lakes, surface water, ground water etc.);
- consider whether the Proposed Development will increase flood risk elsewhere (e.g. neighbouring properties);
- consider the potential adverse and beneficial effects of flood risk management infrastructure;
- identify flood risk reduction measures and include an assessment of the remaining (residual) risk after risk reduction measure have been taking into account;
- consider whether the measures proposed to deal with the identified effects and risks are appropriate;
- consider the vulnerability of those using the site;
- consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems.

7.6.2

Chapter 19 (Water Resource and Flood Risk) of the PEIR provides detailed preliminary information on Flood Risk and how it will be considered in the context of the Proposed Development.

7.7 HABITAT REGULATIONS ASSESSMENT

7.7.1

The UK is bound by the terms of the Habitats Directive and Wild Birds Directive. The aim of the Habitats Directive is to conserve particular natural habitats and wild species across the EU. The protection given by the Habitats Directive and Wild Birds Directive is transposed in UK legislation through the Conservation of Habitats and Species Regulations 2017. Sites of Community Importance ("SCIs"), Special Areas of Conservation ("SACs"), Special Protection Areas ("SPAs") and Ramsar sites are protected under the Habitat Regulations. These sites are referred to as 'European Sites'.

7.7.2

Eight European and Ramsar designated sites have been identified within 10 km of the boundary of the Proposed Development, three of these sites partly overlap the boundary of the Proposed Development, in many cases simply partially overlapping the cable route:

- Solent Maritime SAC;
- Buster Hill SAC;
- Solent and Isle of Wight Lagoons SAC;
- South Wight Maritime SAC;
- Chichester and Langstone Harbours SPA / Ramsar;
- Portsmouth Harbour SPA / Ramsar;
- Solent and Southampton Water SPA / Ramsar; and
- Solent and Dorset Coast potential SPA ("pSPA").

7.7.3

No adverse impacts to the integrity of these protected sites are anticipated due to the Proposed Development.

7.8 OTHER CONSENTS AND LICENCES

7.8.1

In addition to the DCO, AQUIND may be required to obtain additional consents and licences which may need to be separate to the DCO. The requirement for such consents and licences is currently being reviewed, in line with the refinement of the proposals. Any additional consents and licences required to facilitate the construction, operation and maintenance of the Proposed Development will be confirmed when the DCO application is made and obtained before any works relevant to them are carried out.

8 APPROACH TO COMPULSORY ACQUISITION AND USE OF LAND

8.1 INTRODUCTION

8.1.1

This Chapter sets out AQUIND's approach to the acquisition and use of land for the purpose of the Proposed Development.

8.1.2

It explains AQUIND's strategy of seeking powers to compulsorily acquire and temporarily use land as part of the application for development consent, in parallel with private negotiations with land owners.

8.1.3

The legal status of owners of highway subsoil is set out, and our approach to acquisition of such land is distinguished from acquisition of other land.

8.1.4

AQUIND would like to reassure consultees that the acquisition of residential land comprising homes or gardens is not proposed. Where residential land owners of houses adjoining the proposed onshore cable corridor have been contacted as part of this consultation, it is purely in their capacity as the presumed owner of highway subsoil (see section 8.4 below).

8.2 LAND AND RIGHTS REQUIRED FOR THE PROPOSED DEVELOPMENT

8.2.1

AQUIND will require certain interests in land in order to construct, maintain, operate and decommission the Proposed Development. The land required for these purposes will not exceed the Site Boundary which is presented in this consultation [see Figure 2 above], and by the time our application for development consent is made the land required will have been significantly reduced due to route choices having been made from the options currently being considered.

8.2.2

The types of interests in land likely to be required for the Proposed Development comprise:

- A freehold or leasehold interest in so much of the land comprising the Converter Station Area (described in Chapter 2) as is required for the Converter Station, access road (which may also be by way of an easement), landscaping, attenuation pond (and any telecommunications equipment associated with the fibre optic cable);
- A legal right (known as an "Easement") to install and operate the onshore HVDC cables, HVAC cables and fibre optic cables, both in the subsoil of the highway and across privately owned land outside the highway. This easement would also include the right to carry out works to inspect, maintain, repair or decommission the cables where necessary in future;
- An easement to install, operate, inspect, maintain, repair or decommission the link pillars and link boxes in connection with the onshore HVDC cable;
- A right or easement to create or improve access tracks;
- A restriction on any use of land which might cause interference with or damage to the cables;
- An easement to use certain areas as work areas in connection with the construction, inspection, maintenance or decommissioning of the Proposed Development;
- Temporary use of some areas of land as work or compound areas where these are required during the construction phase only;
- An easement to install, inspect, operate, maintain, repair and decommission the fibre optic cable. As explained in Figure 3, the fibre optic cable will be used both in association with the interconnector and potentially for future commercial telecommunication purposes. The easement will therefore cover both uses;

- A freehold or leasehold interest in a site within approximately 1km of the Landfall for the construction and operation of infrastructure associated with the operation of the fibre optic cable, including two optical regeneration stations to boost the signal strength of the fibre optic cable; and
- A licence from the Crown (who own the seabed inside the seaward limit of the territorial seas adjacent to the UK) to lay the cables in so much of the seabed as is within their ownership.

8.3 ACQUISITION OF LAND AND EASEMENTS IN RESPECT OF NON-HIGHWAY LAND

8.3.1

Our intention is to seek powers of compulsory acquisition in respect of all land required as part of the application for development consent. Where land is acquired by compulsory purchase, the land owner is entitled to claim its market value from the acquirer. However, wherever possible, AQUIND would prefer to reach private agreement with affected land owners and has already been engaging with a number of land owners for this purpose. Further engagement will be undertaken as part of this consultation and continued thereafter.

8.4 ACQUISITION OF EASEMENTS FROM SUBSOIL OWNERS

8.4.1

The surface of a highway and the first metre or so required to maintain it are deemed to be owned by a highway authority where the road is maintainable at the public expense, as most highways are. Usually, utility companies installing cables and pipes for water, gas, electricity and telecommunications install them within this upper part of the highway under statutory licence from the highway authority. However, the precise extent of the highway authority's deemed ownership is not defined by law, and in order to ensure that AQUIND is able to lawfully install and operate the interconnector within the highway at the necessary depth, AQUIND intends to obtain an easement for these purposes.

8.4.2

In most cases, the owner of the subsoil below the part of the highway deemed to be owned by the highway authority is not formally registered. However, there is a legal presumption that in such cases the owners of the subsoil are the owners of the land or houses on either side of the highway up to the middle of the road (known as the ad medium filum rule).

8.4.3

Where AQUIND requires an easement from owners of highway subsoil our intention is for that interest to be acquired via compulsory acquisition without negotiation or the payment of compensation. This is because the relevant owner has no use or enjoyment of it, is not prejudiced by its use for the Proposed Development, and because the subsoil of a highway is not recognised to have any market value.

8.5 CROWN LAND

8.5.1

Legally, it is not possible for land owned by the Crown to be acquired by compulsory purchase and negotiations are ongoing to obtain a licence in relation to the Crown land required for the laying of cables in the seabed.

8.5.2

It may also be necessary to acquire land or rights from Government Departments, such as the Ministry of Defence, which is also Crown land. Where necessary, licences will be sought to authorise the construction and operation of the Proposed Development over such land.

8.6 THE ROLE OF LAND OWNERS IN THE CONSENTING PROCESS

8.6.1

All parties who have been identified through our inquiries as owners, lessees or occupiers of land, including of the highway subsoil, within our Site Boundary or who have any rights or easements which affect this land are statutory consultees within the meaning of Section 42 Planning Act 2008. As such, they have been individually contacted and invited to respond to this consultation.

8.6.2

When we make our application for development consent, AQUIND will have a statutory requirement to make landowners aware that the Secretary of State has accepted the application for examination and to give them a deadline by which they can register their interest and assert their right to make representations about the application to the Planning Inspectorate. This provides a further opportunity for land owners affected by the proposals to make representations in relation to the application.

8.6.3

The decision of whether to grant AQUIND a development consent order which includes powers to compulsorily acquire or temporarily use land is a matter which is to be decided by the Secretary of State and will be examined as part of the public examination of the application. Any person with an interest in land affected by the Proposed Development will have the opportunity to make representations to the examining authority, which will be taken into account in the decision made. Where requested to do so by an affected land owner, the Secretary of State must hold an oral compulsory acquisition hearing. At this hearing each affected person will be able to make oral representations regarding the compulsory acquisition request.

8.6.4

In accordance with Section 122 of the Planning Act 2008 the Secretary of State will need to be satisfied certain conditions are met before he may authorise the granting of a development consent order which contains powers of compulsory acquisition. These conditions are (1) that the land is required for the development, or is required to facilitate or is incidental to the development; and (2) that there is a compelling case in the public interest for the land to be acquired compulsorily.

9.1 HOW TO FEEDBACK

There are a range of ways that feedback can be provided on the Proposed Development during the consultation, including:

9.1.1

At public exhibitions – Feedback forms, together with freepost envelopes, will be available to complete all public exhibitions, the following exhibitions will be held;

Date	Venue	Time
07/03/2019	Broad Oak Sports & Social Club, Airport Service Road, Portsmouth, PO3 5PB	16:00 – 20:00
08/03/2019	Eastney Community Centre, Bransbury Park, Bransbury Road, Eastney, Portsmouth, PO4 9SU	16:00 – 20:00
14/03/2019	Jubilee Hall, Crouch Lane, Horndean, Waterlooville, Hampshire, PO8 9SU	16:00 – 20:00
16/03/2019	The Drayton Centre, 238 Havant Road, Portsmouth, PO6 1PA	10:00 – 14:00
21/03/2019	Waterlooville Community Centre, 10 Maurepas Way, Waterlooville, PO7 7AY	16:00 – 20:00
22/03/2019	Acorn Community Centre, 3 The Kestrels, Wecock Farm, Waterlooville, Hampshire, PO8 9UX	16:00 – 20:00
23/03/2019	Deverall Hall, 84 London Road, Purbrook, Waterlooville, PO7 5JU	10:00 – 14:00
30/03/2019	Milton Village Community Hall, 182 Milton Road, Southsea, PO4 8PR	11:30 – 15:30
05/04/2019	Denmead War Memorial Hall, Hambledon Road, Denmead, PO7 6PW	16:00 – 20:00

FIGURE 57 AQUIND PUBLIC CONSULTATION EVENT SCHEDULE

9.1.2

Online – An online feedback form is available at www.aquindconsultation.co.uk. Electronic copies of the feedback forms can also be downloaded via the website;

9.1.3

By post – Comments can be submitted in writing via 'FREEPOST AQUIND CONSULTATION'. Feedback forms can be downloaded from the website address stated above and completed feedback forms can also be returned via this address also;

9.1.4

By email – Comments can also be submitted via email to aquindconsultation@becg.com. Electronic or scanned copies of completed feedback forms can also be return via email; and

9.1.5

By phone – The project team can be contacted via freephone on 01962 893869 with any queries.

9.1.6

A feedback form is available to assist in responding to the consultation, and is available on the website and at public consultation events.

9.1.7

All comments submitted during the consultation will be recorded and carefully considered by AQUIND and will be taken into account when further developing the proposals. If it is considered that further information is required after this consultation, further engagement with stakeholders to address specific matters may be undertaken.

9.1.8

Responses to the consultation must be received by no later than midnight on **29 April 2019** (postal responses will be accepted up to three working days after this deadline) and responses received after this date will not be taken into consideration.

9.2 TAKING FEEDBACK INTO ACCOUNT

9.2.1

AQUIND intends, where possible, to provide an acknowledgement of receipt of feedback to this consultation and is committed to fully considering all feedback received, as well as explaining how that feedback has been taken into account in the ongoing refinement of the proposals for AQUIND Interconnector.

9.2.2

An explanation of how all feedback received has been taken into account will be detailed in the Consultation Report that is to be produced pursuant to Section 37 of the Planning Act 2008, that will be submitted at the same time as the application for a DCO.

1 GLOSSARY

1 GLOSSARY

Abnormal Indivisible Load (AIL)	An Abnormal Indivisible Load (AIL) is a vehicle that has any of the following: a mass of more than 44,000 kilograms, an axle load of more than 10,000 kilograms for a single non-driving axle and 11,500 kilograms for a single driving axle, a width of more than 2.9 metres, a rigid length of more than 18.65 metres.
AC Cables	For the purpose of the Proposed Development, the Cables designed to transfer power using Alternating Current at a nominal voltage of 400 kV, which will connect Lovedean Substation to the Converter Station. They will be arranged as two Circuits, each with three cables.
AC Cable Route	The final area occupied by the permanent installation of the AC Cables including any easement areas required for maintenance.
AC Cable Corridor	The area within which the AC Cable Route and all associated Temporary Works could be located.
Access Road	The permanent road that will be constructed to facilitate vehicular access to the Converter Station from the existing highway network.
Alternating Current (AC)	A flow of electrical current which reaches maximum in one direction, decreases to zero, then reverses itself and reaches maximum in the opposite direction. The cycle is repeated continuously and the number of cycles per second is described as the frequency. The National Electricity Transmission System (NETS) is an AC network that uses a frequency of 50 Hz.
Ancient Woodland	Ancient Woodland is defined as an area that has been wooded continuously since at least 1600 AD. Ancient Woodland is divided into ancient semi-natural woodland and plantations on Ancient Woodland sites. Both types are classed as ancient woods.
Applicant	AQUIND Limited.
Application	The Application for a Development Consent Order (DCO) that will be submitted by the Applicant to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS).
Appropriate Assessment	n assessment undertaken under the Habitats Regulations 2010 (as amended), implementing the requirements of the Habitats Directive and Birds Directive.
AQUIND Interconnector	The Project.

Authorised Development	The development that will be described in the Draft Development Consent Order
Baseline	A reference level of existing environmental conditions against which a project is measured and controlled.
Baseline Studies	Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed.
Cable Joint	The components required to connect together two sections of cable.
Cable Lay Vessel (CLV)	The vessel which will carry the marine cables to be installed.
DC Cable Corridor	The cable includes the Onshore Cable Corridor and Marine Cable Corridor.
DC Cable Route	Comprises the Onshore Cable Route and Marine Cable Route.
Cables	Insulated metallic electrical conductors used for the transfer of power. All Cables for the Proposed Development will be buried underground.
Connection Agreement	The contract between the Applicant and National Grid to facilitate the transmission of electricity to the National Electricity Transmission System.
Consultation Documents	These are documents to include: "plans and maps showing the nature and location of the proposed development" as stated in subsection (4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009. For the Proposed Development, the Consultation Documents consist of: Statement of Community Consultation (SoCC); Preliminary Environmental Information Report (PEIR); PEIR Non-technical Summary (NTS); Consultation document; Newsletter; Feedback form.

1 GLOSSARY

Converter Station	The fenced compound, adjacent to Lovedean Substation, comprising the necessary equipment to convert AC to DC and vice versa.
Converter Station Area	This is the area of land identified to accommodate: the Converter Station and associated equipment; the connection between AQUIND Interconnector AC cables and the National Electricity Transmission System (NETS) at Lovedean Substation; the Cable Corridor to accommodate AC cables (and FOC) between the Converter Station and Lovedean Substation; the DC Cables (including FOC) from Converter Station southwards; the temporary construction compound area(s); access road; and, mitigation measures, for example additional planting and attenuation pond.
Cumulative Effects	In terms of an Environmental Impact Assessment (EIA), the summation of Effect that result from changes caused by the Proposed Development in conjunction with other reasonably foreseeable development that is either consented but not yet constructed or is in the process of seeking consent.
DC Cables	Cables designed to transfer power using Direct Current at 320 kV, which will connect The Converter Station to Grand Rue Converter Station.
DCO Application	The Application for a Development Consent Order (DCO) that will be made in respect of the Proposed Development.
Deemed Marine Licence	Marine licence that is deemed by a Development Consent Order (DCO) under Section 149A of the Planning Act 2008 (as amended) (PA 2008).
Development Consent Order (DCO)	A Development Consent Order (DCO) is made by the Secretary of State (SoS) pursuant to the Planning Act 2008 (as amended) (PA 2008) to authorise a Nationally Significant Infrastructure Project (NSIP).
Development Plan	This includes adopted Local Plans and neighbourhood plans as defined in section 38 of the Planning and Compulsory Purchase Act 2004.
Direct Buried Cables	An installation method whereby cables are laid in a trench and are buried in backfill which is in direct contact with the cables.
Direct Current (DC)	A flow of continuous electrical current which flows in one direction.
Draft Development Consent Order (dDCO)	The draft Development Consent Order (DCO) submitted with the Application.

Ducted Installation	An installation method where ducts are installed in the ground and cables are subsequently pulled into them.
EIA Directive	Directive 85/337/EEC (as amended). The initial Directive of 1985 and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011. Directive 2011/92/EU has been amended in 2014 by Directive 2014/52/EU.
EIA Regulations	In the context of the Proposed Development, The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 which prescribe the information to be included in the Environmental Statement (ES) and the consultation to be carried out in connection with development requiring an Environmental Statement (ES).
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant Effect undertaken in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
EIA Directive	Directive 85/337/EEC (as amended). The initial Directive of 1985 and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011. Directive 2011/92/EU has been amended in 2014 by Directive 2014/52/EU.
EIA Regulations	In the context of the Proposed Development, The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 which prescribe the information to be included in the Environmental Statement (ES) and the consultation to be carried out in connection with development requiring an Environmental Statement.
Environmental Statement (ES)	A statement that includes the information that is reasonably required to assess the Effects of a development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but that includes at least the information required in the EIA Regulations and which is prepared in accordance with any Scoping Opinion. The Environmental Statement accompanying the DCO Application will be prepared in accordance with the EIA Regulations.
European Commission (EC)	The executive body of the European Union responsible for proposing legislation, enforcing European law, setting objectives and priorities for action, negotiating trade agreements and managing implementing European Union policies and the budget.
Exclusive Economic Zone (EEZ)	An Exclusive Economic Zone is a sea zone prescribed by the United Nations Convention on the Law of the Sea, over which a state has special rights regarding the exploration and use of marine resources, including energy production from water and wind. The UK's EEZ starts at the seaward edge of its Territorial Waters and meets the French EEZ maritime boundary at KP 109.107.

Fibre Optic Cable (FOC)	A telecommunications cable made from thin strands of glass fibre, which uses pulses of light to transfer data. Each Pole will have a FOC, which will be used to provide a dedicated communications link between the UK and French Converter Stations for the purposes of control, protection and monitoring of the Project. Capacity provided by strands that are not utilised for these functions will be available for third parties to purchase for other telecommunication purposes.
Flood Risk Assessment (FRA)	An assessment of the risk of flooding.
Flood Zones	Zones based on the annual probability of flooding from Fluvial and tidal sources, as defined in the Flood Map for Planning. Areas are categorised into one of the following: Flood Zone 1, Flood Zone 2, Flood Zone 3a or Flood Zone 3b.
FOC Infrastructure	The physical infrastructure associated with the fibre optic communication system. This includes: the Fibre Optic Cables; up to two Optical Regeneration Stations within approximately 1 km of Landfall; up to two Telecommunications Buildings adjacent to the Converter Station; auxiliary power supply and fuel supply to buildings; securely fenced compounds around buildings; access and parking to buildings.
Haul Road	A temporary road constructed for use during the Construction Phase.
Highway Boundary	The area which is adopted road, maintained at public expense. (Hampshire County Council or Portsmouth City Council)
Horizontal Directional Drilling (HDD)	A trenchless technology that involves drilling into the ground to create a bore with a generally horizontal profile, along a planned pathway.
ICES Division V.II.d	A large area of sea encapsulating the Eastern Channel.
Inshore Marine Cable Corridor	The part of the Marine Cable Corridor that runs from Mean High Water Springs (MHWS) through UK Territorial Waters, out to the 12 nautical mile limit.
Jack Up Vessel	A self-elevating barge fitted with long support legs that can be raised or lowered.

Joint Bay	Transition location between each section of cable. This contains the cable joint and the ancillary equipment and parts which are required to make the joint, serving perpetually for the asset life of the cable.
Landfall	The landfall is the area comprising an underground structure where the Marine Cables come ashore and connect to an Onshore Cable in a Transition Joint Bay.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significant Effect of change resulting from development both on the Landscape as an environmental resource in its own right and on people's views and Visual Amenity.
Laydown Area	Temporary area required during the construction stage of the Proposed Development to store equipment, vehicles and appropriate staff facilities during the [construction stage], which will be reinstated to its original state following demobilisation where required.
Link Box	A box in which electrical connections between the metallic sheaths of Cables may be removed, enabling tests to establish the integrity of the Cable oversheaths in the event of suspected damage.
Link Box Chamber	An underground chamber with a lockable cover, in which electrical connections between the metallic sheaths of Cables may be removed, enabling tests to establish the integrity of the Cables oversheaths in the event of suspected damage. Necessarily installed in close proximity to some, but not all, Joint Bays.
Local Development Plan (LDP)	The set of documents and plans that sets out the local authority's policies and proposals for the development and use of land in their area.
Local Planning Authority (LPA)	The local authority or council that is empowered by law to exercise statutory town planning functions for a particular area of the UK.
Lovedean Substation	The existing National Grid Electrical Substation located at Lovedean, Hampshire.
Made Ground	Areas where material is known to have been placed by people on the pre-existing (natural or artificial) land surface (including engineered fill).
Marine Cable	The part of the DC Cable that runs from the Mean High Water Spring (MWHS) to the UK/FRENCH maritime boundary line.

Marine Cable Corridor	The section of the as-surveyed corridor that runs from UK Mean High Water Springs (MHWS) out to the UK/French EEZ maritime boundary line, within which the Marine Cable Route will be located.
Marine Cable Route	The final installed cable route that lies within the Marine Cable Corridor
Marine Conservation Zone (MCZ)	Created under The Marine and Coastal Access Act 2009, Marine Conservation Zones (MCZs) protect a range of nationally important marine wildlife, Habitats, geology and geomorphology, and can be designated anywhere in English and Welsh territorial and UK offshore waters.
Marine Policy Statement (MPS)	The UK Government's framework for management of the UK marine area. The Marine Management Organisation (MMO) prepares Marine Plans which set out how the Marine Policy Statements (MPS) will be implemented in different geographical areas.
Marine Site Boundary	The perimeter of land around the Marine Cable Corridor.
Mean High Water Springs (MHWS)	The highest level which spring tides reach on average over a period of time above chart datum.
Mean Low Water Springs (MLWS)	The lowest level which spring tides reach on average over a period of time above chart datum.
Micro-Tunnelling	Driving tunnel sections, usually steel tubes or reinforced concrete section, in a straight line, between pits excavated on either side of the obstruction to be crossed.Hydraulic rams are used to drive the tunnel sections.
Mitigation Measures	Actions proposed to prevent, reduce and where possible offset significant adverse Effects arising from the whole or specific elements of the Proposed Development.
National Electricity Transmission System (NETS)	The 275 kV and 400 kV electricity networks in Great Britain, which are owned and operated by National Grid.
National Grid	National Grid Electricity Transmission plc (NGET).
National Planning Policy Framework (NPPF)	The document that sets out government's planning policies for England and how these are expected to be applied. The revised NPPF was published on 24 July 2018.

National Policy Statement (NPS)	Overarching policy designated under the Planning Act 2008 concerning the planning and consenting of Nationally Significant Infrastructure Project (NSIP) in the UK.
Nationally Significant Infrastructure Project (NSIP)	Projects which fall under the categories in Part 3 of the Planning Act 2008 (as amended) (PA 2008), or which are deemed by the Secretary of State (SoS) to be a Nationally Significant Infrastructure Project pursuant to section 35 of the PA 2008.
Offshore Marine Cable Corridor	The part of the Marine Cable Corridor that runs from the UK territorial waters limit out to the UK/French EEZ boundary mid-channel.
Onshore Cable Corridor	The section of the as-surveyed corridor that runs from Lovedean Substation to the Landfall, within which the Onshore Cable Route will be located.
Onshore Cable Route	The refined route for cable that lies within the Onshore Cable Corridor.
Onshore Components	The onshore components of the Proposed Development are all of that part above the Mean Low Water Spring.
Onshore Site Boundary	The perimeter of land encompassing the Cable Corridor, Converter Station Area, Landfall and other associated works.
Optical Regeneration Station(s)	Structural unit housing telecommunication equipment for the proposed development and responsible for optical signal amplification purposes.
Ordnance Survey (OS)	Great Britain's national mapping agency.
Overhead Lines (OHL)	A structure used to transmit electrical energy, consisting of air insulated electrical conductors suspended by pylons or poles.
Parameters	A limit or boundary which defines the scope of a particular process or activity.
Photomontage	A Visualisation which superimposes an image of the Proposed Development or parts thereof upon a photograph or series of photographs.
Pipe Jacking	A trenchless method of installing ducts, by pushing them from one pit to another, below the obstruction to be crossed.

Planning Inspectorate (PINS)	The government agency responsible for examining applications for development consent for Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 (as amended) (PA 2008) on behalf of the Secretary of State (SoS).
Planning Practice Guidance (PPG)	The Planning Practice Guidance (PPG) provides context and guidance to the National Planning Policy Framework (NPPF). The PPG will be updated to reflect changes to the revised NPPF. Draft updates to the Planning Practice Guidance have been published in March 2018.
Pole	The term used in to signify one DC transmission circuit. The Project will have two Poles, each of a Symmetrical Monopole topology.
Preliminary Environmental Information (PEI)	Regulation 12(2) of the EIA Regulations defines Preliminary Environmental Information (PEI) as 'information referred to in regulation 14(2) which— (a) has been compiled by the applicant; and (b) is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development).'
Preliminary Environmental Information Report (PEIR)	The Preliminary Environmental Information Report (PEIR) is a report prepared by the Applicant, containing Preliminary Environmental Information (PEI).
Primary Consultation Zone (PCZ)	The area – defined for the purposes of consultation – where the Impacts of the Proposed Development may be felt most. Accordingly, the formal consultation has been publicised to those households and businesses located within the Primary Consultation Zone (PCZ) via direct correspondence.
Project	The Project comprises the Proposed Development, as well as the development proposed within French borders and the French Exclusive Economic Zone (EEZ), including Grand Rue Converter Station, Onshore Cables, Marine Cables and a Landfall which do not fall within the remit of the DCO Application.
Project of Common Interest (PCI)	Projects that fall under the definition in Article 2(4) of the TEN-E Regulation.
Proposed Development	The development for which a Development Consent Order (DCO) will be sought. This is equivalent to the Authorised Development that will be set out in a Schedule of the Draft Development Consent Order (dDCO).

Scoping (EIA)	An exercise undertaken pursuant to the EIA Regulations, to determine the topics to be addressed within the Environmental Statement (ES). Following the issue of a Scoping Report to the relevant authority by the Applicant, a Scoping Opinion (see below) is issued by the respective authority. For the purpose of the Proposed Development, the Scoping exercise resulted in the Scoping Report issued to the Planning Inspectorate on 29 October 2018.
Scoping Opinion	A document adopted by the Secretary of State (SoS) in response to a Scoping Report. For the purpose of the Proposed Development, this refers to the Scoping Opinion adopted by the SoS dated 07 December 2018.
Scoping Report	A report prepared by an applicant setting out the results of the Scoping exercise. For the purpose of the Proposed Development, the Scoping Report prepared to determine the topics to be addressed within the Environmental Statement accompanying the Application was issued to the Planning Inspectorate (PINS) on 29 October 2018.
Secretary of State (SoS)	In case of the Proposed Development, the Secretary of State for Business, Energy and Industrial Strategy (BEIS).
Significance	A measure of the importance or gravity of the Effect, defined by significance criteria specific to the environmental topic.
Site	The land within the red line that will be shown on the works plans. Equivalent to Order Limits.
Site Boundary	The Site Boundary refers to the outer perimeter of the Site.
Site of Importance for Nature Conservation (SINC)	Sites of Importance for Nature Conservation are usually selected within a local authority area and support both locally and nationally threatened Habitats and Species that are priorities under the county or UK Biodiversity Action Plan (BAP).
Site of Special Scientific Interest (SSSI)	A site statutorily notified under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation or geological interest. Site of Special Scientific Interest (SSSIs) include Habitats, geological features and Landforms.
Special Area of Conservation (SAC)	Areas of protected habitats and species as defined in the Habitats Directive

Special Protection Area (SPA)	Sites classified in accordance with Article 4 of the EC Birds Directive (79/409/EEC) which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex 1 of the Directive), and for regularly occurring migratory Species.
Statement of Community Consultation (SoCC)	The Planning Act 2008 (as amended) (PA 2008) requires the Applicant to undertake public consultation in advance of submitting the Development Consent Order (DCO) application to the Secretary of State (SoS). A Statement of Community Consultation (SoCC) must be prepared, setting out how the Applicant proposes to consult people living in the vicinity of the Proposed Development.
Substation Works	Works required at Lovedean Substation to facilitate the connection between the Converter Station and the National Electricity Transmission System (NETS).
Telecommunications building(s)	A building housing telecommunication equipment . For the Proposed Development, this will be contained within a dedicated building within its own perimeter fence adjacent to the Converter Station perimeter.
Temporary Works	Non-permanent works that enable the construction of the permanent assert, e.g. trench excavation.
TEN-E Regulation	Regulation (EU) No 347/2013 of the European Parliament and of the Council on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009
Territorial Waters	UK Territorial waters are a belt of coastal waters extending 12 nautical miles from Mean Low Water Springs (MLWS).
Transition Joint Bay	The underground onshore point at which the Marine Cables are jointed (connected) to the Onshore Cables at the Landfall.
Transboundary Effects	Those effects as a result of an impact which crosses into another countries jurisdiction.
UK EEZ	The Exclusive Economic Zone (EEZ) belonging to the United Kingdom.
UK / France EEZ Boundary Line	The boundary line between the UK's Exclusive Economic Zone (EEZ) and the French Exclusive Economic Zone (EEZ).

UK Marine Area	Defined by Section 42 of the Marine and Coastal Access Act 2009 (the "MCAA 2009") out to the UK/France Exclusive Econmic Zone ("EEZ") boundary. The area of the sea within the seaward limits of the territorial sea adjacent to the UK and any area within the limits of the Exclusive Economic Zone which includes the bed and subsoil of the sea within those areas. The 'sea' includes any area submerged at mean high water spring tide, and the waters of estuary, river or channel so far as the tide flows at mean high water spring tide.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through the area.
Visual Effect	An Effect on specific views and on the general Visual Amenity experienced by people.
Visual Receptor	Individuals and/or defined groups of people who have the potential to be affected by the Proposed Development.
XLPE	Cross-linked polyethylene. A polymeric material that is widely used as electrical insulation on power cables and which may be the insulation material for both the AC Cable and DC Cable.
Zone of Influence (ZOI)	The areas / resources that may be affected by the biophysical changes caused by activities associated with a project.
Zone of Theoretical Visibility (ZTV)	A map, digitally produced, showing areas of land within which the Proposed Development is theoretically visible.

2 ABBREVIATIONS

2 ABBREVIATIONS

Abbreviation	Term in full
AC	Alternating Current
AIL	Abnormal Indivisible Load
ALARP	As Low as Reasonably Practicable
CEMP	Construction Environmental Management Plan
CION	Connection and Infrastructure Options Note
CLB	Cable Lay Barge
CLV	Cable Lay Vessel
DC	Direct Current
DCLG	Department for Communities and Local Government
DCO	Development Consent Order
dDCO	Draft Development Consent Order
dML	Deemed Marine Licence
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EC	European Commission

Abbreviation	Term in full
EEA	European Economic Area
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EHDC	East Hampshire District Council
EHLCA	East Hampshire Landscape Character Assessment
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field (or Force)
EMP	Environmental Management Plan
EN-1	Overarching NPS for Energy
EN-3	NPS for Renewable Energy Infrastructure
EN-5	NPS for Electricity Networks Infrastructure
EP	Environmental Permit
EPC	Engineering, Procurement and Construction
EPS	European Protected Species

2 ABBREVIATIONS

Abbreviation	Term in full
EPUK	Environmental Protection UK
ES	Environmental Statement
ESCP	East Solent Coastal Partnership
EU	European Union
ExA	Examining Authority
FOC	Fibre Optic Cable
FR	France
FRA	Flood Risk Assessment
GB	Great Britain
GW	Gigawatts (1000 MW)
GWh	Gigawatt hour (Measurement Unit for Energy)
HBC	Havant Borough Council
HBIC	Hampshire Biodiversity Information Centre
HCC	Hampshire County Council
HDD	Horizontal Directional Drilling

Abbreviation	Term in full
HE	Highways England
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executive
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
LDF	Local Development Framework
LDP	Local Development Plan
LGV	Light Goods Vehicle
LHB	Langstone Harbour Board
LNR	Local Nature Reserve
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
MFE	Mass Flow Excavation
MHWS	Mean High Water Spring

2 ABBREVIATIONS

Abbreviation	Term in full
MLWM	Mean Low Water Mark
MMO	Marine Management Organisation
MPS	Marine Policy Statement
mT	Militesla
MW	Megawatt (1,000,000 watts)
MWh	Megawatt hour (Measurement Unit for Energy)
N	North
NE	Natural England
NETS	National Electricity Transmission System
NG	National Grid
NGET	National Grid Electricity Transmission plc
nm	Nautical mile
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance

Abbreviation	Term in full
NPS	National Policy Statement
NTS	Non-Technical Summary
OS	Ordnance Survey
OSPAR	Oslo and Paris Conventions
PCC	Portsmouth City Council
PCZ	Primary Consultation Zone
PCI	Project of Common Interest
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PPG	Planning Practice Guidance
PPS	Planning Policy Statement
PRoW	Public Right of Way
S	South
SDNP	South Downs National Park

2 ABBREVIATIONS

Abbreviation	Term in full
SDNPA	South Downs National Park Authority
SINC	Site of Importance for Nature Conservation
SoCC	Statement of Community Consultation
SOLAS	Safety of Life at Sea
SoS	Secretary of State
TCE	The Crown Estate
TCPA 1990	Town and Country Planning Act 1990 (as amended)
TEN-E	Trans-European Networks - Energy
t/h or t/hr	Tonnes per hour
TJB	Transition Joint Bay
TJP	Transition Joint Pit
UK	United Kingdom
WCC	Winchester City Council
ZOI	Zone of Influence
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence

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