AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Appendix 22.1A Framework Traffic Management Strategy

The Planning Act 2008

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

Document Ref: 6.3.22.1A

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Appendix 22.1A Framework Traffic Management Strategy

PINS REF.: EN020022

DOCUMENT: 6.3.22.1A

DATE: 25 FEBRUARY 2021

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	6.3.22.1A FTMS
Revision	004
Document Owner	WSP UK Limited
Prepared By	S. Gander
Date	23 February 2021
Approved By	C. Williams
Date	23 February 2021

CONTENTS

TABLES

PLATES

APPENDICES

1. FRAMEWORK TRAFFIC MANAGEMENT STRATEGY

1.1. INTRODUCTION

1.1.1.1. This document provides details of the Framework Traffic Management Strategy ('FTMS') required in connection with the construction of the Onshore Cable which forms part of the Proposed Development, running from the proposed Converter Station in Lovedean, Hampshire to the Landfall at Eastney, Portsmouth. This FTMS sets out the overarching principles and methodology to be used during the construction of the Proposed Development and will be developed in further detail, as required by the Development Consent Order ('DCO'), by appointed contractors prior to commencement of each phase of the works.

1.1.1.2. This document is an updated version of the FTMS, of which versions have previously submitted at Deadline 1 and Deadline 6 of the Examination (REP1-068 and REP6-030), and thus should be taken to directly supersede the submission version. Updated information included within this document primarily relates to the following:

- Provision of a Framework Signage Strategy that sets out how traffic management highway signage will be implemented on the Onshore Cable Corridor and wider highway network;
- Updates to how access to properties will be maintained throughout the construction process;
- Further information of the proposed communication strategy which will be implemented during the Construction Stage to ensure that residents, businesses and other stakeholders are kept up-to-date with details of the works;
- Provision of a Travel Demand Management Strategy that will be implemented alongside the FTMS;
- Additional information on the indicative location of Joint Bays which has been provided in the UK Joint Bay Feasibility Report submitted in the examination at Deadline 7 (REP7-073); and
- Proposed changes to traffic management requirements on A2030 Eastern on Portsmouth Football Club match days.

1.1.1.3. The FTMS should be read in conjunction with Appendix 22.1 (Transport Assessment) ('TA') of the Environmental Statement ('ES') Volume 3 (APP-137), the Supplementary Transport Assessment ('STA') (REP1-142) and the Supplementary Transport Assessment Addendum (REP7-065), which details the anticipated impact on all forms of traffic and travel as a consequence of the construction of the Proposed Development and which in turn has informed the traffic management requirements to mitigate those anticipated impacts. Further details on the management of construction traffic in connection with the construction of the Converter Station and the Onshore Cable Route can be found within Appendix 22.2 (Framework Construction Traffic Management Plan) ('CTMP') of the ES Volume 3 (REP6-033).

1.1.1.4. A key aspect of the FTMS is the proposed programme for the construction of the Onshore Cable Route, which aims to mitigate the impacts of the works by taking account of key constraints and sensitive locations along the route. In relation to this, the FTMS provides an indicative programme for construction that considers environmental constraints, major events likely to be planned during the Construction Stage, school term times and the interaction between adjacent or nearby locations to minimise the impact of the construction of the Onshore Cable Route in the highway.

1.1.1.5. It should be noted that this document forms an update to the previously submitted FTMS (REP6-030). The revisions undertaken reflect discussions with HCC and PCC which have taken place post-submission.

2. OVERARCHING TRAFFIC MANAGEMENT PRINCIPLES

2.1. INTRODUCTION

2.1.1.1. The FTMS has been developed with the aim of minimising disruption to all road-users, including pedestrians, cyclists, public transport users and car drivers. This section sets out the principles that will be followed by contractors during the construction of the Onshore Cable Route. These principles will be included within the Technical Specification issued to contractors as part of the construction tender process, along with specific details of traffic management requirements at key sections of the Onshore Cable Corridor as described within this document.

2.2. DESCRIPTION OF UK ONSHORE CABLE CORRIDOR

2.2.1.1. The Onshore Components of the Proposed Development comprise the Converter Station, the Onshore Cable Route and the Landfall. Four High Voltage Direct Current ('HVDC') Cables (two circuits) are proposed to be installed in the Onshore Cable Corridor between the Converter Station and the Landfall. The Onshore Cables will be installed in two ducts per circuit, mostly in trenches or in certain specific locations via trenchless installation methods (e.g. Horizontal Directional Drilling ('HDD')). The proposed Onshore Cable passes through the urban areas of Waterlooville, Purbrook, Drayton and Portsmouth, with the Landfall located at Eastney.

2.2.1.2. A typical cross-section of the cable trench arrangement in the highway is shown in Plate 1, showing each pair of Direct Current ('DC') Cables in its own trench. Each excavated trench would typically be approximately 0.7 m in width but could increase to 1 m in order to facilitate the cables being installed deeper, when navigating existing utility services. In the majority of cases, parallel trenches will be excavated at separate times for each circuit.

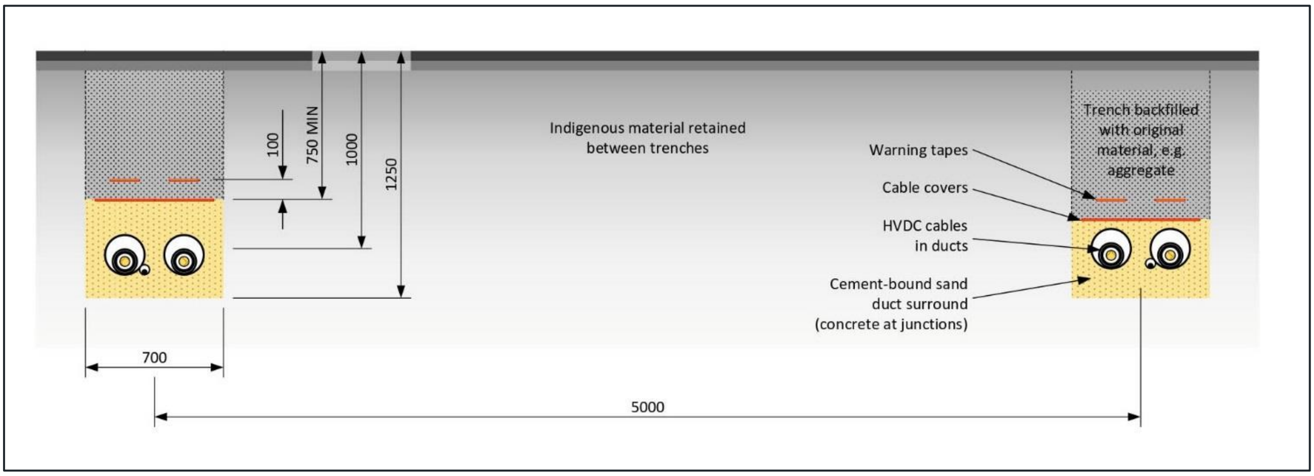


Plate 1 - Typical Arrangement of HVDC Cable in Road, Verges and Footpath

2.2.1.3. The Onshore Components of the Proposed Development have been split into 10 sections for ease of description as follows:

- Onshore Cable Corridor Section 1 – Lovedean (Converter Station Area)
- Onshore Cable Corridor Section 2 – Anmore
- Onshore Cable Corridor Section 3 – Denmead/Kings Pond Meadow
- Onshore Cable Corridor Section 4 – Hambledon Road to Farlington Avenue
- Onshore Cable Corridor Section 5 – Farlington
- Onshore Cable Corridor Section 6 – Zetland Field and Sainsbury's Car Park
- Onshore Cable Corridor Section 7 – Farlington Junction to Airport Service Road
- Onshore Cable Corridor Section 8 – Eastern Road (adjacent to Great Salterns Golf Course) to Moorings Way
- Onshore Cable Corridor Section 9 –Moorings Way to Bransbury Road
- Onshore Cable Corridor Section 10 – Eastney (Landfall)

2.2.1.4. A plan showing these sections can be found in Chapter 3 (Description of the Proposed Development) of the ES Volume 1 (APP-118). For the purposes of this study these Sections have also where appropriate been divided into shorter sub-sections as described in Sections 3 to 12 of this report.

2.2.1.5. In some locations the Onshore Cable Corridor includes a number of route options. Where a number of options are present, these represent alternate route options due to constraints affecting the cable installation.

2.3. CONSTRUCTION METHODOLOGY OF ONSHORE CABLE ROUTE

2.3.1.1. During construction there will be a number of locations along the route at which construction work will be performed simultaneously, all of which will require traffic management measures when being completed in or immediately adjacent to roads. For the purposes of the FTMS, each location is referred to as a 'construction zone.' The stages of construction for the Onshore Cables are as follows:

- Excavation of the trench, installation of the cable ducts and reinstatement of the final grade;
- Excavation of Joint Bays;
- Provision for cable pulling, requiring space for cable drums and winches;
- Cable jointing work; and
- Filling of ducts, if necessary, to maintain thermal performance e.g. at locations of unexpected service congestion.

2.3.2. INSTALLATION OF CABLE DUCTS

2.3.2.1. A conservative estimate of the installation rate for cable ducts is approximately 12m – 30m per 10-hour day shift per circuit, varying depending on the level of services and/or other constraints which are encountered, within urban areas and approximately 50 m per day in open country. These typical installation rates are per gang per shift and are dependent upon the level of obstacles and utility services encountered within the road or constraints that need to be observed to minimise impacts. At this stage the approximate likely construction progress has been estimated using available utility records. For the purpose of this assessment construction progress rates fall into four categories as is set out below, these progress rates apply to the construction of the cable duct component of the Onshore Cable Route only:

- 50m / day in areas of "open country";
- 30m / day in "Grassed areas with light service congestion";
- 24m / day in "Roads with light service congestion"; or
- 12m / day in "Roads with heavy service congestion."

2.3.2.2. When considering these installation rates across the entirety of the Onshore Cable Route the average assumed progress rate has been calculated at 100 m per week per circuit, which maintains the overall construction programme detailed within (Chapter 3 (Description of the Proposed Development) of the ES Volume 1 (APP-118). However, for the purposes of this document these construction rates have been applied as appropriate to each section of the Onshore Cable Corridor with revised durations of traffic management set out in the subsequent sections of the report.

2.3.2.3. For the durations set out in this document, all part days (e.g. 0.4 days) have been rounded up to full days and part weeks (e.g. 2 days) have also been rounded-up to the next full week. Accordingly, the assumptions regarding the rate of installation represent a very robust and worst-case analysis of the likely construction periods on each section.

2.3.2.4. The locations of the ducts within the road will be dictated by, amongst other factors, existing services. Where it is necessary to increase installation depth to clear existing services it may be necessary to increase the distance between ducts to avoid de-rating the circuits (i.e. when the cables operate at the maximum temperature and do not achieve the maximum required current carrying capacity).

2.3.3. INSTALLATION OF JOINT BAYS

2.3.3.1. Joint Bays will be positioned off of the highway (in highway verges, fields or other land) where possible, to limit the need for road closures associated with their installation, with the final location to be confirmed as part of the detailed design approvals post the grant of the DCO for the Proposed Development. It is preferable to avoid the need for the Onshore Cables to cross the highway to access a Joint Bay location.

2.3.3.2. Typically, it would take approximately 20 working days to complete one joint bay location. This timescale includes the excavation, set-up, cable pulling, jointing, bonding connections, testing and reinstatement (i.e. site cleared and reinstated to its original state). Each excavation will be approximately 15 m x 3 m, with additional space required at ground level for construction, cable installation, jointing and reinstatement, including a 20 m x 6 m ‘compound’ during jointing (for approximately one week).

2.3.3.3. Construction of Joint Bays, when required in carriageway, will be subject to the same traffic management proposals and restriction which are set out in Section 3 – 10 of this document.

2.3.4. CONCURRENT WORKING RESTRICTIONS

2.3.4.1. The construction of the Onshore Cable Corridor on-carriageway will be undertaken by a maximum of six gangs working concurrently at any one time. These concurrent works will take into account the restrictions set out in Section 3 – Section 12 of this report.

2.3.4.2. There are six locations along the Onshore Cable Route where the ducts will be installed by trenchless installation methods. None of these locations require the utilisation of highway land during construction and as such will not require traffic management measures.

2.4. NEW ROADS AND STREETS WORKS ACTS 1991

2.4.1.1. All works in the highway to be carried out as part of the construction of the Proposed Development will observe requirements of the New Roads and Street Works Act ('NRSWA') (HM Government, 1991). The DCO replicates relevant sections of the NRSWA to provide powers for the undertaker to carry out the following within the Order Limits:

- Break up or open the street, or any sewer, drain or tunnel under it;
- Tunnel or bore under the street or carry out works to strengthen or repair the carriageway;
- Place or keep apparatus in, or under the street;
- Maintain, renew or alter apparatus in, or under the street or change its position;
- Execute and maintain any works to provide hard and soft landscaping;
- Carry out re-lining and placement of road markings;
- Removal and Installation of temporary and permanent signage;
- Removal, replace and relocate and street furniture; and
- Execute any works required for or incidental to any works related to the above tasks.

2.4.1.2. Prior to commencement of works in the highway, detailed designs for the works and the traffic management measures will be submitted for approval to the relevant Highway Authority in accordance with the relevant requirements at Schedule 2 to the DCO. It will also be required that detailed design works and traffic management measures which are proposed associated with the construction of new accesses to the highway be submitted to the local Highway Authority for technical approval, either by way of a Section 278 or a Minor Works Agreement. Further details of these requirements are contained within the Framework Construction Traffic Management Plan (REP6-032).

2.4.1.3. The detailed design of all highway accesses will be approved pursuant to the DCO requirements. The Converter Station Access junction is to be the subject of an agreement pursuant to Section 278 of the Highways Act 1980. It is proposed that all temporary construction accesses are also the subject of minor works agreement with the relevant highway authority pursuant to Section 278 of the Highways Act 1980.

2.5. TRAFFIC MANAGEMENT METHODOLOGY OF ONSHORE CABLE ROUTE

2.5.1.1. In all cases the traffic management requirements will be based upon guidance included within the following documents to ensure the safety of all road-users and construction workers:

- Traffic Signs Manual Chapter 8: Traffic Safety Measures and Signs for Roadworks and Temporary Situations (Department for Transport, 2009);
- Safety at Streetworks and Roadworks: A Code of Practice (Department for Transport, 2013); and
- New Roads and Street Works Act 1991: Code of Practice of Co-ordination of Street Works and Works for Road Purposes and Related Matters (Fourth Edition) (Department for Transport, 2012).

2.5.1.2. Using this Guidance, the following assumptions have been used to inform the traffic management requirements of the construction process:

- It is anticipated that the cable duct installation will take place in 100 m sections, generally taking approximately five working days to complete each section including reinstatement of the highway. Where progress is anticipated to be slower, a shorter section may be used to ensure that each section is only in place for approximately one week:
- The Onshore Cable Route will include two circuits (as described in Section 2.2), with trench excavation and cable duct installation taking place at separate times for all parallel sections or circuits, except where road closures are required;
- The construction corridor will generally be 4.0-6.0 m and 100-150 m long, although this can be reduced by use of smaller plant to 2.0-3.0 m at local pinch points where required to avoid road closures; and
- Construction on a footway will require 2.0 m on footway / verge and 3.0 m on carriageway to allow for construction vehicle access if no other parallel routes are available.

2.5.1.3. Taking account of these assumptions the following overall principles have been applied to the traffic management requirements for the Onshore Cable Corridor:

- Two-way traffic flow should be maintained wherever possible, albeit this may need to be facilitated by shuttle working, temporary traffic signals and lane closures;
- Full road closures should only be a last resort and where required pedestrian access should be maintained at all times. Where a full road closure is required, the programming of works should aim to minimise disruption where possible and provide for non-car modes, ensuring that safe and convenient routes are provided for pedestrians, cyclists and public transport users;

- Traffic management measures should provide for non-car modes, ensuring that safe and convenient routes are provided for pedestrians, cyclists and public transport users. Removal of such provision should only be considered as a last resort and where required must accompanied by suitable diversion routes.

2.5.1.4. Where the carriageway width past the construction zone is 6.75 m or wider, two-way traffic flow will be maintained without traffic control.

2.5.2. TYPES OF TRAFFIC MANAGEMENT

2.5.2.1. Construction of the majority of the Onshore Cable Route will be facilitated through temporary lane closures, which will require different types of traffic management depending on the location of the trench within the highway and remaining carriageway width while the construction zone is in place. The main types of traffic management measures to be implemented are described below.

Two-Way Shuttle Working with Temporary Traffic Signals

2.5.2.2. This type of traffic management will be employed along sections of the Onshore Cable Corridor that are single-carriageway two-lane (one in each direction) sections of highway, allowing two-way traffic flow to be maintained past the construction zone. A diagram showing a typical layout of shuttle-working traffic signals is shown in Plate 2, which will follow standard Chapter 8 of the Traffic Signs Manual (DfT, 2009).

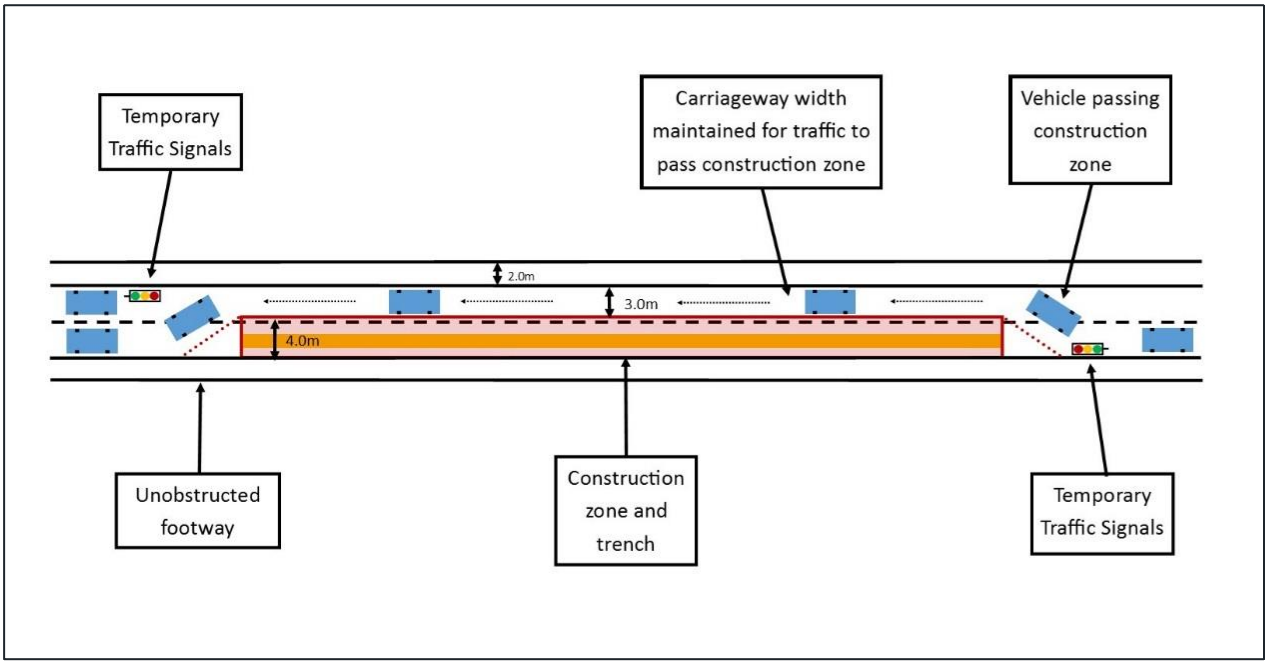


Plate 2 - Shuttle Working with Temporary Traffic Signals

2.5.2.3. Where two-way shuttle-working is installed the minimum lane width past the construction zone will be 3.0m on routes used by buses / Heavy Goods Vehicles

(‘HGVs’) and ideally 3.25-3.7 m. Where a route is used only by cars and Light Goods Vehicles (‘LGVs’) the lane width may be reduced to 2.5 m. This follows guidance contained within Chapter 8 of the Traffic Signs Manual (DfT, 2009) and reflects the different road types that form part of the Onshore Cable Corridor. This means that the lane widths used will be defined by existing land-uses on any given street (e.g. residential or commercial) and access arrangements.

2.5.2.4. All shuttle-working traffic signals will run in Vehicle Actuated (‘VA’) mode during the off-peak period but be manually controlled during peak periods as is required and specified within the conditions of any permit issued by the relevant local authority. With VA mode, detectors are used to monitor traffic flows and use this information to adjust the length of green-time to reduce delays. Manual operation during peak hours will allow traffic flow and queue lengths to be monitored, therefore giving the ability to mitigate blocking back of queues to adjacent or sensitive junctions.

Lane Closures without Shuttle Working Traffic Signals

2.5.2.5. On wider single carriageway roads and dual carriageways, it may be possible for lane closure to be implemented without the need for traffic signal control. At these locations either the carriageway will be wide enough to accommodate two-way traffic and the construction zone through lane realignment, or a single lane closure will be required where there are two or more lanes in each direction

2.5.2.6. Plate 3 shows a diagram of single lane closure on a dual carriageway link, with the same setup also appropriate for single carriageway roads where there is more than one lane in each direction. An example of this is A3 London Road, where the majority of its length has two-general traffic lanes and at least one bus lane. This will follow the requirements of Chapter 8 of the Traffic Signs Manual (DfT, 2009).

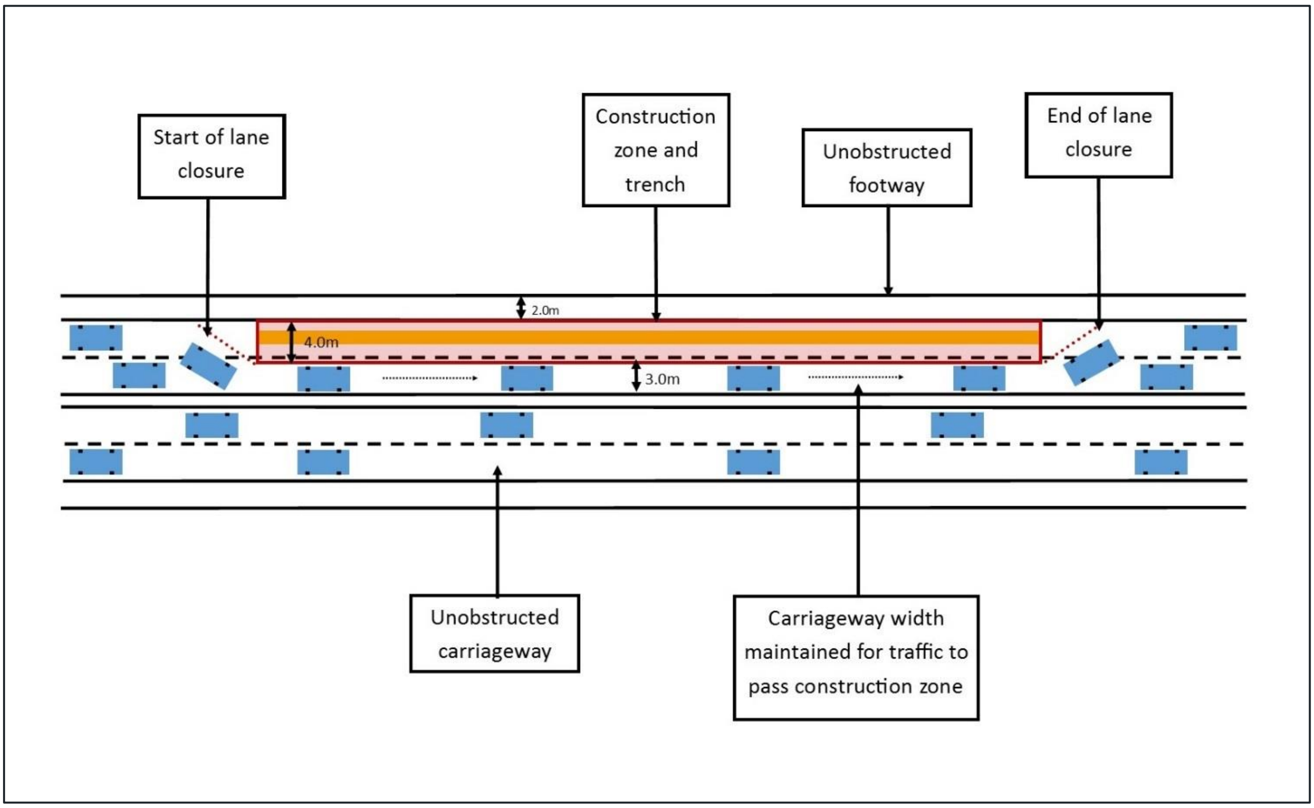


Plate 3 - Lane Closure without Shuttle Working Traffic Signals

2.5.2.7. As with the shuttle-working the minimum lane width past the construction zone will be 3.0 m on routes used by buses / HGVs and ideally 3.25-3.7 m.

2.5.3. RESIDENTIAL AND BUSINESS ACCESS

2.5.3.1. Residential and business access comes in two forms along the Onshore Cable Corridor:

- As direct access, through access junctions, driveways or vehicle crossovers directly onto residential or business premises; and
- Via side-road junctions that adjoin the Onshore Cable Corridor.

2.5.3.2. Included in Appendix 1 of this document is the 'Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy', hereby referred to as the 'Access to Properties Note', which gives specific consideration to the impacts of the Proposed Development upon parking and driveway access for residential properties, businesses and car parks located within or immediately adjacent to the Onshore Cable Corridor. The general principles for access to properties is as follows:

- All residents and businesses will be informed of construction works affecting access at least 10 days in advance of the works commencing;
- Access for vulnerable residents, those with mobility impairments and those with children of Primary School age or younger will be maintained at all times;
- Access in emergency situations will be provided at all times;
- Contractors will be required to make best endeavours to provide access to other residents with prior notification through use of road plating or similar, noting that it may not always be possible given the nature of the construction works; and
- Contractors will be required to be in continuous liaison with affected residents and businesses by notifying them on the first day of construction and prior to removal of road plating.

2.5.3.3. Residential and business access will be maintained wherever possible, albeit with different traffic management approaches to be applied depending upon the circumstances as described below. It should be noted that the required traffic management will only be in place for 1-2 weeks for each individual side-road due to the way in which the construction corridor will progress in sections.

2.5.3.4. The type of traffic management is dependent on the location of the construction zone within the carriageway, which cannot yet be defined as detailed design of the traffic management will only be completed once a contractor is appointed. For example, side-roads on the northern side of the carriageway may not require temporary closure or traffic signal control when the construction zone is on the southern side of the carriageway. This will also apply to dual-carriageway and wide single-carriageway sections, where construction works on one side of the carriageway are unlikely to impact on the other side.

Side-Road Access

2.5.3.5. Side-road access adjacent to the cable route will be considered on an individual basis with the traffic management used dependent on the characteristics of the road and junction. The strategy at this stage can be summarised as follows:

- For residential cul-de-sacs, side-road access will be maintained via either road plate or three-way traffic signals. The decision to use traffic signals will depend on the level of traffic flow and visibility from the side-road to the main road traffic signal approaches. Where visibility is poor, traffic signal control is likely to be required, although in all cases this will depend on the exact location of the construction zone.
- For side-roads that act as through-roads, temporary closure of the access will be considered but this depends on the category of road, what the side road provides access to and the suitability of diversion routes. Where closure is not an option, three-way traffic signals will be used if the location of the construction zone requires it.
- Where the side-road junction is controlled by traffic signals with the main road and where there is more than one approach lane at each entry, it may be possible to continue operating the existing signals through closure of a single lane on each entry. Where this is not possible, temporary traffic signals will be used instead of the existing control.

2.5.3.6. The exact traffic management strategy for side-road access will be agreed with the Highway Authority through submission of detailed designs and traffic management measures prior to commencement of works. It should be reiterated however that such traffic management will only be in place for a maximum of 1-2 weeks for each individual side-road and will be fully dependent upon the location of the Construction Zone.

2.6. TRAFFIC MANAGEMENT MEASURES OUTSIDE OF THE ONSHORE CABLE CORRIDOR

2.6.1.1. Contractors will also consider, where appropriate, the use of additional measures to mitigate impacts on minor roads outside of the Onshore Cable Corridor resulting from traffic reassigning away from the traffic management on the Onshore Cable Route itself. These measures include, but are not limited to, the following:

- One-way working / no entry orders / banned turns: To prevent certain routes being used by traffic reassigning away from traffic management on the Onshore Cable Route;
- Suspension of on-street parking: To facilitate two-way traffic flow and / or implementation of passing bays where on-street parking occurs;
- Priority measures / road narrowing: To discourage certain manoeuvres from being undertaken and to discourage use of certain routes;
- Bolt-down speed humps / Temporary speed limits: To reduce the potential for use of inappropriate traffic speeds along minor residential roads; and
- Signage to discourage certain driver behaviour such as ''Keep Clear', 'Do Not Block Junction', 'Unsuitable Route for HGVs' and 'Unsuitable Route for Diverting Traffic'.

2.6.1.2. Proposals for the provision of such measures should be included as part of the detailed traffic management strategies submitted to the relevant highway authority and may also be included within a condition of any permit issued for traffic management works by relevant local authorities. The ability of contractors to implement these measures is included in Article 16 of the dDCO.

A3(M) Junction 3

2.6.1.3. Further to 'Technical Note HE03 – Response to Highways England Technical Note TN03' (Appendix 2 of the Supplementary Transport Assessment Addendum (REP7-065), it has been confirmed that consideration should be given to the position should the committed part signalisation scheme of A3(M) Junction 3 be implemented prior to construction of the Onshore Cable Route.

2.6.1.4. Should this occur, based upon the traffic modelling completed in REP7-065, it may be necessary to alter proposed lane markings on the northbound off-slip of the junction during construction of the Onshore Cable Route to mitigate potential impacts associated with additional traffic using this route to avoid traffic management on the A3 London Road. In these circumstances the Contractor will be required to consider the need to include for these temporary alterations to the highway layout as part of the detailed traffic management measures submitted to HCC for approval, which will require consultation with Highways England. The need or otherwise for these alterations, or other temporary measures which will have the same effect such as signage, will require ongoing engagement between the Contractor, HCC and Highways England. This will provide a reactive approach to traffic management during the construction of the Onshore Cable Route. Queue lengths and collision records on these slip roads will be monitored throughout the works by the Road Safety Officer to determine whether any additional mitigation is required to deal with road safety matters.

2.7. NOTICE PERIODS FOR CONSTRUCTION WORKS

2.7.1.1. The submission of detailed designs and traffic management measures for approval by HCC or PCC will be undertaken in accordance with the relevant requirement at Schedule 2 to the DCO. Schedule 3 to the DCO provides the time periods for the approval of those details. Once approved, a permit will be applied for, with the timescale for the grant of a permit being 10 days in accordance with the Permit Scheme. To ensure the co-ordination of works and to provide certainty of when works will be carried out in specific locations, Provisional Advance Authorisations may be applied for and obtained, at least 3 months before works in a location are scheduled to be undertaken.

2.7.1.2. The application for approval of a traffic management strategy to a relevant Highway Authority, completed in addition to the relevant permit scheme, will include the following information:

- plans detailing the extent of the works;
- the construction methodology in relation to the works including details of the hours of the day within which the works are to be carried out;
- a schedule of timings for the works, including the dates and durations for any closures of any part of the public highway;
- the traffic management strategy to be implemented in relation to those works, including details of any traffic signals and signs and any traffic regulation measures proposed in connection with those works;
- a schedule of condition of any part of the public highway to be affected by the works, informed through photographic and scanner surveys;
- a specification of the condition in which the parts of the public highway to be used for the works will be reinstated post completion of the works and occupation of that part of the public highway for that purpose;
- details of any lighting to be used in connection with the works for the duration that the works are being undertaken;
- contact details for the client and contractor carrying out the works;
- details of the advanced publicity to be carried out in connection with those works; and
- details of the proposed approach to the reinstatement of the public highway in connection with those works, including (where applicable) details of both temporary and permanent reinstatement and where a notice pursuant to section 58 or 58A has been issued in relation to the relevant part of the public highway and the prescribed period in that notice remains in effect when the works are undertaken such reinstatement may include half or full carriageway reinstatement.

2.7.1.3. The detailed design of all highway accesses will be approved pursuant to the DCO requirements. The Converter Station Access junction is to be the subject of an agreement pursuant to Section 278 of the Highways Act 1980. It is proposed that all temporary construction accesses are also the subject of minor works agreement with the relevant highway authority pursuant to Section 278 of the Highways Act 1980.

2.7.1.4. The construction methodology will require the work to be completed in a number of phases as the installation of the Onshore Cable progresses along a section of highway. Where possible, an application for approval will be submitted for multiple phases (such as whole cable sections between Joint Bays), albeit noting that individual approvals may be required for smaller phases of work.

2.8. CONSTRUCTION PROGRAMME

2.8.1.1. An indicative onshore construction programme has been developed for construction works associated with the Proposed Development, taking account of factors such as environmental constraints, public events, school terms and public holidays.

2.8.1.2. The following wildlife events are taken into consideration and will be built into the phasing of enabling and construction works for the Converter Station and Onshore Cable:

- Badger breeding season from January to March;
- Bird breeding and nesting season from March to August;
- Plant growing season and winter wet season from August to November, at Kings Pond Meadow SINC and Denmead in Section 3; and
- Wintering bird season, from October to March.

2.8.1.3. Public activities and events that are likely to be planned in proximity to the Converter Station Area and Onshore Cable Corridor, including but not limited to the following are also taken into consideration:

- School term time;
- Football season;
- Coastal Waterside Marathon;
- Great South Run;
- South Central Festival; and
- Victorious Festival.

2.8.1.4. An indicative onshore construction programme for the Onshore Cable is as follows:

- HDD and Landfall installation: Q3 2021 – Q1 2024
- Onshore HVDC Route Construction / Installation: Q3 2021 – Q4 2023

2.8.1.5. Further to this indicative programme, consideration has been given within the FTMS to the construction programme for each individual section of the Onshore Cable Corridor. This considers the constraints listed above and links between nearby sections of the Onshore Cable Corridor, where for example multiple construction zones in the same area should be avoided. The programme for each sub-section is presented as a month-by-month calendar year with the following categories:

- Green – construction may be completed at any time within the month;
- Amber – construction may take place during part of the month only;
- Red – construction should be avoided during this month.

2.8.1.6. This programme will mitigate the impacts of the construction works on the highway network.

2.8.2. A2030 EASTERN ROAD TRAFFIC MANAGEMENT DURING PORTSMOUTH DURING PORTSMOUTH FC HOME GAMES

2.8.2.1. Further to the programme restriction detailed above, consideration has been given specifically to how the FTMS for the A2030 Eastern Road responds to Portsmouth FC home games, noting the potential traffic congestion resulting from pre-match and post-match traffic flows and traffic management that will reduce highway capacity.

2.8.2.2. To inform this strategy, the 'Eastern Road, Impact of Football Traffic: Technical Note' has been completed and is provided at Appendix 2 of this document. This document has provided a review of traffic flows and conditions on the A2030 Eastern Road before and after weekday evening Portsmouth FC games played in February and March 2020 prior to the Covid-19 UK Lockdown. However, due to Covid-19 pandemic it has not been possible to complete traffic surveys on Saturday football match days prior during the Examination as had been planned.

2.8.2.3. These assessments have shown the on weekday match days, while traffic flows were comparable to weekday traffic peaks, the traffic surveys recorded a much higher proportion of slow moving traffic than non-match days. This therefore suggests that there is significant congestion on the A2030 Eastern Road before and after a football match, which would be worsened by the implementation of traffic management, and that actual traffic flows during these periods may be higher than weekday peak periods.

2.8.2.4. On this basis, in the first instance, it is proposed the FTMS allows for removal of traffic management on the A2030 Eastern Road on football match days in order to mitigate the potential impacts on such, with this detailed within Section 10 of this document.

2.8.2.5. This mitigation would be achieved through the careful scheduling of works changeovers between each 100m construction section, which under the proposed 24-hour construction working hours would occur every three days. This will also allow the traffic management to be removed prior to a football match and reinstalled on the same day therefore minimising delay to the construction progress.

2.8.2.6. However, as the assessment work undertaken so far was based on evening traffic flows for weekday matches, and noting the limitations for undertaking football match day surveys at the current time due to Covid-19 restrictions, the Applicant may undertake further representative surveys to confirm the position when possible to do so, post grant of the DCO.

2.8.2.7. These surveys will be reviewed by and agreed with Portsmouth City Council and Hampshire County Council. If these assessments identify that the traffic flows are comparable to those for weekday peak hours, the need to remove traffic management on football match days would be lifted, so as to assist with the efficient delivery of the works in this location.

2.9. COMMUNICATION STRATEGY

2.9.1.1. The communication strategy for the construction of the Onshore Cable Corridor is included in the Access to Properties Note which is included in Appendix 1 of this document.

2.9.1.2. In summary, the communication strategy includes further details regarding the high-level timeline and nature of communications activities to be undertaken at all stages of the construction of the Onshore Cable Route. The strategy includes details of identified stakeholders, any challenges which may face communications that have been identified and a working plan of actions to be undertaken prior to and during the works, as well as an evaluation strategy for after works have been completed.

2.10. FRAMEWORK SIGNAGE STRATEGY

2.10.1.1. Additional to the communication methodologies set out in the Access to Properties Note, a Framework Signage Strategy has been produced to communicate proposals to road users who may otherwise be unaware of the construction works and associated traffic management and ensure that traffic reassigning away from the Onshore Cable Corridor uses appropriate routes.

2.10.1.2. The strategy included in Appendix 3 considers the following key topics:

- The location of strategic signage across the wider strategic highway network which informs drivers of the construction works and allows them to re-route well before reaching the Onshore Cable Corridor;
- The location of additional signage in the vicinity of or on the Onshore Cable Corridor which allows drivers to re-route in close proximity of the works;
- Signage to direct and encourage use of appropriate alternative routes to avoid the construction works; and
- Signage to discourage use of routes which are considered to be inappropriate for reassignment of traffic away from the works.

2.10.1.3. On the highway network itself, the provision and location of signage will be an important factor in notifying road users of programmed construction works. While there will be 'Advanced Warning' signs placed on the highway before the works detailing start-date and periods of works, it is also intended that Variable Message Signs ('VMS') are provided at key locations along the Onshore Cable Corridor. These will be installed at least one week prior to commencement of the construction works along each section of highway.

2.10.1.4. The use of VMS signs is proposed as these are considered more conspicuous than standard Advance Warning' signs and can be easily updated to reflect the intended programme of works.

2.10.1.5. Further to this, it is proposed that secondary signs are placed within the vicinity of the Onshore Cable Corridor both in advance of the works and during them to provide an additional opportunity to direct traffic away from the construction works and onto appropriate routes.

2.10.1.6. The strategy for the location of signage across the wider highway network during construction of the Onshore Cable Route is shown in Plate 4 below. The location and full details of all signs will be agreed with each Highway Authority prior their implementation as part of the submission of detailed traffic management strategies.

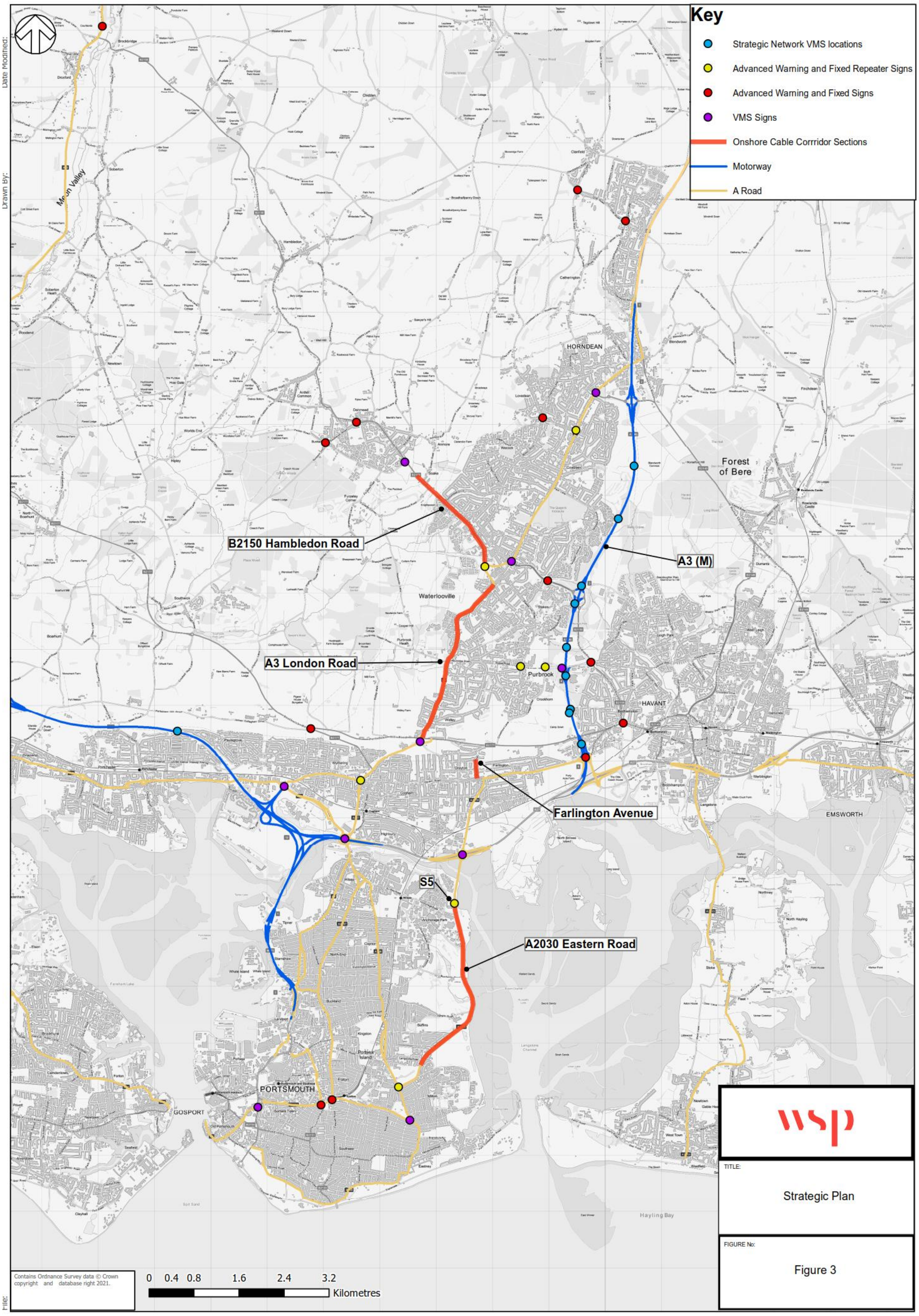


Plate 4 – Strategic Signage Strategy

Signage at Traffic Management Locations

2.10.1.7. The Signage Strategy also provides a framework for the implementation of signage at key locations where traffic management will be required along the Onshore Cable Route. As part of this, locations are provided to encourage traffic to use appropriate routes and discourage use of routes which may be sensitive to increases in traffic flow.

2.10.1.8. Although not listed within the Framework Signage Strategy, as part of the submission of detailed traffic management strategies to HCC and PCC the Contractor will also be required to confirm the provision of temporary signs (such as white on red or black on yellow) to encourage positive user behaviour to mitigate possible safety problems on the Onshore Cable Corridor itself. Examples include ‘Keep Clear’, ‘Do Not Block Junction’, ‘Merge in Turn’ and ‘Do Not Overtake Cyclists’, the locations of which are dependent upon the exact location of the traffic management at any one time.

2.11. TRAVEL DEMAND MANAGEMENT STRATEGY

2.11.1.1. Additional to the FTMS, Access to Properties Note and Framework Signage Strategy, a Travel Demand Management (TDM) strategy has also been produced. The overall aim of TDM Strategy is to manage the traffic/travel demand at the identified locations at A2030 Eastern Road and A3 London Road in Waterlooville to avoid excessive disruption across the transport network, promote travel behaviour change and influence travel demand across the study area.’

2.11.1.2. The TDM Strategy focuses on behaviour change solutions, working in partnership with local authorities, partners and stakeholders to influence the travel behaviour of target audiences to encourage them to alter their behaviour through the 5Rs – Reducing the need to travel, Re-moding journeys, Re-routing journeys, Re-timing journeys and Re-thinking journeys to maximise car occupancies.

2.11.1.3. The TDM Strategy comprises six linked components to ensure as many people as possible are aware of the construction works and Traffic Management measures, when they will be in place and the travel options available to them to reduce any potential impacts upon their daily lives through implementation of the 5Rs. The six components are listed below and elements of each described in the following paragraphs:

- Mass media engagement, marketing and communications campaign;
- Engagement with the business community;
- Engagement with freight, logistics and delivery sector businesses;
- Engagement with schools and colleges;
- Engagement with residents; and

- Engagement with visitors.

2.11.1.4. Once the final construction programme has been agreed and finalised, the Applicant will begin work on delivering the TDM Strategy to ensure that TDM activities align with the construction programme and are afforded as much preparation time as possible.

2.11.1.5. The TDM strategy will be monitored and evaluated continually throughout construction in order to demonstrate the effectiveness of the TDM measures and determine whether the Strategy is achieving its objectives.

2.12. PEDESTRIANS AND CYCLISTS

2.12.1.1. Pedestrian and cycle routes along the Onshore Cable Corridor will be maintained wherever possible, with full closure considered as the last resort, such as where it would prevent full closure of a major road. In all cases the construction works will ensure that pedestrians and cyclists can pass in a safe manner, with suitable barriers between the construction works. Particular attention will also be paid to the needs of people with mobility and visual impairments to ensure that their safety and free movement is retained. All layouts will follow protocol defined by Chapter 8 of the Traffic Signs Manual (DfT, 2009).

2.12.2. PEDESTRIANS

2.12.2.1. Where construction works do obstruct a footway a minimum unobstructed width of 1.0 m will be provided alongside the construction corridor, and where this is not possible a safe alternative route will be provided. Where possible, a desirable minimum footway width of 1.2m will be provided. This will include provision of suitable crossing facilities where required, including temporary replacement of existing pedestrian crossings that may need to be closed to facilitate construction.

2.12.2.2. In some locations, a footway closure may be required without a suitable alternative route being available nearby or on the opposite side of the carriageway. In these instances, a pedestrian route will be provided within the carriageway with a minimum unobstructed width of 1.0 m, albeit this will be wider where it does not impact on traffic flow. Suitable barriers will be provided, along with ramps and footway boards where these are required.

2.12.2.3. In all cases, access to Public Rights of Way which terminate at the back of footway / edge of the Order Limits will be maintained at all times through the provision listed above and / or plating over the trench if necessary.

2.12.2.4. Some temporary footway closures may be required to facilitate delivery and collection of materials. In the majority of cases this will be mitigated through alternative footway links being available but where this is not possible, the following will apply:

- The footway be closed for no longer than 15 minutes in every one-hour period;
- Construction operatives will be made available to assist users past the works;
- Pedestrians with impaired mobility will need to wait no longer than 5 minutes; and
- Temporary footway closure signs are provided in place of the works.

2.12.3. CYCLISTS

2.12.3.1. Where there are shared-use paths or cycleways impacted by the works these will be kept open if possible, or a suitable diversion route provided.

2.12.3.2. Where full closure of cycle route is necessary and diversion routes are unsuitable temporary cycle facilities will be provided past the construction corridor where possible, such as on the Eastern Road shared-use path. This could be completed as part of a full lane closure or through provision of a temporary off-road route. The width of these temporary routes will be 2.5 m where possible, with a minimum of 1.5 m. If the temporary route is provided over unmade ground, then footway boards will be used to provide a formal surface.

2.12.3.3. In some cases, it may be required to narrow a shared-use path past the construction corridor to a width that is not suitable for cycle use (I.e. 1.0 m). In these circumstances 'Cyclists dismount and use footway' signs will be used as a last resort, noting that his would only be completed for one 100 m section at a time.

2.12.3.4. Where road closures are required for construction of the Onshore Cable Route cycle access will be maintained at all times.

2.12.3.5. On A3 London Road where closure of the bus and cycle lane is required to facilitate construction of the Onshore Cable Route, specific consideration should be given by the Contractor as part of the detailed design of traffic management measures to the how cyclists merge with the general traffic lane. As a minimum 'cycle lane ahead closed' advance signing will be provided to ensure that cyclists have ample opportunity to alter their road position before reaching the road works. These detailed traffic management measures will be submitted to the relevant Highway Authority for approval as detailed in paragraph 2.4.1.2 and 2.7.1.2

2.13. PUBLIC TRANSPORT

2.13.1.1. During construction of the Onshore Cable Route some existing bus stops may need to be closed depending upon the exact location within the carriageway or footway. Where this is required, a temporary bus stop will be provided as close as possible to the original location, taking into account highway safety of all road users.

2.13.1.2. Construction of the Onshore Cable Route within the A3 London Road will require works within the existing bus lane or suspension of the bus lane to mitigate the impact on general traffic flow. As with the rest of the Onshore Cable Corridor this will be completed in 100 m sections and therefore bus priority will be maintained where the bus lane is suspended through provision of temporary bus priority traffic signals where practicable. An example layout of this temporary bus priority is provided in Appendix 4 for reference.

2.13.1.3. Where this is not possible, it is proposed that temporary 'Merge In Turn' signs are installed to encourage vehicles to allow buses to join the general traffic lane.

2.14. SCHOOL ACCESS

2.14.1.1. Construction of the Onshore Cable Route will take place during school holidays on links that contain schools or where they are located directly adjacent to the Onshore Cable Corridor. This includes the following links and schools:

- Solent Junior School on Solent Road and Solent Infant School on Evelegh Road, adjacent to Farlington Avenue; and
- Mooring Way Infant School, Moorings Way.

2.14.1.2. Consideration will also be given to schools located close to the Onshore Cable Corridor, given the potential wider re-distribution impact of the construction works. This includes the provision of traffic marshalling around schools in proximity to the Onshore Cable Corridor to assist with the safe management of traffic flow and pedestrians in the proximity to school accesses. As detailed within the Supplementary Transport Assessment Addendum (REP7-065) the use of traffic marshals should be considered at the following locations:

- Milton Road, Waterlooville (Section 4) at Hart Plain Junior School, Hart Plain Infant School and Cowplain Community School;
- Mill Road, Waterlooville (Section 4) at Mill Hill Primary School and Growing Places Nursery;
- Park Avenue, Purbrook (Section 4) at Purbrook Park School;
- Westbrook Grove Purbrook (Section 4) at Purbrook Infant School;
- Evelegh Road and Solent Road, Farlington (Section 5) at Solent Infant School and Solent Junior School;
- Grove Road and Station Road (Section 5) at Springfield School; and
- Dundas Lane (Section 8) at Admiral Lord Nelson School.

Traffic marshals, who will be appointed by the contractor, hold authority through the Community Safety Accreditation Scheme (CSAS) to stop or divert traffic during construction in order to reduce delays and ensure the safety of the travelling public.

2.15. RESPONSIVE TRAFFIC MANAGEMENT PROTOCOL

2.15.1.1. It is proposed that the FTMS required to support the Proposed Development operates as a 'live' and responsive strategy. This means that, in continuous liaison with HCC / PCC (as appropriate), an approved TMS will be amended where required to reflect traffic conditions and events that may impact upon the construction works or capacity of the highway network surrounding the Onshore Cable Corridor. Examples of this can include:

- a protocol to temporarily suspend and remove works or alter traffic management strategies if a road traffic accident, emergency event or other unforeseen circumstances occur on either the Onshore Cable Corridor or surrounding network requires road closures and diversion of traffic;
- where the construction zone is at key junctions within the network, management of traffic signals adjacent to the Onshore Cable Corridor during peak hours to ensure signal timings reflect additional traffic flows;
- Management of traffic signal junctions along diversion routes associated with road closures;
- Provision of traffic marshalling around schools adjacent to the Onshore Cable Corridor (other than those included in paragraph 2.14.1.2) to mitigate the impact of traffic redistribution onto such links;
- Revisions to signage to direct traffic onto appropriate routes and discourage the use of inappropriate routes; and
- Use of other additional traffic management measures away from the Onshore Cable Route as detailed in Section 2.6

2.15.1.2. The ability of the FTMS to respond to events away from the Onshore Cable Corridor itself will mitigate impact of the works should these events occur. These unforeseen incidences include emergency events and / or urgent works, such as road traffic accidents, gas leaks, burst water mains and loss of customer service. This is particularly important for the A3 London Road and A2030 Eastern Road, both of which experience a significant increase in traffic flow when such incidents occur on either the A3(M) or M275. Such mitigation can be directed by HCC and PCC through powers contained within the Permit Scheme where new circumstances occur which could not have reasonably been foreseen or where the impact is significant.

2.15.1.3. In addition to this, the CTMP includes provision for a road safety officer, who will be responsible for the continual monitoring of the streetworks for the Onshore Cable Route to ensure the proactive management of road safety. They will ensure there is sufficient road signage to warn the public of construction works and inform construction related traffic to ensure compliance and route choice. There will also be contact telephone numbers for the public to raise concerns as well as the provision of a website. Receptors that attract vulnerable people will be updated on a regular basis with visits (e.g. schools) as necessary.

2.16. EMERGENCY SERVICES

2.16.1.1. The Onshore Cable Corridor runs past a number of emergency services locations therefore meaning that access by emergency vehicles will need to be actively managed to minimise delays. The Onshore Cable Corridor runs nearby or adjacent to the following bases:

- Waterlooville Fire Station - A3 Maurepas Way;
- Eastern Road Ambulance Station, albeit this does not provide emergency response; and
- Eastney Lifeboat Station – Ferry Road.

2.16.1.2. At Waterlooville Fire Station access will be maintained at all times by excavation of the trench taking place in two phases to allow a suitable width access between works or through use of road plates.

2.16.1.3. In proximity to Eastney Lifeboat Station, the works along Fort Cumberland Road will be facilitated by shuttle working traffic signals. This will maintain access to Ferry Road and the Lifeboat Station at all times.

2.16.1.4. Along the remainder of the Onshore Cable Corridor each construction location zone will be setup to ensure access by emergency vehicles is achievable. To facilitate access and minimise delay through the works, a protocol will be setup for management of temporary signals. This could include implementation of an 'all red' phase to clear the construction zone of traffic or extended green times to give priority to an approaching vehicle.

2.16.1.5. Under the responsive traffic management protocol described in Section 2.12 there will also be an option to temporarily suspend works if required to mitigate the impacts of the road traffic accident or other emergency event in proximity to the Onshore Cable Corridor.

2.16.1.6. Where there are full road closures, road plates will be available at the point of work at all times, should emergency access be required. At the end of the working day road plates would be installed to allow for out of hours emergency access only. Out of hours emergency access will be provided by an onsite standby emergency team.

2.16.1.1. In addition, the Applicant will seek to produce a communication plan in conjunction with the emergency services to address the specific needs of the emergency services during the construction. The communication plan will outline the relevant procedures to be followed by both parties with regard to the dissemination of information and how emergency access will be safeguarded and delivered through each individual phase.

3. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

3.1.1.1. The Onshore Cable Route will not be constructed within public highway within Section 1, but some traffic management will be required to facilitate construction of the temporary and permanent access junction for the Converter Station. This is described below and shown on Drawing EN02022-TMS-1 included in Appendix 5 to this FTMS.

3.1.1.2. TM will also be required where the Onshore Cable Corridor crosses Broadway Lane at approximately 200 m east of the junction with Edney's Lane

3.2. SUB-SECTION 1.1 - CONVERTER STATION ACCESS JUNCTION

3.2.1.1. Construction of the Converter Station access junction / access road will be primarily constructed 'off-line' in order to avoid impacting upon traffic flow along Broadway Lane and Day Lane. However, it is likely that construction work on each access junction bellmouth will require some limited narrowing of the existing carriageway, which will only accommodate one-way traffic flow. This will be accommodated by the implementation of three-way temporary traffic signals to control traffic flow in the vicinity of the access. The exact location of the temporary traffic signals will be determined by the contractor(s) however, it is envisaged that these would be located as follows to provide adequate visibility for approaching traffic:

- Adjacent to Broadway Cottages on Broadway Lane south of the proposed access junction;
- 20 m north of the give-way line on Broadway Lane north of the proposed access junction (at the junction with Day Lane); and
- 75 m east of the junction of the Broadway Lane / Day Lane junction on Day Lane.

3.2.1.2. Broadway Lane and Day Lane within the vicinity of the Converter Station Area are currently rural lanes without street lightning of footways and are subject to a national speed limit (60 mph).

3.2.1.3. To reduce traffic speeds within the vicinity of the access works it is also proposed that a temporary 30 mph speed limit is implemented to be in place for the entirety of Day Lane up to its junction with Lovedean Lane, and Broadway Lane between the northern edge of Broadway Cottages and the junction with Day Lane. This is secured via inclusion with within the Framework CTMP (REP6-032) and Requirement 17 of the dDCO.

3.2.1.4. The timeframe for this traffic management to be in place will be dependent upon the construction schedule of the access junction. Currently, the anticipated programme for these works suggests that traffic management will need to be in place for 8-12 weeks to facilitate construction of the access junction.

3.2.1.5. Table 1 shows a breakdown of the calendar year, showing availability for the construction of the access works to take place within this Section.

Table 1 – Section 1 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration
1.1	Converter Station Access	TBC	Shuttle Working	8-12 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
None	50 weeks

3.2.1.6. This shows that construction can take place during any month of the year. It is also considered that there are no constraints on the construction programme presented by works on adjacent sections of the Onshore Cable Corridor.

3.3. SUB-SECTION 1.2 – BROADWAY LANE

3.3.1.1. TM is required in Sub-Section 1.2 at the intersection of the Onshore Cable Corridor and Broadway Lane. The Onshore Cable Corridor crosses Broadway Lane at approximately 200 m east of the junction with Edney's Lane.

3.3.1.2. Below is a breakdown of the calendar year, showing availability for the construction of the Onshore Cable Corridor to take place within this Section.

Table 2 - Section 1.2 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="2">Description</th><th colspan="3">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="3">Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td colspan="2">1.2</td><td colspan="2">Broadway Lane</td><td colspan="3">6</td><td colspan="2">Road Closure</td><td colspan="3">1 Day</td></tr>
<tr><td colspan="12">Calendar Restrictions</td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year</td></tr>
<tr><td colspan="12">Other Restrictions</td></tr>
<tr><td colspan="7"><u>Sections</u></td><td colspan="5"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="7">Section 3.1 – 2 weeks</td><td colspan="5">48 weeks</td></tr>
</table>

3.3.1.3. Programming of these works at separate times to Section 3.1 will minimise the impact resulting from the proposed traffic management strategy for Broadway Lane and Anmore Road.

3.4. DESCRIPTION OF TRAFFIC MANAGEMENT

3.4.1.1. It is likely that a full road closure will be required to allow the Onshore Cable to cross Broadway Lane. It is anticipated that this road closure will need to be in place for one day per circuit. This is described below and shown on Drawing EN02022-TMS-1 and EN02022-TMS-2 included in Appendix 5 to this FTMS.

3.4.1.2. A diversion route will need to be implemented to mitigate the impact of the proposed road closure on Broadway Lane. The diversion route will need to take account of the following:

- The nature of rural lanes within the vicinity of the road closure and their suitability for accommodating diverted traffic; and
- The general origin and destination of traffic using Broadway Lane.

3.4.1.3. Taking account of these factors, it is recommended that diversions be implemented that route traffic via Edney's Lane, Anmore Road, Anmore Lane and Broadway Lane as shown in Drawing EN02022-TMS-11 included in Appendix 6 to this FTMS. Taking into account this proposed diversionary routing, the closure of Broadway Lane should be scheduled so as to not coincide with construction in Anmore Road, a link which is contained within Section 3 of the Onshore Cable Corridor.

3.4.1.4. Appropriate signage will be provided along this diversion at all appropriate junction locations. Broadway Lane to the east of the Onshore Cable Corridor provides the sole vehicular access to several residential properties, as well as to the Lower Chapters Bed and Breakfast. Broadway Lane to the east of the Onshore Cable Corridor will remain open to ensure access to properties and the bed and breakfast is retained throughout the duration of works.

4. SECTION 2 - ANMORE

4.1.1.1. The Onshore Cable Corridor in Section 2 is contained entirely within agricultural fields and does not include or intersect any highway, as such, no TM is required in this Section.

5. SECTION 3 – DENMEAD/KINGS POND MEADOW

5.1.1.1. As with Section 2, the Onshore Cable Corridor within Section 3 is contained primarily within agricultural fields. However, there are two limited sections of public highway which are likely to be impacted within this section. The impacted highway includes the following:

- **Sub-Section 3.1**: Anmore Road: up-to 50 m between agricultural fields to the north and south; and
- **Sub-Section 3.2:** B2150 Hambledon Road to Soake Road (180m).

5.1.1.2. Both of these links are likely to require traffic management to facilitate the construction of the Onshore Cable Route. The construction works within this section are likely to take a maximum of 1-2 weeks to complete per circuit.

5.2. SUB-SECTION 3.1 – ANMORE ROAD

5.2.1.1. Table 3 below provides a summary of the traffic management requirements for Section 3.1.

Table 3 – Sub-Section 3.1 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="3">Description</th><th colspan="2">Length (m)</th><th colspan="3">Proposed TM</th><th colspan="2">Duration
Per Circuit
(Cable Ducts)</th></tr>
<tr><td colspan="2">3.1</td><td colspan="3">Anmore Road</td><td colspan="2">6</td><td colspan="3">Road Closure</td><td colspan="2">1 Day</td></tr>
<tr><th colspan="12">Calendar Restrictions</th></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year</td></tr>
<tr><th colspan="12">Other Restrictions</th></tr>
<tr><td colspan="7"><u>Sections</u></td><td colspan="5"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="7">Section 1.2 – 1 week
(rounded up from 1 day)
Sub-Section 3.2 – 3 weeks</td><td colspan="5">46 weeks</td></tr>
</table>

5.2.1.2. Programming of these works at separate times will minimise the impact resulted from the proposed traffic management strategy for Broadway Lane and the B2150 Hambledon Road (Section 3.2).

DESCRIPTION OF TRAFFIC MANAGEMENT

5.2.1.3. The Onshore Cable Corridor will cross Anmore Road between agricultural fields to the north and south, requiring a full road closure for the period of the construction works. The Onshore Cable Corridor will intersect Anmore Road in a north-south orientation, whilst moving from the fields to the immediate north of the carriageway, to those in the south. Works in Sub-Section 3.1 will only impact upon a limited section of highway and would require a one-day road closure per circuit.

5.2.1.4. As is stated above, any road closures on Anmore Road should be scheduled to avoid coinciding with any closure of Broadway Lane. The recommended diversion route for the road closure on Anmore Road is via Mill Road, B2150 Hambledon Road and Soake Road as shown in Drawing EN02022-TMS-11 included in Appendix 6 to this FTMS.

5.2.1.5. Taking into account this proposed diversion, it is also recommended that the closure of Anmore Road should not take place at the same time as any works on B2150 Hambledon Road (Section 3.2).

5.3. SUB-SECTION 3.2 – B2150 HAMBLEDON ROAD TO SOAKE ROAD

5.3.1.1. Within Sub-Section 3.2, the Onshore Cable Corridor includes a section of B2150 Hambledon Road between the point from which the cable exits the agricultural fields, to the junction with Soake Road. Table 4 below provides a summary of the traffic management requirements for Section 3.2.

Table 4 – Sub-Section 3.2 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
3.2	B2150 Hambledon Road to Soake Road	180	Shuttle working TS	3 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 4.1 – 22 weeks Sub-Section 4.2 – 14 weeks Sub-Section 4.31 – 2weeks Sub-Section 4.33 – 5 weeks Sub-Section 4.34 – 4 weekends Sub-Section 4.35 – 3 weeks	4 weeks

5.3.1.2. Programming of Section 3.2 works will be undertaken at separate times to that scheduled for

- Section 4.1 - B2150 Hambledon Road between Soake Road and Milton Road;
- Section 4.2 - B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road (1.0 km); and
- Sections 4.31, 4.33, 4.34 and 4.35 - All sections of A3 London Road between A3 Maurepas Way and Ladybridge Road that require shuttle working traffic signals.

5.3.1.3. This phasing of works will mitigate disruption to traffic flow within the Denmead and Waterlooville area, particularly those trips which travel along the B2150 Hambledon Road and A3 London Road to / from Purbrook, Cosham and Portsmouth. Specifically, it will ensure that there is not more than one location of traffic management that requires shuttle working on B2150 Hambledon Road, A3 Maurepas Way and A3 London Road at any one time.

5.3.1.4. Sub-Section 4.32 has intentionally been omitted from the restrictions because unlike sub-sections 4.1, 4.2, 4.31, 4.33, 4.34 and 4.35, the traffic management involves a bus lane closure rather a general traffic lane closure. This is considered to be less disruptive from a traffic management perspective, meaning works associated with Sub-Section 4.32 can occur simultaneously with Sub-Section 3.2 if required.

DESCRIPTION OF TRAFFIC MANAGEMENT

5.3.1.5. Construction along this section of B2150 Hambledon Road will likely require implementation of single lane closure, with shuttle working being implemented through the use of temporary traffic signals to allow for continued two-way traffic flow. Where the cable enters / exits agricultural fields, the construction corridor will be phased / managed in line with the standard protocol set out in the technical specification issued to contractors in order to ensure that a continuous pedestrian link is provided along the northern side of the carriageway.

5.3.1.6. Where the Onshore Cable Corridor intersects the junction with Soake Road, temporary three-way traffic signals may need to be implemented to allow continuous access to the Byng's Business Park and Jewson Builders Merchant at the southern end of Soake Road. This will mitigate the need for HGV's wishing to access these businesses from using the less suitable Anmore Road / northern half of Soake Road as a temporary diversion route.

5.3.1.7. No residential properties are impacted by this section of the Onshore Cable Corridor.

6. SECTION 4 – HAMBLEDON ROAD TO FARLINGTON AVENUE

6.1.1.1. This section provides a summary of the proposed TMS for the longest section of the Onshore Cable Corridor, which runs from B2150 Hambledon Road between Denmead and Waterlooville and Burnham Road in Farlington. This section has been split into five sub-sections, based upon similarities in road types and commonalities in traffic management requirements. The total length of this section is 6.7 km, and the sub-sections are as follows:

- **Sub-Section 4.1** – B2150 Hambledon Road between Soake Road and Milton Road;
- **Sub-Section 4.2** – B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road;
- **Sub-Section 4.3** – A3 London Road to Ladybridge Roundabout;
  - **Sub-Section 4.31** – A3 London Road between Forest End Roundabout and south of the junction with Forest End;
  - **Sub-Section 4.32** - A3 London Road between south of junction with Forest End and southern end of bus lanes (in proximity to Poppy Fields);
  - **Sub-Section 4.33** - A3 London Road between south of southern end of bus lanes (in proximity to Poppy Fields) and Post Office Road;
  - **Sub-Section 4.34** - A3 London Road between Post Office Road and Rocking Horse Nursery;
  - **Sub-Section 4.35** - A3 London Road between Rocking Horse Nursery and Ladybridge Roundabout;
- **Sub-Section 4.4** – A3 London Road to Portsdown Hill Road;
  - **Sub-Section 4.41** - A3 London Road between Ladybridge Roundabout and start of bus lane;
  - **Sub-Section 4.42** - A3 London Road between start of bus lane and Lansdowne Avenue;
  - **Sub-Section 4.43** - A3 London Road between Lansdowne Avenue and bus lane (south of The Brow);

- **Sub-Section 4.44** - A3 London Road between bus lane (south of The Brow) and Portsdown Hill Road; and

- **Sub-Section 4.5** – B2177 Portsdown Hill Road.

6.1.1.2. The FTMS proposals for Section 4 are shown on Drawing EN02022-TMS-3, 4 and 5 included in Appendix 5

6.2. SUB-SECTION 4.1 – B2150 HAMBLEDON ROAD BETWEEN SOAKE ROAD AND MILTON ROAD

6.2.1.1. Section 4.1 includes the section of B2150 Hambledon Road between the junction with Soake Road and the roundabout with Milton Road. All of B2150 Hambledon Road in this subsection is single carriageway and is subject to a 30 mph speed limit.

6.2.1.2. Table 5 shows availability for the construction of the Onshore Cable Route to take place within this subsection.

Table 5 – Sub-Section 4.1 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.1	B2150 Hambledon Road between Soake Road and Milton Road	1300	Shuttle working TS	11 - 22 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 3.2 – 3 weeks Sub-Section 4.2 – 14 weeks Sub-Section 4.31 – 2 weeks Sub-Section 4.33 – 5 weeks	23 weeks

Sub-Section 4.34 – 4 weekends Sub-Section 4.35 – 3 weeks	

6.2.1.3. December has been categorised as 'Amber' due to the proximity of the southern end of B2150 Hambledon Road in this sub-section to Wellington Retail Park, Asda Superstore on A3 Maurepas Way and Lidl supermarket on Elettra Avenue. As December is typically a very busy period in this location, construction should only take place during the first two weeks of the month.

6.2.1.4. In addition to these considerations, construction within Section 4.1 should not take place simultaneously with the following:

- Section 3.2 - B2150 Hambledon Road to Soake Road;
- Section 4.2 - B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road (1.0 km); and
- Section 4.31, 4.33, 4.34 and 4.35 – All sections of A3 London Road between A3 Maurepas Way and Ladybridge Road that require shuttle working traffic signals.

6.2.1.5. This phasing of works will mitigate disruption to traffic flow within the Denmead and Waterlooville area, particularly those trips which travel along the B2150 Hambledon Road and A3 London Road to / from Purbrook, Cosham and Portsmouth. Specifically, it will ensure that there is not more than one location of traffic management that requires shuttle working on B2150 Hambledon Road, A3 Maurepas Way and A3 London Road at any one time.

6.2.1.6. Sub-Section 4.32 has intentionally been omitted from the restrictions because unlike sub-sections 3.2, 4.2, 4.31, 4.33, 4.34 and 4.35 the traffic management involves a bus lane closure rather a general traffic lane closure. This is considered to be less disruptive from a traffic management perspective, meaning works associated with Sub-Section 4.32 can occur simultaneously with Sub-Section 4.1 if required.

6.2.2. DESCRIPTION OF TRAFFIC MANAGEMENT

6.2.2.1. For the majority of this subsection construction will likely be able to be facilitated by shuttle working traffic signals. Opportunities to reduce the length of shuttle working will however be taken where possible and practical, such as at the following:

- By constructing one circuit within Southdown View / Hambledon Road and the Hambledon Road spur that runs parallel to the B2150 Hambledon Road. This is described in further detail in paragraph 6.2.2.3 – 6.2.2.6 and would remove disruption from B2150 Hambledon Road for 450m or 8 weeks for one circuit; and
- Use of lane realignment between the junction with The Hundred and the roundabout junction with Milton Road. The use of right-turn lanes to facilitate construction works will likely enable construction to take place without impacting on two-way traffic flow for 200m or 3 weeks for each circuit.

6.2.2.2. These options will help minimise the length of time shuttle working traffic signals are required on B2150 Hambledon Road.

Southdown View / Hambledon Parade / Hambledon Road

6.2.2.3. Southdown View runs parallel to B2150 Hambledon Road between Darnell Road and Sunnymead Drive and provides access to 13 residential properties (all with off-road parking) and a public car park which serves Billy's Lake open space which comprises of approximately 10 acres of woodland. It measures approximately 150 m in length. The carriageway width of Southdown View is less than 6.0 m, so to avoid road closure, the construction corridor will be narrowed through the use of smaller plant. Two-way traffic flow will be facilitated by an informal 'give-and-take' approach which is appropriate for a link with such low traffic flows. Construction along this link is anticipated to take approximately 2-3 weeks per circuit.

6.2.2.4. Construction works through the junction of Southdown View / Sunnymead Drive / Hambledon Parade will be managed through the use of temporary traffic signals, with construction being phased to ensure that the carriageway remains open at all times.

6.2.2.5. Hambledon Parade is approximately 140 m in length and provides access to a number of retail / commercial units on the northern side of the carriageway. On-street parking is provided on either side of Hambledon Parade and provides capacity for 23 cars, with two additional two accessible bays and a loading bay. To accommodate construction, the on-street parking spaces on one side of the carriageway may need to be temporarily suspended to mitigate the need for a full road closure. To further mitigate the impact of construction on retail / commercial units, it is proposed that construction corridor will be split into 70 m sections therefore allowing some on-street parking to remain on both sides of the carriageway throughout the duration of the works. A one-way system will be implemented along Hambledon Parade during construction to minimise traffic congestion. Construction along this link is anticipated to take 2-3 weeks per circuit.

6.2.2.6. The Hambledon Road spur, running parallel to the north of the B2150 is a residential cul-de-sac providing access to 16 residential properties, all of which have dedicated off-road parking. The carriageway is approximately 5.0m wide on this link, with the northern verge / footway providing an additional 4.0m. This total width of 9.0m provides adequate space for construction but will require use of smaller plant in order to avoid a full road closure. The approximate length of the spur is 150m. Two-way traffic flow will be facilitated by an informal 'give-and-take' approach which is appropriate for a link with such low traffic flows and the majority of residents will continue to be able to park off-road on driveways. It is anticipated that construction of cable ducts along this link will take approximately 2-3 weeks per circuit.

B2150 Hambledon Road

6.2.2.7. Construction of the Onshore Cable Route along B2150 will require shuttle working traffic signals, although opportunities for lane realignment will be taken on the approach to the junctions with Darnel Road and Milton Road to maintain two-way traffic flow. For example, retaining two free-flow traffic lanes for 200 m between The Hundred and Milton Road by use of right-turn lanes and central hatching will remove the requirements for shuttle working traffic signals for 4 weeks per circuit.

6.2.2.8. Several junctions intersect B2150 Hambledon Road in Section 4.1, with the required traffic management at each location dependent upon the exact location of the construction zone within the carriageway, which is not possible to define at this stage. The following junctions, however, will be subject to traffic signal control due to their existing layout or classification:

- B2150 Hambledon Road / Darnel Road – either lane realignment and use of existing traffic signals or temporary three-way traffic signals;
- B2150 / Hambledon Road / Sunnymead Drive – temporary three-way traffic signals; and
- B2150 / Hambledon Road / Milton Road / Elettra Avenue roundabout – temporary traffic signals.

6.2.2.9. The traffic management required for the following junctions will be determined by the contractor and dependent upon location of the construction zone, albeit with access retained at all times, either directly or my alternative routes:

- B2150 Hambledon Road / Sickle Way;
- B2150 Hambledon Road / Hambledon Parade;
- B2150 Hambledon Road / Charlesworth Drive;
- B2150 Hambledon Road / Petersham Drive; and
- B2150 Hambledon Road / The Hundred.

Milton Road

6.2.2.10. Milton Road in Sub-Section 4.1 has been identified within the Road Safety Technical Note (REP6-075) as benefiting from the use of traffic marshals in the vicinity of the school. should construction on B2150 Hambledon Road in this section be undertaken in term time. This additional traffic management measure would be reactive to conditions on this links during construction and would be overseen by the road safety officer.

6.3. SUB-SECTION 4.2 – B2150 HAMBLEDON ROAD AND A3 MAUREPAS WAY BETWEEN MILTON ROAD AND A3 LONDON ROAD

6.3.1.1. Sub-section 4.2 includes B2150 Hambledon Road to the south of the roundabout with Milton Road, as well as A3 Maurepas Way between the roundabout with Houghton Avenue and Forest End Roundabout, and the Hambledon Road Spur Road.

6.3.1.2. Table 6 provides details of programme availability and traffic management proposals for this sub-section.

Table 6 – Sub-Section 4.2 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="4">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td colspan="2">4.2</td><td colspan="4">B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road</td><td colspan="2">1000</td><td colspan="2">Lane Closure</td><td colspan="2">14 weeks</td></tr>
<tr><td colspan="12">Calendar Restrictions</td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions: 4-week restriction due to Christmas shopping.</td></tr>
<tr><td colspan="12">Other Restrictions</td></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 3.2 – 3 weeks
Sub-Section 4.1 – 22 weeks
Sub-Section 4.31 – 2 weeks
Sub-Section 4.33 – 5 weeks
Sub-Section 4.34 – 4 weekends
Sub-Section 4.35 – 3 weeks
Sub-Section 4.41 – 1 week
Sub-Section 4.43 – 3 weeks</td><td colspan="6">9 weeks</td></tr>
</table>

6.3.1.3. December has been categorised as ‘Red’ as this section contains vehicular accesses to Wellington Retail Park, Asda Superstore on A3 Maurepas Way and Lidl supermarket on Elettra Avenue and Waterlooville town centre. As December will be a busy period in this location, construction of this section of the Onshore Cable should not take place during this month. In addition to these considerations, construction within Section 4.2 should not take place simultaneously with the following Sections:

- Sub-Sections 3.2 and 4.1 – B2150 Hambledon Road north-west of this section'
- Section 4.31, 4.33, 4.34, 4.35, 4.41 and 4.43 – All sections of A3 London Road between A3 Maurepas Way and Portsdown Hill Road that require shuttle working traffic signals.

6.3.1.4. Phasing of works will mitigate disruption to traffic flow within the Denmead and Waterlooville area, particularly those trips which travel along the B2150 Hambledon Road and A3 London Road to / from Purbrook, Cosham and Portsmouth. Specifically, it will ensure that construction along Sub-Section 4.2 does not occur at the same time as traffic management that requires shuttle working on B2150 Hambledon Road, A3 Maurepas Way and A3 London Road.

6.3.1.5. Sub-Section 4.32, 4.42 and 4.44 have intentionally been omitted from the restrictions because within sub-sections 3.2, 4.1 4.31, 4.33, 4.34, 4.35, 4.41 and 4.43, the traffic management involves a bus lane closure rather a general traffic lane closure. This is considered to be less disruptive from a traffic management perspective, meaning works associated with these three sub-sections can occur simultaneously with Sub-Section 4.2 if required.

6.3.2. DESCRIPTION OF TRAFFIC MANAGEMENT

B2150 Hambledon Road

6.3.2.1. Construction along B2150 Hambledon Road in this subsection will require implementation of single lane closures. To facilitate continued access to Wellington Retail Park throughout the duration of works, temporary turning restrictions may need to be implemented at the junction of B2150 Hambledon Road / Aston Road. Temporary turning restrictions will prohibit right turn movements at this junction, allowing it to remain operational via a left-in, left-out arrangement. These temporary access arrangements are likely to be in place for one week per circuit.

Hambledon Road (spur)

6.3.2.2. Hambledon Road (spur) within Sub-Section 4.2 has been identified within the UK Joint Bay Feasibility Report (REP7-073) as a possible location for Joint Bay 07. Construction along B2150 Hambledon Road in this subsection would require implementation of single lane closures should a Joint Bay be installed in the carriageway in this location. Two-way traffic flow will be facilitated by an informal 'give-and-take' approach which is appropriate for a link with such low traffic flows. As is set out in Section 2.3.3. of this report, installation of Joint Bays will take approximately 20 working days per circuit.

B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue Roundabout

6.3.2.3. Temporary traffic signals may also need to be implemented at the roundabout junction of B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue. Traffic management is likely to be required at this junction for approximately one week.

A3 Maurepas Way

6.3.2.4. Construction within A3 Maurepas Way may require a closure of one lane of the dual carriageway. On the A3 in this section a minimum of three lanes will remain operational, and two-way flow will be maintained at all times. The link provides the entry to the Asda Waterlooville Superstore car park, access to this car park will be retained throughout the duration of works.

6.3.2.5. Waterlooville Fire Station gains vehicular access from A3 Maurepas Way on this link. Vehicular access from the fire station will be retained at all times through-out the duration of works through phased construction maintaining a suitable access width at all times.

Forest End Roundabout

6.3.2.6. Temporary traffic signals may be required at Forest End Roundabout. Construction through this junction is likely to be in place for 2-3 days per circuit.

6.4. SUB-SECTION 4.31 - A3 LONDON ROAD BETWEEN FOREST END ROUNDABOUT AND SOUTH OF THE JUNCTION WITH FOREST END

6.4.1.1. A limited section of shuttle working may be required between Forest End Roundabout and just south of the junction with Forest End, where the central island ends. The programme availability to complete this sub-section is shown in Table 7 below.

Table 7 – Sub-Section 4.31 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="4">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration Per Circuit (Cable Ducts)</th></tr>
<tr><td colspan="2">4.31</td><td colspan="4">A3 London Road between Forest End Roundabout and south of the junction with Forest End</td><td colspan="2">100</td><td colspan="2">Shuttle Working</td><td colspan="2">2 weeks</td></tr>
<tr><td colspan="12">Calendar Restrictions</td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter School Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), School Summer Holidays (approximately 6 weeks), and October Half-Term (1 week).
Approximate availability per calendar year: 18 weeks.</td></tr>
<tr><td colspan="12">Other Restrictions</td></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 3.2 – 3 weeks
(no calendar restrictions)
Sub-Section 4.1 – 22 weeks
(2-week restriction due to Christmas)
Sub-Section 4.2 – 14 weeks
(4-week restriction due to Christmas)
Section 4.32 = 10 weeks
(no calendar restrictions)
Sub-Section 4.33 – 5 weeks
(same calendar restrictions)
Sub-Section 4.34 – 4 weekends
(no calendar restrictions)
Sub-Section 4.35 – 3 weeks
(same calendar restrictions)
Sub-Section 4.41 – 1 week
(same calendar restrictions)</td><td colspan="6">3 weeks
(based on avoiding simultaneous works at sub-sections 4.33, 4.35, 4.41 and 4.43 where there are similar calendar restrictions)</td></tr>
</table>

Sub-Section 4.43 – 3 weeks *(same calendar restrictions)*	

6.4.1.2. Due to the high traffic flows at this location and close proximity to Waterlooville town centre, construction should not take place outside of the periods shown in Table 7. In addition to these considerations, construction within Section 4.3 should not take place simultaneously with the following Sections:

- Sub-Sections 3.2, 4.1 and 4.2 – B2150 Hambledon Road and A3 Maurepas Way;
- Sub-Sections 4.32, 4.33, 4.34, and 4.35 – parts of Section 4.3 – A3 London Road between A3 Maurepas Way and Ladybridge Road; and
- Sub-sections 4.41 and 4.43 – Parts of A3 London Road between Ladybridge roundabout and Portsdown Hill road that require shuttle working traffic signals.

6.4.1.3. This phasing of works will mitigate disruption to traffic flow within the Denmead and Waterlooville area, particularly those trips which travel along the B2150 Hambledon Road and A3 London Road to / from Purbrook, Cosham and Portsmouth. The programme will ensure that the construction of sub-section 4.2 is not completed at the same time as any other works on A3 London Road north of Ladybridge roundabout nor during any periods where shuttle working traffic signals are required on either B2150 Hambledon Road or A3 London Road south of Ladybridge roundabout.

6.5. SUB-SECTION 4.32 – A3 LONDON ROAD BETWEEN SOUTH OF JUNCTION WITH FOREST END AND SOUTHERN END OF BUS LANES (IN PROXIMITY TO POPPY FIELDS)

6.5.1.1. Construction within this section can be completed through lane realignment, thereby maintaining two-way traffic flow for the entirety of this sub- section. Where the construction zone is located, the bus lanes and general traffic lane will merge from two to one lane. To mitigate the impact on public transport, temporary bus priority traffic signals will be provided where possible to maintain bus priority over general traffic. Table 8 provides details of the available programme for this sub-section.

Table 8 – Sub-Section 4.32 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.32	A3 London Road between south of junction with Forest End and southern end of bus lanes (in proximity to Poppy Fields)	1000	Lane Closure	17 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 4.31 – 2 weeks **Sub-Section 4.33 – 5 weeks** **Sub-Section 4.35 – 3 weeks** **Sub-Section 4.41 – 1 week** **Sub-Section 4.42 – 8 weeks** **Sub-Section 4.43 – 3 weeks** **Sub-Section 4.44 – 4 weeks**	24 weeks

6.5.1.2. Given the limited impact of construction along this section it is proposed that works can be completed all year round. To minimise impacts on public transport the construction within this section should not take place simultaneously with the following:

- Sub-Sections 4.31, 4.33, 4.35 – Sections of A3 London Road north of Ladybridge Roundabout that require shuttle working traffic signals; and
- Sub-Sections 4.41 and 4.43 – Sections of A3 London Road south of Ladybridge roundabout that require shuttle working traffic signals.

6.5.1.3. Sub-Section 4.32 has been identified in the UK Joint Bay Feasibility Report as a possible location of both Joint Bay 10 and Joint Bay 11. As is set out in Section 2.3.3. of this report, construction of Joint Bays will take approximately 20 working days per circuit in each location. Construction of Joint Bays in this section would be facilitated by single lane closures, as with the construction of the Cable Ducts component of the Onshore Cable Route.

6.5.1.4. If practicable, temporary bus priority traffic signals will be used to maintain bus priority over general traffic where the lane merge occurs. Where this is not possible, it is proposed that temporary 'Merge In Turn' signs are installed to encourage vehicles to allow buses to join the general traffic lane. Similarly, 'cycle lane ahead closed' advance signing will be provided to ensure that cyclists have ample opportunity to alter their road position before reaching the road works.

6.6. SUB-SECTION 4.33 – A3 LONDON ROAD BETWEEN SOUTH OF SOUTHERN END OF BUS LANES (IN PROXIMITY TO POPPY FIELDS) AND POST OFFICE ROAD

6.6.1.1. Shuttle working will be required between the junction of A3 London Road / Poppy Fields and the junction of A3 London Road / Post Office Road. The programme availability to complete these works is shown on Table 9 below.

Table 9 – Sub-Section 4.33 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.33	A3 London Road between Poppy Fields and just south of Post Office Road and Campbell Crescent	250	Shuttle Working	5 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter School Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), School Summer Holidays (approximately 6 weeks), and October Half-Term (1 week).

Approximate availability per calendar year: 18 weeks.

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 3.2 – 3 weeks ***(no calendar restrictions)*** **Sub-Section 4.1 – 22 weeks** ***(2-week restriction due to Christmas)*** **Sub-Section 4.2 – 14 weeks** ***(4-week restriction due to Christmas)*** **Sub-Section 4.31 – 2 weeks** ***(same calendar restrictions)*** **Sub-Section 4.32 = 10 weeks** ***(no calendar restrictions)*** **Section 4.34 – 4 weekends** ***(no calendar restrictions)*** **Sub-Section 4.35 – 3 weeks** ***(same calendar restrictions)*** **Sub-Section 4.41 – 1 week** **(same calendar restrictions)** **Sub-Section 4.43 – 3 weeks** ***(same calendar restrictions)***	9 weeks *(based on avoiding simultaneous works at sub-sections 4.31, 4.35, 4.41 and 4.43 where there are similar calendar restrictions)*

6.6.1.2. Due to the high traffic flows at this location, no construction should take place outside of the periods shown in Table 9. In addition to these considerations, construction within Section 4.3 should not take place simultaneously with the following Sections:

- Sub-Sections 3.2, 4.1 and 4.2 - B2150 Hambledon Road and A3 Maurepas Way;
- Sub-Sections 4.31,4.32, 4.34, 4.35 - All other parts of Section 4.3 - A3 London Road between A3 Maurepas Way and Ladybridge Road; and
- Sub-sections 4.41 and 4.43 – Parts of A3 London Road between Ladybridge roundabout and Portsdown Hill road that require shuttle working traffic signals.

6.6.1.3. As with other sub-sections of A3 London Road, this phasing of works will mitigate disruption to traffic, particularly those trips which travel along the A3 London Road between Waterlooville, Purbrook, Cosham and Portsmouth. The programme will ensure that the construction of sub-section 4.33 is not completed at the same time as any other works on A3 London Road north of Ladybridge roundabout nor during any periods where shuttle working traffic signals are required on either B2150 Hambledon Road or A3 London Road south of Ladybridge roundabout.

6.6.1.4. Campbell Crescent in Sub-Section 4.33 has been identified in the UK Joint Bay Feasibility Report as a possible location of Joint Bay 12. Construction of Joint Bays in this section will be facilitated by single lane closure of Campbell Crescent and / or shuttle working traffic signals on A3 London Road. Two-way traffic flow on Campbell Crescent would be facilitated by an informal 'give-and-take' approach which is appropriate for a link with such low traffic flows. As is set out in Section 2.3.3. of this report, construction of Joint Bays will take approximately 20 working days per circuit.

6.6.1.5. Detailed traffic management strategies for this section of A3 London Road should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A3 London Road, Stakes Hill Road and Stakes Road / Ladybridge Road.

6.7. SUB-SECTION 4.34 - A3 LONDON ROAD BETWEEN POST OFFICE ROAD AND ROCKING HORSE NURSERY

6.7.1.1. A full road closure may need to be implemented on the section of the A3 London Road between Post Office Road and Rocking Horse Nursery and Pre-School, a distance of approximately 90m. It is anticipated that this closure would take place over the course of four weekends per circuit, with construction taking place only during 10-hour working days between 08:00 and 18:00.

6.7.1.2. The programme availability to complete these works is shown on Table 10 below.

Table 10 – Sub-Section 4.34 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.34	A3 London Road between Post Office Road and Rocking Horse Nursery	90	Road Closure	4 weekends

Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year											

Other Restrictions	
Sections	Total Availability per Calendar Year
Sub-Section 4.31 – 2 weeks **Sub-Section 4.41 – 1 week** **Sub-Section 4.43 – 3 weeks**	44 weeks

6.7.1.3. Given off-peak nature of the road closure requirements within sub-section 4.34 there are no calendar restrictions. The will however will most likely be completed at a similar time to sub-section 4.33 and 4.35.

6.7.1.4. During the period of road closure, it will be necessary to provide a diversion route for all traffic, with the following proposed to the east of the A3 London Road:

- For northbound traffic on the A3 London Road travelling between Ladybridge Roundabout and the Forest End Roundabout – Diversion via Ladybridge Road eastbound, Stakes Road eastbound, Stakes Hill Road northbound; and Rockville Drive westbound;
- For southbound traffic on the A3 London Road travelling between Forest End Roundabout and Ladybridge Roundabout – Diversion via Rockville Drive eastbound, Stakes Hill Road southbound, Stakes Road westbound and Ladybridge Road westbound.

6.7.1.5. These diversion routes are shown on Drawing EN02022-TMS-11 included in Appendix 6.

6.7.1.6. To minimise the impact of the road closure, construction works will not be completed simultaneously with Sections 4.31, 4.41 and 4.43, all of which require shuttle working traffic signals elsewhere on the A3 London Road.

6.8. SUB-SECTION 4.35 - A3 LONDON ROAD BETWEEN ROCKING HORSE NURSERY AND LADYBRIDGE ROUNDABOUT

6.8.1.1. Shuttle working will also be required for this sub-section between Rocking Horse Nursery and Pre-School and Ladybridge Roundabout. Table 11 provides details of the programme availability for completion of construction in this sub-section.

Table 11 - Sub-Section 4.35 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.35	A3 London Road between Rocking Horse Nursery and Ladybridge roundabout	170	Shuttle Working	3 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter School Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), School Summer Holidays (approximately 6 weeks), and October Half-Term (1 week).

Approximate availability per calendar year: 18 weeks

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 3.2 – 3 weeks ***(no calendar restrictions)*** **Sub-Section 4.1 – 22 weeks** ***(2-week restriction due to Christmas)*** **Sub-Section 4.2 – 14 weeks** ***(4-week restriction due to Christmas)*** **Sub-Section 4.31 – 2 weeks** ***(same calendar restrictions)*** **Sub-Section 4.32 = 10 weeks** ***(no calendar restrictions)*** **Sub-Section 4.33 – 5 weeks** ***(same calendar restrictions)*** **Sub-Section 4.34 – 4 weekends** ***(no calendar restrictions)*** **Sub-Section 4.41 – 1 week** ***(same calendar restrictions)*** **Sub-Section 4.42 = 8 weeks** ***(no calendar restrictions)***	7 weeks *(based on avoiding simultaneous works at sub-sections 4.31, 4.33, 4.41 and 4.43 where there are similar calendar restrictions)*

Sub-Section 4.43 – 3 weeks ***(same calendar restrictions)*** **Section 4.44 = 4 weeks** ***(no calendar restrictions)***	

6.8.1.2. Given the requirement for shuttle-working and volume of traffic which uses A3 London Road in this section, no construction work on this section should take place outside of the periods shown in Table 11.

6.8.1.3. As with other sub-sections of A3 London Road, this phasing of works will mitigate disruption to traffic, particularly those trips which travel along the A3 London Road between Waterlooville, Purbrook, Cosham and Portsmouth. The programme will ensure that the construction of sub-section 4.35 is not completed at the same time as any other works on A3 London Road north of Ladybridge roundabout nor during any periods where shuttle working traffic signals are required on either B2150 Hambledon Road or A3 London Road south of Ladybridge roundabout. Several junctions intersect the A3 London Road in Section 4.3. Those junctions which provide connections to the eastern side of the carriageway are, for the most part, accessible by alternate routes on the wider network. While the exact traffic management for each side-road can only be determined once the exact construction zone location is confirmed, at this stage it is proposed that the following are subject to Temporary traffic signals:

- A3 London Road / Mill Road priority junction (due to the proximity of Mill Hill Primary School); and
- A3 London Road / Ladybridge Road / Marrels Wood Garden.

6.8.1.4. As noted, the technical specification issued to contractors will set out the standard protocol for enabling continued access to cul-de-sacs throughout the duration of works.

6.8.1.5. It should be noted that the majority of the side roads to the west of A3 London Road in this section form part of the West of Waterlooville Major Development Area (MDA) which is currently in build out stage. As such, existing cul-de-sacs which currently gain sole vehicular access from A3 London Road which may require temporary traffic signals during construction, may be more suited to temporary suspension of access from the A3 during construction as the wider road network of the MDA develops and the residential streets gain further permeability.

6.8.1.6. Detailed traffic management strategies for this section of A3 London Road should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A3 London Road, Stakes Hill Road and Stakes Road / Ladybridge Road.

Westbrook Grove

6.8.1.7. Westbrook Grove in Sub-Section 4.35 has been identified within the Road Safety Technical Note (REP6-075) as benefiting from the use of traffic marshals in the vicinity of the school, should construction on A3 London Road in this section be undertaken in term time. This additional traffic management measure would be reactive to conditions on this links during construction and would be overseen by the road safety officer.

6.9. SUB-SECTION 4.41 - A3 LONDON ROAD BETWEEN LADYBRIDGE ROUNDABOUT AND START OF BUS LANE

6.9.1.1. Immediately south of Ladybridge roundabout the A3 London Road does not include bus lanes, for a distance of approximately 70 m, and will therefore require shuttle working traffic signals to facilitate construction of the Onshore Cable Route. Table 12 provides details of the programme availability for completion of constructions in this sub-section.

Table 12 - Sub-Section 4.41 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.41	A3 London Road between Ladybridge roundabout and start of bus lane	80	Shuttle Working	1 week

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter School Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), School Summer Holidays (approximately 6 weeks), and October Half-Term (1 week).

Approximate availability per calendar year: 18 weeks

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 3.2 – 3 weeks ***(no calendar restrictions)*** **Sub-Section 4.1 – 22 weeks** ***(2-week restriction due to Christmas)*** **Sub-Section 4.2 – 14 weeks** ***(4-week restriction due to Christmas)*** **Sub-Section 4.31 – 2 weeks** ***(same calendar restrictions)*** **Sub-Section 4.33 – 5 weeks** ***(same calendar restrictions)*** **Sub-Section 4.34 – 4 weekends** **Sub-Section 4.35 – 3 weeks** ***(same calendar restrictions)*** **Section 4.42 = 8 weeks** ***(no calendar restrictions)*** **Sub-Section 4.43 – 3 weeks** ***(same calendar restrictions)*** **Section 4.44 = 4 weeks** ***(no calendar restrictions)***	5 weeks *(based on avoiding simultaneous works at sub-sections 4.31, 4.33, 4.35 and 4.43 where there are similar calendar restrictions)*

6.9.1.2. Given the requirement for shuttle-working and volume of traffic which uses A3 London Road in this section, no construction work on this section should take place outside of the periods shown in Table 12.

6.9.1.3. As with sub-section 4.35, this phasing of works will mitigate disruption to traffic, particularly those trips which travel along the A3 London Road between Waterlooville, Purbrook, Cosham and Portsmouth. The programme will ensure that the construction of sub-section 4.41 is not completed at the same time as any other works on A3 London Road north of Ladybridge roundabout nor during any periods where shuttle working traffic signals are required on either B2150 Hambledon Road or A3 London Road south of Ladybridge roundabout.

6.9.1.4. Detailed traffic management strategies for this section of A3 London Road should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A3 London Road, Crookhorn Lane and Stakes Road / Ladybridge Road.

6.10. SUB-SECTION 4.42 - A3 LONDON ROAD BETWEEN START OF BUS LANE AND LANSDOWNE AVENUE

6.10.1.1. Construction within this section can be completed through lane realignment, thereby maintaining two-way traffic flow for the entirety of this sub- section. Where the construction zone is located, the bus lanes and general traffic lane will merge from two to one lane. To mitigate the impact on public transport, temporary bus priority traffic signals will be provided where possible to maintain bus priority over general traffic. Table 13 provides details of the available programme for this sub-section.

Table 13 - Sub-Section 4.42 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.42	A3 London Road between start of bus lane and Lansdowne Avenue	850	Lane Closure	8 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Section 4.33 – 5 weeks **Sub-Section 4.34 = 4 weekends** **Section 4.35 – 3 weeks** **Sub-Section 4.41 – 1 week** **Sub-Section 4.43 – 3 weeks** **Sub-Section 4.44 – 4 weeks**	32 weeks

6.10.1.2. Given the limited impact of construction along this section it is proposed that works can be completed all year round. To minimise impacts on public transport the construction within this section should not take place simultaneously with the following:

- Sub-Sections 4.31, 4.33, 4.35 – Sections of A3 London Road north of Ladybridge Roundabout that require shuttle working traffic signals;
- Sub-Sections 4.41 and 4.43 – Sections of A3 London Road of Ladybridge roundabout that require shuttle working traffic signals; and
- Sub-Sections 4.44 – sections of the A3 London Road south of Ladybridge Roundabout where bus lane closures are required.

6.10.1.3. Sub-Section 4.42 has been identified in the UK Joint Bay Feasibility Report as a possible location Joint Bay 14 and Joint Bay 15. Construction of Joint Bays in this section would be facilitated by single lane closures, as with the construction of the Cable Ducts component of the Onshore Cable Route. As is set out in Section 2.3.3. of this report, construction of Joint Bays will take approximately 20 working days per circuit in each location.

6.10.1.4. If practicable, temporary bus priority traffic signals will be used to maintain bus priority over general traffic where the lane merge occurs. Where this is not possible, it is proposed that temporary 'Merge In Turn' signs are installed to encourage vehicles to allow buses to join the general traffic lane. Similarly, 'cycle lane ahead closed' advance signing will be provided to ensure that cyclists have ample opportunity to alter their road position before reaching the road works.

Park Avenue

6.10.1.5. Park Avenue in Sub-Section 4.42 has been identified within the Road Safety Technical Note (REP6-075) as benefiting from the use of traffic marshals in the vicinity of the school, should construction on A3 London Road in this section be undertaken in term time. This additional traffic management measure would be reactive to conditions on these links during construction and would be overseen by the road safety officer.

6.11. SUB-SECTION 4.43 - A3 LONDON ROAD BETWEEN LANSDOWNE AVENUE AND BUS LANE (SOUTH OF THE BROW)

6.11.1.1. Sub-section 4.43 may require shuttle working traffic signals, although temporary removal of existing pedestrian refuge islands may allow for two-way traffic flow to be maintained due to the wide carriageway width. The worst-case requirement of shuttle working traffic signals has the programme constraints identified in

6.11.1.2. Table 14.

Table 14 - Sub-Section 4.43 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.43	A3 London Road between Lansdown Avenue and start of bus lane (south of The Brow)	250	Shuttle Working	3 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: Work Permitted Only During: February Half-Term (1 week), Easter School Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), School Summer Holidays (approximately 6 weeks), and October Half-Term (1 week).

Approximate availability per calendar year: 18 weeks

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 3.2 – 3 weeks ***(no calendar restrictions)*** **Sub-Section 4.1 – 22 weeks** ***(2-week restriction due to Christmas)*** **Sub-Section 4.2 – 14 weeks** ***(4-week restriction due to Christmas)*** **Sub-Section 4.31 – 2 weeks** ***(same calendar restrictions)*** **Sub-Section 4.33 – 5 weeks** ***(same calendar restrictions)*** **Sub-Section 4.34 – 4 weekends** ***(no calendar restrictions)*** **Sub-Section 4.35 – 3 weeks** ***(same calendar restrictions)*** **Sub-Section 4.41 – 1 week** **(same calendar restrictions)** **Section 4.42 = weeks**	7 weeks *(based on avoiding simultaneous works at sub-sections 4.31, 4.33, 4.35, and 4.41 where there are similar school term-time restrictions)*

(no calendar restrictions) **Section 4.44 = 4 weeks** ***(no calendar restrictions)***	

Given the requirement for shuttle-working and volume of traffic which uses A3 London Road in this section, no construction work on this section should take place outside of the of the periods shown in

6.11.1.3. Table 14. The phasing of works aims to mitigate disruption to traffic, particularly those trips which travel along the A3 London Road between Waterlooville, Purbrook, Cosham and Portsmouth. The programme will ensure that the construction of this sub-section is not completed at the same time as any other works on A3 London Road south of Ladybridge roundabout nor during any periods where shuttle working traffic signals are required on either B2150 Hambledon Road or A3 London Road north of Ladybridge roundabout.

6.11.1.4. Detailed traffic management strategies for this section of A3 London Road should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A3 London Road, Crookhorn Lane and Stakes Road / Ladybridge Road.

6.12. SUB-SECTION 4.44 - A3 LONDON ROAD BETWEEN BUS LANE (SOUTH OF THE BROW) AND PORTSDOWN HILL ROAD

6.12.1.1. As with sub-sections 4.32 and 4.42 construction within this sub-section can be accommodated for through the use of either lane realignment as a result of the wide carriageways and bus lanes. This means that overall, 2.25km out of 3.20km construction along A3 London Road can be accommodated while retaining two-way traffic flow and avoiding the need for shuttle working traffic signals. Table 15 shows the programme availability for sub-section 4.44.

Table 15 – Sub-Section 4.44 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.44	A3 London Road start of bus lane (south of The Brow) and B2177 Portsdown Hill Road	400	Lane Closure	4 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 4.31 = 2 weeks **Sub-Section 4.33 = 5 weeks** **Sub-Section 4.34 = 4 weekends** **Sub-Section 4.35 = 3 weeks** **Sub-Section 4.41 = 1 week** **Sub-Section 4.42 = 8 weeks** **Sub-Section 4.43 = 3 weeks**	28 weeks

6.12.1.2. Given the limited impact of construction along this section it is proposed that works can be completed all year round. To minimise impacts on public transport the construction within this section should not take place simultaneously with the following:

- Sub-Sections 4.31, 4.33, 4.34 and 4.35 – Sections of A3 London Road north of Ladybridge Roundabout that require shuttle working traffic signals;
- Sub-Sections 4.41 and 4.43 – Sections of A3 London Road of Ladybridge roundabout that require shuttle working traffic signals; and
- Sub-Section 4.42 – A3 London Road south of Ladybridge Roundabout where lane closure are required.

6.12.1.3. As with the northern part of A3 London Road, in this Section, the majority of side roads to the east of the construction corridor are accessible via alternate routes on wider road network. While the exact traffic management for each side-road can only be determined once the exact construction zone location is confirmed, at this stage it is proposed that the following are subject to temporary traffic signals:

- A3 London Road / The Brow: The Brow also provides access to multiple residential roads and Purbrook Park school; and
- A3 London Road / A3 southbound slip road: No properties gain access from this link.

6.12.1.4. If practicable, temporary bus priority traffic signals will be used to maintain bus priority over general traffic where the lane merge occurs. Where this is not possible, it is proposed that temporary 'Merge In Turn' signs are installed to encourage vehicles to allow buses to join the general traffic lane. Similarly, 'cycle lane ahead closed' advance signing will be provided to ensure that cyclists have ample opportunity to alter their road position before reaching the road works.

6.12.1.5. As is noted in the Road Safety Technical Note (REP6-071), the junction of A3 London Road / Park Avenue would benefit from additional 'Keep Clear' or 'Do Not Block Junction' signs. This should therefore be included within the detailed traffic management strategy submitted to the local highway authority for approval.

6.13. SUB-SECTION 4.5 – B2177 PORTSDOWN HILL ROAD BETWEEN CAR PARK ACCESS AND FARLINGTON AVENUE

6.13.1.1. Section 4.5 spans between the priority-controlled access junction of the Car Park directly to the south of B2177 Portsdown Hill Road and the priority-controlled junction of B2177 Portsdown Hill Road / Farlington Avenue. Table 16 below shows the available programme for completion of construction on sub-section 4.5.

Table 16 - Sub-Section 4.5 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.5	B2177 Portsdown Hill Road between Car Park Access and Farlington Avenue	160	Shuttle Working	2 Weeks

Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year											

Other Restrictions	
Sections	Total Availability per Calendar Year
Sub-Section 4.41 – 1 week **Section 4.42 = 8 weeks** **Sub-Section 4.43 – 3 weeks** **Sub-Section 4.44 = 4 weeks** **Section 5.1 – 6 weeks** **Sub-Section 5.2 – 6 weeks**	22 weeks

6.13.1.2. Aside from this however, construction work should not take place on the B2177 Portsdown Hill Road concurrently with the following:

- Sub-Sections 4.41 , 4.42, 4.43 and 4.44 – A3 London Road between Ladybridge Roundabout and B2177 Portsdown Hill Road that require shuttle working traffic signals; and
- Sub-Sections 5.1 and 5.2 – Farlington Avenue.

6.13.1.3. The aim of these restrictions is to mitigate the potential cumulative impacts of multiple construction zones being located within a similar area as the same time. Specifically, it will avoid works on the B2177 Portsdown Hill Road being completed at the same time as construction on the A3 London Road south of Ladybridge Roundabout and Farlington Avenue.

6.13.2. DESCRIPTION OF TRAFFIC MANAGEMENT

6.13.2.1. It is likely that shuttle working will be required for the entirety of the highway network contained within Section 4.5 and will be in place for approximately two weeks per circuit.

6.13.2.2. Temporary traffic signals or road plating will be required to maintain access at the following junctions whilst the construction corridor intersect the B2177 in these locations:

- Priority junction of B2177 Portsdown Hill Road / Hilltop Crescent: This junction provides the sole vehicular access to approximately 50 private residential properties; and
- Priority junction of B2177 Portsdown Hill Road / Hoylake Road: This junction provides the sole vehicular access point to 16 private residential properties.

6.13.2.3. As is noted in the Road Safety Technical Note (REP6-071), the junction of A3 London Road / B2177 Portsdown Hill Road and the junction of B2177 Portsdown Hill Road / Farlington Avenue would benefit from additional 'Keep Clear' or 'Do Not Block Junction' signs during construction work on B2177 Portsdown Hill Road. This should therefore be included within the detailed traffic management strategy submitted to the local highway authority for approval.

7. SECTION 5 – FARLINGTON

7.1.1.1. Section 5 spans from the junction of B2177 Hambledon Road / Farlington Avenue in the north to the junction of A2030 Eastern Road / Fitzherbert road in the south. For ease of assessment, Section 5 has been split into two subsections, these subsections are as follows:

- **Sub-Section 5.1** – Farlington Avenue between Portsdown Hill Road and Sea View Road;
- **Sub-Section 5.2** – Farlington Avenue between Sea View Road and Havant Road;
- **Sub-Section 5.3** – Evelegh Road;
- **Sub-Section 5.4** – Crossing of Havant Road into Farlington Avenue and Crossing of A2030 Havant Road into Portsmouth Water Land; and
- **Sub-Section 5.5** – Havant Road / the A2030 Havant Road and the A2030 Eastern Road between Farlington Avenue and Zetland Field.

7.1.1.2. The FTMS proposals are shown on Drawing EN02022-TMS-5 and 6 included in Appendix 5 to this FTMS.

7.2. SUB-SECTION 5.1 – FARLINGTON AVENUE BETWEEN B2177 PORTSDOWN HILL ROAD AND SEA VIEW ROAD

7.2.1.1. Two-way flow is likely to be able to be retained on Farlington Avenue through the use of shuttle working traffic signals between the junction with B2177 Portsdown Hill Road and the junction with Sea View Road. Table 17 shows the programme availability for construction along this sub-section.

Table 17 - Sub-Section 5.1 Programme Availability

<table>
<tr><th>Section</th><th colspan="3">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td>5.1</td><td colspan="3">Farlington Avenue between B2177 Portsdown Hill Road and Sea View Road</td><td colspan="2">650</td><td colspan="2">Shuttle Working</td><td colspan="2">6 Weeks</td></tr>
<tr><th colspan="12">Calendar Restrictions</th></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter Holidays (2 weeks), May Half-Term (1 week), June (4 weeks), July outside of school holidays (3 weeks), Summer Holidays (approximately 6 weeks), and October Half-Term (1 week) available.
Approximate availability: 11 weeks.</td></tr>
<tr><th colspan="12">Other Restrictions</th></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 4.5 = 2 weeks
(no calendar restrictions)
Sub-Section 5.2 = 6 weeks
(same calendar restrictions)
Sub-Section 5.3 = 3 weeks
(same calendar restrictions)
Sub-Section 5.5 = 6 weeks
(2-week restriction for South Coast Festival and Victorious Festival plus 4-week restriction at Christmas. No school term-time restrictions)</td><td colspan="6">14 weeks
(based on avoiding simultaneous works at Sub-Section 5.2 and 5.3 where there are similar calendar restrictions)</td></tr>
</table>

7.2.1.2. Construction along Sub-Section 5.1 will take approximately 6 weeks per circuit. In order for the programme to be deliverable, construction will be limited to the school holidays where possible and with the exception of June and early July. In addition, construction along this section should not take place simultaneously with the following owing to the location of Solent Infant School on Evelegh Road and Solent Junior School on Solent Road:

- Section 4.5 – Portsdown Hill Road;
- Section 5.2, 5.3 – Farlington Avenue south of Sea View Road and Evelegh Road; and
- Section 5.5 – Havant Road between the junction with Farlington Avenue and Eastern Road.

7.2.1.3. These restrictions will mitigate the cumulative impacts associated with construction being completed across several locations in the same area.

7.2.1.4. The majority of side roads which have junctions with Farlington Avenue are accessible via more than one junction and therefore alternative access is available implemented. Temporary three-way signals or road plating will be required to provide access to the Blake Road cul-de-sac.

7.2.1.5. Sub-Section 5.1 has been identified in the UK Joint Bay Feasibility Report as a possible location of both Joint Bay 18 and Joint Bay 19. Construction of Joint Bays in this section would be facilitated by shuttle working traffic signals, as with the construction of the Cable Ducts component of the Onshore Cable Route. As is set out in Section 2.3.3. of this report, construction of Joint Bays will take approximately 20 working days per circuit in each location.

7.3. SUB-SECTION 5.2 – FARLINGTON AVENUE BETWEEN SEA VIEW ROAD AND HAVANT ROAD

7.3.1.1. Due to width restrictions on the southern section of Farlington Avenue between the junction with Sea View Road and the junction with Havant Road, a temporary road closure may be required on this link. Table 18 shows the available programme for construction on this sub-section.

Table 18 - Sub-Section 5.2 Programme Availability

Section		Description		Length (m)		Proposed TM		Duration Per Circuit (Cable Ducts)			
5.2		Farlington Avenue between Sea View Road and Havant Road		350		Road Closure		6 weeks			
Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: Work Permitted Only During: February Half-Term (1 week), Easter Holidays (2 weeks), May Half-Term (1 week), Summer Holidays (approximately 6 weeks), and October Half-Term (1 week) available. Approximate availability: 11 weeks.											
Other Restrictions											
Sections						Total Availability per Calendar Year					
Sub-Section 4.5 – 2 weeks ***(no calendar restrictions)*** **Sub-Section 5.1 – 6 weeks** ***(similar calendar restrictions but also includes June / July outside of school holidays)*** **Section 5.3 = 2 weeks** **(same calendar restrictions)** **Sub-Section 5.5 – 6 weeks** ***(2-week restriction for South Coast Festival and Victorious Festival plus 4-week restriction at Christmas. No school term-time restrictions)***						14 weeks *(based on avoiding simultaneous works at Sub-Section 5.3 where there are similar school term-time restrictions)*					

7.3.1.2. Owing to the location of Solent Infant School on Evelegh Road and Solent Junior School on Solent Road, construction should only take place during the school holidays to avoid impacts to school trips. . Avoidance of term time for construction is also fundamental to ensure that emergency access is maintained during term time. In addition, construction along this section should not take place simultaneously with the following:

- Section 4.5 – Portsdown Hill Road;
- Section 5.1 and 5.3 Farlington Avenue between Portsdown Hill Road and Sea View Road and Evelegh Road;
- Section 5.5 – Havant Road between the junction with Farlington Avenue and Eastern Road.

7.3.1.3. These restrictions will mitigate the cumulative impacts associated with construction being completed across several locations in the same area.

7.3.2. DESCRIPTION OF TRAFFIC MANAGEMENT

7.3.2.1. While it is anticipated that a full road closure will be required, a limited section of shuttle working may be able to be implemented on Farlington Avenue between the junction with Sea View Road and the junction with Solent Road. This would allow two-way traffic to be retained on this link for the duration of works. This section is approximately 200 m long and thus it is anticipated that works would be in place on this link for approximately 4 weeks in total per circuit.

7.3.2.2. Access to residential properties which are to be impacted by the proposed road closure will not be possible for the duration of works. The section of Farlington Avenue which may require a temporary road closure to accommodate construction is approximately 350m in length but would be split into construction zones of approximately 100 m in length. As such it is only access to an estimated 10-15 properties which would be impacted at any one time.

7.3.2.3. Where road closures are required, it will not be possible for vehicles to access residential properties expect in an emergency. Access for pedestrians will however be retained at all times. To help minimise disruption to residents during road closures, the existing waiting restrictions on Farlington Avenue will be suspended, if agreed with PCC. This will allow for limited on-street parking on sections of Farlington Avenue north or south of the road closure.

7.3.2.4. Detailed traffic management strategies for this section of Farlington Avenue should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads east and west of Farlington Avenue, west of A2030 Eastern Road in Section 5 and north of Grove Road.

7.4. SUB-SECTION 5.3 – EVELEGH ROAD

7.4.1.1. The Order Limit in this location also includes the section of Evelegh Road which spans from the junction with Farlington Avenue in the west to the 70th Portsmouth Scouts Hut in the east, providing an alternative route for one circuit along the Portsmouth Water land that runs parallel to Farlington Avenue. This section of Evelegh Road is likely to require a temporary road closure to accommodate construction. Use of this route would halve the road closure time required on Farlington Avenue between Solent Road and Havant Road. Table 19 shows the available programme for construction on this sub-section.

Table 19 - Sub-Section 5.3 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
5.3	Evelegh Road	150	Road Closure	3 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: February Half-Term (1 week), Easter Holidays (2 weeks), May Half-Term (1 week), Summer Holidays (approximately 6 weeks during the last week of July and throughout August), and October Half-Term (1 week) available. Approximate availability: 11 weeks**.**

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 5.1 = 6 weeks ***(similar calendar restrictions but also includes June / July outside of school holidays)*** **Section 5.2 = 6 weeks** **(same calendar restrictions)** **Section 5.5 – 6 weeks** ***(2-week restriction for South Coast Festival and Victorious Festival plus 4-week***	7 weeks *(based on avoiding simultaneous works at Sub-Section 5.2 where there are similar school term-time restrictions*

restriction at Christmas. No school term-time restrictions)	

7.4.1.2. The part of Evelegh Road that forms part of the Onshore Cable Corridor also provides the sole vehicular access to Solent Infant School, as stated above, and therefore all road closures on this route should be scheduled to avoid term times. construction should also not take place simultaneously with the following sub-sections:

- Section 5.1 and 5.2 Farlington Avenue between Portsdown Hill Road and Havant Road; and
- Section 5.5 (Havant Road between the junction with Farlington Avenue and Eastern Road).

7.4.1.3. These restrictions will mitigate the cumulative impacts associated with construction being completed across several locations in the same area.

7.4.1.4. Where road closures are required, it will not be possible for vehicles to access residential properties expect in an emergency. Access for pedestrians however, will be retained at all times.

7.5. DIVERSION ROUTES FOR ROAD CLOSURES ON FARLINGTON AVENUE AND EVELEGH ROAD

7.5.1.1. Appropriate diversion routes have been identified, as can be seen in Drawing EN02022-TMS-12 included in Appendix 6 to this FTMS. The diversion routes for Farlington Avenue will direct vehicles away from the Solent Road / Sea View Road and Galt Road / Evelegh Road routes which are the shortest alternative routes during road closures for traffic wishing to continue to the northern or southern end of Farlington Avenue. The proposed diversion routes are as follows:

- For traffic left from Havant Road to Farlington Avenue: The diversion will be eastwards along A2030 Havant Road, Bedhampton Road and Portsdown Hill Road with the opposite used for southbound traffic; and
- For traffic turning right from Havant Road to Farlington Avenue: The diversion with westwards along the Havant Road, A3 London Road, Boundary Way and Portsdown Hill Road to reach the northern end of Farlington Avenue with the opposite used for southbound traffic.

7.5.1.2. Should Evelegh Road be used for one circuit, traffic will be diverted along Galt Road to gain access to the eastern end of Evelegh Road.

7.5.1.3. These diversion routes should be accompanied by the provision of 'Access Only' signage for adjoining minor roads as detailed within the Framework Signage Strategy included in Appendix 3.

7.6. SUB-SECTION 5.4 – CROSSING OF HAVANT ROAD INTO FARLINGTON AVENUE AND CROSSING OF A2030 HAVANT ROAD INTO PORTSMOUTH WATER LAND

7.6.1.1. Where the Onshore Cable Corridor crosses Havant Road it is anticipated that two temporary road closures will also be required. The road closures are anticipated to be required at the following locations, assuming the contractor routes one circuit along Farlington Avenue and one through the parallel Portsmouth Water land:

- On Havant Road directly to the south of the signal-controlled junction with Farlington Avenue; and
- On A2030 Havant Road between the junction with the A2030 Eastern Road and the junction with Waterworks Road.

7.6.1.2. It is anticipated that these road closures will be required to allow the cable to move from across the respective junctions into and out of the main carriageway on Havant Road. Table 20 shows the available programme for construction on this sub-section.

Table 20 - Sub-Section 5.4 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
5.4	Havant Road	N/A	Road Closure	1-2 Weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
2 weeks for South Central Festival and Victorious Festival, plus a 4-week Christmas embargo.

Other Restrictions

Sections	Total Availability per Calendar Year

Sub-Section 4.5 = 2 weeks **Sub-Section 5.2 – 6 weeks** **Sub-Section 5.3 – 3 weeks** **Sub-Section 5.5 – 6 weeks**	29 weeks

7.6.1.3. It is anticipated that this closure would take place either:

- Over the course of one weekend per circuit, with construction taking place from Saturday sunrise until Sunday sunset, (including night-working); or
- Over the course of two-weekends per circuit, with construction only taking place only during working hours of 07:00 to 22:00. Given that construction will take place during non-peak periods, there are only limited calendar restrictions relating to only Christmas and the South Central Festival and Victorious Festival weekends.

7.6.1.4. Additionally, construction on this link should not coincide with:

- Section 5.2 – Farlington Avenue between Sea View Road and Havant Road;
- Sub-Section 5.3 – Evelegh Road; and
- Sub-Section 5.5 – Havant Road and A2030 Eastern Road.

7.6.1.5. These restrictions will ensure that traffic disruption is not exacerbated within the local area, particularly given the need for diversions and their intended routes.

7.7. DIVERSION ROUTES FOR ROAD CLOSURES ON HAVANT ROAD AND THE A2030 HAVANT ROAD

7.7.1.1. Weekend road closures on Havant Road will require the following diversion routes to be implemented: also shown on Drawing EN02022-TMS-13 and 14 included in Appendix 6

7.7.1.2. For traffic turning right from Havant Road onto the A2030 Eastern Road: The diversion will be eastwards along A2030 Eastern Road, onto the A27 via the J1 of the A3(M)) and back onto the A2030 Eastern Road at the A27 Farlington roundabout; and

7.7.1.3. For traffic turning right from Havant Road to Farlington Avenue: The diversion with westwards along the Havant Road, A3 London Road, Boundary Way and Portsdown Hill Road. To reach the northern end of Farlington Avenue.

7.7.1.4. Access to Waterworks Road from Havant Road will be maintained for the duration of the road closure in this location.

7.7.1.5. The entirety of Havant Road / A2030 Havant Road contained within the Order Limit in Section 5.2 also forms part of the Area 3 HE Agreed Diversion Routes for the A27. Due to the designation of this route as an HE Agreed Diversion, any roadworks on this link will be coordinated with HE and scheduled as to not coincide with planned roadworks on the A27 Havant Bypass.

7.8. SUB-SECTION 5.5 – HAVANT ROAD AND A2030 EASTERN ROAD BETWEEN FARLINGTON AVENUE AND ZETLAND FIELD

7.8.1.1. Sub-Section 5.5 spans the following areas of road in the Order Limit:

- Havant Road / A2030 Havant Road between the signal-controlled junction of Farlington Avenue / Havant Road and the priority-controlled junction of the A2030 Havant Road / Waterworks Road;
- A2030 Eastern Road between the signal-controlled junction with A2030 Havant Road / Havant Road and Zetland Field, approximately 200m north of the junction with Fitzherbert Road.

7.8.1.2. Table 21 shows the available programme for construction on this sub-section.

Table 21 - Sub-Section 5.5 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
5.5	Havant Road / the A2030 Havant Road and the A2030 Eastern Road between Farlington Avenue and Zetland Field	600	Lane Closure	6 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
2 weeks for South Central Festival and Victorious Festival, plus a 4-week Christmas embargo.

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 5.2 – 6 weeks Section 5.4 – 2 weekends, Sub-Section 6 – 1 week	39 weeks

7.8.1.3. As with Section 5.4, construction work should be avoided in December due to the Christmas shopping period and the proximity to Sainsbury's / B&M Home Store in Farlington. Certain parts of May and August should also be avoided due to the South Coast and Victorious Music Festivals, which use the nearby Farlington playing fields as a campsite for those attending these events.

7.8.2. DESCRIPTION OF TRAFFIC MANAGEMENT MEASURES

Havant Road

7.8.2.1. The Onshore Cable Corridor runs through Farlington Avenue / Havant Road / A2030 Eastern Road traffic signal junction, which is dual carriageway and comprises of four lanes, two in each direction.

7.8.2.2. When the construction zone is running east/west along Havant Road, rather than north/south as described in Sub-section 5.4, single lane closures will be required. It will also be necessary to temporarily restrict right turns between Havant Road and Farlington Avenue and between Havant Road and between Havant Road and A2030 Eastern Road to minimise traffic delays at the junctions. The single lane closures are anticipated to be in place for approximately 2 weeks per circuit.

7.8.2.3. Detailed traffic management strategies for Havant Road should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads east and west of Farlington Avenue, west of A2030 Eastern Road in Section 5 and north of Grove Road.

7.8.2.4. If construction on Havant Road takes place during the school term the use of traffic marshals should be considered on Evelegh Road / Solent Road in the vicinity of Solent Infant School and Solent Junior School and on Grove Road / Station Road in the vicinity of Springfield School.

A2030 Eastern Road

7.8.2.5. Construction along the A2030 Eastern Road in Sub-Section 5.5 can be accommodated using temporary single lane closures. These lane closures will be in place on only one of the carriageways at any given time to minimise disruption to road users. The part of A2030 Eastern Road contained within Section 5.5 is approximately 400 m in length, and thus it is anticipated that the proposed single lane closures will be in place for approximately 4 weeks per circuit.

7.8.2.6. Where works are completed off-carriageway, a temporary closure and diversion of one of the shared-use paths alongside the A2030 Eastern Road will be required. Due the limited options for suitable non-motorised users to divert, any temporary closures of a shared-use path will be facilitated by a diversion route that runs parallel to the construction zone. As with the overall works, any closure will be limited to 100 m at a time as the construction zone progresses along the A2030 Eastern Road.

8. SECTION 6 – SAINSBURY'S CAR PARK

8.1.1.1. The highway network in Section 6 is inclusive of Fitzherbert Road between the signal-controlled junction with the A2030 Eastern Road and the signal-controlled junction with the access into the car park of Sainsbury's Farlington Superstore. Also included in this section is the part of Sainsbury's car park. The FTMS proposals are shown in Drawing EN02022-TMS-6 included in Appendix 5.

8.1.1.2. Table 22 shows a breakdown of the calendar year, showing availability for the construction of the Onshore Cable Route to take place within this section.

Table 22 - Section 6 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="4">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td colspan="2">6</td><td colspan="4">Fitzherbert Road</td><td colspan="2">60</td><td colspan="2">Lane Closure</td><td colspan="2">1 week</td></tr>
<tr><td colspan="12">Calendar Restrictions</td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions:
2 weeks for South Central Festival and Victorious Festival, plus a 4-week Christmas embargo and restriction around Easter to mitigate impact on trade.</td></tr>
<tr><td colspan="12">Other Restrictions</td></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 5.5 – 6 weeks</td><td colspan="6">40 weeks</td></tr>
</table>

8.1.1.3. As with Section 5.5 construction work should be avoided in December and around Easter due to the Christmas shopping period and the proximity to Sainsbury's and B&M Home Store.

8.1.1.4. Additionally, Certain parts of May and August should also be avoided due the South Central and Victorious Music Festivals, which use the nearby Farlington playing fields as a campsite for those attending these events.

8.1.1.5. Finally, construction within this sub-section should also not take place simultaneously with Sub-Section 5.5, to minimise the traffic impacts within this area.

DESCRIPTION OF TRAFFIC MANAGEMENT MEASURES

Fitzherbert Road

8.1.1.6. Within Fitzherbert Road, it is anticipated that construction can be accommodated with the use of single lane closures. The part of Fitzherbert Road contained within Section 6 is approximately 60 m long and thus it is anticipated that these single lane closures will be in place for approximately 1 week per circuit.

8.1.1.7. These works may be completed on a 24hr working basis to minimise disruption to Sainsbury's and B&M Home Store. Where this occurs, the noisiest activities (road cutting / breaking and resurfacing) will be avoided between 22:00 and 07:00. Furthermore, it is anticipated that temporary three-way signals will need to be implemented at the junction of Fitzherbert Road and the access to Sainsbury's Car Park. The temporary signals will ensure that access to Sainsbury's Car Park is maintained at all times throughout construction. Similar construction working hours may be used as for Fitzherbert Road to minimise disruption to Sainsbury's and B&M Home Store.

Sainsbury's Car Park

8.1.1.8. The Order Limits contain a portion of the car park of Sainsbury's Farlington Superstore. It is anticipated that partial closure of the car park may be required for the duration of works. This partial closure would likely include the temporary suspension of parking spaces on the western side of the Car Park. Construction taking place in Sainsbury's Car Park may require the temporary realignment of the Car Park's internal road, making it one way in the southbound direction on the western side.

9. SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

9.1.1.1. Section 7 is inclusive of the A2030 Eastern Road between the junction with A27 Havant Bypass and the junction with Airport Service Road. It is anticipated that construction in Section 7 will take place entirely off carriageway, and thus no traffic management measures are deemed necessary in this Section.

9.1.1.2. Table 23 shows a breakdown of the calendar year, showing availability for the construction of the Onshore Cable Route to take place within this section. Certain parts of May and August should also be avoided due the South Coast and Victorious Music Festivals, which use Farlington playing fields as a campsite for those attending these events.

Table 23 - Section 7 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
7	Farlington Playing Fields and Langstone Harbour Playing Fields	N/A	N/A	N/A

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
2 weeks for South Central Festival and Victorious Festival, plus a 4-week Christmas embargo.

Other Restrictions

Sections	Total Availability per Calendar Year
N/A	46 weeks

9.1.1.3. As these works are not being completed on-carriageway, there is no requirement to avoid simultaneous construction with other nearby sections.

9.1.1.4. As is noted in the Road Safety Technical Note (REP6-071) temporary 'Merge In Turn' signage is proposed to be installed on A2030 Eastern Road in this Section where single lane closures are in place to encourage vehicles to queue in both lanes.

10. SECTION 8 – A2030 EASTERN ROAD (ADJACENT TO GREAT SALTERNS GOLF COURSE) TO MOORINGS WAY

10.1.1.1. Section 8 is inclusive of the A2030 Eastern Road between the signal-controlled junction A2030 Eastern Road / Airport Service Road in the north and the priority-controlled junction of A2030 Eastern Road / Eastern Avenue in the south. Also included within Section 8 is the entirety of Eastern Avenue. The FTMS proposals are shown on Drawings EN02022-TMS-7 and 8, which are contained within Appendix 5.

10.1.1.2. For the purpose of this assessment, Section 8 has been split into three sub-sections as follows:

- **Sub-Section 8.1** – A2030 Eastern Road between the junction with Airport Service Road and the junction with Tangier Road;
- **Sub-Section 8.2** – A2030 Eastern Road between the junction Tangier Road and the junction with Eastern Avenue; and
- **Sub-Section 8.3** – Eastern Avenue.

10.1.1.3. Sub-Section 8.2 has been further disaggregated into three options to take account of the multiple options for cable routeing in this location.

10.1.1.4. Where works are completed off-carriageway along the Eastern side of the A2030 Eastern Road, a temporary closure and diversion of the shared-use path may be required. This shared-use path forms part of National Cycle Network Route 222. Due to the limited options for suitable diversions away from Eastern Road, any temporary closures will be facilitated by a diversion route that runs parallel to the construction zone. As with the overall works, any closure will be limited to 100 m at a time as the construction zone progresses along the A2030 Eastern Road.

10.2. SUB-SECTION 8.1 – A2030 EASTERN ROAD BETWEEN THE JUNCTION WITH AIRPORT SERVICE ROAD AND TANGIER ROAD

10.2.1.1. Table 24 details the programme availability for Sub-Section 8.1. Due the volume of traffic which uses the A2030 Eastern Road, construction works should be limited to the Easter holidays, May half-term (outside of the football season), June, early July and summer holiday periods. During the summer construction will also need to avoid the Victorious Festival at the end of August.

10.2.1.2. As noted in Section 2.7.2 it is proposed at this time that traffic management on this Section is removed on Portsmouth FC match-days in the first instance.

10.2.1.3. Traffic surveys will be completed prior to construction works on A2030 Eastern Road to confirm an up-to-date and representative position of traffic flows on the day of Portsmouth FC home games. Should those surveys, which will be reviewed by and agreed with PCC and HCC, identify that the traffic flows are comparable to those in the weekday peak hour as assessed in the TA and STA the need to remove traffic management on football match days will be lifted, so as to assist with the efficient delivery of the works in this location.

Table 24 – Sub-Section 8.1 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
8.1	A2030 Eastern Road between Airport Service Road and Tangier Road	1200	Lane Closures	5 Weeks (24hr, 7-Day construction) 8 Weeks (10hr, 7-Day construction)

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: Easter Holidays (2 weeks), May Half-Term (1-week), June , July and August (approximately 13 weeks, with avoidance of the Victorious Festival Weekend).
Approximate availability: 16 weeks.

Other Restrictions

Traffic management to be removed on Portsmouth FC home match days

Sections	Total Availability per Calendar Year
Sub-Section 8.2 – 2-11 weeks	8-14 weeks *(depending upon option used for Sub-Section 8.2)*

10.2.1.4. Construction within this section should also not take place simultaneously with any other construction works along the A2030 Eastern Road contained within Section 8. This is to mitigate the cumulative traffic impacts of construction taking place in two sections of the same road.

DESCRIPTION OF TRAFFIC MANAGEMENT MEASURES

10.2.1.5. It is anticipated that the construction corridor on A2030 Eastern Road will require single lane closures on both the southbound and northbound carriageways between the junction with Airport Service Road and the junction with Tangier Road. These single lane closures will be scheduled as so they do not take place concurrently on the northbound and southbound carriageways as to minimise disruption. This section of Section 8.1 is approximately 1200 m long.

10.2.1.6. Discussions with PCC indicate that due to the heavily trafficked nature of this link, the use of 24-hour, seven-day a week working would be preferable in this section to minimise the period that traffic management is in place. Use of 24-hour working by construction teams on this link would increase the progression rate to approximately 36 m per 24-hour period. At this rate of construction, works on this link are likely to take approximately 5 weeks per circuit assuming a seven-day working week.

10.2.1.7. If 24-hour working is employed on a seven-day working week the period of construction would be 5 weeks per circuit. If a 10-hour working day is used across a seven-day period (07:00-17:00 Monday to Friday and 08:00-18:00 at the weekend), the construction period would take 8 weeks per circuit. This highlights the mitigation achieved by use of 24-hour, seven-day a week working.

10.2.1.8. It should also be noted that between the junction with Burrfields Road and Tangier Road may be able accommodate installation of at least one circuit off-carriageway, using the verge on the eastern verge of the A2030 Eastern Road. Where on-carriageway works are required, the preferred option would be single lane closures on the southbound carriageway only. This is preferred over use of the northbound carriageway as the two-lane southbound carriageway merges into one lane further downstream.

10.2.1.9. Four junctions intersect the A2030 Eastern Road in Section 8.1. These are as follows:

- Signal-controlled junction of A2030 Eastern Road / Airport Service Road;
- Signal controlled junction of A2030 Eastern Road / Burrfields Road;
- Priority controlled access junction, providing access to Langstone Harbour Viewing Car Park; and
- Signal controlled junction of A2030 Eastern Road / Tangier Road.

10.2.1.10. Due to the volume of traffic which travels through the three signal-controlled junctions in Section 8.1, it is not considered appropriate to temporarily suspend side road access during construction regardless of which, if any, of the carriageways on this link are impacted. Whilst the roads which gain access from these signal-controlled junctions are not cul-de-sacs, and consequently remain accessible via alternate routes on the wider road network, the level of demand on them renders it unfeasible for access to be temporarily suspended via A2030 Eastern Road. Where necessary, temporary signals will instead be implemented, if required, although depending on the location of the Construction Zone it may be possible for each junction to operate under the existing traffic signal control but with single lane closures on entry or exit.

10.2.1.11. A2030 Eastern Road in Section 8.1 grants the sole vehicular access to The Great Salterns Mansion Harvester, and Harbourside Holiday Park, a complex of 69 holiday homes. Both the Harvester and Holiday Park gain access exclusively from the signal-controlled junction of the A2030 Eastern Road / Burrfields Road, and thus access will continue to be facilitated through the phasing of construction.

10.2.1.12. The access to Langstone Harbour Viewing Car Park on the southbound carriageway, may require temporary suspension throughout the course of construction. Where possible, access will be maintained by road plating of the access. In any case, access will only be impacted by the installation of one circuit for a period of one week or less.

10.2.1.13. If construction on Sub-Section 8.1 take place during the school term the use of traffic marshals should be considered on Dundas in the vicinity of Admiral Lord Nelson School. In addition as is noted in the Road Safety Technical Note (REP6-071) the following signage should be provided during construction works in Sub-Section 8.1:

- temporary 'Merge In Turn' and 'Do Not Block Junction' signage should be installed on A2030 Eastern Road in this Section where single lane closures are in place to encourage vehicles to queue in both lanes and avoid blocking back through upstream junctions; and
- 'Do Not Block Junction' signage should be installed in the vicinity of the A3 Mile End Road / Church Street / Commercial Road / Hope Street junction and upstream junctions south of this location

10.2.1.14. Detailed traffic management strategies for this section of A2030 Eastern should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A2047 London Road / Kingston Road and A288 Copnor Road, and residential roads between Tangier Road, Baffins Road and A2030 Eastern Road.

10.3. SUB-SECTION 8.2 – A2030 EASTERN ROAD BETWEEN TANGIER ROAD AND EASTERN AVENUE

10.3.1.1. Section 8.2 includes the section of the A2030 Eastern Road which spans from the junction with Tangier Road to the junction with Eastern Avenue. Table 24 shows details of the programme availability for Section 8.2. Due the volume of traffic which uses Eastern Road construction works should be limited to Easter holiday, May half-term, June / July and summer holiday periods. During the summer construction will also need to avoid the Victorious Festival at the end of August.

10.3.1.2. As noted in Section 2.7.2 it is proposed at this time that traffic management on this Section is removed on Portsmouth FC match-days in the first instance.

10.3.1.3. Traffic surveys will be completed prior to completion of construction works on A2030 Eastern Road to confirm an up-to-date and representative position of traffic flows on the day of Portsmouth FC home games. Should those surveys, which will be reviewed by and agreed with PCC and HCC, identify that the traffic flows are comparable to those in the weekday peak hour as assessed in the TA and STA the need to remove traffic management on football match days would be lifted, so as to assist with the efficient delivery of the works in this location.

Table 25 - Sub-Section 8.2 Programme Availability

<table>
<tr><th>Section</th><th>Description</th><th>Length (m)</th><th>Proposed TM</th><th>Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td>8.2 Option 1</td><td>Both Circuits within Milton Common</td><td>Up to 300m in carriageway</td><td rowspan="3">Lane Closure</td><td>1-2 week (24hr, 7-day working) – 2 weeks (10hr, 7-day working)</td></tr>
<tr><td>8.2 Option 2</td><td>One Circuit within Milton Common</td><td rowspan="2">1300m</td><td>8 weeks (10hr, 7-day working)</td></tr>
<tr><td>8.2 Option 3</td><td>Both Circuits within the A2030 Eastern Road</td><td>11 weeks (10hr, Mon-Fri plus 5hr on Saturdays)</td></tr>
<tr><td colspan="5">Calendar Restrictions</td></tr>
</table>

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: Easter Holidays (2 weeks), May Half-Term (1-week), June July and August (approximately 13 weeks, with avoidance of the Victorious Festival Weekend).
Approximate availability: 17 weeks.

Other Restrictions

Traffic management to be removed on Portsmouth FC home match days

Sections	Total Availability per Calendar Year
Sub-Section 8.1 – 5-8 weeks ***(depending upon working hours used)***	9-12 weeks *(depending upon working hours used for Sub-Section 8.1)*

10.3.1.4. Construction within this section should also not take place simultaneously with any other construction works within A2030 Eastern Road contained in Section 8 to mitigate the cumulative impacts of the construction taking place in two sections of the same road.

DESCRIPTION OF TRAFFIC MANAGEMENT MEASURES

10.3.1.5. Section 8.2 is inclusive of three options for cable routeing. These are set out below. Any construction taking place within the carriageway of A2030 Eastern Road will be facilitated by single lane closures.

Option 1 – Both Circuits within Milton Common

10.3.1.6. Option 1 involves both circuits exiting the carriageway south of the A2030 Eastern Road / Tangier Road signal-controlled junction, travelling south through the centre of Milton Common. Should both circuits be accommodated off-carriageway using Milton Common, then single lane closures would only be required for up to 300m. As with Sub-Section 8.1, 24-hour, seven-day a week working would be preferable to minimise the period of disruption, leading to a 1-2 week construction period per circuit.

10.3.1.7. If 24-hour working is employed on a five-day working week the period of construction per circuit would be 2 weeks. If the 10-hour working day is used across a seven-day period (07:00-17:00 Monday to Friday and 08:00-18:00 at the weekend), the construction period would take 2 weeks per circuit.

Option 2 – One Circuit within Milton Common

10.3.1.8. Should it only be practicable for one of the circuits to be accommodated off-carriageway, one circuit may be required to be installed on-carriageway. This would require a single lane closure on the southbound carriageway of A2030 Eastern Road between Tangier Road and Eastern Avenue. As the majority of this section the Eastern Road contains only one southbound lane, the lane closure would be accommodated by lane realignment. This would involve either the existing central hatching or one of the two northbound lanes operating in the southbound direction. It is considered that this will not have a significant impact on northbound traffic flow, due to this being constrained further south by the Eastern Road / Velder Avenue / Milton Road traffic signal junction.

10.3.1.9. This would involve the same construction period as Option 1 for one circuit but the other would require 8 weeks of single lane closures if a 10-hour working day is used across a seven-day period (07:00-17:00 Monday to Friday and 08:00-18:00 at the weekend). Construction for one circuit would require 11 weeks of single lane closures if a 10-hour working day is used Monday to Friday (07:00-17:00) and a 5-hour working day on Saturdays (08:00-13:00). 24-hour working is not possible on this link due to proximity of residential properties.

10.3.1.10. With the exception of the East Shore Way cul-de-sac, there are no junctions or private properties that gain access from the southbound carriageway of A2030 Eastern Road in the section which would be impacted by this single lane closure.

Option 3 – Both Circuits within the A2030 Eastern Road

10.3.1.11. Should the use of all off-carriageway options be deemed unfeasible by contractors as unfeasible, both cable circuits will be installed within the carriageway along the A2030 Eastern Road in Section 8.2. This would require temporary single lane closures on both the southbound and northbound carriageways, albeit at separate times. Should both cable circuits be placed within the carriageway, traffic management would span between the junctions with Tangier Road and the junction with Eastern Avenue. This section of A2030 Eastern Road is approximately 1.3 km in length and it is anticipated that if required, the traffic management on this link will be in place for 8 weeks per circuit if 10-hour working was used across a seven-day (07:00-17:00 Monday to Friday and 08:00-18:00 at the weekend). Construction for one circuit would require 11 weeks of single lane closures if a 10-hour working day is used Monday to Friday (07:00-17:00) and a 5-hour working day on Saturdays (08:00-13:00).

10.3.1.12. It should be noted that 24-hour working is not appropriate on the majority of the section of A2030 Eastern Road contained within Section 8.2, due to its proximity to residential dwellings.

10.3.1.13. Six junctions intersect A2030 Eastern Road between the junction with Tangier Road and the junction with Eastern Avenue, these junctions are as follows:

- A2030 Eastern Road / Sword Sands Road;
- A2030 Eastern Road / Hayling Avenue;
- A2030 Eastern Road / Stride Avenue;
- A2030 Eastern Road / Kirpal Road / East Shore Way; and
- A2030 Eastern Road / Langstone Road.
- A2030 Eastern Road / Eastern Avenue.

10.3.1.14. It is proposed that, Should Option 3 be pursued in Sub-Section 8.2, it is proposed that a temporary restriction of right turn movements is implemented at these junctions during construction to help mitigate the disruption to traffic flow.

10.3.1.15. In addition as is noted in the Road Safety Technical Note (REP6-071) the following signage should be provided during construction works in Sub-Section 8.1:

- temporary 'Merge In Turn' and 'Do Not Block Junction' signage should be installed on A2030 Eastern Road in this Section where single lane closures are in place to encourage vehicles to queue in both lanes and avoid blocking back through upstream junctions; and
- 'Do Not Block Junction' signage should be installed in the vicinity of the A3 Mile End Road / Church Street / Commercial Road / Hope Street junction and upstream junctions south of this location.

10.3.1.16. Should construction of the Onshore Cable Route take place within the carriageway on this section of A2030 Eastern Road detailed traffic management strategies should include consideration of additional traffic management measures contained within 2.6 of the FTMS on residential roads between A2047 London Road / Kingston Road and A288 Copnor Road, and residential roads between Tangier Road, Baffins Road and A2030 Eastern Road.

10.4. SUB-SECTION 8.3 – EASTERN AVENUE

10.4.1.1. Eastern Avenue, a residential street off the A2030, which gives access to several side roads and private residential properties. Traffic management on Eastern Avenue will only be required in the eventuality that works cannot be accommodated in Milton Common. Table 26 shows details of the programme availability for Section 8.3.

Table 26 -Sub-Section 8.3 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
8.3	Eastern Avenue	220	Road Closure	4

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Section 9.11 = 3 weeks	42 weeks

Section 9.12 = 5 weeks	

10.4.1.2. Eastern Avenue is approximately 220 m long and thus it is anticipated that if traffic management measures on this link are required, they will be in place for approximately 4 weeks per circuit.

10.4.1.3. Due to width restrictions on this link, should construction be required in Eastern Avenue, a full road closure will likely be required. Use of the route option that includes Milton Common rather than Eastern Avenue would remove the need for this road closure.

10.4.1.4. Eastern Avenue provides the sole vehicular access to the residential roads of Salterns Avenue, Shore Avenue and Lacey Road. As such, if use of this link is required construction would be split into two parts. The first construction zone would span from the junction of A2030 Eastern Road / Eastern Avenue to just north of the junction of Eastern Avenue / Salterns Avenue. This would allow vehicular access to Salterns Avenue, the adjoining roads, and the southern section of Eastern Avenue to be retained via the junction with Moorings Way. The second construction zone would span the remainder of Eastern Avenue which falls to the south of the junction with Salterns Avenue, this would allow continued access to Salterns Avenue / Shore Avenue and the northern section of Eastern Avenue to be retained.

11. SECTION 9 - MOORINGS WAY TO BRANSBURY ROAD

11.1.1.1. Depending upon the chosen route in Section 8, Section 9 will either start at the Moorings Way to Furze Lane bus link (if the Onshore Cable Route is constructed within the centre of Milton Common) or at the point on Moorings Way adjacent to Eastern Avenue. The FTMS proposals for Section 9 are shown on Drawing EN02022-TMS-8 included in Appendix 5 to this FTMS.

11.1.1.2. Contained within Section 9 are the following six sub-sections:

- **Sub-Section 9.1** – Moorings Way:
  - **Sub-Section 9.11** – Moorings Way between Eastern Avenue and Godwit Road;
  - **Sub-Section 9.12** – Moorings Way between Godwit Road and the Moorings Way to Furze Lane Bus Link; and
- **Sub-Section 9.2 / 9.3** – Other Roads to Bransbury Park:
  - **Sub-Section 9.21** – Locksway Road;
  - **Sub-Section 9.22** – Longshore Way;
  - **Sub-Section 9.31** – Kingsley Road; and
  - **Sub-Section 9.32** – Yeo Court.

11.1.1.3. It should be noted that Sub-sections 9.11 and 9.12 will only be required if Section 8 of the Onshore Cable Route is constructed along the section of the A2030 Eastern Road between Hayling Avenue and Eastern Avenue or on the western side of Milton Common (option 2 or 3 of Sub-Section 8.2). Conversely, if the Onshore Cable Route is constructed within the centre of Milton Common, Section 9 will start at Sub-Section 9.21.

11.2. SUB-SECTION 9.11 – MOORINGS WAY BETWEEN EASTERN AVENUE AND GODWIT ROAD

11.2.1.1. As with Section 8, the Order Limits within Section 9.11 and 9.12 contains multiple options for cable routeing along Moorings Way. These options are as follows:

- Option 1 – All works accommodated off-carriageway along the southern edge of Milton Common, with the construction corridor re-joining the carriageway at the start of the Moorings Way to Furze Lane Bus Link; and
- Option 2 – One circuit to be placed in the carriageway on Moorings Way and one installed within the southern edge of Milton Common.

11.2.1.2. It is not anticipated that there would be any eventuality in which both HVDC Circuits would need to be accommodated within the carriageway on Moorings Way.

11.2.1.3. Table 27 shows the programme availability for Sub-section 9.11, which will require shuttle working traffic signals to facilitate installation of at least one of the HVDC cables. These restrictions would not be required if the Cables were installed within the edge of Milton Common.

Table 27 – Sub-Section 9.11 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="4">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration
Per Circuit</th></tr>
<tr><td colspan="2">9.11</td><td colspan="4">Moorings Way between Eastern Avenue and Godwit Road (passes Moorings Way Infant School)</td><td colspan="2">250</td><td colspan="2">Shuttle Working</td><td colspan="2">3 weeks</td></tr>
<tr><th colspan="12">Calendar Restrictions</th></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions:
Only February Half-Term (1 week), Easter Holidays (2 weeks), May Half-Term (1 week), Summer Holidays (approximately 6 weeks), and October Half-Term (1 week) available. Approximate availability: 11 weeks.</td></tr>
<tr><th colspan="12">Other Restrictions</th></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 9.12 – 5 weeks
(no school term-time restrictions)</td><td colspan="6">11 weeks</td></tr>
</table>

11.2.1.4. As Sub-Section 9.11 runs past Moorings Way Infant School, construction works are to be restricted to school holidays only. This will ensure that emergency access is maintained throughout school term-time and school trips are unaffected.

11.2.1.5. Additionally, it is recommended that construction does not take place simultaneously with works in Sub-Section 9.12 (Moorings Ways between Godwit Road and the Moorings Way to Furze Lane Bus Link) when works are taking place on-carriageway. This would help minimise disruption to local residents and bus users.

11.2.1.6. Sub-Section 9.11 contains one junction. This is with Warren Avenue which is not a cul-de-sac. Therefore, Warren Avenue will be accessible via alternate routes throughout the duration of works. Where possible, access onto Mooring Way will be maintained through road plating.

11.3. SUB-SECTION 9.12 – MOORINGS WAY BETWEEN GODWIT ROAD AND MOORINGS WAY TO FURZE LANE BUS LINK

11.3.1.1. Table 28 shows the programme availability for Sub-Section 9.121, which will require shuttle working traffic signals to facilitate installation of at least one of the cable circuits. These restrictions would not be required if both circuits were installed within the edge of Milton Common.

Table 28 – Sub-Section 9.12 Programme Availability

<table>
<tr><th colspan="2">Section</th><th colspan="4">Description</th><th colspan="2">Length (m)</th><th colspan="2">Proposed TM</th><th colspan="2">Duration
Per Circuit (Cable Ducts)</th></tr>
<tr><td colspan="2">9.12</td><td colspan="4">Moorings Way between Godwit Road and Moorings Way to Furze Lane Bus Link</td><td colspan="2">500</td><td colspan="2">Shuttle Working</td><td colspan="2">5 weeks</td></tr>
<tr><th colspan="12">Calendar Restrictions</th></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="12">Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year</td></tr>
<tr><th colspan="12">Other Restrictions</th></tr>
<tr><td colspan="6"><u>Sections</u></td><td colspan="6"><u>Total Availability per Calendar Year</u></td></tr>
<tr><td colspan="6">Sub-Section 9.11 – 3 weeks</td><td colspan="6">47 weeks</td></tr>
</table>

11.3.1.2. It is recommended that construction does not take place on this Sub-Section simultaneously with works in Sub-Section 9.12 (Moorings Ways between Eastern Avenue and Godwit Road) when works are taking place on carriageway. These restrictions are to minimise disruption to residents and school pick-up / drop-off times.

11.3.1.3. To accommodate one circuit on-carriageway, shuttle working would be required on Moorings Way between Goodwit Road and the junction of Moorings Way / Sanderling Road. This section of Moorings Way is approximately 500 m in length and thus it is anticipated that construction on this link will take approximately 5 weeks to complete.

11.3.1.4. The section of Moorings Way in Sub-Section 9.12 contains three junctions with the following side roads:

- Godwit Road
- Schooner Way; and
- Sanderling Road.

11.3.1.5. None of the side roads adjoining this link are cul-de-sacs, and therefore all are accessible via alternate routes throughout the duration of works. Where possible, access onto Mooring Way will also be maintained through road plating.

11.4. SUB-SECTION 9.21 – LOCKSWAY ROAD

11.4.1.1. Sub-section 9.21 contains the section of Locksway Road between the access road to Eastney and Milton Allotments and the access point to the Thatched House Public House.

11.4.1.2. Table 29 shows the programme availability for Sub-Section 9.21.

Table 29 – Sub-Section 9.21 Programme Availability

Section		Description		Length (m)		Proposed TM		Duration Per Circuit (Cable Ducts)			
9.21		Lockway Road between access road to Milton Piece Allotments and Thatched House Public House		90		Shuttle Working		1 week			
Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year											
Other Restrictions											
Sections						Total Availability per Calendar Year					
Section 9.22 – 2 weeks						48 weeks					

11.4.1.3. It is anticipated that shuttle working facilitated by temporary traffic signals will be required on the section of Locksway Road between the junction with Furze Lane and the access to the Thatched House Public House to accommodate installation of each cable circuit.

11.4.1.4. The remainder of Locksway Road contained within the Order Limits is intended for use for construction access to Milton Piece Allotments only, and as such, it is not anticipated that any traffic management will be required on this link.

11.4.1.5. The part of Locksway Road for which shuttle working is required provides exclusive vehicular access to Locks Sailing Club, Langstone Harbour Fishermen's Association, Thatched House Public House and Old Oyster Public House. Access to all of the aforementioned premises will be retained throughout construction where possible through the use of road plating.

11.5. SUB-SECTION 9.22 – LONGSHORE WAY

11.5.1.1. If the Onshore Cable Route uses the Portsmouth University playing fields shuttle working traffic signals will be required on Longshore Way for approximately 70-150 m or 1-2 weeks per circuit, depending upon the exact routeing of the circuits.

11.5.1.2. Table 30 shows the programme availability for Sub-Section 9.22.

Table 30 – Sub-Section 9.22 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
9.22	Longshore Way	150	Shuttle Working	2 Weeks

Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions	
Sections	Total Availability per Calendar Year
Sub-Section 9.21 – 1 week	49 weeks

11.5.1.3. The only restriction on construction relates to Sub-Section 9.21 Locksway Way Road. This will avoid two sets of shuttle working traffic signals within the same vicinity.

11.6. SUB-SECTION 9.31 – KINGSLEY ROAD

11.6.1.1. The section of Kingsley Road contained within Sub-Section 9.31 spans from the junction with Ironbridge Lane to the junction with Yeo Court. The Order Limit allows for two options for the construction corridor in Kingsley Road. These options are as follows:

- The first option is for the Cables to intersect Kingsley Road in a north-south orientation, whilst moving from the fields to the immediate north of the carriageway, to those in the south. As this would mean the cable route only impacts a limited section of highway, this option would likely require shuttle working to be implemented for 1-2 days as the construction corridor passes across the link; and
- The second option is for the cable route to run along Kingsley Road in an east-west alignment for an up-to 150 m section between Yeo Court and Ironbridge Lane.

11.6.1.2. Regardless of which options is used for construction, it is anticipated that shuttle working facilitated by temporary traffic signals will enable two-way flow to be retained on this link throughout the duration of works.

11.6.1.3. Table 31 provides the programme availability for Section 9.31 assuming that the full 150m of Kingsley Road is required.

Table 31 – Sub-Section 9.31 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
9.31	Kingsley Road between Ironbridge Lane and Yeo Court	150	Shuttle Working	2 Weeks

Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year											

Other Restrictions	
Sections	Total Availability per Calendar Year
N/A	50 weeks

11.6.1.4. No calendar restrictions have been identified for Section 9.31 and no restrictions apply due to construction on nearby links.

11.6.1.5. Access is provided from Kingsley Road to two side-roads; Tideway Gardens and Amyas Court. As Tideway Gardens is not a cul-de-sac, access will be maintained at all times via the wider local road network. Amyas Court is a cul-de-sac and thus whilst the exact traffic management for each side-road can only be determined once the exact construction zone location is confirmed, at this stage it is proposed that this road be subject to temporary traffic signals or road plating.

11.7. SUB-SECTION 9.32 – YEO COURT

11.7.1.1. It is anticipated that a full road closure will be required on this link for approximately one week. During this closure, vehicle access will not be possible for the duration of the works but pedestrian access will be retained at all times.

11.7.1.2. Table 32 shows the programme availability for Sub-Section 9.32.

Table 32 – Sub-Section 9.32 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
9.42	Yeo Court	40	Road Closure	1 week
Calendar Restrictions				

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year											
Other Restrictions											

Sections	Total Availability per Calendar Year
N/A	50 weeks

12. SECTION 10 – EASTNEY (LANDFALL)

12.1.1.1. Section 10 contains the part of the Onshore Cable Corridor between the junction of Henderson Road / Bransbury Road and Landfall in the car park off Fort Cumberland Road near to Fraser Range. The highway links included in Section 10 are as follows:

- **Sub-section 10.1 –** Henderson Road between the junction with Bransbury Road and the junction with Fort Cumberland Road; and
- **Sub-section 10.2 –** Fort Cumberland Road between the junction with Henderson Road and the junction with Lumsden Road;

Table 33 – Sub-Section 10.1 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
10.1	Henderson Road between Bransbury Road and Fort Cumberland Road	300	Shuttle Working	5 weeks

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 1 week for Great South Run, 2 week restriction at Christmas / New Year

Other Restrictions

Sections	Total Availability per Calendar Year
Sub-Section 10.2 – 7 weeks	42 weeks

12.1.1.2. As the Great South Run route uses Bransbury Road and Henderson Road it is proposed that construction work avoids the month of October, when this event is usually held.

12.1.1.3. Additionally, it is proposed that Sub-Section 10.1 is subject to the restriction that construction cannot take place simultaneously with Sub-Section 10.2. This is to mitigate against the cumulative impacts of works in the same area.

12.1.1.4. Overall, Henderson Road is able to accommodate the construction corridor and retain two-way traffic through the use of single lane closures with shuttle working traffic signals. This would be for approximately 300 m or 5 weeks per circuit.

12.1.1.5. Two junctions intersect the Henderson Road in this Sub-Section, the first of which is Halliday Crescent which is accessible by alternate routes on the wider network. While the exact traffic management for each side-road can only be determined once the exact construction zone location is confirmed, at this stage it is proposed that the second side-road, Henderson Park, which is not accessible from any alternate routes, is subject to temporary traffic signals or road plating.

12.2. SUB-SECTION 10.2 – FORT CUMBERLAND ROAD

12.2.1.1. Table 34 sets out the programme availability for Section 10.2 along Fort Cumberland Road.

Table 34 – Sub-Section 10.2 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
10.2	Fort Cumberland Road between Henderson Road and Lumsden Road	370	Shuttle Working	7 weeks

Calendar Restrictions											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions: 2 week restriction at Christmas / New Year

Other Restrictions	
Sections	Total Availability per Calendar Year
Sub-Section 10.1 – 5 weeks	45 weeks

12.2.1.2. Fort Cumberland Road is able to accommodate the construction corridor and retain two-way traffic through the use of single lane closures with shuttle working traffic signals. This would be for approximately 370 m or 7 weeks per circuit. Temporary traffic signals / road plating will be required for the following side roads:

- Ferry Road;
- Gibraltar Road; and
- Lumsden Road.

12.2.1.3. None of these side roads are cul-de-sacs, and as such the Onshore Cable Corridor in Section 10 does not form the sole access point for any of them. As such, access will be maintained at all times via alternate routes on the wider road network.

12.2.1.4. A temporary suspension of access to the car parks serving the flats on the southern side of the carriageway may be required as works progress.

12.2.1.5. Vehicular access to Eastney Lifeboat Station will be maintained throughout the duration of construction through the strategic phasing of construction zones in Henderson Road to ensure access to either Ferry Road or Fort Cumberland Road is retained at all times.

13. SUMMARY OF FTMS

13.1.1.1. This document has provided the Framework Traffic Management Strategy for construction of the Proposed Development, based upon the Order Limits, the construction methodology and national guidance regarding the design / implementation of traffic management measures.

13.1.1.2. The Final TMS to be implemented for each phase of the Proposed Development will be dependent upon the detailed design of the Onshore Cable Corridor and contractor preferences, noting the requirements contained within this document and the Contractor's Technical Specification. All detailed proposals for the TMS will be discussed with HCC / PCC at the earliest opportunity to allow for review and amendment of proposals if required.

13.1.1.3. A summary of the FTMS by section is provided below.

13.1.1.4. Those marked with an asterisk * represent options for the Onshore Cable Corridor which may not be required due to alternative routeing options being pursued.

Table 35 – Section 1 – Lovedean (Converter Station Area)

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
1.1	Converter Station Access	TBC	Shuttle Working	8-12 weeks
1.2	Broadway Lane	6	Road Closure	1 Day

Table 36 – Section 2 – Anmore

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
No on-carriageway impacts in this Section.				

Table 37 – Section 3 Denmead/ Kings Pond Meadow

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
3.1	Anmore Road	6	Road Closure	1 Day
3.2	B2150 Hambledon Road to Soake Road	180	Shuttle working TS	3 weeks

Table 38 – Section 4 - B2150 Hambledon Road to Farlington Avenue

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
4.1	B2150 Hambledon Road between Soake Road and Milton Road	1300	Shuttle working TS	11-22 weeks
4.2	B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road	1000	Lane Closure	14 weeks
4.31	A3 London Road between Forest End Roundabout and south of the junction with Forest End	100	Shuttle Working	2 weeks
4.32	A3 London Road between south of junction with Forest End and southern end of bus lanes (in proximity to Poppy Fields)	1000	Lane Closure	17 weeks
4.33	A3 London Road between Poppy Fields and just south	250	Shuttle	5 weeks

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
	of Post Office Road		Working	
4.34	A3 London Road between Post Office Road and Rocking Horse Nursery	90	Road Closure	4 weekends
4.35	A3 London Road between Rocking Horse Nursery and Ladybridge roundabout	170	Shuttle Working	3 weeks
4.41	A3 London Road between Ladybridge roundabout and start of bus lane	80	Shuttle Working	1 week
4.42	A3 London Road between start of bus lane and Lansdowne Avenue	850	Lane Closure	8 weeks
4.43	A3 London Road between Lansdown Avenue and start of bus lane (south of The Brow)	250	Shuttle Working	3 Weeks
4.44	A3 London Road between bus lane (south of The Brow) and B2177 Portsdown Hill Road	400	Lane Closure	4 Weeks
4.5	B2177 Portsdown Hill Road between car park access and Farlington Avenue	160	Shuttle Working	2 Weeks

Table 39 - Section 5 – Farlington

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
5.1	Farlington Avenue between B2177 Portsdown Hill Road and Sea View Road	650	Shuttle Working	6 Weeks
5.2	Farlington Avenue between Sea View Road and Havant Road	350	Road Closure	6 Weeks
5.3	Evelegh Road	150	Road Closure	3 Weeks
5.4	Crossing of Havant Road	N/A	Road Closure	1-2 Weekends
5.5	Havant Road / the A2030 Havant Road and the A2030 Eastern Road between Farlington Avenue and Zetland Field	600	Lane Closure	6 Weeks

Table 40 - Section 6 –Sainsbury's Car Park

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
6	Fitzherbert Road	60	Lane Closure	1 Week

Section 7 – Farlington Junction to Airport Service Road

13.1.1.5. No traffic management is required in Section 7.

Section 8 – A2030 Eastern Road (Adjacent to Great Salterns Golf Course) to Moorings Way

Table 41 - Section 8 – A2030 Eastern Road to Moorings Way

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
8.1	A2030 Eastern Road between Airport Service Road and Tangier Road	1200	Lane Closures	5 Weeks (24hr, 7-Day working) 8 Weeks (10hr, 7-Day working)
8.2 Option 1	Both Circuits within Milton Common	300	Lane Closure	1 Week (24hr, 7-day working) – 2 Weeks (10hr, 7-day working)
8.2 Option 2	One Circuit within Milton Common	1300		8 Weeks (10hr, 7-day working)6 11 weeks (10hr Mon-Fri and 5hr Sat working)
8.2 Option 3*	Both Circuits within the A2030 Eastern Road			
8.3*	Eastern Avenue	220	Road Closure	4 Weeks

Table 42 – Section 9 – Moorings Way to Bransbury Road

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
9.11*	Moorings Way between Eastern Avenue and Godwit Road (passes Moorings Way Infant School)	250	Shuttle Working	3 Weeks
9.12*	Moorings Way between Godwit Road and Moorings Way to Furze Lane Bus Link	500	Shuttle Working	5 Weeks
9.21	Locksway Road between access road to Milton Piece Allotments and Thatched House Public House	90	Shuttle Working	1 Week
9.22	Longshore Way	150	Shuttle Working	2 Weeks
9.31	Kingsley Road between Ironbridge Lane and Yeo Court	150	Shuttle Working	2 weeks
9.32	Yeo Court	40	Road Closure	1 Week

Table 43 - Section 10 – Eastney (Landfall)

Section	Description	Length (m)	Proposed TM	Duration Per Circuit (Cable Ducts)
10.1	Henderson Road	300	Shuttle Working	5 Weeks
10.2	Fort Cumberland Road	370	Shuttle Working	7 Weeks

REFERENCES

Department for Transport. (2009). Traffic Signs Manual Chapter 8: Traffic Safety Measures and Signs for Roadworks and Temporary Situations.

Department for Transport. (2012). New Roads and Street Works Act 1991: Code of Practice of Co-ordination of Street Works and Works for Road Purposes and Related Matters (Fourth Edition).

Department for Transport. (2013). Safety at Streetworks and Roadworks: A Code of Practice .

HM Government. (1991). New Roads and Street Works Act.

Appendix 1 – Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy

AQUIND Limited

AQUIND INTERCONNECTOR

Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy

The Planning Act 2008

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy

PINS REF.: EN020022

DATE: 24 FEBRUARY 2021

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Document Name
Revision	001
Document Owner	WSP UK Limited and BECG
Prepared By	WSP UK Limited and BECG
Date	24 February 2021
Approved By	C. Williams
Date	24 February 2021

CONTENTS

PLATES

TABLES

1. INTRODUCTION

1.1.1.1. This Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy provides further detail on the expected impacts on residential, business and public vehicle parking along the Onshore Cable Corridor during construction. It outlines AQUIND's (the "Applicant") proposed approach to communicating with local residents, businesses and other stakeholders during the construction period for the onshore elements of the Proposed Development, including high-level objectives, working plans and evaluation methods, and seeks to build upon existing relationships and communication methods with these groups.

1.1.1.2. Mitigation measures outlined in this note will be secured through the construction phase Construction Environment Management Plan ('CEMP') specific to each phase of development.

2. PURPOSE OF THE STRATEGY

2.1.1.1. The purpose of this Onshore Cable Route Construction Impacts on Access, Car Parking and Communication Strategy is to outline the expected impacts on residential, business and public vehicle parking along the Onshore Cable Corridor during construction, the alternatives available and detail any further mitigation that might be required.

2.1.1.2. The report goes on to detail in Sections 6-10 the methods that will be used to communicate with local residents, businesses and other stakeholders in the areas directly affected during the construction period of the Onshore Cable Route.

2.1.1.3. The methods outlined within this document aim to foster positive working relationships between the Applicant and the communities in which construction takes place, building upon the relationships established during the planning stages of the Proposed Development.

2.1.1.4. This strategy provides further detail for the following activities:

- The nature of the work to be undertaken during the construction of the Onshore Cable Route, the anticipated impacts and the alternatives or mitigation measures proposed by the Applicant;
- How the Applicant will engage effectively with local residents, businesses and other stakeholders; and
- Measures to be taken to ensure that local residents, businesses and other stakeholders understand what the Applicant is doing, why, when and how it will impact them.

3. PROJECT OVERVIEW

3.1. OVERVIEW OF THE PROJECT

3.1.1.1. The Applicant is proposing to construct and operate an electricity interconnector between France and the UK known as AQUIND Interconnector with the net transmission capacity of 2000MW.

3.1.1.2. AQUIND Interconnector comprises marine and onshore high voltage direct current ('HVDC') cables between Normandy in France and Eastney, Hampshire, Converter Stations in both England and France and infrastructure necessary to facilitate the import and export of electricity between the High Voltage Alternating Current ('HVAC') electricity transmission networks of both countries as well as Fibre Optic Cables ('FOC') and associated infrastructure necessary for their operation.

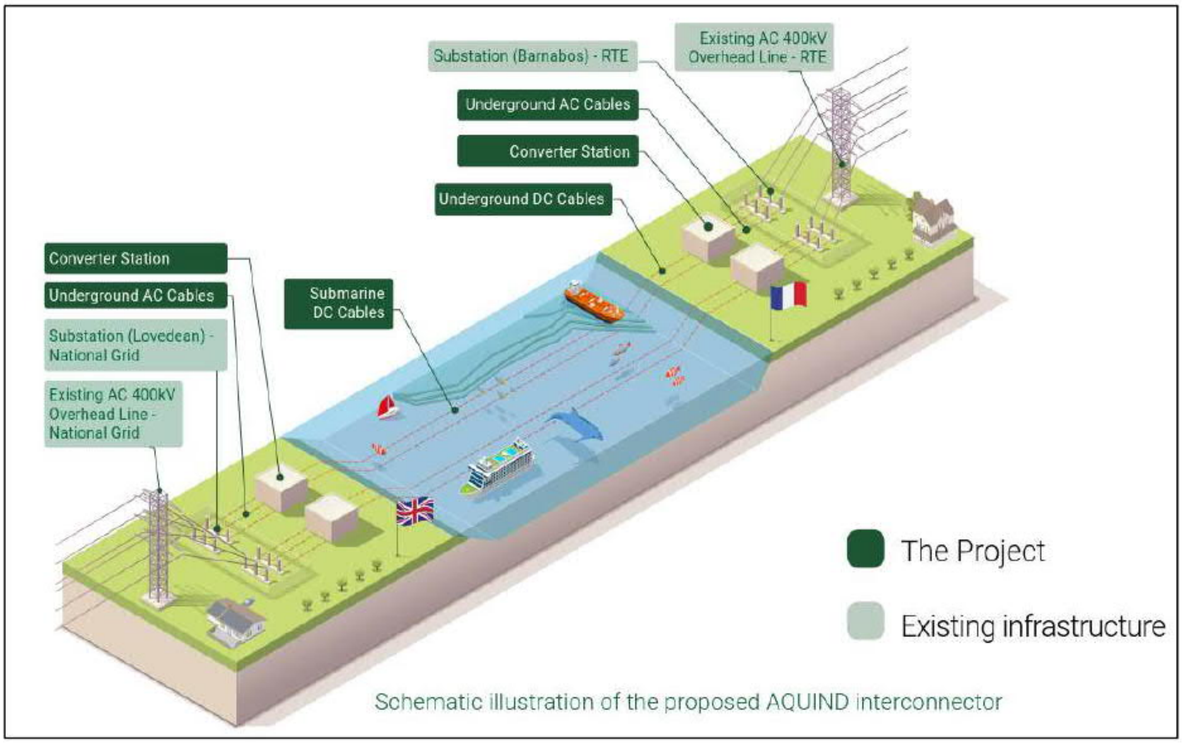


Plate 3-1 - Schematic Illustration of the Proposed AQUIND Interconnector

3.1.1.3. The Proposed Development will broadly comprise the following elements:

- The Marine Cable consisting of two HVDC Circuits from the boundary of the UK Exclusive Economic Zone ('EEZ') to Mean High Water Springs ('MHWS') at Eastney in Portsmouth;
- Jointing of the HVDC Cables at the Landfall;
- The Onshore Cable consisting of two HVDC Circuits from MLWS at Eastney in Portsmouth to the Converter Station;
- The Converter Station Area, including the Converter Station and associated equipment, the Telecommunications Buildings and their compound, the Work Compound and Laydown Area, the Access Road, and other associated infrastructure;
- The HVAC Cables, and associated infrastructure connecting the Converter Station to the National Electricity Transmission System at Lovedean Substation and;
- The Fibre Optic Cables installed together with each of the HVDC and HVAC Circuits and associated infrastructure.

3.1.1.4. This document deals only with onshore elements of the Proposed Development.

4. CONSTRUCTION METHODOLOGY

4.1. METHODOLOGY

4.1.1.1. This section explains the proposed methodology for mitigating effects and maintaining access to properties for residents, vulnerable people and businesses during the construction of the Onshore Cable Route, as outlined in Section 5 of the Onshore Outline Construction Environmental Management Plan (CEMP) (Examination Library reference REP7-032). It describes the communication measures and physical arrangements that the Applicant's contractor will implement in order to provide the necessary access.

4.2. CONSTRUCTION OF THE ONSHORE CABLE ROUTE

4.2.1.1. The construction of the Onshore Cable Route will comprise the installation of underground ducts in which the Onshore HVDC Cables will be housed, construction of underground Joint Bays and pulling of the Onshore HVDC Cables through the ducts from a Joint Bay to a Joint Bay. The construction of those sections of the Onshore Cable Corridor, where trenchless techniques will be used, will differ, but will also require the installation of underground ducts first and then pulling the cables through. This document deals primarily with those areas where the Onshore HVDC Cables will be installed in trenches, unless specified otherwise.

4.2.1.2. The ducts for each circuit will be installed in short sections, typically up to 100m in length. The installation speed will vary depending on the local conditions, like saturation with existing underground services and other factors.

4.2.1.3. At a number of locations along the Onshore Cable Corridor, the cable duct installation will cross in front of residential and business properties. Access to these properties will be temporarily restricted during the installation works and the impacts are considered in full in Section 5 of this report.

4.3. MAINTAINING ACCESS TO SIDE ROADS, BUSINESSES AND RESIDENTS

4.3.1. INTRODUCTION

4.3.1.1. Measures will be taken to limit access disruption where possible, but during the construction period some residential and business properties will experience temporary restrictions to vehicular access, including driveway access. Arrangements for vulnerable persons are set out in Section 4.4 below. Pedestrian and bicycle access will be maintained at all times, as will access for those using wheelchairs, mobility scooters and pushchairs.

4.3.1.2. Following standard practice, Contractors will be required to provide access to properties through "best endeavours" where reasonable notice of such requirements is given, noting that this may not always be possible and is dependent upon the stage of construction at any given time.

4.3.1.3. The contractor will be required to communicate planned works to members of the public at least 10 days in advance of the works commencing as detailed in Section 9 of this document. In addition, the Contractors would be required to notify all impacted residents / businesses of work commencing at the start of construction of a new 100m section(through door knocking at least 24 hours before works are planned to start).

4.3.1.4. Contractors will seek to facilitate access to property where possible for all affected parties including those identifying as vulnerable.

4.3.2. FULL ROAD CLOSURES

4.3.2.1. Along the entirety of the Onshore Cable Corridor, there are three locations where it will be necessary to put in place temporary full road closures. For Farlington Avenue and Evelegh Road, full road closures are likely to be required due to local conditions. In contrast, it is anticipated that closure of only a short stretch of London Road will be required. Further detail can be found in the Framework Traffic Management Strategy (FTMS) (Examination Library reference REP6-030).

4.3.2.2. Where there are full road closures, vehicular access will be unavailable for the entirety of the road closure, including outside of construction working hours, except in emergencies. Road plates will be available at the point of work at all times, should emergency access be required. At the end of the working day road plates would be installed to allow for out of hours emergency access only. Out of hours emergency access will be provided by an onsite standby emergency team.

4.3.2.3. Listed below are all the road closures which are anticipated to be required to facilitate construction of the Onshore Cable Corridor:

- **Broadway Lane:** Road closure of for an estimated duration of one day per circuit as the cable route is constructed across the carriageway between fields either side of Broadway Lane;
- **Anmore Road**: Road closure of for an estimated duration of one day per circuit as the cable route is constructed across the carriageway between fields either side of Anmore Road;
- **A3 London Road between Post Office Road and Rocking Horse Nursery**: Road closure of 90m for a duration of two weekends per circuit;
- **Farlington Avenue between Sea View Road and Havant Road**: Road closure of 350m for a duration of four weeks per circuit;

- **Evelegh Road**: Road closure of 150m for a duration of two weeks per circuit;
- **Havant Road**: Road closure at both the Havant Road directly to the south of the signal-controlled junction with Farlington Avenue and between the junctions with A2030 Eastern Road and the junction with Waterworks Road (a total of approximately 60m) for a duration of 1-2 weekends per circuit;
- **Eastern Avenue:** Road closure of 220m for a duration of three weeks per circuit; and;
- **Yeo Court**: Road closure of 40m for a duration of one week per circuit.

4.3.3. SINGLE LANE CLOSURES

4.3.3.1. In some locations, temporary single lane closures will be required to facilitate construction.

4.3.3.2. At these locations, vehicular access may be unavailable during construction working hours, except for emergencies.

4.3.3.3. In order to provide for vehicular access to properties and driveways outside of construction hours, road plates will be used to bridge the trench. Road plates will be mechanically lifted into position or placed by hand depending on the type of road plate selected. Road plates will then be secured to prevent slippage. The site security fencing will be re-arranged to allow the trench to be crossed.

4.3.3.4. During construction hours, it is intended to provide urgent access for vulnerable people, persons with disabilities or reduced mobility or for the emergency services, on demand, by stopping the works, re-arranging the fences, and bridging the trench using steel plates or similar.

4.3.3.5. Below is an example of ductile iron plates which can be quickly installed across trenches:

Plate 4-1 - Example of Duct Iron Plate

4.4. MAINTAINING ACCESS TO VULNERABLE PERSONS' PROPERTIES AND FOR EMERGENCY SERVICES

4.4.1.1. As is usual practice on construction projects, it will be incumbent upon residents identifying as vulnerable to make themselves known to the site manager/ contractor once notified works are due to begin. Vulnerable persons for the purpose of this strategy are defined as those with locomotion, seeing, hearing, reaching, stretching and dexterity and learning disabilities, as outlined in the Inclusive Mobility guidance appended to this report in Appendix 9. In addition, the definition of vulnerable persons for the purpose of this report has been expanded to include children of Primary School age or younger. Contractors will undertake a best endeavours approach to identifying vulnerable individuals, through the requirement to knock on doors of all affected properties 24 hours prior to work within the relevant sections beginning. During this door-to-door engagement contractors will advise residents that works are due to commence, how long properties are likely to be impacted, as well as identifying any other access requirements. It is noted however that members of the public have no obligation to share such information with contractors, and thus it is incumbent upon residents identifying as vulnerable to make themselves known.

4.4.1.2. As stated in paragraph 2.5.1.3 of the FTMS (Examination Library Reference: REP6-030) access for pedestrians will be retained at all times. Access for cyclists will also be retained, although cyclists may be required to dismount in the immediate vicinity of works. Access to properties for persons with disabilities or reduced mobility and orientation will be retained via the additional measures set out in Section 4.3.2 and 4.3.3.

4.4.1.3. As outlined in Section 5, during the construction of the Onshore Cable Route, vehicular access to properties will be temporarily restricted in some locations. Details regarding the identification of vulnerable persons along the Onshore Cable Corridor will be outlined in the Construction Environment Management Plan (which will be produced post consent in accordance with requirement 15 of the DCO (Examination Library Reference: REP7-013). Under the Equality Act 2010, works promoters also have a duty to have regard for the needs of disabled people and older people in the planning and execution of works.

4.4.1.4. In periods of no construction activity, steel plates will be installed to provide constant access for all occupiers including vulnerable people outside of working hours during the construction phase of that section of the Onshore Cable Route. Steel plates will only be removed as and when construction works need to take place directly outside the affected property (I.e. not at the start of every working day) and therefore will be in place for the majority of the time during which properties are directly affected by the construction works. Contractors will be required to provide notice to occupiers prior to the removal of steel plates in order to allow for access while available and the steel plates will be reinstated to allow access during the completion of construction of that section.

4.4.1.5. During the construction of the Onshore Cable Route, it is intended to provide urgent access for vulnerable people, persons with disabilities or reduced mobility or for the emergency services, on demand by stopping the works, re-arranging the fences, and bridging the trench using steel plates or similar.

4.4.1.6. General access for vulnerable people and persons with disabilities or reduced mobility will be provided by the contractor within 1 hour of a request to the contractor’s point of contact. Members of the public identifying as vulnerable, who require bespoke access arrangements to be made, will be encouraged to contact the team via the dedicated freephone to enable arrangements on a case by case basis to be made.

4.4.1.7. The Applicant has held positive discussions with the emergency services at pre-submission and pre-examination stages with regard to emergency access during the construction of the Onshore Cable Route, particularly in respect of Waterlooville Fire

Station. As part of these discussions, the Applicant will seek to produce a communication plan in partnership with the emergency services (police, fire and ambulance services). The communication plan will outline the relevant procedures to be followed by both parties to ensure the continuous flow of accurate information between, the emergency services and contractors during the construction of the project.

4.4.1.8. The Applicant will continue to engage positively with the emergency services during the Examination.

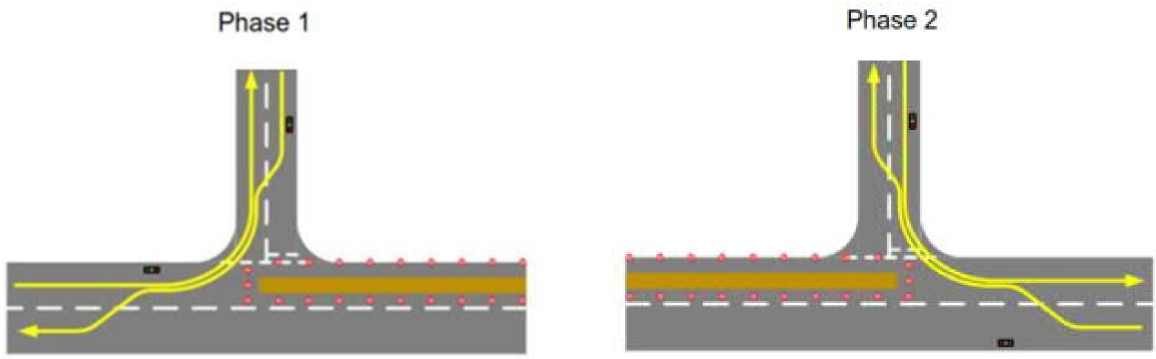
4.5. MAINTAINING ACCESS TO SIDE ROADS

4.5.1.1. As outlined in paragraph 2.5.3.5 of the FTMS (Examination Library Reference: REP6-030), side road access adjacent to the cable route will be considered on an individual basis with the traffic management used dependent on the characteristics of the road and junction. The strategy at this stage can be summarised as follows:

- For residential cul-de sacs, side-road access will be maintained via either road plate or three-way traffic signals, the decision to use traffic signals will depend on the level of traffic flow and visibility from the side-road to the main road traffic signal approaches. Where visibility poor, traffic signal control is likely to be required, although in all cases this will depend on the exact location of the construction zone.
- For side-roads that act as a through-roads, temporary closure of the access will be considered but this depends on the category of road, what the side road provides access to and the suitability of diversion routes. Where closure is not an option, three-way traffic signals will be used if the location of the construction zone requires it.
- Where the side road junction is controlled by traffic signals with the main road and where there is more than one approach lane at each entry, it may be possible to continue operating the existing signals through closure of a single lane on each entry. Where this is not possible, temporary traffic signals will be used instead of the existing control.

4.5.1.2. The exact traffic management strategy for side-road access will be agreed with the Highway Authority through submission of detailed designs and traffic management measure prior to commencement of works.

4.5.1.3. An example of a three-way traffic management set-up is outlined below. This would be applicable to all circumstances. Duct installation will take place in two phases. Once phase 1 has been completed the traffic management setup will be switched to reflect phase 2, as outlined below:



4.5.1.4. A similar methodology will be adopted to maintain access to Waterlooville Fire Station.

5. ONSHORE CABLE ROUTE CONSTRUCTION AND IMPACTS ON PARKING

5.1.1.1. This section provides further detail on the expected impacts on residential, business and public vehicle parking along the Onshore Cable Corridor, some of which may be temporarily unavailable during construction of the Onshore Cable Route, depending on their location and type of traffic management required to facilitate construction of the Onshore Cable Route as identified in the FTMS (Examination Library Reference: REP6-030). As the proposed Onshore Cable Route is not anticipated to impact upon any dedicated motorcycle or bicycle parking, this section will focus upon impacts for access to properties with cars and other analogous vehicles only.

5.1.1.2. This section builds upon information contained within the FTMS. It explains:

1. The extent of potential disruption to residential, business and public car parking along the Onshore Cable Corridor;
2. Available alternatives where access or parking will be temporarily unavailable due to the construction works;
3. Where parking surveys are required or have been completed to confirm existing levels of car parking demand and potential impact of construction works; and
4. The mitigation measures that are proposed to mitigate for the temporary loss of car parking spaces, whilst noting that in some instances there is no appropriate mitigation available to mitigate the temporary impact of the construction works.

5.1.1.3. In completing this assessment, the strategy for residential driveway access is as follows:

1. Driveway access will be provided outside of working hours except where full road closures are required, by road plating over the trench and rearrangement of security fencing / traffic management to allow the trench to be crossed;
2. Urgent access for vulnerable people, persons with disabilities or reduced mobility or for the emergency services will be provided, on demand;
3. General access for vulnerable people persons with disabilities or reduced mobility will be provided by the Contractor within one hour;
4. Steel plates will only be removed as and when construction works need to take place directly outside the affected property (I.e. not at the start of every working

day) and therefore will be in place for the majority of the time during which properties are directly affected by the construction works;

5. In other circumstances, Contractors will be required to provide access to properties through “best endeavours” where reasonable notice of such requirements is given, noting that this may not always be possible and is dependent upon the stage of construction at any given time. and;
6. Side-road access will be provided at all times via either road plating or three-way temporary traffic signals.

5.1.1.4. This section considers residential / business parking and public car parks that are directly impacted by construction of the Onshore Cable Route, with locations accessed via side-roads / access roads and with off-carriageway private car parks to be managed by road plating or temporary signals as defined in the FTMS and Section 4. An example of this is Wellington Retail Park in Waterlooville, which is accessed via Aston Road, rather than directly from the B2150 Hambledon Road and business premises on the northern section of A3 London Road which have private car parks. Given access to the Retail Park and these businesses will be maintained at all times, there will be no impact on associated car parking.

5.1.1.5. Generally, business and residential parking will only be impacted when construction is occurring in that immediate vicinity. As is stated in paragraph 2.5.1.2 of the FTMS (Examination Library Reference: REP6-030) it is expected that highway works will progress, on average, at a rate of 100m per week. As such, the majority of residential accesses and businesses with on-street parking are likely to only be impacted for approximately one - two weeks per circuit within the construction phase. Taking into account 100m working section and typical parking bay sizes, it can be assumed that this will be equivalent to a loss of up to 22 spaces at any one given time of on-street parking, and considerably fewer properties (5-10) where only driveway access is impacted.

5.1.1.6. A small number of Public car parks may face longer periods of disruption in some instances where construction works of joint bays may occur or at Horizontal Directional Drilling (HDD) locations, and where known, the length of disruption has been listed in section 5.

5.2. PARKING SURVEYS

5.2.1.1. Parking surveys have been deemed necessary by the Applicant where alternatives are not clearly available either in relation to their location or available capacity. Surveys will generally consist of one of the following:

- Residential parking surveys: Taking account of the Lambeth parking survey methodology, which is a generally accepted method of surveying residential parking demand, a snapshot survey will be completed between the hours of

00:30 and 05:30 on two separate weekday nights (Monday to Thursday). This will capture on street parking demand when it is likely to be at its greatest;

- Business parking surveys: Completed over a weekday and Saturday daytime period to assess parking demand during business hours; and
- Other public parking surveys: Completed over a weekend daytime period to assess parking demand at peak leisure periods.

5.2.1.2. Use of the Lambeth parking survey methodology is recommended within paragraph 3.9 and 4.9 of Portsmouth City Council's Parking Standards and Transport Assessment Supplementary Planning Document (July 2014).

5.2.1.3. Results of parking surveys completed prior to submission of the application are included within the Transport Assessment (Examination Library Reference: APP-448) and are summarised below, while results of additional parking surveys are included within this document in Section 5.7 through Section 5.33.

5.2.2. BUSINESS AND CAR PARK SURVEYS

5.2.2.1. As it has not been possible to complete representative business parking surveys and car park surveys during the examination due to the ongoing COVID-19 pandemic it is proposed that confirmatory surveys will be completed prior to the start of construction. Given the robust approach adopted to the assessment of parking availability it is not expected that such surveys will identify other impacts or additional mitigation beyond that already detailed within this document.

5.2.3. RESIDENTIAL PARKING SURVEYS

5.2.3.1. Partial relaxation of lockdown measures in the UK has allowed residential parking surveys to be completed. As such, residential parking surveys were carried out in July 2020 for nine sites where alternatives were not clearly available in respect to capacity or location. The nine residential sites surveyed are as follows:

- **Forest End and surrounding area:** Surveys of Forest End, Evergreen Close, Norton Close, Windrush Gardens and part of the on-footway parking on A3 London Road;
- **Bushy Mead**: Comprising of a survey of Bushy Mead;
- **Alternative parking for Farlington Avenue**: Comprising of surveys of Evelegh Road, Grant Road and Galt Road;
- **Eastern Avenue and surrounding area**: Comprising of surveys of Eastern Avenue, Salterns Avenue, Shore Avenue and Moorings Way between A2030 Eastern Road and Warren Avenue;
- **Eastney**: Comprising of surveys of Warren Avenue between Milton Road and Mayles Road, Shelford Road, Crofton Road, Hollam Road, Catisfield Road, Meon Road, Weston Road, Milton Park Avenue, Cromarty Avenue, Locksway Road, Fair Oak Road, Cheriton Road, Oakdene Road, Furze Lane, Broom Square, Longshore Way, Waterlock Gardens, Seaway Crescent, Rosetta Road, Bertie Road, Pleasant Road, Stowe Road, Morgan road, Ironbridge Lane, Trevis Road, Meryle Road, Towpath Mead, Perth Road, Gurney Road, Hester Road, Old Canal, Melrose Close, Shirley Avenue, Berney Road, Redlands Grove, Tideway Gardens, Maurice Road, Dunbar Road, Kingsley Road, Tranmere Road, Glasgow Road, Amayas Court, Yeo Court, Torfrida Court, Wake Lawn, Holne Court, Lightfoot Lawn and Leofric Court; and
- **Fort Cumberland Road and surrounding area**: Comprising of surveys of Ferry Road, Gibraltar Road, Finch Road, Lumsden Road and Fort Cumberland Road between either end of Ferry Road

These surveys were undertaken using the Lambeth parking survey methodology.as noted in paragraph 5.2.1.1, as recommended in Portsmouth City Council's Parking Standards and Transport Assessment Supplementary Planning Document (July 2014).

5.2.3.2. A summary of the methodology used in the calculation of parking capacity, occupancy and resulting stress is as follows:

- **Areas within a Controlled Parking Zone (CPZ)**:
  - Only Resident Permit Holder Bays and Shared Bays which allow residents parking (these may be shared with Pay-and-Display parking and/or Business Permit Holders) were counted;
  - Calculation of parking capacity was recorded by measuring the total length of each parking bay and this length then divided by five, within each vehicle assumed to be 5m; and

- In any other areas where cars can legally park overnight, the number of cars were counted and noted separately. These typically comprise of Single Yellow Lines or short-term parking or Pay-and-Display bays.

- **Areas which are not within a CPZ**:

  - All areas of unrestricted parking were counted; and

  - Calculation of parking capacity was recorded by measuring the total length of the road, accounting for any obstructions to parking (drive-way accesses, junctions etc.) were measured and then divided by five. This number was then rounded down to the nearest whole number in order to approximate capacity.

5.2.3.3. The results of these residential parking surveys has been included in the relevant table for each survey site in Section 5.7 through Section 5.33 of this report.

5.3. ESTIMATED CAR PARKING DEMAND AND CAPACITY

5.3.1.1. A number of assumptions have been used to estimate existing levels of car parking demand and capacity as described below. These assumptions have been formulated based on professional judgement and experience of existing conditions along the Onshore Cable Corridor. These assumptions have been used to estimate parking capacity / occupancy in the cases where representative surveys cannot be undertaken due to the on-going public health situation (for business parking and public car parks), or for areas where initial assessment found sufficient alternative parking available and thus did not require further assessments through the use of parking surveys.

5.3.1.2. For all parking that does not occur on private driveways, a 75% occupancy rate has been assumed where necessary surveys have not yet been carried out (as shown highlighted in [red] in the tables below). This includes all areas of parking impacted directly by construction of the Onshore Cable Route and alternative locations identified as possible locations to cater for displaced demand. This is considered to be a realistic and robust assumption that enables a robust and comprehensive package of mitigation to be established in lieu of surveys, taking into account the anticipated impact of the works and ability of alternative locations to accommodate displaced parking.

5.3.1.3. For driveway parking it is recognised that the proposed strategy will reduce the level of displaced parking during single lane closures through the following:

- by providing access outside of working hours,
- by provide access to vulnerable people and persons with disabilities or reduced mobility at all times during single lane closures; and
- by making best endeavours to provide for access in all other circumstances.

5.3.1.4. . For assessment purposes however and to provide a robust estimate of the potential level of displaced parking during construction working hours where single lane closures are required a combination of desktop surveys and the National Travel Survey 2018 (Department for Transport) have been used based on the following methodology:

1. Driveway parking has been estimated for an area using a combination of Google Maps and Streetview, with the upper limits of provision being used to calculate total parking capacity. For example, if 10 properties each had driveway capacity for 2-3 vehicles, it has been assumed that the maximum parking capacity is 30 vehicles.
2. Table NTS0503 'Trip purpose by start time (Monday to Friday): England' from the National Travel Survey 2018 was used to calculate the proportion of trips made between 08:00 and 17:00 to take account of construction working hours and likely periods when road plates will be installed. This showed that 67% of trips are made between this time, when considering all journey purposes.
3. Table NTS0409 'Average number of trips (trip rates) and distance travelled by purpose and main mode: England' from the National Travel Survey 2018 was used to estimate the number of trips made by car and as a robust assumption, it has been assumed that in addition to car driver trips, all car passenger (as pick-ups from home), London transport and surface rail trips (as part of a longer commute) have been assumed to include car travel from home. This shows that 67% of trips are made by car when considering all journey purposes.
4. The maximum capacity has been multiplied by the percentage of trips made between 08:00 and 17:00 (67%) and by the percentage of trips made by car (67%) to calculate an anticipated level of demand from displaced parking when residential access is not available.

5.3.1.5. Using this methodology for single lane closures, it is assumed that 45% of total driveway parking capacity will be displaced during construction working hours. For full road closures, it is assumed that 100% of total driveway capacity will be displaced.

5.3.1.6. In all cases, the assessment has also assumed that all properties located within the 100m construction zone have driveway access restricted by the construction works, and therefore require parking to be displaced during construction working hours. This is a very robust assessment, taking account of the strategy for maintaining access to properties summarised in paragraph 5.1.1.3, which means that only 2-3 properties are likely to have access restricted at any one time.

5.4. APPROXIMATING AVAILABLE CAPACITY OF ALTERNATIVE PARKING

5.4.1.1. For the purpose of this assessment, it was necessary to approximate the available capacity of existing parking where surveys have not been completed. The methodology set out below has been used to approximate the capacity of existing parking spaces unless it is specifically stated that an alternative approach has been taken (for example, if parking surveys have already been undertaken in areas to assess existing capacity).

5.4.2. ON-STREET PARKING

5.4.2.1. The methodology used to approximate the total capacity of on-street parking was as follows:

- **For locations where on-street parking has marked bays**: the total number of marked bays were counted; and
- **For locations where on-street parking does not have marked bays**: the total length of available kerbside was measured, and this number divided by 4.5m to gain an approximation of the total capacity. The value of 4.5m was chosen as this reflects the minimum expectable total length of designated on-street parking bays parallel to the carriageway in the UK as per guidance set out in Paragraph 5.b of Part 5 of The Traffic Signs Regulations and General Directions 2016 (TSRG).

5.4.2.2. As stated above, in order to provide a robust assessment, it was assumed that total number of existing on-street bays have an occupancy rate of 75%. Therefore, it is assumed that the remaining 25% of the total capacity will be available to accommodate displaced parking. As such, the number of available parking spaces listed in the 'Alternatives Available' sections of this report are reflective of 25% of total existing capacity. The 75% occupancy rate is considered to be robust as it mainly relates to residential areas which are quieter during the working day. If parking levels are at 100%, affected residents will park further away from their destination.

5.4.3. PUBLIC CAR PARKS

5.4.3.1. This methodology used to calculate the total capacity of public car parks is as follows:

- **For Car Parks with marked bays**: the total number of bays were counted; and

- **For Car Parks with no formal markings**: the total number of available spaces was approximated by measuring available length and dividing this number by 2.8m, the standard width of a UK parking spaces.

5.4.3.2. Again, in order to provide a robust assessment, the 'Alternatives Available' section of this report lists 25% of total the total number of spaces.

5.5. TRAFFIC REGULATION ORDERS

5.5.1.1. Where it is required that Traffic Regulation Orders (TROs) are required to be temporarily suspended or altered to facilitate construction (including the provision of alternative car parking), the power to do so is to be included in the DCO (Examination Library Reference: REP7-013), with the requirements for TROs confirmed as part of the approval of the detailed traffic management measures to be implemented in connection with specific works forming part of the Proposed Development.

5.6. CONSTRUCTION IMPACTS OF THE ONSHORE CABLE ROUTE

5.6.1.1. The following sub-sections of this report detail the likely impact of the construction of the proposed Onshore Cable Route on car parking within the entirety of the Order Limits. To assess impacts on residential, business and public car parking this note uses the same section numbering convention as the FTMS. For ease of reference, the location of impacted parking is also shown **in Appendices 1- 7.** The section breaks as shown in Appendix 1 – 7 refer to the different sections of the Onshore Cable Route, as outlined in the FTMS. The row breaks further sub-divide each of these sections into groups of properties, and in doing so allow for further localised consideration of the properties (business and residential) impacted by the proposals and the mitigation proposed within each section.

5.7. SECTION 1 - CONVERTER STATION AND SECTION 2- ANMORE

5.7.1.1. Within section 1 and 2 of the Onshore Cable Corridor the access arrangements to residential properties and businesses or public car parking will not be impacted by construction of the Onshore Cable Route.

5.7.1.2. Full details of alternative parking locations for section 1, 2 and 3 can be found in Appendix 1.

5.8. SECTION 3 - DENMEAD / KINGS POND MEADOW

Table 5-1 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Mill Road	Driveway access and on-street parking capacity for approximately 12 vehicles north of Mill Close / Windmill Field	Temporary TRO to be implemented in order to prohibit on-carriageway parking to enable delivery of cable drums. Driveway access will be maintained at all times. Maximum duration of one week per circuit during construction working hours only.	Temporary TRO suspension of on-carriageway parking during working hours. Limited impact as majority of residential properties have private driveways on this link.	On-street parking spaces available on Mill Close and Windmill Fields = 13 spaces within a maximum distance of 360m. This can fully accommodate displaced parking.	No surveys required	Negligible residual impacts due to availability of driveways for residential properties on this link.
Anmore Road	Driveway access and on-street parking provision for approximately seven vehicles in close proximity to the residential properties directly to the east of the junction with Mill Road	Temporary TRO to be implemented in order to prohibit on-carriageway parking to enable delivery of cable drums. Driveway access will be maintained at all times. Maximum duration of one week per circuit during construction working hours only.	Temporary TRO suspension of on-carriageway parking during working hours. Limited impact as majority of residential properties have private driveways on this link.	On-street parking spaces available on Mill Close and Windmill Fields = 13 spaces within a maximum distance of 400m. This can fully accommodate displaced parking.	No surveys required	Negligible residual impacts due to availability of driveways for residential properties on this link.

5.8.1. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.8.1.1. There are no public car parks in this section.

5.8.2. PUBLIC CAR PARKS

5.8.2.1. There are no public car parks in this section.

5.9. SUB-SECTION 3.2 - B2150 HAMBLEDON ROAD TO SOAKE ROAD

5.9.1.1. Access to residential or business properties or public car parks will not be directly impacted by construction of the Onshore Cable Route within this Section.

5.10. SECTION 4 – HAMBLEDON ROAD TO FARLINGTON AVENUE

5.10.1.1. The Onshore Cable Corridor within Section 4 contains the following highway links:

- Sub-Section 4.1 – B2150 Hambledon Road between Soake Road and Milton Road;
- Sub-Section 4.2 – B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road;
- Sub-Section 4.3 – A3 London Road to Ladybridge Roundabout;
- Sub-Section 4.4 – A3 London Road to Portsdown Hill Road; and
- Sub-Section 4.5 – B2177 Portsdown Hill Road.

5.10.1.2. A summary of residential, business and public parking impacted by construction of the cable Onshore Cable Route is provided below.

5.10.1.3. Full details of alternative parking locations for section 4.1, can be found in Appendix 2.

5.10.1.4. Alternative parking arrangements for section 4.2 and 4.3 can be found in Appendix 3 and sections 4.4 and 4.5 in Appendix 4.

5.11. SUB-SECTION 4.1 – B2150 HAMBLEDON ROAD BETWEEN SOAKE ROAD AND MILTON ROAD

5.11.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-2 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
3 properties on B2150 Hambledon Road to the immediate south of Closewood Road	Driveway access with capacity for approximately 2 vehicles per property (6 vehicles in total).	Each property to be impacted for approximately one week per circuit. Driveway access impacted during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, impacting 3 properties at any one time, during construction. Displaced parking of approximately 4 vehicles at any one-time.	Billy's Lake Car Park = approximately 20 spaces within a maximum distance of 270m. This can fully accommodate displaced parking.	No surveys required	Limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours result in minimal residual impacts.
11 houses on Southdown View, 92 – 130 B2150 Hambledon Road and 16 properties on Hambledon Road spur.	Mainly driveway access with capacity for approximately 2 vehicles per property. (54 vehicles in total). Very limited on-road parking on Southdown	Informal give-way on Southdown View / Hambledon Road spur, shuttle working traffic signals on Hambledon Road.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, impacting 6-8 properties at any one time, during construction.	Southdown View / Hambledon Road spur =approximately 8 on-street parking spaces within a maximum distance of 400m.	No surveys required	Limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours result in minimal residual impacts.

	View and Hambledon Road spur.	Each property to be impacted for approximately six days in total. Driveway access impacted during working hours only.	Displaced parking of approximately 7 vehicles at any one-time.	Charlesworth Drive = approximately 4 on-street parking spaces within a maximum distance of 400m.. This can fully accommodate displaced parking.		
11 houses on Southdown View	Mainly driveway access for approximately 2 vehicles per property (22 vehicles in total) and on-road parking for approximately 12 vehicles	Temporary suspension of on-street parking on Southdown View to facilitate cable drum delivery. Driveway access to be retained.	Temporary suspension of on-street parking on Southdown View. Displaced parking of up to 12 vehicles.	Silverdale Drive = approximately 6 on-street parking spaces within 400m. Esher Grove = approximately 6 on-street parking spaces within 400m.	No surveys required	Limited daytime demand, available alternatives and driveway access retention result in minimal residual impacts.

Table 5-3 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Hambledon Parade **(12 local shops / businesses)**	On-street parking for 23 cars, 2 accessible bays and 1 loading bay.	Construction to be split into two 70m sections with one-way system used to limit car parking suspension to one-side of carriageway. Construction will take place over two weeks per circuit (70m per week).	Temporary suspension of 7-8 on-street car parking spaces at any one-time, equivalent to 6 vehicles at 75% occupancy, during construction.	Public car park on corner of Sickle Way and Hambledon Road, approximately 70m from existing with capacity for approximately 24 vehicles. 75% occupancy would provide capacity for 6 displaced vehicles within 90m Southdown View / Hambledon Road spur = approximately 8 on-	Surveys required to assess the typical daytime and evening occupancy on Hambledon Parade and Sickle Way car park.	Potential overflow parking onto alternative parking locations. Accessible bays and loading bay to be retained at all times through reallocation of spaces as required. This will require suspension of existing TROs.

				street parking spaces within 220m		

Table 5-4 – Public Car Park

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Billy's Lake open space car park, Southdown View **(Havant Borough Council)**	Informal parking for approximately 20 vehicles.	Potential joint bay location. Approximately one month per Joint Bay.	Temporary loss of 50% of car parking spaces, equivalent to 10 vehicles.	Southdown View = 4 on-street parking spaces within 150m Hambledon Parade = 6 spaces (limited to 3-hour stay) within 300m. Sickle Way car park = 6 spaces within 350m.	Surveys required to assess the weekend demand for Sickle Way car park. Surveys required to assess the typical daytime and evening occupancy on Hambledon Parade and Southdown View.	Potential overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient.

5.12. SUB-SECTION 4.2 – B2150 HAMBLEDON ROAD AND A3 MAUREPAS WAY BETWEEN MILTON ROAD AND A3 LONDON ROAD

5.12.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
13 properties between 40 – 64 Hambledon Road spur (south of the junction with Milton Road	On-street parking for approximately 35 vehicles and private driveway access	Temporary TRO to suspend on-street parking to facilitate the delivery of cable drums to Joint Bay locations.	Temporary suspension of on-street parking to facilitate the delivery of cable drums to Joint Bay locations. Driveway access to be retained throughout delivery of cable drums.	Hambledon Road spur (south of the junction with B2150 Hambledon Road) On-street parking = approximately 6 spaces within 300m Hambledon Road spur (north of the junction with Milton Road) On-street parking = approximately 7 spaces within 300m	No surveys required.	Negligible residual impacts due to available alternatives and retention of private driveway access

5.12.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.12.2.1. There are no businesses impacted in this section.

5.12.3. PUBLIC CAR PARKS

5.12.3.1. There are no public car parks impacted in this section.

5.13. SUB-SECTION 4.3 – A3 LONDON ROAD TO LADYBRIDGE ROUNDABOUT

5.13.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-5 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
1 – 35 A3 London Road, A3 London Road between Forest End Roundabout and south of the junction with Forest End.	A mix of driveway access (with capacity of approximately 3 spaces per property for 13 properties equating to a total of 39 spaces in driveways) and on-footway parking (8 spaces).	Shuttle working Each property to be impacted for approximately one week per circuit. Driveway access impacted during working hours only.	Approximately 18 impacted properties with temporary loss of vehicular access to driveway and on-footway parking during working hours, except for emergency / vulnerable persons' access, during construction. 8-10 properties and displaced parking of approximately 14 vehicles at any one time.	Forest End / Norton Close / Windrush Gardens / Evergreen Close / On-footway parking on A3 London Road = approximately 299 spaces within 400m. Surveys undertaken on Forest End / Norton Close / Windrush Garden / Evergreen Close / the on-footway parking on A3 London Road found an average occupancy of 30%. This suggests these roads are able to fully accommodate displaced parking.	No further surveys required.	Negligible residual impacts due to available alternatives
100 – 208 A3 London Road	Driveway access with capacity of approximately 3 spaces per property for approximately 54 properties equating to approximately 162 spaces in driveways.	Single lane closures. Each property to be impacted for approximately one week per circuit,	Possible temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. Temporary closure will only be required if	Forest End / Norton Close / Windrush Gardens / On-footway on A3 London Road = existing reserve capacity for 73 on-street parking spaces for 13 properties within a maximum distance of 400m.	No surveys required.	Negligible residual impacts due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
		during working hours only.	constructer utilises bus lane(s) rather than all-purpose lane. Impact on 5-10 properties and displaced parking of approximately 14 vehicles at any one time.	Corbett Road = approximately 5 on-street parking spaces for 24 properties within a maximum distance on 400m Newlands Avenue = approximately 9 on street parking spaces for 17 properties within 400m This can fully accommodate displaced parking.		
72 – 100 A3 London Road	Driveway access with capacity of approximately 3 spaces per property for 4 properties equating to 12 spaces in driveways.	Shuttle working. Each property to be impacted for approximately one week per circuit, during working hours only.	Approximately 4 impacted properties with temporary loss of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. Impact on maximum of 4 properties at any one time equating to 7 displaced vehicles.	Campbell Crescent = approximately 5 on-street parking spaces for four properties within 180m Purbrook Gardens = approximately 2 spaces for two properties within 350m. This can fully accommodate displaced parking.	No surveys required.	Negligible residual impacts due to further mitigation required due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.
50-72a London Road	On-street parking for resident permit holders only (6pm-8am) for up to 5 vehicles.	Shuttle working. Each property to be impacted for approximately one week per circuit, during entirety of construction works.	Temporary suspension of all on-street parking during construction. TRO suspension required.	Ladybridge Road public car park (free of charge) with approximately 46 spaces within a maximum walking distance of 330m 75% occupancy would provide capacity for displaced parking.	Weekday and weekend parking surveys of Ladybridge Road public car park required to assess peak occupancy.	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient. Potential to use road plates to bring on-street

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
						parking back into use outside of working hours.
7, 48, 50 and 55 A3 London Road	Single driveway access for 2-3 vehicles for one property but no other parking provision.	Road closure. Each property to be impacted for two weekends week per circuit.	Temporary closure of vehicular access to single driveway parking for the entire construction period.	Ladybridge Road public car park (free of charge) with approximately 46 spaces within a maximum distance of 240m. 75% occupancy would provide capacity for displaced parking.	No surveys required.	Negligible residual impacts due to limited number of properties impacted.
24 - 30 London Road	On-street parking with capacity for 6 vehicles.	Shuttle working. Each property to be impacted for approximately one week per circuit, during working hours only. Total impact of six parking spaces at any one time.	Temporary suspension of on-street parking during construction. TRO suspension required.	Alternative parking available within Ladybridge Road public car park (free of charge) with approximately 46 spaces Within a maximum walking distance of 340m. 75% occupancy would provide capacity for displaced parking.	Weekday and weekend surveys required of village centre and car park to assess peak occupancy on A3 London Road and Ladybridge Road public car park.	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient. Potential to use road plates to bring on-street parking back into use outside of working hours.

Table 5-6 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
The following businesses will be impacted within Purbrook village centre north of Ladybridge roundabout:	On-street parking bays (Mon-Fri 8am-6pm 1 hour with no returns within 1 hour) with capacity for approximately 16 vehicles.	Shuttle working. Each property to be impacted for approximately one week per circuit.	Temporary suspension of up to 12 on-street parking bays and two loading bay at any one-time, equivalent to 9 vehicles at 75% occupancy.	Alternative parking available within Ladybridge Road public car park (free of charge) with approximately 46 spaces. This is within a	Weekday and weekend surveys required of village centre and car park to assess peak occupancy on A3 London Road and Ladybridge Road public car park.	Potential for overflow parking onto alternative parking locations. Alterations of existing TRO to provide for relocated loading bay.

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Roadracer International Motorcycle Dealership **Gino's Mens Hairdressing** **Jacqueline's Hair and Nails Salon** **Radiance Beauty Salon** **JmB-PC Computer Repairs and sales shop** **Matheson Optometrists** **Tax Assist Accountants** **Purbrook Pharmacy** **Ray Dentith Motorcycles** **New Purbrook Garden Chinese Take Away** **One Stop Convenience Store** **Broadway Coffee Shop** **Cut'n'Dry barbers** **Purbrook Spice Indian Takeaway**	Two loading bays.			a maximum distance of 275m. 75% occupancy would provide capacity for displaced parking.		Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient. Potential to use road plates to bring on-street parking back into use outside of working hours.

5.13.1.1. Within Purbook the following business fall outside of the road closure discussed in Table 5.6, and as such would be provided with road plating as per the FTMS and Access Note:

- Portsmouth Plumbing Supplies;
- The Co-operative Food (entry and exit);
- Happy Hearts Pre-School;
- Time 4 Nutrition;
- Motorwise; and
- The Woodman public house.

5.13.2. PUBLIC CAR PARK

5.13.2.1. There are no public car parks in this section.

5.14. SUB-SECTION 4.4 - A3 LONDON ROAD / LADYBRIDGE ROUNDABOUT TO PORTSDOWN HILL ROAD

5.14.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-7 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
14 properties - 108 – 136 A3 London Road and 46 impacted properties between 46 – 106 A3 London Road	Driveway access with capacity for a maximum of approximately 3 cars per property for approximately 42 properties equating to a total of 126 spaces in driveways.	Lane closures. Each property to be impacted for approximately one week per circuit, during working hours only.	Possible temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access. Temporary closures will only be required if construction utilises bus lane(s) rather than all-purpose lane. 5-10 properties impacted and displaced parking of approximately 14 vehicles at any one-time.	Park Road = approximately 8 on-street parking spaces for approximately 14 properties within a maximum distance of 400m. Bushy Mead = approximately 5 on-street parking spaces with restriction of no waiting Monday Friday between 9am-5pm) and approximately 36 on street spaces without restrictions for 34 impacted properties within a maximum distance of 400m Surveys of Bushy Mead found an existing occupancy of 40% with approximate reserve capacity for 24 vehicles	No further surveys required	Negligible residual impacts due to the availability of alternatives.
Between 6 and 46 London Road **Approximately four properties are impacted on the west side of the carriageway on A3 London Road.** **Approximately 22 properties are impacted on the eastern side of the carriageway.**	Driveway access with capacity for a maximum of approximately 3 cars per property for approximately 27 properties equating to approximately 81 spaces in driveways.	Shuttle working. Each property to be impacted for approximately one week per circuit, during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access. 5-10 properties impacted and displaced parking of approximately 14 vehicles at any one-time.	Lily Avenue / Lansdowne Avenue / Geoffrey Avenue / Victoria Avenue = approximately 24 on-street parking spaces within a maximum distance of 400m Park Avenue and The Brow = approximately 13 on-street parking spaces within a maximum distance of 400m This can fully accommodate displaced parking.	No surveys required.	Negligible residual impacts thus no further mitigation required due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.
Four properties impacted between 1 – 6 A3 London Road	Driveway access with capacity for a maximum of approximately 3 cars per property for approximately 4	Shuttle working. Each property to be impacted for	Temporary closure of vehicular access to driveway parking during working hours, except for	Oakhurst Gardens = approximately 5 on-street parking spaces for four properties within a maximum distance of 220m.	No surveys required.	Negligible residual impacts thus no further mitigation required due to limited daytime demand, available

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
	properties equating to approximately 12 spaces in driveways.	approximately one week per circuit, during working hours only.	emergency / vulnerable persons' access 5-10 properties impacted and displaced parking of approximately 8 vehicles at any one-time.	This can accommodate displaced parking.		alternatives and road-plating of driveway access outside of construction working hours.

Table 5-8 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
The following business properties will be impacted directly south of Ladybridge roundabout: **Milton Glass** **The Village Bakery and Café** **3D Beauty Salon** **1st Quay Fish and Chips**	Off-carriageway car-park with capacity for 10 vehicles plus off-carriageway parking for 3 vehicles.	Shuttle working. Each property to be impacted for approximately one week per circuit.	Temporary closure of car park and all off-carriageway car park during construction, equivalent to 10 vehicles at 75% occupancy.	Alternative parking available within Ladybridge Road public car park (free of charge) with approximately 46 spaces within a maximum distance of 260m. 75% occupancy will cater for displaced parking if completed independently to works north of Ladybridge Roundabout. Capacity may not be available if construction also extends to northern side of Ladybridge roundabout.	Weekday and weekend surveys required of village centre and car park to assess peak occupancy on A3 London Road and public car park.	Potential for overflow parking onto alternative parking locations. Potential to use road plates to provide access to car-park during construction working hours.
Four local businesses on A3 London Road immediately north of Bushy Mead: **Purbrook Veterinary Practice** **Widley Cottage Chinese Take-away**	Nine designated off-carriageway bays, including one designated accessible bay (business customer parking only).	Lane closure. Each property to be impacted for approximately one week per circuit.	Possible temporary suspension all of parking for approximately one week during construction. Temporary suspension will only be required if constructer utilises bus lane(s) rather than all-purpose lane.	On-street alternative parking available on Bushy Mead for 5 vehicles. Will require temporary suspension of existing TRO on Bushy Mead (no waiting 9am-5pm Mon-Fri).	Weekday surveys required of business parking on London Road and weekday surveys of Bushy Mead.	Potential for overflow parking onto alternative parking locations. May require temporary suspension of TRO on western end of Bushy Mead to increase available car parking capacity.

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Manhatten Cakes Bakery **The Co-operative Funeral Care Funeral Directors**			Equivalent to 7 vehicles at 75% occupancy.			
Two local businesses on A3 London Road immediately south of Bushy Mead **L.A. Barbers barbershop** **Enchanted Endeavours Tattoo Parlour**	Four designated off-carriageway bays (business customer parking only).	Lane closure. Each property to be impacted for approximately one week per circuit.	Possible temporary suspension of all parking for approximately one week during construction. Temporary suspension will only be required if constructer utilises bus lane(s) rather than all-purpose lane. Equivalent to 3 vehicles at 75% occupancy.	On-street alternative parking available on Bushy Mead for 5 vehicles. Temporary suspension of existing TRO on Bushy Mead (No waiting 9am-5pm Mon-Fri) to accommodate displaced parking. Alternative parking on Bushy Mead is within 200m of displaced parking.	Weekday surveys required of business parking on London Road and weekday surveys of Bushy Mead	Potential for overflow parking onto alternative parking locations. May require temporary suspension of TRO on western end of Bushy Mead to increase available car parking capacity.
Hampshire Rose Public House	Car park with approximately 25 spaces.	Possible joint bay location. Approximately one month per joint bay.	Temporary suspension of car parking, equivalent to 19 vehicles at 75% occupancy.	Park Avenue = approximately 8 on-street parking spaces available within 400m.	Surveys required on Friday / Saturday on both the Public House Car Park and Park Avenue to existing occupancy levels.	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient – displaced parking likely to be spread further form car park.

5.14.2. PUBLIC CAR PARK

5.14.2.1. There are no public car parks in this section.

5.15. SUB-SECTION 4.5 – B2177 PORTSDOWN HILL ROAD

5.15.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-9 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
2 properties impacted on B2177 Portsdown Hill Road	Driveway access with capacity for a maximum of approximately 3 cars per property for 2 properties equating to approximately 6 spaces in driveways.	**Shuttle working.** Each property to be impacted for approximately one week per circuit, during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access. 2 properties impacted and displaced parking of approximately 3 vehicles at any one-time.	Hilltop Crescent = approximately 6 on street parking spaces within 300m. Portsdown Hill Car park = approximately 7 spaces within a maximum distance of 132m. This can accommodate displaced parking	No surveys required.	Negligible residual impacts,

5.15.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.15.2.1. There are no public car parks in this section.

5.15.3. PUBLIC CAR PARK

Table 5-10 – Public Car Park

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Portsdown Hill Car Park	Public car park with capacity for approximately 30 vehicles (informal parking).	Temporary partial closure of car park during construction, with possible full closure required when construction of Onshore Cable Route is entering / exiting the car park. Impact for approximately one week per circuit.	Temporary loss of public parking provisions at Portsdown Hill Car Park during construction, equivalent to 23 vehicles at 75% occupancy.	Hilltop Crescent = approximately 6 on street parking spaces within 400m. Hoylake Road = approximately 10 spaces on-street within 400m Portsdown Hill Viewpoint and Widley Walk car parks also have capacity for approximately 80 vehicles, within 1km of displaced parking. These car parks are likely to act as appropriate alternatives for users of Portsdown Hill Car Park whom use the car park for recreational uses.	No surveys required.	Negligible residual impacts.

5.16. SECTION 5 –FARLINGTON

5.16.1.1. The Onshore Cable Corridor within Section 5 contains the following highway links:

- Sub-Section 5.1 – Farlington Avenue between Portsdown Hill Road and Sea View Road;
- Sub-Section 5.2 - Farlington Avenue between Sea View Road and Havant Road;
- Sub-Section 5.3 - Evelegh Road;
- Sub-Section 5.4 – crossing of Havant Road into Farlington Avenue or Portsmouth Water land; and
- Sub-Section 5.5 – Havant Road and A2030 Eastern Road between Farlington Avenue and Fitzherbert Road.

5.16.1.2. A summary of residential, business and public parking impacted by construction of the Onshore Cable Route is provided below.

5.16.1.3. Full details of alternative parking locations for section 5.1,5.2, 5.3, 5.4,5.5 and 6, can be found in Appendix 5.

5.17. SUB-SECTION 5.1 – FARLINGTON AVENUE BETWEEN PORTSDOWN HILL ROAD AND SEA VIEW ROAD

Table 5-11 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Approximately 39 properties between 31 – 100 Farlington Avenue	On-street parking and some driveway access with capacity for approximately 1-2 cars per property for nine properties equating to approximately 18 spaces in driveways.	Shuttle working. Each property to be impacted for approximately one week per circuit, during working hours only.	Temporary suspension of approximately 140 total on-street parking bays during construction. Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons’ access. Impact on up to 10-15 properties and displaced parking of approximately 14 vehicles at any one-time.	Moortown Avenue = approximately 13 on-street parking spaces for 11 properties within a maximum distance of 350m. Birkdale Avenue = approximately 20 spaces for the eight properties within a maximum distance of 400m. Burnham Road = approximately 7 on-street parking spaces for 11 impacted properties within a maximum distance of 240m. Blake Road = approximately 2 on-street parking spaces for six properties within a maximum distance of approximately 160m Parking surveys were undertaken in October 2019 on Seaview Road, Portsdown Avenue, Solent Road, Evelegh Road and St Hellens Road. Occupancy was found to be an	No further surveys required.	Negligible residual impacts.

				average of 53%, which suggests these roads have sufficient capacity to accommodate displaced vehicles.		
Farlington Avenue north of Sea View Road (in proximity to Burnham road and Mooortown Avenue)	On-street parking and some driveway access with capacity for approximately 1-2 cars per property for nine properties equating to approximately 18 spaces in driveways.	Temporary suspension of on-street parking to facilitate Joint Bay construction	Temporary suspension of approximately 15 on-street parking spaces on Farlington Avenue and Burnham Road or Moortown Avenue	Moortown Avenue = approximately 13 on-street parking spaces for 11 properties within a maximum distance of 350m. Birkdale Avenue = approximately 20 spaces for the eight properties within a maximum distance of 400m. Burnham Road = approximately 7 on-street parking spaces for 11 impacted properties within a maximum distance of 240m. Parking surveys were undertaken in October 2019 on Seaview Road, Portsdown Avenue, Solent Road, Evelegh Road and St Hellens Road. Occupancy was found to be an average of 53%, which suggests these roads have sufficient capacity to accommodate displaced vehicles.	No further surveys required.	Negligible residual impacts.

5.17.1. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.17.1.1. No affected business properties within this section.

5.17.2. PUBLIC CAR PARKS

5.17.2.1. There are no public car parks within this section.

5.18. SUB-SECTION 5.2 FARLINGTON AVENUE BETWEEN SEA VIEW ROAD AND HAVANT ROAD

5.18.1.1. Alongside consideration given to residential, business and public car parking in this sub-section it should be noted that Solent Infant School is also on this link. Access and parking associated with the school is unlikely to be impacted during term time given the restrictions set out in paragraph 7.3.1.2. of the FTMS which prevent works in this location being undertaken during term time.

5.18.2. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-12 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Approximately 34 properties on Farlington Avenue between 1-44	Driveway access with capacity for approximately 1-2 cars per property for 34 properties equating to 68 spaces in driveways.	Temporary road closure. Each property to be impacted for approximately one week per circuit, for entirety of construction period.	Temporary closure of vehicular access to driveway parking. Impact on up to 10-15 properties and displaced parking of approximately 14 vehicles at any one-time.	Blake Road = approximately 2 on-street parking spaces for seven properties within a maximum distance of approximately 230m. Evelegh Road approximately 5 on-street parking spaces for 1 – 13 Farlington Avenue (west side of carriageway) and 2 – 32 Farlington Avenue (east side of carriageway) within a maximum distance of approximately 400m. Parking surveys were undertaken in October 2019 on Seaview Road, Portsdown Avenue, Solent Road, Evelegh Road and St Hellens Road. Occupancy was found to be an average of 53%, which suggests these roads have sufficient capacity to accommodate displaced vehicles.	No further surveys required.	Negligible residual impacts.

5.18.3. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.18.3.1. No affected business properties within this section.

5.18.4. PUBLIC CAR PARKS

5.18.4.1. There are no public car parks within this section.

5.19. SUB-SECTION 5.3 - EVELEGH ROAD

5.19.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-13 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Ten properties impacted on the southern side of the carriageway on Evelegh Road between numbers 2 – 18.	Driveway access with capacity for approximately 1-2 vehicles per property equating to approximately 20 spaces in driveways and on-	Temporary road closure. Each property to be impacted for approximately one week	Temporary suspension of on-street parking.	Evelegh Road, Galt Road and Grant Road have a combined existing reserve capacity of 66 spaces within a maximum distance of 400m.	No further surveys required.	Negligible residual impacts due to

	street parking for approximately 13 vehicles.	per circuit, for entirety of construction period.	Temporary closure of vehicular access to driveway parking. Displaced parking of approximately 18 vehicles.	Overnight surveys undertaken on Evelegh Road, Galt Road and Grant Road have found an existing occupancy of 59%, suggesting reserve capacity for approximately 57 vehicles in total.		alternatives available

5.19.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.19.2.1. No affected business properties within this section.

5.19.3. PUBLIC CAR PARKS

5.19.3.1. There are no public car parks within this section.

5.20. SUB-SECTION 5.4 – CROSSING OF HAVANT ROAD INTO FARLINGTON AVENUE OR PORTSMOUTH WATER LAND

5.20.1.1. No residential, business or public parking provision is likely to be impacted by construction in this Section.

5.21. SUB-SECTION 5.5 – HAVANT ROAD AND A2030 EASTERN ROAD BETWEEN FARLINGTON AVENUE AND FITZHERBERT ROAD

5.21.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-14 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Eight properties impacted on the northern side of the carriageway on Havant Road.	Driveway access with capacity of approximately 3 vehicles per property equating to approximately 24 spaces in driveways.	Temporary lane closure. Each property to be impacted for approximately one week per circuit, during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. Displaced parking of approximately 11 vehicles.	Solent Road =approximately 4 on-street parking spaces (restricted no waiting Monday-Friday 8am-5pm) within a maximum distance of approximately 400m. Evelegh Road and Galt Road have a combined existing reserve capacity of 21 spaces within a maximum distance of 400m. Overnight surveys undertaken on Evelegh Road, Galt Road and Grant Road have found an existing occupancy of 59%, suggesting reserve capacity for approximately 57 vehicles in total.	No further surveys required.	Negligible residual impacts due to alternatives available

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
One property on the southern side of the carriageway on Havant Road	Driveway access with capacity of approximately 2 vehicles and private garage access	Temporary lane closure. Property to be impacted for approximately one week per circuit, during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. Displaced parking of approximately 3 vehicles.	Solent Road = approximately 5 on-street parking spaces (restricted no waiting Monday-Friday 8am-5pm) within a maximum distance of approximately 400m. Evelegh Road, Galt Road and Grant Road have a combined existing reserve capacity of 21 spaces within a maximum distance of 400m. Overnight surveys undertaken on Evelegh Road, Galt Road and Grant Road have found an existing occupancy of 59%, suggesting reserve capacity for approximately 57 vehicles in total.	No further surveys required.	Negligible residual impacts due to alternatives available and limited number of properties impacted.

5.21.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.21.2.1. No affected business properties within this section.

5.21.3. PUBLIC CAR PARKS

5.21.3.1. There are no public car parks within this section.

5.22. SECTION 6 – SAINSBURY'S CAR PARK

5.22.1.1. The Onshore Cable Corridor within Section 6 contains part of Fitzherbert Road, and the western section of Sainsbury's Car Park.

5.22.1.2. A summary of residential, business and public parking impacted by construction of the cable Onshore Cable Corridor is provided below.

5.22.2. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

5.22.2.1. No affected residential properties within this section.

5.22.3. BUSINESS PROPERTIES AND ASSOCIATED PARKING

Table 5-15 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Sainsbury's Farlington Car Park	Large car park of approximately 640 bays, approximately 76 of which are accessible.	Temporary partial closure of car park. Construction period 26 weeks.	Temporary partial closure of car park, with loss of bays to the western side of the car park, and possible temporary realignment of internal road in order to facilitate one-way movement only. 30-40 spaces to be lost at any one time.	Alternatives to lost spaces in remainder of car park. 75% occupancy would cater for lost parking spaces during construction.	No further surveys required.	Negligible residual impacts, thus further mitigation required. As per the restrictions set out in paragraph 8.1.1.3 of the FTMS, construction in this Section will not be permitted in December, as to avoid peak shopping periods.
Tudor Sailing Club	Informal car park with capacity of approximately 30 car parking spaces		Temporary partial or full closure of the car park for car parking / lay down	Andrew Simpson Centre and Langstone Harbour Sports Ground These are unlikely to accommodate displaced parking	Weekend surveys required to confirm occupancy of car park.	Parking unavailable during construction
Langstone Harbour Sports Ground car park	Informal car park with capacity for approximately 25 car parking spaces	Temporary / full closure of car park for up to 1 week per circuit.	Temporary full closure of car park required if alignment of Cable Route follow access (25 spaces lost). Partial closure will be required if alignment of cable route passes through part of the car park.	No alternative available.	Weekday and Weekend surveys required to confirm occupancy of car park.	Parking unavailable during construction

5.22.4. PUBLIC CAR PARKS

5.22.4.1. There are no public car parks within this section.

5.23. SECTION 7 –FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

5.23.1.1. The Onshore Cable Corridor within Section 7 is entirely off-carriageway, and for the most part comprises of the Horizontal Directional Drilling route between the mainland and Portsea Island.

5.23.1.2. A summary of residential, business and public parking impacted by construction of the Onshore Cable Route is provided below.

5.23.1.3. Full details of alternative parking locations for section 7 and 8.1, can be found in Appendix 6.

5.23.2. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

5.23.2.1. No affected residential properties within this section.

5.23.3. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.23.3.1. No affected business properties within this section.

5.23.4. PUBLIC CAR PARKS

Table 5-16 – Public Car Parks

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Farlington Playing Fields Car Park	Public car park with approximate capacity for 150 vehicles in unmarked bays.	Appendix 25.5. Illustrative Phasing of Works at Example Public Open Spaces of the ES (Examination Library Reference: 473) states "use of the small proportion of the car park for installing the ducts for one circuit and HDD4 Railway Crossing taking place during April 2022 lasting approximately 2 weeks".	Temporary partial closure of northern part of car park, with loss of approximately 15 spaces. Equivalent to 12 vehicles at 75% occupancy.	Remainder of Farlington Playing Fields Car Park provides spaces for approximately 100 vehicles, equivalent to 75 spaces at 75% occupancy. This would be sufficient to cater for displaced demand.	Weekend surveys required to confirm occupancy at Farlington Playing Fields Car Park.	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient – displaced parking likely to be spread further from car park.

5.24. SECTION 8 –EASTERN ROAD (ADJACENT TO GREAT SALTERNS GOLF COURSE) TO MOORINGS WAY

5.24.1.1. The Onshore Cable Corridor within Section 8 contains the following highway links:

- Sub-Section 8.1 – A2030 Eastern Road between the junction with Airport Service Road and the junction with Tangier Road;
- Sub-Section 8.2 – A2030 Eastern Road between the junction Tangier Road and the junction with Eastern Avenue; and
- Sub-Section 8.3 – Eastern Avenue.

5.24.1.2. A summary of residential, business and public parking impacted by construction of the Onshore Cable Route is provided below. Full details of alternative parking locations for section 8.2, 9 and 10, can be found in Appendix 7.

5.25. SUB-SECTION 8.1 – A2030 EASTERN ROAD BETWEEN THE JUNCTION WITH AIRPORT SERVICE ROAD AND TANGIER ROAD

5.25.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

5.25.1.1. No affected residential properties within this section.

5.25.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

Table 5-17 – Impacted Business Parking

Public Business Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Kendalls Group (Aggregate Industries)	Overspill parking site	Use of overspill parking site for HDD-3 compound, for approximately 31 weeks	Temporary loss of overspill car parking facilities	Parking area may available south of HDD-5 compound.	No surveys required.	Overspill parking may be unavailable during construction of HDD-3 (31 weeks).

5.25.3. PUBLIC CAR PARK

Table 5-18 – Public Car Parks

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Langstone Harbour Viewing Car Park	Public car park which can accommodate approximately 20 vehicles in unmarked bays.	Temporary suspension of access to car park during construction. This access will only be impacted by the installation of one circuit, and for approximately one week.	Temporary suspension of access may be required during construction on the southbound carriageway, although where possible access will be maintained by road plating of the access. Equivalent to 15 vehicles at 75% occupancy.	No alternative available.	Surveys required to assess occupancy of the car park during weekday and weekend period.	Parking unavailable during construction (one week).

5.26. SUB-SECTION 8.2 - A2030 EASTERN ROAD BETWEEN TANGIER ROAD AND EASTERN AVENUE

5.26.1.1. No residential, business or public parking provision is likely to be impacted by construction in this Section.

5.27. SUB-SECTION 8.3 - EASTERN AVENUE

5.27.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-19 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
19 properties impacted, 1-9 and 35 – 45 Eastern Avenue	Mainly on-street parking with some driveway accesses with capacity for a maximum capacity of 1-2 vehicles per property for five properties equating to 10 spaces in driveways.	Temporary road closure. Each property to be impacted for approximately one week per circuit, for	Temporary suspension of on-street parking. Up to 15 on-street spaces impacted at any one-time.	Shore Avenue, Moorings Way and Salterns Avenue = approximately 156 on-street parking spaces within a	No further surveys required.	Negligible residual impacts due to available alternatives.

		entirety of construction period.	Temporary closure of vehicular access to driveway parking. Displaced parking of approximately 17 vehicles.	maximum distance of approximately 350m Parking surveys showed a reserve capacity for 70 vehicles. This can fully accommodate displaced vehicles		

5.27.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.27.2.1. No affected business properties within this section.

5.27.3. PUBLIC CAR PARK

5.27.3.1. There are no public car parks within this section.

5.28. SECTION 9 –MOORINGS WAY TO BRANSBURY ROAD

5.28.1.1. The Onshore Cable Corridor within Section 9 contains the following highway links:

- **Sub-Section 9.1** – Moorings Way:
  - **Sub-section 9.11** - Moorings Way between Eastern Avenue and Goodwit Road;
  - **Sub-section 9.12** – Moorings Way between Goodwit Road and the Moorings Way to Furze Lane Bus Link;
- **Sub-Section 9.2 and 9.3**– Other Roads to Bransbury Park:
  - **Sub-section 9.21** – Locksway Road;
  - **Sub-section 9.22** – Longshore Way;
  - **Sub-section 9.31** – Kingsley Road; and
  - **Sub-section 9.32** - Yeo Court.

5.28.1.2. A summary of residential, business and public parking impacted by construction of the Onshore Cable Route is provided below.

5.29. SUB-SECTION 9.1 – MOORINGS WAY

5.29.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-20 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
11 properties on the southern side of the carriageway, and five on the northern side between 78 – 110 Moorings Way	Driveway access with capacity for approximately 1-2 vehicles per property for 16 properties equating to approximately 32 spaces on driveways and on-street parking.	Shuttle working. Properties impacted for approximately one week per circuit, during working hours only.	Temporary suspension of approximately 50 on-street parking spaces during construction. Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. 5-10 properties impacted and displaced parking of approximately 9 vehicles at any one-time.	Mariners Walk / The Haven = approximately 6 on-street parking spaces for 11 properties within a maximum distance of approximately 330m. Godwit Road = approximately 17 on-street parking spaces for five properties within a maximum walking distance of approximately 400m This is able to fully accommodate displaced parking	No surveys required.	Negligible residual impacts, thus no further mitigation required due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.
Approximately 13 properties on 17 – 41 Moorings Way	Driveway access with capacity for approximately 1-2 vehicles per property for 7 properties equating to approximately 9 spaces on driveways and intermittent on-street parking.	Temporary suspension of on-street parking on one side fo the carriageway on Moorings Way between the junction with Salterns Avenue and the junction with Mariners Walk.	Temporary TRO required for the suspension of on-street parking on one-side of the carriageway to allow for delivery of cable drums to Joint Bay locations.	Mariners Walk / The Haven = approximately 6 on-street parking spaces for 11 properties within a maximum distance of approximately 280m. This is able to fully accommodate displaced parking	No surveys required.	Negligible residual impacts, thus no further mitigation required due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Approximately 50 properties between 112 – 212 Moorings Way	Driveway access with capacity for approximately 1-2 vehicles per property for 50 properties equating to approximately 100 spaces on driveways and on-street parking.	Shuttle working. Properties impacted for approximately one week per circuit, during working hours only.	Temporary suspension of approximately 50 on-street parking during construction. Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction. 5-10 properties impacted at any one-time. Displaced parking of approximately 9 vehicles.	Parking is available approximately 17 on-street parking spaces on the northern side of the carriageway on Moorings Way, which is expected to be sufficient to accommodate the 100m or so impacted at any one-time during construction. This is able to fully accommodate displaced parking.	No surveys required.	Negligible residual impacts, thus no further mitigation required due to limited daytime demand, available alternatives and road-plating of driveway access outside of construction working hours.

5.29.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

5.29.2.1. No affected business properties within this section.

5.29.3. PUBLIC CAR PARK

5.29.3.1. There are no public car parks within this section.

5.30. SUB-SECTION 9.2 AND 9.3 – OTHER ROADS TO BRANSBURY PARK

5.30.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-21 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
13 properties impacted between 1 – 13 Longshore Way	Driveway access and on-street parking providing capacity for up to 20 vehicles.	Shuttle working. Properties impacted for approximately one week per	Temporary suspension of 10 on-street parking spaces at any one time during construction.	Locksway Road has existing reserve capacity for approximately 18 vehicles within a maximum walking distance of approximately 400m.	No further surveys required.	Negligible residual impacts due to existing

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
		circuit, during working hours only.	Temporary closure of vehicular access to driveway parking during working hours, except for emergency / vulnerable persons' access, during construction, equivalent to 8 vehicles at 75% occupancy.	Parking surveys of the entirety of Locksway Road and Longshore Way showed a reserve capacity for 57 vehicles This can fully accommodate displaced parking.		reserve capacity
Approximately 24 properties impacted, between 148 – 190 Kingsley Road	On-street parking providing capacity for us to 25 vehicles, plus parking court with capacity for approximately 14 vehicles.	Shuttle working Properties impacted for approximately one week per circuit, during working hours only.	Temporary suspension of up to 17 on-street parking spaces at any one time during construction, equivalent to 13 vehicles at 75% occupancy. Access to the parking court to be retained through road plating.	Tideway Gardens = approximately 38 on-street spaces within a maximum walking distance of approximately 170m. Parking surveys showed a reserve capacity for 21 vehicles. Kingsley Road = approximately 162 on-street parking spaces within a maximum distance of approximately 400m. Parking surveys showed a reserve capacity 49 vehicles for this section of Kingsley Road This can fully accommodate displaced parking	No further surveys required.	Negligible residual impacts due to existing reserve capacity.
Five properties to be impacted between 2 – 10 Yeo Court	On-street parking for up to 7 vehicles.	Temporary road closure. Each property to be impacted for approximately one week per circuit, for entirety of construction period.	Temporary suspension of on-street parking during construction, equivalent to 6 vehicles at 75% occupancy.	Tideway Gardens = approximately 38 on-street spaces within a maximum distance of approximately 270m. Parking surveys a reserve capacity for 21 vehicles. Kingsley Road = approximately 233 on-street parking spaces in total. Parking surveys showed a reserve capacity for 5 vehicles within a maximum distance of approximately 400m. This can fully accommodate displaced parking	No further surveys required.	Negligible residual impacts due to existing reserve capacity.
All of Locksway Road (during cable drum deliveries only)	On-street parking with capacity for approximately 216 vehicles including disabled bays	Temporary TRO required for the suspension of on-street parking on one-side of the carriageway to allow for delivery of cable drums to Joint Bay locations.	Temporary suspension of on-street parking for a maximum of 20 spaces.	Parking surveys showed an existing capacity in the Eastney area (as described in Section 5.2 of this report) for 233 vehicles.	No further surveys required.	Negligible residual impacts due to existing reserve capacity.

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
		Temporary suspension of approximately 20 spaces will be required for approximately six days construction working hours.				
6 properties between 1 – 7 Longshore Way	On-street parking capacity for 16 vehicles	Temporary TRO required for the suspension of on-street parking to allow for delivery of cable drums to Joint Bay locations.	Temporary suspension of on-street parking for a maximum of 16 spaces.	Parking surveys showed an existing reserve capacity in the Eastney area (as described in Section 5.2 of this report) for 233 vehicles.	No further surveys required.	Negligible residual impacts due to existing reserve capacity.
All of Kingsley Road (during cable drum deliveries)	On-street parking with capacity for approximately 233 vehicles including disabled bays	Temporary TRO required for the suspension of on-street parking on one-side of carriageway to allow for delivery of cable drums to Joint Bay locations. Temporary suspension of approximately 70 spaces will be required for approximately six days during construction working hours.	Temporary suspension of on-carriageway parking for a maximum of 70 spaces.	Parking surveys showed an existing reserve capacity on Tranmere Road, Dunbar Road, Perth Road, Gurney Road, Hester Road, Melrose Close, Shirley Avenue, Berney Road, Maurice Road, Ironbridge Lane, Redlands Grove, Tideway Gardens and Glasgow Road = existing reserve capacity for 95 vehicles within 400m	No further surveys required.	Negligible residual impacts due to existing reserve capacity.

5.30.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

Table 5-22 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Thatched House Public House Car Park.	Public car park comprising approximately 45 spaces.	Horizontal Directional Drilling	Temporary closure of car park for 12 weeks for Horizontal Directional	Longshore Way = approximately 5 on-street parking spaces within a maximum	Friday night / weekend parking occupancy survey required to assess on-street parking demand and	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show

		Construction period 12 weeks.	Drilling, equivalent to 34 vehicles at 75% occupancy.	distance of approximately 300m	capacity at the Car Park for Thatched House Public House.	alternative capacity is not sufficient – displaced parking likely to be spread further form car park.
Locks Sailing Club	Private car park with access gained via private access road	Temporary road plating of access road during construction of the Onshore Cable Corridor	N/A	N/A	N/A	N/A
Langstone Harbour Fishermen's Association	Private car park with access gained via public car park at Thatched Public House Car Park	Access to private car park to be retained via road plating	N/A	N/A	N/A	N/A

5.30.3. PUBLIC CAR PARK

Table 5-23 – Public Car Parks

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Bransbury Park Car Park	Public car park comprising approximately 40 spaces, two of which are accessible bays.	Joint bay location. Approximately one month per joint bay.	Temporary closure of car park. Equivalent to 30 vehicles at 75% occupancy.	Henderson Road and Bransbury Road = 30 on-street parking spaces.	Weekend survey required to assess occupancy of Bransbury Road car park plus overnight surveys of Bransbury Road / Henderson Road.	Potential for overflow parking onto alternative parking locations. Full mitigation unlikely to be available if surveys show alternative capacity is not sufficient – displaced parking likely to be spread further form car park.

5.31. SECTION 10 –EASTNEY (LANDFALL)

5.31.1.1. The Onshore Cable Corridor within Section 10 contains the following highway links:

- **Sub-section 10.1** Henderson Road – between the junction with Bransbury Road and the junction with Fort Cumberland Road; and
- **Sub-section 10.2** Fort Cumberland Road – between the junction with Henderson Road and the junction with Lumsden Road.

5.31.1.2. A summary of residential, business and public parking impacted by construction of the Onshore Cable Route is provided below.

5.32. SUB-SECTION 10.1 – HENDERSON ROAD

5.32.1.1. No residential or business parking or public car parks are to be directly impacted in this Section.

5.33. SUB-SECTION 10.2 – FORT CUMBERLAND ROAD

5.33.1. RESIDENTIAL PROPERTIES AND ASSOCIATED PARKING

Table 5-24 – Residential Properties and Associated Parking

Impacted Properties	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
16 properties impacted on the northern side of the carriageway between 9 – 39 Fort Cumberland Road.	On-street parking with capacity for up to 24 cars plus laybys with capacity for up to 8 vehicles and accesses into off-carriageway parking areas.	Shuttle working. Properties impacted for approximately one week per circuit, during working hours only.	Temporary suspension of up to 17 on-street parking spaces at any one-time during construction. Access to off-carriageway parking to be plated outside of working hours. Equivalent to 13 spaces at 75% occupancy.	Parking surveys showed an existing reserve capacity on Ferry Road for 25 spaces within a maximum distance of approximately 400m. This can fully accommodate displaced parking	No further surveys required.	Negligible residual impacts due to existing reserve capacity.

5.33.2. BUSINESS PROPERTIES AND ASSOCIATED PARKING

Table 5-25 – Business Properties and Associated Parking

Business / Area Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Portsmouth Day Services, Henderson Road Centre	Private car park with 13 spaces	Shuttle working traffic signals on Fort Cumberland Road / temporary signalisation of Fort Cumberland Road / Ferry Road Property impacted for approximately one week per circuit, during working hours only.	Access to be retained at all times during construction through road plating	N/A – access to be retained at all times	N/A – access to be retained at all times	Negligible – access to be retained at all times

5.33.3. PUBLIC CAR PARK

Table 5-26 – Public Car Park

Public Car Park Impacted	Existing Provision	Traffic Management Proposals and Duration of Impacts	Impact of Construction Works	Alternatives Available	Parking Surveys Required	Residual Impacts
Fort Cumberland Car Park	Large public car park with space for approximately 100 vehicles in unmarked bays.	Temporary full closure to facilitate construction of landfall and associated buildings. 44 weeks duration.	Loss of public car parking at Fort Cumberland Car Park, equivalent to 75 vehicles at 75% occupancy.	Ferry Road, Fort Cumberland Road, Gibraltar Road, Lumsden Road and Finch Road = approximately 70 on-street parking spaces within a maximum distance of approximately 450m.	Occupancy survey undertaken in August 2019 which showed maximum occupancy of 25% of Fort Cumberland Car Park. Occupancy surveys completed over the August Bank Holiday weekend (29 August to 31 August 2020). These showed that the car park reached 44% capacity on the Saturday, 90% on the Sunday and 69% on the Bank Holiday Monday	Potential for overflow parking onto alternative parking locations

6. COMMUNICATION OBJECTIVES

6.1.1.1. Throughout the construction period, the Applicant will endeavour to ensure that local residents, businesses and other stakeholders are fully informed of the works being undertaken.

6.1.1.2. To ensure this, a number of Communication Objectives have been established for the construction of the Onshore Cable Route, which are listed below. These are the guiding principles that all communications activities covered within this report will follow, and are an evolution of the principles adhered to during the planning stages of the project:

- Be clear, timely, meaningful, open, honest, consistent, and accountable;
- Promote and raise awareness of the construction period and the methods for contacting the project team;
- Ensure transparency by providing access to technical information related to construction, where required;
- Use plain language;
- Be equally accessible to all;
- Continue to review the communication strategy set out in Section 8 against any change in general situation e.g. Covid-19, etc
- Encourage and support good two-way communication and engagement with all audiences; and
- Use best practice engagement methods.

6.1.1.3. The communications methods will be assessed to ensure they meet the objectives and are effective.

7. STAKEHOLDER OVERVIEW

7.1.1.1. The Applicant is committed to engaging with a wide range of local stakeholders throughout the construction process of the Proposed Development. Appropriate stakeholder engagement will be critical in ensuring that the objectives set out in Section 6 will be met.

7.1.1.2. Clear, concise, consistent and regular dialogue with stakeholders will ensure that accurate information is disseminated to the communities that they represent which, combined with the suggested activities set out in section 9, will ensure that the wider public are well informed of the construction programme.

7.1.1.3. Stakeholders identified include directly affected Local Planning Authorities and Parish Councils, bodies identified as Statutory Consultees (e.g. Highways England, Natural England, Environment Agency, emergency services), residents associations, community groups, recreational users, residents and businesses.

7.1.1.4. A list of stakeholders currently identified is included in Appendix 8 and could be amended, if required, if there is a change in circumstances.

8. COMMUNICATION CHALLENGES AND THEIR MITIGATION

8.1.1.1. It is important to identify any known barriers to engagement that may affect the successful implementation of this Communication Strategy.

8.1.1.2. A full communication and mitigation plan can only be developed, post consent, once a final construction programme is available. This is because communication will be tailored and targeted against a number of factors including timings e.g. school holidays, impacts on road closure and mitigation e.g. diversion routes.

8.1.1.3. Table 8.1 highlights the key challenges that could arise during the communication and collaboration process for the construction of the Proposed Development. It also sets out, where necessary, potential mitigation strategies to be considered.

Table 8-1 - Summary of Challenges and Mitigation

Challenges	Mitigation
Consultation/communication fatigue among the local community and stakeholders	• Creation of clear and concise messaging and materials to avoid confusion with other construction works associated with the Proposed Development / or communications from other projects.
Alterations to locations / timing of planned works	• 10 days' advance notice to be given for all construction works, with further updates should works be delayed. • 24hrs before works are due to commence, residents whose driveways will be inaccessible are to be notified.
Potential confrontation between local community and contractors	• Ensure contractors are appropriately trained in conflict management to peacefully resolve

Challenges	Mitigation
	any potential situations that may arise. • A dedicated freephone will be established for the construction phase to deal with all queries.
Construction coinciding with local/regional events	• The Applicant will engage with the relevant event organiser(s) to discuss potential mitigation measures specific to the event(s) once contractors are appointed and the construction programme confirmed.
Engaging with hard-to-reach groups and passing users of areas impacted (e.g. cycling groups, ramblers' groups and recreational users) including where relevant, the appropriate Local Authority or Parish Council representing users.	• Signage to be erected at construction locations to provide notice to passing users with details of forthcoming/ongoing works (e.g. timings, length and working hours). • Community relation induction to be given to contractors/ site staff, prior to works commencing. • Hard to reach groups identified through stakeholder mapping and communication plan on a case by case basis. • Using various communication methods required followings stakeholder mapping e.g braille.
Local community posing detailed questions regarding the project to contractors	• All contractors to be provided with business cards with contact details of the project team and local residents advised to direct their query through these channels.

9. WORKING PLAN

9.1.1.1. This working plan outlines the high-level timeline and nature of communications activities to be undertaken at all stages of the construction of the Onshore Cable Route. This plan should be read in conjunction with the Travel Demand Management strategy (REP7-079).

9.1.2. ACTIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION

9.1.2.1. All letters and notices will include the following communication methods consisting of a dedicated email address, freephone number and freepost address to enable local residents, businesses and other stakeholders to contact the relevant members of the project team during the construction phase to ask questions and report any potential issues. These will be monitored during office working hours (Mon-Fri, 9.00am – 5.30pm and can be amended in line with the changes in working hours), with all incoming communications systematically logged and responded to accordingly.

9.1.2.2. The project website will be updated to create a dedicated 'Construction' section, which will provide information on forthcoming and current works, together with a set of construction focused FAQs and contact details for the project team.

9.1.2.3. The 'Construction' section of the website will also allow individuals/organisations to register for email updates that are specific to certain geographical areas where construction works are taking place (e.g. Eastney, Milton, Farlington Avenue, A3 London Road, Lovedean).

9.1.2.4. Queries from members of the public will be answered using construction FAQs where possible, with input sourced from relevant project team members where required.

9.1.2.5. Two weeks prior to the commencement of construction on any element of the Onshore Cable Route, letters and emails will be issued to the following to inform them of the forthcoming works and advertise the relevant section of the project website where information on all future works will be provided:

- Homes and businesses listed within Section 5 of this document for the relevant section of the Onshore Cable Corridor (1-10);
- Homes and businesses on delivery routes of Abnormal Indivisible Loads;
- Individuals/organisations who provided their feedback and / or registered for updates during pre-application consultation; and
- Identified stakeholders.

9.1.3. ONGOING ACTIONS DURING CONSTRUCTION

9.1.3.1. To ensure local residents, businesses and other stakeholders are kept up to date, the 'Construction' section of the website will continually be updated with revised information on current and forthcoming construction works as construction progresses.

9.1.3.2. As outlined in section 4 and 5 of this document, during the construction of the Onshore Cable Route, vehicular access to properties may be temporarily restricted. Details with regard to the identification of vulnerable persons along the Onshore Cable Corridor will be outlined in the Construction Environment Management Plan (which will be produced post consent in accordance with requirement 17 of the DCO (Examination Library Reference: APP-019). Prior to the start of construction, letters will be sent out to the relevant parties who will be affected by the proposed works. Residents identifying as vulnerable will be encouraged to get in contact with the contractors via the dedicated email address, freephone number and freepost address. This will enable any concerns raised to be dealt with in a timely manner and communicated with the relevant parties in advance of works commencing.

9.1.3.3. Prior to the commencement of certain construction activities (e.g. delivery of Converter Station transformers, HDD works at the Landfall, Abnormal Load deliveries and Farlington Playing Fields), updates (including email, letters and were appropriate communication in person) will be sent to local community representatives e.g. Parish Clerks, Residents Associations, properties affected by abnormal load deliveries and Ward Members and those who have registered their interest in construction updates for the relevant geographical area to inform them of and provide further information on forthcoming works.

9.1.3.4. To ensure the continuous flow of accurate information, separate monthly/bi-monthly Community Update Newsletters will be produced for the relevant Sections (1- 10) of the Onshore Cable Corridor that is being progressed. The distribution area for the Community Update Newsletter will be reviewed post-consent, subject to the final construction programme and appointment of contractors.

9.1.3.5. Each newsletter will include information on the progress of works for the Converter Station, Cable Route and Landfall (where geographically appropriate), such as recent works completions, ongoing and forthcoming works and FAQs, and will be distributed to relevant stakeholders and those who have registered for updates relating to specific elements/locations of the project.

9.1.3.6. The Applicant will endeavour to respond to all construction enquires within 5 working days. Where enquires are of a technical nature not relating to construction, the Applicant will endeavour to provide a response within 10 working days of receipt.

9.1.3.7. Any other queries received by the Applicant (relating to media, legal and complaints) will also be responded to within [10] working days. A template of the escalation procedure and guidance note, which will be reviewed post-consent as part of the Stakeholder Mapping Process can be found at Appendix 10.

9.1.3.8. In all cases enquires will be immediately assessed and escalated accordingly which could entail immediate mitigation and the contact centre will have access to the mobile numbers for all active gang leaders. At times of additional out of hours work it may be necessary to have an emergency option on the phoneline which will put the caller straight through to an individual. If any urgent enquiries are received regarding ongoing construction, the Applicant will endeavour to respond within 24 hours where practicable. If urgent enquires are received on the weekend or a bank holiday, an out of hours number will be provided either as a pre-recorded message (if a call is made to the dedicated telephone number) or within the email acknowledgment (if the query is submitted via email).

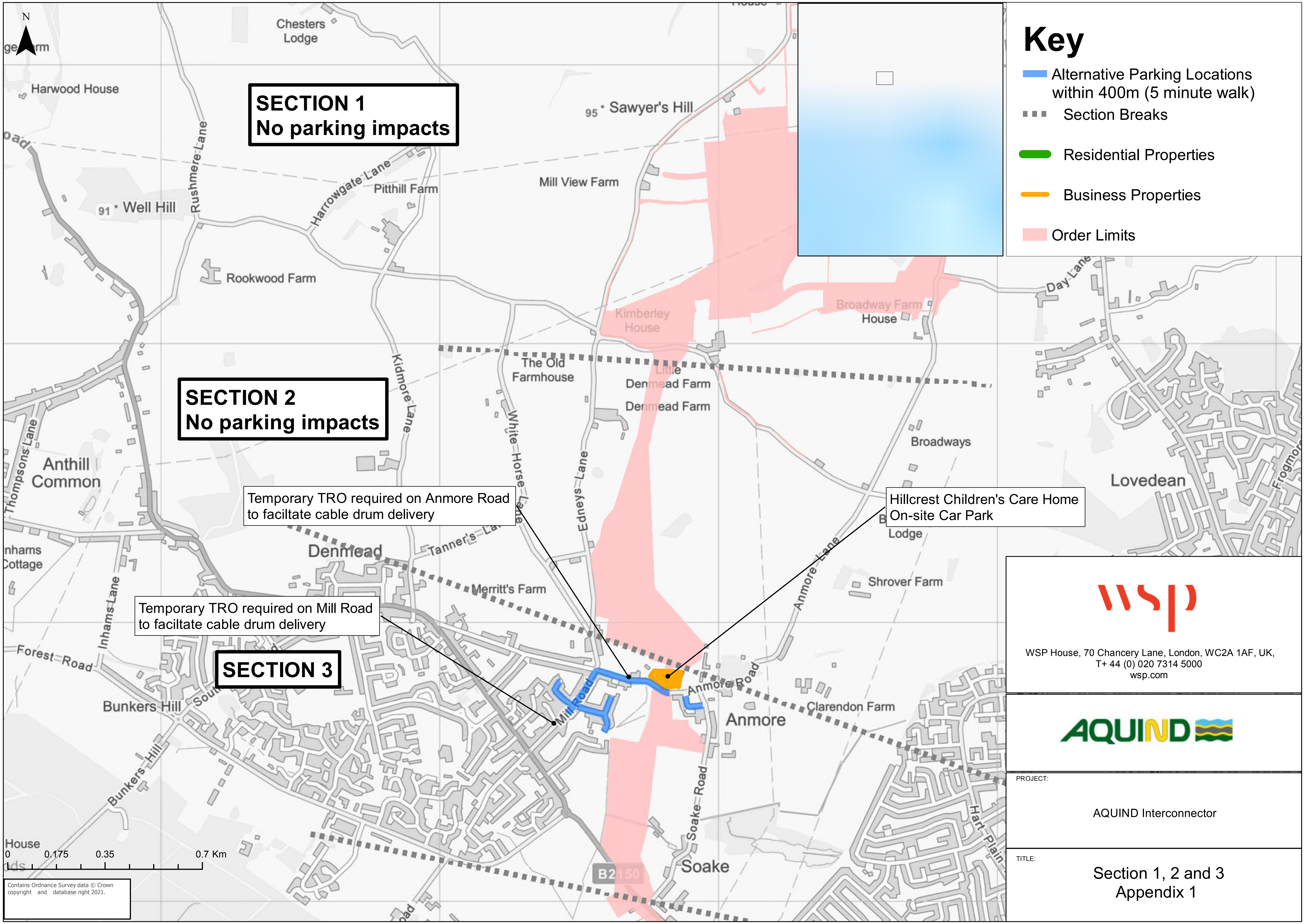
10. EVALUATION

10.1.1.1. In order to evaluate the Communications Strategy outlined in sections 6-10 of this document against the Communications Objectives established in section 6, the Applicant will regularly review a number of metrics, including:

- Enquiries received via email / freephone / freepost;
- Visits to the 'Construction' section of the project website;
- Enrolments through 'Register for Updates' website form; and
- Readership of monthly/bi-monthly Community Update Newsletter.

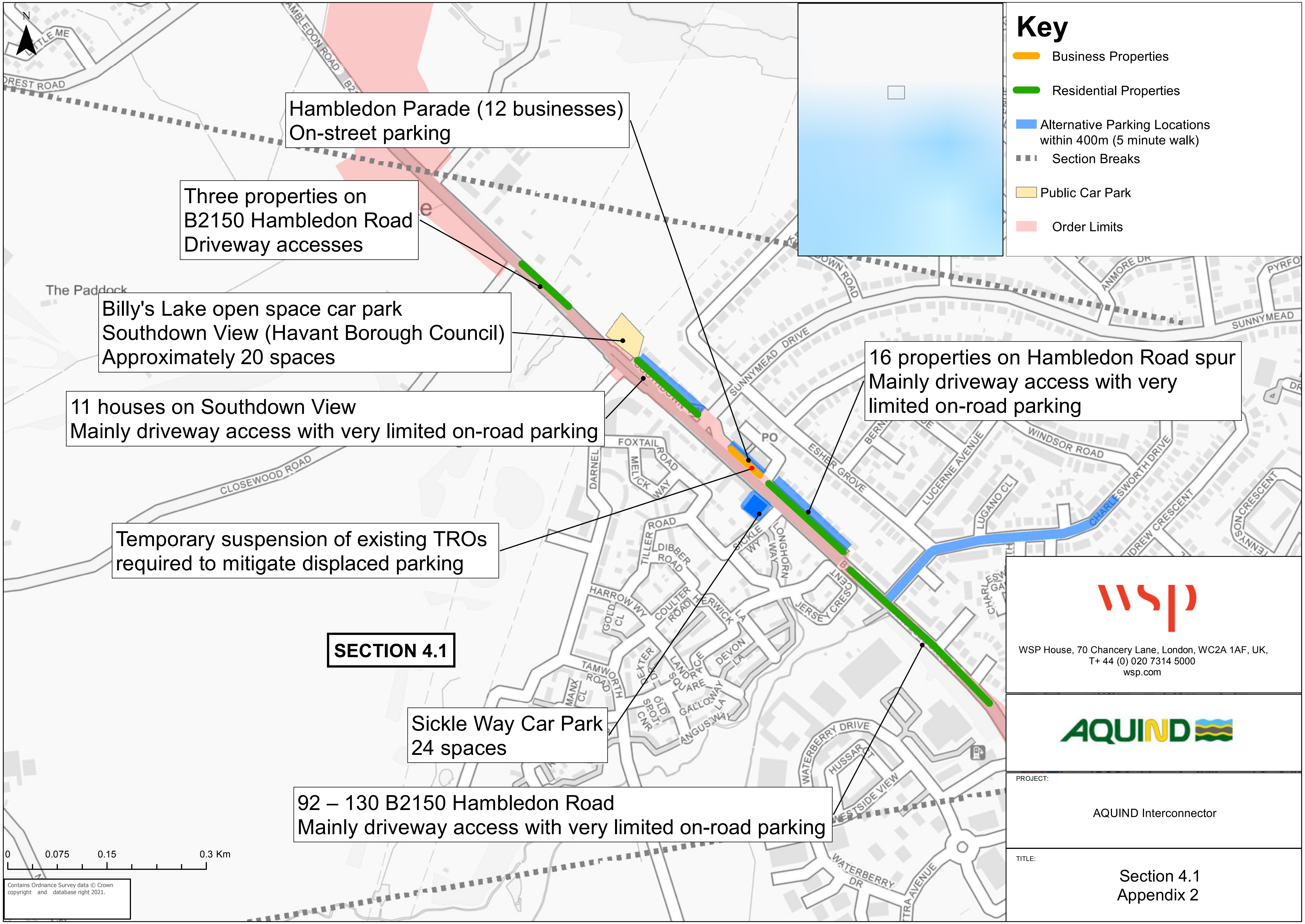
10.1.1.2. Any amendments made to the Communications Strategy to further improve the way that the Applicant communicates with the public and stakeholders will be outlined on the dedicated project website, and the monthly/bi-monthly Community Update Newsletter.

APPENDICES

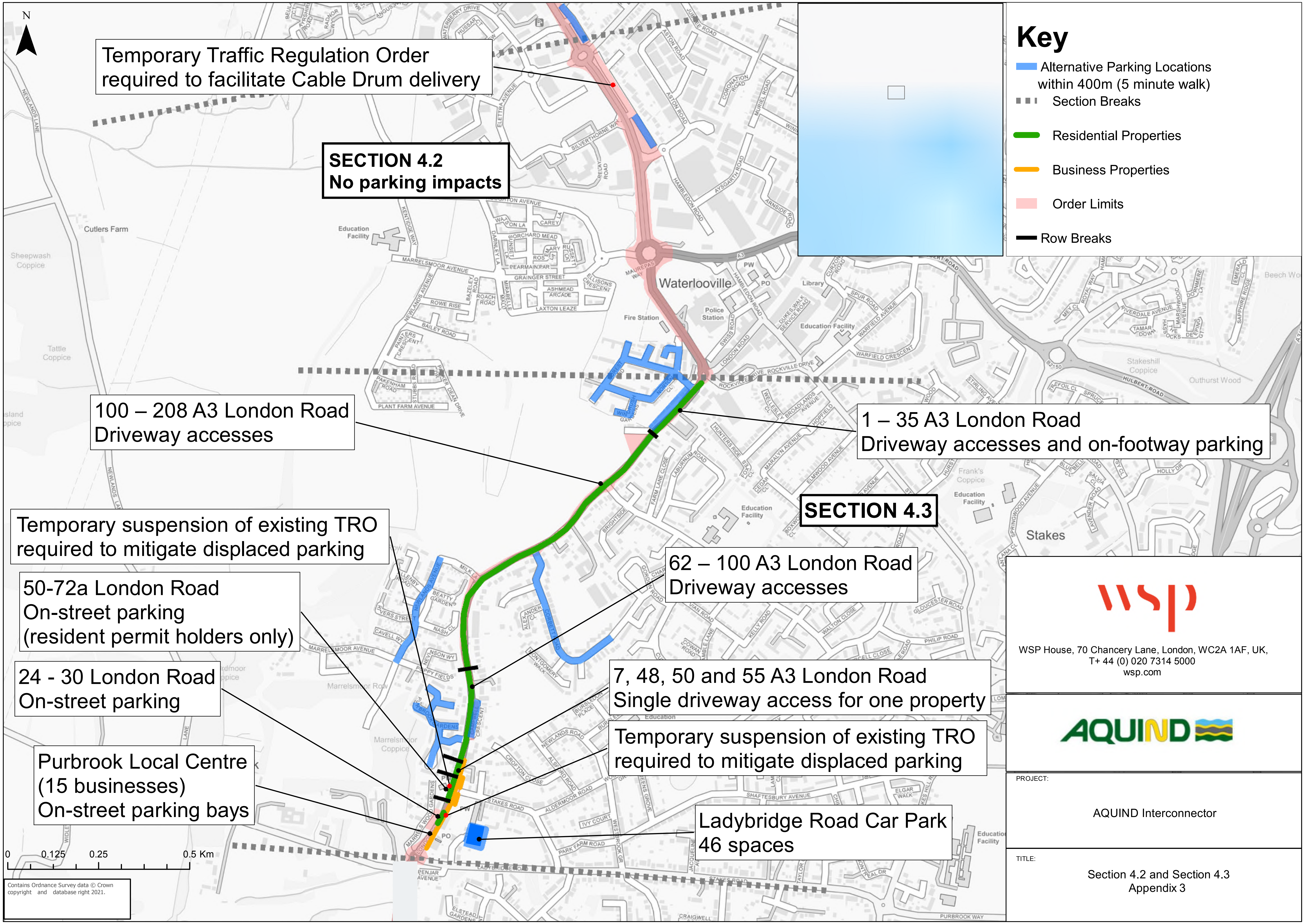


N
SECTION 1
No parking impacts
SECTION 2
No parking impacts
SECTION 3
Temporary TRO required on Anmore Road to faciltate cable drum delivery
Temporary TRO required on Mill Road to faciltate cable drum delivery
Hillcrest Children's Care Home On-site Car Park
Chesters Lodge
Harwood House
Sawyer's Hill
Mill View Farm
Pitthill Farm
Harrowgate Lane
Rushmere Lane
Well Hill
Rookwood Farm
Kimberley House
Broadway Farm House
Day Lane
The Old Farmhouse
Little Denmead Farm
Denmead Farm
Kidmore Lane
White Horse Lane
Edneys Lane
Broadways
Anthill Common
Thompsons Lane
Lovedean
Frogmore
Denmead
Tanner's Lane
Merritt's Farm
Inhams Lane
Forest Road
Bunkers Hill
Mill Road
Anmore Road
Anmore Lane
Shrover Farm
Clarendon Farm
Anmore
Soake Road
Soake
Hart Plain
B2150
0 0.175 0.35 0.7 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
Key
Alternative Parking Locations within 400m (5 minute walk)
Section Breaks
Residential Properties
Business Properties
Order Limits
wsp
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK, T+ 44 (0) 020 7314 5000 wsp.com
AQUIND
PROJECT:
AQUIND Interconnector
TITLE:
Section 1, 2 and 3
Appendix 1

APPENDIX 2 – SECTION 4.1

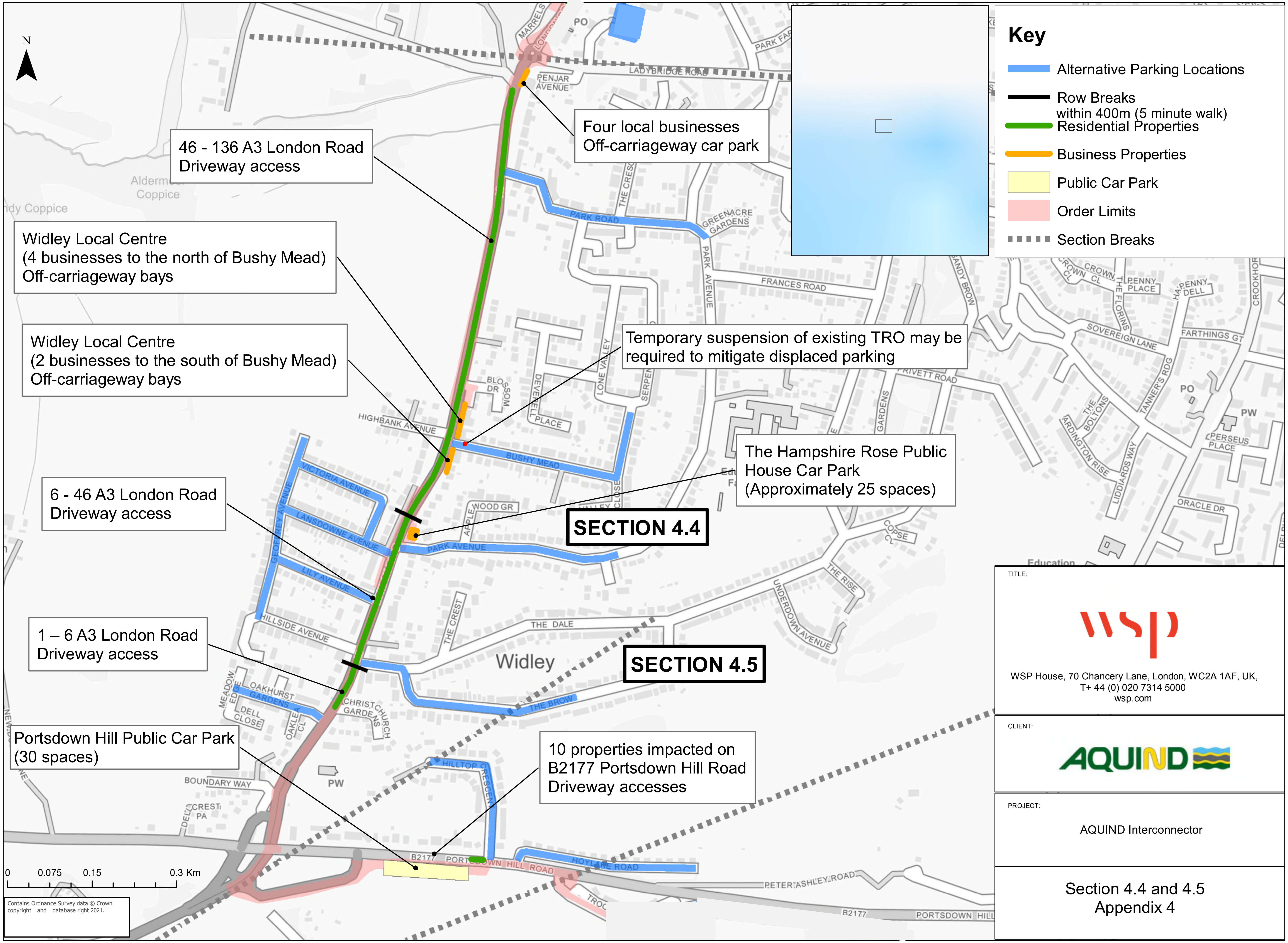

Key
Business Properties
Residential Properties
Alternative Parking Locations within 400m (5 minute walk)
Section Breaks
Public Car Park
Order Limits
Hambledon Parade (12 businesses)
On-street parking
Three properties on
B2150 Hambledon Road
Driveway accesses
Billy's Lake open space car park
Southdown View (Havant Borough Council)
Approximately 20 spaces
11 houses on Southdown View
Mainly driveway access with very limited on-road parking
16 properties on Hambledon Road spur
Mainly driveway access with very
limited on-road parking
Temporary suspension of existing TROs
required to mitigate displaced parking
SECTION 4.1
Sickle Way Car Park
24 spaces
92 – 130 B2150 Hambledon Road
Mainly driveway access with very limited on-road parking
The Paddock
CLOSEWOOD ROAD
SUNNYMEAD DRIVE
FOXTAIL ROAD
WINDSOR ROAD
LUCERNE AVENUE
ESHER GROVE
HARROW WY
WATERBERRY DRIVE
0 0.075 0.15 0.3 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com
AQUIND
PROJECT:
AQUIND Interconnector
TITLE:
Section 4.1
Appendix 2

APPENDIX 3 – SECTION 4.2 AND 4.3



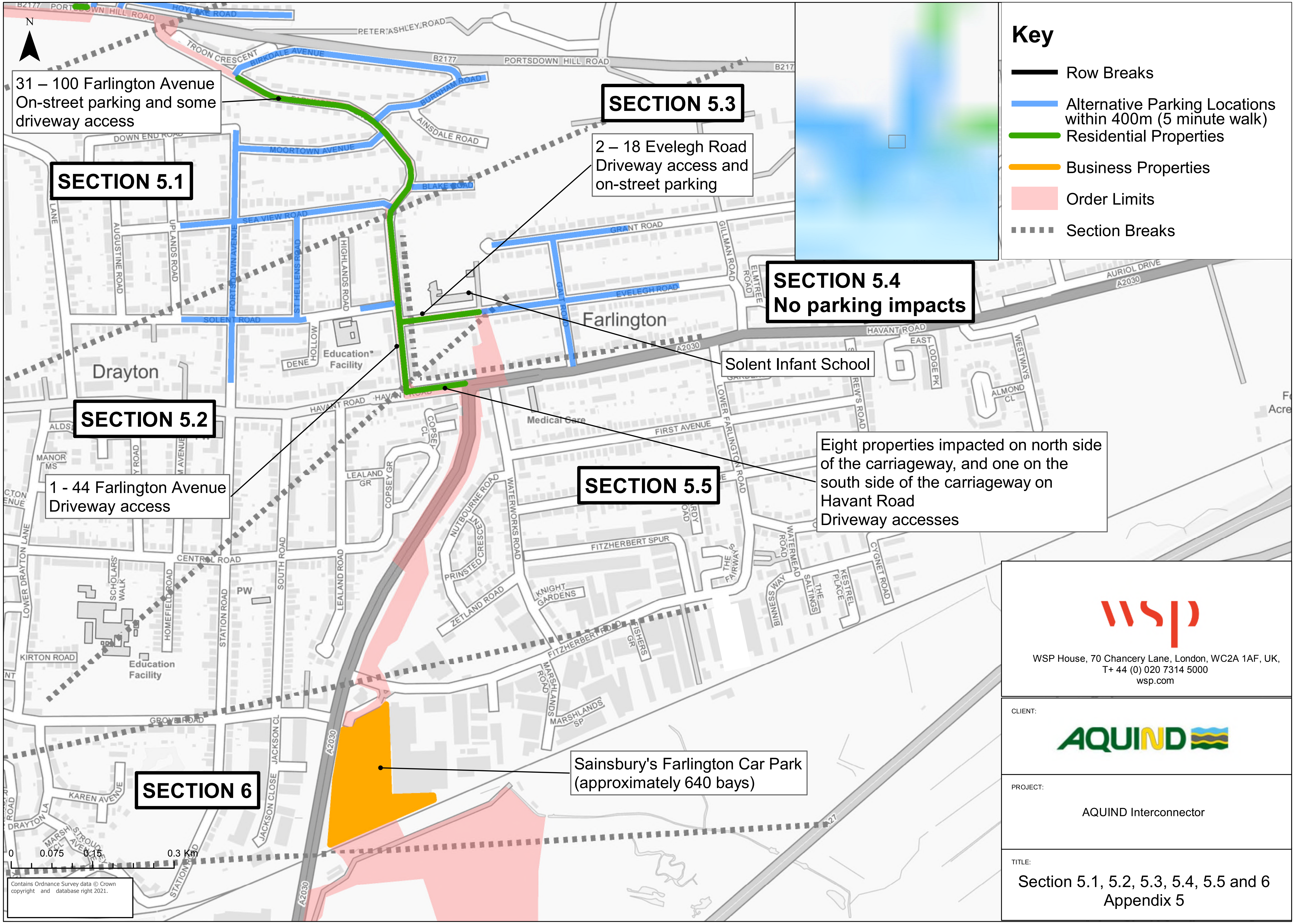
N
Temporary Traffic Regulation Order required to facilitate Cable Drum delivery
SECTION 4.2
No parking impacts
100 – 208 A3 London Road
Driveway accesses
1 – 35 A3 London Road
Driveway accesses and on-footway parking
SECTION 4.3
Temporary suspension of existing TRO required to mitigate displaced parking
62 – 100 A3 London Road
Driveway accesses
50-72a London Road
On-street parking
(resident permit holders only)
24 - 30 London Road
On-street parking
7, 48, 50 and 55 A3 London Road
Single driveway access for one property
Temporary suspension of existing TRO required to mitigate displaced parking
Purbrook Local Centre
(15 businesses)
On-street parking bays
Ladybridge Road Car Park
46 spaces
Waterlooville
Stakes
0 0.125 0.25 0.5 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
Key
Alternative Parking Locations within 400m (5 minute walk)
Section Breaks
Residential Properties
Business Properties
Order Limits
Row Breaks
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com
AQUIND
PROJECT:
AQUIND Interconnector
TITLE:
Section 4.2 and Section 4.3
Appendix 3

APPENDIX 4 – SECTION 4.4 AND 4.5

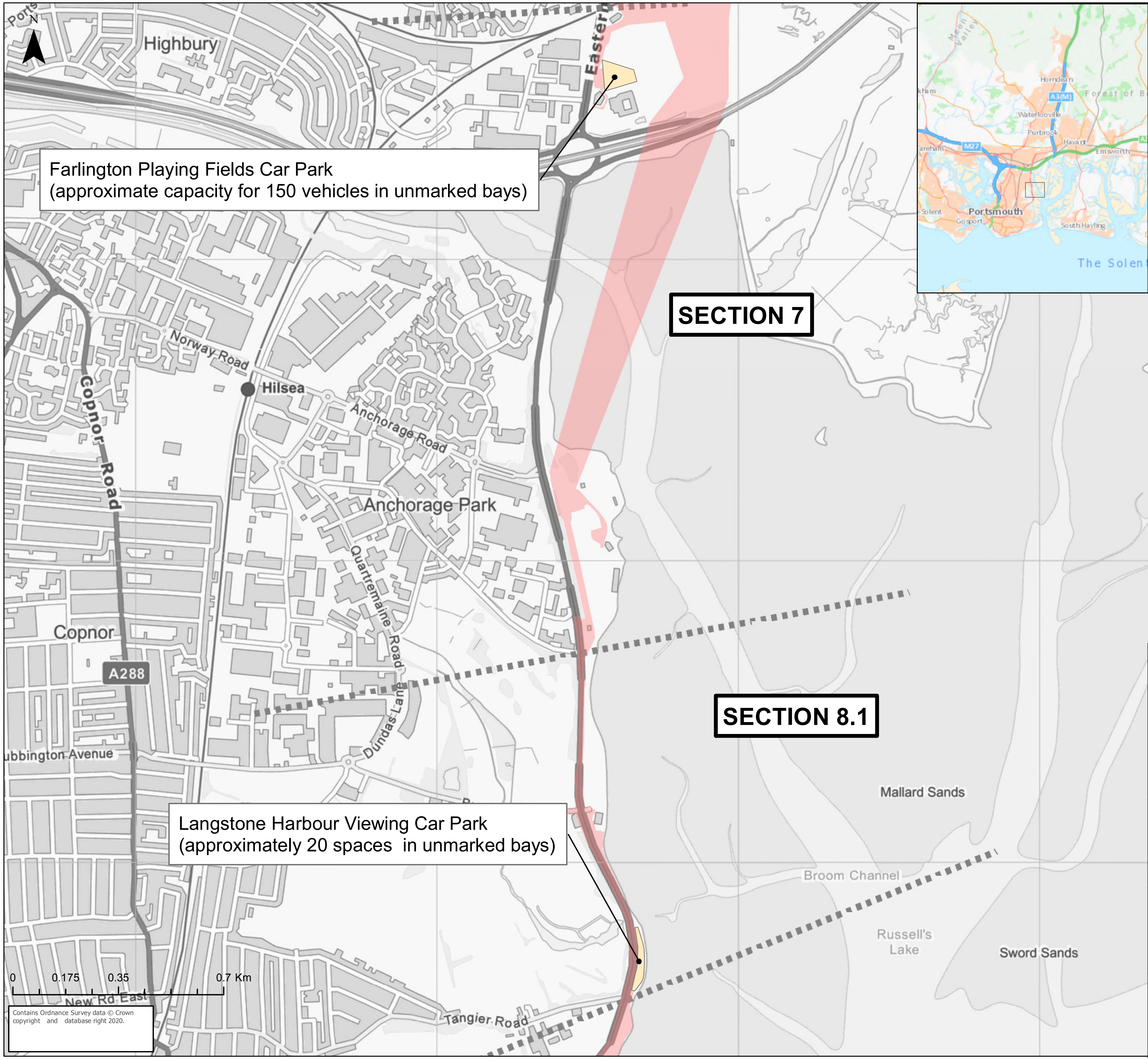


Key
Alternative Parking Locations
Row Breaks
within 400m (5 minute walk)
Residential Properties
Business Properties
Public Car Park
Order Limits
Section Breaks
46 - 136 A3 London Road
Driveway access
Four local businesses
Off-carriageway car park
Widley Local Centre
(4 businesses to the north of Bushy Mead)
Off-carriageway bays
Widley Local Centre
(2 businesses to the south of Bushy Mead)
Off-carriageway bays
Temporary suspension of existing TRO may be required to mitigate displaced parking
The Hampshire Rose Public House Car Park
(Approximately 25 spaces)
6 - 46 A3 London Road
Driveway access
SECTION 4.4
1 – 6 A3 London Road
Driveway access
SECTION 4.5
Widley
Portsdown Hill Public Car Park
(30 spaces)
10 properties impacted on B2177 Portsdown Hill Road
Driveway accesses
0 0.075 0.15 0.3 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
TITLE:
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com
CLIENT:
PROJECT:
AQUIND Interconnector
Section 4.4 and 4.5
Appendix 4

APPENDIX 5 – SECTION 5.1, 5.2, 5.3, 5.4, 5.5 AND 6


SECTION 5.1
SECTION 5.2
SECTION 5.3
SECTION 5.4
No parking impacts
SECTION 5.5
SECTION 6
31 – 100 Farlington Avenue
On-street parking and some driveway access
2 – 18 Evelegh Road
Driveway access and on-street parking
Solent Infant School
1 - 44 Farlington Avenue
Driveway access
Eight properties impacted on north side of the carriageway, and one on the south side of the carriageway on Havant Road
Driveway accesses
Sainsbury's Farlington Car Park
(approximately 640 bays)
Drayton
Farlington
Education Facility
Medical Care
Key
Row Breaks
Alternative Parking Locations within 400m (5 minute walk)
Residential Properties
Business Properties
Order Limits
Section Breaks
N
0
0.075
0.15
0.3 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com
CLIENT:
PROJECT:
AQUIND Interconnector
TITLE:
Section 5.1, 5.2, 5.3, 5.4, 5.5 and 6
Appendix 5

APPENDIX 6 – SECTION 7 AND 8.1



Key

- Public Car Park
- Order Limits
- Section Breaks

wsp

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT:

AQUIND

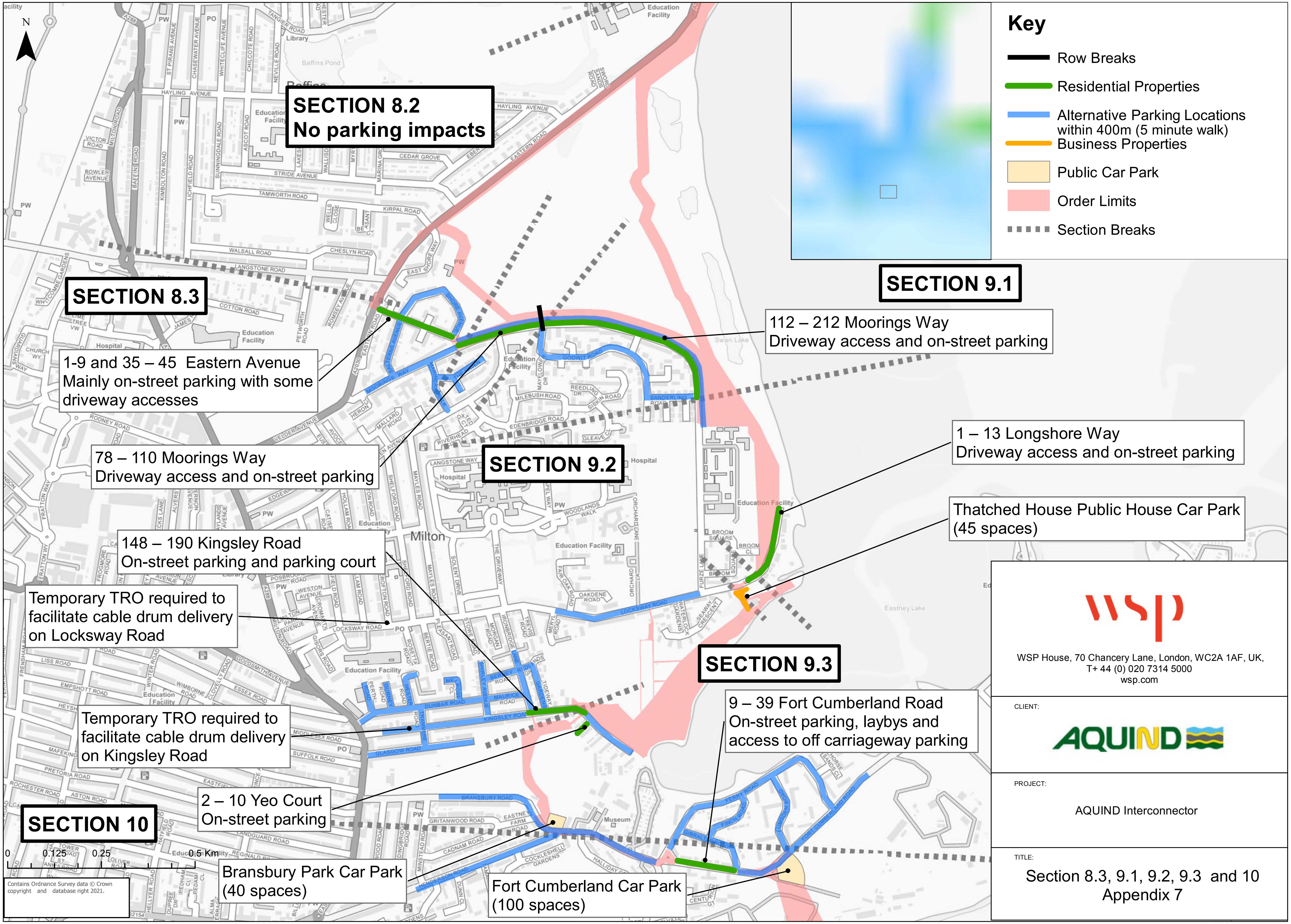
PROJECT:

AQUIND Interconnector

TITLE:

Section 7 and 8.1
Appendix 6

APPENDIX 7 – SECTION 8.2, 9 AND 10


SECTION 8.2
No parking impacts
SECTION 8.3
SECTION 9.1
SECTION 9.2
SECTION 9.3
SECTION 10
1-9 and 35 – 45 Eastern Avenue
Mainly on-street parking with some driveway accesses
78 – 110 Moorings Way
Driveway access and on-street parking
112 – 212 Moorings Way
Driveway access and on-street parking
1 – 13 Longshore Way
Driveway access and on-street parking
Thatched House Public House Car Park
(45 spaces)
148 – 190 Kingsley Road
On-street parking and parking court
Temporary TRO required to facilitate cable drum delivery on Locksway Road
Temporary TRO required to facilitate cable drum delivery on Kingsley Road
2 – 10 Yeo Court
On-street parking
9 – 39 Fort Cumberland Road
On-street parking, laybys and access to off carriageway parking
Bransbury Park Car Park
(40 spaces)
Fort Cumberland Car Park
(100 spaces)
Milton
Key
Row Breaks
Residential Properties
Alternative Parking Locations within 400m (5 minute walk)
Business Properties
Public Car Park
Order Limits
Section Breaks
N
0
0.125
0.25
0.5 Km
Contains Ordnance Survey data © Crown copyright and database right 2021.
wsp
WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com
CLIENT:
AQUIND
PROJECT:
AQUIND Interconnector
TITLE:
Section 8.3, 9.1, 9.2, 9.3 and 10
Appendix 7

APPENDIX 8 – STAKEHOLDER LIST

APPENDIX 8 - LIST OF STAKEHOLDERS

As identified in Section 6 of this strategy, throughout the construction phase, the project team will engage with local residents, businesses and other stakeholders in close proximity to and with an interest in AQUIND Interconnector.

Stakeholder Mapping

The consultation data should be reviewed to help identify any specific concerns and communications should be segmented against the relevant mitigation.

It will be crucial to prioritise those individuals and businesses living in close proximity to the substation, cable laying spread and those along the Traffic Management Plan (TMP). For the former we would suggest a face-to-face visit to discuss the project details and any associated concerns should be captured and followed up with further discussions and, where applicable, potential mitigation measures investigated and communicated.

For the wider audience, we would carry out some initial demographic modelling and social media listening to identify specific targets for more tailored communications and involvement. These could well include local politicians, community and business representatives and may pick up some useful insight from opinions about the enabling works.

In addition, there will be a need to identify any specific interest parties who should be contacted in connection with a particular event in the construction process e.g. any local Ramblers or walking groups etc against any potential Public Right of Way (PRoW) closures, parents and teachers at schools near to any road closures etc.

A specific mapping process will be carried out for the Hard to Reach (H2R) groups through liaison with the relevant council officers and contact being made with third party support groups, charities and other representatives. In addition, the contact centre would be fully briefed on H2R issues so to be fully prepared to offer mitigation once letters have dropped in advance of works.

Once the full construction timelines are available, all this data would be matched against the nature of works and the relevant comms programme activated at the appropriate moment i.e. at least 10 days prior to work starting.

At this stage, the following stakeholders have been identified and further stakeholder groups will be identified as part of the stakeholder mapping process outlined above:

APPENDIX 9 – INCLUSIVE MOBILITY GUIDANCE

1 Introduction

The Government is committed to comprehensive civil rights for disabled people. An integrated transport policy, which encompasses accessible public transport, public transport infrastructure and a barrier-free pedestrian environment is fundamentally important to delivering that commitment.

Part III of the Disability Discrimination Act 1995 (DDA) gives disabled people a right of access to goods, facilities, services and premises. These rights are being phased in over the period 1996 to 2004. Since 1996, it has been unlawful for service providers to treat disabled people less favourably than other people for a reason related to their disability.

Since October 1999 service providers have had to take reasonable steps to change practices, policies and procedures which make it impossible or unreasonably difficult for disabled people to use a service; to provide auxiliary aids or services which would make it easier for, or enable, disabled people to use a service; and to overcome physical features, which make it impossible or unreasonably difficult for disabled people to use a service, by providing the service by a reasonable alternative method. From October 2004, service providers may have to alter the physical features of premises if the service continues to be impossible or unreasonably difficult for disabled people to use.

These requirements apply to facilities and services in the pedestrian environment and in transport related infrastructure: bus stations and stops, airports and rail stations [1] for example. Transport vehicles are covered by separate provisions under Part V of the DDA.

There is already a range of advice, guidance and codes of practice drawn up to guide highway engineers and others in local authorities and the transport industries on the best ways to meet the needs of disabled people. The recently published British Standard (BS) 8300, Design of buildings and their approaches to meet the needs of disabled people Code of practice, for example, covers many aspects of good design for disabled people. Outside the United Kingdom (UK), many other countries have produced guides to good practice, as they too move towards attaining better access for disabled people. Relevant publications that were consulted during the preparation of this report are listed in the bibliography.

The introduction of legislation in this field requires a fresh look at what guidance already exists, whether it is up-to-date, consistent and comprehensive and whether there are overlaps and omissions. Ultimately the courts will determine whether a service provider is in breach of the new laws. These guidelines do not have any legal status and compliance with them should not be regarded as complying with the DDA, but they will provide guidance on established best practice in a general sense that relevant organizations can apply to their particular situation.

Although the main purpose of these guidelines is to provide good access for disabled people, designs that satisfy their requirements also meet the needs of many other people. Those who are travelling with small children or are carrying luggage or heavy shopping will all benefit from an accessible environment, as will people with temporary mobility problems (e.g. a leg in plaster) and many older people. Thus, the overall objective of this guide is to provide inclusive design and through that achieve social inclusion.

One further point should be borne in mind when using this guide. Part V of the DDA enables regulations to be made concerning access onto and within buses, coaches, taxis and trains. The amount of space that is available, particularly in taxis and smaller buses, is quite restricted and because of this the dimensions required by the regulations, for example to accommodate a passenger in a wheelchair, are limited. Generally there is more space available in the built environment, and the guidelines in this report recognize that fact. People who wish to travel by public transport, particularly those who use a wheelchair, should take account of the amount of space available on buses, taxis and trains and should not be misled into believing that a wheelchair that can be used in the pedestrian environment will necessarily be usable on public transport vehicles. The Department for Transport (DfT) and the British Healthcare Trades Association (BHTA) have issued advice to wheelchair user on public transport in Get Wheelchair Wise which is available free of charge from the DfTs Mobility and Inclusion Unit.

There are solutions to the majority of access difficulties in existing buildings and in the pedestrian environment. Frequently the best options are not the most expensive nor the most disruptive. Access audits can provide detailed analysis of potential and actual problems and can be made based on plans for new buildings as well as by surveying existing ones. Where access audits are made, they must take account of the full range of requirements of disabled people, including those with sensory and cognitive impairments. Audits should be carried out by recognized, specialist auditors or consultants. Improvements to access in existing buildings may be made most economically as part of regular repair, maintenance, refurbishment and redecoration. Whenever work of this kind is to be undertaken, access provision should be reviewed to see how it can be improved.

Beyond specific opportunities like these, auditing problems of access should be part of the process of developing guidance, strategies and implementation programmes, which themselves should form part of Local Transport Plans, local bus and local walking strategies.

Where the area concerned is an historic environment, changes needed to improve accessibility should be made with sensitivity for site context. Early consultation with those responsible for managing the historic environment should ensure that any changes made do not detract from the appearance of the area.

The sequence of topics described in this guide generally follows that used by the Institution of Highways and Transportation (IHT) in their 1991 Revised Guidelines, Reducing Mobility Handicaps Towards a Barrier Free Environment. Thus it starts with the pedestrian and street environment and then goes on to deal with public transport buildings and infrastructure. At the start of the first section there is basic information on the space needed by people; walking, using wheelchairs, walking with sticks etc. Towards the end of the guide, there is a list of the sources of information used in its preparation, subdivided by subject area. There is also a summary card listing the dimensions given in the text.

[1] The Strategic Rail Authority published a revised code of practice, Train and Station Services for Disabled Passengers in February 2002. That code should be used as the main reference document for disability provision in the rail environment.

2 Basic human factors information

2.1 Definitions

It is essential that design for people with mobility impairments should be to the highest possible standards. This requires knowledge of the capabilities of different types of person. This section provides information on the basic human requirements for ease of movement. In designing or modifying facilities the aim should be to be generous in the allocation of space.

The term disability is a broad one. It includes people with physical, sensory or mental impairment; at a conservative estimate between 12 and 13 per cent of the population have some degree of impairment. Many, though not all, face barriers to movement in the environment. This guide is intended to show how these barriers can be removed or at least reduced, but it does have a wider relevance because there are many other people not conventionally considered to have a disability who also encounter barriers to movement.

People with small children, people carrying heavy shopping or luggage, people with temporary accident injuries and older people can all benefit from good design of the pedestrian and transport environment. Without a barrier free environment, many of these people will be mobility impaired.

While it is true that there are many aspects of design in the pedestrian environment that are helpful to all or most disabled people (and many others as well) there are also some specific facilities needed by people with a particular kind of impairment.

Manual wheelchair users need sufficient space to be able to propel the chair without banging their elbows or knuckles on door frames or other obstacles. But someone who walks with sticks or crutches also needs more space than a non-disabled walker; so too does a long cane user or person carrying luggage, or a lot of shopping bags, or with small children. Thus providing adequate clear space on pavements, along passages in public buildings, through doorways etc, is of benefit to many people.

Similarly, visually impaired people need a good level of lighting in transport buildings and elsewhere and, if information such as a train or bus timetable is displayed, a print size that they can read easily. But almost everyone else benefits from good lighting, not least because it gives a greater sense of security, and practically everyone finds reading timetables easier if the print is clear and large.

These are just two examples of design requirements that are essential for people with a particular impairment but which have a much wider relevance.

More specific needs, however, can be just as important for people with certain types of impairment. For example, the rotating cone below the push button box on a controlled pedestrian crossing is essential if a deaf blind person is to know when the steady green man signal is lit.

This guide attempts to cover both those requirements that are general in nature and those that are more specific.

As noted at the start of this section, the term disability is a broad one. The DDA defines a person as having, a disability if he has a physical or mental impairment which has a substantial and long term adverse effect on his ability to carry out normal day-today activities.

There are various ways or models used to define disability, but in functional terms this guide is mainly concerned with the following:

Locomotion, which includes people who use wheelchairs and those who can walk but only with difficulty often using some form of aid such as a stick or walking frame. Approaching 70% of disabled people have locomotion difficulties: those with walking difficulties outnumber wheelchair users by about 10:1.

Seeing, which can be sub-divided into blind and partially sighted people. It is estimated by the Department for Work and Pensions (DWP) that there are almost two million people in Great Britain with a significant sight loss.

Hearing, which can also be sub-divided into those who are profoundly deaf and those with impaired hearing, ranging from severe to mild deafness. The Royal National Institute for Deaf People (RNID) estimates that there are over eight million deaf or hard of hearing people in the UK of whom approaching 700,000 are severely or profoundly deaf.

Reaching, stretching and dexterity, frequently the result of arthritis, which can make these movements painful and difficult, or of muscular dystrophy causing a loss of muscular strength, or of complaints of the nervous system.

Learning disability, making it hard to understand complicated information or to use complex machines (like some ticket machines).

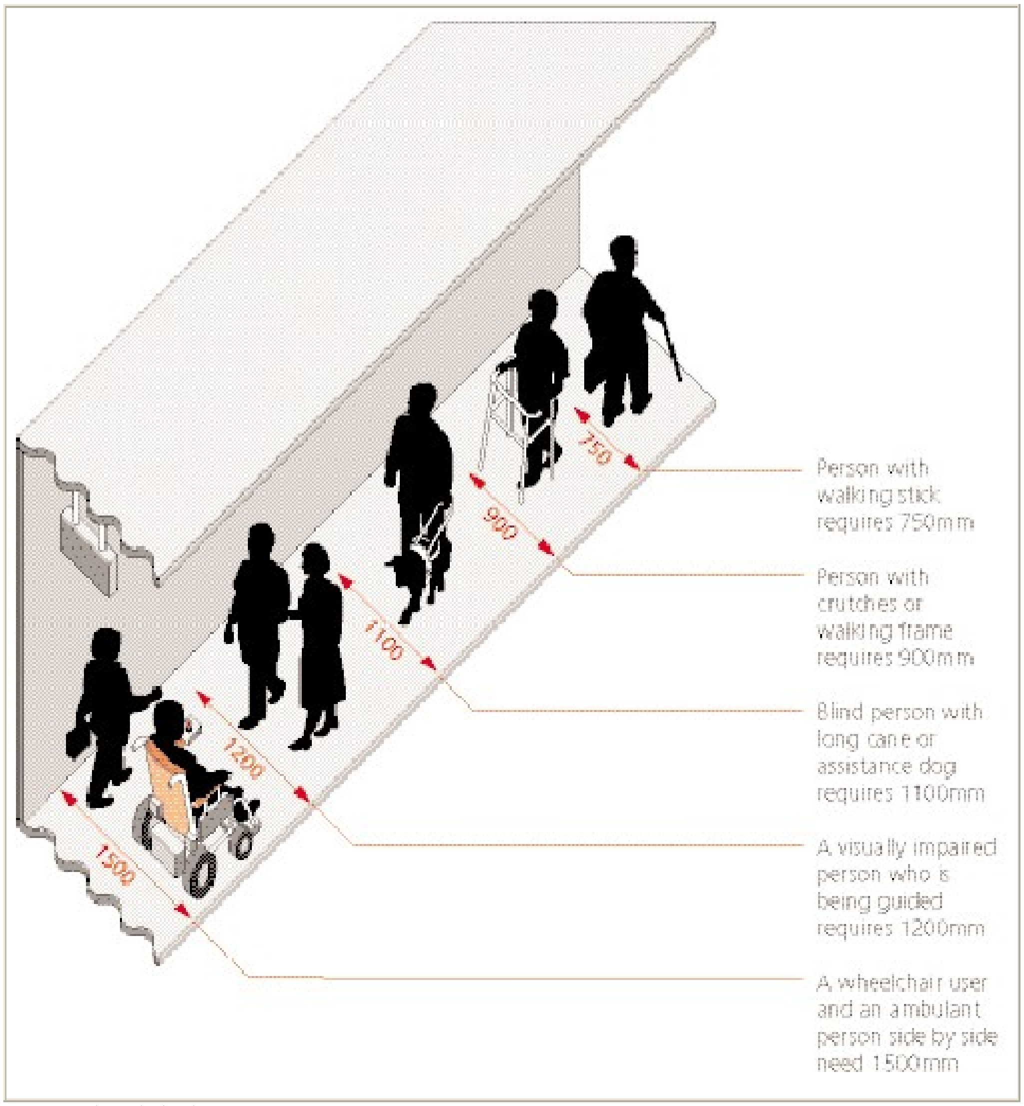
It should be remembered that these categories are not mutually exclusive. Many disabled people, particularly older people, have more than one impairment. The following paragraphs give some basic information on the space needed by people when they are standing or moving. Of course there is a lot of variation in this, but if the dimensions given below are used then the great majority of disabled people will be able to move around buildings and the environment much more easily.

2.2 Mobility impaired and visually impaired people

Someone who does not use a walking aid can manage to walk along a passage way less than **700mm** wide, but just using a walking stick requires greater width than this; a minimum of **750mm**. A person who uses two sticks or crutches, or a walking frame needs a minimum of **900mm**, a blind person using a long cane or with an assistance dog needs **1100mm**. A visually impaired person who is being guided needs a width of **1200mm**. A wheelchair user and an ambulant person side-by-side need **1500mm** width.

Unobstructed height above a pedestrian way is also important, especially for visually impaired people. Generally, this should be a minimum of **2300mm** except on sub-surface station platforms where it should be **3000mm**. Where a sign is suspended over a footway or pedestrian area, for example in a railway station a minimum clearance of **2100mm** is acceptable (**2300mm** on cycleways). Where trees overhang a footway it is advisable to cut them back to at least **3000mm** clear height to allow room for regrowth.

Mobility impaired and visually impaired people



2.3 Wheelchair users

Although a minority among disabled people, wheelchair users need quite a lot of space to move around comfortably and safely: usually more than mobility impaired people, although those who walk with two sticks can occupy a greater width than someone using a wheelchair.

A comprehensive set of measurements of wheelchair visitors to the Mobility Roadshow (1999) gave the figures for length and width summarized on the opposite page. The range of dimensions is considerable, particularly that for overall length. The greatest lengths are those of conventional wheelchair users with leg supports (maximum 1545mm, though this was the only measurement out of 745 of more than 1500mm) and electric scooters with a maximum of **1500mm**. Conventionally seated wheelchair users do not occupy more than approximately **1250mm**. However, if a wheelchair user has a personal assistant, their combined length will be typically **1750mm**.

The figures given for width, with a 95th percentile of slightly over **700mm** at maximum (for powered chairs), do not make allowance for the wheelchair users elbows and hands. The ISO standard for wheelchairs (ISO 7193) notes that to propel a wheelchair manually needs a clearance of not less than **50mm**, preferably **100mm**, on both sides.

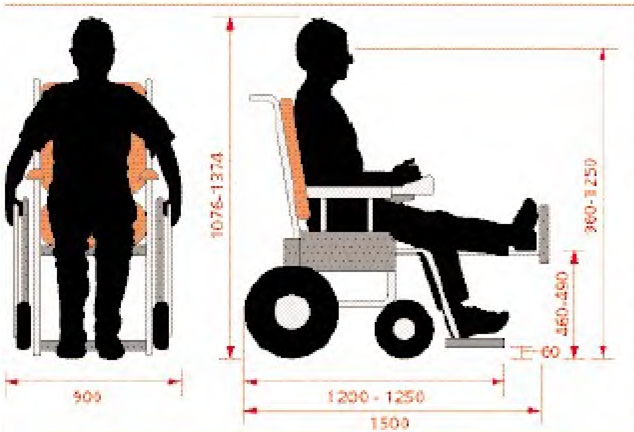
The Mobility Roadshow survey also measured the heights of wheelchair / users. The overall mean height for all types of wheelchair users was **1243mm**, with a 5th percentile of **1076mm**, 95th percentile of **1374mm** and a maximum of just over **1450mm**. As with overall length, scooter users gave slightly greater figures, with a mean height of **1340mm**, 5th and 95th percentiles of **1202mm** and **1438mm** respectively and a maximum of **1502mm**.

Other basic measurements which are of importance when considering design standards to accommodate wheelchair users are:

- Eye height, which is around **120-130mm** below seated height giving a 5th-95th percentile range for wheelchair users from **960mm** to **1250mm** (**1080mm** to **1315mm** for scooter users)
- Knee height, **500mm** to **690mm**
- Seat height, **460mm** to **490mm**
- Ankle height, manual wheelchair users **175mm** to **300mm**; electric wheelchair users **380mm** to **520mm**
- Height to bottom of foot support, **60mm** to **150mm**.

The ability of a person in a wheelchair to reach, sideways or forward, is also important and a number of guidelines give figures for this.

Wheelchair users



Note:

Requirements in transport regulations introduced under the Disability Discrimination Act 1995 are based on an occupied wheelchair 1200 x 700mm.

Wheelchairs that are larger than this can and should be catered for in the built environment, but it is not feasible to provide for larger wheelchairs on public transport.

Length of wheelchair and user (excluding children)

Chair type	Mean (mm)	Min (mm)	Max (mm)	Percentiles (mm) 5th	95th
Attendant propelled	1080	742	1318	928	1197
Electric wheelchair	1107	758	1549	949	1328
New style manual chair	1033	707	1256	846	1183
Older style manual chair	1108	862	1357	919	1267
Electric scooter	1187	971	1500	1000	1402
All chairs	**1085**	**707**	**1549**	**894**	**1273**

Width of wheelchair (excluding children)

Chair type	Mean (mm)	Min (mm)	Max (mm)	Percentiles (mm) 5th	95th
Attendant propelled	596	520	674	528	658
Electric wheelchair	635	521	755	552	706
New style manual chair	638	511	741	579	702
Older style manual chair	616	511	722	560	686
Electric scooter	607	501	695	529	685
All chairs	**627**	**501**	**755**	**558**	**695**

Source: A survey of occupied wheelchairs to determine their overall dimensions and weight: 1999 Survey by R E Stait, J Stone and T A Savill. Unpublished Project Report, Transport Research Laboratory.

The distance that an individual can reach varies with both the size of the person and the height to which they are reaching. Reach distance forms an arc based on the shoulder level of the wheelchair user and can be measured as easy or comfortable (reach without much movement of the torso) and maximum or extended (just possible with movement of the torso). Recent research done for the preparation of the new Code of Practice (BS 8300) gives figures for comfortable and extended reach ranges. These are shown in the table below. The Code of Practice, which gives further and more detailed guidance on reach ranges, should be consulted when designing anything which people will have to touch, push, turn etc.

Dimensions associated with comfortable and extended reach ranges

Person	Access	Reach angle	Height (H)		Depth (D)	
			Comfortable mm	Extended mm	Comfortable mm	Extended mm
Wheelchair user	Front	+ 70°	1,000	1,150	90	120
		horizontal	(750)	(750)	180	230
		- 24°	650	650	120	200
	Side	+ 70°	1,060	1,170	100	135
		horizontal	(750)	(750)	220	310
		- 24°	665	630	165	230
Ambulant Disabled	Front	+ 70°	1,500	1,625	200	250
		horizontal	(850)	(850)	280	400
		- 24°	750	700	180	310

Note 1 Dimensions have been rounded to the nearest 5 mm.

Note 2 Dimensions in brackets are for the horizontal reference plane.

Note 3 It is assumed that any kneehole allows full reach capabilities.

Note 4 Maximum heights are measured from the 70° line; minimum heights from the -24° line

Note 5 For some activities, the recommended dimensions in the standard are extended beyond those resulting from the research trials on the basis of accepted practice.

Source: BS 8300 Design of buildings and their approaches to meet the needs of disabled people – Code of Practice.

The height of the feature button, handle etc, - which the wheelchair user has to reach is also important. As a general rule any features that are intended for use by people in wheelchairs, such as push buttons, switches, coin slots etc, should be no less than **750mm** and no more than **1200mm** above ground level. By leaning forward or sideways it is possible for a wheelchair user to reach beyond this range US data suggests an absolute range for sideways reach height from 230mm to 1370mm but placing controls or other features towards the extremes of this range should be avoided if at all possible.

Forward reach measurements are also important. Some wheelchair users find it difficult or impossible to lean forward: if practicable the distance forward, measured at chest height, should be no more than **500mm**; **600mm** should be the absolute maximum.

Manoeuvring space is needed for a wheelchair to turn corners or turn around. Skilled users of manual wheelchairs can turn through 360°° in a space no more than **1500mm** x **1500mm**, but this is insufficient for larger chairs, particularly outdoor electric wheelchairs (turning circle **2420mm**), electric pavement vehicles (turning circle **4350mm**) and for wheelchair users with extended leg rests.

Within transport related buildings, the following dimensions should be taken as the minima acceptable:

- Right angle turn (along corridor) **1200mm** x **1200mm**
- 180° turn (within corridor) **1600mm (width) x 2000mm (length)**

Users of electric scooters and large electric chairs may need greater space than this for 180° turns, but the dimensions given (as minimum) will accommodate users of self-propelled wheelchairs and the majority of electrically powered wheelchairs.

2.4 Walking distances

Walking distances were researched in some detail in the late 1980s and, based on the findings from these studies, the following are recommended:

Impaired group	Recommended distance limit without a rest
Wheelchair users	150m
Visually impaired	150m
Mobility impaired using stick	50m
Mobility impaired without walking aid	100m

These figures are average measures; there is a lot of variation between individuals. Gradients, weather conditions, whether there are handrails etc, will also affect the distances people are able to walk. US regulations, for example, note that on distances over 100 feet (30m) disabled people are apt to rest frequently. These regulations suggest that to estimate travel times over longer distances allowance should be made for two minutes rest time every 30 metres.

Research based on a follow-up study to the London Area Travel Survey found that of all the people with a disability who were able to walk at all, approximately 30 per cent could manage no more than 50 metres without stopping or severe discomfort and a further 20 per cent could only manage between 50 and 200 metres.

2.5 Standing

Standing is difficult and painful for some disabled people, particularly those with arthritis, rheumatism and back problems. In the same study as that mentioned above, nine per cent of the survey respondents could only stand for less than a minute without discomfort, 24 per cent could manage between one and five minutes and a further 22 per cent could stand for up to ten minutes. The findings from this study emphasize the importance of providing plenty of appropriately placed and designed seating at places where people may have to wait and along pedestrian routes.

3 Footways, footpaths and pedestrian areas

The distinction between a footway and a footpath is that a footway (usually called the pavement) is the part of a highway adjacent to, or contiguous with, the carriageway on which there is a public right of way on foot. A footpath has no contiguous carriageway. Where reference is made to one, it can generally be regarded as applying to the other for design purposes.

3.1 Widths

A clear width of **2000mm** allows two wheelchairs to pass one another comfortably. This should be regarded as the minimum under normal circumstances. Where this is not possible because of physical constraints **1500mm** could be regarded as the minimum acceptable under most circumstances, giving sufficient space for a wheelchair user and a walker to pass one another. The absolute minimum, where there is an obstacle, should be **1000mm** clear space. The maximum length of restricted width should be **6 metres** (see also Section 8.3). If there are local restrictions or obstacles causing this sort of reduction in width they should be grouped in a logical and regular pattern to assist visually impaired people.

It is also recommended that there should be minimum widths of **3000mm** at bus stops and **3500mm** to **4500mm** by shops though it is recognized that available space will not always be sufficient to achieve these dimensions.

Where a cycle track runs alongside a footway or a footpath best practice is to physically segregate the two as advocated in Local Transport Note (LTN) 2/86 Shared Use by Cyclists and Pedestrians.

If this is not possible, appropriate tactile surfaces should be used to identify the cycle and pedestrian paths (see Section 4.5). The cycle track should be at least **1400mm** wide with the cycle symbol on the ground every 50 yards. The pedestrian part should meet the standards given earlier in this section and should be separated from the cycle track by a raised dividing line **150mm** wide and **12 to 20mm high**, with a **50mm** wide top face.

3.2 Gradients (see Section 8.4 for design of steps and ramps)

There is general agreement among guidelines from many countries that an 8 per cent (1 in 12) slope is the maximum that may be used; anything greater than this will cause difficulties for manual wheelchair users. Most guidelines also agree that 5 per cent (1 in 20) is preferred. (A ramp is generally defined as a pathway with a slope of more than 5 per cent). The effects of different gradients have been described in the Swedish publication Streets for Everybody as:

- **1%** (1 in 100) - is never an obstacle.
- **2%** (1 in 50) - can be managed by most people (and also provides good drainage).
- **2.5%** (1 in 40) - can be managed by many people.
- Steeper than **2.5%** - impossible for many manual wheelchair users.

These figures may be regarded as a counsel of perfection as the terrain in many places imposes steeper gradients than 2.5 per cent, but the standard of 5 per cent should be borne in mind when designing new footpaths and pedestrian areas.

Steeper gradients than these can be managed by some wheelchair users, but only over very short distances (1000mm or less), for example on a ramp between a bus entrance and the pavement. Even over these short distances the maximum gradient used should be no more than **10 per cent (1 in 10)**. As a general rule, however, **8 per cent (1 in 12)** should be used as the absolute maximum. Not only is the physical effort of getting up a steeper gradient beyond many wheelchair users, but there is also a risk of the wheelchair toppling over.

Crossfall on footways and footpaths may be necessary to provide good drainage [2] , but if too great, can make it difficult for wheelchair users. Recommendations contained in guidelines vary somewhat but, under normal circumstances, a figure of **2.5 per cent (1 in 40)** should be regarded as the maximum acceptable. Where possible, it is preferable to have a crossfall between **1** and **2 per cent**.

Variable crossfall, such as may be found when travelling along a street with vehicle cross-overs, can be irritating as it affects the steering of wheelchair users and can also cause problems for people with walking difficulties. Local authorities should take these problems into account when considering their policies on front garden parking in residential areas, which may result in the installation of cross-overs.

3.3 Fences and guardrails

If there is a steep slope or drop at the rear of the footway, precautions must be made to prevent wheelchair users running over the edge or blind or partially sighted people walking over it. Guardrails and barriers at the side of or across footways should be at least **1100mm high**; preferably **1200mm** measured from ground level.

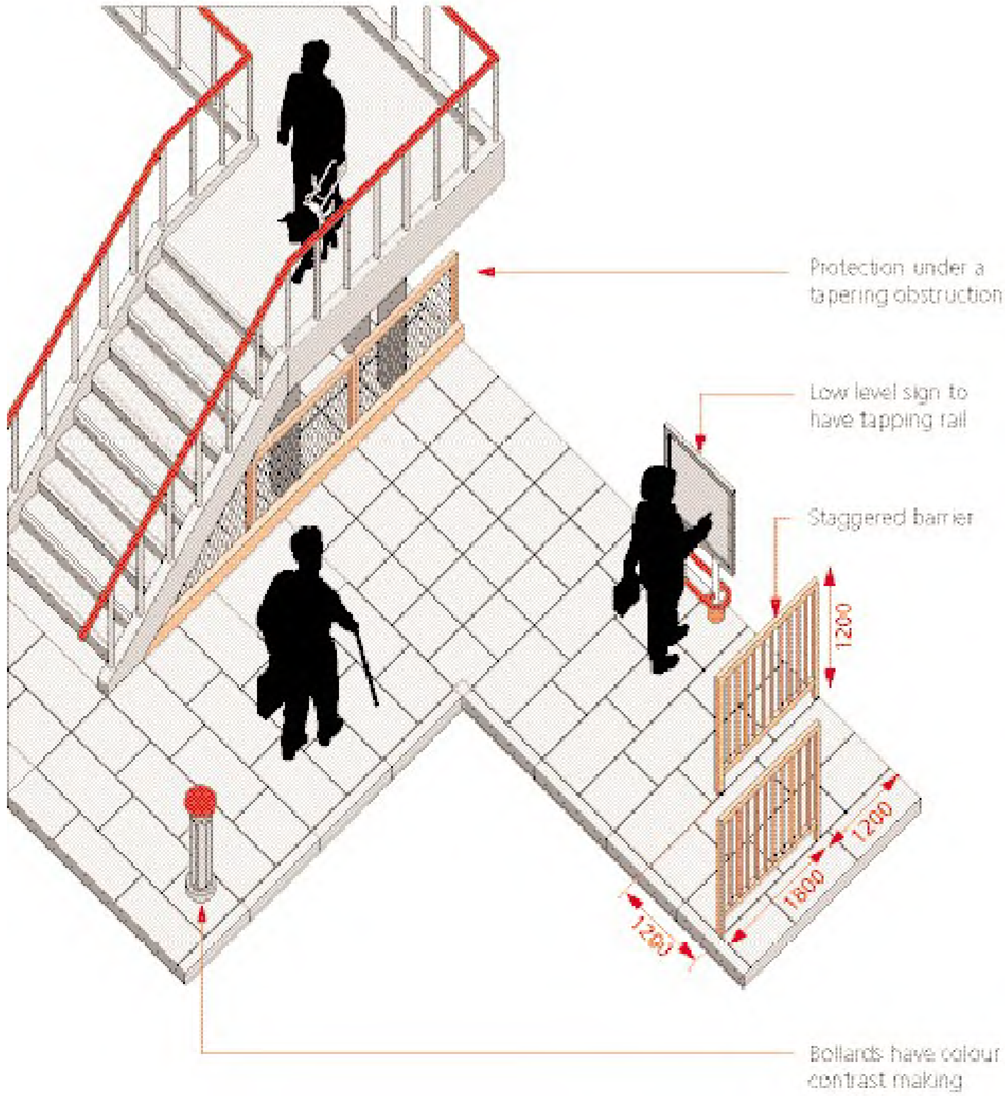
In common with other street furniture on or close by footways, guardrails should be clearly colour contrasted from their surroundings: simple galvanized railings are not acceptable. If, for reasons of economy, this type of railing has to be used it should at minimum have colour contrasted markings on it. These requirements also apply to rails around street works.

Guardrails should also be designed to prevent guide dogs from walking under the rails, but there should be sufficient openings between vertical members to ensure that children and wheelchair users can see, and be seen, through the railings. The top rail should have a smooth profile and, if intended to provide support, should be circular with a diameter of between **40** and **50mm**.

There should also be an upstand a minimum of **150mm** in height at the rear of the paved area, which can then act as a tapping rail for long cane users as well as a safeguard for wheelchair users.

BS 7818 includes more detailed information on this area.

Fences and guardrails



3.4 Seating

As mentioned in Sections 2.4 and 2.5, mobility impaired people need seating at reasonably frequent intervals. In commonly used pedestrian areas, and transport interchanges and stations, seats should be provided at intervals of no more **50 metres**. Wherever possible seats should also be provided at bus stops and shelters. Seating should be placed adjacent to, but not obstructing, the pedestrian route and should be picked out in contrasting colours to help people with visual impairment (the design of seating is described in Section 9.3).

3.5 Barriers on footways

Where it is necessary to provide staggered barriers across footways and footpaths in order to prevent conflict with other forms of traffic (for example at junctions with main roads) the barriers should be constructed of vertical bar sections **1200mm** high and colour contrasted with their surroundings. An offset between the two barriers of **1200mm** allows wheelchair users convenient passage but discourages the riding of bicycles. Requirements to give visibility through the railings, as mentioned in Section 3.3, also apply to barriers.

3.6 Ramps and steps

Detailed design guidelines for ramps and steps are given in Section 8.4. The recommended dimensions apply equally to the external as well as the internal environment.

3.7 Street furniture

Street furniture can cause problems for both wheelchair users and for people who are visually impaired. It is essential, taking account of heritage issues, to consider both the position of any furniture and the means of making it apparent to people with reduced vision.

Posts, poles, bollards etc should be positioned to leave at least the minimum footway widths given in Section 3.1. It helps visually impaired people if, within an area, the positioning of posts etc is consistent and away from general lines of movement. Thus lamps (and signs) should be mounted on walls or buildings whenever possible; if not, then placing them at the back of the footway as near the property line as possible is acceptable. In this position the maximum distance from the property line to the outer edge of the pole should be **275mm**. If they are placed on the road side of the footway, they should be at least **500mm** away from the edge of the carriageway, increased to **600mm** where there is severe camber or crossfall. If there is more than one pole, they should be at least **1000mm** apart.

Waste bins should be approximately **1300mm** in height, should continue down or close to ground level and should be of a rounded design. The bin opening should be about **1000mm** above ground level. Bins should be colour contrasted to their surroundings.

Bollards are recommended to be at least **1000mm** in height. The same minimum height **(1000mm)** applies to other freestanding objects such as raised flowerbeds, which should also be designed with rounded edges. Under no circumstances should adjacent bollards be linked with chain or rope as this is a hazard for blind and partially sighted people.

Low level signs supported on two vertical poles (eg city maps) should have a lower tapping rail or skirting between the posts to prevent blind pedestrians inadvertently walking between them and colliding with the sign. The rail or skirting should be **300-400mm** above ground level. The sign should not extend more than **150mm** beyond the supporting posts.

Colour contrasted bands (**150mm** deep) on poles and colour contrast on the tops of bollards will help partially sighted people, but the choice of colour for the overall post or bollard also affects visibility. Grey poles in particular are often problematic as they tend to blend into the general background. The incorporation of a light at the top of bollards is also an effective way of making them more easily seen.

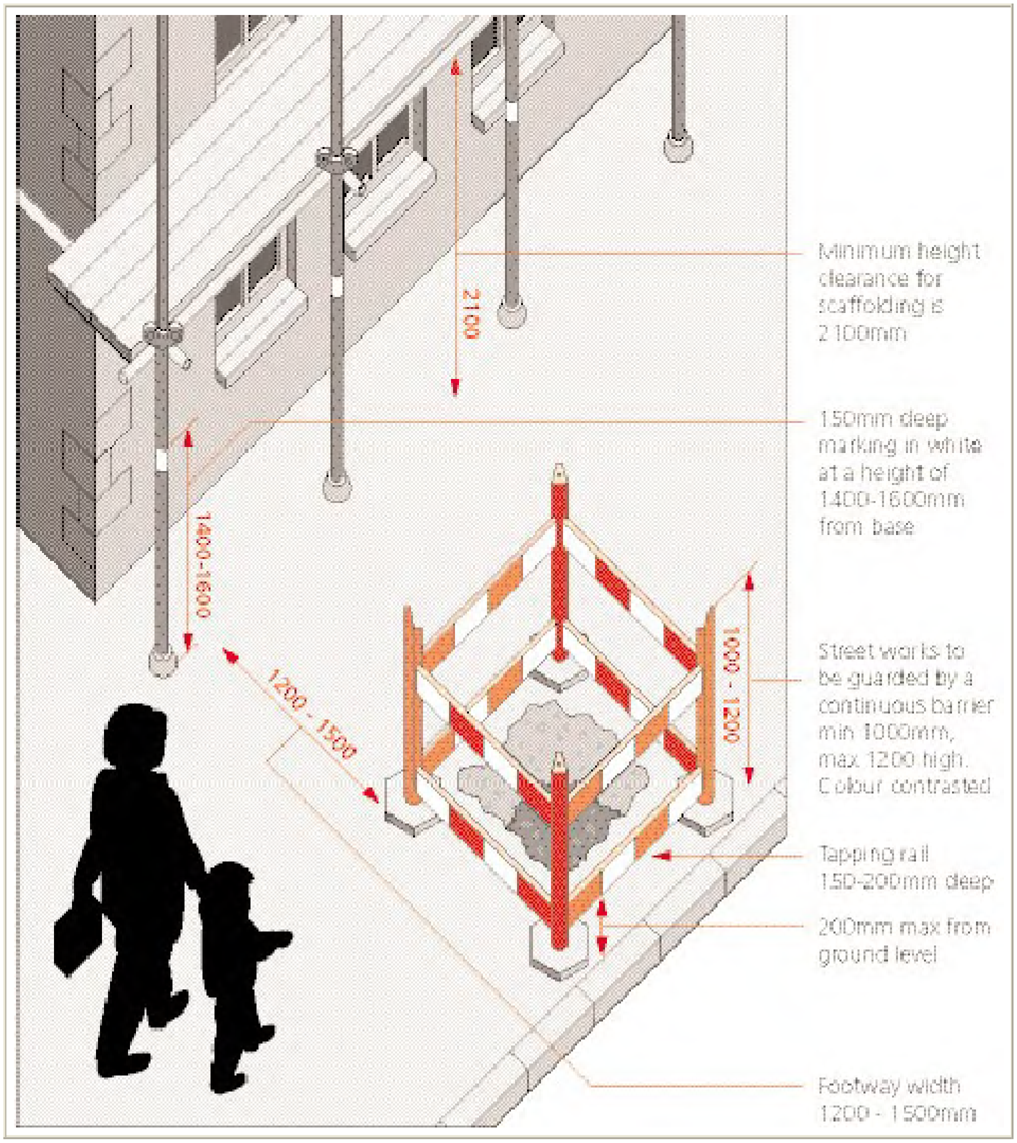
Overhead signs (and any other obstacles over a footway) should give the height clearances specified in Section 2.2 (**2100mm** minimum below suspended signs, **2300mm** otherwise).

Tapering obstructions are usually inside buildings, but can also be found in the outside environment, for example where there is a pedestrian bridge over a road. Any part below a stairway which is **2100mm** or less in height should be protected with a barrier to warn blind and partially sighted pedestrians. In some circumstances (where there is sufficient space) protection can be given by a warning surface which extends out from the obstacle. In this context it should be remembered that pedestrians take time to come to a halt. Finnish guidelines, for example, give a braking distance for pedestrians of 500mm and a reaction distance of 1400mm.

3.8 Street works

Street works not properly safeguarded pose a hazard for many disabled people and particularly blind and partially sighted pedestrians. Street works should be guarded for their full extent by a continuous barrier, minimum **1000mm** high, maximum **1200mm**, with a tapping rail (depth **150mm** to **200mm** with its bottom edge on the ground or up to a maximum height of **200mm** above the ground). The barriers must be placed so that they cannot be knocked over and should be reasonably rigid. The requirements for clear level footway space around roadworks including temporary footpaths should follow the standards given in Section 3.1. Illumination of the street works at night-time helps partially sighted people; audible warnings help blind people. Colour and tonal contrasting of the protective barriers is essential (see Section 3.9).

Streetworks



If the extent of the works means that pedestrians will have to use the carriage way, kerb ramps or raised footways should be provided to help wheelchair users.

Where scaffolding is erected on or over a footway, there must be adequate height clearance **(2100mm minimum)** and an absolute minimum footway width of **1200mm** in lightly populated areas, **1500mm** in busier areas. Enclosing the actual building works with a hoarding is the safest measure for blind, deafblind and partially sighted people.

The name and contact details of companies undertaking works should be clearly displayed so that any problems can be reported immediately (see Section 3.12 for street works affecting pedestrian crossings).

Building works within bus and rail stations, or in other transport facilities used by the public, should also be guarded in a manner similar to that described for street works.

3.9 Colour contrast

Many guidelines advocate the use of colour / tonal contrasted marking to identify street furniture, railing or boarding around street works, scaffolding, tactile paving surfaces and so on (it may not be appropriate to use such treatments in historic areas. Consultation with those responsible for these areas should take place at the earliest opportunity). The main purpose of using contrasted marking is to help partially sighted people avoid obstacles that they might walk into or trip over. The dimensions and placing of colour contrasted bands on poles and similar obstructions are a minimum depth of **150mm** placed with the lower edge of the band between **1400mm** and **1600mm** above ground level. Some guidelines advocate deeper bands (300mm) or more than one band (three dark, two light bands each 100mm deep), but the single band, minimum 150mm, is considered satisfactory by the Royal National Institute for the Blind (RNIB).

Colour contrast is also necessary on structures other than poles and guardrails, for example on glass doors and on bus shelters. The principles underlying colour and contrast have been researched in detail but, in summary, it is essential to ensure that the colours used contrast with their surroundings. Colours which appear to be different from one another in colour (chroma) can be very similar tonally (eg green and brown) and therefore do not give sufficient contrast. Contrast is the difference in reflectivity between two surfaces.

An easy way of judging whether there is good contrast is to take a black and white photograph of the scene or a photocopy of a colour photograph. A good contrast will show up black and white, poor contrast will show up as grey. Further detailed information on the use of colour and contrast can be found in A design guide for the use of colour and contrast (see Section 5 of the Bibliography).

3.10 Surfaces (see Section 4 for tactile paving surfaces)

Uneven surfaces, gaps between paving slabs etc whether within or outside buildings can cause problems for people using sticks and crutches, visually impaired cane users and wheelchair users. Joints between flags and pavers should not be less than **2mm** and not more than **5mm** wide. For pedestrian-only footways, flags can be laid with wider joints **(6-10mm)** filled with compacted mortar. Maximum deviation of the footway surface under a **1 metre** straight edge should not exceed **3mm**. New cobbled surfaces are unlikely to be appropriate and, even in historic environments, alternatives should be sought.

Covers and gratings can also cause problems and may be mistaken by blind people as a tactile surface. It is recommended that the maximum size of openings should be **13mm** and if openings are elongated they should be placed at right angles to the predominant direction of travel. It is also recommended that the spaces should not be more than **150mm** long. Wherever possible gully covers and drainage slots should be positioned as far as possible from main pedestrian flows. Inspection chamber covers and service inspection chambers should be flush with the surface.

Surfaces should be firm, slip-resistant (dry friction between 35 and 45) in wet and dry conditions and should not be made of reflective material. Dished channels (for drainage) should not be incorporated within pedestrian routes.

When small paving bricks (paviours) are used, care should be taken to ensure that they are evenly laid; any unevenness can cause problems for some wheelchair users and some visually impaired cane users. For obvious reasons cobblestones should not be used. As noted earlier in Section 3.2, crossfalls should not exceed **2.5 per cent (1 in 40)**.

3.11 Other obstructions

Apart from roadworks and scaffolding, there are many other sometimes temporary obstructions that can cause problems for disabled people, particularly those with visual impairments. A-frame advertisement boards placed outside shops, ladders, over-hanging tree branches, dustbins, vehicles and bicycles parked on pavements are all potential hazards.

Wherever feasible obstructions of this kind should be kept to a minimum and should not encroach on the clear space (horizontal and vertical) needed to provide safe passage for pedestrians. Any floor mounted signs and displays should only be within the shop curtilage. If temporary obstructions have to be placed on a pedestrian route ladders, for example, used when redecorating a shop front the minimum clear passageway given in Section 3.1 should be maintained and the obstructing equipment should be clearly marked with colour contrasting tape or similar. Other temporary structures such as street market stalls and pavement café tables should be placed so as to leave clear pedestrian routes. Consideration could be given to the approach used in the Netherlands in pedestrian areas, where two colours (or textures) are used to help people detect between where obstacles are allowed and the clear path through the development.

3.12 Road crossings

Road crossings are dealt with in detail in a number of Traffic Advisory Leaflets (TALs) and guidance documents produced by the DfT.

These include:

- Audible and tactile signals at pelican crossings (TAL 4/91)
- Audible and tactile signals at signal controlled junctions (TAL 5/91)
- The Design of Pedestrian Crossings (LTN 2/95)
- Guidance on the use of Tactile Paving Surfaces (DfT, 1998).

The method for assessing whether or not a crossing is required, and if so what type of crossing, is given in LTN 1/95. The considerations include whether there is any hospital, sheltered housing or workshop for disabled people with an entrance within 100 metres of the crossing and the composition of the pedestrians including people with impairments.

The timings given for the Green Walking Figure are, for Pelican crossings, from four seconds (for crossings up to 7.5 metres in length) up to seven seconds for crossings over 12.5 metres. The period can be extended by two seconds if there is considerable use by disabled pedestrians. Similar figures apply to Toucan crossings. There is a further time allowance on each type of crossing which advises pedestrians not to start crossing but allows time for those already on the crossing to get to the other side.

The allowance of six seconds for a 7.5 metre crossing compares with a need for about 12 seconds, however the extendable periods on Toucan and Puffin crossings and the Flashing Green Man on Pelican crossings are long enough to give disabled people sufficient time to complete their crossing. New Puffin crossings with detectors enable people to cross in their own time, which is of benefit to people with mobility impairments.

Section 2.7 of The Design of Pedestrian Crossings (LTN 2/95) sets out the facilities required for disabled pedestrians, including provision of dropped kerbs, tactile paving, audible and tactile signals.

At controlled crossings the control unit should be located close to the tactile surface (see Section 4), with the centre of the button between **1000mm** and **1100mm** above the footway level. The post on which the unit is mounted should be clearly marked with a contrasting band of colour **140mm** to **160mm** in depth with the lower edge **1400mm** to **1600mm** above footway level. Where a tactile indicator (a rotating knurled cone) for the steady green man phase is used, it should be placed on the right hand side of the bottom of the push button unit, extending **20mm** down (±1mm) and with a diameter of **15mm** (±1mm). Tactile indicators should not be considered as a substitute for audible signals as they are required by different people, although some will benefit from both. A large diameter raised push button which can be activated by a closed fist will be most easily used by pedestrians who have mobility impairments. It should have an illuminated LED surround or be colour contrasted for increased conspicuity. The United States Access Board recommends 50mm diameter buttons and a maximum pressure to activate of 22.2N. It should be noted that push button units used in Great Britain must first be approved by Traffic Control and Lighting in Bristol.

Where centre refuge islands are provided they can be an absolute minimum of **1200mm** in width (LTN 2/95) but to cater for wheelchair users they should be at least **1500mm** and preferably **2000mm**. If the island is at the centre of a staggered crossing there should be a minimum clear width (between guard rails) of **2000mm**: sufficient to allow two wheelchair users to pass one another.

Clearly marked pedestrian crossing areas should be provided in bus stations where people cross the bus lanes to get from one platform to another, with signing for buses to give way. As a general matter of policy authorities should give the pedestrian priority.

The appropriate tactile paving surfaces should be installed at all controlled and uncontrolled pedestrian crossings. Details of these surfaces are given in Section 4 of this Guide.

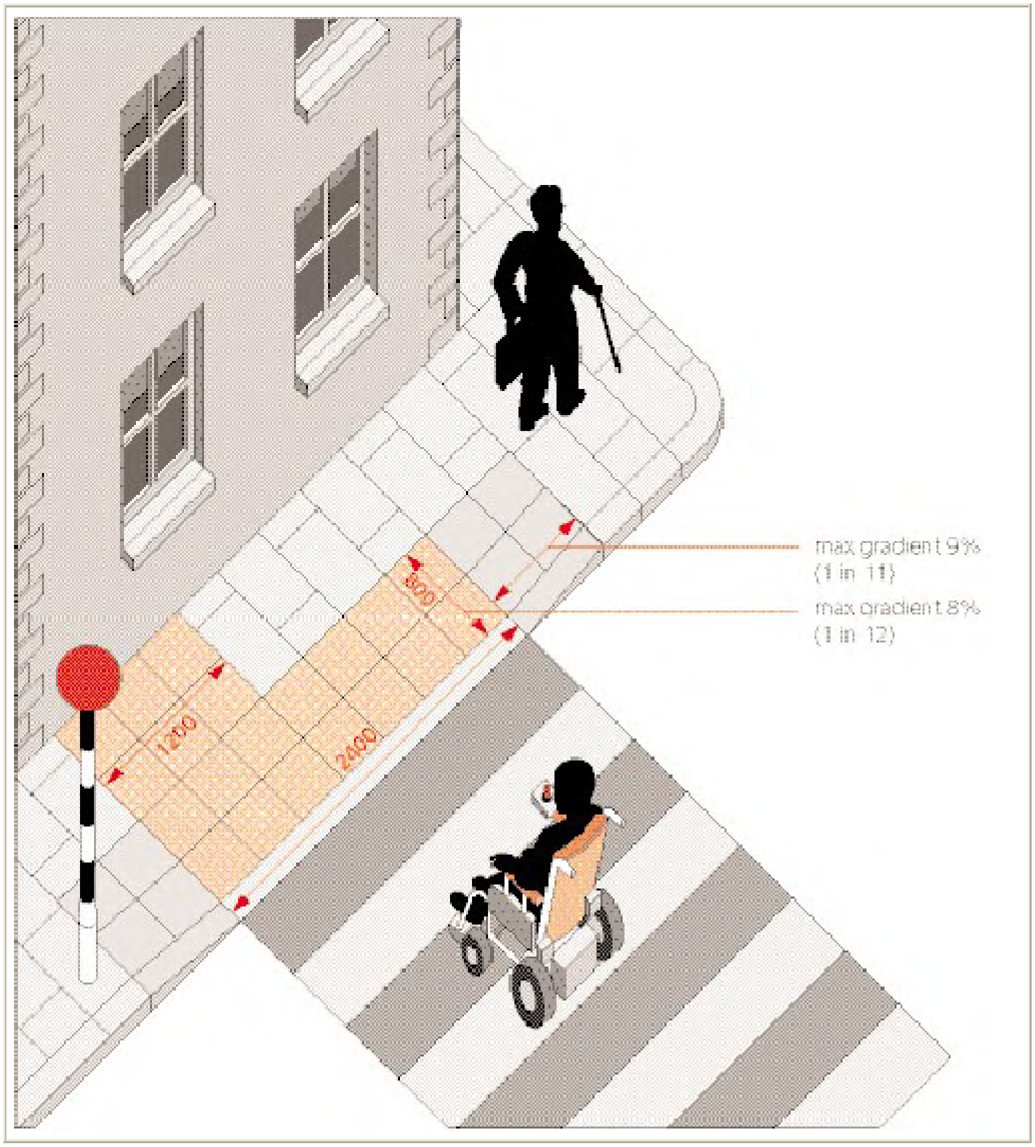
If street works mean that a pedestrian crossing cannot be used, the following should be done:

- put barriers across pedestrian accesses to the crossing.
- use signs showing Zebra, Pelican etc crossing not in use. Place them so that they face pedestrians on both sides of the road.
- extinguish or cover Zebra crossing globes, switch off the lights on Pelican, Puffin or Toucan crossings.

3.13 Dropped kerbs and raised crossings

Level or flush access is essential for the majority of wheelchair users. Such access, either by dropped kerb or raised road crossing must be provided at all Zebra and controlled crossings and at other places side roads, access points to parking areas etc used by pedestrians. On longer side roads and residential roads dropped kerbs should, where possible, be provided every 100 metres to avoid the need for wheelchair users to make lengthy detours to cross the road having given due consideration to desire lines for pedestrians and intervisability.

Dropped kerbs and raised crossings (Example of layout at zebra crossing)



Wherever possible the dropped kerb should be flush with the carriageway (maximum 6mm rounded bullnose if really essential) and have a maximum gradient of **8 per cent (1 in 12)** on the direct approach; **9 per cent (1 in 11)** on the flared sides. The minimum width of the flush area should be **1200mm** (up to **3000mm** where there are heavy pedestrian flows) though **1000mm** is acceptable adjacent to car parking reserved for disabled users. Where a dropped kerb is provided at a controlled road crossing it should be the same width as the crossing itself (minimum **2400mm**). At the foot of the dropped kerb, the camber of the road should be no more than **5 per cent (1 in 20)** for a wheelbase distance (approximately 600mm) away from the kerb line. This avoids the wheelchair front wheels or footrest being caught by an opposing upslope.

If the width of the footway is sufficient there should be a level area, **900mm** minimum width, along the rear side to allow easy passage for wheelchair users who are not crossing the road.

It is essential that the dropped kerb be indicated by the appropriate tactile surface (see Section 4) and, again with the interests of visually-impaired people in mind, the kerb should not be on the radius of a road junction at an uncontrolled junction. If the radius is large it may be necessary for the dropped kerb to be within it, but it should be located so as to give as close as possible to a right-angled crossing of the side road.

If level access is provided by a raised road crossing, the raised area should be at least **2400mm** in width and should be level with the footway.

An H marking should be applied to dropped crossings (at uncontrolled crossings) to indicate to motorists that there is a crossing present and not to park there (see diagram 1026.1 in Traffic Signs Regulations and General Directions (TSRGD)).

[2] As an alternative to crossfall, pervious surfaces which absorb rain may be used in some circumstances.

4 Tactile paving surfaces

Following extensive research, DfT and the Scottish Executive jointly published guidance on the use of tactile paving surfaces (Guidance on the use of Tactile Paving Surfaces). The following paragraphs summarize the guidance given, but designers should consult the document itself and follow the guidance given. In addition, BS 7997 established the construction standards for these materials in concrete, clay and stone.

Whenever a footway or other area used by pedestrians is being constructed, repaired or renewed, consideration should be given to incorporating any appropriate tactile surfaces.

4.1 Pedestrian crossing points

Type of surface: parallel rows of flat-topped blisters **5mm** (±0.5mm) high, **25mm** in diameter, pitch **64-67mm**.

Colour: red at controlled crossings; buff or any other colour that contrasts with the surroundings **except red** at uncontrolled crossings.

Application: at controlled and uncontrolled crossing points where the footway and carriageway are level with one another.

Layout - controlled crossings: where the dropped kerb at the controlled crossing is in the direct line of travel, the tactile surface should be laid to a depth of 1200mm. At all other controlled crossings a depth of 800mm should be provided. The surface should be laid to the full width of the dropped kerb.

The back edge of the section of tactile surface which extends across the dropped kerb should be at right angles to the direction of the crossing. Where the back edge is not parallel to the kerb (ie the crossing itself is not at right angles to the kerb) the tactile surface should not be less than **800mm** in depth at any point.

At controlled crossings only, a stem of the surface **1200mm** wide should extend back from the tactile surface adjacent to the push button control box or the zebra pole and should be in line with the direction of travel across the road.

Layout uncontrolled crossings: for crossings at or close to road junctions, the blister surface should extend across the full width of the dropped kerb, with a depth of **400mm** where the crossing is inset (ie not in the direct line of pedestrian travel) or **1200mm** where it is in the direct line. As with the surface at controlled crossings, the back edge should be at right angles to the direction of crossing.

When the dropped kerb is inset (into the side road) it should not be located on the radius but set about **1000mm** in from the end of the radius.

Where there is an uncontrolled crossing away from a junction, the blister surface should be laid to a depth of **800mm**.

The DfT publication provides a series of illustrative diagrams of the layout for blistered surfaces at a range of different crossings and pedestrian islands. These should be used in the circumstances shown.

There is no suggestion (by DfT) that highway authorities should set out to reconfigure existing installations. It would be useful, however, to take the opportunity to review existing sites in the course of maintenance or other major works, with a view to bringing them into line with the guidance.

4.2 Hazard warning surface

Type of surface: corduroy, consisting of rounded bars. The bars are **6mm** (± 0.5mm) high, **20mm** wide and spaced, centre to centre at **50mm**.

Colour: the surface should contrast with the surrounding area but **should not be red**.

Application: at the top and bottom of steps, at the foot of a ramp to an on-street Light Rapid Transit (LRT) platform (but not other ramps), a level crossing, where people could walk inadvertently onto a platform at a railway station and where a footway joins a shared route (cycle/pedestrian).

It should be noted that the surface is **not** recommended for raised bus stops.

Layout: the surface should be laid so that the bars run transversely across the direction of pedestrian travel and should extend across the full width plus **400mm** each side of stairs at top and bottom, across the full width of the ramp (at the foot of the ramp only), across the full width of the footway at level crossings and the full width of pedestrian entry to unprotected railway station platforms.

The recommended depths of the corduroy surface are:

Steps (top and bottom)	- in direct line of travel	**800mm**
	- otherwise	**400mm**
Ramps (foot only)		**800mm**
Level crossings	- where there is a barrier	**400mm**
	- no barrier	**800mm**
Entrance to unprotected railway station platform		**800mm**

Surfaces laid to warn of steps should start **400mm** away from the nosing of the first step.

4.3 Off-street platform edge warning

Type of surface: offset rows of flat-topped domes **5mm** (± 0.5mm) high, spaced **66.5mm** apart, centre to centre.

Colour: should contrast with the surrounding area but **should not be red**.

Application: should be used at all off-street rail platforms, including heavy rail, light rail and underground (but **not at on-street platforms**).

Layout: the surface should be laid parallel to the edge of the platform, with a depth of **400mm** and set back from the edge by between **500mm** and **700mm**. The surface should extend the full length of the platform. (The platform edge itself should still be marked with a white line).

4.4 On-street platform edge warning

Type of surface: rows of lozenge shapes, **6mm** (± 0.5mm) high with rounded edges so as not to be a trip hazard and **150mm** by **83mm** in size.

Colour: normally buff coloured but can be any colour, **other than red**, which contrasts with the surrounding surface.

Application: at all on-street LRT platform edges.

Layout: the surface should be laid immediately behind the platform edge coping stone, no closer than **500mm** from the edge and for the full length of the platform including any approach ramps. The surface should be laid to a depth of **400mm**.

Note that a tram stop is regarded as being on-street where: the tramway is in a street environment, or where the ability for pedestrians to cross and/or walk, without restriction, along or alongside the infrastructure, exists. (This definition has been agreed with the Railway Inspectorate).

4.5 Segregated shared cycle track/footway surface and centre delineator strip

Types of surface: the start of the pedestrian part of the shared surface is a ladder pattern consisting of raised flat-topped bars each **5mm** (± 0.5mm) high, **30mm** wide and spaced **70mm** apart. These bars are laid at right angles to the direction of travel.

the start of the cyclists part of the shared surface has exactly the same raised bars but laid parallel to the direction of travel.

the centre delineator strip should be **12-20mm** high (preferably 20mm), **150mm** wide with sloping sides and a flat top 50mm wide. The strip should be finished in white.

Colour: no specific recommendations are made for the colours of the surfaces other than the requirement that the centre delineator be white. However, the use of different coloured surfaces and different materials, eg bitumen and concrete, on the different sides of the route can provide a helpful cue to partially sighted people.

Application: to be used on any segregated shared route where the pedestrian side is not physically separated from the cyclist side, for example by a difference in level.

Layout: the tactile surfaces should be laid at the beginning and end of the shared segregated route, at regular intervals along the route and at any junctions with other pedestrian or cyclist routes.

The surfaces should be **2400mm** long, across the full width of the footway and cycle track.

The delineator strip should run the entire length of the route except at crossing points and places where another cycle track crosses the pedestrian footway to join the route.

A cycle symbol marking (in accordance with diagram 1057 of TSRGD) should be provided on the appropriate side at all entry/exit points, and at any junctions with footways or other shared routes. This should be repeated at every **50 metres** along the cycle way.

As with other warning surfaces, the DfT publication gives illustrations of the ways in which various layouts should be treated. Schemes in historic environments can create particular aesthetic problems and should be carried out sensitively.

In general, shared use facilities should be regarded as a last resort; every effort should be made to keep cyclists and pedestrians fully separated. Where shared facilities are unavoidable at least the minimum width for the footway should be maintained as detailed in Section 3.1.

4.6 Guidance path surface

Type of surface: a series of raised, flat-topped bars running in the direction of pedestrian travel. The bars are **5.5mm** (± 0.5mm) high, **35mm** wide and are spaced **45mm** apart.

Colour: contrasting to the surrounding area, but **should not be red**.

Application: the surface is recommended for use in pedestrian precincts where the traditional guidance given by a standard footway between the property line and carriageway does not exist, where pedestrians need guidance around obstacles, where visually impaired people need to find a specific location and possibly in transport terminals.

The layout of the guidance path will be determined by the specific location in which it is placed, but the path should be **800mm** wide (with unobstructed space on each side also at least **800mm** wide) as straight as possible and, in busy shopping centres, with a minimum **2000mm** of unobstructed space between the path and the property line.

Where there is a right angle turn, the surface should be installed so that the bars run transversely across the path for **1200mm** before the bend in both directions; the same applies to T junctions in the path. For bends other than right angles, the bars should be turned to follow the direction of travel.

When considering putting in guidance paths care should be taken to make sure that the layout of the pathways is not too complicated, otherwise they may cause confusion rather than assisting blind people. Local consultation on the proposed layout should be held to avoid any risk of confusion.

4.7 Information surface

Type of surface: this does not have a raised profile but is made of a material that is slightly softer underfoot than conventional paving materials, for example neoprene rubber or similar elastomeric compound.

Colour: it should contrast in colour and tone to the surrounding area.

Application: the surface can be used to draw attention to facilities such as bus stops, help points, telephone kiosks, post-box, tactile or talking information board, entrances to civic amenities, cash dispensers, etc. Within transport terminals it can be used to indicate ticket offices, help points, waiting rooms and toilets.

Layout: the surface of the material should be level with the surrounding area. A space of **400mm** should be allowed between the facility and the start of the surface, the surface itself should be at least **800mm** wide or the full width of the facility, whichever is the greater. The only exception to this is where the facility is an entrance or window (eg for a ticket office) when the surface should be no wider than the facility itself.

As with the guidance surface, local consultation with blind and partially sighted people should be carried out to ensure that the layout of any surfaces does not cause confusion.

5 Car parking 5.1 General provision

Provision should be made for car parking spaces for disabled motorists (Blue (formerly Orange) Badge holders) wherever conventional parking spaces are provided. In off-street car parks operated by a Local Authority and in car parks offered for public use by private companies, spaces for Blue Badge holders should be provided as close as possible, preferably within **50 metres** of the facilities served by the car park with level or ramped (preferred gradient 5 per cent) access, and under cover if possible.

In open parking areas, designated parking spaces should be located on firm and level ground. The surface of designated parking spaces should be even and stable, with any variation of surface profile not exceeding **± 5mm** (eg between paving, surface features or different surfaces).

Where the provision of designated parking spaces close to the building is not possible, a setting-down point for disabled passengers should be provided on firm and level ground, close to the principal entrance to the building. The surface of the pavement or footpath alongside a setting-down point should be level with the carriageway at this point. Tactile indication of this type of setting-down point is necessary to enable people with impaired vision to determine whether they are on the pavement or the carriageway.

In multi-storey car parks the spaces should be on the level or levels at which there is pedestrian access or, if this is not possible, near to a lift usable by wheelchair users.

Where car parks serve a general area rather than a specific facility, consideration should be given to providing a Shopmobility service [3] for disabled motorists between the car park and the area served by it. This type of service, of which there are many examples, can also be helpful for older and disabled people who travel to a town centre by Dial-a-Ride or similar accessible bus services. A good location for a Shopmobility scheme office would be in close proximity to a large car park and set down/pick up points for local Dial-a-Ride, Community Transport bus services and local public transport.

Spaces reserved for use by disabled motorists should be monitored for abuse, with reminder notices or other appropriate action taken if cars are wrongly parked.

Where park-and-ride facilities are available, the advance signing should include information on whether or not the facility is served by wheelchair accessible buses.

5.2 Recommended spaces for disabled motorists parking

The recommended proportions of spaces [4] for Blue Badge holders are:

(i) For car parks associated with existing employment premises: 2% of the total car park capacity, with a minimum of one space.

Spaces for disabled employees **must be additional** to those recommended above; reservations could be ensured, for example, by marking a space with a registration number.

(ii) For car parks associated with new employment premises: 5% of the total parking capacity should be designated (to include both employees and visitors).

(iii) For car parks associated with shopping areas, leisure or recreational facilities, and places open to the general public: A minimum of one space for each employee who is a disabled motorist, plus 6% of the total capacity for visiting disabled motorists.

The numbers of designated spaces may need to be greater at hotels and sports stadia that specialize in accommodating groups of disabled people.

At railway stations, the Strategic Rail Authority (SRA) [5] recommends the following:

- Fewer than 20 spaces, a minimum of **1** reserved space
- 20 to 60 spaces, a minimum of **2** reserved spaces
- 61 to 200 spaces, **6%** of capacity, with a minimum of 3 reserved spaces
- Over 200 spaces, **4%** of capacity, plus **4** reserved spaces

An additional space should also be provided for any railway employee who is a disabled motorist.

5.3 Bay design

DfT Traffic Advisory Leaflet 5/95 gives detailed advice on the provision and design of parking for disabled car users, as does BS 8300, "Design of buildings and their approaches to meet the needs of disabled people Code of practice".

On-street parking parallel to the kerb: within the marked parking space, a clear rectangular space should be provided which is a minimum of **6600mm** long by **2700mm** wide (preferably **3600mm**). The extra width allows for an access zone on kerb or street side.

On-street parking at an angle to the kerb: the parking space should be a minimum of **4200mm** long by **3600mm** wide.

It is recommended that kerbside parking bays should be sited where road gradient and camber are reasonably level, eg **1:50**. A road with a steep camber causes difficulties for wheelchair users who have a side lift in their vehicle.

Where designated bays on-street are at a different level from the adjacent pavement, dropped kerbs should be provided for wheelchair users, with appropriate tactile marking.

It should be remembered that parking vehicles partly on the pavement is one of the main causes of concern to blind and visually impaired people, deafblind and partially sighted people in the pedestrian environment. Every effort should be made to ensure that it does not occur or that, if it does, appropriate enforcement action is taken.

Off-street parking: bays should be a minimum of **4800mm** long by **2400mm** wide with additional space:

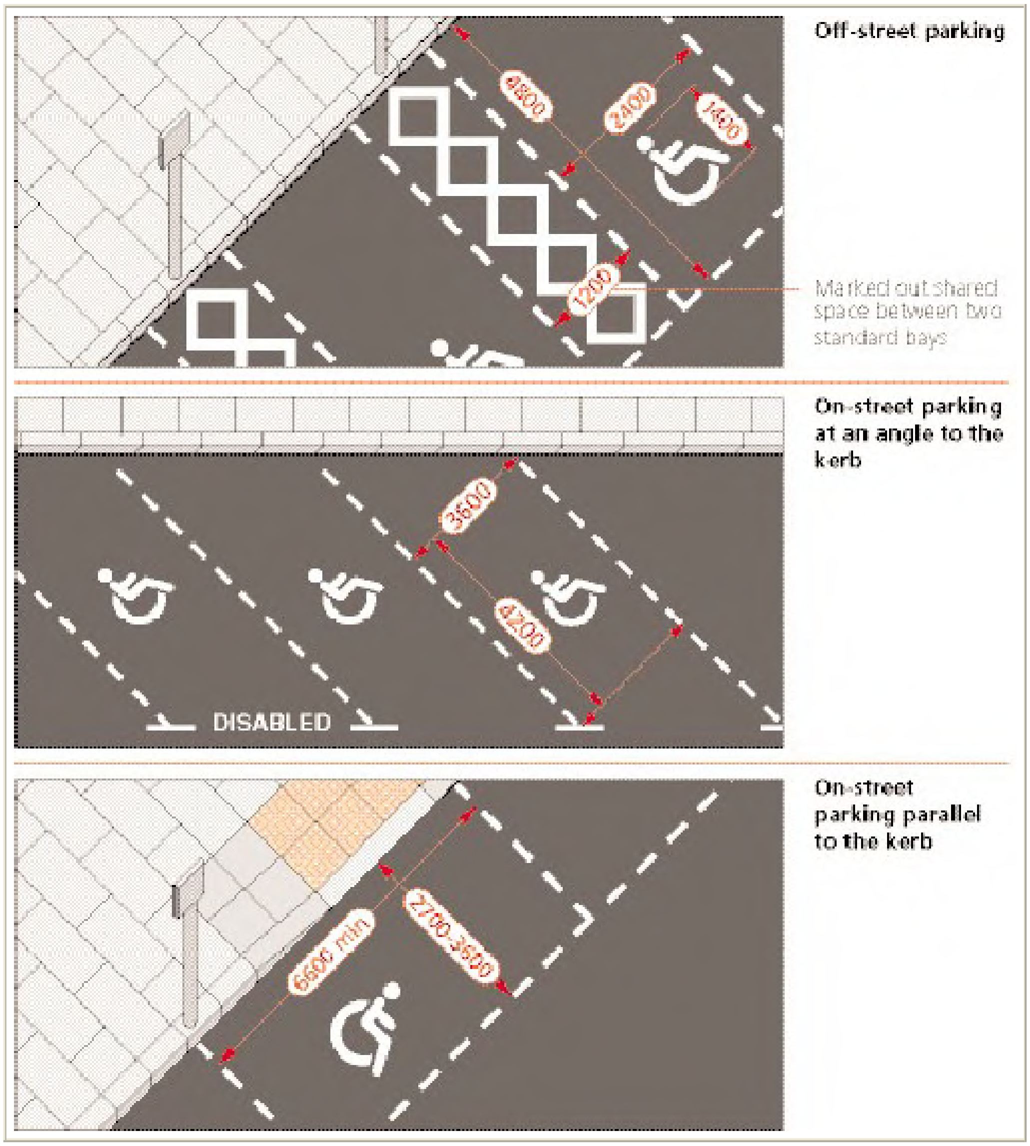
1 Where bays are parallel to the access aisle and access is available from the side an extra length of at least **1800mm**, or,

2 Where bays are perpendicular to the access aisle, an additional width of at least **1200mm** along each side. Where bays are adjacent the same **1200mm** space can serve both sides. There should also be a **1200mm** wide safety zone at the vehicle access end of each bay to provide boot access or for use of a rear hoist.

5.4 Bay marking and signing

On-street bays should be indicated by signs in accordance with TSRGD; road markings must also confirm to TSRGD. Each bay should have a raised sign at the head of the bay to ensure that if snow or fallen leaves obscure the road markings, the purpose of the bay is still apparent.

Bay Design



In off-street parks, bays should be marked with yellow lines and a yellow wheelchair symbol within the parking space. A sign or, if appropriate, signs should be provided at the entrance to the car park to direct disabled motorists to designated parking spaces which, if the car park is not under cover, should also have raised signs at the head of the reserved bays.

Signs inside the car park should show the most convenient way to the facilities served by the park, with an approximate distance to those facilities.

Where the car park is provided for a specific facility and where there are staff available, an emergency / assistance point could be located adjacent to the area reserved for disabled car users.

5.5 Parking control equipment

In many places Blue Badge holders do not have to pay for parking, but in some they do. Where this is so, the design of pay and display machines, parking meters etc, should conform to the standards given in Section 9.1. Signs should make it very clear that Blue Badge holders are required to pay.

BS 8300 states that ticket dispensers and slots for coins or cards that need to be operated from a wheelchair should not be less than **750mm** and not more than **1200mm** high. Any variable message displays or control instructions should be centred on **1500mm** above ground level. Keypads on those parking machines which require registration numbers to be typed in, should be no more than **1200mm** high.

Access to the ticket machine should take account of the space at foot level needed by a wheelchair user and should not be placed on plinths, or, if a plinth is necessary, it should not extend out beyond the face of the equipment. To allow wheelchair users to manoeuvre in front of the machine, there should be a clear space of **1850 x 2100mm**.

Barrier control units (for coin or card entry and ticket issue) should be between **1000mm** and **1300mm** above ground, with instruction plates placed at the lower end of the range (**1000mm** to **1600mm** above ground) required by BS 6571.

Irrespective of the particular type of charging system used, it helps disabled motorists if they are informed before entering the car park what sort of system is used or if there is no charge. It is also essential that the maximum acceptable height of vehicle is shown on the approach to the car park. Some disabled motorists use vans or high-top cars, others use cars with their wheelchair stowed on top of the vehicle, so height can be critical. It is recommended that the minimum vertical clearance, from carriageway to designated parking bays should be **2600mm**. This height is sufficient for a car carrying a wheelchair on its roof and for the wheelchair to be positioned vertically during the hoisting process.

If it is not possible to maintain this height along the route to the designated bays, information to that effect, specifying what the minimum clearance is, must be displayed prominently so that the driver of a higher vehicle has time to avoid entering the car park. At the same point, directions to a suitable alternative parking area must be displayed.

[3] Shopmobility services are now found in many town centres and can provide wheelchairs and personal assistance for disabled people when they travel round the centre.

[4] See Parking for Disabled People TAL 5/95, DfT.

[5] See Train and Station Services for Disabled Passengers, Strategic Rail Authority, 2002.

6 Bus stops

The advent of low floor buses will improve access for disabled people, but full benefit will only be attained if bus stops are also designed to meet their needs.

Section 2.4 showed that the distances some disabled people are able to walk are quite short. In residential areas bus stops should be located ideally so that nobody in the neighbourhood is required to walk more than **400 metres** from their home. The spacing of bus stops should, where possible, take account of gradients on the footpaths within the vicinity of the stop. A suggested standard is to reduce the maximum walk distance (400 metres) to a bus stop by **10 metres** for every **1 metre** rise or fall. Regular bus services designed particularly with elderly and disabled people in mind, such as the Swedish Service Routes have bus stops at more frequent intervals, typically every **200 metres**. This figure is in accord with research that shows that for disabled people, bus use falls off sharply if the distance is more than **200 metres** (**250 metres** for able-bodied people). Where there are places that will be used by disabled people, such as residential care homes, day centres etc, bus stops should be sited as close as possible and should have a pedestrian crossing (with dropped kerb) in reasonable proximity. On single carriageway roads it is normal practice to stagger bus stops in opposing directions so that buses stop tail-totail and move away from each other. The stagger should be a minimum of **40 metres** and may have a pedestrian crossing in-between. As a matter of general policy, highway authorities should ensure that dropped kerbs are provided wherever there is a need to do so, so that wheelchair users can get to stops.

Routes, or sections of routes that do not have fixed bus stops that is they are operated on a hail and ride basis should be clearly defined in timetables, on route maps and preferably by some indication on the streets concerned such as signs at eye level on street furniture. If signs of this kind are used, they should include embossed lettering so that they can be read by blind and visually impaired people.

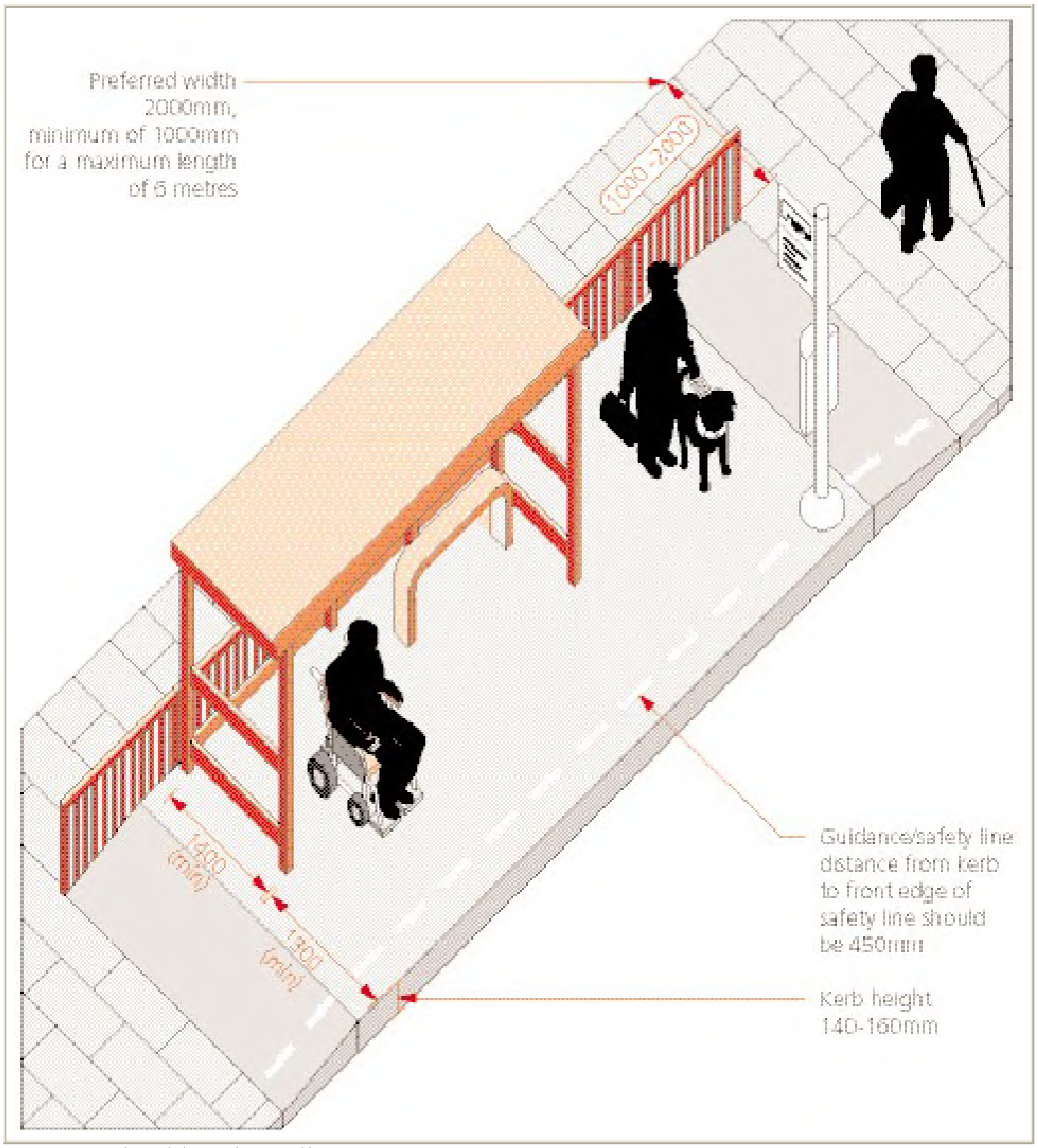
The improvement of bus stops and the introduction of low-floor wheelchair-accessible buses should be, as they already are in some places, the subject of partnership agreements between local authorities and bus operators. Joint initiatives should ensure that benefits for passengers, including those who are disabled, are maximized.

Whenever maintenance work is carried out highway authorities should take the opportunity to lift kerbs and provide a raised bus boarding area (see Section 6.1.1).

6.1 Bus stop overall design

Many bus stops have to be placed in locations where pavement space is limited but, where space permits, the following guidelines are suggested.

Bus stop overall design



6.1.1 Raised bus boarding area

A raised bus boarding area assists passengers boarding / leaving the vehicle and may enable some wheelchair users to board directly without using a ramp.

There are two conventional types of bus boarder: full width and half width. A full width boarder juts out into the carriageway far enough for the bus to avoid parked vehicles, that is by approximately **1800mm**.

The length of the boarder will depend on the type of bus using the stop and whether or not a shelter is provided. For a conventional single entry / exit bus where there is no shelter a length of **3000mm** is recommended. For buses with two doors, the recommended minimum length of the boarder is **9000mm**.

A half width boarder, which juts out by between **500mm** and **1500mm**, is a compromise design that can be used where a full width boarder would unduly delay other traffic or place the bus in or too close to the opposing traffic stream. A further alternative is an angled boarder: wedge shaped from up to **2000mm** into the carriageway and tapering back to the original kerb line over the length of the bus stop cage. This design is similar to the shallow saw tooth layout used in some bus stations.

Standard kerb heights range from **125mm** to **140mm**; above this it is recommended that specialized bus stop kerbs should be used (eg Marshalls, Charcon, Lafarge Redland) which can give heights up to 220mm. Recent research by Greater Manchester Passenger Transport Executive suggests that a height of **160mm** will give the best compromise between ease of access and reduced damage to the bus.

A higher kerb may be appropriate where there is a segregated bus system or at places where the vehicle is guided into the stop.

Where a raised bus boarding area is provided, care should be taken to keep the transition gradients to acceptable levels (**1 in 20** preferably, **1 in 12** maximum). Tactile warning surfaces (Section 4) should **not** be used on raised bus boarders.

Bus boarders should be carefully designed and built, particularly in relation to drainage. If a raised boarding area is simply added onto the existing kerbline with gullies still in place, the gullies may cause problems for disabled passengers as well as potentially obstructing a bus shelters foundations.

6.1.2 Shelters

Shelters should be provided where there is space to do so. From the point of view of disabled passengers, particularly wheelchair users, the best location for a shelter is opposite the boarding point. Because of space constraints this may not be possible; an alternative is to place the shelter downstream, leaving 2000mm length of clear boarding / alighting area. In locations not exposed to severe weather, a cantilever bus shelter with one end panel offers good accessibility and some weather protection. Where the end panel is used for advertising, it should be at the downstream end of the shelter so that people can see the bus approaching. In more exposed locations enclosed shelters should be provided, if there is space to do so.

For reasons of personal security the bus shelter should be made mainly of transparent material and well lit at night, though use of other materials may be more appropriate in rural areas. Where glass or transparent walls are used they should have a tonally contrasting band at least **150mm** wide at a height of **1400mm** to **1600mm** from the ground. A second, lower band may be put at **900mm** to **1000mm** above ground level.

There should be sufficient space either to the rear of the shelter, or in front of it if the shelter has to be placed at the back of the pavement, to allow easy pedestrian movement. Where shelters are provided in newly built areas there should be a clear obstacle free footway width of at least **2000mm**, preferable **3000mm**. These dimensions should also be used where practical, when improvement work on highways is being carried out.

However, it is recognized that at many existing stops it is not possible to achieve these standards. It was noted in Section 3.1 that, where there are physical constraints, a clear footway width of **1500mm** is acceptable, with an absolute minimum of **1000mm** over a limited distance (for example, that occupied by the shelter provided it is not more than 6 metres long).

The Public Service Vehicles Accessibility Regulations 2000 state that the maximum acceptable angle of a bus boarding ramp shall be 7° (12 per cent or 1 in 8) from a bus step height of 250mm down to a reference kerb height of 125mm. This means a minimum ramp length of 1000mm. To allow adequate manoeuvring space for a wheelchair user the unobstructed boarding area at the stop onto which the ramp is lowered should be **2000mm** by **2000mm**. Where an open-fronted passenger shelter is used, part of this boarding area may extend into the sheltered area. This layout, with the canopy of the shelter 1400mm in depth requires a total footway width of, ideally **4700mm**, absolute minimum **3700mm**.

If the shelter is placed down stream of the bus boarding area, with its closed side to the carriageway, the total footway width required can be reduced to **4000mm**, absolute minimum **3000mm**.

It is also suggested that a **100mm** yellow line be provided on the footway, offset **450mm** from the kerb (to the outer edge of the line) at bus stops, replicating that used on railway platforms. This will provide guidance to bus drivers and indicate to passengers that they should keep away from the kerb-edge.

Where a fully enclosed shelter is used allowance must be made for manoeuvring space for wheelchair users both into and within the shelter. It is recommended that shelters of this type should be 2000mm in depth and with a minimum of 1500mm clear footway space between the rear of the shelter and the inner edge (or heel) of the footway to allow the wheelchair user space to turn into the shelter entrance. However, as with the other types of shelter, the clear footway to the rear should be 2000mm if possible giving a total footway width of 4600mm. If the enclosed shelter is placed at rather than downstream of the bus boarding area the exit from the shelter onto the bus boarding area should be 2000mm wide, with the shelter itself set back from the kerb edge by a minimum of 1000mm.

6.1.3 Bus stop flags

Bus stop flags should be fixed as low as possible while remaining visible above road traffic, pedestrians and any other nearby obstacles. The bottom of the flag should not be less than **2500mm** above ground. The minimum size for the flag given in TSRGD is 300mm wide by 250mm high, but it is recommended that a larger size, **450mm** wide by **400mm** high should be used if possible. Bus route numbers on the flag should be at least

50mm high. A US demonstration project found that a limited amount of information was more effective than a substantial amount, which tended to lead to confusion. That research suggested just

- Route number / name
- Pictograph of a bus
- Special messages
- Telephone number for information

Direction of travel, Towards (name of next town / principal destination) helps travellers who are not familiar with the area.

In the future it is possible that there will be automatic onbus announcements made as the bus approaches each stop. With this in mind, it would be helpful if the name / location of the bus stop could be included either on the flag or in a prominent position on the bus shelter.

Where there are a lot of different routes using one stop it may be better to keep these off the flag and put them on the time table display, but they must be shown in one or the other place.

Bus stop signs should be positioned so as to be visible to passengers inside the vehicle so that they can verify where they are. A raised capital letter B about 20mm high at a height of 1000mm from the ground fitted to the bus stop pole or other structure at the bus stop will assist blind people. The clearance between a bus stop pole and the kerb edge should be **600mm** (500mm minimum). Coloured bands should be applied to the bus stop pole to enhance visibility, in accordance with the dimensions given in Section 3.9. As with bus shelters, bus stops should be well lit with sufficient illumination to enable reading. A good level of lighting will also improve personal security.

6.1.4 Seating

Seating should be provided where possible (see Section 9.3). Shelters should incorporate a bench, platform or horizontal rails to rest against at a height of about **580mm**. Any seating should be painted or self-coloured in a contrasting colour and, if not undercover, should be designed so that rainwater does not collect on it. Where seating is provided in a shelter, sufficient clear space should be left for use by a wheelchair passenger.

6.2 Timetable information

Timetable information should be provided at as many bus stops as is feasible. Timetable and information displays should be located between **900mm** and **1800mm** in height. Information that is of particular relevance to wheelchair users should be put at the bottom of the display and any important information should not be more than **1700mm** above ground. If surrounding street lighting is not adequate, additional lighting should be provided at the stop itself.

The information provided should include at minimum details of the route(s), destination(s) and departure times. Full timetables and route diagrams are helpful to passengers unfamiliar with the service(s) and are essential for longer routes or less regular services. Details of other stopping places in the vicinity and routes servicing them will avoid confusion where routes cross or there is more than one stopping place. Lettered bus stops, as used in London and elsewhere, should be used where stops are split between different routes at complex junctions or picking-up points, with maps of the stop locations, letters and route numbers displayed at each stop. Where bus stops are lettered, the letter should be shown on the bus stop flag as well as on the timetable display. The information provided on this display should also include directions to and distance of the nearest public telephone, with the display itself including the bus operating companys telephone number and textphone number. The maps of bus stop locations should also show where public telephones are, including any textphones, separately identified.

Where space permits, new designs of panel bus stops provide more space for information. These types of bus stop poles are more frequently found in other parts of Europe and are usually 400mm to 500mm wide with a width of up to about 350mm available for information.

Visual displays of expected arrival times of buses at stops, destinations served and any delays are helpful for all passengers but particularly so for deaf and hard of hearing people. Where real-time information of this type is provided, the screen should be shielded from direct sunlight (see also Section 10.1.6). Voice activated information systems will assist people with visual impairments and learning difficulties.

The increasing number of low-floor buses coming into operation and the implementation of the DDA regulations mean that vehicles are much more accessible than previously, but the benefits of low floor entry are negated if the bus cannot draw up close to the kerb. As recommended by the Disabled Persons Transport Advisory Committee (DPTAC) all bus stops should have a 24-hour clearway marking and the ban on parking should be enforced.

7 Taxi ranks

At present over 80 Licensing Authorities have introduced mandatory orders requiring some or all of the taxis within their area to be wheelchair accessible. Regulations under consideration for implementation under the DDA will require further wheelchair accessible taxis to be provided.

Wherever feasible to do so, taxi ranks should be provided adjacent to railway, bus and coach stations, and all major attractors such as retail areas. If possible, ranks should be located close to the facility being served and should have clear signs within the facility showing where they are. Ranks should be sited so that passengers board or alight onto the footway from the nearside of the taxi. The width of unobstructed footway should be sufficient to allow the deployment of wheelchair ramps (up to **1620mm**) and adequate manoeuvring space for the wheelchair user. The suggested total width is **4040mm**. A dropped kerb or raised road crossing should be provided close to the rank if passengers need to cross a street to get to or from the taxis.

The ranks themselves should be clearly signed and should have seating close by. If the rank does not have taxis regularly standing at certain times, the sign should state what these times are and give telephone number(s) for calling a taxi. Embossed information of this type would assist blind and partially sighted people.

8 Access to and within transport-related buildings 8.1 Location of bus, rail and interchange stations

Although this guide is primarily concerned with the design and dimensions of specific features in the built environment, it is worthwhile mentioning the wider principles that should determine the location and general layout of transport facilities. Public transport can seldom provide through door-to-door services, so many journeys will involve passengers transferring from one mode to another or, at the very least having to walk from a station to their final destination.

Ideally interchanges and bus/coach stations should be located at, or immediately adjacent to the other transport services and to local shops and passenger destinations. The table in Section 2.4 illustrates the comparatively short distances disabled people can manage without undue discomfort. Thus a centrally located bus station on a less than ideal site may be preferable to a superb interchange that many potential passengers find difficult or impossible to reach.

The size and layout of interchanges and bus stations will be dictated by the frequency and pattern of services, but it is important to use as compact a layout as possible, so minimizing walk distances. A two-level station, provided there is good access between the levels, may be better than an extensive single-level site. A compact layout with passenger facilities concentrated in one area will also be easier to supervise and reduce any fear felt by passengers who might otherwise have to wait in quiet, isolated areas.

Completely new railway stations are infrequently built, those that are are often Parkway stations towards the outskirts of urban areas. It is essential at these stations that provision is made immediately by the station for interchange from road-based transport: buses and taxis as well as private cars. This requirement applies as much to existing railway stations. The provision of set down/pickup points for private cars should include specific provision for disabled car users, who should have priority over other car users if space is limited.

Where passengers are moving between road and rail services, or between different bus services within a station, conflicts between pedestrians and moving (road) vehicles should be kept to a minimum. There are a number of different basic layouts for bus stations including oblique-angled bays, saw-tooth bays, L, U or horseshoe layouts and island layouts. The design adopted will depend among other things on the dimensions of the site available and the numbers of buses using it, but layouts with buses stopping around a central island site require all passengers to cross the path of buses or negotiate a change of level. For this reason central island stations are not recommended, though they can be very compact, therefore useful where space is limited and careful design and management can reduce the risk of passenger/vehicle accidents.

Oblique angled bus bays mean that the bus has to reverse back out of the bay which can be a hazard though careful attention to railing off the reversing area from any adjacent pedestrian areas can reduce this. Wherever passengers do need to cross the path of buses, fixed crossing points, very clearly marked with level access and priority for pedestrians are essential.

As rail and bus stations may be approached by a variety of means: pedestrian, by car (parked or drop off) paratransit service etc, the pathways leading to the station entrance should be accessible from all of these approaches. As stated in the US Accessibility Handbook: Regardless of which means passengers use to get to the station, approaches have to be accessible and minimize the distance to an accessible entrance.

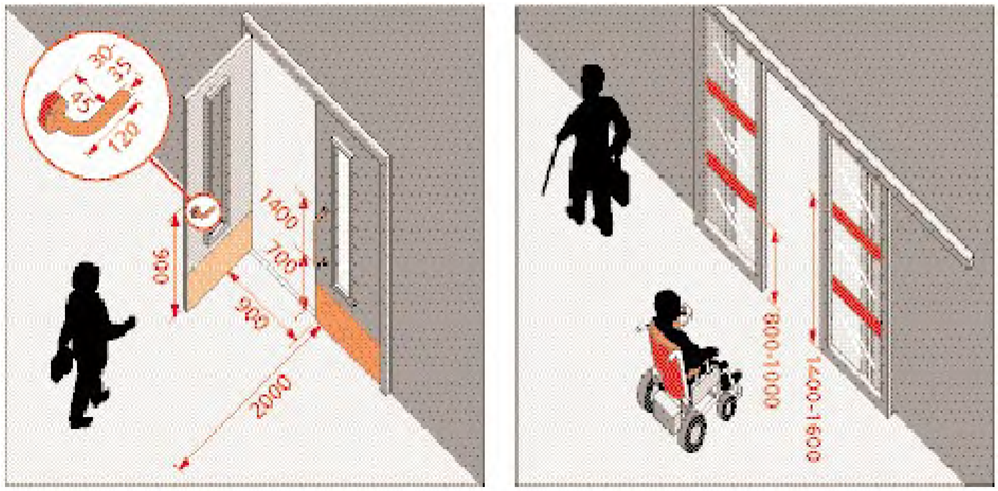
It is important that disabled passengers should be able to find accessible entrances easily, thus there should be clear signs to indicate where the accessible entrance is and to direct people to it from any other entrances that may not be fully accessible. Entrances should be in contrasting colours to their building.

Clear signage throughout transport sites and buildings is important for everyone, particularly deaf and hard of hearing people.

8.2 Entrances and doors

The physical location of transport infrastructure bus, railway stations etc varies greatly; at ground level, below ground, above, single or multi-level. The basic principles in designing access, however, remain the same whatever the specific physical characteristics of the building. A single step at the entrance to a building or a kerb without a ramp in the road outside can make the most carefully designed terminal inaccessible to some disabled people.

Recommended dimensions for doorways



Clear width when open	1200mm
(minimum acceptable	900mm)
Width of leaf in double leaf door	900mm
(minimum acceptable	800mm)
Clear, level space before/after door	2000mm
(minimum acceptable	1500mm)
Clear, level space between doors in series	1340 + width of doors opening into space

Door handle	lever height	900mm
	lever length	120mm min
	vertical "pull to open" bar	from 700 to 1400mm above floor level
Diameter of lever or bar		30-35mm
Clearance of lever or bar from door surface		45mm

If possible entrances to stations should not have doors, but this is not always feasible, for example for reasons of security or to retain heat within the building. Where there are doors they should be automatic, linked either to a weight sensor or to sensors mounted above the door; manual doors are very difficult for people in wheelchairs to manage. Revolving doors are not well suited to many people, including disabled people, but if they are installed, an alternative hinged or sliding door must be provided.

The clear width of the door(s) once open should preferably be **1200mm**; **900mm** is the minimum acceptable. Where double leaf doors are installed each leaf should be **900mm** wide, with 800mm as a minimum. Space immediately before and after a door is also important to allow for people to stand clear if the door opens towards them and for wheelchair users to manoeuvre. At the very least there should be a clear, level space of **1500mm** on both sides of the doorway; preferably more than this. Where there are two doors in series there should be a minimum space between of **1340mm** plus the width of any door swinging into this space. If a space of **2000mm** can be achieved, it makes manoeuvring in a wheelchair much easier.

The door handle should be of the lever type, which is easier for people with any weakness in their hands to manipulate, and if horizontal should be at a height of **900mm** and with a minimum length of **120mm**. If the door has a vertical bar rather than a lever handle, this should stretch from **700** to **1400mm** above floor level.

The diameter of the door handle or bar is recommended as **30mm** to **35mm**. As with any rails, there should be sufficient space between the inner side of the handle or rail and the surface of the door to avoid people catching their knuckles on the door. The recommended gap is **45mm**.

Doors should be fitted with a kick plate, **400mm** in depth at the bottom of the door and, where they are made of glass or other translucent material, should have contrast colour banding in accordance with the standards given in Section 3.9 or a logo or other decorative symbol with minimum dimensions **150mm** by **150mm** set at eye level. The contrasting feature should be repeated at a lower level of between **800mm** and **1000mm** above floor level. However, clear glass doors can be a hazard for visually impaired people and use of this material should be avoided if possible, except to provide a viewing panel, which should extend from adult eye level down to **500mm** from the floor. Glass used in a door must be safety glass.

Automatic sliding doors are recommended in preference to manually operated doors and should remain open for a minimum of **six** seconds, preferably **nine** seconds, and should not open faster than **three** seconds to back check. Many automatic doors incorporate a time delay device whereby the doors close automatically after a prescribed time lapse. Such doors can be hazardous to wheelchair users and some people with walking difficulties.

The operation of automatic doors can be triggered by a sensing device or by foot or hand pressure, pendant switch or push button. The most suitable operating device is mat contact, where doors are held open for as long as the area on either side is occupied. Mats must be sensitive to pressure exerted unevenly (for example by crutch users) and to light pressure (for example exerted by an assistance dog). Where doors are operated by photoelectric cells a Z layout of light beams ensures that doors remain open if traffic moves slowly. Pressure required to stop doors closing should not be more than **66.6N (15lbf)**. In the event of a power failure it must be possible to move the door freely by hand. If the doors are controlled by a push button it is recommended that the button be located **800mm** from floor level and a similar distance from the side of the door with appropriate luminance and colour contrast.

If manual doors are used, it must be possible to open them with minimal effort: some people with severe disabilities cannot exert a force even as low as 13.3N (3lbf). Australian standards sub-divide the action of opening a door into three movements with different acceptable levels of force for each:

- To initially open the door: **19.5N**
- To swing the door: **6N**
- To hold the door open between 60 degrees and 90 degrees: **7.5N**.

However, the Strategic Rail Authority recommends an opening force of **15N**, which is preferred to the Australian standard of 19.5N.

Thresholds should be level, but if this is not possible, the maximum acceptable threshold rise is **10mm**. Any rise of more than **5mm** should have a bevelled edge.

Doors should have tonal contrast with the wall around them and door handles should contrast with the doors, to help visually impaired people. Doormats should be flush with the floor finish. Rubber backed mats, placed on top of the existing floor finish can ruck and present a trip hazard, and should not be used. Coir dirt mats and mats with directional weave are not recommended, as they can impede access for people with walking difficulties and people using wheelchairs.

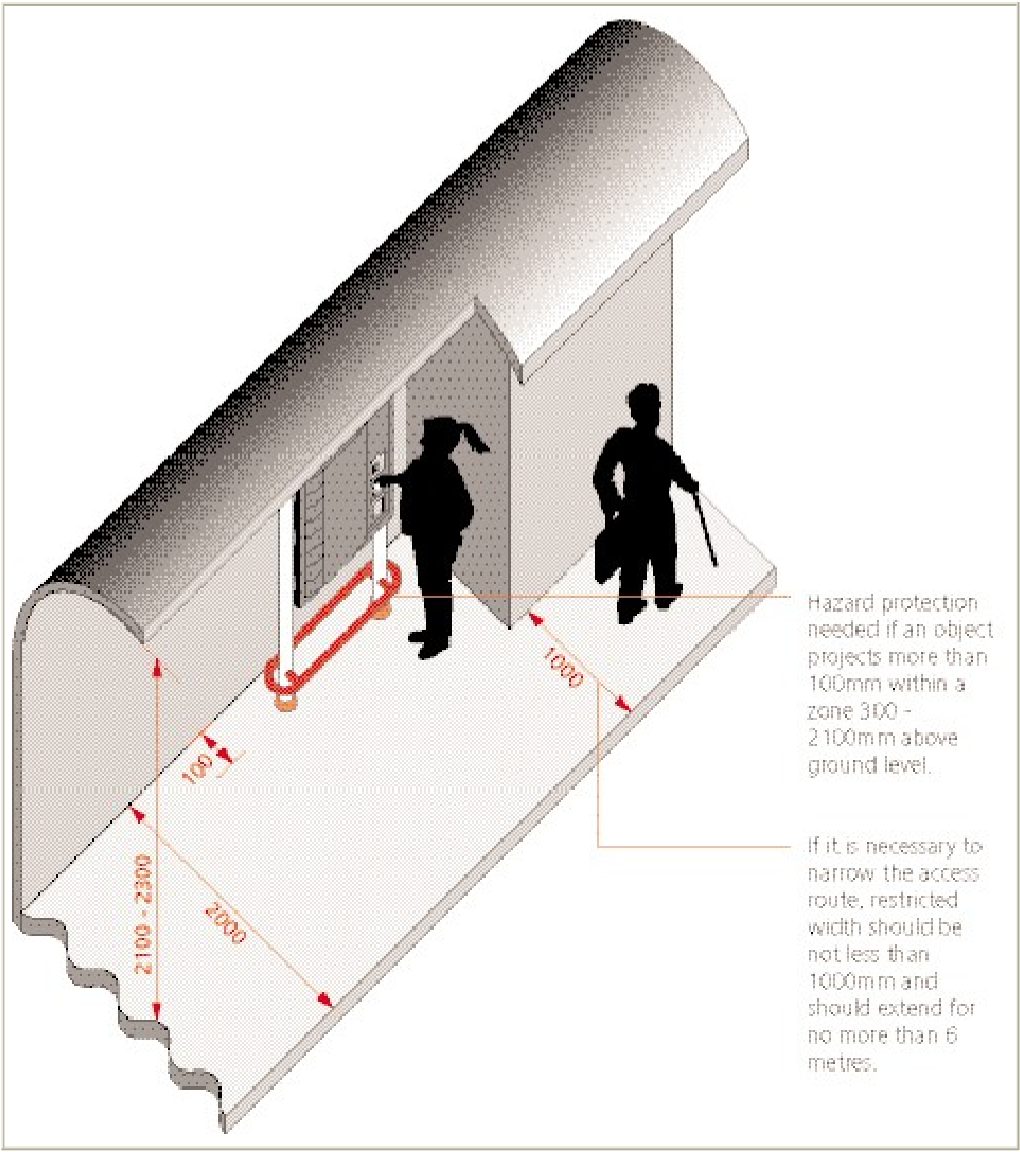
There should be a lighting transition zone immediately within the entrance door to enable adjustment from a bright outdoors to a more dimly lit interior or vice versa.

If there is a canopy at an entrance, care should be taken to ensure that the supporting structure is either incorporated into the building fabric, positioned on a verge or clearly marked at eye level **(1400-1600mm)** with contrasting banding **150mm** in depth.

8.3 Access within transport sites and buildings : passageways

The width of space required for wheelchair users, people with assistance dogs etc was given earlier in Sections 2.2 and 2.3: the minimum width for a two-way corridor should be **2000mm**. Where an access route is predominantly less than **1800mm** wide, passing places should be provided to allow two wheelchair users to pass each other. A passing place should be a minimum of **2000mm** long by a minimum of **1800mm** wide and located within direct sight of another, or at a maximum distance of **50 metres** from another, whichever is the closer.

Access within transport sites and building: passageways



Where it is necessary to introduce occasional narrowing of the access route, the restricted width should not be less than 1000mm and should extend for no more than 6 metres.

The American guidelines use the concept of an accessible route; their regulations state that:

At least one accessible route within the boundary of the site shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones and public streets or sidewalks to the accessible building they serve. The accessible route shall, to the maximum extent feasible, coincide with the route for the general public. At least one accessible route shall connect accessible buildings, facilities elements, and spaces that are on the same site. (Federal Register/Vol 56, No 173)

The same source also says that accessible routes servicing any accessible space or element shall also serve as a means of egress in emergencies or connect to an accessible area of rescue assistance.

An access route should have a clear height of not less than **2300mm** (**2100mm** absolute minimum). Isolated objects that cause an occasional narrowing of the access route, but which project not more than **100mm** from their base into the access route, do not need hazard protection. However, if an object projects more than **100mm** within a zone between **300** and **2100mm** above ground level then hazard protection should be provided. If the base of the projection is less than **300mm** above ground level, no hazard protection is needed.

Well-designed corridors help every user to find their way through a building. People with visual impairments generally navigate by focussing mainly on the floor up to 1500mm ahead of travel. Floor finishes are therefore instrumental in helping visual impaired people to find their way. They should incorporate landmarks which may be one or a combination of features, such as visible clues, tactile indicators, sounds etc. For example, different materials, texture changes and raised symbols could indicate that stairs are being approached, there is a junction opposite etc. Such changes and symbols should be consistent throughout the building.

The end wall of a corridor should be highlighted by, for example, good colour and tone contrast between the wall and floor and a change in lighting. Glare problems caused by windows positioned at the end of corridors or passageways can be reduced by using tinted glass, anti-glare treatment or blinds. As a general rule, walls should have light, non-reflective surfaces and should be in a colour which contrasts with the floor, so that the boundary of the floor is clearly visible.

8.3.1Travelators / moving walkways

Where there are substantial distances to be traversed within terminals, travelators help a lot of people, but they should always have a parallel walkway. For some people, particularly older people who are a little unsteady, stepping onto a moving walkway is not a comfortable experience. Where travelators are provided, the direction of travel should be shown clearly and the footway at both ends should be marked by colour contrast and a change in floor finish. The travelator must be well lit, particularly at its entrance and exit. Moving handrails should be rounded in section, in a colour which contrasts with the background and should extend approximately **700mm** beyond the beginning of the walkway. The recommended width for a travelator is **1500mm** with a minimum height clearance of **2300mm**. The side panels of the travelator channel should be finished in a non-reflective surface; back illuminated side panels can be very disorientating.

The speed of movement of the travelator should be kept low: **0.5m/second** is recommended (**0.75m/second** maximum). The surface should be non-slip and there should be clearly visible emergency stop switches that can be reached and operated by disabled people. An audible warning at the beginning and prior to the end of the travelator is essential for visually impaired people.

Travelators should have a minimum unobstructed level run-off at each end of **6 metres**. The maximum gradient for a travelator should be **5 per cent (1 in 20)**.

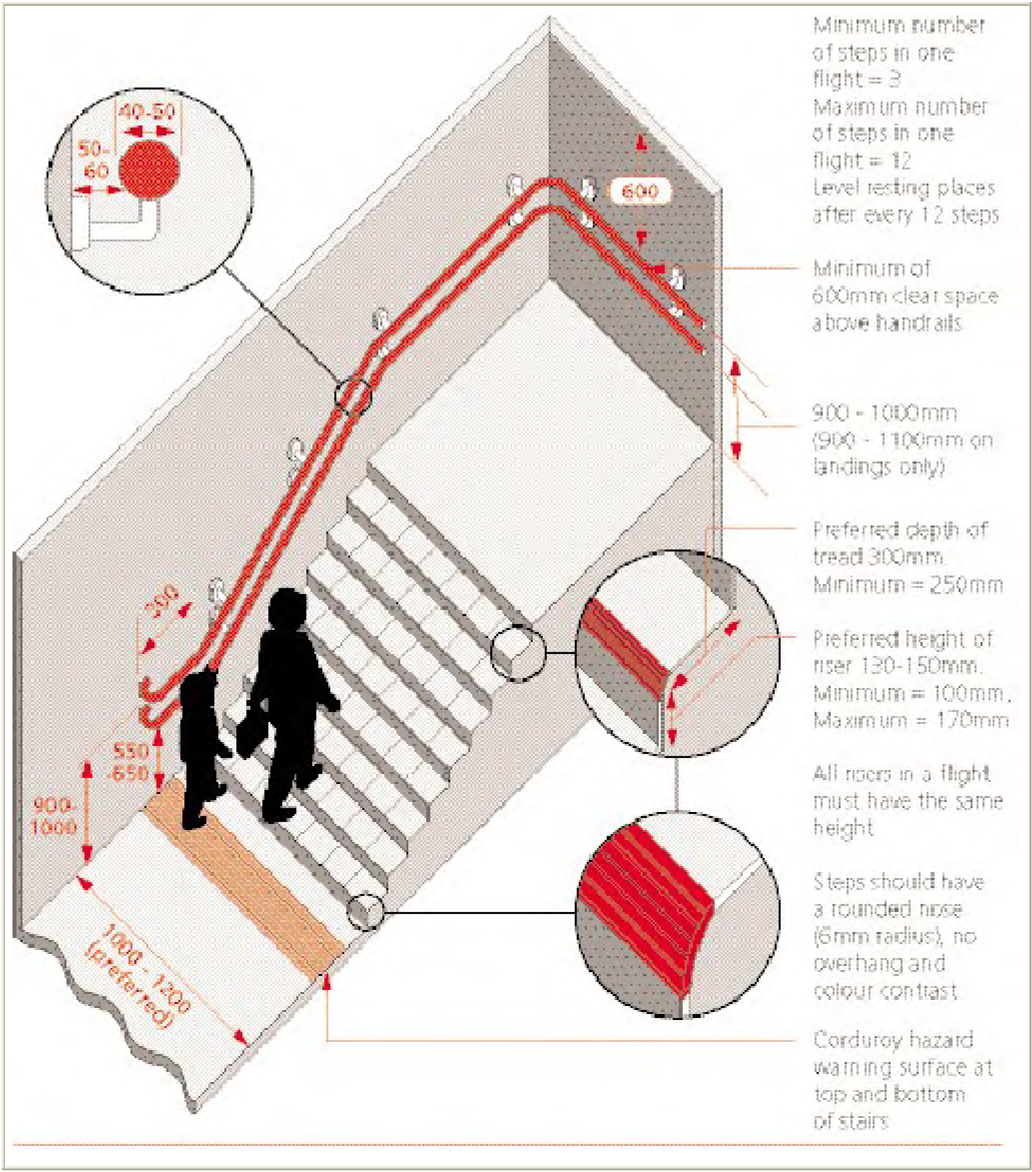
8.4 Changes in level[6]

Even a single step will prevent access for the great majority of wheelchair users (and be a trip hazard for others), so alternatives must be provided; either ramps or lifts. However, the design of steps and stairs themselves is important. Good design can greatly assist ambulant disabled people and those with visual impairment.

8.4.1 Steps and stairs

A considerable amount of research on dimensions and design of steps and stairs was carried out in the 1970s and 1980s and there is reasonable consistency between the dimensions given in various national guidelines. A riser height of **150mm** can be managed by most people; a little more than this is possible if there are well designed handrails but **170mm** should be regarded as the maximum in normal circumstances. Steps with very shallow risers can cause problems and should be avoided; **100mm** is the absolute minimum.

Steps and stairs



Tread depth or going should be **300mm** deep (approximately the length of a size 9 shoe), never less than **250mm** and the nose of the step should be rounded (**6mm** radius) without any overhang. People with walking difficulties often pull their feet up the face of the riser; any overhang will catch their foot.

Common criteria from several guidelines are that all steps in a flight must have the same dimensions, that open tread staircases are to be avoided, as are curved or spiral staircases and that there should be tactile warning surfaces at the foot and head of the stairs (see Section 4). Stairs should be well lit (minimum **200 lux**, see Section 11) and surfaced with a slip resistant material. Colour contrast on the step noses is essential for visually impaired people and should extend across the full width of each tread, **55mm** deep on both tread and riser.

People with walking difficulties cannot manage long flights of steps. The maximum number of risers in a flight should be **12**, with resting places between successive flights. Resting places should be at least **1200mm** long, preferably **1800mm**, and across the full width of the stairway. The minimum number of steps in a flight should be **three**; fewer than this is less safe.

Stairs should have a minimum clear width between handrails of **1000mm**, preferably **1200mm** which is sufficient for a disabled person and companion. Handrails should be provided on both sides (see Section 8.4.3) and, where stairways have a clear width of more than **1800mm**, a centre handrail should also be provided [7] . Stairs of this width are needed where there is concurrent two-way movement. Stairs that lead to a platform, on which people will be carrying luggage, should be **3000mm** wide (with centre handrails).

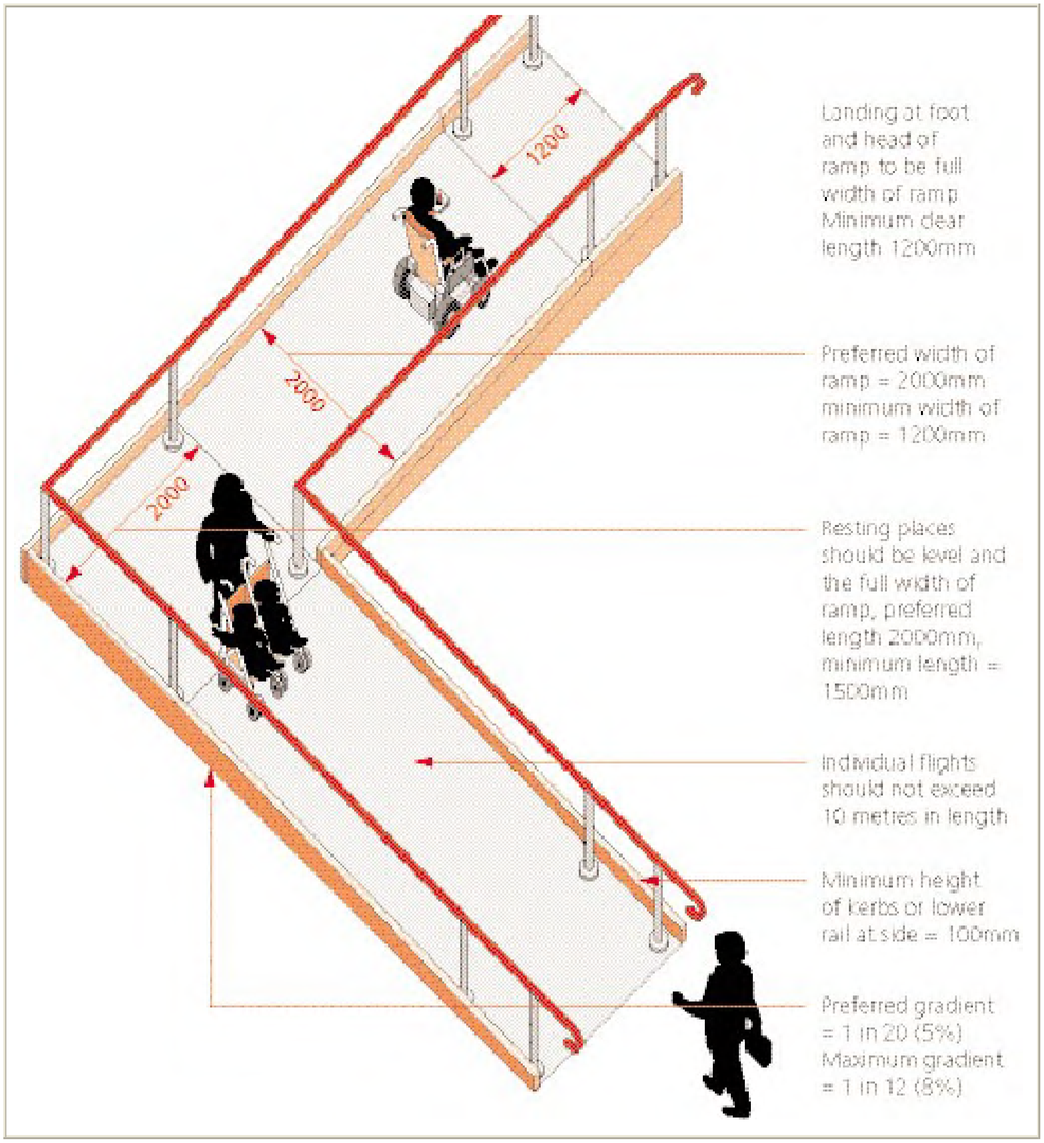
As mentioned in Section 3.7, means should be provided to limit the risk of people colliding with the underside of freestanding stairs or ramps at any point where the clear height is less than **2100mm**. The appropriate hazard warning surface should also be provided at the top and bottom of steps (as detailed in Section 4.2).

There should be unobstructed landing space at the top and bottom of each flight of stairs of a length at least equal to the unobstructed width of the stairway.

8.4.2 Ramps

In many places ramps (defined as a gradient of more than 1 in 20) will provide the alternative access to stairs for wheelchair users. Where the change in level is no more than **200mm** a ramp may be used without alternative steps.

Ramps



As described in Section 3.2, most guidelines specify **5 per cent (1 in 20)** as the preferred gradient and **8 per cent (1 in 12)** as the absolute maximum acceptable. There is a relationship between the length of a ramp and the gradient that people can manage; the longer the ramp the less severe the gradient that is feasible. One possible approach to this is, where a lengthy ramp is necessary, to design more frequent landings and lesser slopes for each successive segment.

BS 8300 states that a ramped approach should have the lowest practical gradient and should be within the limits shown in the table below.

Going of a flight	Maximum gradient	Maximum rise
Not exceeding 2m	1:12	167mm
Not exceeding 5m	1:15	333mm
Not exceeding 10m	1:20	500mm

A slightly steeper gradient of **1 in 10** is acceptable over very short distances, for example a ramp covering a distance of **600mm**. Gradients steeper than 1 in 10 are not only physically difficult to manage but may cause the wheelchair to overbalance.

If more than one flight is needed, there must be rest places between the flights. These should be level if under cover (**1 in 50** gradient if outside to drain surface water) should be at least **1500mm** long and the full width of the ramp. The landings at the foot and head of a ramp should be at least **1200mm** long, clear of any obstruction such as door swing and, again, should be the full width of the ramp.

The minimum surface width of a ramp should be **1200mm**, but as with stairways, two-way movement requires more space preferably **2000mm** (minimum **1800mm**).

Handrails should be provided on each side, with a minimum clear width rail to rail of **1000mm**. Where this unobstructed width exceeds **2000mm**, a central, continuous handrail may be used as an alternative to a handrail on each side.

The sides of a ramp should be protected by a raised solid kerb at least **100mm** in height. Australian standards also state that if the kerb height exceeds **75mm** there must be no slot or gap greater than **20mm** in the range of **75mm** to **150mm**. This is done to avoid the possibility of the footplate of a wheelchair riding over the kerb or becoming trapped. These standards also require the ramp-side face of the kerb to be flush with, or no more than **100mm** away from the ramp-side face of the handrail.

Transition between level and inclined parts of the ramp should be sufficiently rounded to ensure that a wheelchair user does not get caught by the foot supports. There is rarely a need for cross fall on a ramp. If drainage is thought likely to be a problem, the use of a pervious surface should be considered.

Physically fitting a ramp into the available space can be a problem if a lift cannot be made available. South Yorkshire Passenger Transport Executive has calculated that a ramp needed to give an over-rail clearance of 4.8 metres above platform level would require some 76 metres in length at 1 in 12 or 126 metres at 1 in 20, both measurements allowing for rest points. It is not clear how practicable ramps of this length would be for wheelchair users. Many manual wheelchair users would probably not be able to manage these distances unaided, though what constitutes a reasonable maximum length is not known; this is an area where further research is needed. The report of the European COST 335 project on Passengers Accessibility of Heavy Rail Systems states that ramps should never be longer than **132 metres** in total and preferably no longer than **50 metres**. The preferred figure (50 metres) means that ramps should not be used to bridge between platforms. No individual flight of a ramp should have a length of more than **10 metres** or rise more than **500mm**.

Where railway stations are being refurbished provision of lifts should be considered where the alternative would be a long ramp. However, it would be unrealistic to expect that lifts will always be provided so, in spite of their drawbacks, lengthy ramps are likely to remain the only way of providing access for wheelchair users in some places. Where a long ramp is unavoidable, stairs should also be provided; some people prefer to climb a shorter staircase (properly designed) than a very much longer ramp.

The hazard warning tactile surface should be used at the foot of ramps to on-street LRT platforms, but should not be used at other ramps. Ramp surfaces must be slip resistant and non-reflective. A colour and tone contrasting V shaped marking on the ramp surface is helpful, with the apex of the V at the top of the ramp or ramp section.

If portable or temporary ramps have to be used to give access to an existing building where space is limited, they should be positioned and their presence identified so that they do not constitute a hazard to passers-by. These ramps should have a surface width of at least **800mm**, a drainable, slip-resistant surface and upstands to prevent wheelchair tyres veering off the edge.

8.4.3 Handrails

Handrails should be provided on both sides of stairways and ramps and down the centre of stairs when their unobstructed width (ie between handrails) exceeds **1800mm** (see Section 8.4.1). The recommended height to the top of the principal handrail is between **900mm** and **1000mm** above the pitchline of the steps or above the surface of the ramp. On landings the top of the handrail should be between **900mm** and **1100mm** from the surface.

Handrails should continue beyond the end of the ramp slope or end of the stairs by a (minimum) distance of **300mm** and should either return to the wall or down to the floor or have a minimum rounded downturn of **100mm**.

Second, lower handrails for children and people of restricted growth are helpful and should be at heights of between **550mm** and **650mm**.

The handrail itself should be smooth and comfortable to use by people with arthritic hands that is they should not be too small in diameter. Circular handrails should have a diameter between **40mm** and **50mm**; if not circular the handrail should be a maximum of **50mm** wide by **38mm** deep with rounded edges (radius of at least **15mm**).

There should be a clear space between the handrail and any adjacent wall of at least **50mm**, preferably **60mm**. Handrails should be supported centrally on the underside so there is no obstruction to the passage of the hand along the rail. There should also be a minimum of **600mm** clear space above the handrail.

Colour / tonal contrasted handrails are essential to assist partially sighted users.

8.4.4 Escalators

The maximum speed recommended for escalators is **0.75m per second**, but lower speeds (down to **0.5m per second**) may be preferable where levels of passenger use are not so great. The recommended angle of inclination is **30°** to **35°**.

The recommended minimum width is **580mm** and the maximum **1100mm**. Step heights are specified as a maximum of **240mm** or **210mm** if the escalator would be used as an emergency exit when stationary. Tread surface should be a matt, non-reflective finish.

The moving handhold should be between **900** and **1100mm** above step nosing and, as with handrails on stairs, extend a minimum of **300mm** beyond the ends of the escalator. It should be clearly colour contrasted and should move synchronously with the escalator.

Clear space on the approach to an escalator used in heavily trafficked places should be **10 metres** or more. The direction of travel should be clearly indicated (top and bottom) and the steps should form level areas at top and bottom of the escalator of at least **2000mm** and **1600mm** respectively (falls on boarding or leaving are the most common type of accident on escalators). An audible warning at the beginning and just before the end of the escalator is essential for visually impaired people.

Good lighting is also important, with a minimum of **50 lux** and there should be a minimum vertical clear height above the escalator of **2300mm**. Step edge marking in a contrasting colour is also required on the tread only (**55mm** deep) and there should be a noticeable change in lighting at the bottom and top of the escalator.

It should be borne in mind that escalators are difficult for some ambulant disabled people to use and cannot be used at all by people in wheelchairs or with assistance dogs. As a general rule, where there are substantial changes in level, a lift should be provided and should be clearly signed as an alternative to the escalator.

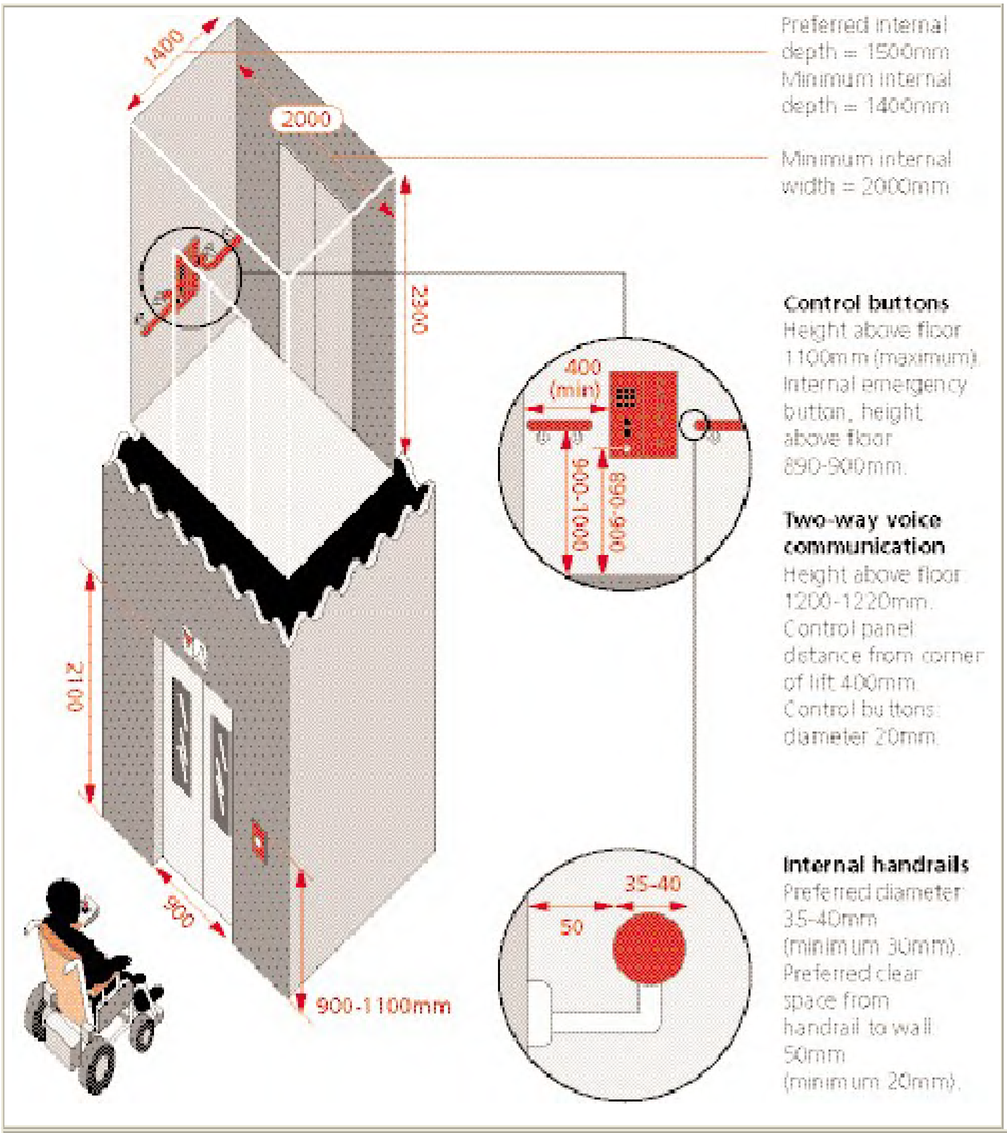
8.4.5 Lifts

Lifts are essential for wheelchair users and for some people who have walking difficulties when there is a substantial change in levels. They should be provided in preference to very long ramps. Finding the lift location can be a problem for blind, deafblind and partially sighted people. Lift locations should be clearly sign posted from the main pedestrian route and recognizable through design and location.

Ideally the internal dimensions of a lift should be big enough to enable a wheelchair user to turn round and come out facing forwards, but space constraints, particularly where a lift is put into an existing building may dictate less than an ideal size.

The draft European Lift Standard (April 2000) defines minimum internal dimensions measured between the structural lift car walls (see table, below). Any decorative finishes of a wall must not exceed 15mm in thickness.

Lifts



Minimum car dimensions for lifts with a single or two opposite entrances

Type of lift	Minimum car dimensions	Accessibility level	Remarks
1	1000mm wide x 1250mm deep	This lift car accommodates one wheelchair user	Provides access for manual and powered wheelchairs used in indoor environments
2	1100mm wide x 1400mm deep	This lift car accommodates one wheelchair user and one accompanying person	Provides access for manual wheelchairs and powered wheelchairs that are capable of negotiating some outdoor obstacles
3	2000mm wide x 1400mm deep	This lift car accommodates one wheelchair user and several other passengers. It also allows a wheelchair to be rotated	Provides access for manual wheelchairs and powered wheelchairs that are used in the outdoors. The car provides sufficient turning space for persons using class A and B wheelchairs or walking aids (walking frames, roller frames etc)

It should be noted that these are **minimum** dimensions. The depth of lift required by a wheelchair user with an elevated leg rest may be more than the dimensions given; a minimum of **1500mm** is suggested. This depth also makes turning a wheelchair round easier. Lifts provided in the pedestrian and transport environment should be large enough for a person to accompany the wheelchair user. The increasing numbers of scooters used in the outside environment also argue for using larger dimensions wherever possible than those given in the table. Where it is possible to fit them, walk through lifts (ie with doors on opposite sides) are preferable to single door lifts.

If a tip-up seat is provided it should not impede the normal use of the lift when in its folded position and it should be colour contrasted. The seat should have the following dimensions:

- seat height from floor **500mm ± 20mm**
- depth **300 400mm**
- width **400 500mm**
- ability to support a mass of **100kg**.

Handrails should be provided on the (non-opening) sides of the lift cabin at a height between **900mm** and **1000mm** and should contrast in colour with the interior of the lift. The dimensions of the handrails should meet those specified in Section 8.4.3 where possible, but lack of space may dictate a reduced standard. However, the handrail should not be less than **30mm** in diameter and should have at least **35mm** clear space between rail and wall. The handrail should not continue across the control panel in order to avoid obstructing it. The ends of handrails should be closed and turned in to minimize the risk of injury.

The clear width of the doorway into the lift should be **900mm**, which allows for wheelchair users elbow space. The minimum clear height of the doorway should be **2100mm**, with **2300mm** inside the lift cabin.

Control buttons used to call a lift should be positioned between **900mm** and **1100mm** above floor level. They should not be positioned closer than **400mm** to an internal corner or other obstruction; if they are a wheelchair user many find it difficult to reach them. The call buttons should have symbols in relief to enable tactile reading. Call buttons should also contrast in colour and luminance with the surrounding face plate; the face plate should contrast with the wall on which it is mounted.

Similar measurements apply to control buttons inside the lift, but there are some additional features. Emergency buttons (with an embossed tactile legend) should be placed at the bottom of the control panel, not less than **890-900mm** above the floor and twoway voice communication should be at a height of **1200-1220mm**. If communication is via a handset, it should have a minimum length of cord of **735mm**. However, a push and talk facility is superior to a handset and cord and is more resistant to vandalism. As an aid to people with impaired hearing, the communication system should have an acoustic coupler and a volume control. There should be a yellow illuminated pictogram to indicate that the alarm has been activated and a green illuminated pictogram to indicate that the emergency call/alarm has been registered. Simple written information explaining emergency procedures should be provided for deaf people. The audible signal (voice communication) should have a sound level adjustable between **30dBA** and **55dBA**. The control panel should be at least **400mm** away from the corner of the lift cabin and there should be no fittings or objects between the panel and the floor which extend out more than **100mm** from the wall. Where the lift has centreopening doors, the control panel should be located on the right hand side when entering the cabin. With side opening doors, it should be on the closing side. Whichever side they are on, control panels should be on the flank wall of the lift rather than the front wall.

Outside the lift door there should be sufficient space for a wheelchair user to manoeuvre into place and to wait without obstructing the passage of other people. A clear landing **1500x1500mm** is the minimum. If this floor area is finished in a different colour from its surrounding area it will help visually impaired people to locate the lift.

Control buttons both within and outside the lift should be **20mm** in diameter and should protrude from the wall or lift cabin side. They should be at least **10mm** apart. Control panels should include instructions in Braille and in relief: the latter should use characters raised **1mm** from the surface and at least **15mm** in size. The force needed to press the buttons should be between **2.5N** and **5N**. The buttons should contrast with their surrounding area, either by internal illumination or colour contrast on or around the button.

Visual and audible announcements should be provided both in and outside the lift, the audible announcements having a sound level of between **30dBA** and **55dBA** adjustable to suit the site conditions. An audible signal on the landing should indicate when the doors are opening. An illuminated indicator arrow giving advance information on the direction the lift is going should be placed above or near the doors in a visible position. The height of the arrows should be at least **40mm**. The visual information display inside the lift should be positioned just above head height, to ensure a clear sight line when the lift car is full (**1800-1900mm** above floor finish) and should have minimum dimensions of **60mm x 50mm**.

The display could be digital or segmented LED or an appropriate alternative. A yellow or light green on black display is preferred to red on black as it is easier to read.

Lift doors should be open long enough to allow people who can only move slowly to get in and out without being caught by the doors. A minimum of **3 seconds** is acceptable, but a usual dwell time of **5 seconds** before the doors begin to close after they are fully open is preferable. The control system should allow for the door dwell time to be adjustable up to **20 seconds**: the means of adjustment should not be accessible to users.

The door re-activating mechanism should be photo-eye or infrared not pressure sensitive door edges. Sensors should be positioned at low level (around **125mm** above floor finish) to ensure that the sensor will be triggered by an assistance animal, and at around **700mm** to **800mm** above floor finish. It is also recommended that a **5 second** notification time should be given that the lift is answering a landing call.

The lift doors should be in a clear colour/tonal contrast with the surrounding wall and control buttons inside and outside the lift should contrast with the control panel. A clear contrast between the lift walls and floor will assist visually-impaired people. Lift floors should have a non-slip finish. Placing a mirror on the rear wall of the lift will enable wheelchair users to see floor indicators located over the entrance. In lifts where a wheelchair passenger cannot turn around, a mirror or other device should be installed to enable a wheelchair user to observe obstacles when moving backwards out of the cabin. Where wall mirrors are installed care should be taken to avoid creating optical confusion for users with impaired vision. Where glass is used it must be safety glass, but in general it is better to have internal walls with a non-reflective, matt finish.

Interior lighting should provide a level of illumination of minimum **100 lux** at floor level uniformly distributed, avoiding the use of spotlights or downlighters.

The stopping accuracy of a lift is important because, if inaccurate, it could prevent a wheelchair user accessing the lift or trip an ambulant user. The maximum vertical distance should be **10mm** and any horizontal gap should be kept to **20mm** or less.

There should be an obvious way of showing an intending user if the lift is not working. An emergency call system inside the lift is essential and, should it be used, there must be a swift response. There should also be an external communication system on all lift landings to enable communication with a central controller should a lift not be in service.

Passenger lifts that are provided to evacuate disabled people in an emergency must have an independent power supply and meet the relevant recommendations of BS 5588.

8.4.6 Footbridges, tunnels and underpasses

While it is preferable to have at grade crossings wherever it is safe and feasible, there are places where a bridge or underpass has to be provided.

The design of road- and rail-related footbridges, tunnels and underpasses is largely governed by the good practice standards on stairs, ramps and handrails given earlier in this Section.

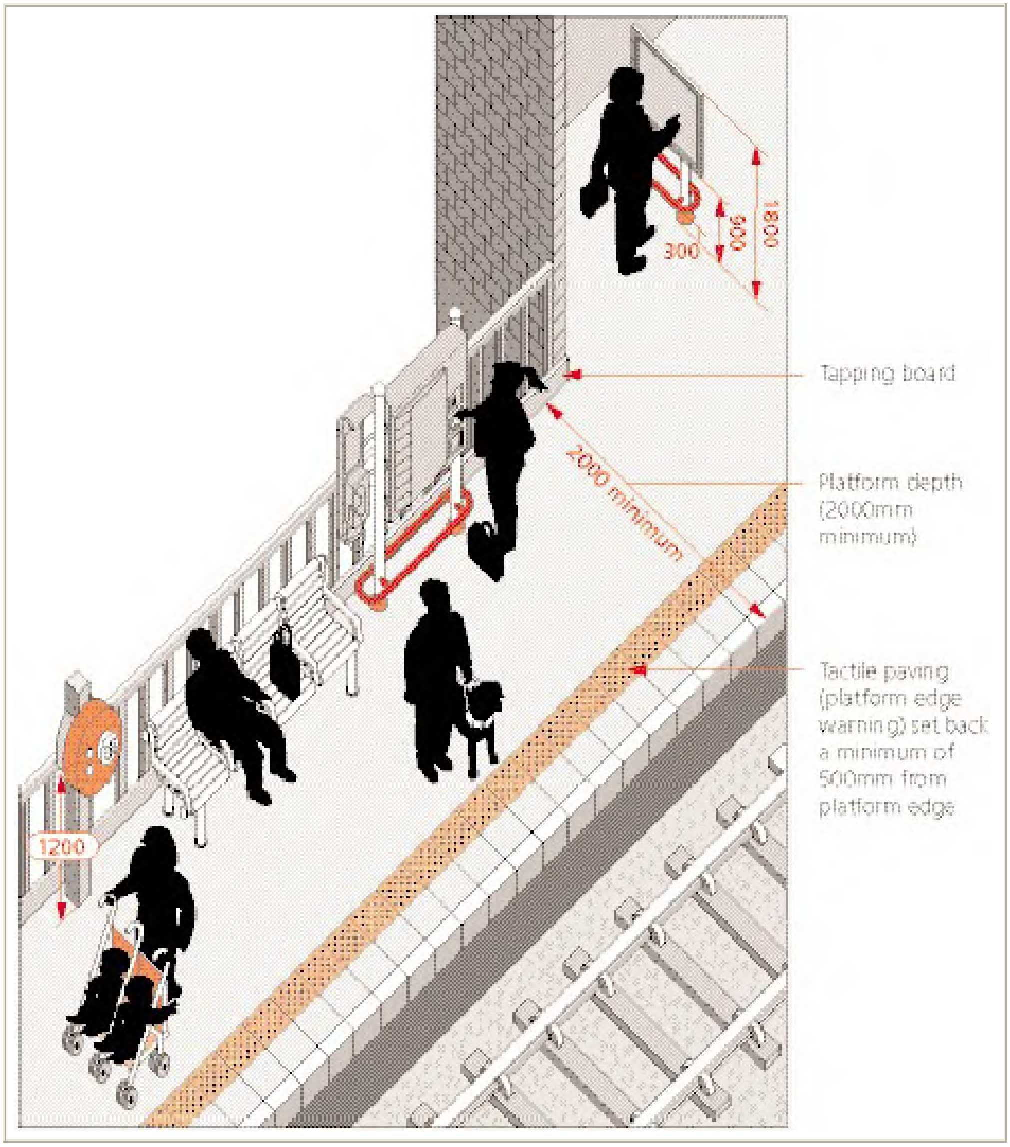
It is worth remembering that the headroom to be accommodated on an underpass is usually less than that required for a footbridge, so the length of ramp and stairway will also be less.

Where underpasses are provided the approach to them should be as wide as possible to give an open aspect and sense of security. It is recommended that the width of the underpass itself should be at least **4.8 metres** and have a clear headroom of **3 metres**. Within the underpass, handrails set at **1000mm** above the walking surface should be provided on both sides. There should be a clear view from one end to the other and a good level of lighting, at least **50 lux**. CCTV cameras placed in tunnels will enhance security and should be located so as to provide full coverage. Notices to the effect that CCTV is in operation should deter vandals and provide a measure of comfort to pedestrians.

8.4.7 Platforms: rail services

Passenger platforms should be built on a straight section of track so that the gap between platform and rail carriage is minimized. If they have to be on a curve, it is recommended that the smallest radius of curvature should be **600 metres**, and that if possible at least part of the platform should be on a straight section of track. Inevitably there is sometimes a balance to be made between locating a station on a straight section of track and locating it where it is most easily accessible, while economic and engineering factors also have to be taken into consideration. Where a station is on a curve, announcements should be made (as on London Underground) to alert passengers to the gap between platform and carriage.

Platform: rail services



The width of platform is influenced by the (maximum) number of passengers using it, but should have a minimum of **2000mm** clear space in addition to the width of the safety zone(s) and a further **1000mm** for service traffic.

The surface of platforms should comply with all aspects of good practice associated with flooring: even, slip resistant and non-reflective. Any crossfalls needed for drainage purposes should slope down from the front edge to the rear edge of the platform. Drainage gullies should if possible be avoided on platforms as they can cause problems for wheelchair users. Where they have to be provided they should be covered.

The appropriate tactile surface should be used to warn of the platform edge (see Section 4) and there should be a white line 100mm wide at the edge of the platform. If a guidance tactile surface is used along the platform, it should be **800mm** wide (Section 4.6) and should be located on the safe side of the platform safety area, eg behind the yellow line

1000mm from the platform edge on those platforms where trains pass faster than 165km/hour.

Any equipment such as vending machines should be placed clear of the unobstructed space along the platform and should be marked by contrasting colour and tone. Information signs should include a tapping rail between supporting posts to aid identification of the hazard by long cane users. Columns and other projections into the passenger circulation area should be avoided if at all possible; if not they should be highlighted using contrasting colour/tone. At least one Help Point (for information and use in an emergency) should be provided on each platform with controls (raised push buttons) and communication link at a height that can be reached by wheelchair users (around **1200mm**). Wherever possible the Help Point should provide both visual and audible communication. Similarly any audible announcements such as delays or changes of platforms should be provided visually as well, as should any emergency announcements.

The height of rail station platforms is normally 915mm, which does not give level boarding onto trains. However, the kinetic envelope required by a moving train (particularly freight) means that any increase in platform height would have to be offset by an increase in the horizontal distance between train and platform edge. Thus access to heavy rail trains for wheelchair passengers will continue to require a mobile ramp or on-train lift. Modern light rail systems are normally built with platforms that provide level boarding; if there is a gap a ramp has to be carried on the vehicle.

8.4.8 Platforms: rail services off-street

Where the rear of the rail platform is open there must be a raised kerb or kicking board in addition to rails or fencing. Such a kerb may be used as a tapping rail by long cane users; for this purpose the bottom edge of the board should be not more than **200mm** above ground level and should have a depth of **150mm**.

The DfT recommended tactile warning surface (see Section 4) should be laid between **500mm** and **700mm** back from the platform edge and should have a depth of **400mm** along the entire length of the platform. In addition to this, the edge of the platform should be marked with a **100mm** wide white line to assist partially sighted people.

Other potential hazards for visually impaired people, for example flights of steps, should be marked by a colour and tactile change in the platform surface.

The surface of platforms should comply with all aspects of good practice associated with flooring: even, nonreflective and slip resistant. Cross-falls required for drainage purposes should be no greater than **1:40** and must slope away from the platform edge.

Where there is a larger than usual gap between the railway carriage and the platform a clear mind the gap warning painted along the edge of the platform is of benefit to deaf and hard of hearing people.

8.4.9 Platforms: rail services on-street

The height of on-street LRT platforms will be dictated by the floor height of the rolling stock used. Modern low-floor LRT designs are such that the platforms need be no more than **350mm** high to give level access into the train. Although the height of the platform above road level may be relatively small, it should still be marked with the appropriate tactile warning surface and a white strip along the edge of the platform.

Access from pavement to the platform should be by shallow ramp and protection must be given if the rear of the platform is open (see Section 3.3).

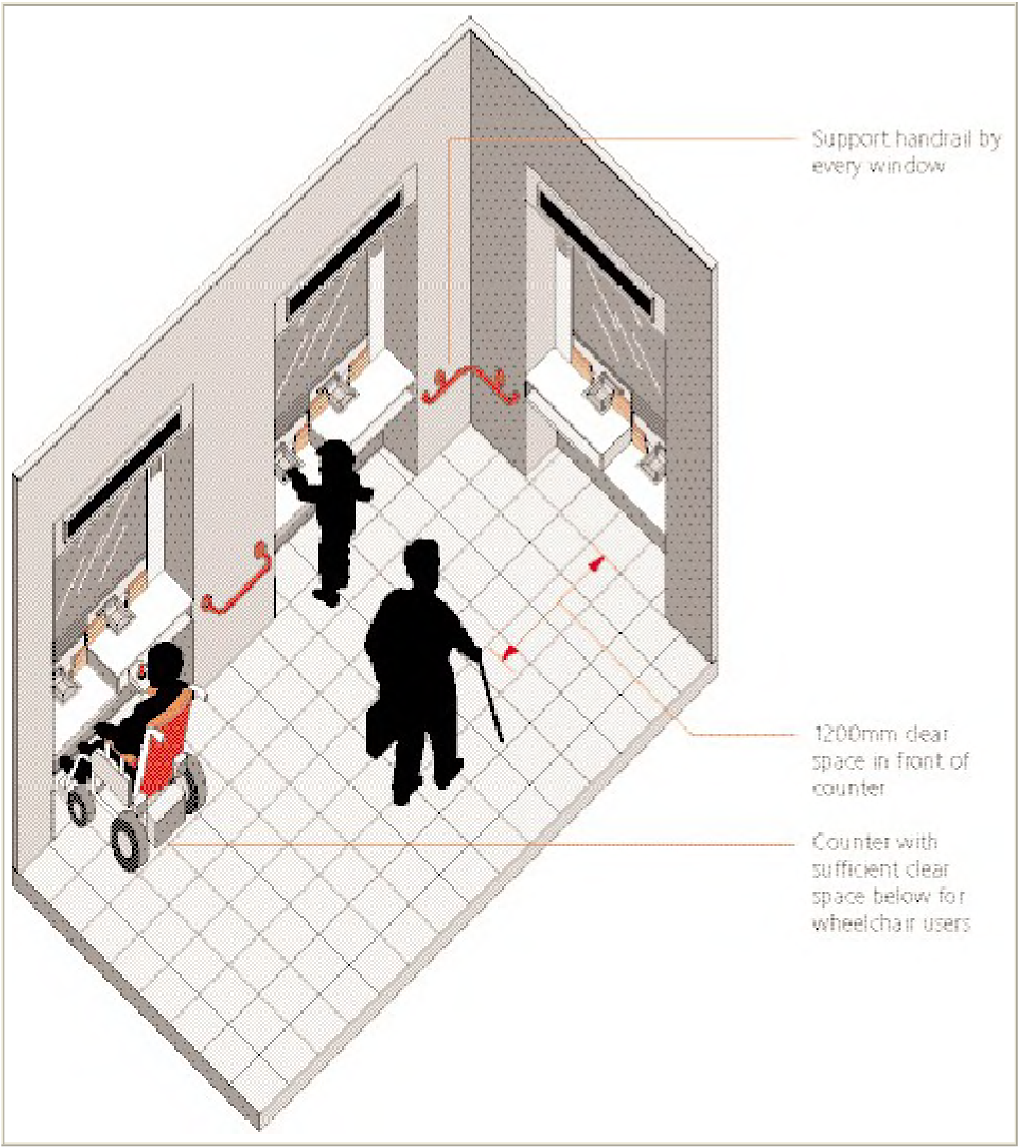
[6] It should be noted that stairs, ramps and lifts may form part of an escape route in the event of an emergency. Specific requirements are contained in Fire precautions in the design, construction and use of buildings. Code of Practice for means of escape for disabled people BS 5588 part 8 (1988).

[7] Note that this recommendation precludes the use of stairs with a clear width between 1800mm and 2000mm.

9 Transport buildings: Facilities 9.1 Ticketing and information

Service counters at ticket and information offices are conventionally designed for standing passengers and have a height of about 1050mm 1100mm: too high for passengers in wheelchairs or people of restricted growth. A service counter should be provided to meet their requirements, with a height of **760mm**. There should be sufficient clear knee space below the counter for a wheelchair users to come right up to the counter. It is recommended that this space should be **750mm** high by **500mm** deep and at least **900mm** wide. There should be a clear space at least **1200mm** wide in front of the counter. A support handrail should be provided at the side of each ticket office window.

Ticketing and information



The design of the counter top is also important. Some counters have a large radius curve on the top leading edge and when a customer sweeps the change or ticket into their hand it falls to the floor. A slight upstand at the front edge of the counter facilitates picking up small items. The design of the counter top should also reduce glare and reflection from lighting both natural and artificial.

Service counters should have induction loops for people who use hearing aids (with the appropriate sign displayed). The intercom unit should be mounted at a height of **1100mm** from the floor this height being chosen so that there is no visual barrier between the employee in the ticket office and the passenger.

Where there is a glass screen partition, consideration should be given to installing a voice transfer system. This is potentially of benefit to all hearing aid users (including those with a t-switch) as well as hearing impaired people who do not normally rely on a hearing aid for communication.

Glass screens should be non-reflective so that a person who relies on lip-reading or facial gestures can see the staff member. Where information centres have textphones these should be well located with easy access to the staff member.

Cash tills should display amounts due for payment on tickets so that they can be easily seen by the ticket purchaser.

Wherever possible, ticket and information offices should be in a quiet area, well separated from the noise of the concourse.

Remembering that some ambulant disabled people find standing for even a few minutes difficult and painful, handrails which passengers can lean on should be provided in the queueing area.

Many rail systems are becoming closed with barriers at entry and exit points. Standard designs of barriers are not accessible to wheelchair users and are difficult for other disabled people. At each ticket barrier, the availability of assistance for mobility-impaired travellers should be clearly signed, as should an alternative, accessible route through the ticket checking and collection area.

Automatic ticket vending machines are becoming an increasingly common feature of transport systems. Probably the two most important aspects of the design of these machines are simple operation and all interactive parts of the machine within reach of wheelchair users. The maximum height of any interactive element should be **1200mm** and the minimum **750mm**. The operational features of ticket vending machines should be straightforward three or four step procedures. For example, ticket machines on the Manchester Metrolink System have such a system: select destination zone, select ticket type, pay fare and collect ticket and change. The places into which the ticket and change are issued should be large enough for people with manual dexterity impairment to be able to retrieve them without difficulty ie the size of the hand.

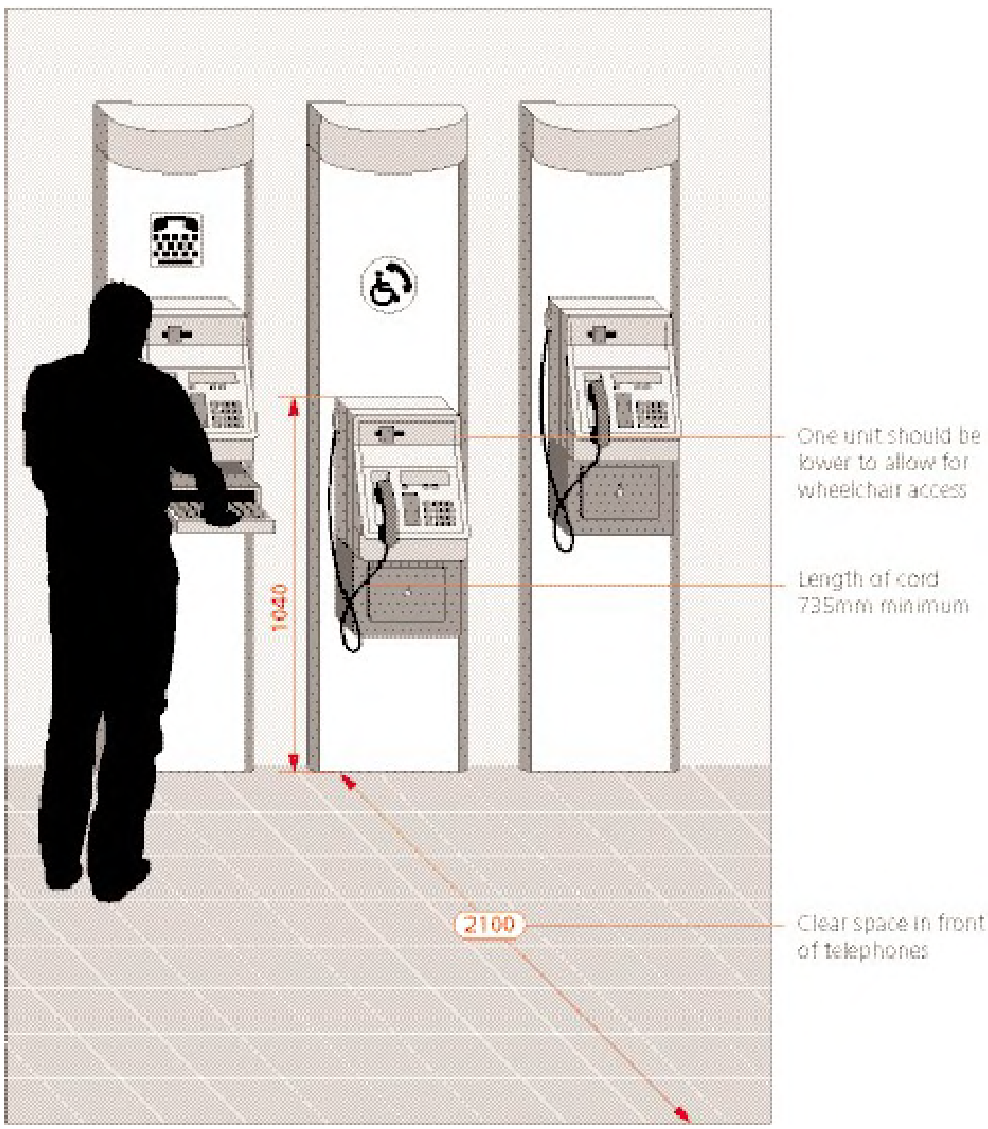
Instructions should be very clearly set out minimum type size **16 point**, with a mix of upper and lower cases and unambiguous illustrations. Printing and illustrations should be colour contrasted to their background. Consideration should be given to providing a Braille version of any instructions. Push buttons should be **20mm** in diameter and slightly protruding. There should be a good level of lighting around the machine; **200 lux** is recommended for the interactive parts and there should be sufficient clear space in front of the machine to allow wheelchair users to manoeuvre (**1850mm x 2100mm**). Ticket machines should not be placed on plinths that extend beyond the face of the machine.

Having staff available who can help disabled people, who find using ticket machines difficult or even impossible, would be of benefit, but where this is not possible the operational system of the service (rail, tram etc) should not penalize disabled people unable to use automatic machines.

9.2 Telephones

Some telephones, including text payphones, should be positioned **260mm** lower than the standard height (ie at **1040mm** to the top of the unit instead of **1300mm**). A new kiosk has been designed with the receiver, keypad etc at a height that is suitable for both standing and wheelchair users. On the keypad, the numeral 5 should always have a clear tactile marking. At transport facilities (airports, major rail stations, motorway service stations) text payphones should be provided. Clear signage to show the existence of text payphones should be provided. (see also Section 4.7: tactile information surface may be used to show where telephones are located).

Telephones

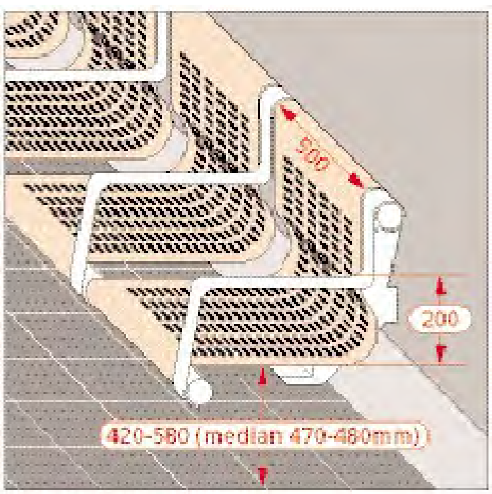


New public payphones are equipped with an inductive coupler and many have an adjustable volume control for incoming speech. Canadian guidelines recommend that the adjustment should cover from **12 decibels** to **18 decibels** above the noise level of the surroundings. The cord of the telephone should be at least **735mm** long to bring it within comfortable reach of a wheelchair user. There should be a clear space in front of the telephone of **1850 x 2100mm** to allow either forward or parallel approach by a wheelchair user. The design of any kiosk should ensure that there is no overhang that would present a danger to blind, deafblind and partially sighted people.

9.3 Seating and waiting areas

Use of public transport usually involves waiting, so provision of seating is important. Guidance on conventional seat heights varies over the range of **420- 580mm**, with a median height around **470-480mm**. Merseyside PTE uses a seat design which provides two seat heights at **489mm** and **584mm**, thus meeting the requirements of most people. Armrests are helpful for some people and should be placed about **200mm** above seat level. Seats placed in a row either should all have armrests or no armrests; a mixture within a single row can cause difficulties for visually impaired people. Seat widths are recommended to be a minimum of **500mm**.

Seating and waiting areas



Conventional seats

Although conventional seating to the dimensions given above will meet the needs of most disabled people, there are some who find perch-type seating, against which people half lean and half sit, easier to use. There may also be constraints on the amount of space available for seating, in which case fold down seats may be appropriate. Perch-type seating is recommended to be at a height of **700mm** and fold down seating at **550mm** to **600mm**. If space permits it is helpful for people of restricted growth (and children) if there are some seats at a lower level than the standard height. Also, in designing the layout of the seats, space should be left for wheelchair users to sit with their companions.

For outdoor seating it is vital that rain water is not allowed to collect on any part of the seat; wire top or wire-mesh seats are an obvious way of preventing this. Seats should be made of vandal resistant easy clean material. As mentioned in Section 3.4, seating should colour contrast with its surrounding area and should not obstruct pedestrian flows.

The need for seating is not limited to transport terminals; it also applies to the pedestrian environment as a whole (see Section 3.4).

Where audible announcements are made in seating/ waiting or refreshment areas, they should also be provided visually for the benefit of deaf and hard of hearing people.

9.4 Waiting and refreshment rooms

Waiting and refreshment rooms should make provision for the needs of disabled travellers. Doorways must provide level access and have, preferably, automatic doors or ones which are capable of being opened easily (see Section 8.2).

Priority seating for older and disabled people should be clearly identified. Where tables are provided they should make provision for use by wheelchair users, with legroom below the table **700-730mm** in height, **600mm** (minimum) wide and **500mm** (minimum) deep.

The tops of tables to be used by customers in wheelchairs should be no more than **750mm** in height. The height of accessible counters should conform with the dimensions given in Section 9.1.

Gangways between tables should be a minimum of **1300mm** wide to allow for the passage of wheelchair users and people with assistance dogs, though a narrower width of **900mm** may be acceptable in circumstances where space is very limited.

Colour contrasted seating and tables will assist visually impaired people, as will a contrast between wall and floor.

US regulations specify the numbers of wheelchair spaces in public places with fixed seating as one space where there are 4 to 25 fixed seats, two spaces where there are 26 to 50 fixed seats, four spaces (minimum) above this. Australian guidelines require a minimum of two spaces, above this five per cent of capacity.

Waiting areas should be equipped with help buttons and visual / audio information points.

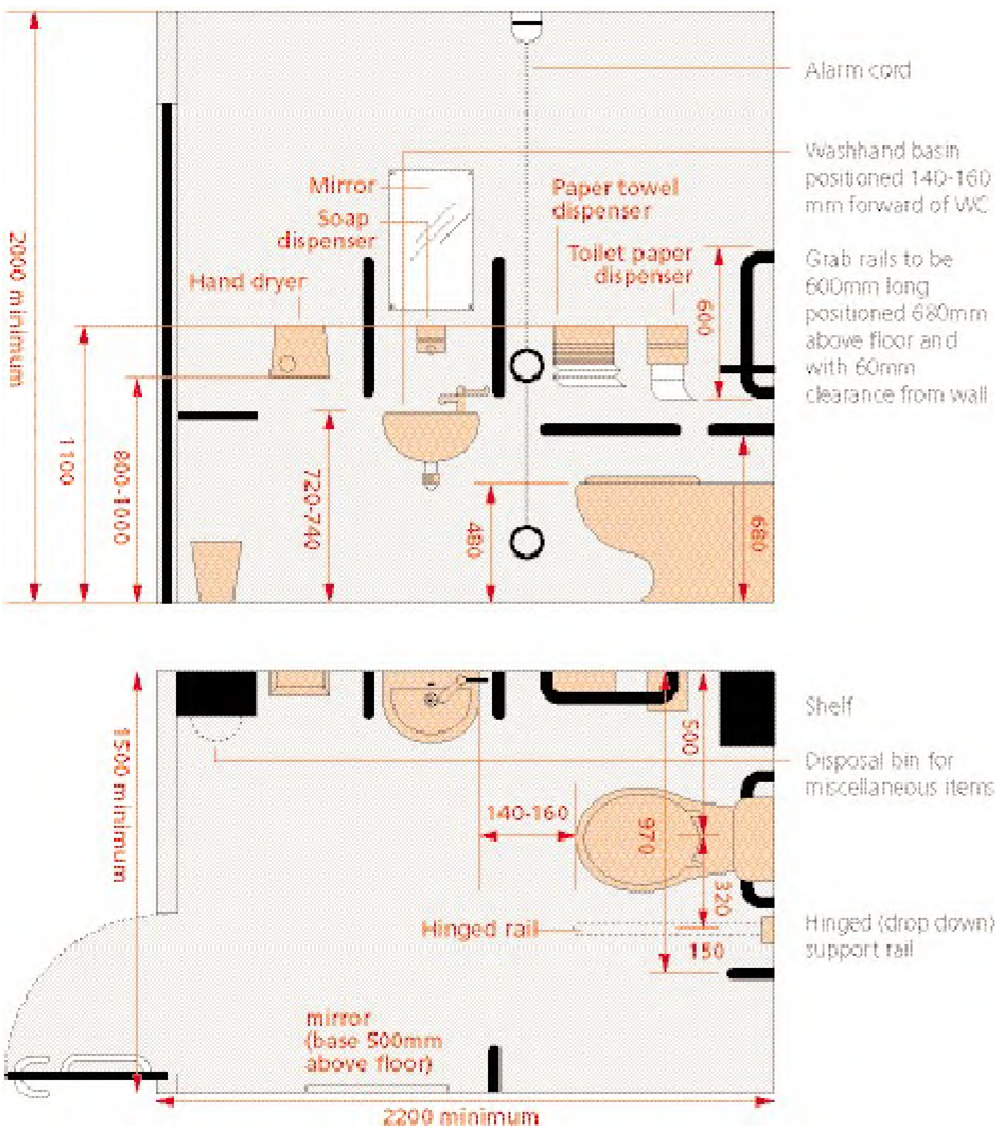
9.5 Luggage facilities

Where left luggage facilities are provided, they should be accessible to wheelchair users. Lockers of different sizes must be placed at heights appropriate to the range of passengers who wish to use them.

9.6 Toilets[8]

Toilets should be no less available for disabled people than for non-disabled people. It is recommended that they should be designated as unisex, not integrated with male and female toilets. Providing unisex toilets allows use by the many disabled people accompanied by a carer or partner of the opposite sex. Accessible toilets should have a raised tactile sign **180mm x 100mm**.

Toilets



Toilet doors should have a clear minimum opening width of **925mm** and be fitted with L or D shaped handles on the outside of the door at a height of **1040mm** above floor level. A horizontal closing bar should be fixed to the inside face of an outward opening door and the lock should be large and easy to operate.

The overall size of the toilet cubicle depends on whether it has a corner WC or a central (or peninsular) WC. A central WC allows the user to transfer from right or left on to the toilet or from the front and needs overall dimensions of **2800mm** width by **2200mm** length. A corner layout, which allows transfer from either left or right, requires less space: **1500mm** width by **2200mm** length.

Where more than one WC is provided the opportunity should be taken to provide both left-handed and righthanded transfer layouts, with the handing indicated by a touch legible pictogram. The overall dimensions quoted in this paragraph are sufficient to allow a wheelchair user to turn around.

In a corner WC layout, the WC centre line should be **500mm** from the side wall on which the wash basin is fixed. The basin should be within reach; placed **140mm** to **160mm** forward of the WC. The height of the WC should be **480mm** and the rim of the wash basin **720mm** to **740mm** above the floor. If a separate wash basin is provided for ambulant disabled people, the wash basin by the lavatory can be at a lower level. The toilet paper, soap dispenser and towel/hand drier should be within reach of a person seated on the lavatory. The wash basin should have a lever operated mixer tap on the side closest to the WC. A flushing lever attached to the WC cistern is preferable to a chain pull, and should be positioned on the transfer side of the pan where a corner layout is used.

It should be noted that a peninsular layout does not allow hand washing when seated on the lavatory, unless a pivoting design of washing basin is used. A single WC with a peninsular layout should not be seen as a substitute for two separate lavatories with handed corner layouts, but as an additional facility.

A hinged (drop down) support rail should be provided on the transfer side of a corner WC, set at a height of **680mm** and **320mm** from the centre line of the WC pan. Peninsular layouts need a hinged handrail on both sides. In corner layouts there should be fixed support rails, one set horizontally **680mm** above the floor on the wall at the side of the WC and two vertical rails set either side of the wash basin, **600mm** long with the bottom end of each rail **800mm** above floor level. If the WC cistern is a duct or at high level a horizontal grab rail should be fitted behind the WC. All rails should be **35mm** in diameter, with a good grip when wet, and the fixed rails should have **60mm** clearance from the wall.

Accessories such as dispensers for soap, toilet paper and paper towels should be suitable for single-handed use and positioned with their lower edge between **800mm** and **1000mm** from floor level. A mirror should be placed immediately over the wash basin, with a second longer mirror located away from the basin. This mirror should be at least **1000mm** tall with the bottom edge **600mm** above the floor (**500mm** in a corner layout where the viewing distance is more limited). A coat hook should be provided at a level that can be reached by a wheelchair user (**1050mm** above floor level) as well as one set at a more conventional height.

A colostomy changing shelf should be provided to the side of the WC pan (at a height of **950mm**) and a lower shelf (**700mm** above floor level) can be provided by the wash basin but away from the wheelchair manoeuvring space.

An emergency alarm or call for assistance cord, in a contrasting colour to its surrounding should be provided. The cord should be positioned to hang between the WC and wash basin and should reach almost to the floor level, passing through wall mounted guides for ease of control. Two large pull handles (**50mm diameter**) should be attached to the cord one at between **800mm** and **1000mm** and the other at **100mm** above floor level so that assistance can be summoned from the seated position or from floor level if someone has fallen. It is recommended that the alarm reset switch be positioned inside the cubicle.

The emergency alarm cord should be clearly labelled as such, and should trigger audible and visual signals outside the cubicle and in a reception point or area which is staffed. The cubicle door should allow for opening from the outside in an emergency.

Urinals should include one stall with a lower rim (maximum **430mm** from the floor), for use by people of restricted growth and children. At this urinal there should be a vertical rail on both sides to assist people who only have the use of one or other side of their body. A similar rail should be provided at the side of at least one standard height urinal.

If a urinal is intended for wheelchair users, the rim height should be **380mm** from the floor and should project at least **360mm** from the wall face. A tapering urinal, possible extending more than **360mm** from the wall to avoid contact with pipework, would allow closer access without the wheelchair touching the wall. An unobstructed space not less than **900mm** wide by **1400mm** deep should be provided in front of the urinal to allow access by a wheelchair user.

Shiny surfaces are confusing for visually impaired people and should be avoided for wall, floor, door etc finishes. Matt and mid-sheen finishes are likely to realize the full benefit of colour differentiation. There should be a good level of colour / tonal contrast between floor and walls, between door and walls and between the toilet, washbasin and other fittings and their surroundings.

9.7 Provision for assistance dogs

A secure area should be provided close to station buildings with a step-free access route. The dog relief area should be at least **3 metres x 4 metres** with a **1200mm** high secure fence. The entrance gate to the enclosed area should have a simple to operate and secure catch. The surface area should be concrete with a smooth finish to assist cleaning and a slight fall, say 3.5 per cent, to assist drainage. A waste bin, with a supply of plastic bags, should be placed close to the entrance. A sign saying For assistance dogs only should be displayed.

[8] BS 8300 Design of buildings and their approaches to meet the needs of disabled people Code of practice contains guidance for designing toilets and the measurements given in

this section are largely based as those given in that publication. See also design standards given in Part M of the Building Regulations 1991 (Access and Facilities for disabled people) and in Part T of the Technical Standards (Scotland) Regulations 1990.

10 Signage and information

Signs and information must be in forms that can be used by disabled people. It is particularly important to take account of the needs of visually impaired and hard of hearing people and to make information as simple and easily understood as possible. Simplicity helps everyone but particularly people with learning disabilities. The placing of signs is also important: reasonably close to, but not impeding passenger circulation areas.

Signage has a very important role to play. It should encompass all the facilities within the area, particularly any services or facilities for disabled people such as accessible toilets, accessible buses, Shopmobility services etc, and should also say how far it is to each facility mentioned. Given the limited distances that some ambulant disabled people can manage, it is essential for them to know how far away the facility or service is located. All stations and terminals should have clocks which display the time in large digital characters. Rail and most bus timetables use a 24-hour format, so this format should also be used for clocks.

Signage is also very important in relation to emergencies. Exit routes to be used in an emergency must be clearly signed; essential for deaf and hard of hearing people who may not be able to hear emergency announcements. Visual information systems used for emergencies should have flashing warning lights to alert deaf and hard of hearing people.

A considerable amount of research has been undertaken on the design of signage and printed material. The general principles are summarized in the following sub-sections.

10.1 Signage 10.1.1 Size of letters

Size of letters should be related to the distance from which the sign will usually be read.

Various research studies have produced a range of preferred size of letters in relation to distance and degree of visual impairment. As a general rule it is suggested that the letter height should be at least 1% of the distance at which the message will usually be read, subject to a minimum height of 22mm. If space permits, letter height should be greater than the one per cent rule. US guidelines, for example, specify a minimum (capital) letter height of 75mm for overhead signs and a general ratio of text height to reading distance of 1:60 or approximately 1.7 per cent. This size is stated to be acceptable to people with low vision (20/200).

The Sign Design Guide (see Bibliography) recommends the following character sizes:

- Long distance reading, for example at building entrances, a minimum size of **150mm**.
- Medium range reading, for example direction signs in corridors, a size of **50-100mm**.
- Close up reading, for example wall mounted information signs, a size of **15-25mm**.

The Guide also contains a graph showing the relationship between character size and reading distance. For someone with 6/60 vision registered as partially sighted the character size : reading distance ratio is approximately **1:27** or **3.75 per cent**. Thus at a distance of four metres, character size would need to be 150mm; at six metres it would be 225mm.

10.1.2 Size of symbols

Research by TransVision for Transport Canada produced the table shown below relating viewing distance to symbol size. The size is actual for any square symbol, nominal for symbols using a circular or triangular shape. Symbols can have the advantage of simplicity and greater clarity but should not be used unless it is known that they will be understood by passengers and staff.

Viewing Distance and Symbol Size

Viewing distance	Symbol size
3-6m	40mm
6-9m	60mm
9-12m	80mm
12-15m	100mm
15-18m	120mm
18-24m	160mm
24-30m	200mm
30-36m	240mm
36-48m	320mm
38-60m	400mm
60-72m	480mm
72-90m	600mm

10.1.3 Typefaces

Considerable research has been carried out into legibility of different typefaces. The general recommendations are that letters and numbers should:

- be Sans Serif;
- use lower case lettering, which is more readily distinguishable than uppercase (capital) lettering;

- use Arabic numbers;
- have a width to height ratio of between **3:5** and **1:1**;
- have a stroke width to height ratio between **1:5** and **1:10**, preferably in the band **1:6** and **1:8**;
- character spacing the horizontal spacing between characters should be **25 to 50%** of characters width and **75 to 100%** between words; and
- vertical spacing between lines should be at least **50%** of character height.

Examples of appropriate typefaces for signs include New Johnston (used by London Underground) Rail Alphabet (designed for British Rail), Futura, Folio, Helvetica, Standard, Airport and DfT Transport Heavy and Medium (expressly designed for clarity for traffic signs).

10.1.4 Colour contrast

It is essential that characters on signs should contrast with the background of the sign. Apart from signs that are internally lit, dark text on a light background is preferable: eg black or dark blue on a white background though there may be occasions when light lettering on a dark background is preferable.

Signs should have a matt finish, not a shiny one, and should be well and evenly lit with uniform lighting over the surface of the sign of between **100** and **300 lux**.

The sign board colour should contrast with its background as this will assist with visibility and readability. The table below, reproduced from the Merseyside Code of Practice, shows appropriate colour relationships.

Schedule of Colour Contrast for Signs

Background	Sign board	Legend
Red brick or dark stone	White	Black, dark green or dark blue
Light brick or light stone	Black / dark	White or yellow
Whitewashed walls	Black / dark	White or yellow
Green vegetation	White	Black, dark green or dark blue
Back-lit Sign	Black	White or yellow

10.1.5 Positioning of signs

The optimum viewing angles for signs mounted on walls or other vertical surfaces are ± **30°** in the vertical plane (from eye level) and up to **20°** either side of a **90°** line to the sign in the horizontal plane.

In practice, it may not be possible to achieve the height implied by the optimum viewing angle because of obstruction from other passers-by, where for example the content of the sign is directional information that needs to be seen from a distance. Wall-mounted signs that contain detailed information; timetables, maps or diagrams, should be centered around **1400mm** from the ground, with the bottom edge not less than **900mm** above ground and the top edge up to **1800mm** above ground.

Consideration should be given to duplicating detailed signs and instructions, especially safety notices, at high and low levels, i.e. at **1600 1700mm** and at **1000 1100mm** to allow convenient close viewing by wheelchair users.

Where a sign may be temporarily obscured, eg by a crowd, it should be placed at a height of not less than **2000mm**. Where a directional or information sign is suspended over a pedestrian area there should be preferably **2300mm** clear space below the bottom edge of the sign, (**2100mm** minimum).

10.1.6 Variable message signs (VMS)

Signs of this kind have been used for many years in transport terminals, but their use has extended in more recent times to other locations such as bus stops and Underground stations.

The increased use of VMS has been accompanied by the development of guidelines, notably in North America. The recommendations include:

Reading rate: there is a wide range in individual reading rates from around 125 words per minute up to 500 to 600. The average is about 250 words per minute. Where messages are scrolled or changed (as in split-flap or flip-disk displays) each message should be held for a fixed time of **10 seconds** sufficient time for someone with relatively poor reading ability to read about 20 words. This is also sufficient time for a synthesized speech message to be made.

Electronic characters: can be formed by segments or dots. Increasing the number of dots or segments improves character readability. The recommendations are:

Segmented displays

Segmented displays	
7 segments	Numerical information only
14 segments	Preferred for general applications
Dot matrix displays	
5x7 matrix	Minimally acceptable
7x9 matrix	Preferred for general applications
8x11 matrix	Minimum if symbols are rotated
15x21 matrix	Preferred if symbols are rotated

Colours: must take into account colour deficiencies, thus red/green combination should be avoided.

Height of characters is recommended as equal to the distance between the viewer and the screen divided by 137.5. Thus if viewed from **2 metres**, the character height would be approximately **14.5mm**, at **10 metres** it would be about **73mm**.

Variable message signs outside buildings should be shielded from direct sunlight. Care should be taken to ensure that VMS information is accurate and up-to-date.

10.1.7 Tactile signs

Characters, whether letters or pictograms, should be embossed, not engraved, and should be raised from the surface of the sign by between **1mm** and **1.5mm**. The stroke width should be between **1.5mm** and **2mm** and the height of each character should be at least **15mm**. The letter spacing should be increased by between **20-30 per cent**, depending on the selected font, and word spacing should be increased by 25 per cent. The edges of embossed characters should be slightly rounded to avoid sharp edges and the typeface should be sans serif.

Where Braille is used, grade one Braille is permissible for single words but for signs with more than one word, contracted Braille must be used. Most blind and visually impaired people do not read Braille, so embossed signs will be more generally useful.

10.1.8 Audible information

Audible announcements are helpful to most people but particularly to those with visual impairment. It is essential that there is a significant difference between the level of background noise (ambient noise) and the level of the signal or announcement. The higher the signal to noise ratio (the difference in decibels (dB) between signal and ambient) the better for communication. People with hearing impairment require at least a **+5dB S/N** ratio. In environments that are noisy, any spoken information should be repeated at least once.

Audible alarm systems should operate at least **15dB** over the prevailing sound level, with a maximum of **120dB**.

10.1.9 Timetables[9]

Timetables and other information which people will read from a short distance should:

- use a simple sans serif mixed-case typeface;
- print size of 16 point (if there is sufficient space);
- good contrast between print and background, eg black on white or black on yellow;
- matt finish paper, not glossy;
- and if appropriate, distinguish clearly between weekday and weekend services.

In some cases the amount of timetable information that has to be displayed will mean that use of 16 point print size would make the displays too large, so a smaller size will have to be used. The other requirements listed above would still apply.

Where text is used it should be left-aligned type with a ragged right-hand margin; this is easier to read than justified type. Although a word or two in capitals should not present any difficulties, capitals should be avoided in continuous text.

Timetables placed outside, for example at bus stops, should if possible be sheltered from the rain; water on the glass over the timetable distorts the text and makes it difficult to read. All bus stops should be provided with timetable frames located between **900mm** and **1800mm** above ground level.

Timetable panels, of the type found in railway stations, should be placed adjacent to the main flow of passenger circulation, and at right angles to the direction of the flow. Placing should allow passengers to stand directly in front of the panel without impeding the main circulation flow. The recommended dimensions for the panels are: bottom **900mm** above ground, top **1800mm**, width **800mm** to **1100mm**. If there is an opening between the bottom of the panel and the ground, a skirting **300mm** minimum in height should be placed below the panel to guide people who use a long cane or stick around the panel.

[9] This subsection is concerned with timetable displays. Guidance on good practice for books and leaflets is given in Legibility of Timetables Books and Leaflets produced by DPTAC.

11 Lighting

Good lighting in the transport and pedestrian environment is important from several points of view personal security, safety, the ability to see signs and instructions.

People with visual impairments require clarity from a lighting system. Reflection, glare, shadows and large variations in lighting levels generate visual confusion and, in some cases, discomfort.

- Reflection can be minimized with the careful use of non-reflective finishes on internal surfaces.
- Glare can be reduced by the thoughtful positioning of lights out of the line of vision. Glare from daylight can be reduced with adjustable blinds on windows.
- Shadows can mask hazards. They can be avoided by increasing the level of ambient light and ensuring spotlights are not used on their own.
- Feature lighting, such as downlighters should be located where they will not cause shadows to fall across peoples faces making lip reading difficult.
- Large variations in lighting levels requiring swift reactions from the eye should be avoided. Any change in lighting levels should be gradual.

Lighting often fulfils secondary functions, for example, giving directional guidance along a corridor illuminated by a series of lamps mounted longtitudinally on the ceiling or highlighting potential hazards such as stairs. Recommendations for carriageway and footway lighting levels are given by BS 5489, the Code of Practice for Road Lighting. Different parts of the Code relate to different types of area to be lit. Part 2 refers, for example, to lighting for traffic routes and Part 3 to lighting for subsidiary roads and associated pedestrian areas.

Part 3 of the Code recommends maintained average illuminance figures varying from 3.5 to 10 Lux, depending on the road lighting category. This includes for public use, crime risk and traffic use. For other areas, the following recommendations for minimum acceptable illuminance levels are drawn from a number of sources, including British, Australian and Canadian guidelines. They represent minimum acceptable levels.

Entrances to buildings	**150 lux**
Passages and walkways	**150 lux**
Steps and stairs, at tread level	**200 lux**
Ramps, at top and bottom	**200 lux**
Station platforms and forecourts	**50 lux**
Underpasses	**50 lux**
Directional signage	**200 lux**
Maps and displays, text panels	**200 lux**
Counter tops	**250 lux**
Telephones	**200 lux**
Control panels (eg on lifts)	**100 lux**
Ticket and other interactive machines	
- interactive area	**200 lux**
- background level (around machine)	**50 lux**
Lifts, internal minimum (uniformly distributed)	**100 lux**
Lifts, landing area	**200 lux**
Accessible toilets	**100 lux**

It should be remembered that good levels of lighting will be of benefit to everyone who uses transport and pedestrian facilities. Bright, well-lit premises will encourage the use of public transport and lighting that eliminates dark areas or corners will give a greater feeling of security to passengers. Wherever possible, buildings should be designed to make maximum use of natural lighting, though care should be taken to minimize glare and strong reflections off surfaces.

12 Access in the countryside

Although this guide is mainly concerned with accessibility in the urban environment, access to the countryside is also important. Those who are involved in the design, planning and provision of access to the countryside should consult the British Telecom (BT) Countryside for All Standards and Guidelines (1997).

Many of the dimensions recommended in the BT Guidelines are similar to those given in this report. The following paragraphs summarize the key recommendations.

To allow for two-way pedestrian traffic paths should be at least **2000mm** wide with a clear visual distinction between the path surface and the ground next to it. If the path width has to be less than **1500mm**, passing places (minimum **1500mm** wide by **2000mm** long) should be provided every **50 metres**.

Where there are gates on a path, there should be clear space **2000mm** long, with **300mm** extra width adjacent to the latch side, on the side of the path into which the gate opens.

Where there are changes in level both steps and ramps should be provided, but if there is insufficient space for both provide a ramp. (The BT Guidelines give detailed recommendations for maximum ramp lengths and gradients in different countryside settings).

All accessible path surfaces should be compact, firm, stable, non-slip and obstacle free. Suitable materials include concrete, bitumen macadam, stone, timber, brick/paving and grass. Sand, loose gravel, woodchips and cobbles should not be used.

Bridges and boardwalks should have a minimum clear width between handrails or edging boards of **1200mm** for one-way traffic and **2000mm** for two-way traffic. At the start of a boardwalk the lip should not be more than 5mm high and gaps between boards (laid at right angles to the directions of pedestrians flow) should not be more than **12mm** wide. All boardwalks and bridges should have edge protection at least **75mm** high and also handrails.

The recommendations for the design of steps are similar to those given earlier in Section 8.4 of this report and include advice to avoid single steps, to use colour contrasting for step noses and to provide handrails.

Viewing points should, wherever possible, be accessible to everyone including wheelchair users. The provision of seating or resting places is important, as is ensuring that any information or interpretation points do not obscure the view for wheelchair users. If telescopes are provided they should have a variable height control and there should be knee space between the telescope and the ground to give wheelchair users access. Safety barriers should be provided where necessary and should take account of the viewing height of wheelchair users, though safety considerations are paramount.

Detailed advice on the design of gates and stiles, including a type of stile that can be used by people unable to climb over traditional stiles, is given in the BT Guidelines.

Seats and perches should be placed or regular intervals along paths in the countryside. They should be located no more than **100 metres** apart and should be set back from the main route by at least **600mm** to allow the free passage of through traffic. Surfaced resting places at least **900mm** square should be provided next to seats so that wheelchair users can sit next to family and friends.

Sheltered information and interpretation boards are helpful for visitors and can double up as shelter from the weather. They should be accessible to all visitors and, where possible, incorporate seats or perches under the shelter. The roof of the shelter should not just cover the information board, but also people who are reading it and the roof should be at least **2100mm** from the ground so that it is not a hazard for blind or partially sighted people. The BT Guidelines also include advice on signage and way marking, car parking and the provision of facilities including toilets and telephones.

13 Consultation, training and management 13.1 Consultation and participation

As will be apparent from the information contained in this report, planning and developing an accessible environment is quite a complex process.

Consultation, at an early stage, with local groups representing disabled people will help in the process of planning and implementing accessible buildings and other infrastructure. It should be remembered that disability covers a very wide spectrum of people with different needs, so consultation should involve people who use wheelchairs, who are ambulant disabled, people with partial sight and others who are blind, people with impaired hearing and people with cognitive impairment.

Consultation with these people and of local authority access officers by planners, engineers, architects, surveyors and transport providers will provide a better understanding of the mobility requirements of disabled people and avoid the cost of rectifying mistakes retrospectively.

Following on from consultation, the direct involvement of disabled people participation in the development and testing of accessible features will be of value in again ensuring that what is provided does meet disabled peoples needs.

Beyond local groups, there are national organizations, such as DPTAC, the RNIB the RNID and The Royal Association for Disability and Rehabilitation (RADAR), that can provide advice on the design of buildings and facilities. The DfTs Mobility and Inclusion Unit can give advice both on specific aspects of designing for accessibility and on appropriate national organizations concerned with disability (see Useful Addresses for further details).

13.2 Disability awareness training

Brief reference was made in Section 2.1 to the definitions or models of disability. The Social Model of Disability views disability as something which is imposed on people with impairments whatever the nature of those impairments by the way society places barriers to equality.

This guide is mainly concerned with designs that will remove these barriers, but disability awareness training is also essential if disabled people are to have equality of access and mobility.

Obviously it is most important that staff who come into contact with the public should have this training, but equally those who deal with designing, planning and managing facilities and services should also have a good knowledge of the needs of their disabled customers and users.

Senior managers need to understand the implications of the DDA on policy and procedures, planning, investment and strategy to ensure:

- Investment opportunities are not wasted.

- Investment helps meet the requirements of the DDA.
- The guidance and standards set out in this document are built into routine maintenance and construction projects to avoid making mistakes that may be expensive to rectify and to help ensure compliance with the DDA.
- All policies, practices and procedures at every location used by the public comply with the DDA.

Staff who are in regular contact with the public need to have awareness of how to serve a disabled person without discrimination and how to mitigate the effects of inaccessible premises, vehicles and services etc, in compliance with the DDA. All staff need to be able to think on their feet in unexpected situations or in an emergency.

Some transport operators and other organizations have produced training programmes on disability awareness which can be used by other organizations. Training in disability awareness should form part of both induction training and refresher or promotion courses for staff. Disabled people should be involved in the design of training programmes as well as their delivery where possible.

Training should be tailored to the particular job function, but in general programmes should include (as appropriate):

- barriers faced by disabled people, including attitude, environment and organization;
- principles of access audits;
- suggestions for removing barriers faced by disabled people;
- information on the range of disabilities, including hidden disabilities;
- the skills needed for assisting disabled travellers;
- communication and interpersonal skills for dealing with disabled people, particularly those with a hearing impairment;
- and general awareness of the DDA.

For those who are involved at a professional level and who wish to learn in more depth about designing access into the environment, short courses and modular degree courses are becoming available. Advice on courses of this kind may be obtained from DPTAC.

Give the far-reaching nature of the DDA, it would be sensible for any organization that is involved with transport and its associated environment, to make sure that it has staff who are well-trained and knowledgeable about access for disabled people.

13.3 Management

Much of the future improvement to access in the transport environment will take place as part of maintenance, repair and modernization of transport fabric, rather than when brand new facilities are built. Continuing maintenance programmes give the opportunity to make improvements in access at lower cost and with less disruption than if the improvements are made separately. For example, relaying a footway may provide the opportunity to clear some of the clutter often found in the pedestrian environment.

This is not to say that specific improvements to access should never be made unless they are part of larger works; there will be occasions when it will be essential to carry out improvements outside normal work programmes. However, there are obvious advantages in incorporating access improvements into planned work programmes wherever possible. Staff, particularly engineering and maintenance, should be made aware of the importance of doing this.

Further emphasis to developing programmes for improving access in the environment is given in Guidance on Full Local Transport Plans, published in March 2000 by DfT. Paragraphs 301 to 304 in Part II of this document set out the disability issues that should be taken into account when preparing local transport plans (LTPs) and include the statement that, Local authorities and transport operators will have to consider the needs of disabled people from the start to the finish of their journey. This section also makes the point that, getting the design of the pedestrian environment and public transport infrastructure right is just as important as ensuring that disabled people can get on and off vehicles.

It is also Government policy to encourage walking by making it easier, more pleasant and safer. In the advice to local authorities Encouraging walking (DfT, March 2000) the point is made that improvements to the pedestrian environment must take account of the full range of people who will use them, including people using wheelchairs and walking aids, people with sight or hearing impairments and people with all levels of fitness and ability.

Thus there is a clear responsibility placed on local authorities to plan and implement improved access for disabled people.

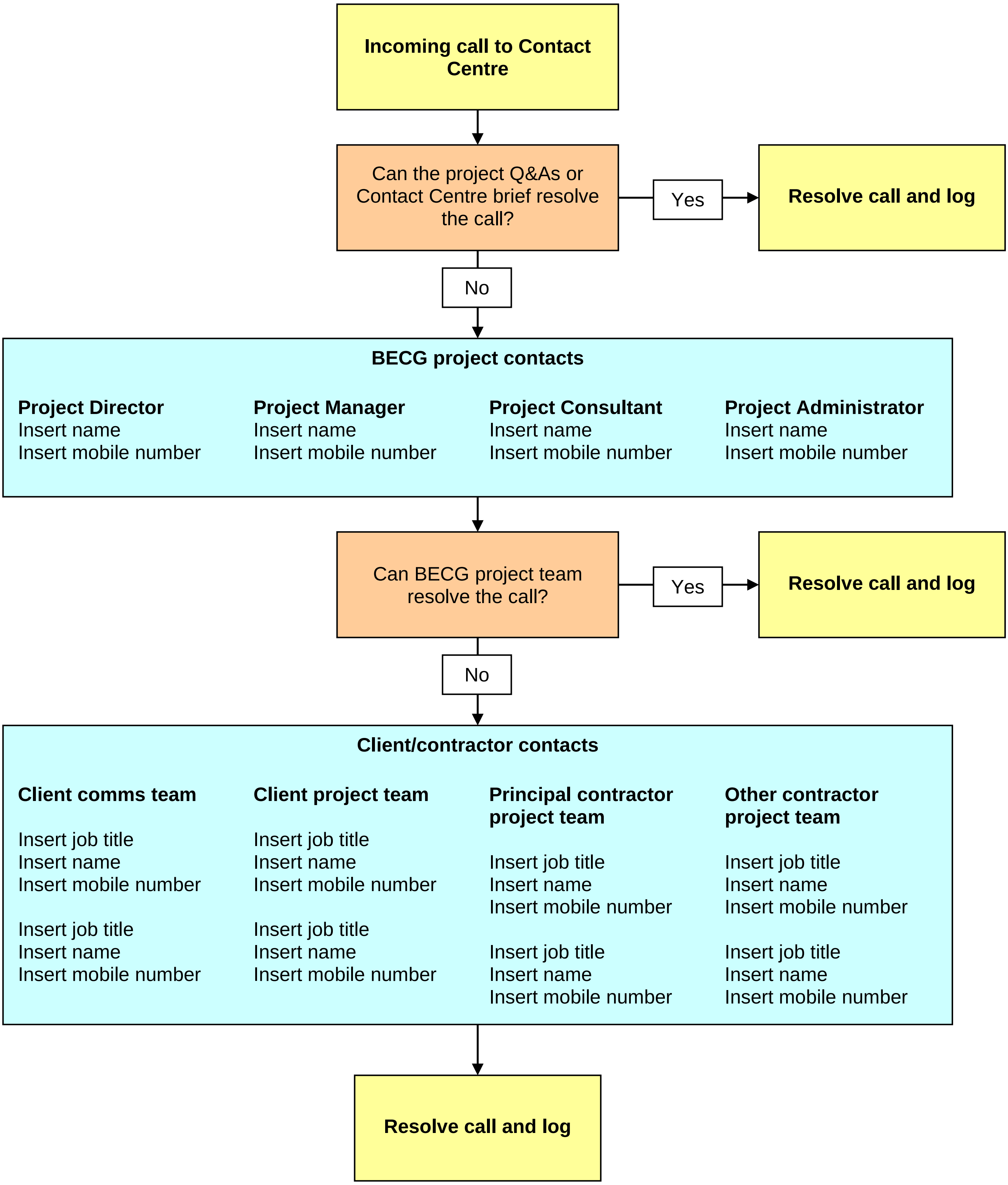
13.4 Publicity for improvements in accessibility

When access to an existing facility or service is improved, or when a new fully accessible facility is built, disabled people who may use and benefit from the improvements should be made aware of them. The methods used to bring improvements to the attention of disabled people will vary depending on the type and scale of the changes made, but may include direct correspondence with local organizations of disabled people, announcements in the local press or on local radio, leaflets and advertising. Hiding the light of an improvement in access under a bushel of nonpublicity helps no-one.

Apart from the need to inform people about changes in accessibility, there is a more general requirement to make sure that people are aware of the level of access at stations and other transport infrastructure. This information should be available in a variety of formats so that, for example, blind as well as sighted people can obtain the information.

APPENDIX 10 – CONTACT CENTRE ESCALATION PROCEDURE AND GUIDANCE NOTE

Client name
Project name
Contact Centre escalation procedure



Contact Centre escalation procedure
Guidance notes

Purpose

The Contact Centre escalation procedure shows BECG and Client contacts for a project and lays out the order in which they should be contacted in order to resolve a call into the Contact Centre.

Completing the document

- Insert the Client name and project name in the title of the document.
- Insert the BECG project contact names and details. Amend the BECG project team job titles as appropriate.
- Insert Client and contractor job titles, names and contact details. Within any project different issues may be dealt with by different people. The escalation procedure should therefore include all the relevant contacts that BECG has with the Client and/or contractors. It could be separated into different teams (Client comms team, Client project team, principal contractor, etc.), or into different areas of responsibility (media enquiries, complaints from the public, consultation feedback, etc.).
- Save the document according to the BECG document management system and file name system.

Appendix 2 – A2030 A2030 Eastern Road, Impact of Football Traffic: Technical Note

AQUIND Limited

AQUIND INTERCONNECTOR

A2030 Eastern Road, Impact of Football Traffic: Technical Note

The Planning Act 2008

Document Ref: ERTM

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Eastern Road, Impact of Football Traffic: Technical Note

PINS REF.: EN020022

DOCUMENT: ERTM

DATE: DECEMBER 2020

AQUIND Limited

AQUIND INTERCONNECTOR

Eastern Road, Impact of Football Traffic: Technical Note

WSP

WSP House

70 Chancery Lane

London

WC2A 1AF

+44 20 7314 5000

www.wsp.com

DOCUMENT

Document	Document Name
Revision	001
Document Owner	WSP UK Limited
Prepared By	D. Jenkins
Date	23/12/20
Approved By	Chris Williams
Date	23/12/20

CONTENTS

TABLES

APPENDICES

1. INTRODUCTION

1.1. PURPOSE OF NOTE

1.1.1.1. This Technical Note has been produced by WSP on behalf of AQUIND Limited (the 'Applicant') following the submission of the application for a Development Consent Order (DCO) in respect of the UK elements of AQUIND Interconnector (the 'Proposed Development') in November 2019 (the 'Application').

1.1.1.2. This Technical Note has been produced in response to queries raised by Portsmouth City Council (PCC) and the Examining Authority (ExA) regarding the impact of the proposed works on the A2030 Eastern Road (part of the Onshore Cable Corridor) during Portsmouth Football Club (FC) home games.

1.1.1.3. The Applicant had previously intended to undertake traffic surveys during home games to assess the impact, but due to the Covid-19 pandemic it is no longer possible within the timetable of the Examination to complete surveys that would be representative of normal traffic conditions on a match day. This Technical Note – and the accompanying spreadsheets in the Appendices – provides a comparison of traffic data at times before and after football matches with other peak times to estimate the traffic flow position using data that has become available. The comparison is on the A2030 Eastern Road south of the junction with the A27 Havant Bypass.

1.1.1.4. The structure of this Technical Note is as follows:

- The remainder of this Chapter 1 outlines:
  - The sub-regional transport model (SRTM), which is the basis of future year assessments in the Transport Assessment (TA) (APP-448) and Supplementary Transport Assessment (STA) (REP1-142);
  - The proposed traffic management required to facilitate construction of the Onshore Cable Route on A2030 Eastern Road;
  - A summary of the Applicant's previous response to the issue of traffic flow on match days; and
  - Details of the traffic data obtained for this updated response to the traffic flow issue.
- Chapter 2 contains assessments of traffic volumes before and after a high-attendance match at Portsmouth FC. These assessments include:
  - Comparisons of football traffic with non-football day peak traffic;
  - Comparisons with the SRTM flows;
  - Assessment of the proportion of slow-moving traffic as an estimate of traffic congestion on the A2030 Eastern Road;

- Chapter 3 contains the same assessments as Chapter 2, but for an typical-attendance match; and
- Chapter 4 contains conclusions and recommendations.

1.2. SUB-REGIONAL TRANSPORT MODEL (SRTM)

1.2.1.1. The TA (APP-448) and the STA (REP1-142) use the Solent Sub-Regional Transport Model (SRTM) to assess the future year baseline and Construction Stage impacts of the Proposed Development. It should be noted that the use of the SRTM was agreed with HCC and PCC during pre-application scoping.

1.2.1.2. The full scope and methodology of the SRTM modelling is described fully within Section 1.10 of the TA and 1.2 of the STA and summarised below for reference.

1.2.1.3. The SRTM is a multi-modal strategic transport model for Hampshire, the Isle of Wight and Portsmouth that includes public transport networks and the strategic and local highway network. The purpose of the model is to test the impact of transport interventions and changes to land-use. For the Proposed Development, it has been used to assess the temporary impacts associated with construction of the Onshore Cable Route and traffic management required to facilitate these works. This assessment takes into consideration the primary impacts along the Onshore Cable Corridor itself, as well as secondary impacts resulting from traffic distribution during construction works.

1.2.2. MODELLED SCENARIOS

1.2.2.1. Due to the length of the Onshore Cable Route, it is possible that several sections will be constructed simultaneously. Construction of the cable ducts will be completed in 100m sections between the Landfall point and the Converter Station. In the SRTM modelling, it has been assumed that a maximum of six 100m sections will be under construction at any one time along the Onshore Cable Corridor, and this is secured in the Framework Traffic Management Strategy (REP1-068). This is in line with the construction programme which assumes a maximum of six sections of the Onshore Cable Route being constructed at any one time; the specific combination of locations was agreed with HCC and PCC as part of the TA scoping exercise.

1.2.2.2. It was agreed with HCC and PCC during pre-application scoping discussions for the TA that the following six areas of Traffic Management tested together (shown in **Error! Reference source not found.**) would be a robust assessment:

- Shuttle working traffic signals on the B2150 Hambledon Road between Soake Road and Closewood Road;
- Temporary traffic signal operation of the B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue roundabout in Waterlooville;
- Shuttle working traffic signals on the A3 London Road between Poppy Fields and the roundabout with Ladybridge Road;
- Single lane closure on Havant Road between Farlington Avenue and the A2030 Eastern Road;
- Single lane closure on the A2030 Eastern Road between Airport Service Road and Burrfields Road; and

- Shuttle working traffic signals on Henderson Road between Bransbury Road and Fort Cumberland Road.

1.2.2.3. The SRTM modelled the impacts of the proposed traffic management across the following scenarios:

- **2026 Do Minimum (DM) Scenario**: the future baseline without the Proposed Development;
- **2026 Do Something 1 (DS1) Scenario**: traffic management to facilitate the construction of the Onshore Cable Route is in place at the six specified locations but on the A2030 Eastern Road lane closures apply to the southbound carriageway only
- **2026 Do Something 2 (DS2) Scenario**: traffic management is in place at the six specified locations but with lane closures on the northbound carriageway along the A2030 Eastern Road

1.2.2.4. The 2026 Do Minimum scenario outlines what conditions would be like without the Proposed Development. In this sense its sole purpose is to provide the baseline for comparison. For the Do Something Scenarios, 2026 was selected as the forecast model most aligned to the anticipated timescales of the Proposed Development. The SRTM produces future year outputs for 2026, 2031, 2036 and 2041.

1.2.2.5. As highlighted, peak construction for the Proposed Development is anticipated to occur in 2022. The assessment approach provides a robust analysis of the impacts as it involves using traffic flows for 2026, which are higher than those that would be expected during the anticipated peak construction period of 2022.

1.2.3. OUTPUTS

1.2.3.1. Outputs of the SRTM provide information regarding traffic flow, speed and vehicular delay, alongside a volume/capacity (V/C) assessment for each link that pertains to the study area. The SRTM provides data for the AM Peak, Inter-peak and PM peak periods as well as 18-hour Average Annual Weekday Traffic (AAWT) and 24-hour Average Annual Daily Traffic (AADT).

1.3. OVERALL STRATEGY OF FRAMEWORK TRAFFIC MANAGEMENT STRATEGY

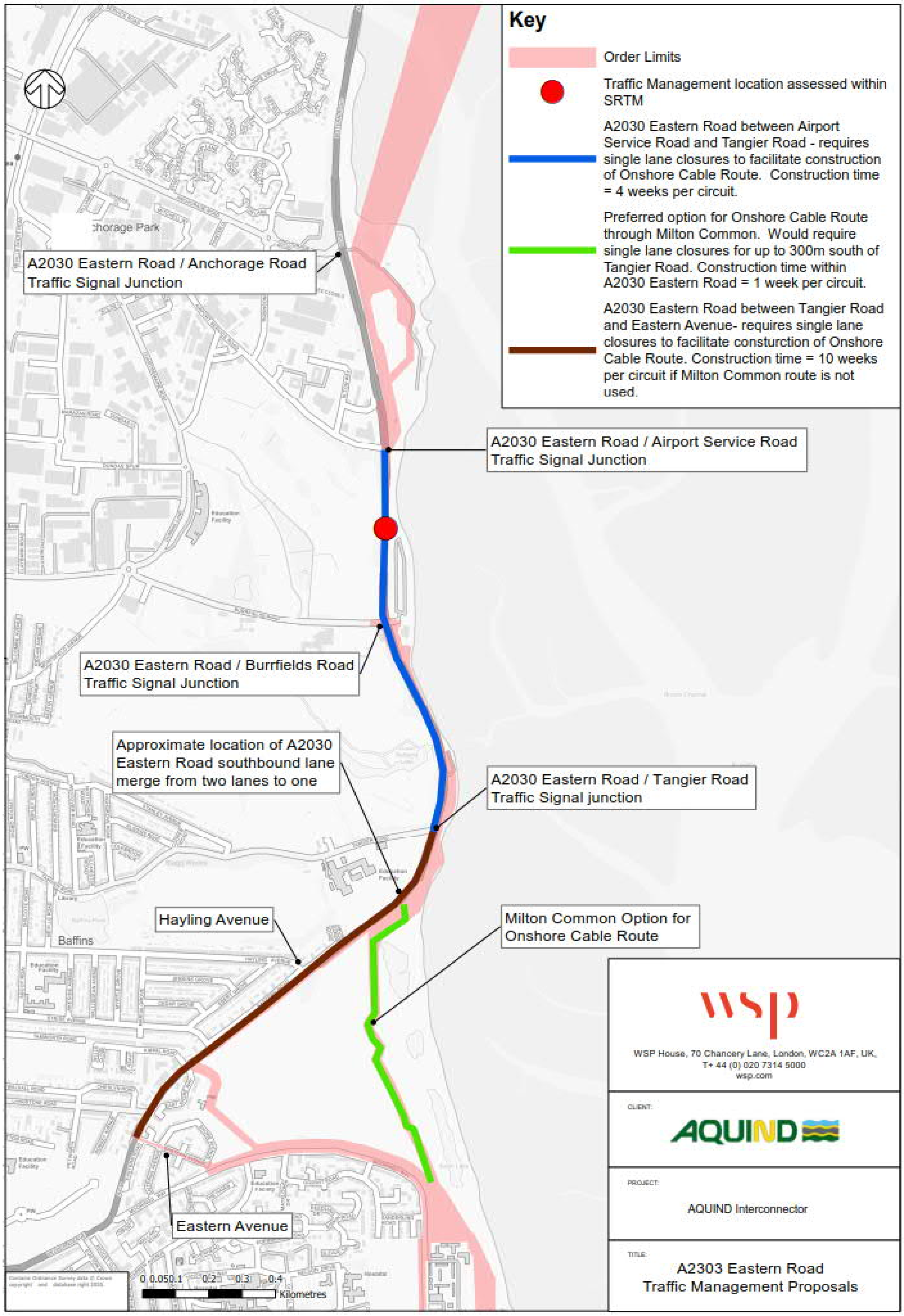
1.3.1.1. The Framework Traffic Management Strategy (FTMS) (REP1-068) sets out the strategy for all traffic management required to facilitate the construction of the Onshore Cable Route. The FTMS sets out the overarching principles taken towards all aspects of traffic management, including timing of works, notice periods, methodology and provisions for all types of highway users.

1.3.1.2. As is stated in paragraph 1.1.1.1 of the FTMS, the framework will be developed in further detail by appointed contractors prior to the commencement of each phase of works.

1.4. PROPOSED TRAFFIC MANAGEMENT ON A2030 EASTERN ROAD

1.4.1.1. A summary of the traffic management proposals for the A2030 Eastern Road is illustrated on Figure 1, taken from the Technical Note ERTN01 – Eastern Road Further Traffic Assessments (Appendix E of the STA (REP1-142).

Figure 1 - A2030 Traffic Management Proposals



1.4.2. PROPOSED TRAFFIC MANAGEMENT

1.4.2.1. Where on-carriageway construction works are required on the A2030 Eastern Road, these will be facilitated by single lane closures. Details of how these lane closures will operate is included in paragraphs 2.5.2.5. and 2.5.2.6, and Plate 3 of the FTMS (Examination Library Reference: REP1-068).

1.4.2.2. Specifically, in relation to A2030 Eastern Road past Milton Common, the FTMS (REP1-068) includes three separate Traffic Management options to reflect the three different options for the Onshore Cable Route within the Order Limits. These are as follows:

- **Option 1 – Both circuits within Milton Common**: a lane closure will be required for each circuit but only for 300 m south of the A2030 Eastern Road / Tangier Road traffic signal junction.
- **Option 2 – One circuit within Milton Common**: Construction will be facilitated through single lane closure of the southbound carriageway, with the single southbound lane being re-provided through a contraflow lane realignment on the northbound side of the carriageway (temporarily removing one northbound lane), or the existing central hatching operating in the southbound direction.
- **Option 3 – Both circuits within A2030 Eastern Road**: As per Option 2 for one circuit, with the second circuit requiring a single lane closure on the northbound carriageway at a separate time.

1.4.2.3. It should be noted that under Option 2 or 3, the capacity of the southbound carriageway of the A2030 Eastern Road between Tangier Road and Eastern Avenue will remain similar to the existing situation. This is due to the Traffic Management required to facilitate construction either relocating the existing lane merge or re-providing the southbound lane as part of a contra-flow arrangement.

1.4.3. TOTAL DURATION AND PROGRAMME OF WORKS

1.4.3.1. The duration and programme of the works is provided in the FTMS with details for the A2030 Eastern Road on Portsea Island specifically being included in Table 24 and Table 25 of the FTMS. Table 24 and Table 25 of the FTMS, as shown in **Figure 2,** also include calendar restrictions which dictate which periods of the year works can be undertaken on A2030 Eastern Road, and programme restraints which prevent works being undertaken at the same time at sections in proximity to one another such as the reference to Sub-section 8.2 under "*Other Restrictions*" in Table 24. As is detailed in the FTMS, both the calendar and programme restrictions set out act to mitigate the impacts of the proposed works on A2030 Eastern Road.

1.4.3.2. Specifically in relation to this Technical Note, the programme restriction for the Eastern Road allow for construction to take place during the following periods only:

- Easter School holidays;
- May half-term for Section 8.1 and last two-week of May for Section 8.2; and
- June, July and August.

1.4.3.3. The restrictions prevent the works from being undertaken during the football season, other than any Portsmouth FC matches that may be held during Easter school holidays or August.

1.4.3.4. As with all construction works, the duration is a temporary and the works will not be a permanent feature on the A2030 Eastern Road.

Figure 2 – Tables 24 and 25 of the FTMS

Table 24 – Sub-Section 8.1 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit
8.1	A2030 Eastern Road between Airport Service Road and Tangier Road	1200	Lane Closures	5 Weeks (24hr, 7-Day construction) 8 Weeks (10hr, 7-Day construction)

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: Easter Holidays (2 weeks), May Half-Term (1-week), June , July and August (approximately 13 weeks, with avoidance of the Victorious Festival Weekend).
Approximate availability: 16 weeks.

Other Restrictions

Traffic management to be removed on Portsmouth FC home match days

Sections	Total Availability per Calendar Year
Sub-Section 8.2 – 2-11 weeks	8-14 weeks *(depending upon option used for Sub-Section 8.2)*

Table 25 - Sub-Section 8.2 Programme Availability

Section	Description	Length (m)	Proposed TM	Duration Per Circuit
8.2 Option 1	Both Circuits within Milton Common	Up to 300m in carriageway	Lane Closure	1-2 week (24hr, 7-day working) – 2 weeks (10hr, 7-day working)
8.2 Option 2	One Circuit within Milton Common	1300m		8 weeks (10hr, 7-day working)
8.2 Option 3	Both Circuits within the A2030 Eastern Road			11 weeks (10hr, Mon-Fri plus 5hr on Saturdays)

Calendar Restrictions

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Notes on Calendar Restrictions:
Work Permitted Only During: Easter Holidays (2 weeks), May Half-Term (1-week), June July and August (approximately 13 weeks, with avoidance of the Victorious Festival Weekend).
Approximate availability: 17 weeks.

Other Restrictions

Traffic management to be removed on Portsmouth FC home match days

Sections	Total Availability per Calendar Year
Sub-Section 8.1 – 5-8 weeks *(depending upon working hours used)*	9-12 weeks *(depending upon working hours used for Sub-Section 8.1)*

1.5. APPLICANT'S PREVIOUS RESPONSE

1.5.1.1. The Applicant has previously addressed the issue of traffic flow on match days. A summary of this is as follows:

- From the Applicant's Response to Written Questions ExQ1, reference REP1-091:
  - The Applicant's Response to Question TT1.16.18 stated that it was the intention of the Applicant to complete traffic surveys of the A2030 Eastern Road during home matches; however, the Covid 19 pandemic made this exercise unrepresentative of normal conditions. The response to TT1.16.18 further stated that the traffic conditions associated with football matches would be similar to weekday peak traffic conditions, which are already assessed in the Transport Assessment (TA) (APP-448). Finally, the FTMS applies programme constraints that limit construction as far as practically possible to periods outside of the football season (though 2-3 football matches would occur during construction of each circuit based upon the programme restrictions contained within the FTMS).
- At the Issue Specific Hearing 2 – Traffic, Highways and Air Quality – dated 14 December 2020, Item 3(a) of the Agenda (EV-012a) included a request with reference to the Applicant's response to ExQ1 TT1.16.18. The request was for the Applicant to set out the "*assumptions and limitations made in respect of traffic generated from Fratton Park on football match days, and the predicted effects on the highways*". To summarise the Applicant's response, the Applicant stated that:
  - The response to TT1.16.18 was based upon a review of traffic flow information obtained from the Highways England Webtris database (https://webtris.highwaysengland.co.uk/) for the weeks containing the 07 December 2019, 11 January 2020 and 01 February 2020 when Portsmouth FC played home league games with attendances of approximately 18,000, which was consistent with average attendances across the 2019 / 2020 season.
  - The response also included traffic flows on the A27 off-slips on the Tuesday, Wednesday and Thursday preceding each football match between the hours of 07:00-10:00 and each Saturday match day between 12:00-15:00. The comparison of this data shows that weekday peak hour traffic flows are either higher or very similar to Saturday pre-match flows on all the assessed dates, which corroborates the Applicant's assumption that traffic conditions on a Portsmouth FC match-day are similar to those in weekday peak periods.
  - The Applicant accepts that there were two potential limitations with their assumptions and researched the availability of third-party traffic data. One potential limitation within these assumptions is that the data is for the A27 off-slips rather than the A2030 Eastern Road itself. However, local knowledge suggests that the majority of traffic turns onto the A2030 Eastern Road from the A27 off-slips; and that prior to a football match, non-football related traffic routes away from the A2030 Eastern Road where possible to avoid traffic congestion on this route. It is therefore a reasonable assumption that the majority of traffic recorded on the A27 off-slips between 12:00-15:00 on a match day is also headed towards the A2030 Eastern Road.

- Another potential limitation is that it has not been possible, due to Covid 19, to confirm the assumptions used in the modelling in relation to the post-match traffic flows leaving Portsea Island on the A2030 Eastern Road or A27 on-slips. However, the available data shows that northbound flows on A2030 Eastern Road are similar to weekday PM peak hour flows and, therefore, the Applicant is satisfied that no additional mitigation measures (such as the removal of traffic management on match days) would be required.
- The Applicant also re-iterated that the FTMS (REP1-068) limits construction on the A2030 Eastern Road on Portsea Island as far as practically possible to periods outside of the football season.

1.6. TRAFFIC DATA

1.6.1.1. Further to the responses summarised above the Applicant has since obtained traffic flow data to complete further analysis of traffic volumes on A2030 Eastern Road on football match days.

1.6.1.2. This traffic data have been provided by Advanced Transport Research in the form of automatic traffic counter (ATC) data from 21.02.2020 – 16.03.2020, at this location:

- Site 23771-266: A2030 Eastern Road, just south of the A27 roundabout (northbound and southbound).

1.6.1.3. This location is shown in **Figure 4** below.

Figure 3 – Location of Automatic Traffic Counter (ATC) Site 23771-266

Source: Advanced Transport Research

1.6.1.4. The ATC data will be used to compare volumes before and after football matches at Portsmouth FC, with volumes on the non-football weekdays, as described in Chapter 2 and 3.

1.6.1.5. During the above time period, the dates on which Portsmouth FC played at Fratton Park are summarised in **Table 1**, below, with the attendance figures shown for each match.

Table 1: Portsmouth FC Home Matches and Attendance

Competition	Dates and Times	Attendance
League One 2019/2020	Tuesday 25/2/20 at 19:45	16,500
	Friday 28/02/2020 at 19:45	17,600
	Tuesday 10/03/2020 at 19:45	16,775
FA Cup 2019/2020	Monday 2/3/20 at 19:45.	18,839

2. HIGH-ATTENDANCE MATCH

2.1. INTRODUCTION

2.1.1.1. This chapter assesses traffic volumes before and after a high-attendance match at Portsmouth FC, to include:

- Comparisons of football traffic with non-football day peak traffic;
- Comparisons with the SRTM flows;
- Assessment of the proportions of slow-moving traffic as this may under-estimate actual traffic demand.

2.2. PORTSMOUTH FC MATCH ATTENDANCE

2.2.1.1. Portsmouth FC had a home match, in the FA Cup Competition, on **Monday 2 March 2020** at 19:45. Attendance was 18,839 people.

2.2.1.2. While the stadium can hold around 20,000 people, the 2 March 2020 game was above average attendance for the last 4 years. The average attendances at League One and League Two matches over the past four years at Portsmouth FC are as follows:

Table 2: Portsmouth FC Average Attendances

Season	Competition	Average
19/20	League One	17,804
18/19	League One	18,223
17/18	League One	17,917
16/17	League Two	16,823

2.3. ATC TRAFFIC FLOW COMPARISONS

2.3.1.1. To assess the impact of football traffic on overall traffic volumes, the following volumes are assessed:

- **Football day:** Pre-match traffic, 2 March 2020: the busiest hour between 16:00 and 20:00;
- **Football day:** Post-match traffic, 2 March 2020: the busiest hour after 21:45;
- **Non-football days:** the busiest hour between 16:00 and 20:00; 3-day averages of Tuesday 3 March to Thursday 5 March 2020;
- Comparisons have then been made between the football day (2 March) and the 3-day non-football averages, to determine if football traffic at an evening match with an above-

average attendance differs significantly from normal weekday PM peak traffic.

2.3.1.2. Further to the above, the hourly totals and busiest hours have been determined, as shown in Appendix A.

2.3.1.3. The comparisons of football traffic with non-football traffic are also in Appendix A. Extracts from the Appendix are given in **Figure 5** below. These show the comparisons of southbound flows during the pre-match periods and northbound flows during the post-match periods, as these are the critical directions in each time period; however, the full dataset is included in Appendix A.

Figure 4 – Comparisons of Football Traffic with Non-football Traffic: High-Attendance Match

3-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	1,924	2,160

3-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	1,938	1,640

2.3.1.4. The volume comparisons above show that the southbound non-football day traffic volumes were higher than the southbound ‘football traffic’ in all time period comparisons at the ATC, at which traffic is heading away from the junction of the A2030 Eastern Road with the A27.

2.3.1.5. The ATC would include traffic travelling to a football match in the 16:00 to 20:00 comparison, which compared traffic on a football day against the normal PM peak hour of a non-football day.

2.3.1.6. These results therefore suggest that the football matches do not generate such significant traffic volumes that conditions are worse than normal weekday peaks, at this location. It is however necessary to consider traffic in the opposite direction at this site also.

2.3.1.7. The northbound football day traffic volumes were higher than the northbound ‘non-football traffic’ at the ATC in all time period comparisons. At this location, traffic is heading toward the junction of the A2030 Eastern Road with the A27.

2.3.1.8. The ATC would include traffic departing a football match in the post-21:45 comparison, which compared traffic on a football day after 21:45 against the normal PM peak (busiest hour between 16:00 to 20:00) hour of a non-football day. In this comparison, the football traffic was 298 vehicles per hour higher.

2.4. COMPARISON WITH SRTM

2.4.1.1. The flows used within the SRTM are shown in the October 2020 Eastern Road Further Traffic Assessments Technical Note (“*the Eastern Road Note*”) which is Appendix E of the STA (“REP1-142).

2.4.1.2. Table 13 of the Eastern Road Note includes PM peak hour SRTM flows in various scenarios at locations south of the A2030/A27 junction. The purpose of this exercise is to assess the similarity between recorded ATC flows and modelled SRTM flows for the Do-minimum scenario (DM).

2.4.1.3. A comparison of the DM scenario PM peak hour SRTM flows with the ATC flows is given below for A2030 Eastern Road between A27 and Anchorage Road. The non-match day ATC volumes are three-day averages.

Table 3: Comparisons ATC to SRTM, PM Peak

	SRTM Do-min, weekday peak hours (non-football)	ATC, non-match day; busiest hour between 16:00 and 20:00	ATC, match day, busiest hour between 16:00 and 20:00	Increase SRTM over non-match ATC		Increase SRTM over match day ATC	
				Vol	%	Vol	%
Northbound (vehicles per hour)	2,230 vph	1,640 vph	1,739 vph	590 vph	36%	491 vph	28.2%
Southbound (vehicles per hour)	2,172 vph	2,160 vph	1,924 vph	12 vph	0.55%	248 vph	12.9%

2.4.1.1. The above comparison is for the busiest hour between 16:00 and 20:00, to give a like-with-like comparison to the SRTM. However, for completeness, a comparison of the post-match traffic flows (ATC, match day and non-match day) with the weekday peak hours (SRTM, Do-minimum) is given below also. Non-match day ATC volumes are three-day averages.

Table 4: Comparisons ATC to SRTM, Post-21:45

	SRTM Do-min, weekday peak hours (non-football)	ATC, non-match day; post-21:45	ATC, match day; post-21:45	Increase SRTM over non-match ATC		Increase SRTM over match day ATC	
				Vol	%	Vol	%
Northbound (vehicles per hour)	2,230 vph	418	1,938 vph	1,812	433%	292	15%
Southbound (vehicles per hour)	2,172 vph	338	342 vph	1,834	543%	1,830	535%

2.4.1.2. In the northbound direction the post-match traffic flows are comparable to the weekday peak hours assessed in the SRTM. However, this is despite the post-match peak traffic flows being recorded between after 21:45 when background traffic flows on the Eastern Road on non-match days are significantly lower than other times of the day. This suggests that the spare road capacity is used by departing football traffic.

2.4.1.3. In the PM peak non-match day comparison, the SRTM flows are almost identical to the ATC southbound flows. In the PM peak match-day comparison, the SRTM flows are 12.9% higher southbound.

2.4.1.4. In the post 21:45 non-match day comparison, the SRTM flows are 433% higher than the ATC for the northbound movements. In the post 21:45 match-day comparison, the SRTM flows are 15% higher northbound.

2.4.1.5. To understand the differences between the SRTM and ATC flows further, an assessment of the recorded traffic speeds on the A2030 Eastern Road has also been completed in the next sub-section.

2.5. RECORDED TRAFFIC SPEEDS

2.5.1.1. To ensure a robust assessment has been undertaken of traffic volumes of football match days consideration has also been given to on-site observations during the period of the ATC and the impact which this may have on recorded traffic volumes.

2.5.1.2. Those that were recorded are as follows (including any roadworks):

- A2030 Eastern Road northbound:
  - 25.02.2020 - Slow moving traffic noted going over the A2030 bridge;
  - 02.03.2020 - Slow moving traffic noted going over the A2030 bridge; and
  - Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days.
  - Roadworks checked online from roadworks.org: A2030 Eastern Road (North of site location) – lane closure between 22nd February until 23rd February 2020.
- A2030 Eastern Road southbound:
  - 25.02.2020 - Slow moving traffic noted going over the A2030 bridge;
  - 02.03.2020 - Slow moving traffic noted going over the A2030 bridge; and
  - Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.
  - Roadworks checked online from roadworks.org: A2030 Eastern Road (North of site location) – lane closure between 22nd February until 23rd February 2020.

2.5.1.3. These observations are all related to slow-moving traffic; this could potentially under-estimate actual traffic demand as queuing traffic may have built up which would otherwise have crossed the counter tubes and increased the recorded flow during the time periods. Additionally, ATC data can sometimes be inaccurate in congested conditions due to the counters not recording some traffic at all, for example when vehicles stop on the counter tubes.

2.5.1.4. In order to determine if the actual traffic demand may be higher than the recorded traffic flows, the following additional analysis has been undertaken:

- Determination of the proportions of slow-moving traffic from the ATC data; and
- Consideration of these slow traffic proportions in conjunction with the above comparison of ATC flows with SRTM flows.

2.5.2. PROPORTIONS OF SLOW-MOVING TRAFFIC; AND 85TH PERCENTILE SPEEDS

2.5.2.1. The ATC data categorises the traffic volumes according to speed, grouping each count into 5-mph or 10-mph speed groupings, as follows:

- 0 to 10 mph;
- 10 to 15 mph;
- 15 to 20 mph;
- 20 to 25 mph;
- 25 to 30 mph;
- 30 to 35 mph;
- 35 to 40 mph;
- 40 to 45 mph;
- 45 to 50 mph;
- 50 to 60 mph;
- 60 to 70 mph;
- 70 to 80 mph;
- 80 to 90 mph;
- 90 to 100 mph.

2.5.2.2. The ATC also provides a record of average and 85th percentile traffic speeds across all recorded areas. The use of this data in combination with data on the proportions of slow-moving traffic therefore provides a better understanding of traffic conditions on a link.

2.5.2.3. The speed limit at the ATC site is 40 mph. The proportion of 'slow-moving' traffic is determined as the traffic moving under 15 mph as a proportion of each traffic count.

2.5.2.4. There is no accepted definition of a threshold speed under which traffic is deemed to be affected by queuing; however, using professional judgement, it is considered that 15 mph may indicate vehicles moving from a stopping position or slowing down to a stop, due to queuing.

2.5.2.5. The ATC data with the proportions of slow-moving traffic added (just for the time periods of the comparative assessments above) are enclosed in Appendix B.

2.5.2.6. In summary, the percentages of slow-moving traffic (under 15 mph) during the assessed time periods are shown below.

Table 5: Traffic under 15 mph

Site	Slow-moving traffic (under 15mph)			
	Monday 02 March 2020 (football day)		Averages over 3 to 5 March 2020 (non-football days)	
	Time periods when > 10%	Percentage variation excl. instances 10% or under	Time periods when > 10%	Percentage variation excl. instances 10% or under
A2030 Eastern Road Northbound	16:00 to 18:00	20% to 52.7%	16:00 to 18:00	23.7% to 74.9%
	22:00 to 22:45	20% to 51%		
A2030 Eastern Road Southbound	16:30 to 19:15	40.1% to 92.4%	None	None

Table 6: 85th Percentile Traffic Speeds

Site	85th Percentile Traffic Speeds – (15 minute increments within each hour)			
	Monday 02 March 2020 (football day)		Averages over 3 to 5 March 2020 (non-football days)	
	Busiest hour from 16:00 to 20:00	Busiest hour Post 21:45	Busiest hour from 16:00 to 20:00	Busiest hour Post 21:45
A2030 Eastern Road Northbound	16:00 to 17:00 - 21.9 to 23.9 mph	21:45 to 22:45 - 19 to 36.1 mph	17:15 to 18:15 - 18.9 to 40.4 mph	21:45 to 22:45 - 47.4 to 50.3 mph
A2030 Eastern Road Southbound	16:00 to 17:00 - 15.9 to 43.8 mph	21:45 to 22:45 - 47.3 to 51.6 mph	16:45 to 17:45 - 39.5 to 42.7 mph	21:45 to 22:45 – 48.3 to 49.2 mph

2.5.2.7. As noted in the previous sub-section, the PM peak SRTM flows are almost identical to the ATC southbound flows on non-football days.

2.5.2.8. Considering the football day traffic, while pre-match southbound traffic flows were comparable or less than those used in the SRTM assessments of weekday traffic peaks (as shown in Table 3), the ATC recorded a much higher proportion of slow-moving traffic than non-match days (40.1 – 92.4% compared with 0%, as shown in Table 5). This means that it is likely the ATC under reported traffic flows during this period in the southbound direction.

2.5.2.9. The 85th percentile speeds for the PM peak on match days show a range of speeds in each direction suggesting some congestion, with lower speeds recorded in comparison with non-match days.

2.5.2.10. The 85th percentile speeds on non-match days show that speeds were only constrained in the PM peak northbound, which corroborates the records of traffic under 15 mph in Table 5.

2.5.2.11. On the basis of this assessment, the following conclusions can be drawn:

- Actual traffic flows may have been higher than those recorded by the ATC and those used in the SRTM assessment of weekday peaks.
- The A2030 Eastern Road experiences significant congestion in the southbound direction prior to a football match and in the northbound direction after a football match; and
- While the ATC comparisons of football day traffic with non-football traffic show that the effect of a football match is not significant, this may be under-estimated.

2.5.2.12. Taking all the above additional information into account, a robust assumption for assessment purposes is that the addition of post-match football related traffic at other times of the day, such as Saturday at 17:00, is likely to lead to higher traffic flows on A2030 Eastern Road than assessed within the SRTM.

2.5.3. NON-MATCH SATURDAY TRAFFIC

2.5.3.1. For comparison purposes, an assessment of traffic on a non-match Saturday – 7 March 2020 – has been undertaken as well. The raw data is enclosed in Appendix A, while the results are summarised in Table 7 below.

2.5.3.2. The time periods shown in Table 7 would also be applicable to assessing traffic on a football Saturday, i.e. 12:00 to 15:00 for southbound traffic to the football match; and 16:00 to 19:00 for departing northbound traffic. Accordingly, it can be noted that the addition of football traffic volumes on these Saturday traffic flows would likely lead to higher traffic flows than assessed within the SRTM for the weekday peaks.

Table 7: Saturday 7 March Traffic Volumes– Non-match Day

Time Period	Direction	Volume
Busiest hour between 12:00 and 15:00	Southbound	1,735
Busiest hour between 16:00 and 19:00	Northbound	1,307

3. TYPICAL-ATTENDANCE MATCH

3.1. INTRODUCTION

3.1.1.1. This chapter repeats the assessment methodology in Chapter 2, but assesses traffic volumes before and after a typical-attendance match at Portsmouth FC, rather than the high-attendance match in Chapter 2. It includes:

- Comparisons of football traffic with non-football day peak traffic;
- Comparisons with the SRTM flows;
- Assessment of the proportions of slow-moving traffic as this may under-estimate actual traffic demand.

3.2. PORTSMOUTH FC MATCH ATTENDANCE

3.2.1.1. Portsmouth FC had a home match, in the League One 2019/2020 Competition, on **Tuesday 25 February 2020** at 19:45. Attendance was 16,500 people.

3.3. ATC TRAFFIC FLOW COMPARISONS

3.3.1.1. To assess the impact of football traffic on overall traffic volumes, the following volumes are assessed:

- **Football day:** Pre-match traffic, Tuesday 25 February 2020: the busiest hour between 16:00 and 20:00;
- **Football day:** Post-match traffic, Tuesday 25 February 2020: the busiest hour after 21:45;
- **Non-football days:** the busiest hour between 16:00 and 20:00; 2-day averages of Wednesday 26 February to Thursday 27 February 2020;
- Comparisons are then made between the football day (25 February) and the 2-day non-football averages, to determine if football traffic at an evening match with a typical attendance differs significantly from normal weekday PM peak traffic.

3.3.1.2. Further to the above, the hourly totals and busiest hours have been determined, as shown in Appendix C.

3.3.1.3. The comparisons of football traffic with non-football traffic are also in Appendix C. Extracts from the Appendix are given in **Figure 6** below.

Figure 5 – Comparisons of Football Traffic with Non-football Traffic: Typical-Attendance Match

2-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	2,185	2,084

2-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	1,589	1,778

3.3.1.4. At the ATC southbound, at which traffic is heading towards the football, the volume comparisons in Appendix C show that the football day traffic volumes were higher than the non-football day traffic in the busiest hour between 16:00 and 20:00. In this comparison, the football traffic volumes were higher by 101 vehicles per hour.

3.3.1.5. As such, a typical attendance football match appears to have a slight effect on traffic volume, though this variation might be within normal day-to-day variations.

3.3.1.6. The football day traffic volumes were lower than the 'non-football traffic' at the ATC northbound in the post-match time period comparison.

3.3.1.7. The ATC northbound would include traffic departing a football match in the post-21:45 comparison, which compared traffic on a football day after 21:45 against the normal PM peak hour of a non-football day. In this comparison, the normal PM peak hour of a non-football day had a traffic volume of 189 vehicles per hour higher.

3.4. COMPARISON WITH SRTM

3.4.1.1. As with Section 2 traffic flows used within the SRTM have been taken from Table 13 of the Eastern Road Technical Note (Appendix E of the STA (REP1-142)). The purpose of this exercise is to assess the similarity between recorded ATC flows and modelled SRTM flows for the Do-minimum scenario (DM).

3.4.1.2. A comparison of the DM scenario PM peak hour SRTM flows with the ATC flows is given below for A2030 Eastern Road between A27 and Anchorage Road. The non-match day ATC volumes are two-day averages.

Table 8: Comparisons ATC to SRTM, PM Peak

	SRTM Do-min, weekday peak hours (non-football)	ATC, non-match day; busiest hour between 16:00 and 20:00	ATC, match day, busiest hour between 16:00 and 20:00	Increase SRTM over non-match ATC		Increase SRTM over match day ATC	
				Vol	%	Vol	%
Northbound (vehicles per hour)	2,230 vph	1,778 vph	1,681 vph	452 vph	25.4%	549 vph	32.7%
Southbound (vehicles per hour)	2,172 vph	2,084 vph	2,185 vph	88 vph	4.2%	-13 vph	-0.6%

3.4.1.3. The above comparison is for the busiest hour between 16:00 and 20:00, to give a like-with-like comparison to the SRTM. However, for completeness, a comparison of the post-match traffic flows (ATC, match day and non-match day) with the weekday peak hours (SRTM, Do-minimum) is given below also. Non-match day ATC volumes are two-day averages.

Table 9: Comparisons ATC to SRTM, Post-21:45

	SRTM Do-min, weekday peak hours (non-football)	ATC, non-match day; post-21:45	ATC, match day; post-21:45	Increase SRTM over non-match ATC		Increase SRTM over match day ATC	
				Vol	%	Vol	%
Northbound (vehicles per hour)	2,230 vph	473 vph	1,589 vph	1,757	371%	641 vph	40.3%
Southbound (vehicles per hour)	2,172 vph	422 vph	363 vph	1,750	415%	1,809 vph	498%

3.4.1.4. In the PM peak match day comparison, the SRTM flows are 32.7% higher for the northbound movements only compared to the ATC flows, though the northbound movement is not critical for the PM peak for this report.

3.4.1.1. In the post-21:45 match day comparison, the SRTM flows are 40.3% higher for the northbound movement compared to the ATC flows.

3.4.1.2. In the PM peak non-match day comparison, the SRTM flows are 25.4% higher for the northbound movements only compared to the ATC flows, though the northbound movement is not critical for the PM peak for this report.

3.4.1.3. In the post-21:45 non-match day comparison, the SRTM flows are considerably higher for both movements compared to the ATC flows, suggesting under-reporting of flows by the ATC on non-match days at this time.

3.4.1.4. To understand the differences between the SRTM and ATC flows further, we also consider the effect of slow-moving traffic in the next sub-section.

3.5. RECORDED TRAFFIC SPEEDS

3.5.1.1. As noted in Chapter 2, there were a few observations noted by the survey company that related to slow-moving traffic.

3.5.1.2. Using the same methodology as Section 2 the ATC data with the proportions of slow-moving traffic are summarised below and enclosed in Appendix D.

Table 10: Traffic under 15 mph

Site	Slow-moving traffic (under 15mph)			
	Tuesday 25 February 2020 (football day)		Averages over 26 to 27 February 2020 (non-football days)	
	Time periods when > 10%	Percentage variation excludes instances 10% or under	Time periods when > 10%	Percentage variation excludes instances 10% or under
266 Northbound	16:00 to 18:00	21% to 70.9%	16:00 to 18:00	10.5% to 72.9%
	22:00 to 22:45	24% to 48.1%		
266 Southbound	17:00 to 19:15	12.9% to 81.5%	None	None

3.5.1.3. Considering the football day traffic, while pre-match southbound traffic flows were comparable to those used in the SRTM assessments of weekday traffic peaks, the traffic surveys recorded a much higher proportion of slow-moving traffic than non-match days. This means that it is likely the ATC under reported traffic flows during this period in the southbound direction. Therefore, actual traffic flows may have been higher than those used in the SRTM assessment of weekday peaks.

3.5.1.4. This also suggests that, while the ATC comparisons of football day traffic with non-football traffic show that the effect of a football match is not significant, this may be under-estimated.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1.1.1. In view of the above data assessments, it is considered that the following approach is appropriate to address the potential effects of traffic congestion on the A2030 Eastern Road related to Portsmouth FC football matches and traffic management used to facilitate construction of the Onshore Cable Route:

- In the first instance traffic management on the A2030 Eastern Road will be removed on football match days to mitigate potential impacts.
- This mitigation would be achieved through the careful scheduling of works changeovers between each 100m construction section, which under the proposed 24-hour construction working hours would occur every three days.
- This will also allow the traffic management to be removed prior to a football match and reinstalled on the same day, therefore minimising delay to the construction progress.
- However, as the assessment work undertaken so far was based on evening traffic flows for weekday matches, and noting the limitations for undertaking football match day surveys at the current time due to Covid-19 restrictions, the Applicant also proposes the undertaking of further representative surveys to confirm the position when possible to do so, post grant of the DCO.
- These surveys will be reviewed by and agreed with Portsmouth City Council and Hampshire County Council. If these assessments identify that the traffic flows are comparable to those for weekday peak hours the need to remove traffic management on football match days would not be required. This is because the implementation of TM in the weekday peak hours is considered acceptable against the evidence base that has been used to assess the implications of the delivery of the Proposed Development. This approach will assist with the efficient delivery of the works in this location.

4.1.1.2. This approach has included within the FTMS for the A2030 Eastern Road on Portsea Island (Sections 8.1 and 8.2) which has been updated and submitted and Deadline 6.

Appendix A – Traffic Volumes and Comparisons, High Attendance Match

ATR Data, Site: A2030 Eastern Road, just south of the A27 roundabout (northbound)

Monday 02/03/2020 (football day)

Report Date	Time Period Ending	Total Volume
02/03/2020	Busiest hour between 16:00 and 20:00	1739
02/03/2020	Busiest hour after 21:45	1938

Tuesday 03/03/2020

Report Date	**Time Period Ending**	**Total Volume**
03/03/20	Busiest hour between 16:00 and 20:00	1686

Wednesday 04/03/2020

Report Date	**Time Period Ending**	**Total Volume**
04/03/2020	Busiest hour between 16:00 and 20:00	1644

<u>Thursday 05/03/2020</u>

Report Date	Time Period Ending	Total Volume
05/03/2020	Busiest hour between 16:00 and 20:00	1589

<u>3-weekday (non-football) averages</u>

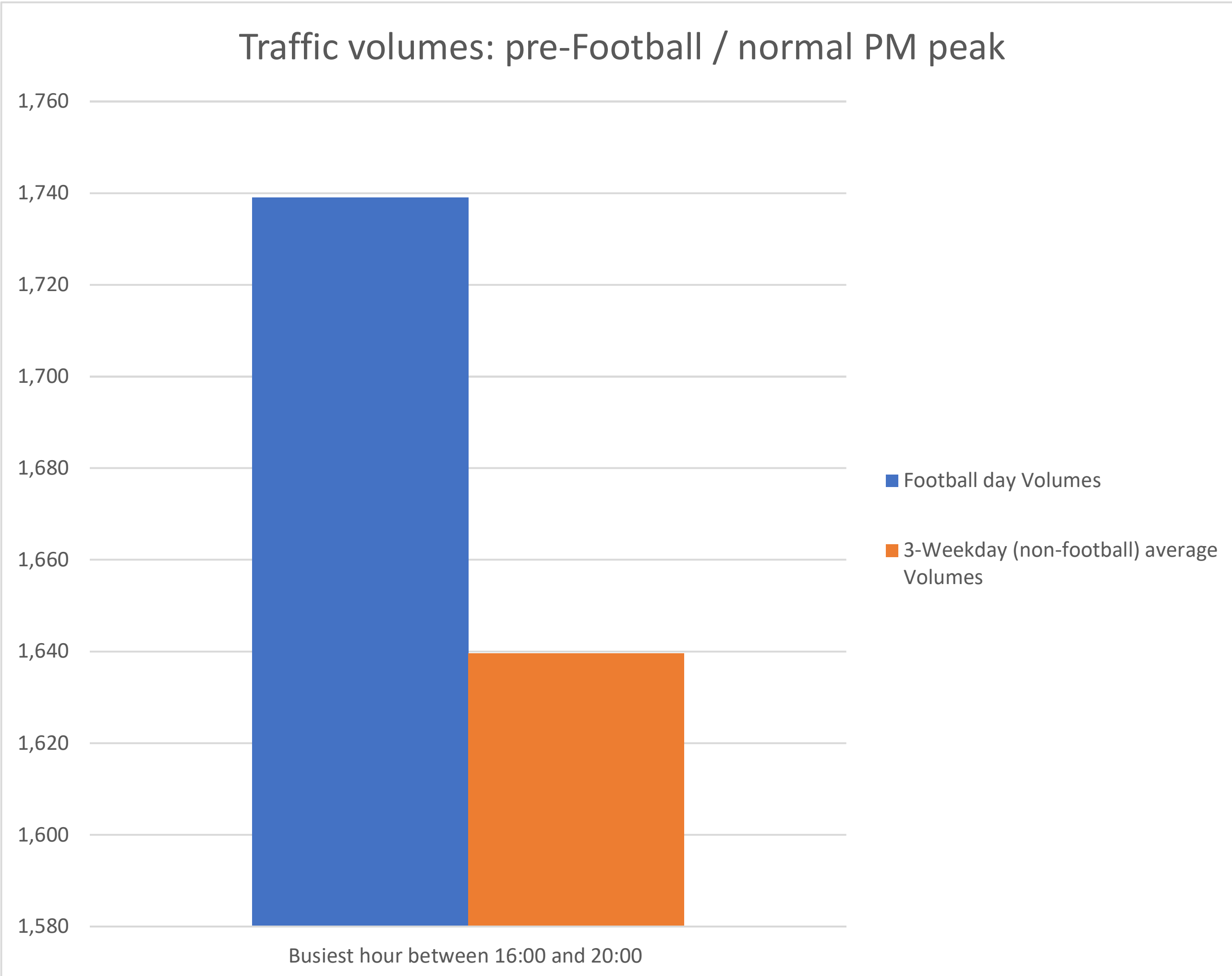
Time Period Ending	3-weekday average Volume
Busiest hour between 16:00 and 20:00	1,640

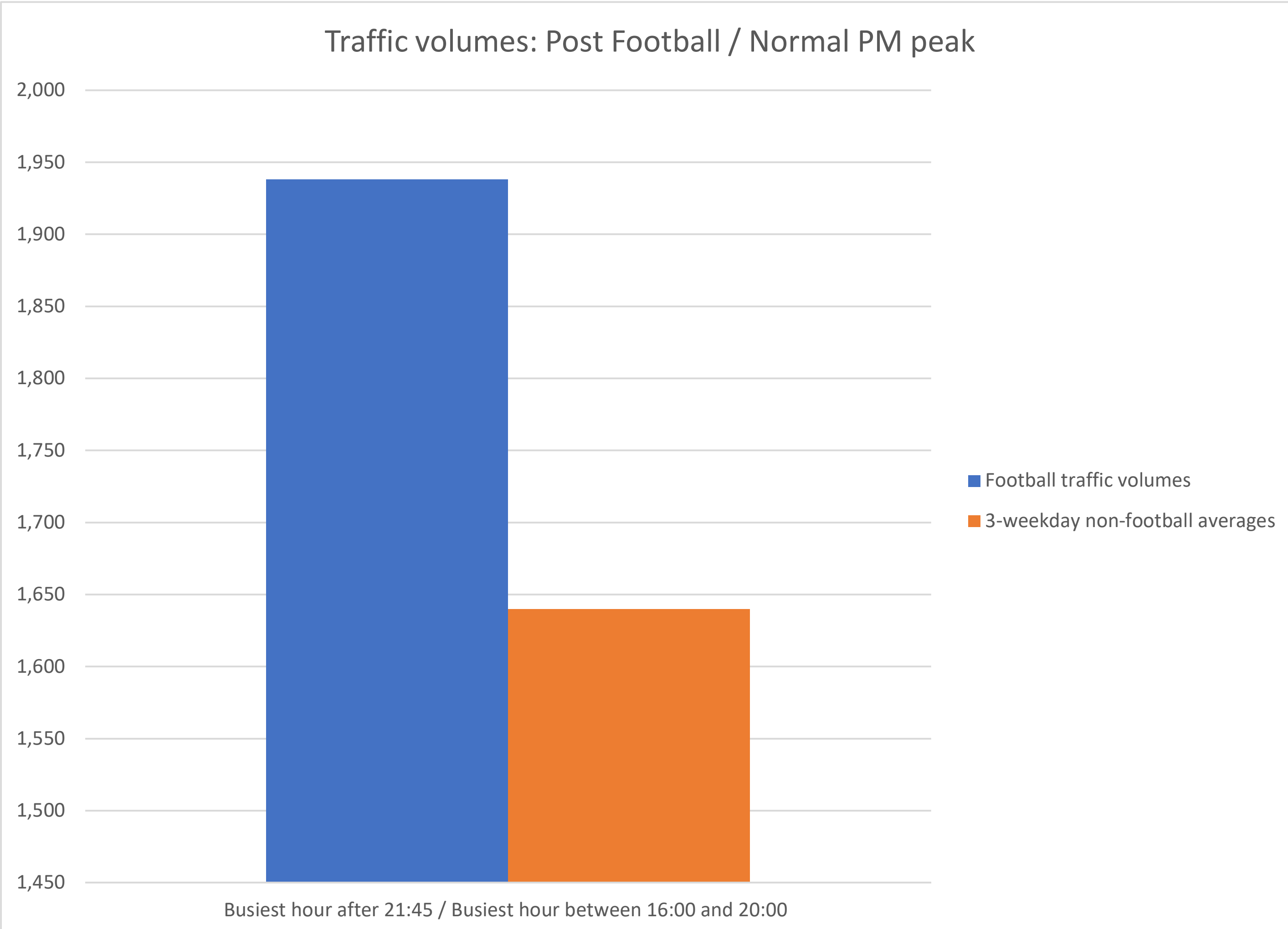
Comparisons: 3-Weekday (non-football day) averages minus Football day		
A: Football day times	**B: Non-football day times**	**Volume Difference: B minus A**
Busiest hour between 16:00 and 20:00	Busiest hour between 16:00 and 20:00	-99

Comparisons: 3-Weekday (non-football day) averages minus Football day		
A: Football day times	**B: Non-football day times**	**Volume Difference: B minus A**
Busiest hour after 21:45	Busiest hour between 16:00 and 20:00	-298

3-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	1,739	1,640

3-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	1,938	1,640


Traffic volumes: pre-Football / normal PM peak
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
Busiest hour between 16:00 and 20:00
Football day Volumes
3-Weekday (non-football) average Volumes


Traffic volumes: Post Football / Normal PM peak
2,000
1,950
1,900
1,850
1,800
1,750
1,700
1,650
1,600
1,550
1,500
1,450
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00
Football traffic volumes
3-weekday non-football averages

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES

INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

	Monday 02 March 2020 (football)			Tuesday 03 March 2020		
Start Time	**Total**	**Rolling Hourly totals**	**To determine busiest hour**	**Total**	**Rolling Hourly totals**	**To determine busiest hour**
1600	440			421		
1615	416			401		
1630	456			397		
1645	427	**1739**	**0**	392	1611	0
1700	405	1704	35	382	1572	39
1715	424	1712	27	416	1587	24
1730	418	1674	65	418	1608	3
1745	374	1621	118	430	1646	-35
1800	365	1581	158	422	**1686**	**-75**
1815	291	1448	291	340	1610	1
1830	256	1286	453	323	1515	96
1845	226	1138	601	266	1351	260
1900	240	1013	726	266	1195	416
1915	180	902	837	203	1058	553
1930	196	842	897	185	920	691
1945	132	748	991	194	848	763
			To determine busiest hour			**To determine busiest hour**
2145	500			143		
2200	525			118		
2215	515			102		
2230	398	**1938**	**0**	43	**406**	**0**
2245	134	1572	366	51	314	92
2300	98	1145	793	51	247	159
2315	76	706	1232	27	172	234
2330	31	339	1599	37	166	240
2345	37	242	1696	35	150	256

Wednesday 04 March 2020			Thursday 05 March 2020		
Total	Rolling Hourly totals	To determine busiest hour	Total	Rolling Hourly totals	To determine busiest hour
334			415		
386			340		
323			406		
399	1442	0	398	1559	0
401	1509	-67	367	1511	48
424	1547	-105	418	**1589**	**-30**
396	1620	-178	389	1572	-13
423	**1644**	**-202**	340	1514	45
385	1628	-186	382	1529	30
323	1527	-85	304	1415	144
316	1447	-5	266	1292	267
280	1304	138	263	1215	344
255	1174	268	266	1099	460
249	1100	342	223	1018	541
187	971	471	204	956	603
178	869	573	171	864	695
		To determine busiest hour			To determine busiest hour
129			104		
134			130		
120			100		
55	**438**	**0**	77	**411**	**0**
42	351	87	49	356	55
58	275	163	62	288	123
29	184	254	45	233	178
30	159	279	47	203	208
21	138	300	26	180	231

3-day (non-football) averages

Total	Rolling Hourly totals	To determine busiest hour
390		
376		
375		
396	1,537	0
383	1,531	7
419	1,574	-37
401	1,600	-63
398	1,601	-64
396	**1,614**	**-77**
322	1,517	20
302	1,418	119
270	1,290	247
262	1,156	381
225	1,059	479
192	949	588
181	860	677
		To determine busiest hour
125		
127		
107		
58	**418**	**0**
47	340	78
57	270	148
34	196	222
38	176	242
27	156	262

ATR Data, Site: A2030 Eastern Road, just south of the A27 roundabout (southbound)

Monday 02/03/2020 (football day)

Report Date	Time Period Ending	Total Volume
02/03/2020	Busiest hour between 16:00 and 20:00	1924
02/03/2020	Busiest hour after 21:45	342

Tuesday 03/03/2020			**Wednesday 04/03/2020**		
Report Date	**Time Period Ending**	**Total Volume**	**Report Date**	**Time Period Ending**	**Total Volume**
03/03/20	Busiest hour between 16:00 and 20:00	2067	04/03/2020	Busiest hour between 16:00 and 20:00	2153

Thursday 05/03/2020

Report Date	Time Period Ending	Total Volume
05/03/2020	Busiest hour between 16:00 and 20:00	2259

3-weekday (non-football) averages

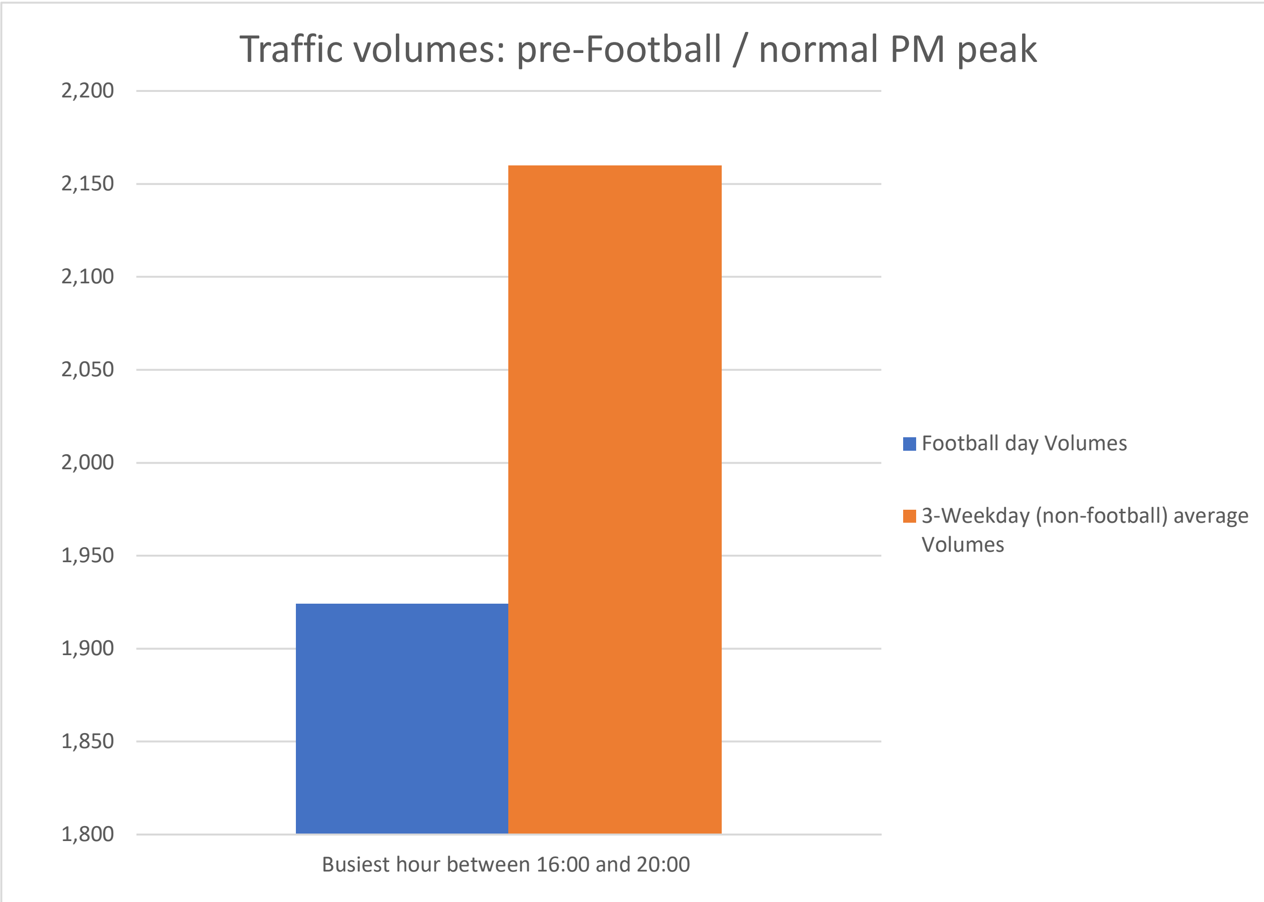
Time Period Ending	3-weekday average Volume
Busiest hour between 16:00 and 20:00	2,160

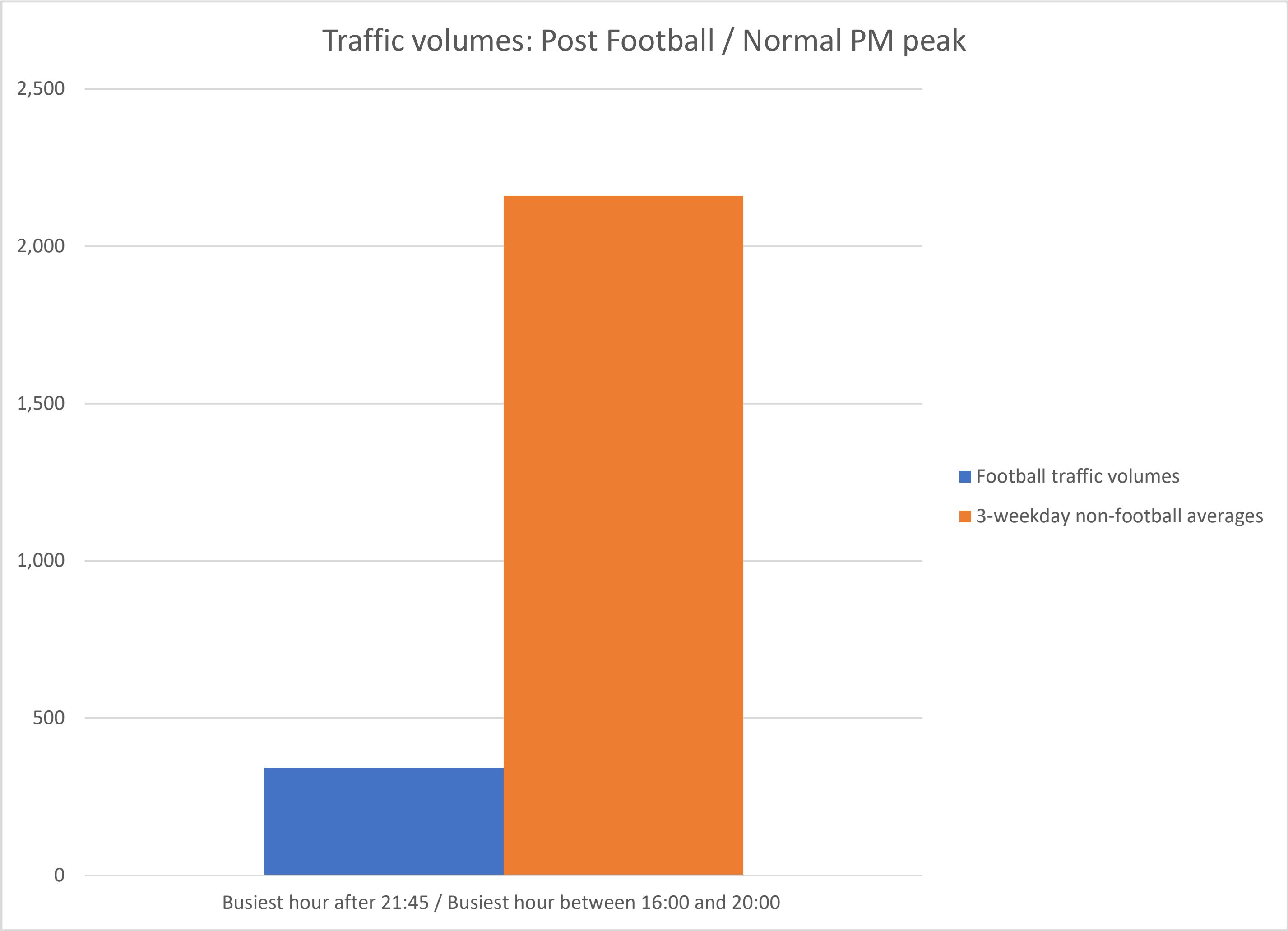
Comparisons: 3-Weekday (non-football day) averages minus Football day		
A: Football day times	**B: Non-football day times**	**Volume Difference: B minus A**
Busiest hour between 16:00 and 20:00	Busiest hour between 16:00 and 20:00	236

Comparisons: 3-Weekday (non-football day) averages minus Football day		
A: Football day times	**B: Non-football day times**	**Volume Difference: B minus A**
Busiest hour after 21:45	Busiest hour between 16:00 and 20:00	1,818

3-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	1,924	2,160

3-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	3-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	342	2,160


Traffic volumes: pre-Football / normal PM peak
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
Busiest hour between 16:00 and 20:00
Football day Volumes
3-Weekday (non-football) average Volumes


Traffic volumes: Post Football / Normal PM peak
2,500
2,000
1,500
1,000
500
0
Football traffic volumes
3-weekday non-football averages
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

	Monday 02 March 2020 (football)			Tuesday 03 March 2020		
Start Time	Total	Rolling Hourly totals	To determine busiest hour	Total	Rolling Hourly totals	To determine busiest hour
1600	537			452		
1615	575			544		
1630	426			497		
1645	386	**1924**	**0**	540	2033	0
1700	432	1819	105	486	**2067**	**-34**
1715	342	1586	338	520	2043	-10
1730	405	1565	359	520	2066	-33
1745	438	1617	307	493	2019	14
1800	319	1504	420	387	1920	113
1815	373	1535	389	388	1788	245
1830	278	1408	516	343	1611	422
1845	276	1246	678	339	1457	576
1900	286	1213	711	298	1368	665
1915	217	1057	867	223	1203	830
1930	164	943	981	221	1081	952
1945	146	813	1111	192	934	1099
			To determine busiest hour			To determine busiest hour
2145	107			100		
2200	96			104		
2215	76			78		
2230	63	**342**	**0**	56	**338**	**0**
2245	58	293	49	42	280	58
2300	44	241	101	57	233	105
2315	39	204	138	42	197	141
2330	30	171	171	31	172	166
2345	31	144	198	31	161	177

Wednesday 04 March 2020

Total	Rolling Hourly totals	To determine busiest hour
518		
523		
510		
505	2056	0
466	2004	52
567	2048	8
554	2092	-36
566	**2153**	**-97**
441	2128	-72
379	1940	116
318	1704	352
306	1444	612
293	1296	760
279	1196	860
231	1109	947
218	1021	1035
		To determine busiest hour
90		
119		
66		
79	**354**	**0**
45	309	45
42	232	122
34	200	154
30	151	203
28	134	220

Thursday 05 March 2020

Total	Rolling Hourly totals	To determine busiest hour
505		
521		
521		
560	2107	0
569	2171	-64
571	2221	-114
559	**2259**	**-152**
472	2171	-64
391	1993	114
342	1764	343
302	1507	600
299	1334	773
254	1197	910
271	1126	981
224	1048	1059
185	934	1173
		To determine busiest hour
88		
101		
63		
70	**322**	**0**
61	295	27
63	257	65
51	245	77
46	221	101
27	187	135

3-day (non-football) averages

Total	Rolling Hourly totals	To determine busiest hour
492		
529		
509		
535	2,065	0
507	2,081	-15
553	2,104	-39
544	**2,139**	**-74**
510	2,114	-49
406	2,014	52
370	1,831	235
321	1,607	458
315	1,412	654
282	1,287	778
258	1,175	890
225	1,079	986
198	963	1,102
		To determine busiest hour
93		
108		
69		
68	**338**	**0**
49	295	43
54	241	97
42	214	124
36	181	157
29	161	177

ATR Data, Site: A2030 Eastern Road, just south of the A27 roundabout

Saturday 07/03/2020 (Not a football day)

Report Date	Time Period	Direction	Total Volume
07/03/2020	Busiest hour between 12:00 and 15:00	Southbound	1,735
07/03/2020	Busiest hour between 16:00 and 19:00	Northbound	1,307

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

07 March 2020

Start Time	Total	Vpp 85th Percentile Speeds		Rolling Hourly Volumes	
1600	358	42.1			
1615	340	43.4			
1630	319	43.8			
1645	290	45.2		1307	
1700	317	44.1		1266	
1715	281	44.2		1207	
1730	272	43.4		1160	
1745	236	47.1		1106	
1800	259	44.3		1048	
1815	204	44.5		971	
1830	176	45.2		875	
1845	205	43.5		844	

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

07 March 2020

Start Time	Total	Vpp 85th Percentile Speeds		Rolling Hourly Volumes	
1200	466	45.1			
1215	409	44.4			
1230	416	45.8			
1245	444	45.7		1735	
1300	409	45.4		1678	
1315	413	45.9		1682	
1330	410	45.7		1676	
1345	421	46		1653	
1400	408	44.7		1652	
1415	373	46.5		1612	
1430	375	45.9		1577	
1445	406	47.1		1562	

Appendix B – Recorded Speeds, High Attendance Match

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

Monday 02 March 2020 (football day)

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	440	18	166	150	61	23	13	7	2	0	0	0	0	0	0	**184**	**41.8%**
1615	416	44	130	121	97	24	0	0	0	0	0	0	0	0	0	**174**	**41.8%**
1630	456	18	73	147	189	28	0	1	0	0	0	0	0	0	0	**91**	**20.0%**
1645	427	36	90	177	101	23	0	0	0	0	0	0	0	0	0	**126**	**29.5%**
1700	405	48	154	173	29	0	1	0	0	0	0	0	0	0	0	**202**	**49.9%**
1715	424	44	165	180	34	1	0	0	0	0	0	0	0	0	0	**209**	**49.3%**
1730	418	33	145	208	32	0	0	0	0	0	0	0	0	0	0	**178**	**42.6%**
1745	374	93	104	73	39	39	22	4	0	0	0	0	0	0	0	**197**	**52.7%**
1800	365	6	8	19	46	88	114	60	14	8	2	0	0	0	0	**14**	**3.8%**
1815	291	2	12	11	30	58	70	62	34	8	4	0	0	0	0	**14**	**4.8%**
1830	256	0	0	0	3	17	69	71	54	38	4	0	0	0	0	**0**	**0.0%**
1845	226	0	0	0	0	20	59	81	43	19	3	1	0	0	0	**0**	**0.0%**
1900	240	0	0	0	0	7	58	83	65	19	8	0	0	0	0	**0**	**0.0%**
1915	180	0	0	0	0	0	31	66	50	21	11	1	0	0	0	**0**	**0.0%**
1930	196	0	0	0	0	3	15	82	64	24	8	0	0	0	0	**0**	**0.0%**
1945	132	0	0	0	1	1	14	35	40	22	16	3	0	0	0	**0**	**0.0%**
2145	500	9	19	59	82	127	100	64	28	8	4	0	0	0	0	**28**	**5.6%**
2200	525	25	80	170	182	66	2	0	0	0	0	0	0	0	0	**105**	**20.0%**
2215	515	35	108	189	153	30	0	0	0	0	0	0	0	0	0	**143**	**27.8%**
2230	398	33	170	145	14	6	4	14	7	4	1	0	0	0	0	**203**	**51.0%**
2245	134	0	0	0	0	0	20	45	25	31	13	0	0	0	0	**0**	**0.0%**
2300	98	0	0	0	0	1	8	18	36	22	13	0	0	0	0	**0**	**0.0%**
2315	76	0	0	0	0	0	9	26	23	11	6	1	0	0	0	**0**	**0.0%**
2330	31	0	0	0	1	0	0	11	3	7	8	1	0	0	0	**0**	**0.0%**
2345	37	0	0	0	0	0	2	8	5	14	6	1	1	0	0	**0**	**0.0%**

Averages over 3 to 5 March 2020 (non-football days)

Start Time	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	**242**	**62.0%**
1615	**239**	**64.3%**
1630	**227**	**61.4%**
1645	**255**	**64.3%**
1700	**287**	**74.9%**
1715	**233**	**55.7%**
1730	**176**	**43.5%**
1745	**101**	**23.7%**
1800	**3**	**0.7%**
1815	**0**	**0.0%**
1830	**0**	**0.0%**
1845	**0**	**0.0%**
1900	**0**	**0.0%**
1915	**0**	**0.0%**
1930	**0**	**0.0%**
1945	**0**	**0.0%**

03 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	421	84	210	101	25	0	0	1	0	0	0	0	0	0	0	**294**	**69.8%**
1615	401	39	165	130	59	8	0	0	0	0	0	0	0	0	0	**204**	**50.9%**
1630	397	67	132	144	45	8	1	0	0	0	0	0	0	0	0	**199**	**50.1%**
1645	392	57	137	152	42	4	0	0	0	0	0	0	0	0	0	**194**	**49.5%**
1700	382	87	176	109	9	1	0	0	0	0	0	0	0	0	0	**263**	**68.8%**
1715	416	30	193	148	41	4	0	0	0	0	0	0	0	0	0	**223**	**53.6%**
1730	418	69	175	135	34	0	0	0	0	5	0	0	0	0	0	**244**	**58.4%**
1745	430	32	78	107	55	24	44	46	35	8	1	0	0	0	0	**110**	**25.6%**
1800	422	2	7	2	9	68	162	107	49	12	4	0	0	0	0	**9**	**2.1%**
1815	340	0	0	0	3	11	119	130	52	23	2	0	0	0	0	**0**	**0.0%**
1830	323	0	0	0	0	4	62	156	68	19	13	1	0	0	0	**0**	**0.0%**
1845	266	0	0	0	0	2	53	115	61	25	6	1	1	2	0	**0**	**0.0%**
1900	266	0	0	0	0	5	60	105	65	19	11	1	0	0	0	**0**	**0.0%**
1915	203	0	0	0	0	5	26	90	43	29	10	0	0	0	0	**0**	**0.0%**
1930	185	0	0	0	0	0	11	61	70	36	7	0	0	0	0	**0**	**0.0%**
1945	194	0	0	0	0	1	36	61	57	28	8	3	0	0	0	**0**	**0.0%**

04 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	334	80	126	122	6	0	0	0	0	0	0	0	0	0	0	**206**	**61.7%**
1615	386	58	195	113	20	0	0	0	0	0	0	0	0	0	0	**253**	**65.5%**
1630	323	95	143	76	9	0	0	0	0	0	0	0	0	0	0	**238**	**73.7%**
1645	399	64	190	134	11	0	0	0	0	0	0	0	0	0	0	**254**	**63.7%**
1700	401	78	223	99	1	0	0	0	0	0	0	0	0	0	0	**301**	**75.1%**
1715	424	29	198	182	14	1	0	0	0	0	0	0	0	0	0	**227**	**53.5%**
1730	396	60	171	108	54	3	0	0	0	0	0	0	0	0	0	**231**	**58.3%**
1745	423	60	128	113	87	25	8	1	1	0	0	0	0	0	0	**188**	**44.4%**
1800	385	0	0	4	3	31	127	141	62	15	2	0	0	0	0	**0**	**0.0%**
1815	323	0	0	0	0	11	92	127	60	29	4	0	0	0	0	**0**	**0.0%**
1830	316	0	0	0	0	16	60	150	70	15	5	0	0	0	0	**0**	**0.0%**
1845	280	0	0	0	0	6	42	139	71	15	7	0	0	0	0	**0**	**0.0%**
1900	255	0	0	0	2	24	40	90	62	27	10	0	0	0	0	**0**	**0.0%**
1915	249	0	0	0	0	10	49	104	56	17	12	1	0	0	0	**0**	**0.0%**
1930	187	0	0	0	0	1	21	72	55	23	14	1	0	0	0	**0**	**0.0%**
1945	178	0	0	0	0	5	21	62	53	27	10	0	0	0	0	**0**	**0.0%**

05 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	415	71	155	46	33	36	46	23	3	2	0	0	0	0	0	**226**	**54.5%**
1615	340	101	159	72	8	0	0	0	0	0	0	0	0	0	0	**260**	**76.5%**
1630	406	40	205	123	31	6	1	0	0	0	0	0	0	0	0	**245**	**60.3%**
1645	398	73	244	75	5	1	0	0	0	0	0	0	0	0	0	**317**	**79.6%**
1700	367	76	221	57	11	0	2	0	0	0	0	0	0	0	0	**297**	**80.9%**
1715	418	66	184	113	48	7	0	0	0	0	0	0	0	0	0	**250**	**59.8%**
1730	389	16	38	46	67	75	71	60	11	4	1	0	0	0	0	**54**	**13.9%**
1745	340	0	4	6	2	40	128	101	41	16	2	0	0	0	0	**4**	**1.2%**
1800	382	0	0	0	3	56	159	116	34	11	3	0	0	0	0	**0**	**0.0%**
1815	304	0	0	0	0	20	76	119	72	14	3	0	0	0	0	**0**	**0.0%**
1830	266	0	0	0	0	12	47	102	67	32	4	2	0	0	0	**0**	**0.0%**
1845	263	0	0	0	0	11	75	101	52	20	4	0	0	0	0	**0**	**0.0%**
1900	266	0	0	0	0	9	54	96	68	29	9	1	0	0	0	**0**	**0.0%**
1915	223	0	0	0	0	3	38	82	74	25	1	0	0	0	0	**0**	**0.0%**
1930	204	0	0	0	4	12	32	62	54	26	11	1	2	0	0	**0**	**0.0%**
1945	171	0	0	0	0	1	17	63	60	24	5	1	0	0	0	**0**	**0.0%**

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

Monday 02 March 2020 (football day)

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	537	0	0	0	1	20	79	226	163	41	7	0	0	0	0	**0**	**0.0%**
1615	575	2	19	27	23	23	147	212	104	17	1	0	0	0	0	**21**	**3.7%**
1630	426	57	114	114	120	19	2	0	0	0	0	0	0	0	0	**171**	**40.1%**
1645	386	181	128	60	17	0	0	0	0	0	0	0	0	0	0	**309**	**80.1%**
1700	432	78	112	154	68	14	6	0	0	0	0	0	0	0	0	**190**	**44.0%**
1715	342	124	58	95	56	7	1	1	0	0	0	0	0	0	0	**182**	**53.2%**
1730	405	97	100	112	79	13	0	4	0	0	0	0	0	0	0	**197**	**48.6%**
1745	438	94	143	124	71	6	0	0	0	0	0	0	0	0	0	**237**	**54.1%**
1800	319	186	100	20	13	0	0	0	0	0	0	0	0	0	0	**286**	**89.7%**
1815	373	146	158	60	8	1	0	0	0	0	0	0	0	0	0	**304**	**81.5%**
1830	278	155	102	21	0	0	0	0	0	0	0	0	0	0	0	**257**	**92.4%**
1845	276	150	91	25	7	3	0	0	0	0	0	0	0	0	0	**241**	**87.3%**
1900	286	74	58	31	7	6	25	24	30	14	17	0	0	0	0	**132**	**46.2%**
1915	217	0	0	0	0	2	4	74	68	52	17	0	0	0	0	**0**	**0.0%**
1930	164	0	0	0	0	2	8	61	50	33	10	0	0	0	0	**0**	**0.0%**
1945	146	0	0	0	0	0	7	36	59	28	13	3	0	0	0	**0**	**0.0%**
2145	107	0	0	0	0	0	8	33	38	16	11	1	0	0	0	**0**	**0.0%**
2200	96	0	0	0	0	0	4	36	27	20	6	3	0	0	0	**0**	**0.0%**
2215	76	0	0	0	0	0	7	19	33	11	5	1	0	0	0	**0**	**0.0%**
2230	63	0	0	0	0	0	1	14	20	18	10	0	0	0	0	**0**	**0.0%**
2245	58	0	0	0	0	0	4	15	20	13	4	2	0	0	0	**0**	**0.0%**
2300	44	0	0	0	0	0	1	11	21	7	4	0	0	0	0	**0**	**0.0%**
2315	39	0	0	0	0	1	2	15	14	3	4	0	0	0	0	**0**	**0.0%**
2330	30	0	0	0	0	0	2	10	8	6	4	0	0	0	0	**0**	**0.0%**
2345	31	0	0	0	3	0	2	12	8	5	1	0	0	0	0	**0**	**0.0%**

Averages over 3 to 5 March 2020 (non-football days)

Start Time	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	**0**	**0.0%**
1615	**0**	**0.0%**
1630	**0**	**0.0%**
1645	**0**	**0.0%**
1700	**0**	**0.0%**
1715	**17**	**2.9%**
1730	**17**	**3.1%**
1745	**27**	**5.8%**
1800	**0**	**0.0%**
1815	**0**	**0.0%**
1830	**0**	**0.0%**
1845	**0**	**0.0%**
1900	**0**	**0.0%**
1915	**0**	**0.0%**
1930	**0**	**0.0%**
1945	**0**	**0.0%**

y 03 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	452	0	0	0	0	10	53	175	156	41	15	2	0	0	0	**0**	**0.0%**
1615	544	0	0	0	0	7	70	225	186	48	7	0	0	1	0	**0**	**0.0%**
1630	497	0	0	0	0	21	114	181	123	50	8	0	0	0	0	**0**	**0.0%**
1645	540	0	0	0	0	17	103	248	140	26	6	0	0	0	0	**0**	**0.0%**
1700	486	0	0	0	0	2	70	217	143	45	9	0	0	0	0	**0**	**0.0%**
1715	520	0	0	0	3	22	127	230	103	28	7	0	0	0	0	**0**	**0.0%**
1730	520	0	0	0	0	10	87	259	128	29	7	0	0	0	0	**0**	**0.0%**
1745	493	0	0	0	0	5	99	226	127	30	5	1	0	0	0	**0**	**0.0%**
1800	387	0	0	0	0	5	43	162	115	52	10	0	0	0	0	**0**	**0.0%**
1815	388	0	0	0	0	1	50	144	130	46	15	1	1	0	0	**0**	**0.0%**
1830	343	0	0	0	0	1	22	138	116	55	11	0	0	0	0	**0**	**0.0%**
1845	339	0	0	0	0	4	33	124	114	56	8	0	0	0	0	**0**	**0.0%**
1900	298	0	0	0	0	1	16	79	127	61	13	1	0	0	0	**0**	**0.0%**
1915	223	0	0	0	0	0	5	73	85	45	13	2	0	0	0	**0**	**0.0%**
1930	221	0	0	0	0	2	12	63	74	43	24	2	1	0	0	**0**	**0.0%**
1945	192	0	0	0	0	0	7	65	71	34	15	0	0	0	0	**0**	**0.0%**

ay 04 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	518	0	0	0	1	31	131	212	112	26	5	0	0	0	0	**0**	**0.0%**
1615	523	0	0	1	13	24	98	222	126	34	5	0	0	0	0	**0**	**0.0%**
1630	510	0	0	0	0	8	99	224	148	26	5	0	0	0	0	**0**	**0.0%**
1645	505	0	0	0	0	12	100	204	152	32	5	0	0	0	0	**0**	**0.0%**
1700	466	0	0	0	1	9	92	219	115	26	4	0	0	0	0	**0**	**0.0%**
1715	567	0	0	4	9	35	179	253	76	10	1	0	0	0	0	**0**	**0.0%**
1730	554	0	0	0	0	7	157	237	128	22	3	0	0	0	0	**0**	**0.0%**
1745	566	0	0	0	0	11	135	290	109	18	3	0	0	0	0	**0**	**0.0%**
1800	441	0	0	0	0	0	70	180	147	30	13	1	0	0	0	**0**	**0.0%**
1815	379	0	0	0	0	1	37	137	146	45	13	0	0	0	0	**0**	**0.0%**
1830	318	0	0	0	0	2	20	99	136	50	10	1	0	0	0	**0**	**0.0%**
1845	306	0	0	0	0	2	24	112	105	44	17	2	0	0	0	**0**	**0.0%**
1900	293	0	0	0	0	4	24	79	118	53	14	1	0	0	0	**0**	**0.0%**
1915	279	0	0	0	0	0	10	90	93	66	17	3	0	0	0	**0**	**0.0%**
1930	231	0	0	0	0	3	11	59	97	46	14	1	0	0	0	**0**	**0.0%**
1945	218	0	0	0	0	0	14	53	82	51	16	2	0	0	0	**0**	**0.0%**

Thursday 05 March 2020

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph Volumes	Traffic moving under 15 mph Percentage of Total
1600	505	0	0	0	0	8	88	240	121	42	6	0	0	0	0	**0**	**0.0%**
1615	521	0	0	0	0	2	93	228	153	35	10	0	0	0	0	**0**	**0.0%**
1630	521	0	0	0	0	14	88	229	136	40	14	0	0	0	0	**0**	**0.0%**
1645	560	0	0	0	6	49	125	243	120	14	3	0	0	0	0	**0**	**0.0%**
1700	569	0	0	0	1	17	179	238	107	25	2	0	0	0	0	**0**	**0.0%**
1715	571	11	39	36	40	52	117	175	82	18	1	0	0	0	0	**50**	**8.8%**
1730	559	16	36	54	116	151	112	58	14	2	0	0	0	0	0	**52**	**9.3%**
1745	472	52	30	104	77	22	45	81	52	6	3	0	0	0	0	**82**	**17.4%**
1800	391	0	0	0	0	3	38	149	143	46	12	0	0	0	0	**0**	**0.0%**
1815	342	0	0	0	0	1	28	117	132	48	15	1	0	0	0	**0**	**0.0%**
1830	302	0	0	0	0	1	37	104	104	41	13	1	1	0	0	**0**	**0.0%**
1845	299	0	0	0	0	2	16	101	123	38	19	0	0	0	0	**0**	**0.0%**
1900	254	0	0	0	0	3	14	78	87	49	21	2	0	0	0	**0**	**0.0%**
1915	271	0	0	0	0	5	15	86	91	56	18	0	0	0	0	**0**	**0.0%**
1930	224	0	0	0	0	0	4	69	91	36	23	0	1	0	0	**0**	**0.0%**
1945	185	0	0	0	0	1	5	60	57	52	9	1	0	0	0	**0**	**0.0%**

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

02 March 2020		03 March 2020		04 March 2020		05 March 2020		Average non-match days	
Time	Vpp 85th percentile speeds	Time	Vpp 85th percentile speeds	Time	Vpp 85th percentile speeds	Time	Vpp 85th percentile speeds	Start Time	Vpp 85th percentile speeds
1600	22.6	1600	17.9	1600	16.7	1600	31	1600	21.9
1615	22.2	1615	20.6	1615	17.2	1615	15.9	1615	17.9
1630	23.9	1630	19.2	1630	16.6	1630	18.3	1630	18.0
1645	21.9	1645	19.3	1645	16.9	1645	15.6	1645	17.3
1700	18.9	1700	17.1	1700	16.2	1700	15.5	1700	16.3
1715	18.4	1715	19.1	1715	17.8	1715	19.8	1715	18.9
1730	18.6	1730	18.5	1730	19.7	1730	36.1	1730	24.8
1745	26.2	1745	37.8	1745	23.2	1745	40.8	1745	33.9
1800	36.9	1800	40.2	1800	41.6	1800	39.3	1800	40.4
1815	40.1	1815	42.2	1815	43.1	1815	42.4	1815	42.6
1830	45	1830	43.4	1830	42	1830	44.8	1830	43.4
1845	43.8	1845	44.6	1845	42.5	1845	42.9	1845	43.3
1900	44.2	1900	44.1	1900	44.9	1900	44.5	1900	44.5
1915	45.8	1915	46.4	1915	44.4	1915	43.6	1915	44.8
1930	45.6	1930	46.6	1930	47	1930	46.1	1930	46.6
1945	50	1945	45.9	1945	47.3	1945	46	1945	46.4
2145	36.1	2145	47	2145	47.2	2145	48.4	2145	47.5
2200	24.6	2200	47.8	2200	47	2200	47.4	2200	47.4
2215	22.7	2215	47.6	2215	48.6	2215	47.9	2215	48.0
2230	19	2230	54.4	2230	47	2230	49.5	2230	50.3
2245	48.7	2245	49	2245	49.3	2245	47.3	2245	48.5
2300	49.7	2300	50.2	2300	52.8	2300	49.3	2300	50.8
2315	47	2315	52.9	2315	54.7	2315	51.1	2315	52.9
2330	53	2330	50.6	2330	48.6	2330	52.3	2330	50.5
2345	53.8	2345	49.5	2345	53.7	2345	52.1	2345	51.8

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

02 March 2020			03 March 2020			04 March 2020			05 March 2020			Average non-match days	
Start Time	Vpp 85th percentile speeds		Start Time	Vpp 85th percentile speeds		Start Time	Vpp 85th percentile speeds		Start Time	Vpp 85th percentile speeds		Start Time	Vpp 85th percentile speeds
1600	43.8		1600	44.4		1600	42.2		1600	43.6		1600	43.4
1615	40.9		1615	43.8		1615	42.7		1615	43.7		1615	43.4
1630	22.7		1630	43.8		1630	43.1		1630	43.3		1630	43.4
1645	15.9		1645	42.4		1645	42.8		1645	41.4		1645	42.2
1700	21.4		1700	44.2		1700	42.4		1700	41.6		1700	42.7
1715	20.6		1715	42.2		1715	40		1715	40.4		1715	40.9
1730	21.2		1730	42.8		1730	41.3		1730	34.4		1730	39.5
1745	20.5		1745	42.8		1745	41.4		1745	39.5		1745	41.2
1800	13.2		1800	45.2		1800	43.8		1800	45		1800	44.7
1815	15.6		1815	45.5		1815	45		1815	45.7		1815	45.4
1830	14.1		1830	46.1		1830	46.2		1830	46.5		1830	46.3
1845	14.7		1845	46.1		1845	46.4		1845	45.7		1845	46.1
1900	42.6		1900	47.4		1900	46.1		1900	47.6		1900	47.0
1915	48.6		1915	47.9		1915	47.4		1915	47		1915	47.4
1930	47.5		1930	49.4		1930	47.2		1930	48.3		1930	48.3
1945	48.7		1945	47.1		1945	47.9		1945	47.8		1945	47.6
2145	48.4		2145	48.2		2145	47.9		2145	49.5		2145	48.5
2200	47.8		2200	46.7		2200	48		2200	50.1		2200	48.3
2215	47.3		2215	49.5		2215	47.3		2215	49		2215	48.6
2230	51.6		2230	49.2		2230	51.1		2230	47.3		2230	49.2
2245	48.2		2245	47.6		2245	49.9		2245	50.3		2245	49.3
2300	46.5		2300	47.7		2300	50.2		2300	49.3		2300	49.1
2315	48.2		2315	48.5		2315	50.3		2315	49.2		2315	49.3
2330	50.1		2330	48.9		2330	51.4		2330	47.1		2330	49.1
2345	46.2		2345	49.1		2345	53.1		2345	51.1		2345	51.1

Appendix C – Traffic Volumes and Comparisons, Typical Attendance Match

ATR Data, Site: A2030 Eastern Road, just south of the A27 roundabout (northbound)

Tuesday 25/02/2020 (football day)

Report Date	Time Period Ending	Total Volume
25/02/2020	Busiest hour between 16:00 and 20:00	1681
25/02/2020	Busiest hour after 21:45	1589

Wednesday 26/02/2020

Report Date	Time Period Ending	Total Volume
26/02/2020	Busiest hour between 16:00 and 20:00	1753

Thursday 27/02/2020

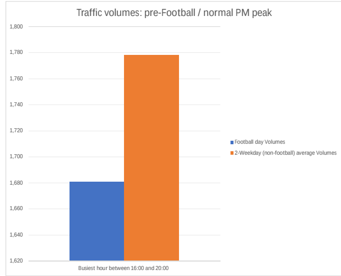
Report Date	Time Period Ending	Total Volume
27/02/2020	Busiest hour between 16:00 and 20:00	1803

2-weekday (non-football) averages

Time Period Ending	2-weekday average Volume
Busiest hour between 16:00 and 20:00	1,778

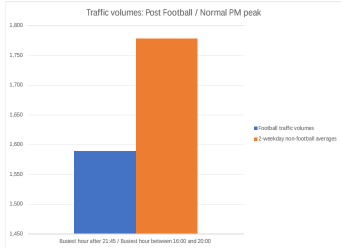
Comparisons: 2-Weekday (non-football day) averages minus Football day		
A: Football day times	B: Non-football day times	Volume Difference: B minus A
Busiest hour between 16:00 and 20:00	Busiest hour between 16:00 and 20:00	97

2-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	1,681	1,778



Comparisons: 2-Weekday (non-football day) averages minus Football day		
A: Football day times	B: Non-football day times	Volume Difference: B minus A
Busiest hour after 21:45	Busiest hour between 16:00 and 20:00	189

2-Weekday averages (non-football) and Football day Volumes: Northbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	1,589	1,778



REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS
Site Observations: 25.02.2020 - Slow moving traffic noted going over the A2030 bridge. 02.03.2020 - Slow moving traffic noted going over the A2030 bridge. Analysis Comments: Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days. Roadworks checked online from roadworks.org: A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

	Tuesday 25 February 2020 (football)			Wed 26 February 2020			Thursday 27 February 2020			2-day (non-football) averages		
Start Time	**Total**	**Rolling Hourly totals**	**To determine busiest hour**	**Total**	**Rolling Hourly totals**	**To determine busiest hour**	**Total**	**Rolling Hourly totals**	**To determine busiest hour**	**Total**	**Rolling Hourly totals**	**To determine busiest hour**
1600	385			351			386			369		
1615	383			344			370			357		
1630	368			422			370			396		
1645	392	1528	0	414	1531	0	371	1497	0	393	1,514	0
1700	404	1547	-19	435	1615	-84	435	1546	-49	435	1,581	-67
1715	422	1586	-58	458	1729	-198	461	1637	-140	460	1,683	-169
1730	445	1663	-135	446	**1753**	**-222**	469	1736	-239	458	1,745	-231
1745	410	**1681**	**-153**	379	1718	-187	438	**1803**	**-306**	409	**1,761**	**-247**
1800	377	1654	-126	424	1707	-176	407	1775	-278	416	1,741	-227
1815	338	1570	-42	354	1603	-72	338	1652	-155	346	1,628	-114
1830	253	1378	150	299	1456	75	290	1473	24	295	1,465	50
1845	259	1227	301	286	1363	168	294	1329	168	290	1,346	168
1900	253	1103	425	250	1189	342	258	1180	317	254	1,185	330
1915	176	941	587	253	1088	443	235	1077	420	244	1,083	432
1930	199	887	641	194	983	548	213	1000	497	204	992	523
1945	136	764	764	183	880	651	164	870	627	174	875	639
			To determine busiest hour			**To determine busiest hour**			**To determine busiest hour**			**To determine busiest hour**
2145	405			116			150			133		
2200	510			136			138			137		
2215	466			111			123			117		
2230	208	**1589**	**0**	76	**439**	**0**	96	**507**	**0**	86	**473**	**0**
2245	89	1273	316	51	374	65	58	415	92	55	395	79
2300	60	823	766	74	312	127	53	330	177	64	321	152
2315	39	396	1193	51	252	187	47	254	253	49	253	220
2330	34	222	1367	46	222	217	40	198	309	43	210	263
2345	42	175	1414	32	203	236	44	184	323	38	194	280

ATR Data, Site: A2030 Eastern Road, just south of the A27 roundabout (Southbound)

Tuesday 25/02/2020 (football day)

Report Date	Time Period Ending	Total Volume
25/02/2020	Busiest hour between 16:00 and 20:00	2185
25/02/2020	Busiest hour after 21:45	363

Wednesday 26/02/2020

Report Date	Time Period Ending	Total Volume
26/02/2020	Busiest hour between 16:00 and 20:00	2013

Thursday 27/02/2020

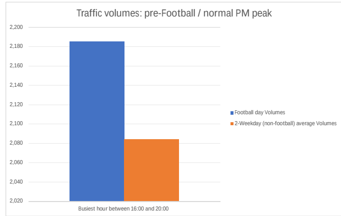
Report Date	Time Period Ending	Total Volume
27/02/2020	Busiest hour between 16:00 and 20:00	2155

2-weekday (non-football) averages

Time Period Ending	2-weekday average Volume
Busiest hour between 16:00 and 20:00	2,084

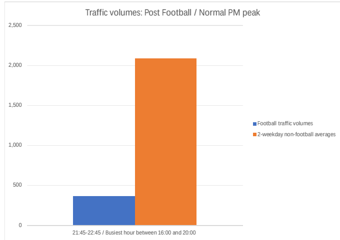
Comparisons: 2-Weekday (non-football day) averages minus Football day		
A: Football day times	B: Non-football day times	Volume Difference: B minus A
Busiest hour between 16:00 and 20:00	Busiest hour between 16:00 and 20:00	-101

2-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour between 16:00 and 20:00	2,185	2,084



Comparisons: 2-Weekday (non-football day) averages minus Football day		
A: Football day times	B: Non-football day times	Volume Difference: B minus A
Busiest hour after 21:45	Busiest hour between 16:00 and 20:00	1,721

2-Weekday averages (non-football) and Football day Volumes: Southbound		
Times	Football day Volumes	2-Weekday (non-football) average Volumes
Busiest hour after 21:45 / Busiest hour between 16:00 and 20:00	363	2,084



REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	**CHECK 1**	**CHECK 2**	**CHECK 3**	**CHECK 4**	**COLLECTION**
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

ed Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

	Tuesday 25 February 2020 (football)			Wed 26 February 2020			Thursday 27 February 2020			2-day (non-football) averages		
Start Time	Total	Rolling Hourly totals	To determine busiest hour	Total	Rolling Hourly totals	To determine busiest hour	Total	Rolling Hourly totals	To determine busiest hour	Total	Rolling Hourly totals	To determine busiest hour
1600	509			482			496			489		
1615	525			536			548			542		
1630	573			476			539			508		
1645	578	**2185**	**0**	519	**2013**	**0**	561	2144	0	540	**2,079**	**0**
1700	492	2168	17	465	1996	17	507	**2155**	**-11**	486	2,076	3
1715	412	2055	130	529	1989	24	478	2085	59	504	2,037	42
1730	419	1901	284	454	1967	46	447	1993	151	451	1,980	99
1745	474	1797	388	455	1903	110	469	1901	243	462	1,902	177
1800	407	1712	473	457	1895	118	440	1834	310	449	1,865	214
1815	450	1750	435	415	1781	232	369	1725	419	392	1,753	326
1830	359	1690	495	345	1672	341	352	1630	514	349	1,651	428
1845	325	1541	644	334	1551	462	306	1467	677	320	1,509	570
1900	309	1443	742	276	1370	643	279	1306	838	278	1,338	741
1915	259	1252	933	279	1234	779	276	1213	931	278	1,224	855
1930	203	1096	1089	232	1121	892	247	1108	1036	240	1,115	964
1945	204	975	1210	214	1001	1012	225	1027	1117	220	1,014	1,065
												To determine busiest hour
2145	92			122			119			121		
2200	110			138			119			129		
2215	100			88			116			102		
2230	61	**363**	**0**	74	**422**	**0**	67	**421**	**0**	71	**422**	**0**
2245	49	320	43	66	366	56	63	365	56	65	366	56
2300	49	259	104	44	272	150	54	300	121	49	286	136
2315	52	211	152	44	228	194	54	238	183	49	233	189
2330	33	183	180	45	199	223	36	207	214	41	203	219
2345	37	171	192	25	158	264	35	179	242	30	169	253

Appendix D – Recorded Speeds, Typical Attendance Match

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Northbound	467381	103985

INSTALL NOTES					
INSTALL	CHECK 1	CHECK 2	CHECK 3	CHECK 4	COLLECTION
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS
Site Observations: 25.02.2020 - Slow moving traffic noted going over the A2030 bridge. 02.03.2020 - Slow moving traffic noted going over the A2030 bridge. Analysis Comments: Slow moving vehicles travelling over the tubes, on weekdays during the AM and PM peak, and also in the evening (22:00) on some days. Roadworks checked online from roadworks.org: A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-62
Site Name - 23771-266A; 23771-266A; 23771-266A; 23771-266A; 23771-266A
Description - Multiple Files! See Header sheet.
Direction - North

Tuesday 25 February 2020 (football day)

Start Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	385	102	166	82	30	5	0	0	0	0	0	0	0	0	0	**268**	**69.6%**
1615	383	88	182	88	23	0	0	0	2	0	0	0	0	0	0	**270**	**70.5%**
1630	368	47	132	128	54	5	2	0	0	0	0	0	0	0	0	**179**	**48.6%**
1645	392	88	190	90	23	1	0	0	0	0	0	0	0	0	0	**278**	**70.9%**
1700	404	74	192	108	27	3	0	0	0	0	0	0	0	0	0	**266**	**65.8%**
1715	422	25	163	149	68	17	0	0	0	0	0	0	0	0	0	**188**	**44.5%**
1730	445	36	164	131	102	11	1	0	0	0	0	0	0	0	0	**200**	**44.9%**
1745	410	20	66	55	72	67	53	56	13	6	2	0	0	0	0	**86**	**21.0%**
1800	377	0	0	1	17	84	122	98	37	15	3	0	0	0	0	**0**	**0.0%**
1815	338	2	7	33	41	58	55	97	30	11	3	1	0	0	0	**9**	**2.7%**
1830	253	0	0	0	1	7	48	113	57	18	7	1	1	0	0	**0**	**0.0%**
1845	259	0	0	0	0	14	59	103	54	22	6	1	0	0	0	**0**	**0.0%**
1900	253	0	0	0	0	0	29	102	74	28	19	1	0	0	0	**0**	**0.0%**
1915	176	0	0	0	0	0	30	59	58	21	6	2	0	0	0	**0**	**0.0%**
1930	199	0	0	0	4	6	23	75	51	31	9	0	0	0	0	**0**	**0.0%**
1945	136	0	0	0	0	1	13	47	37	23	15	0	0	0	0	**0**	**0.0%**
2145	405	0	0	0	2	65	146	92	61	30	8	1	0	0	0	**0**	**0.0%**
2200	510	8	128	102	94	96	36	38	6	1	1	0	0	0	0	**136**	**26.7%**
2215	466	38	186	181	56	5	0	0	0	0	0	0	0	0	0	**224**	**48.1%**
2230	208	14	36	35	29	4	12	28	28	14	8	0	0	0	0	**50**	**24.0%**
2245	89	0	0	0	0	2	7	32	27	14	6	1	0	0	0	**0**	**0.0%**
2300	60	0	0	0	0	0	3	16	17	19	5	0	0	0	0	**0**	**0.0%**
2315	39	0	0	0	0	0	3	10	10	9	6	1	0	0	0	**0**	**0.0%**
2330	34	0	0	0	0	1	3	8	9	8	5	0	0	0	0	**0**	**0.0%**
2345	42	0	0	0	0	0	4	13	13	4	6	2	0	0	0	**0**	**0.0%**

Averages over 26 to 27 Feb 2020 (non-football days)

Start Time	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	**253**	**68.6%**
1615	**261**	**72.9%**
1630	**212**	**54.1%**
1645	**277**	**70.3%**
1700	**167**	**38.3%**
1715	**159**	**34.6%**
1730	**157**	**34.4%**
1745	**42**	**10.5%**
1800	**0**	**0.0%**
1815	**0**	**0.0%**
1830	**0**	**0.0%**
1845	**0**	**0.0%**
1900	**0**	**0.0%**
1915	**0**	**0.0%**
1930	**0**	**0.0%**
1945	**0**	**0.0%**

26 February 2020

Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	351	81	156	104	10	0	0	0	0	0	0	0	0	0	0	**237**	**67.5%**
1615	344	96	147	97	1	2	1	0	0	0	0	0	0	0	0	**243**	**70.6%**
1630	422	40	143	167	64	6	2	0	0	0	0	0	0	0	0	**183**	**43.4%**
1645	414	108	192	90	17	7	0	0	0	0	0	0	0	0	0	**300**	**72.5%**
1700	435	40	127	200	64	4	0	0	0	0	0	0	0	0	0	**167**	**38.4%**
1715	458	33	187	165	72	1	0	0	0	0	0	0	0	0	0	**220**	**48.0%**
1730	446	27	148	187	68	15	1	0	0	0	0	0	0	0	0	**175**	**39.2%**
1745	379	15	35	46	39	26	62	104	35	11	6	0	0	0	0	**50**	**13.2%**
1800	424	0	0	0	2	38	184	139	45	11	5	0	0	0	0	**0**	**0.0%**
1815	354	0	0	0	4	48	105	115	66	14	2	0	0	0	0	**0**	**0.0%**
1830	299	0	0	0	0	12	109	120	35	13	10	0	0	0	0	**0**	**0.0%**
1845	286	0	0	0	0	15	69	127	60	11	4	0	0	0	0	**0**	**0.0%**
1900	250	0	0	0	0	5	39	93	63	37	12	1	0	0	0	**0**	**0.0%**
1915	253	0	0	1	2	8	64	97	44	25	12	0	0	0	0	**0**	**0.0%**
1930	194	0	0	0	0	2	37	59	47	35	12	1	1	0	0	**0**	**0.0%**
1945	183	0	0	0	0	3	29	47	57	25	20	1	1	0	0	**0**	**0.0%**

27 February 2020

Time	Total	Vbin 0 10	Vbin 10 15	Vbin 15 20	Vbin 20 25	Vbin 25 30	Vbin 30 35	Vbin 35 40	Vbin 40 45	Vbin 45 50	Vbin 50 60	Vbin 60 70	Vbin 70 80	Vbin 80 90	Vbin 90 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	386	116	153	90	25	2	0	0	0	0	0	0	0	0	0	**269**	**69.7%**
1615	370	53	225	77	15	0	0	0	0	0	0	0	0	0	0	**278**	**75.1%**
1630	370	63	177	81	48	1	0	0	0	0	0	0	0	0	0	**240**	**64.9%**
1645	371	61	192	109	9	0	0	0	0	0	0	0	0	0	0	**253**	**68.2%**
1700	435	21	145	187	74	8	0	0	0	0	0	0	0	0	0	**166**	**38.2%**
1715	461	27	71	185	151	25	2	0	0	0	0	0	0	0	0	**98**	**21.3%**
1730	469	26	113	196	122	12	0	0	0	0	0	0	0	0	0	**139**	**29.6%**
1745	438	7	27	96	46	68	86	66	29	11	2	0	0	0	0	**34**	**7.8%**
1800	407	0	0	0	5	34	141	144	67	8	8	0	0	0	0	**0**	**0.0%**
1815	338	0	0	0	0	30	91	142	55	17	3	0	0	0	0	**0**	**0.0%**
1830	290	0	0	0	0	2	51	113	89	17	17	0	1	0	0	**0**	**0.0%**
1845	294	0	0	0	0	7	71	127	61	23	3	2	0	0	0	**0**	**0.0%**
1900	258	0	0	0	0	0	43	133	61	16	5	0	0	0	0	**0**	**0.0%**
1915	235	0	0	1	0	11	52	100	40	23	7	1	0	0	0	**0**	**0.0%**
1930	213	0	0	0	0	2	23	78	65	23	20	2	0	0	0	**0**	**0.0%**
1945	164	0	0	0	0	0	14	55	57	22	13	3	0	0	0	**0**	**0.0%**

REPORT STATUS	1 & 5

SITE DETAILS					
266 A	Portsmouth	A2030	Southbound	467381	103985

INSTALL NOTES					
INSTALL	**CHECK 1**	**CHECK 2**	**CHECK 3**	**CHECK 4**	**COLLECTION**
20.02.2020	24.02.2020	02.03.2020	09.03.2020	16.03.2020	17.03.2020

OBSERVATIONS

Site Observations:
25.02.2020 - Slow moving traffic noted going over the A2030 bridge.
02.03.2020 - Slow moving traffic noted going over the A2030 bridge.

Analysis Comments:
Queueing over the tubes causing vehicles to move slowly, especially in the PM peak on 25th and 28th February, and 2nd, 5th and 10th March 2020.

Roadworks checked online from roadworks.org:
A2030 Eastern Road (North of site location) - Lane closure between 22nd February until 23rd February 2020.

Issue Code	Issue Desc
0	No Issues
1	Roadworks & events
2	Equipment damage & failure/Missing Data
3	Weather & environmental
4	Accidents?
5	Other

Advanced Transport Research

Report Id - CustomList-63
Site Name - 23771-266B; 23771-266B; 23771-266B; 23771-266B; 23771-266B
Description - Multiple Files! See Header sheet.
Direction - South

Tuesday 25 February 2020 (football day)

Start Time	Total	Vbin 0 - 10	Vbin 10 - 15	Vbin 15 - 20	Vbin 20 - 25	Vbin 25 - 30	Vbin 30 - 35	Vbin 35 - 40	Vbin 40 - 45	Vbin 45 - 50	Vbin 50 - 60	Vbin 60 - 70	Vbin 70 - 80	Vbin 80 - 90	Vbin 90 - 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	509	0	0	0	0	10	80	198	170	44	7	0	0	0	0	**0**	**0.0%**
1615	525	0	0	0	4	7	71	211	165	51	15	1	0	0	0	**0**	**0.0%**
1630	573	0	0	4	4	17	110	255	155	25	3	0	0	0	0	**0**	**0.0%**
1645	578	0	1	0	10	31	155	266	94	16	5	0	0	0	0	**1**	**0.2%**
1700	492	28	128	129	125	43	27	9	3	0	0	0	0	0	0	**156**	**31.7%**
1715	412	77	104	88	32	26	46	25	13	1	0	0	0	0	0	**181**	**43.9%**
1730	419	53	121	153	76	13	3	0	0	0	0	0	0	0	0	**174**	**41.5%**
1745	474	75	167	167	58	6	1	0	0	0	0	0	0	0	0	**242**	**51.1%**
1800	407	101	123	123	49	11	0	0	0	0	0	0	0	0	0	**224**	**55.0%**
1815	450	84	133	118	99	15	0	1	0	0	0	0	0	0	0	**217**	**48.2%**
1830	359	87	120	108	43	1	0	0	0	0	0	0	0	0	0	**207**	**57.7%**
1845	325	148	117	50	9	1	0	0	0	0	0	0	0	0	0	**265**	**81.5%**
1900	309	4	36	31	9	24	31	59	72	29	13	1	0	0	0	**40**	**12.9%**
1915	259	0	0	0	0	5	9	92	96	37	19	1	0	0	0	**0**	**0.0%**
1930	203	0	0	0	0	0	12	57	84	35	14	1	0	0	0	**0**	**0.0%**
1945	204	0	0	0	0	0	12	55	73	47	16	1	0	0	0	**0**	**0.0%**
2145	92	0	0	0	0	1	10	27	28	23	3	0	0	0	0	**0**	**0.0%**
2200	110	0	0	0	0	0	7	37	40	14	10	2	0	0	0	**0**	**0.0%**
2215	100	0	0	0	0	2	10	36	30	19	3	0	0	0	0	**0**	**0.0%**
2230	61	0	0	0	0	1	5	22	20	12	1	0	0	0	0	**0**	**0.0%**
2245	49	0	0	0	0	1	4	13	17	9	2	3	0	0	0	**0**	**0.0%**
2300	49	0	0	0	0	0	2	19	16	7	5	0	0	0	0	**0**	**0.0%**
2315	52	0	0	0	0	1	4	17	15	10	4	0	1	0	0	**0**	**0.0%**
2330	33	0	0	0	0	0	0	14	13	3	3	0	0	0	0	**0**	**0.0%**
2345	37	0	0	0	0	0	1	7	17	2	9	1	0	0	0	**0**	**0.0%**

Averages over 26 to 27 Feb 2020 (non-football days)

Start Time	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	**0**	**0.0%**
1615	**0**	**0.0%**
1630	**0**	**0.0%**
1645	**0**	**0.0%**
1700	**0**	**0.0%**
1715	**0**	**0.0%**
1730	**0**	**0.0%**
1745	**0**	**0.0%**
1800	**0**	**0.0%**
1815	**0**	**0.0%**
1830	**0**	**0.0%**
1845	**0**	**0.0%**
1900	**0**	**0.0%**
1915	**0**	**0.0%**
1930	**0**	**0.0%**
1945	**0**	**0.0%**

26 February 2020

Time	Total	Vbin 0 - 10	Vbin 10 - 15	Vbin 15 - 20	Vbin 20 - 25	Vbin 25 - 30	Vbin 30 - 35	Vbin 35 - 40	Vbin 40 - 45	Vbin 45 - 50	Vbin 50 - 60	Vbin 60 - 70	Vbin 70 - 80	Vbin 80 - 90	Vbin 90 - 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	482	0	0	0	0	24	89	177	147	37	8	0	0	0	0	**0**	**0.0%**
1615	536	0	0	0	0	16	101	239	139	26	14	1	0	0	0	**0**	**0.0%**
1630	476	0	0	0	2	7	97	205	128	34	3	0	0	0	0	**0**	**0.0%**
1645	519	0	0	0	0	10	90	210	165	40	4	0	0	0	0	**0**	**0.0%**
1700	465	0	0	0	1	4	69	196	154	33	8	0	0	0	0	**0**	**0.0%**
1715	529	0	0	0	0	11	102	217	137	44	16	1	1	0	0	**0**	**0.0%**
1730	454	0	0	2	9	6	67	178	147	44	1	0	0	0	0	**0**	**0.0%**
1745	455	0	0	0	0	1	65	191	131	52	15	0	0	0	0	**0**	**0.0%**
1800	457	0	0	0	1	9	61	170	155	52	9	0	0	0	0	**0**	**0.0%**
1815	415	0	0	0	0	7	54	141	149	48	14	2	0	0	0	**0**	**0.0%**
1830	345	0	0	0	0	2	31	145	95	58	14	0	0	0	0	**0**	**0.0%**
1845	334	0	0	0	0	0	29	99	126	66	13	1	0	0	0	**0**	**0.0%**
1900	276	0	0	0	0	1	14	90	97	55	19	0	0	0	0	**0**	**0.0%**
1915	279	0	0	0	0	0	8	97	98	56	20	0	0	0	0	**0**	**0.0%**
1930	232	0	0	0	0	3	11	77	67	55	18	1	0	0	0	**0**	**0.0%**
1945	214	0	0	0	0	0	19	62	74	43	16	0	0	0	0	**0**	**0.0%**

27 February 2020

Time	Total	Vbin 0 - 10	Vbin 10 - 15	Vbin 15 - 20	Vbin 20 - 25	Vbin 25 - 30	Vbin 30 - 35	Vbin 35 - 40	Vbin 40 - 45	Vbin 45 - 50	Vbin 50 - 60	Vbin 60 - 70	Vbin 70 - 80	Vbin 80 - 90	Vbin 90 - 100	Traffic moving under 15 mph: Volumes	Traffic moving under 15 mph: Percentage of Total
1600	496	0	0	0	0	5	55	221	148	56	11	0	0	0	0	**0**	**0.0%**
1615	548	0	0	0	0	3	84	253	161	44	3	0	0	0	0	**0**	**0.0%**
1630	539	0	0	0	0	9	117	222	140	47	4	0	0	0	0	**0**	**0.0%**
1645	561	0	0	0	3	17	109	279	123	27	3	0	0	0	0	**0**	**0.0%**
1700	507	0	0	0	1	22	92	230	136	23	3	0	0	0	0	**0**	**0.0%**
1715	478	0	0	0	0	7	58	198	156	51	8	0	0	0	0	**0**	**0.0%**
1730	447	0	0	0	0	8	47	200	146	43	3	0	0	0	0	**0**	**0.0%**
1745	469	0	0	0	0	2	44	208	152	53	8	2	0	0	0	**0**	**0.0%**
1800	440	0	0	0	0	0	33	206	141	47	13	0	0	0	0	**0**	**0.0%**
1815	369	0	0	0	0	4	48	126	132	49	10	0	0	0	0	**0**	**0.0%**
1830	352	0	0	0	0	0	18	142	110	63	19	0	0	0	0	**0**	**0.0%**
1845	306	0	0	0	0	1	14	92	120	60	17	2	0	0	0	**0**	**0.0%**
1900	279	0	0	0	0	0	21	89	106	43	16	2	2	0	0	**0**	**0.0%**
1915	276	0	0	0	0	2	14	77	105	52	26	0	0	0	0	**0**	**0.0%**
1930	247	0	0	0	0	1	20	63	85	49	26	3	0	0	0	**0**	**0.0%**
1945	225	0	0	0	0	3	19	40	79	62	20	2	0	0	0	**0**	**0.0%**

Appendix 3 – Framework Signage Strategy

FRAMEWORK SIGNAGE STRATEGY

INTRODUCTION

This document provides a Signage Strategy to accompany the construction of the Onshore Cable Route where it impacts the Portsmouth and Hampshire highway networks. The strategy provides an important part of the Framework Traffic Management Strategy (FTMS) and Communication Strategy during the phased construction period by informing the traveling public of the works and associated Traffic Management required to facilitate this construction. This will allow drivers to make informed choices related to reassignment of trips away from the Onshore Cable Corridor dependent on the programme and location of works at a particular time and help to mitigate impacts associated with use of such.

The strategy considers the following key topics:

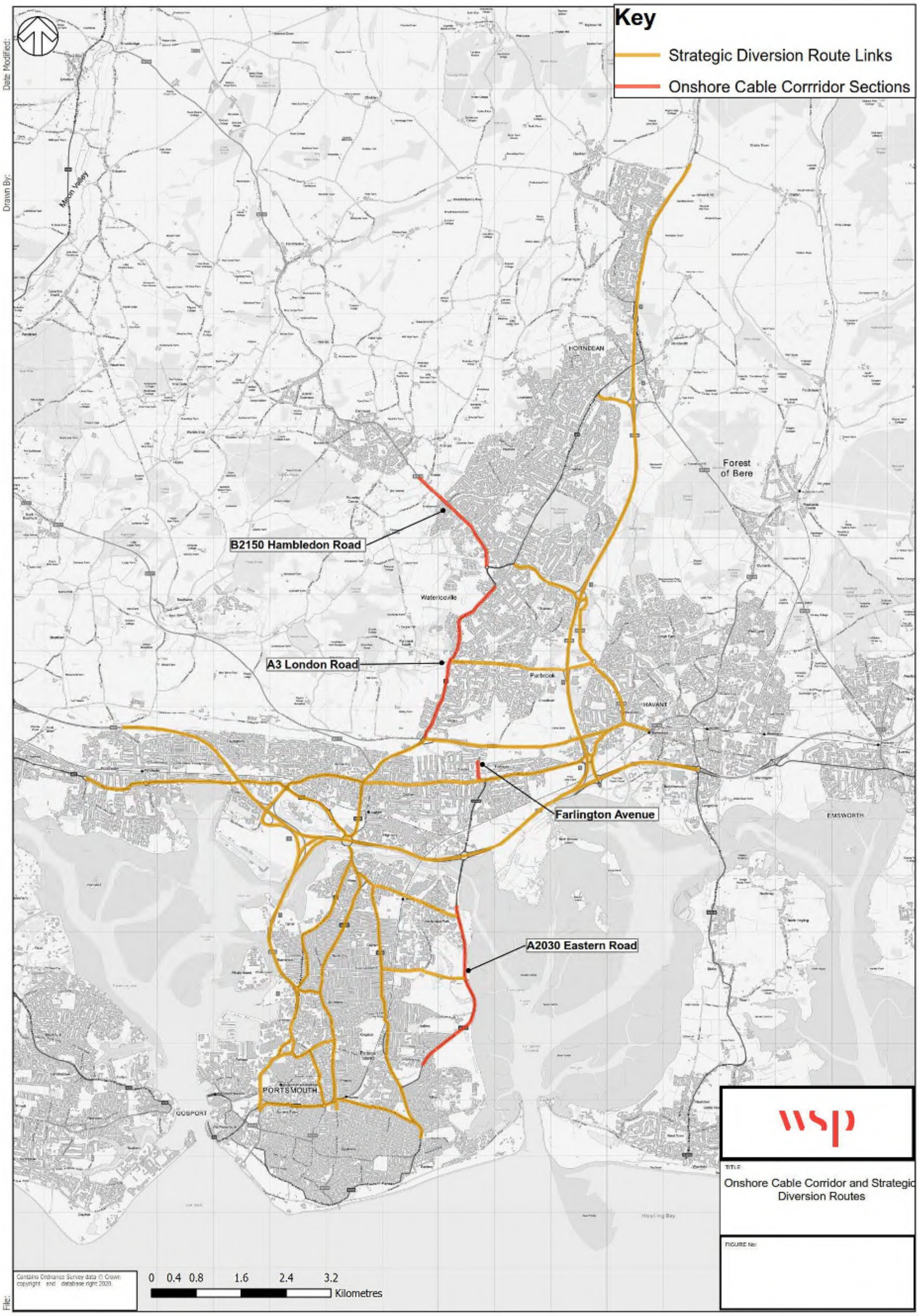
- The location of strategic signage across the wider strategic highway network which informs drivers of the construction works and allows them to re-route well before reaching the Onshore Cable Corridor;
- The location of additional signage in the vicinity of or on the Onshore Cable Corridor which allows drivers to re-route in close proximity of the works;
- Signage to direct and encourage use of appropriate alternative routes to avoid the construction works; and
- Signage to discourage use of routes which are considered to be inappropriate for reassignment of traffic away from the works.

This strategy provides an overall approach to use and proposed locations of highway signage. A high-level approach is necessary given the transient nature of the construction programme of the Onshore Cable Route and restrictions presented in the FTMS that prevent works in close proximity to each other. The strategy also focuses on how this can be adapted to respond to works being undertaken in the following locations:

- B2150 Hambledon Road between where the cable route enters the highway north of Soake Road and B2150 Hambledon Road / A3 Maurepas Way / Houghton Way Roundabout (Section 3.2 to 4.2 of the FTMS);
- A3 London Road between Forest End Roundabout and Portsdown Hill Road (Section 4.3 and 4.4 of the FTMS);
- Farlington Avenue (Section 5.4 of the FTMS) and
- A2030 Eastern Road between Airport Service Road and Eastern Avenue (Section 8.1 and 8.2 of the FTMS).

These locations are provided on the location plan in Figure 1, which also shows the strategic routes which will be used for any formal or informal diversion routes required during the construction stage.

Figure 1 – Onshore Cable Route Construction / Traffic Management Locations



OVERALL PRINCIPLES OF STRATEGY

The signage is required to advise traffic well in advance of the works locations but will also include repeat signage nearer the works locations. Together, the signage will ensure:

- That any drivers who miss the first sign will see the information on subsequent signage; and
- That the reassignment to different routes is more likely to be dispersed across more than one alternative and appropriate routes.

This will be achieved as follows:

- Signage will be placed at appropriate strategic locations as identified within this strategy, to ensure drivers from further afield divert their route before reaching the Onshore Cable Corridor at particular times dependent on the programme of works;
- Advanced warning signs prior to the start of works aligned with the construction programme at a particular location will also reinforce the message; and
- Use of signs to discourage the use of certain routes (such as local roads) which are sensitive to increases in traffic flow as a result of reassignment as identified through work completed within the Transport Assessment (APP-448), Environmental Statement Chapter 22 (APP-137) Supplementary Transport Assessment (REP1-142) and ES Addendum Chapter 15 (REP1-138).

Types of Signage and Content

All signage will be designed in accordance with relevant Standards and regulations (*Traffic Signs Manual, Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations, DfT 2009)* for the location and road type; and will be subject to approval by Hampshire County Council (HCC) and / or Portsmouth City Council (PCC). The signage will comprise fixed signs or mobile variable message signs ('VMS'). The types of signs that will be used are broadly as follows:

- Fixed signs displaying '*Advanced Warning*' of the construction works, to be erected in various locations and showing the start-dates and periods of works. The extent of the area in which these signs will be distributed is provided within this strategy.
- Mobile Variable Message Signs ('VMS') and fixed signs that will be placed at appropriate locations, for the duration of the construction works that require them advising drivers of the construction work. When works are completed in all locations accessible by a particular location (i.e. when the critical decision point location moves), the sign can be moved to another location as needed. Text can also be updated as needed on the VMS units, including live traffic updates if appropriate.
- Fixed signs providing 'positive' directional messages that provide directional information on appropriate alternative routes that avoid the Onshore Cable Corridor. This could include on appropriate routes directional signs for 'Waterlooville town centre' and / or 'A3(M)' around the A3 London Road area and 'Exit from City' along the A288 Copnor Road and A2047 London Road.
- Fixed signs to discourage use of certain routes that are deemed unsuitable routs for the reassignment of traffic. This will primarily be through the of 'Access Only' signage to prevent use of residential streets but should also consider 'Unsuitable for HGVs' and 'Roads Unsuitable for Diverted Traffic' where appropriate.

For the safety of road users, it is important to limit the content of a sign as signs can be distracting to drivers and other road users. As mentioned above, the content will be limited partly by displaying the diversion route information over several different decision points along each diversion route.

HCC and PCC may have additional requirements regarding the content of the signs, both fixed and VMS. While final approval will be required from the highway authority(ies), it is expected that such decisions will be made in accordance with the "*Traffic Signs Manual, Chapter 8: Traffic Safety Measures and Signs for Road Works and Temporary Situations; Part 1: Design and Part 3: Update*" (DfT, 2009 and 2020 update)[1].

Mobile Variable Message Signs (VMS)

While there will be ‘Advanced Warning’ signs placed on the highway before the works detailing start-date and periods of works, it is also intended that mobile Variable Message Signs (‘VMS’) are provided at key locations along the Onshore Cable Corridor. These will be installed at least one week prior to commencement of the construction works along each section of highway. An example of such is shown in Figure 2 below

Figure 2 - Example of Mobile VMS Sign

The following details are given in the Traffic Signs Manual, Chapter 8, Part 3 “*Update*”, [1]regarding VMS. This is not a complete list of requirements as it is expected that the highway authorities to review and approve the requirements of the signage and agree arrangements with the Contractor(s) on the manufacture and provision of the signs to all legal requirements. However, listed below any details regarding permitted words and location, where relevant to this signage strategy.

- VMS may only be used to display traffic signs as defined in the Road Traffic Regulation Act. Their use to display any other message renders the installation unlawful.
- On roads where the 85th percentile approach speed of private cars, as determined in accordance with TA 22, is greater than 40 mph, it is recommended that two VMS displaying the same legend are provided where possible; especially if the information is likely to conflict with that on fixed directional signs.

---

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/782724/traffic-signs-manual-chapter-03.pdf

- Messages should be as short as possible while being fully comprehensible to drivers. They should not normally consist of more than eight words or six units of information, as defined in Table 5.16 of Traffic Signs Manual, Chapter 8, Part 3.
- Table 5.16 details various examples of phrases and the number of 'units of information' of each, for a VMS. As an example, a single place name of one, two or three words is one unit.
- Following the rules in Table 5.16, a sign saying "*A2030 Eastern Road roadworks; use M275*" would equate to four units of information as '*A2030 Eastern Road*' is one unit.
- All messages must be displayed on a single sign aspect. It is unlawful to display messages that require the use of multiple displays (e.g. 'paging' or 'scrolling' text). Where possible, the prescribed messages in TSRGD should be used.
- To assist driver assimilation of VMS, non-prescribed legends should broadly follow the same principles as the prescribed legends in TSRGD.
- Strategic traffic and diversion legends should be constructed in the following order:
  - Location e.g. M1 J3-4 NORTH;
  - Problem e.g. ACCIDENT;
  - Effect e.g. LONG DELAYS; and
  - Guidance e.g. USE M40.
- Depending on the capability of the VMS, some information may have to be omitted. In general, the 'effect' is more important than the 'problem' (see above). Partial information should only be given when it will be supported by other signing in the area.
- Advance or remote notice of road works or major events should follow the order and style of the information on signs to Working Drawings 7002A to 7003.1. Dates and times must be expressed in the formats prescribed in Traffic Signs Regulations and General Directions (TSRGD) (DfT, 2016), see Paragraph U5.3.4. The 24-hour clock must **not** be used under any circumstances.
- The siting of VMS should be carefully considered to ensure safe access for maintenance personnel. Such signs may be trailer or post mounted behind a vehicle restraint system as necessary.

As stated above, the exact details of all VMS signage would be submitted and agreed with HCC and PCC as part of detailed traffic management strategies in accordance with the Development Consent Order (DCO).

STRATEGIC SIGNAGE LOCATIONS

Taking account of the overall strategy, the recommended locations for Advanced Warning / VMS signs are provided in Tables 1 to 3 alongside details of where traffic may reassign base on these locations and period of construction where each location would be required. These are also shown graphically in Figure 3.

In all cases, the signs will not specify the diversion routes but provide suitable warning to drivers to reassign onto appropriate alternative routes before reaching the Onshore Cable Corridor. Additionally, the project website will include details of construction location along the Onshore Cable Corridor, so that drivers can plan their journeys in advance.

In order to respond to comments from HCC, signage has been provided to the north of Droxford on the A32 Wickham Road. A further mobile VMS sign will be provided on the A3 to the north of the Clanfield area at a specific location to be agreed at the detailed approval stage. These additional signs will provide added resilience to the overall strategy.

Strategic Highway Network Signage

At a strategic level, it is recommended that the construction work taking place on the A3 London Road or A2030 Eastern Road is also signed on Highways England VMS signs located on the A3(M), A27 and M27 to the north, east and west of the Onshore Cable Corridor as also shown on Figure 2. These are located such that they provide a significant communication method for traffic travelling along these routes towards where construction works may be in progress:

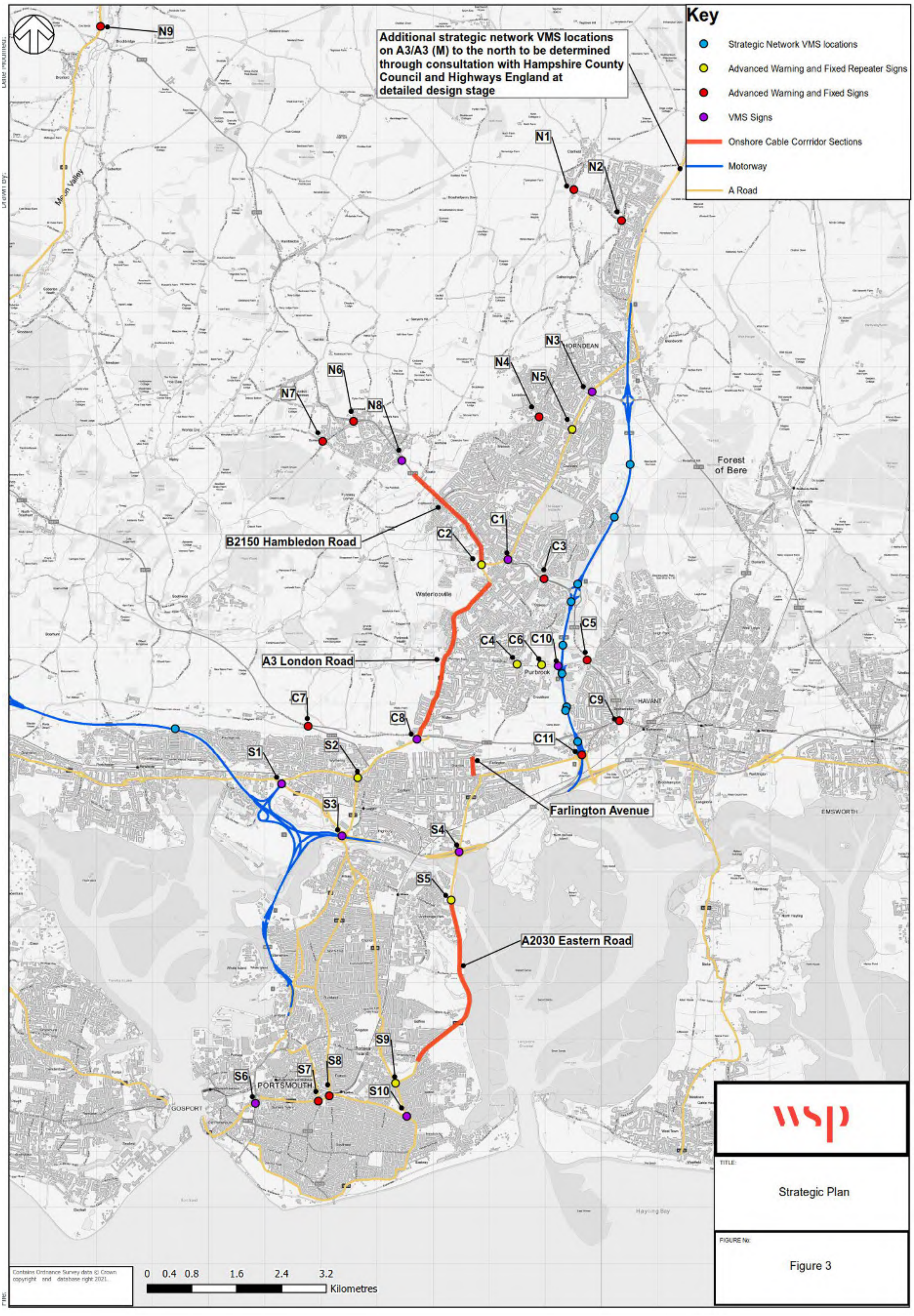
- A3(M) between Junction 2 and 3;
- A3(M) between Junction 3 and 4
- A3(M) between Junction 4 and 5;
- A3 to the north of the Clanfield area and
- M27 between Junction 11 and 12.

Use of messages (in accordance with Highways England policy) at these locations such as “A2030 Eastern Road Roadworks” and / or “A3 London Road Works” will allow driver to divert away from such routes whilst still on the Strategic Road Network thereby limiting the use of routes on the local highway network.

Whilst the preference will be to utilise existing VMS apparatus on the SRN, the use of this cannot be guaranteed. Consequently, the utilisation of mobile VMS has also been allowed for.

Furthermore, to warn drivers of queuing traffic at the A3(M) Junction 2 and 3 as a result of the reassignment of traffic, temporary fixed or VMS signs should be installed on the A3(M) northbound approaches to each junction. The final location of such signage will need to be agreed with Highways England.

Figure 3 - Strategic Signage Locations



Local Highway Network Signage

Table 1 – Clanfield, Horndean and Denmead Areas (North of Onshore Cable Corridor)

Sign Ref	Sign Locations	Sign Type	Potential Diversion Route from signed locations	Applicable Construction Locations where Signage Required
N1	South Lane / Drift Road / Downhouse Road, Clanfield	Advanced Warning Fixed Sign	A3(M) via junction 1 Routes west to Hambledon and Denmead .	All works within HCC network
N2	Green Lane / Drift Road / White Dirt Lane, Clanfield	Advanced Warning Fixed Sign	A3(M) via junction 1 Routes west to Hambledon and Denmead	All works within HCC network
N3	A3 Portsmouth Road / Catherington Lane / Dell Piece West traffic signal junction, Horndean	VMS	A3(M) via Junction 2 Routes to Denmead and west avoiding A3 Maurepas Way and southern half of B2150 Hambledon Road	All works within HCC network
N4	Lovedean Lane / Milton Road, Cowplain	Advanced Warning Fixed Sign	A3(M)	All works within HCC network
N5	A3 Portsmouth Road / Lovedean Lane Junction, Horndean	Advanced Warning Repeater Fixed Sign	A3(M)	Works on A3 London Road
N6	B2150 Hambledon Road / Southwick Road, Denmead	Advanced Warning Fixed Sign	Routes south and west via Southwick and Wickham (B2177)	Works on B2150 Hambledon Road / A3 London Road
N7	Forest Road / Southwick Road / Bunkers Hill, Denmead	Advanced Warning Fixed Sign	Routes south and west via Southwick and Wickham (B2177) Routes north via Hambledon	Works on B2150 Hambledon Road / A3 London Road
N8	B2150 Hambledon Road / Forest Road, Denmead	VMS	Routes south and west via Southwick and Wickham (B2177) Routes north via Hambledon	Works on B2150 Hambledon Road / A3 London Road
N9	A32 Wickham Road	Advanced Warning Fixed Sign	Routes south and west via Southwick and Wickham (B2177) Routes north via Hambledon	Works on B2150 Hambledon Road / A3 London Road

Table 2 – Waterlooville, Purbrook, Northern Portsmouth and Havant Areas (Central section of Onshore Cable Corridor)

Sign Ref	Sign Locations	Sign Type	Potential Diversion Route from signed locations	Applicable Construction Locations where Signage Required
C1	B2150 Hambledon Road / Houghton Avenue / A3 Maurepas Way, Waterlooville	VMS	A3 (M) via Junction 3 A3 London Road north of Onshore Cable Corridor Routes to Purbrook via Frendstaple Road / Stakes Hill Road	Works on B2150 Hambledon Road, A3 Maurepas Way, A3 London Road
C2	A3 London Road / B2150 Hulbert Road roundabout, Waterlooville	Advanced Warning Fixed Sign	A3 (M) via Junction 3 A3 London Road north of Onshore Cable Corridor Routes to Purbrook via Frendstaple Road / Stakes Hill Road	Works on B2150 Hambledon Road, A3 Maurepas Way, A3 London Road
C3	B2150 Hulbert Road / Tempest Avenue / Frendstaple Road roundabout, Waterlooville	Advanced Warning Repeater Fixed Sign	Routes to Purbrook via Frendstaple Road / Stakes Hill Road	Works on A3 London Road
C4	Stakes Road / Stakes Hill Road / Crookhorn Lane, Purbrook	Advanced Warning Repeater Fixed Sign	Routes north via Stakes Hill Road / Frendstaple Road Routes south via Crookhorn lane and A3(M)	Works on A3 London Road
C5	Purbrook Way / Hulbert Road signalised roundabout, Leigh Park	Advanced Warning Fixed Sign	Routes north via Stakes Hill Road and Hulbert Road Hulbert Road	Works on A3 London Road
C6	Purbrook Way / College Road	Advanced Warning Repeater Fixed Sign	Routes south via College Road and Hulbert Road	Works on A3 London Road
C7	B2177 Southwick Road / Portsdown Hill Road	Advanced Warning Fixed Sign	A27 and A3(M)	Works on A3 London Road / Portsdown Hill / Farlington Avenue

Sign Ref	Sign Locations	Sign Type	Potential Diversion Route from signed locations	Applicable Construction Locations where Signage Required
C8	B2177 Portsdown Hill Road / A3 London Road, Widley	VMS	Continue routes along B2177 Portsdown Hill Road	Works on A3 London Road / Portsdown Hill / Farlington Avenue
C9	Bedhampton Road / Hulbert Road traffic signal junction, Bedhampton	Advanced Warning Fixed Sign	North via Hulbert Road	Works on A3 London Road / Portsdown Hill / Farlington Avenue
C10	A3(M) Junction 4, Bedhampton	VMS	North via Hulbert Road	Works on A3 London Road
C11	A3(M) Junction 5, Bedhampton	Advanced Warning Fixed Sign	North via A3(M)	Works on A3 London Road / Portsdown Hill / Farlington Avenue

Table 3 – Northern Portsmouth and Portsea Island Areas (Southern section of Onshore Cable Corridor)

Sign Ref	Sign Locations	Sign Type	Potential Diversion Route from signed locations	Applicable Construction Locations where Signage Required
S1	M275 / M27 (M27 Junction 12)	VMS	M275 for Portsmouth traffic Routes north via A27 and A3(M)	Works on A3 London Road and A2030 Eastern Road
S2	A3 Southampton Road / A397 Northern Road / Havant Road	Advanced Warning Repeater Fixed Sign	M275 for Portsmouth traffic Routes north via A27 and A3(M)	Works on A3 London Road and A2030 Eastern Road
S3	Portsbridge Roundabout	VMS	M275 for Portsmouth traffic Routes north via A27 and A3(M)	Works on A3 London Road and A2030 Eastern Road
S4	A2030 Eastern Road / A27 Havant Bypass	VMS	Routes south via A27 and M275 Routes north via A27 and A3(M)	Works on A3 London Road and A2030 Eastern Road
S5	A2030 Eastern Road / Anchorage Road traffic signal junction	Advanced Warning Repeater Fixed Sign	Routes south via Anchorage Quartremaine Road and Dundas Lane	Works on A2030 Eastern Road
S6	Southern approaches to A3 / A2030 Winston Churchill Avenue / A288 Landport Terrace / Cambridge Road gyratory	VMS	Routes north via M275	Works on A2030 Eastern Road
S7	A2030 Holbrook Road / Victoria Road North roundabout	Advanced Warning Fixed Sign	Routes north via M275	Works on A2030 Eastern Road
S8	A2047 Fratton Road / Goldsmith Avenue / Fawcett Road roundabout	Advanced Warning Fixed Sign	Routes north via M275	Works on A2030 Eastern Road
S9	A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction	Advanced Warning Repeater Fixed Sign	Routes north via A288 Milton Road and Copnor Road	Works on A2030 Eastern Road
S10	A288 Milton Road / A2030 Goldsmith Avenue traffic signals	VMS	Routes north via Fratton Road, Holbrook Road and M275	Works on A2030 Eastern Road

SIGNAGE LOCATIONS FOR SPECIFIC CONSTRUCTION LOCATIONS

This section provides details of the recommended signage strategy for specific sections of the Onshore Cable Corridor identified in the introduction. Further to the strategic signage, this considers:

- The location of additional signage in the vicinity of or on the Onshore Cable Corridor which allows drivers to re-route in close proximity of the works;
- Signage to direct and encourage use of appropriate alternative routes in avoidance of the construction works; and
- Signage to discourage use of routes which are sensitive to increases in traffic flow associated reassignment of traffic away from the works.

For each location, the proposals show a recommended approach for the entirety of each section. This will therefore be subject to alterations to reflect that exact location of construction works and traffic management with that section. This will be confirmed by the contractor during detailed design and submitted for approval to HCC or PCC as required.

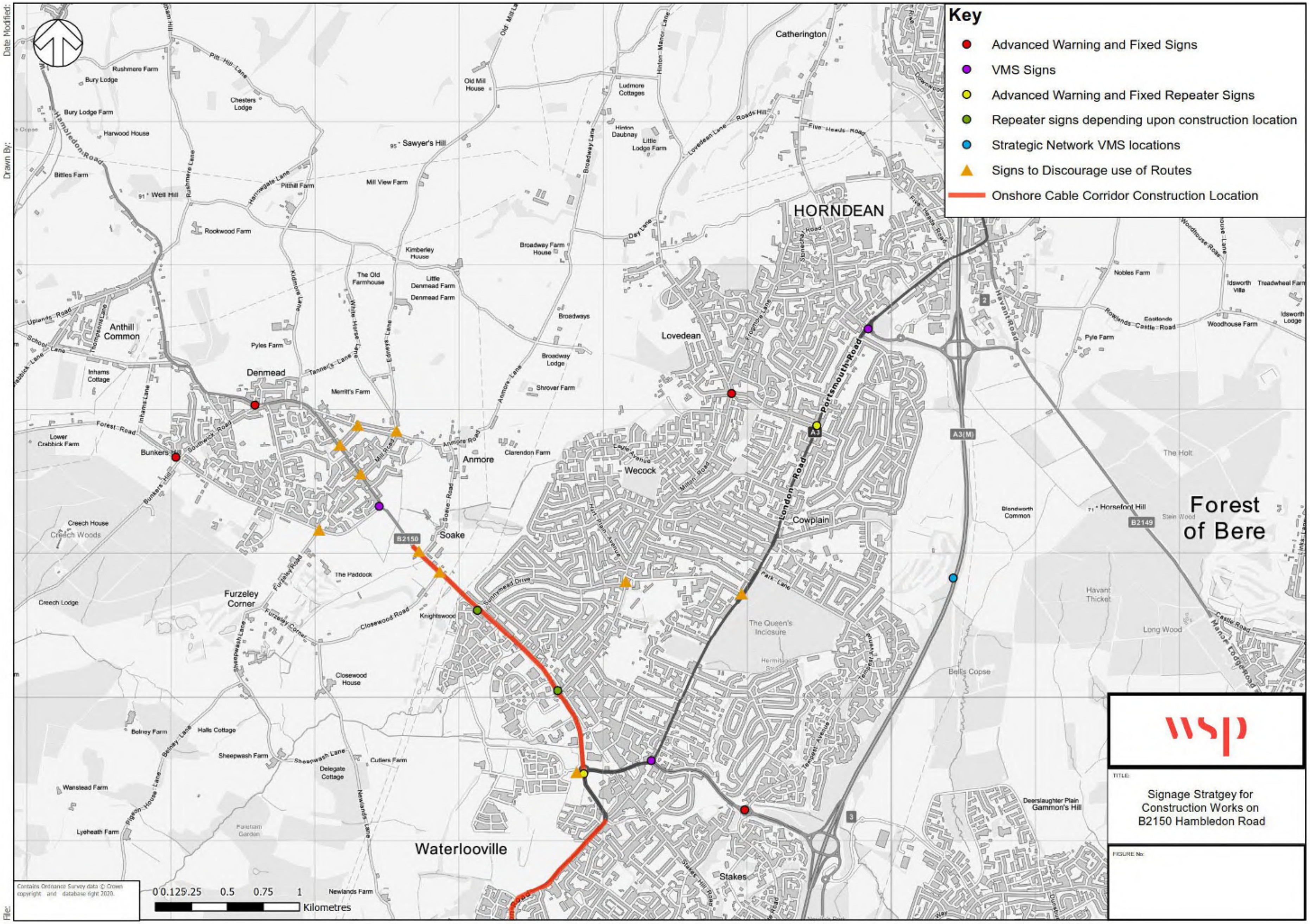
B2150 Hambledon Road between Denmead and Waterlooville

When construction work is taking place on B2150 Hambledon Road, and in combination with the strategic signage, the strategy focuses on:

- Directing drivers away from B2150 Hambledon Road when approaching from Denmead or Waterlooville;
- Providing repeater signs of works at key junctions such as Sunnymead Drive and Milton Road, depending upon the location that construction works are being completed; and
- Discouraging use of routes which may be sensitive to traffic flows increases associated with reassigned traffic, including:
  - Closewood Road, Furzeley Road and Newlands lane;
  - Soake Road (as a route to Anmore Road);
  - Mill Road (as a route to Anmore Rod)
  - Martyn Avenue (as a route to Anmore Road);
  - Darnell Road, Sickle Way and Houghton Avenue (location of Berewood Primary School); and
  - Hart Plain Avenue (Cowplain Infant School and Community School).

In all cases, the final location and type of signs used during construction work on B2150 Hambledon Road will be agreed with HCC as part of the final traffic management strategy produced by the Contractor to facilitate construction of the Onshore Cable Route.

Figure 4 - B2150 Hambledon Road - Framework Signage Strategy



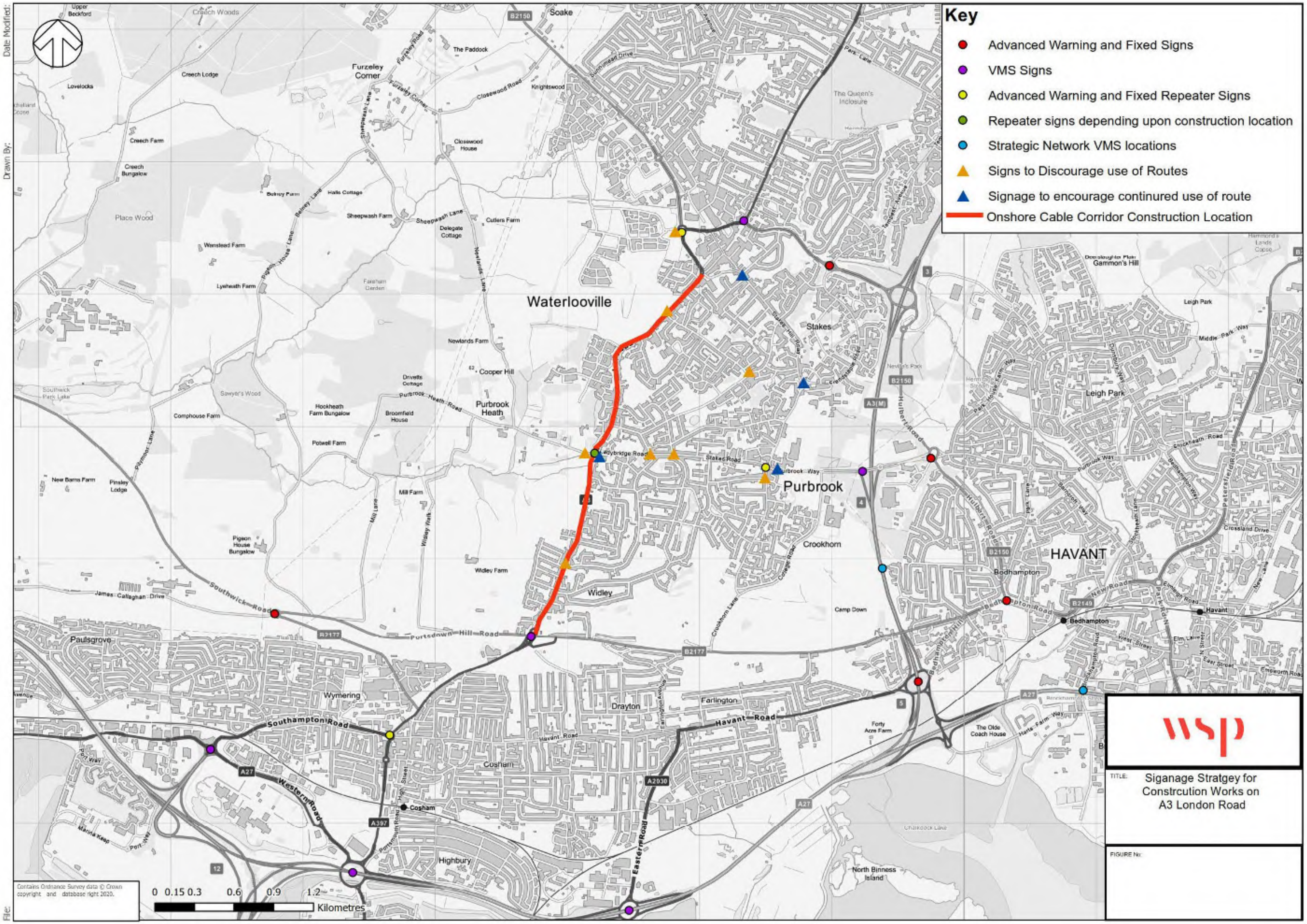
A3 London Road between Waterlooville and Portsdown Hill Road

When construction work is taking place on A3 London Road, and in combination with the strategic signage, the strategy focuses on:

- Directing drivers away from the A3 London Road primarily onto the A3(M) but also ensuring that other traffic remains on Stakes Hill Road / Frenstaple Road and College Road rather than routing down other less suitable routes;
- Providing repeater signs of works at key junctions such as Sunnymead Drive and Milton Road, depending upon the location that construction works are being completed; and
- Discouraging use of routes which may be sensitive to traffic flow increases associated with reassigned traffic, including:
  - Mill Road (location of Mill Hill Primary School);
  - Westbrook Grove, Elizabeth Road and Phillip Road (residential roads and location of Purbrook Infant and Junior School);
  - Park Avenue (residential road and location of Purbrook Park School);
  - Crookhorn Lane (Moorlands Primary School and Crookhorn centre)
  - Darnell Road, Sickle Way and Houghton Avenue (location of Berewood Primary School); and
  - Closewood Road, Furzeley Road, Purbrook Heath Road, New Down Lane, Widley Walk and Pigeon House Lane (rural lanes with limited carriageway width in places.

In all cases, the final location and type of signs used during construction work on A3 London Road will be agreed with HCC as part of the final traffic management strategy produced by the Contractor to facilitate construction of the Onshore Cable Route.

Figure 5 - A3 London Road Framework Signage Strategy



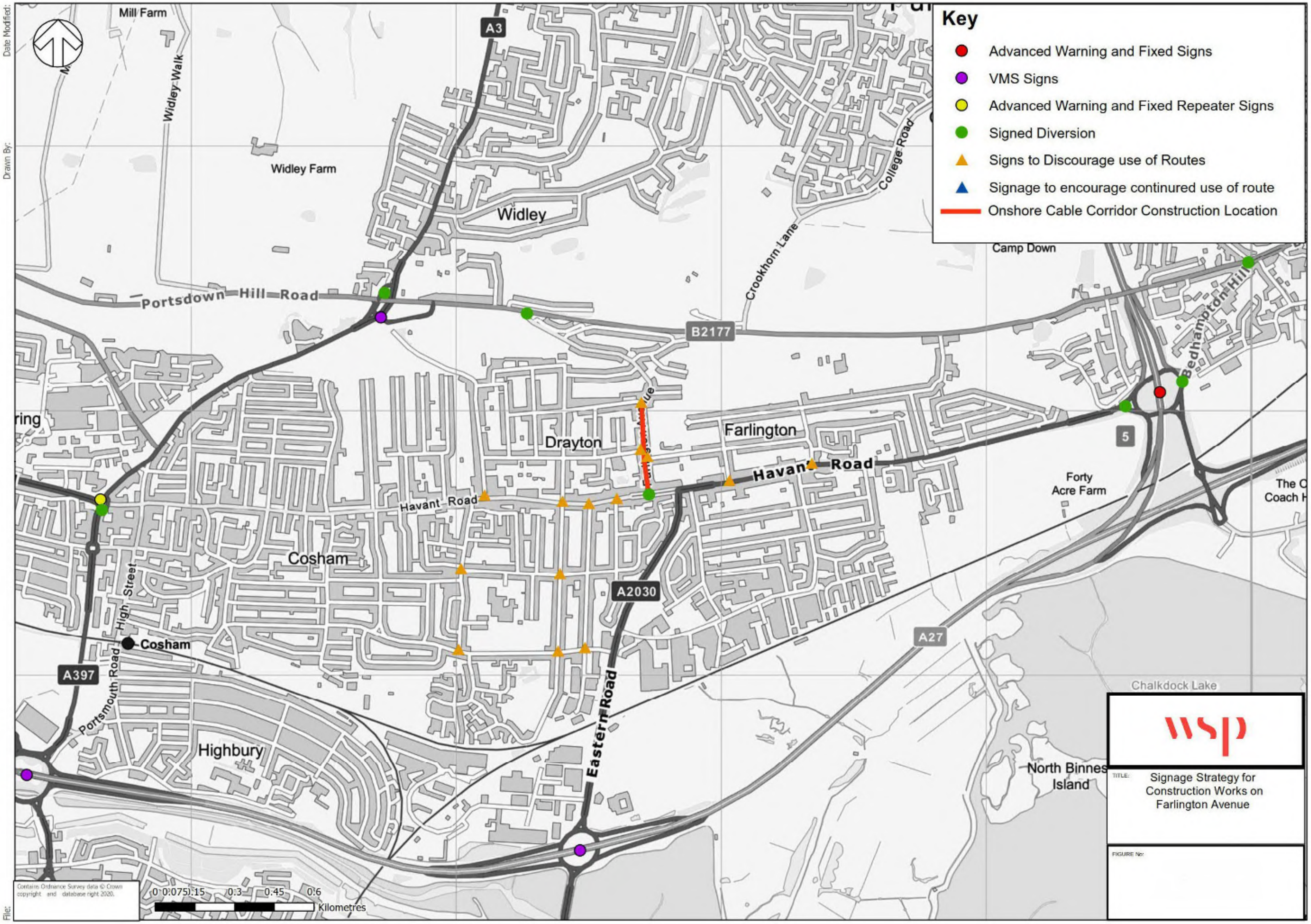
Farlington Avenue Road Closure

When construction work is taking place on Farlington Avenue, and in combination with the strategic signage, the strategy focuses on:

- Directing drivers away from the Farlington Avenue via the formal signed diversion route but also at wider locations before drivers reach the start of the diversion;
- Discouraging use of routes which may be sensitive to traffic flow increases associated with reassigned traffic, including:
  - Sea View Road, Solent Road, Portsdown Avenue to the west of Farlington Avenue;
  - Evelegh Road, Galt Road and Gilman Road to the east of Farlington Avenue;
  - South Road, Station Road, Central Road and Lower Drayton Lane to the south of Farlington Avenue

In all cases, the final location and type of signs used during construction work on Farlington Avenue will be agreed with PCC and HCC as part of the final traffic management strategy produced by the Contractor to facilitate construction of the Onshore Cable Route.

Figure 6 - Farlington Avenue Framework Signage Strategy



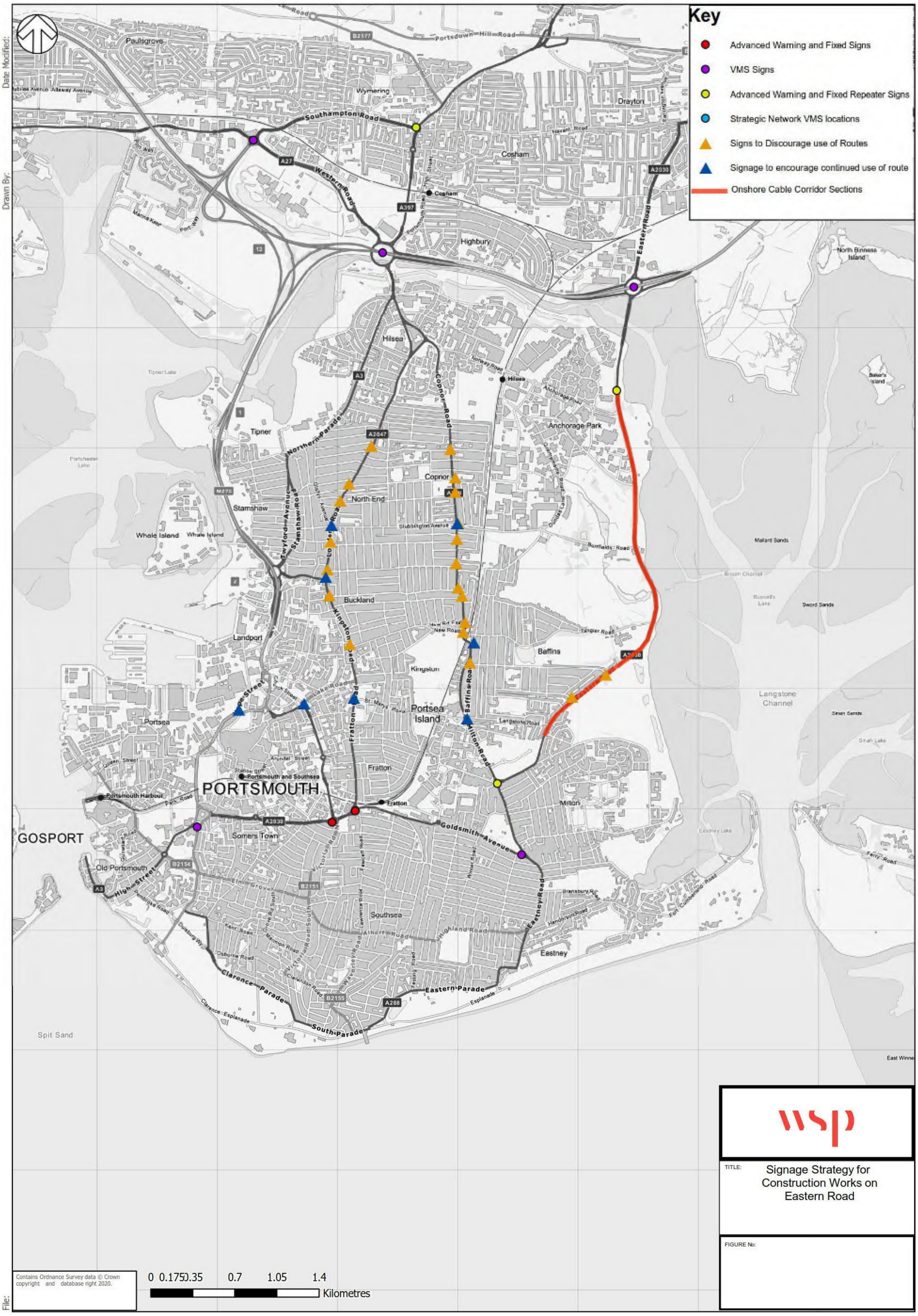
A2030 Eastern Road

When construction work is taking place on A2030 Eastern Road, and in combination with the strategic signage, the strategy focuses on:

- Directing drivers away from the Eastern Road and onto routes in and out of Portsmouth via the M275 from the north and the south;
- Encouraging drivers to remain on the A288 Copnor and A2047 London Road when traveling north or south along these routes to avoid construction works on A2030 Eastern Road
- Discouraging use of routes which may be sensitive to traffic flow increases associated with reassigned traffic, including the following routes which run between the A288 and A2048
  - Battenburg Avenue, Mayfield Road and Kirby Road north of Stubbington Avenue and Burrfields Road;
  - Laburnum Grove, Chichester Road, Powerscourt Road, Queens Road, New Road / New Road East between Stubbington Avenue / Burrfields Road and Tangier Road; and
  - Hayling Avenue and Stride Avenue to the south of Tangier Road.

In all cases, the final location and type of signs used during construction work on Farlington Avenue will be agreed with PCC as part of the final traffic management strategy produced by the Contractor to facilitate construction of the Onshore Cable Route.

Figure 7 - A2030 Eastern Road Framework Signage Strategy



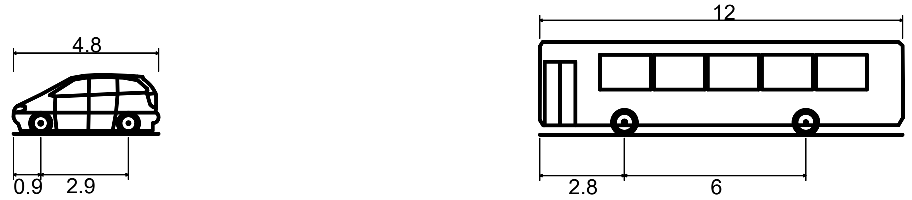
NEXT STEPS

This strategy has provided an overarching signage strategy to support and mitigate impacts associated with construction programme of the Onshore Cable Route within the HCC and PCC highway network. Forming part of the FTMS, this strategy will be secured within the Development Consent Order (DCO) and therefore become a requirement in relation to the construction the Onshore Cable Route.

Schedule 2 of the DCO (REP5-008) provides requirements for the traffic managements strategies, noting that these must be in accordance within the FTMS, submitted and approved to the highway authority detailing:

a. plans detailing the extent of the works aligned with the programme sequencing;
b. the construction methodology in relation to the works including details of the hours of the day within which the works are to be carried out;
c. a schedule of timings for the works, including the dates and durations for any closures of any part of the public highway;
d. the traffic management strategy to be implemented in relation to those works, including details of any traffic signals and signs and any traffic regulation measures proposed in connection with those works;
e. a schedule of condition of any part of the public highway to be affected by the works;
f. a specification of the condition of the parts of the public highway where the works are to be undertaken;
g. details of any lighting to be used in connection with the works for the duration that the works are being undertaken;
h. contact details for the client and contractor carrying out the works;
i. details of the advanced publicity to be carried out in connection with those works;
j. details of the proposed approach to the reinstatement of the public highway in connection with those works, including (where applicable) details of both temporary and permanent reinstatement;

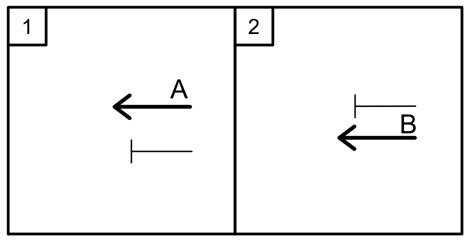
Appendix 4 – Temporary Bus Gate Layout

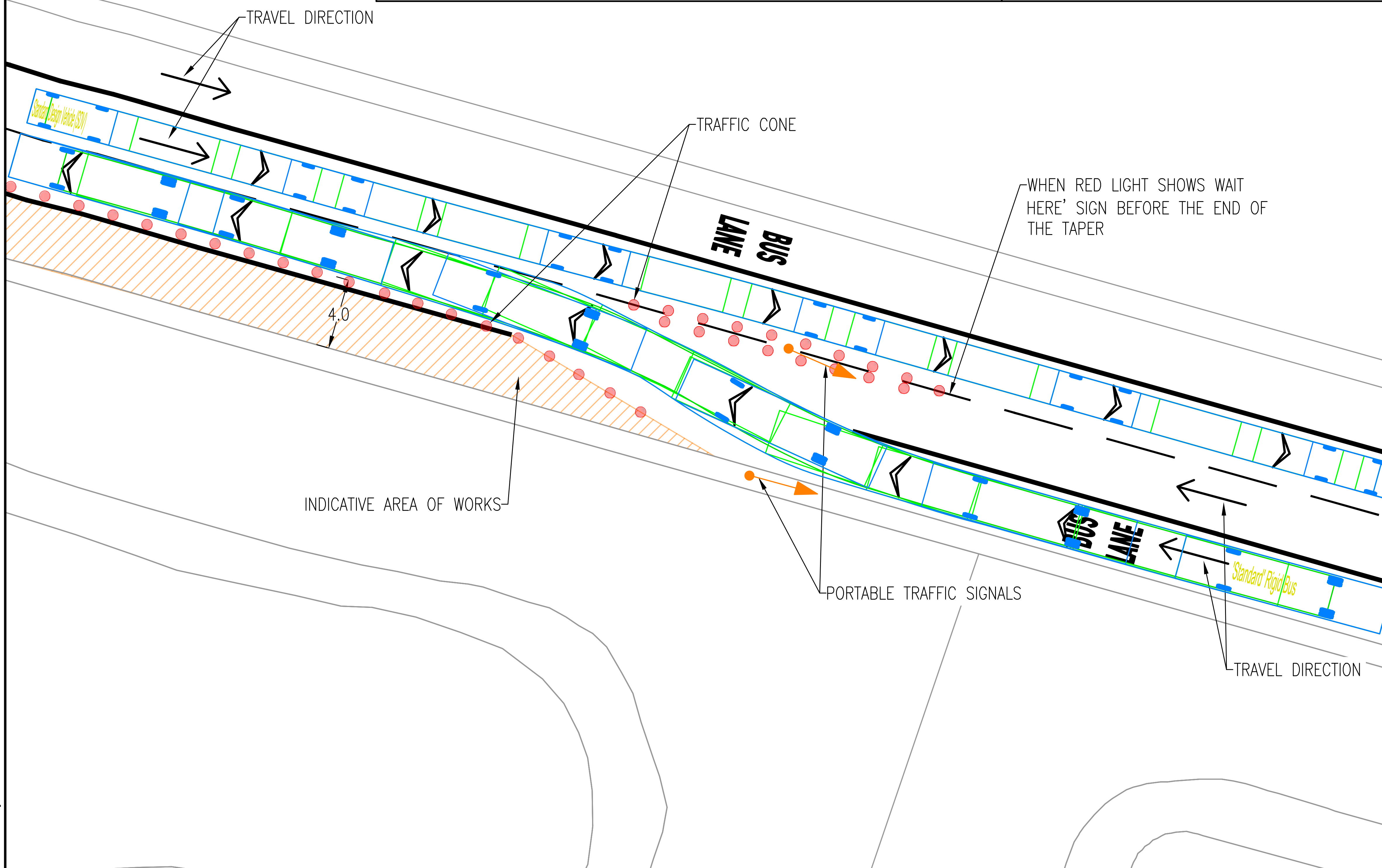


Standard Design Vehicle (SDV)	
Overall Length	4.800m
Overall Width	2.000m
Overall Body Height	1.950m
Min Body Ground Clearance	0.100m
Track Width	2.000m
Lock to lock time	4.00s
Wall to Wall Turning Radius	6.000m

'Standard' Rigid Bus	
Overall Length	12.000m
Overall Width	2.550m
Overall Body Height	3.069m
Min Body Ground Clearance	0.309m
Track Width	2.350m
Lock to lock time	4.00s
Wall to Wall Turning Radius	10.771m

STAGING DIAGRAM





UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

DO NOT SCALE

NOTES:

1. To accommodate the temporary traffic signals, lane widths may be reduced to 3.25m (desirable minimum) or 3.0m (absolute minimum) as prescribed by Traffic Signs Manual Chapter 8.
2. Prior to commencement of works in the highway, detailed designs for the works and traffic management measures will be submitted for approval to the relevant Highway Authority in accordance with the relevant requirements at Schedule 2 of the DCO.
3. Please see section 2.7 of the Framework Traffic Management Strategy for further details of the application requirements of detailed traffic management strategies.

REV	DATE	BY	DESCRIPTION	CHK	APP
A	24/02/2021	AMS	FIRST ISSUE	SB	CW

DRAWING STATUS: S2 - FOR INFORMATION

wsp
Grosvenor House, 2 Grosvenor Square, Southampton, SO15 2BE, UK
T+ 44 (0) 2380 101 700
wsp.com

CLIENT: AQUIND

ARCHITECT: -

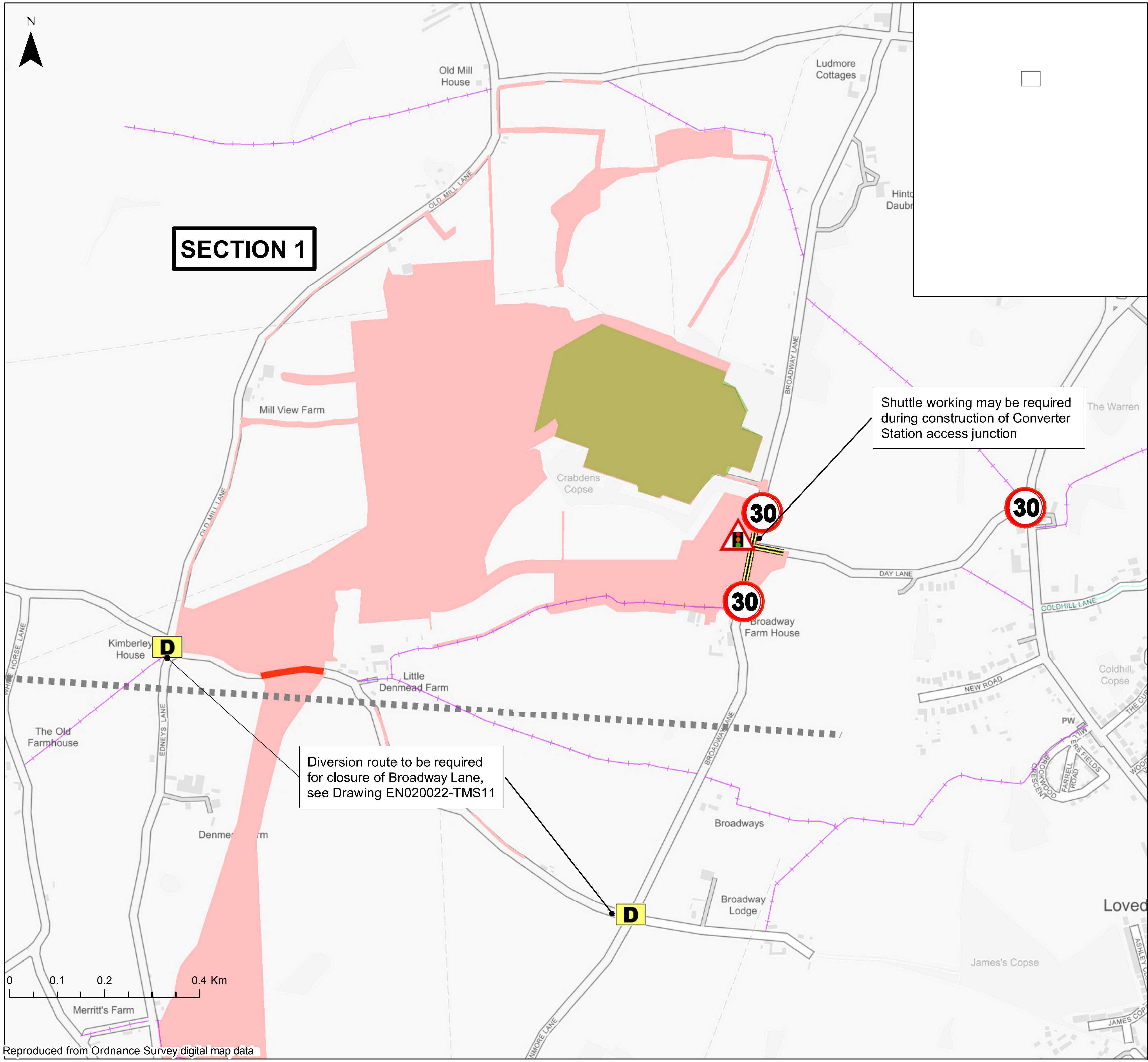
PROJECT: AQUIND

TITLE: BUS PRIORITY TEMPORAL TRAFFIC SIGNAL MANAGEMENT LAYOUT

SCALE @ A3: 1:250	CHECKED: SB		APPROVED: CW
PROJECT No: 62100616	DESIGNED: AMS	DRAWN: AMS	DATE: February 21

DRAWING No:	REV:
AQ-UK-DCO-TR-SK-100	A

Appendix 5 – FTMS Drawings



Key

- BOAT
- Footpath
- Section Breaks
- D Diversion Point
- Temporary signals
- Temporary Road Closure
- Temporary Shuttle Working
- Lovedean Substation
- Order Limits
- 30 Indicative locations of temporary speed limit signs, to be implemented as per AQ-UK-DCO-TR-LAY-011

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

REV	DATE	BY	DESCRIPTION	CHK	APP
04	23/02/2021	SG	EXTENTS OF 30MPH ZONE CHANGED	CW	CW
03	21/12/2020	SG	REVISED ORDER LIMITS	CW	CW
02	17/11/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

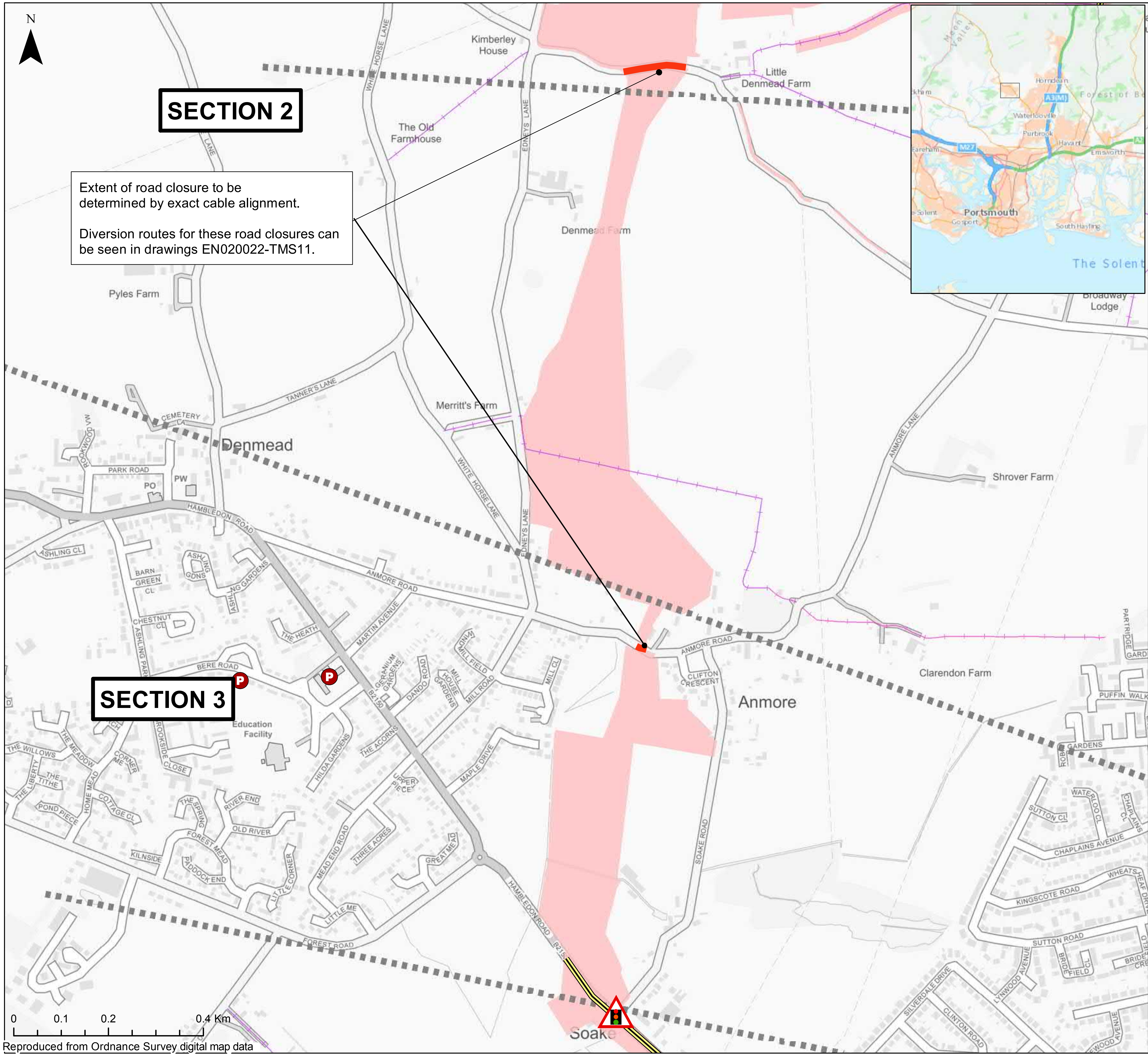
CLIENT: AQUIND

PROJECT: AQUIND Interconnector

TITLE: Framework Traffic Management Proposals - Section 1

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 24/02/2021

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.1 REV.NO. 04



Key

- Order Limits
- Section Breaks
- Temporary Road Closure
- Temporary Shuttle Working
- Temporary signals may be required

Public Rights of Way

- Bridleway
- Footpath

School Type

- Primary

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMIT	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT: AQUIND

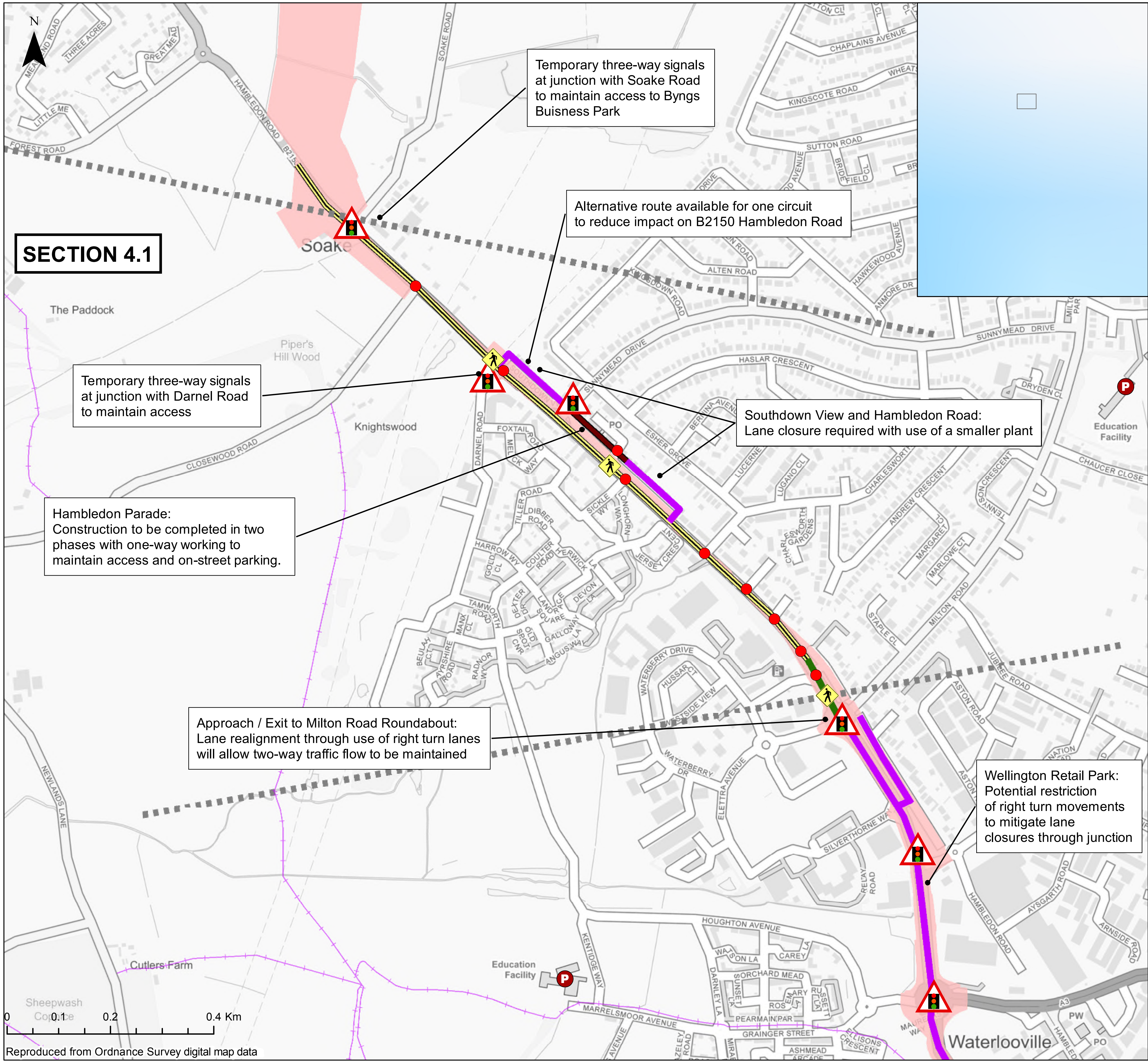
PROJECT: AQUIND Interconnector

TITLE: FrameworkTraffic Management Plan - Section 2/3

SCALE AT A3	CHECKED:	APPROVED:
1:8,000	CW	CW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.2 REV.NO. 02



Key

- Section Breaks
- Order Limits

Public Rights of Way

- Footpath

Traffic Management

- Temporary One-way Working
- Temporary Shuttle Working
- Temporary Single Lane Closure
- Temporary Lane Realignment
- Contractor preference dependent on exact location of construction zone
- Temporary relocation or suspension of multi-user crossing
- Temporary signals may be required
- Primary School

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

REV	DATE	BY	DESCRIPTION	CHK	APP
03	24/02/2021	SG	REVISED TRAFFIC MANAGEMENT	CW	CW
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

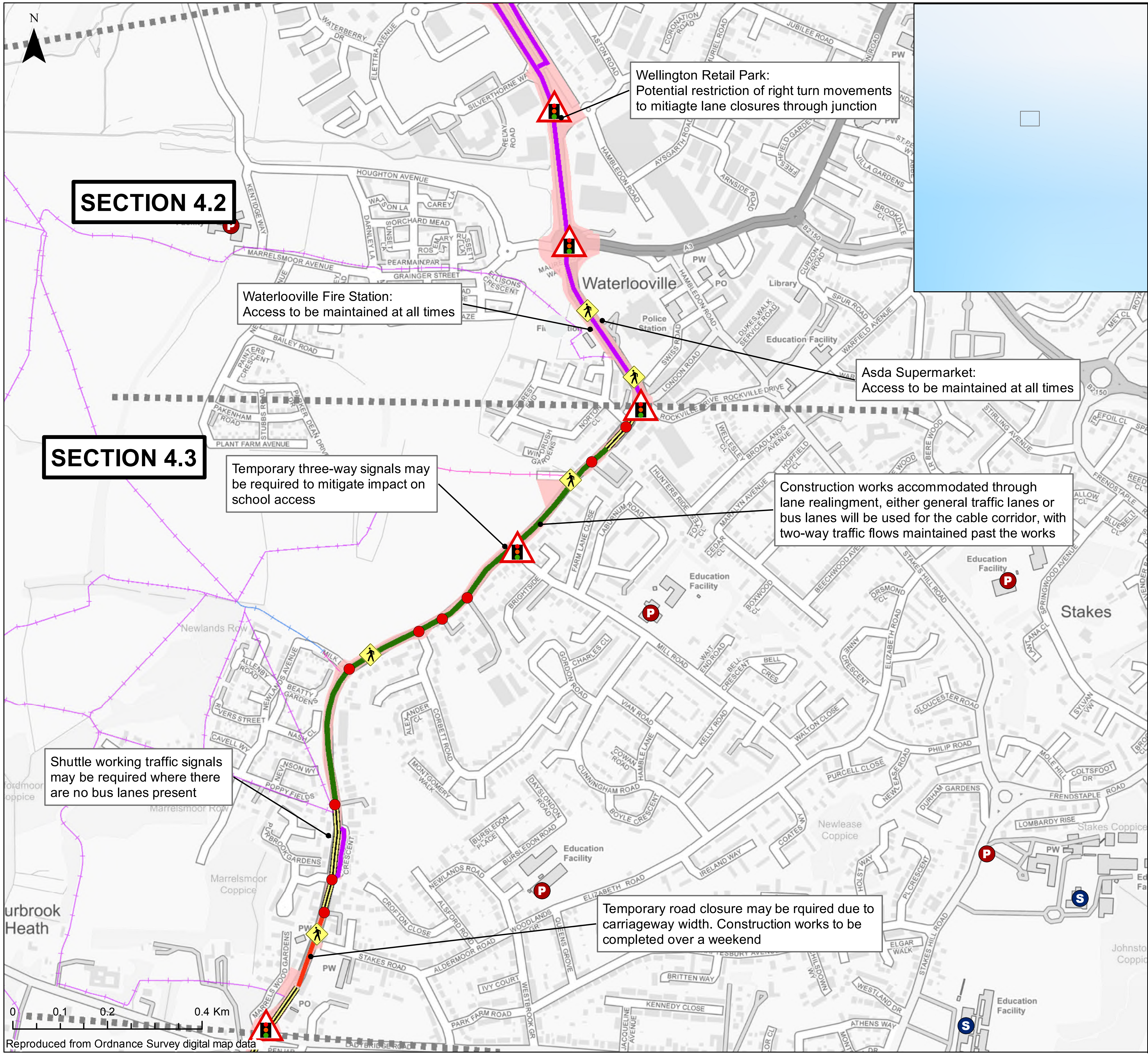
CLIENT: AQUIND

PROJECT: AQUIND Interconnector

TITLE: Framework Traffic Management Proposals Section 4.1

SCALE AT A3	CHECKED:		APPROVED:
1:7,354	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 24/02/2021

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.3 REV.NO. 02



AQUIND Interconnector
Section Breaks
Order Limits

Traffic Management
Temporary Road Closure
Temporary Shuttle Working
Temporary Single Lane Closure
Temporary Lane Realignment

School Type
Primary
Secondary

Contractor preference dependent on exact location of construction zone
Temporary relocation or suspension of multi-user crossing
Temporary signals may be required

Public Rights of Way
BOAT
Bridleway
Footpath
Restricted Byway

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

REV	DATE	BY	DESCRIPTION	CHK	APP
03	24/02/2021	SG	REVISED TRAFFIC MANAGEMENT	CW	CW
02	18/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT:
AQUIND

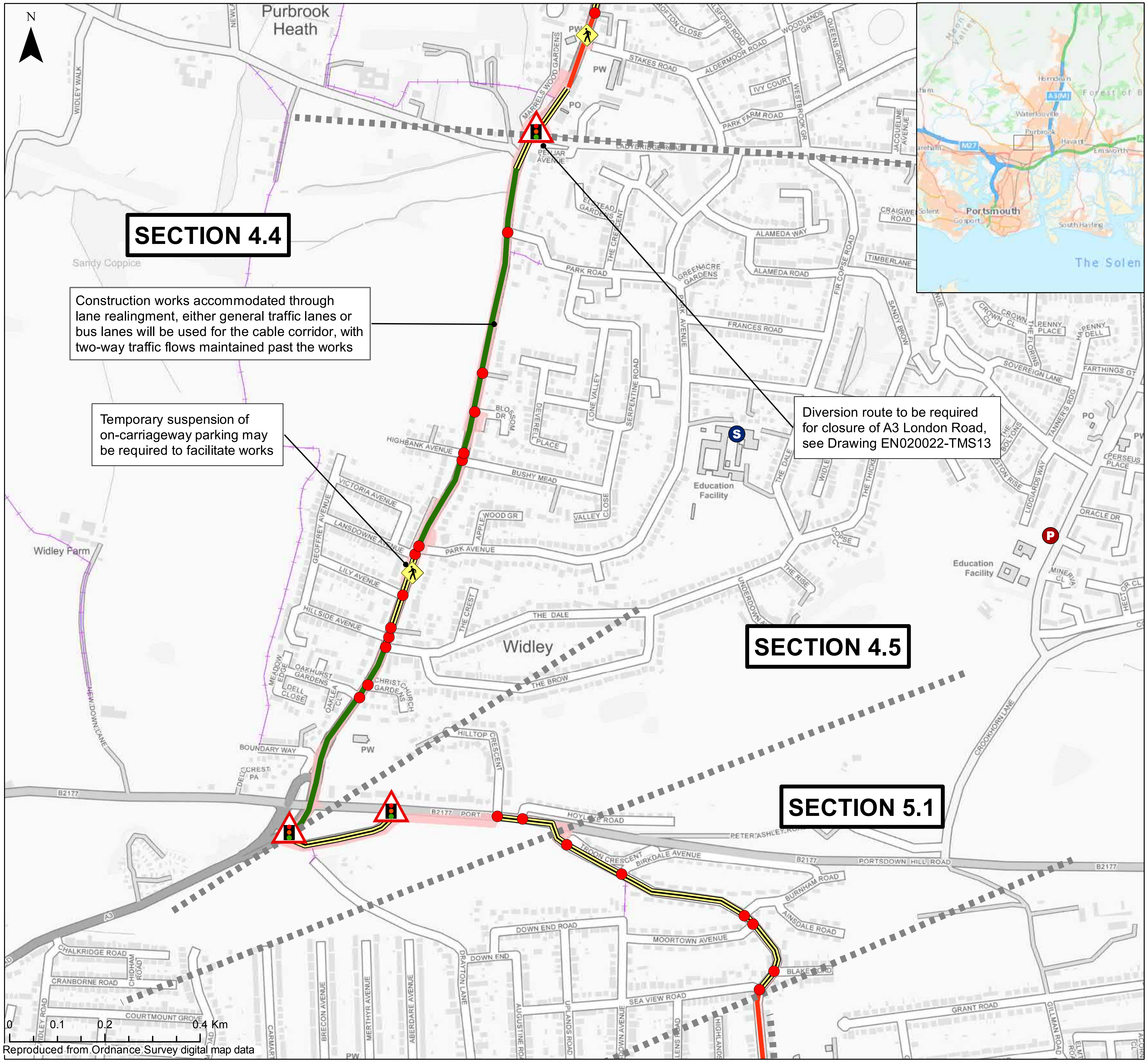
PROJECT:
AQUIND Interconnector

TITLE:
Framework Traffic Management Proposals - Section 4.2 / 4.3

SCALE AT A3	CHECKED:	APPROVED:
1:8,000	CW	CW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	24/02/2021

DRAWING NO:	REV.NO.
EN020022-ESAPPENDIX-22.1.G.4	03



AQUIND Interconnector

Section Breaks

Order Limits

School Type

Primary School

Secondary School

Traffic Management

Temporary Road Closure

Temporary Shuttle Working

Temporary Lane Realingment

Contractor preference dependent on exact location of construction zone

Temporary relocation or suspension of multi-user crossing

Temporary signals may be required

Public Rights of Way

Footpath

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

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMIT	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

wsp

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT: AQUIND

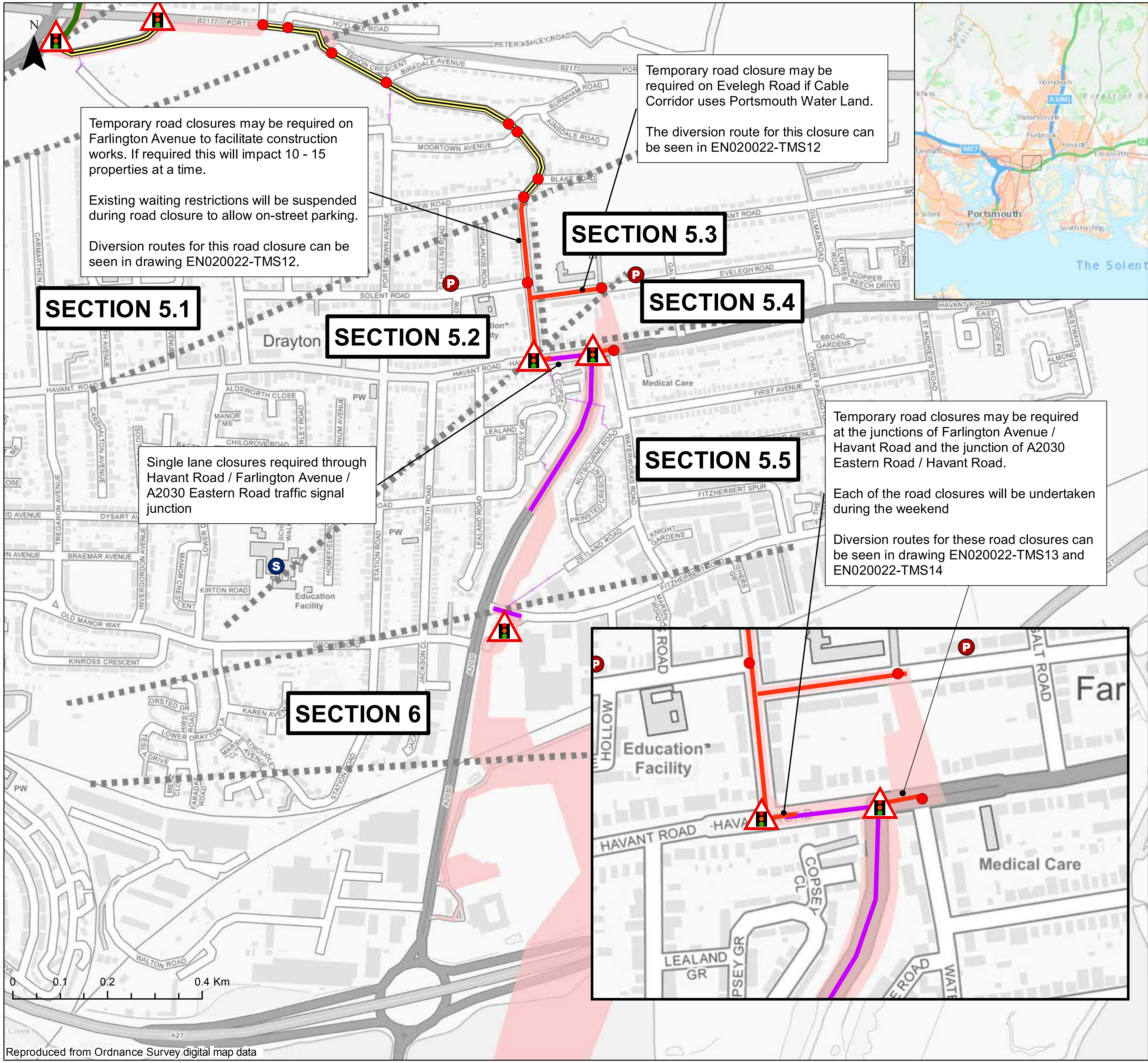
PROJECT: AQUIND Interconnector

TITLE: Framework Traffic Management Proposals - Section 4.4 / 4.5 / 5.1

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.5

REV.NO. 02



AQUIND Interconnector
Order Limits
Section Breaks

Traffic Management

- Temporary Road Closure
- Temporary Shuttle Working
- Temporary Single Lane Closure
- Temporary Lane Realignment

Public Rights of Way

- BOAT
- Bridleway
- Footpath
- Restricted Byway

Temporary signals may be required

Contractor preference dependent on exact location of construction zone

School Type
- Primary School
- Secondary School

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

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMIT	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

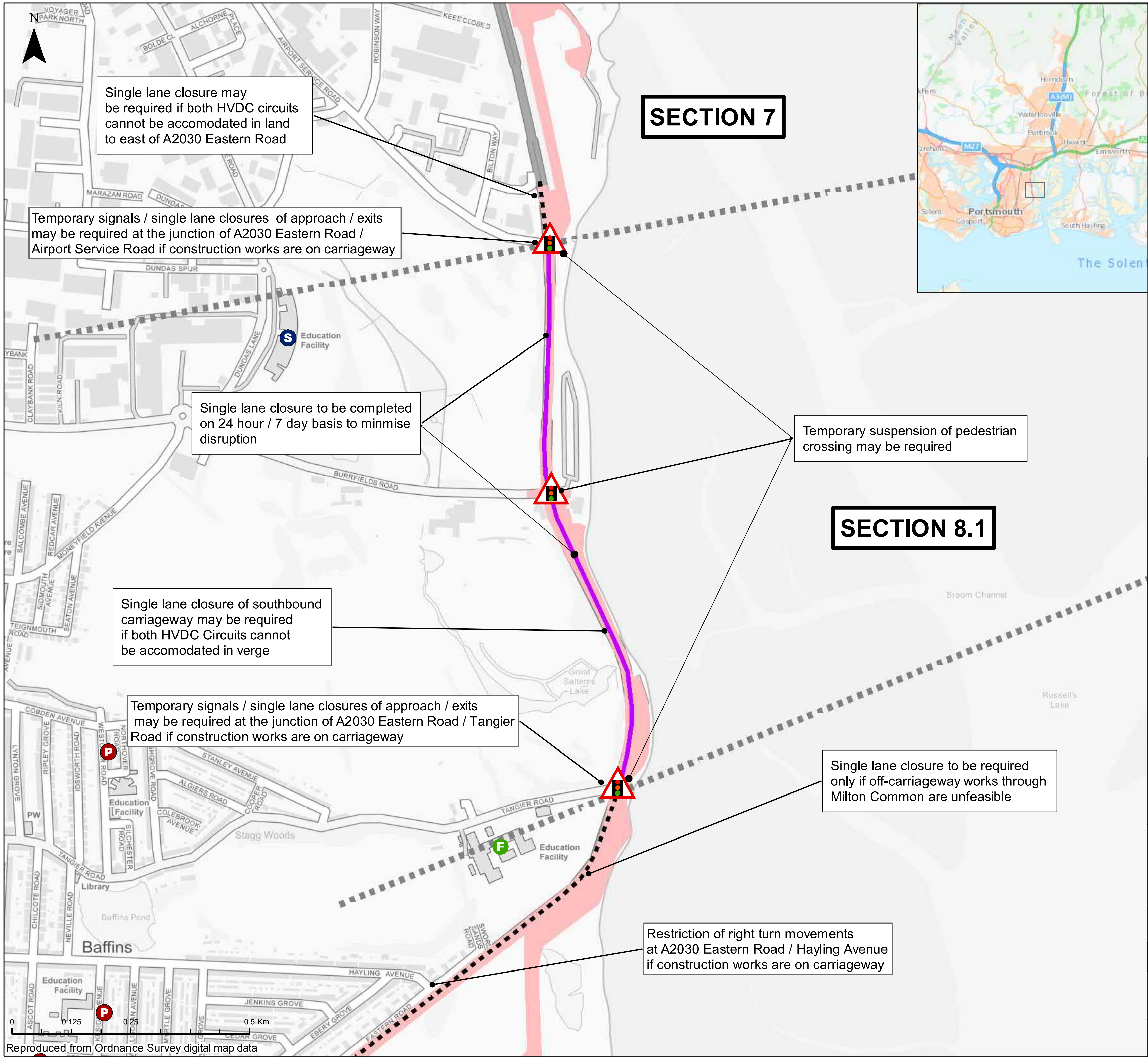
CLIENT: AQUIND

PROJECT: AQUIND Interconnector

TITLE: Framework Traffic Management Proposals - Section 5.1 / 5.2 / 5.3 / 5.4 /5.5 / 6

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.6
REV.NO. 02



AQUIND Interconnector

- Section Breaks
- Order Limits

Temporary signals may be required

Traffic Management

- TM required if off-carriageway routes are considered unsuitable by the contractor
- Temporary Single Lane Closure

School Type

- P Primary
- S Secondary
- F Further Education

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

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

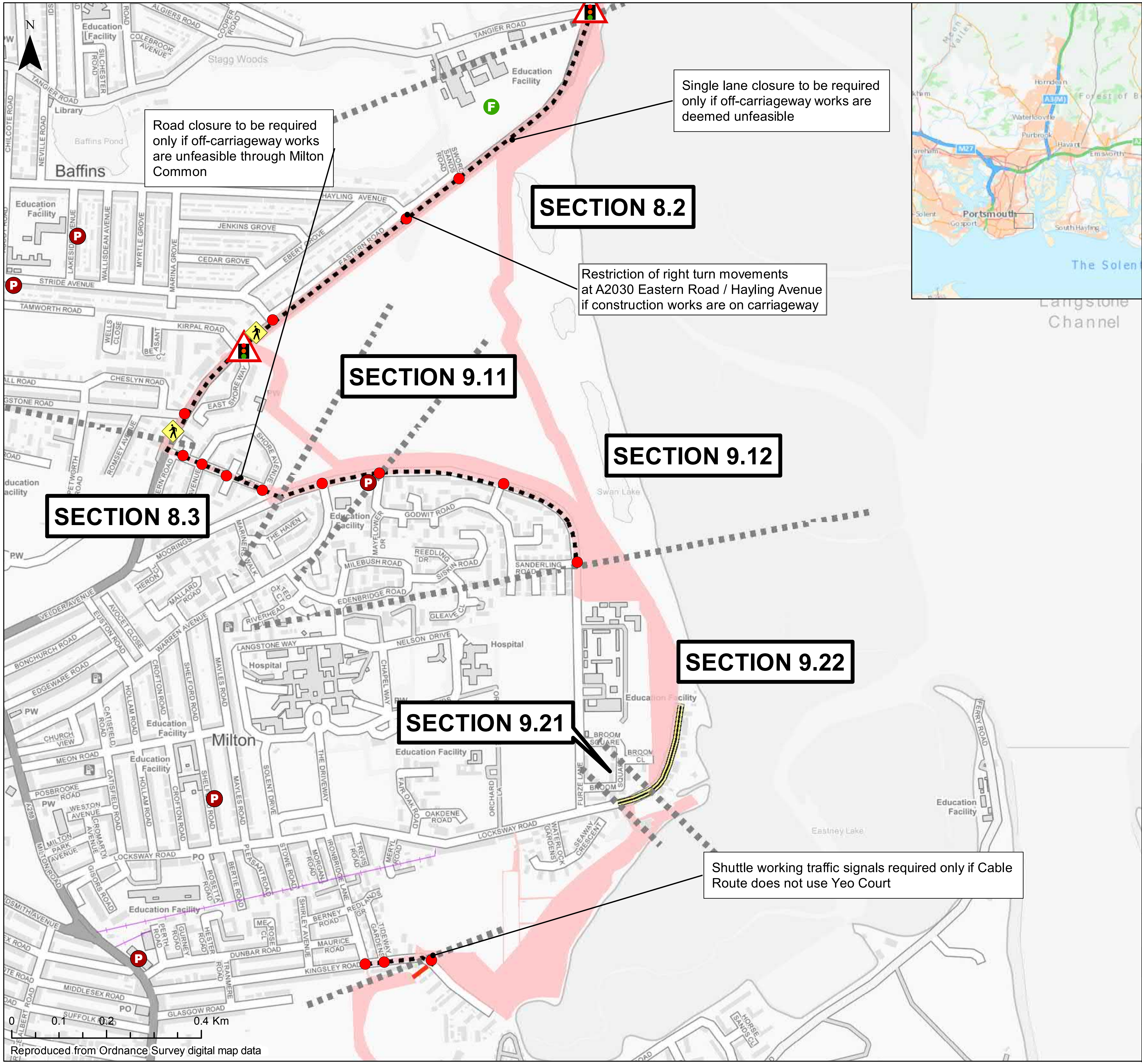
CLIENT:
AQUIND

PROJECT:
AQUIND Interconnector

TITLE:
Framework Traffic Management Proposals - Section 7 / 8.1

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.7
REV.NO. 02



Section Breaks

Order Limits

Traffic Management

TM required if off-carriageway routes are considered unsuitable by the contractor

Temporary Road Closure

Temporary Shuttle Working

Temporary Single Lane Closure

Public Rights of Way

Footpath

Contractor preference dependent on exact location of construction zone

Temporary relocation or suspension of multi-user crossing

Temporary signals may be required

School Type

Primary School

Further Education

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

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT:

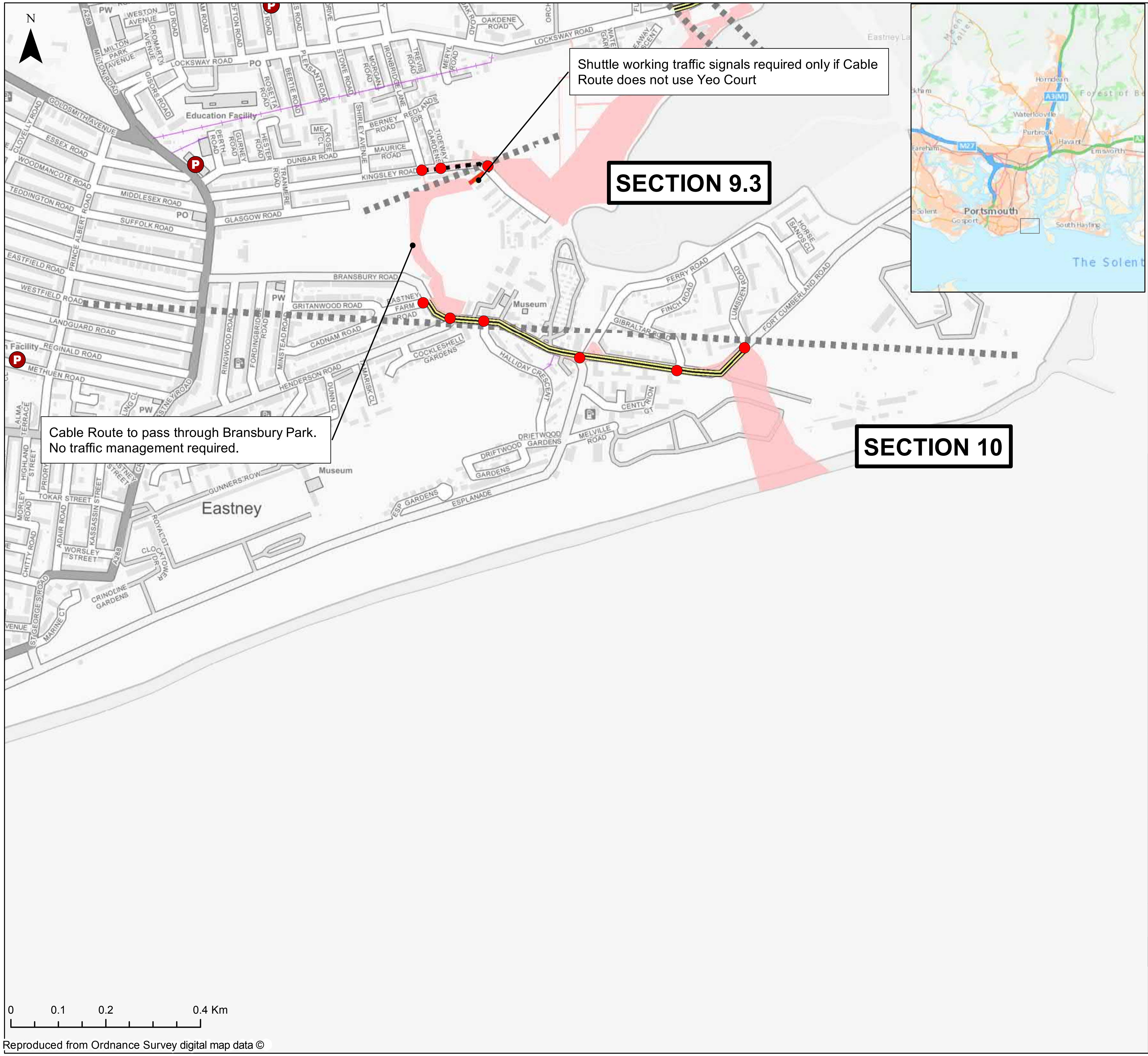
PROJECT:
AQUIND Interconnector

TITLE:
Framework Traffic Management Proposals
Section 8.2 / 8.3 / 9.11 / 9.12 / 9.21 / 9.22

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.8

REV.NO. 02



AQUIND Interconnector
Section Breaks
Order Limits
Contractor preference dependent on exact location of construction zone

Public Rights of Way
Footpath

Traffic Management
TM required if off-carriageway routes are considered unsuitable by the contractor
Temporary Road Closure
Temporary Shuttle Working
School Type
Primary School
Further Education

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

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT:

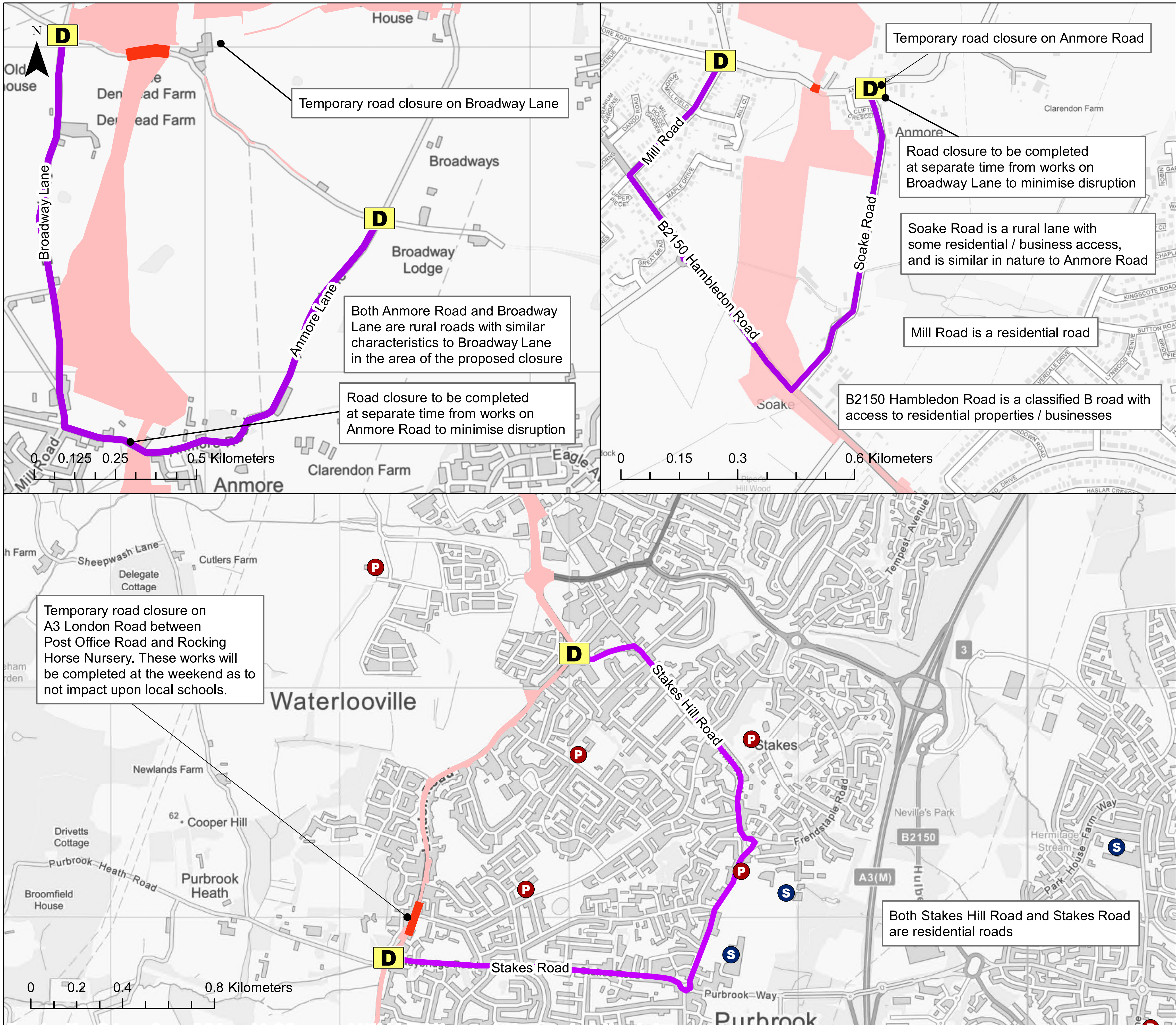
PROJECT:
AQUIND Interconnector

TITLE:
Framework Traffic Management Proposals - Section 9.3 / 10

SCALE AT A3	CHECKED:		APPROVED:
1:8,000	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.9
REV.NO. 02

Appendix 6 – FTMS Diversion Drawings



AQUIND Interconnector

- Order Limits
- D Diversion signage to be implemented
- Temporary Road Closure
- Diversion Route

School Type

- P Primary
- S Secondary
- F Further Education
- O Other Educational Facility

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
03	21/12/2020	SG	REVISED ORDER LIMITS	CW	CW
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

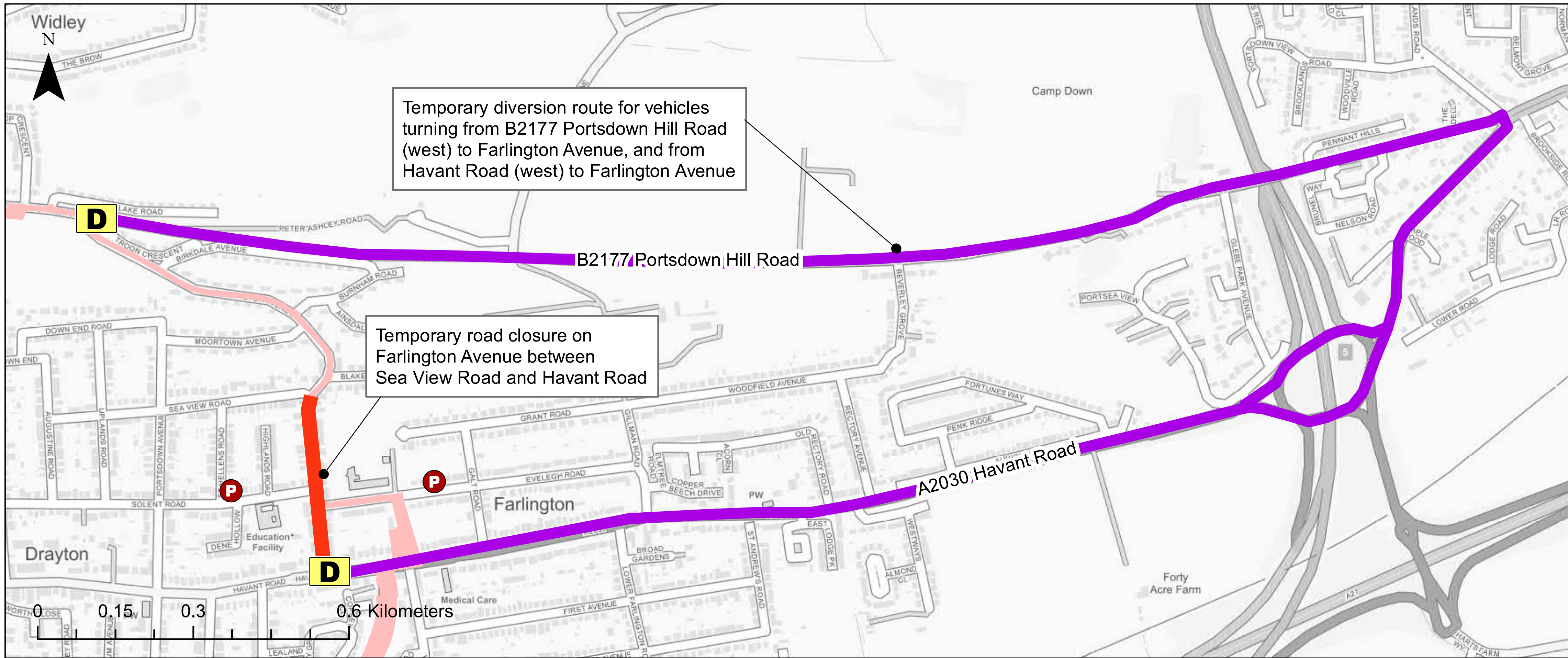
CLIENT:
AQUIND

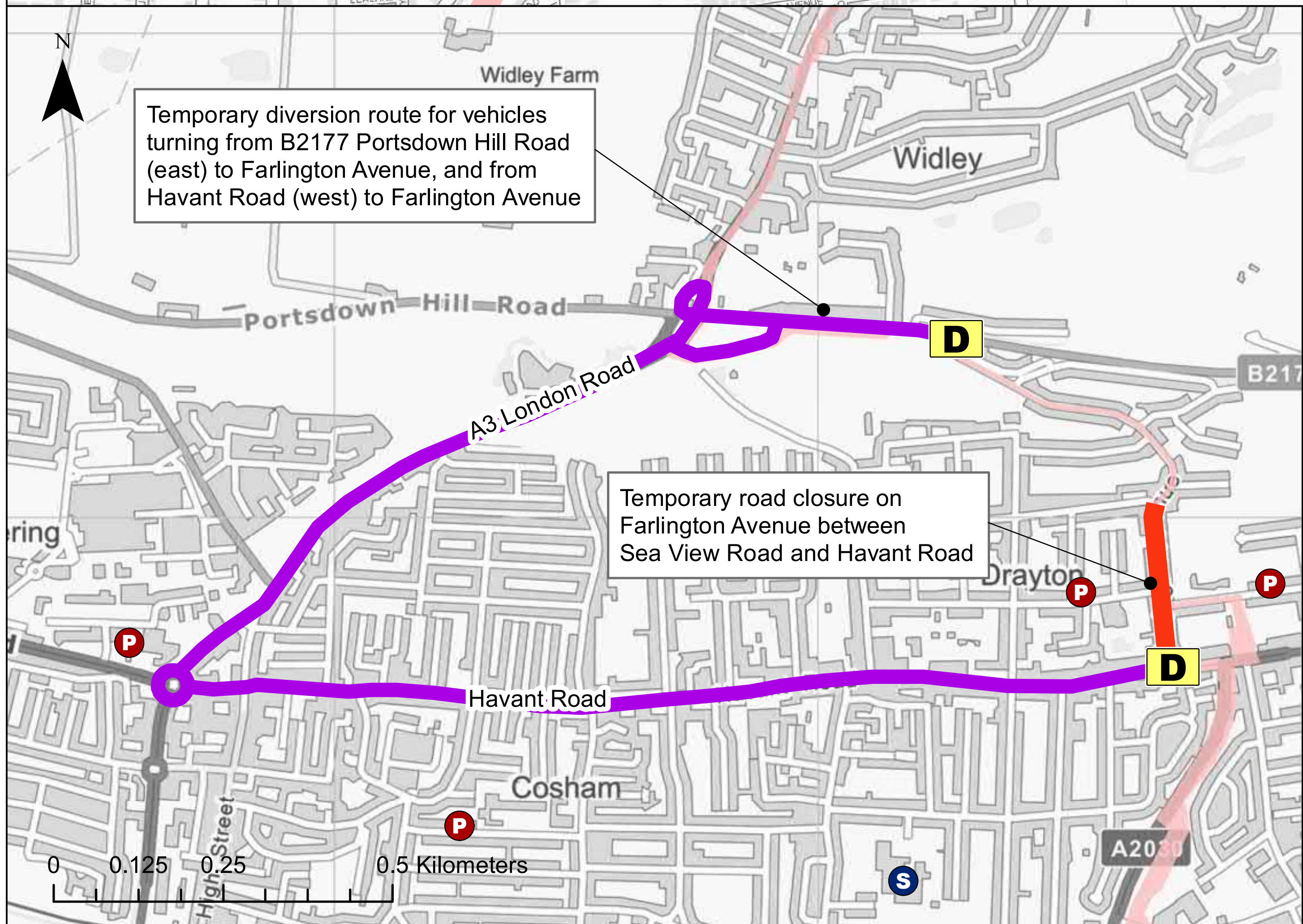
PROJECT:
AQUIND Interconnector

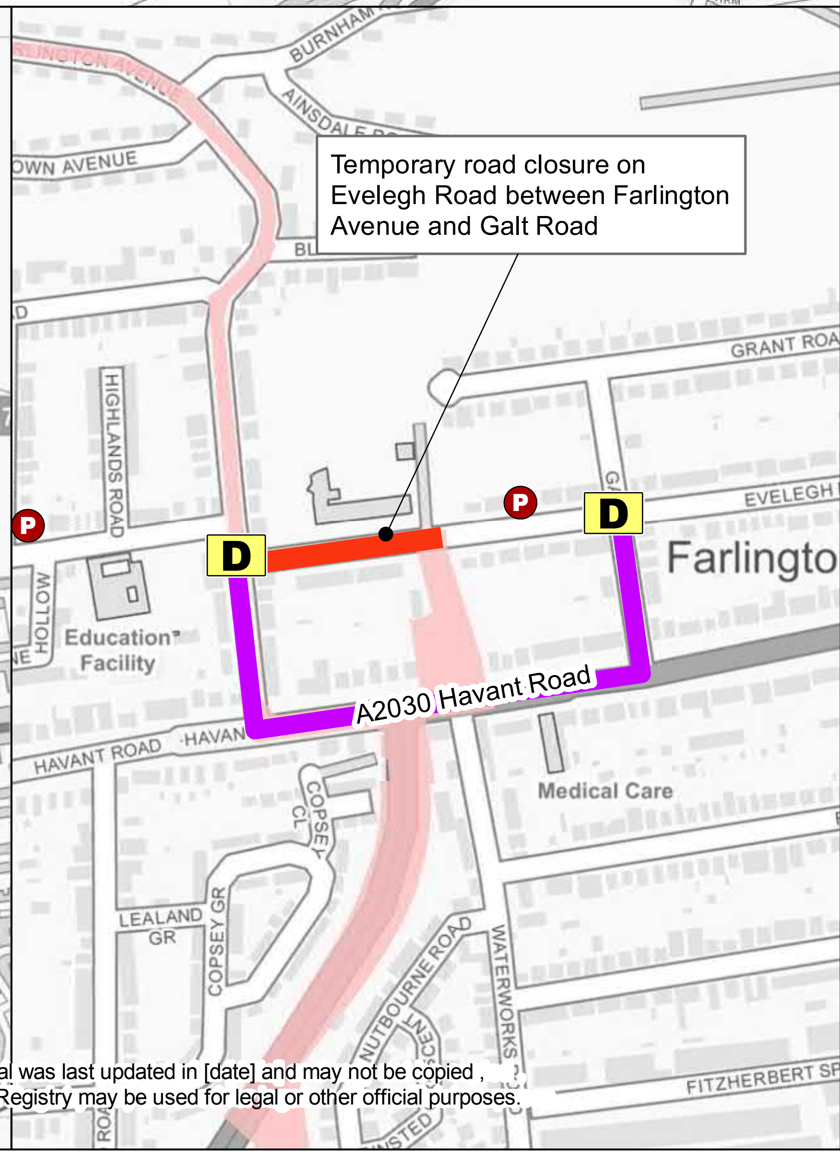
TITLE:
Outline Diversion Route Proposals - Broadway Lane, Anmore Road and A3 London Road

SCALE AT A3	CHECKED:		APPROVED:
1:10,000	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	21/12/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.10
REV.NO. 02







AQUIND Interconnector
Order Limit
D Diversion signage to be implemented
Temporary Road Closure
Diversion Route

School Type
P Primary
S Secondary
F Further Education
O Other Educational Facility

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
02	17/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

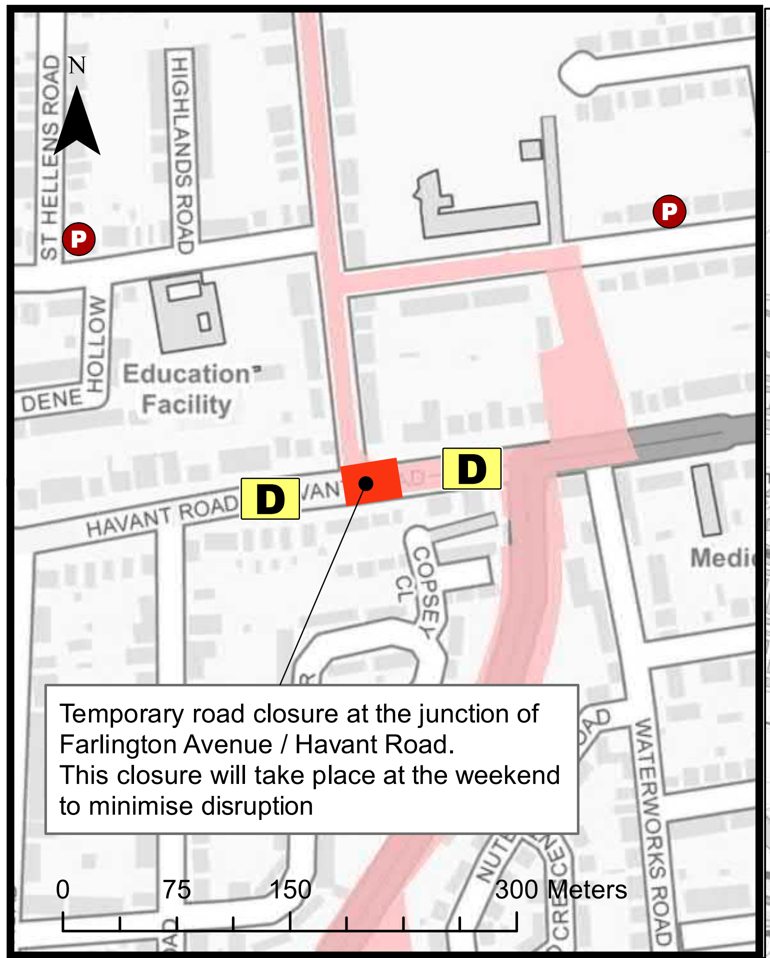
CLIENT:

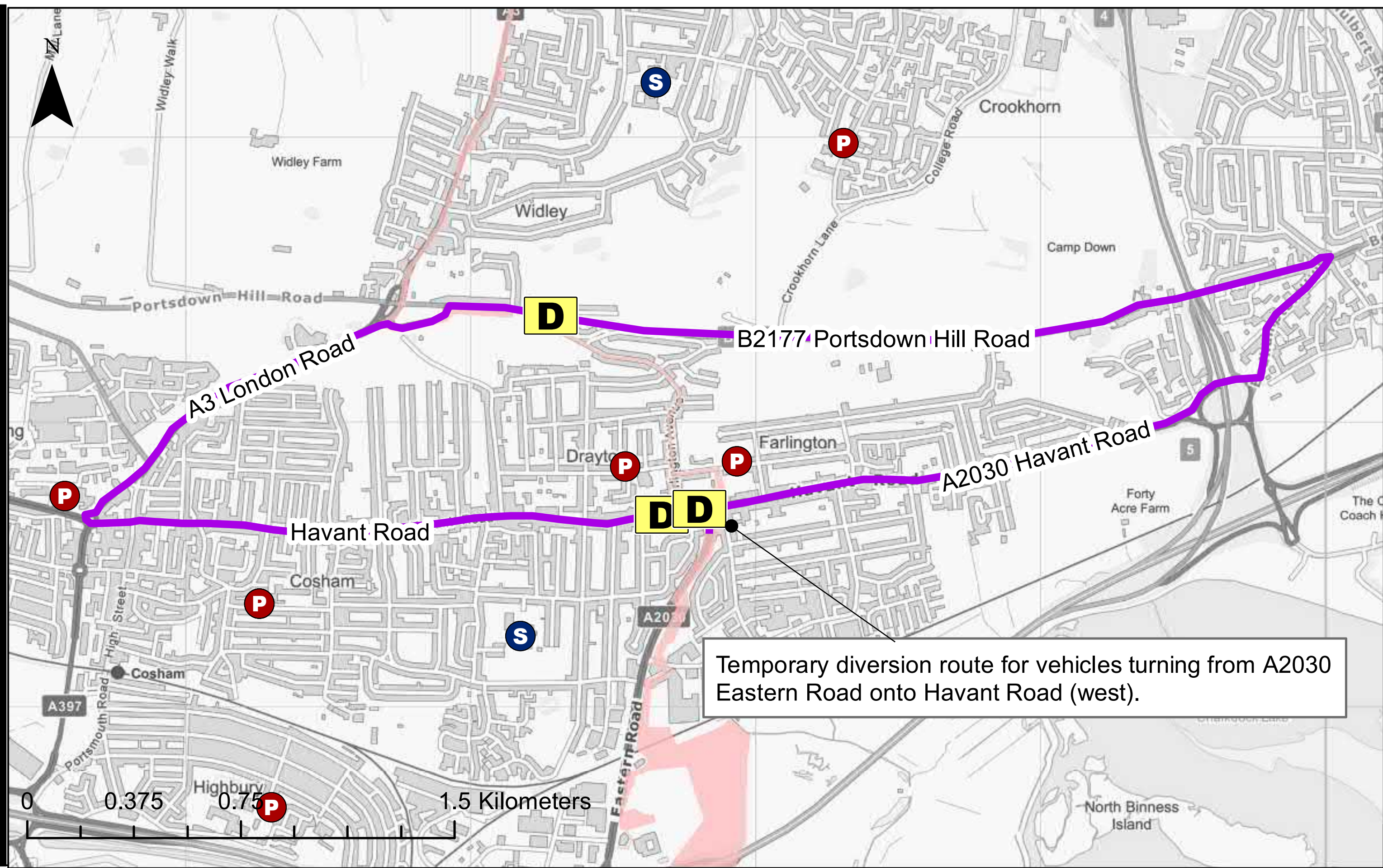
PROJECT:
AQUIND Interconnector

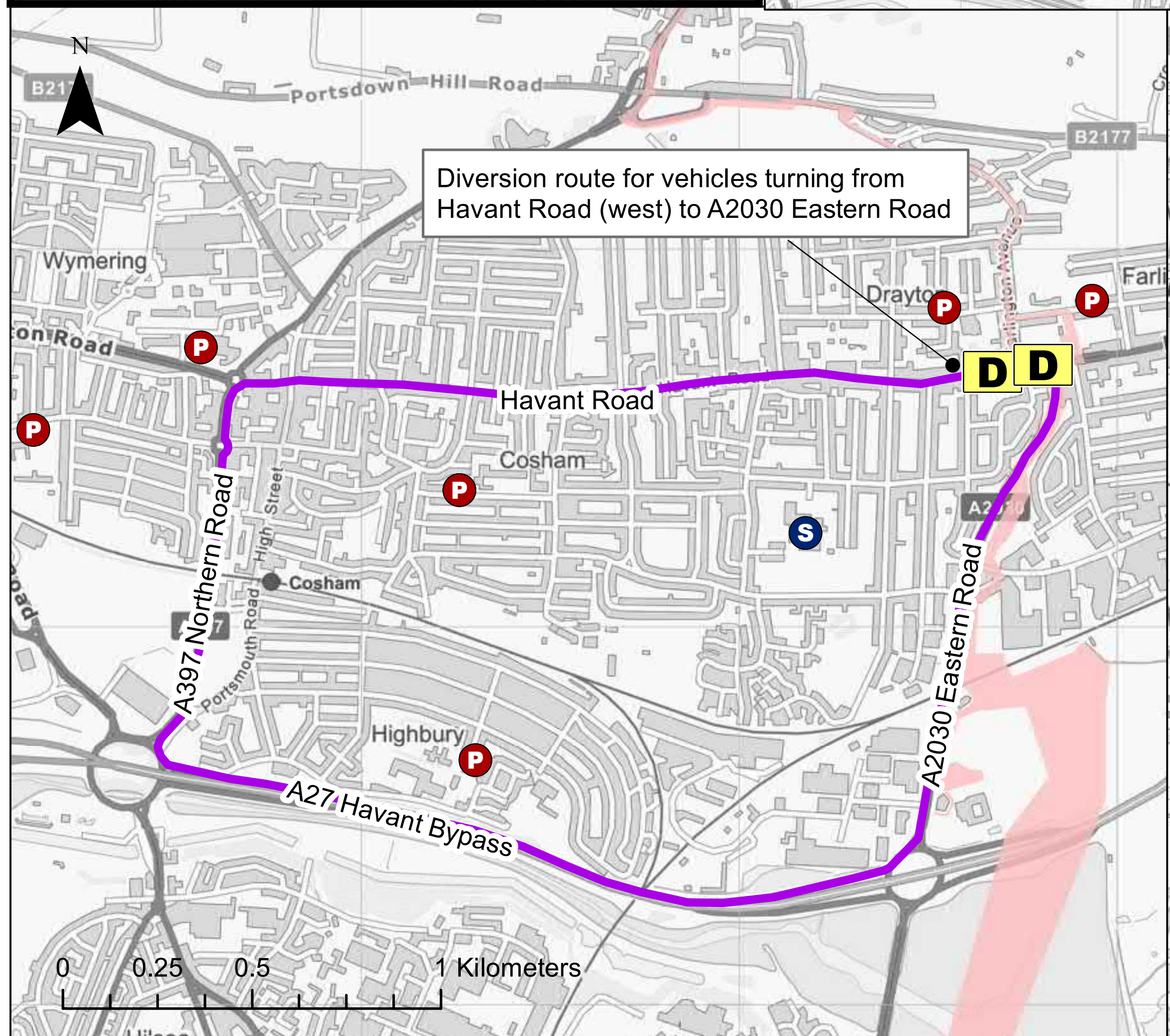
TITLE:
Outline Diversion Route Proposals - Farlington Avenue and Evelegh Road

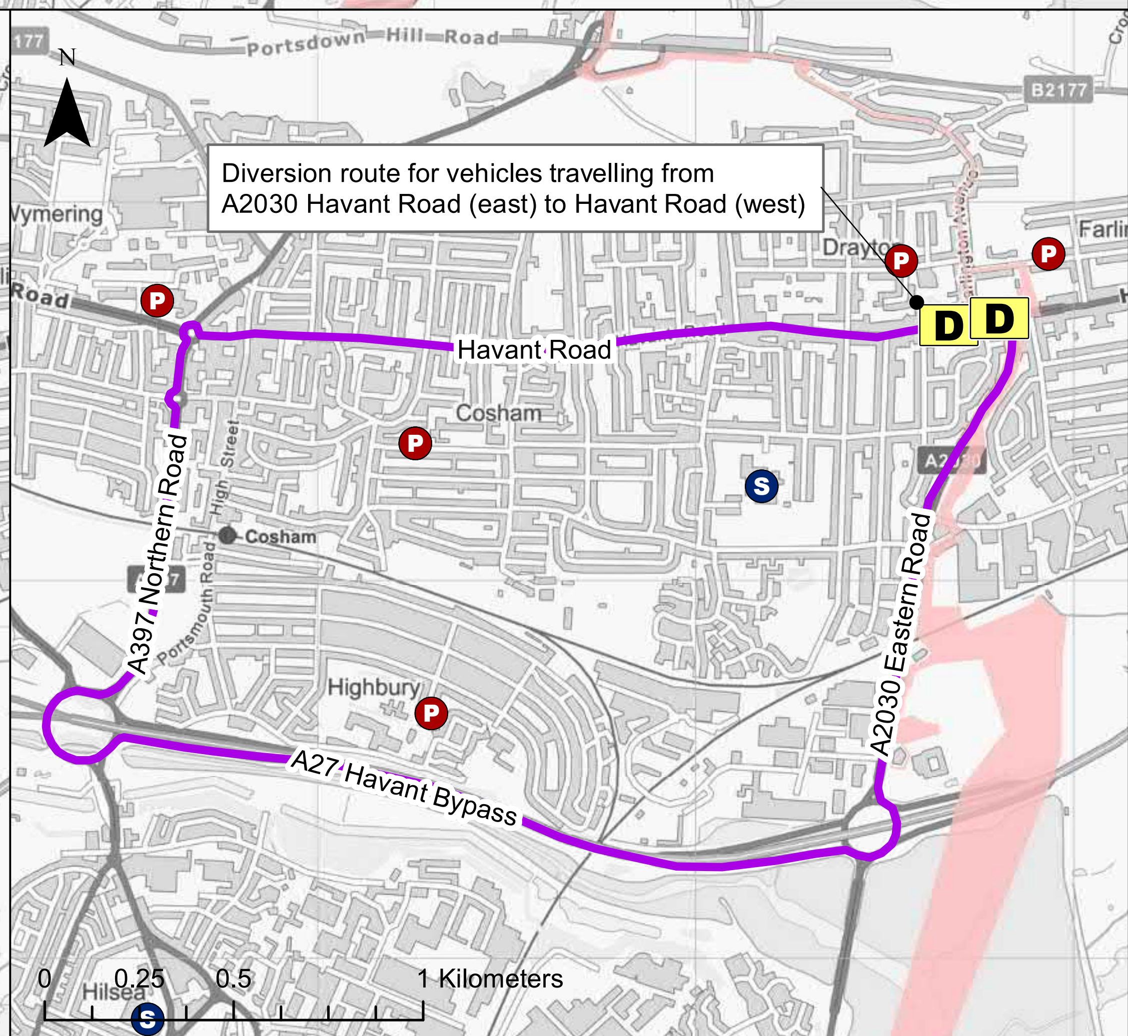
SCALE AT A3	CHECKED:		APPROVED:
1:10,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 17/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.11
REV.NO. 02









AQUIND Interconnector

- Order Limits
- D Diversion signage to be implemented
- Temporary Road Closure
- Diversion Route

School Type

- P Primary
- S Secondary

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
02	18/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS: FINAL

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

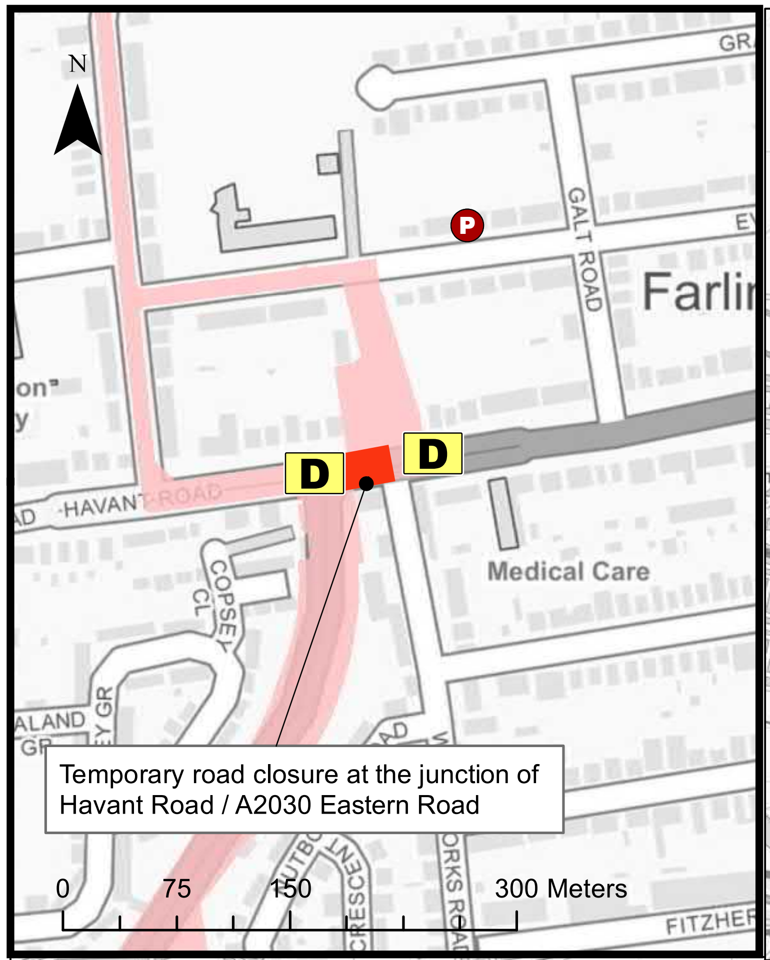
CLIENT: AQUIND

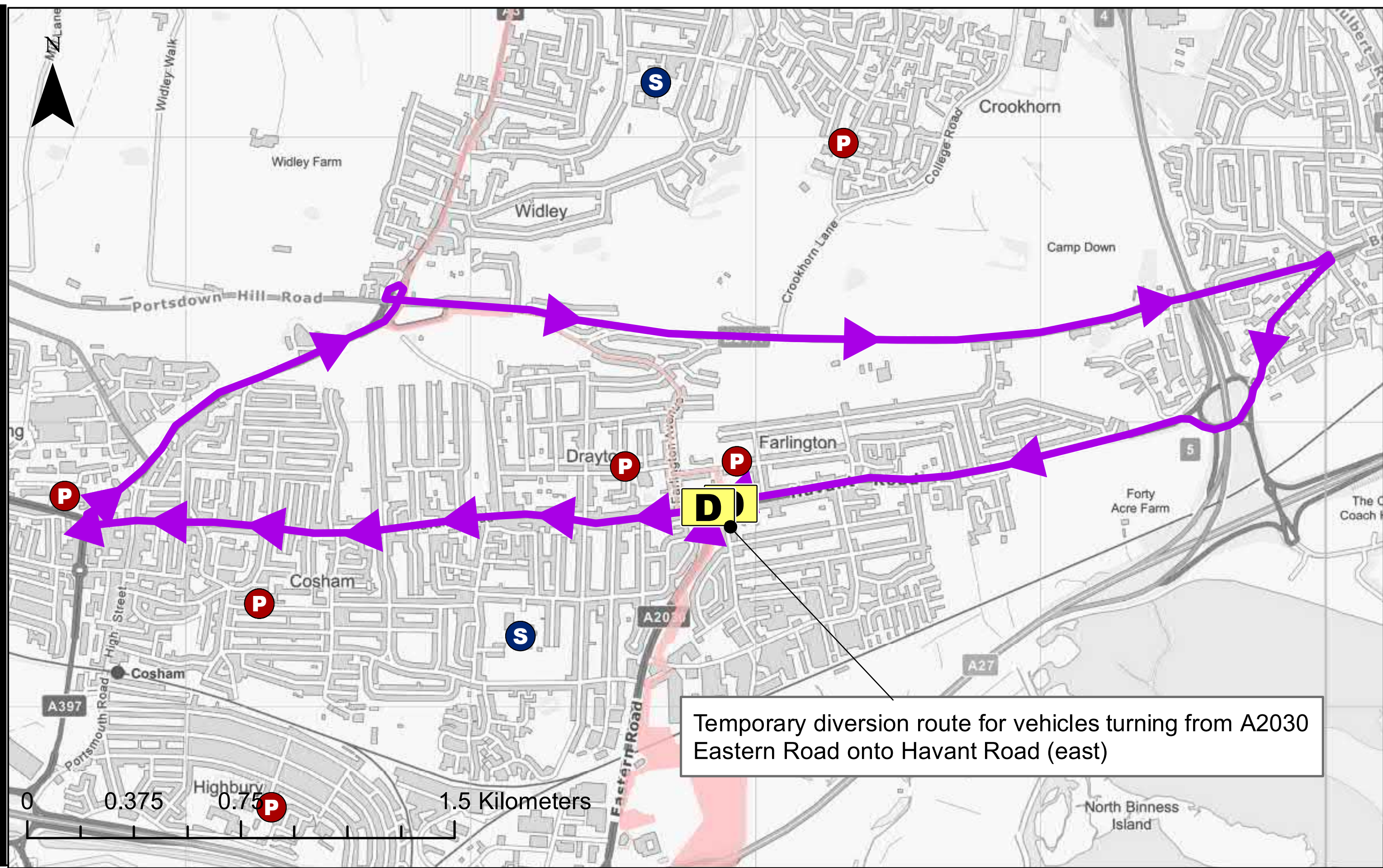
PROJECT: AQUIND Interconnector

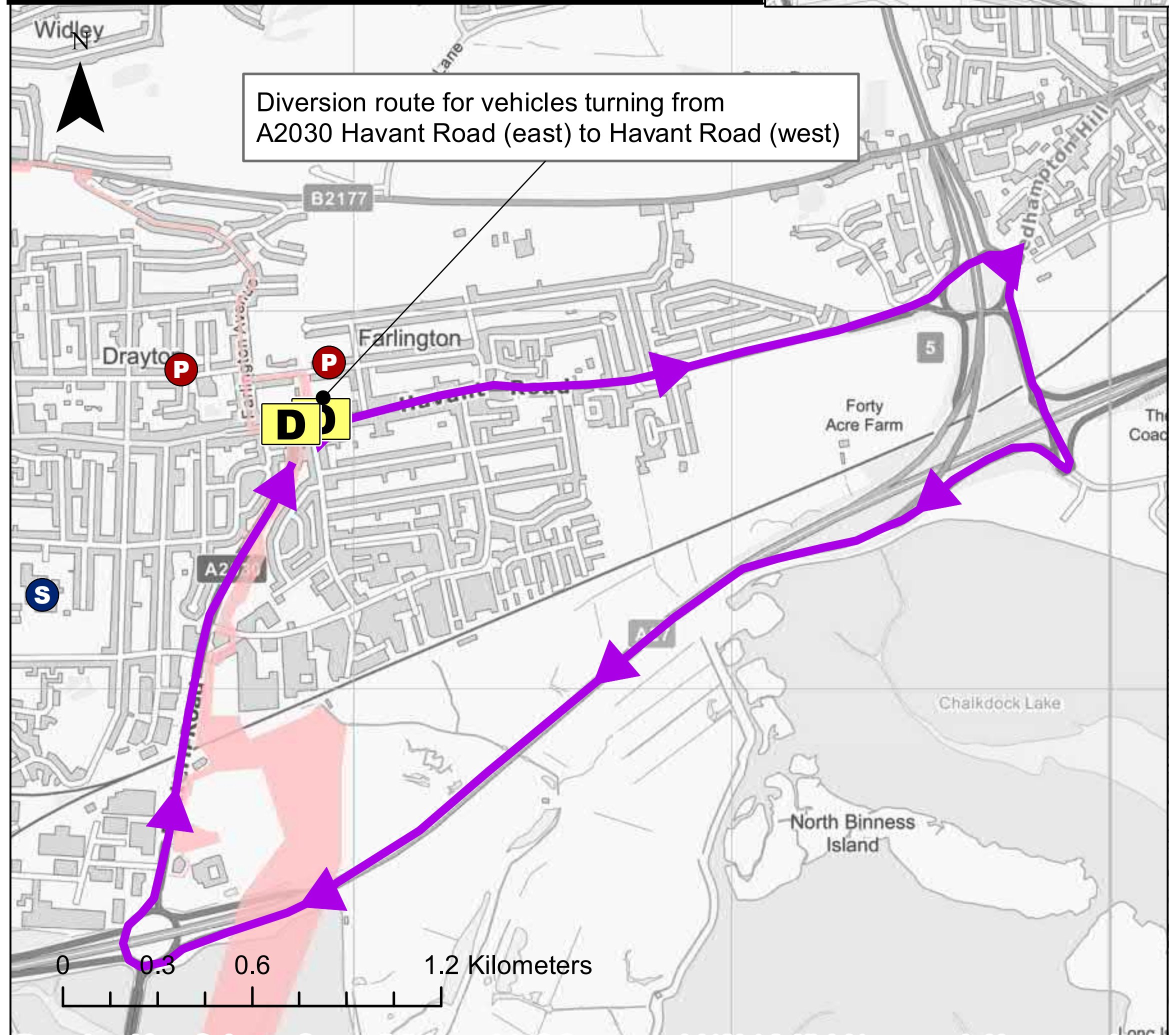
TITLE: Outline Diversion Route Proposals - Farlington Avenue / Havant Road Closure

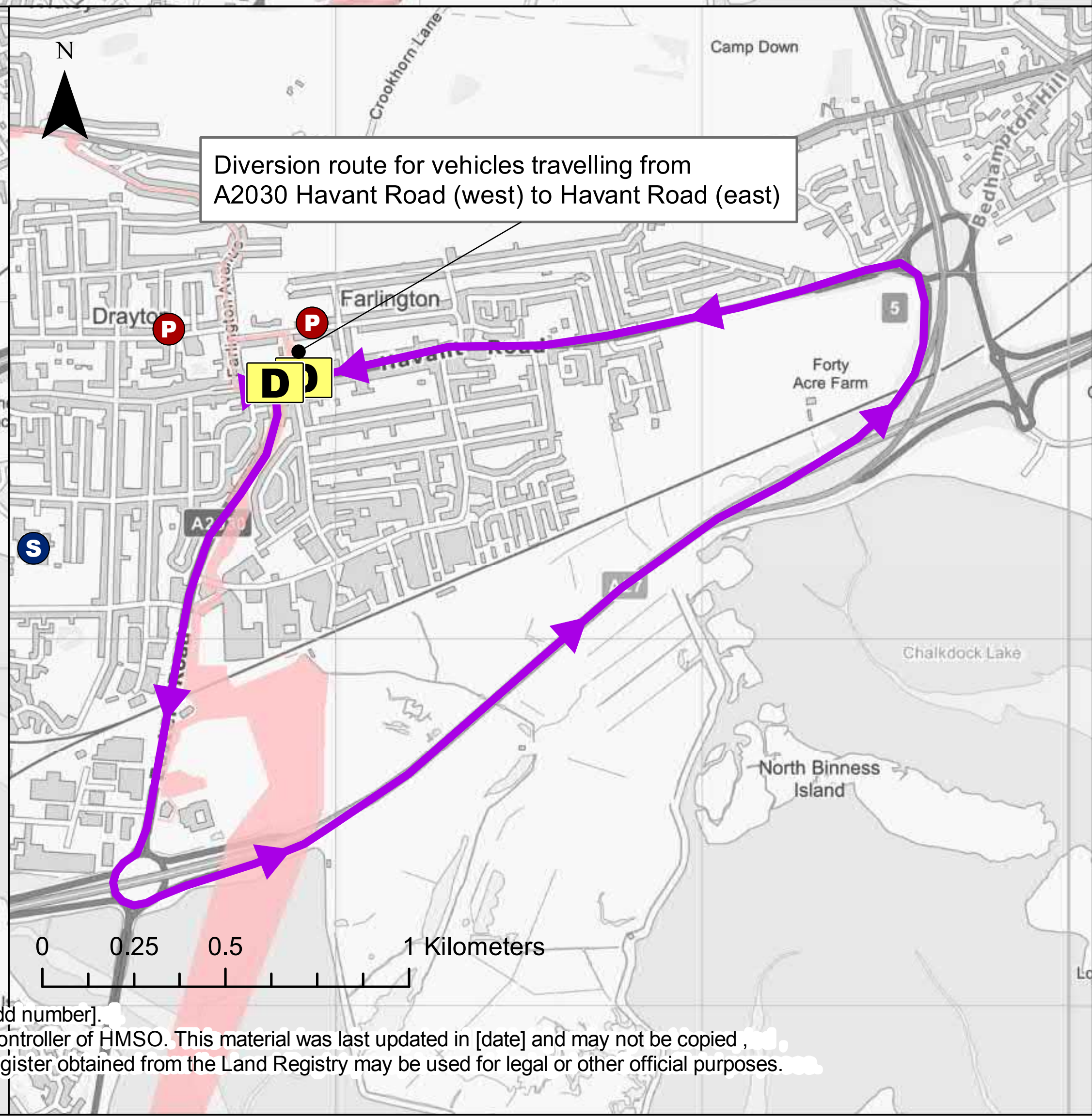
SCALE AT A3	CHECKED:		APPROVED:
1:24,000	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.12 REV.NO. 02









AQUIND Interconnector
- Order Limits
- D Diversion signage to be implemented
- Temporary Road Closure
- Diversion Routes

School Type
- P Primary
- S Secondary

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
02	18/09/2020	SG	REVISED ORDER LIMITS	CW	CW
01	13/11/2019	SG	FIRST ISSUE	CW	CW

DRAWING STATUS:
FINAL

wsp

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK,
T+ 44 (0) 020 7314 5000
wsp.com

CLIENT:
AQUIND

PROJECT:
AQUIND Interconnector

TITLE:
Outline Diversion Route Proposals - A2030 Eastern Road / Havant Road Closure

SCALE AT A3	CHECKED:		APPROVED:
1:24,000	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.G.13
REV.NO. 02