AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement Addendum – Appendix 11 Supplementary Transport Assessment

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1. INTRODUCTION

1.1.1.1. This Supplementary Transport Assessment (STA) has been undertaken by WSP on behalf of AQUIND Limited (the 'Applicant') in response to Relevant Representations, further discussions with Portsmouth City Council (PCC) and Hampshire County Council (HCC) 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'). It should therefore be read in conjunction with the following documents:

- Environmental Statement - Volume 1 – Chapter 22 – Traffic and Transport (APP-137);
- Environmental Statement – Volume 3 – Appendix 22.1 Transport Assessment (TA) (APP-448);
- Environmental Statement – Volume 3 – Appendix 22.1A Framework Traffic Management Strategy (FTMS) (APP-449); and
- Environmental Statement – Volume 3 – Appendix 22.2 Framework Construction Traffic Management Plan (Framework CTMP) (APP 450).

1.1.1.2. This report does not follow a standard TA format, as it seeks to address only the comments provided by Relevant Representations, discussions with PCC and HCC or other updates to the submitted material. Therefore, this STA covers the following topics.

1.1.2. CHAPTER 2 – CONSTRUCTION TRAFFIC ACCESS

1.1.2.1. Chapter 2 will provide further information relating to the construction traffic access for construction of the Onshore Cable Route and Converter Station. it will specifically cover the following:

- The design of the Converter Station highway access junction;
- Additional details of how construction traffic movements will be controlled on Day Lane and Broadway Lane;
- Additional details on the enforcement of Heavy Goods Vehicles (HGV) routing throughout the Construction Stage;
- An update to proposals for permitted construction traffic routing on the A3 London Road and Milton Road in Waterlooville;
- Details of estimated construction traffic movements related to Joint Bays and HDD compounds on the Onshore Cable Corridor;

- An assessment of how cable drum delivery vehicles will access indicative Joint Bay locations along the Onshore Cable Route; and
- Additional information on Abnormal Indivisible Load (AIL) routing between the Portsmouth Cargo Port and the exit of the A3(M). The route between Junction 2 of the A3(M) and the Converter Station Area has been assessed by the specialist abnormal load contractor (Collett) as part of a Route Access Survey, which was included in the original submission as Appendix 5 of the CTMP and re-appended to this STA, as Appendix A. This addresses the requirements for the delivery of large transformers to the Lovedean sub-station.

1.1.3. CHAPTER 3 – COLLISION ANALYSIS

1.1.3.1. Chapter 3 provides an updated analysis of Personal Injury Collision data for the Onshore Cable Corridor and the wider area, specifically the areas that will serve as likely diversion routes as a result of the traffic management required to facilitate construction of the Onshore Cable Route. Not only does the analysis cover a wider area than the TA, to provide analysis of the entire study area, but also an updated time period (1st October 2014 to 30th September 2019) to reflect the most recently available data.

1.1.4. CHAPTER 4 – TRAFFIC ASSESSMENTS

1.1.4.1. Chapter 4 provides additional junction capacity assessments, additional assessments of the A2030 Eastern Road and additional sensitivity testing of traffic management (i.e. temporary traffic signals) along the Onshore Cable Route. The chapter will cover the following elements:

- Junction capacity assessment of the following junctions which were missing signal timing data in the original TA (the data was not received from HCC prior to submission of the DCO):
  - Hambledon Road/ Aston Road Traffic Signal Junction in Waterlooville; and
  - Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction in Horndean.
- An assessment of the impact of traffic in connection with construction workers associated with the Onshore Cable Route leaving the Converter Station during the PM peak period;
- An additional assessment of the impact of the traffic management required to facilitate construction of the Onshore Cable Route on A2030 Eastern Road, produced at the request of PCC; and

- Further sensitivity testing of shuttle working traffic signal locations and junctions with temporary signals associated with the proposed traffic management which were assessed within the TA.

1.1.5. CHAPTER 5 – BUS JOURNEY TIME ASSESSMENT

1.1.5.1. This chapter analyses the bus journey times for a selection of bus services across the study area which may be affected by the construction works for the Onshore Cable Route. The assessment has been undertaken for the AM, PM and Inter peak time periods and the scenarios match those assessed within the TA.

1.1.6. CHAPTER 6 – CONCLUSIONS

1.1.6.1. Chapter 6 summarises the findings of the STA and draws conclusions on the additional and updated assessments. These conclusions are drawn on a stand-alone basis but also in comparison with the TA.

1.2. SUB-REGIONAL TRANSPORT MODEL (SRTM)

1.2.1.1. As with the TA (APP-448), the majority of analyses completed within the STA use the SRTM to assess the future year baseline and Construction Stage impacts of the Proposed Development. The full scope and methodology of the SRTM modelling is described fully within Section 1.10 of the TA and summarised below for reference.

1.2.1.2. 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 six 100m sections will be under construction at any one time along the Onshore Cable Corridor. 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 Plate **1**) 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.

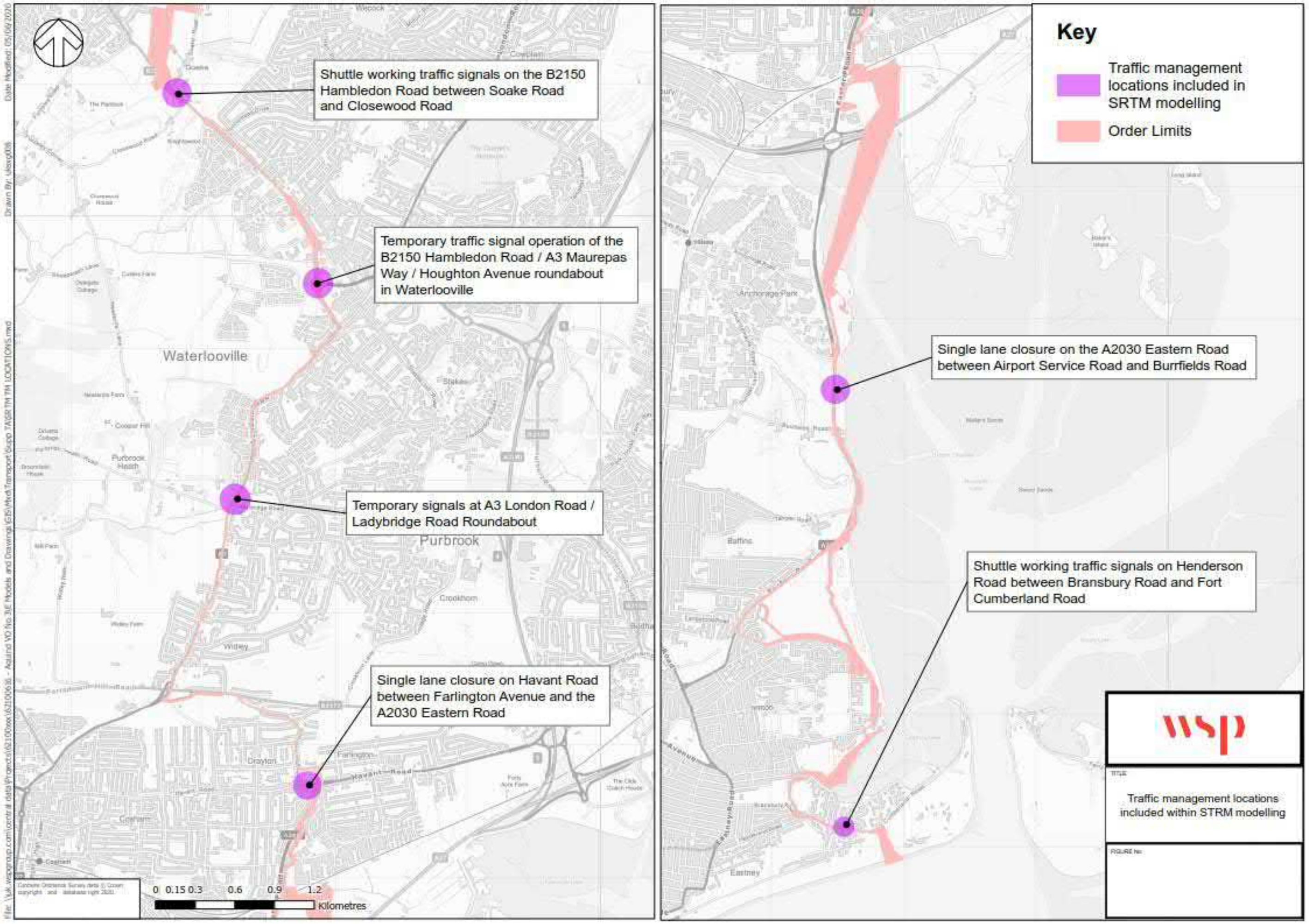

Plate 1 - SRTM Assessed Traffic Management Locations

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 mode 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 will provide a robust analysis of the impacts as it involves using traffic flows 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).

2. CONSTRUCTION PROGRAMME UPDATES

2.1. INTRODUCTION

2.1.1.1. This Section summarises the transport impacts of the updates to the construction programme, including a summary of updates to the FTMS.

2.2. CONSTRUCTION UPDATES

2.2.1. UPDATED DUCT INSTALLATION RATES

2.2.1.1. When considering these construction rates across the entirety of the Onshore Cable Route the average progress rate has been calculated at 100 m per week per circuit, which is in line with Chapter 3 of the E.S. (APP-118). However, it should be noted that installation rates which are per gang per shift are likely to differ dependent upon the level of obstacles and utility services encountered within the road, and upon the level of constraints that need to be observed to minimise impacts. In order to take into account of these local variations in progressions rates, further assessments of existing utility records has been undertaken to gain a more refined idea of likely progression rates for each sub-section of the Onshore Cable Corridor. Following this additional refinement, four broad categories of installation rates have been assumed. These categories are:

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

2.2.1.2. Each sub-section of the Onshore Cable Corridor has been assigned to one of these four broad categories of installation rates.

2.2.3. UPDATED WORKFORCE ASSUMPTIONS

2.2.3.1. As is stated in paragraph 1.8.4.2 of the submitted TA (APP-448), it was previously assumed a maximum of six gangs on the Onshore Cable Route working concurrently on carriageway at any one time, with an additional construction gang working at one of the Horizontal Directional Drill (HDD) locations on the Onshore Cable Corridor (for the purpose of the assessment undertaken in the previously submitted TA, the HDD site at Landfall was chosen). Further development of the construction programme has resulted in two additional construction gangs working at HDD locations on the Onshore Cable Corridor. The maximum number of construction gangs working on carriageway at any one time remains at six. These revised assumptions are summarised in Table 1.

Table 1: Updated workforce assumptions

	Assumptions in submitted TA (now superseded)	Revised assumptions
Maximum number of construction gangs working on the Onshore Cable Corridor at any one time	6	6
Maximum number construction gangs working on HDD sites at any one time	1 (Landfall)	3

2.3. FTMS UPDATES

2.3.1.1. The FTMS has been updated to take into account the revised assumptions in respect of the anticipated progression rates set out in Section 2.2.

2.3.1.2. 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 the updated FTMS 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.

2.3.1.3. A summary of the updated proposals is set out by section is provided in Tables 37 – 45 of the updated FTMS. These summary tables have been recreated in Table 2- Table 9 below for ease of reference. Furthermore, for comparative purposes, the duration per circuit based on the 100m per day progress rate has also been included

2.3.1.4. 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 2 – Section 1 – Lovedean (Converter Station Area)

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
1	Converter Station Access	TBC	Shuttle Working	8-12 Weeks	8-12 Weeks
1.2	Broadway Lane	6	Road Closure	1 Day	1 Day

Table 3 – Section 3 Denmead/ Kings Pond Meadow

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
3.1	Anmore Road	6	Road Closure	1 Day to 2 Weeks	1 Day
3.2	B2150 Hambledon Road to Soake Road	180	Shuttle working TS	2 Weeks	3 Weeks

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

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
4.1	B2150 Hambledon Road between Soake Road and Milton Road	1300	Shuttle working TS	8- 13 Weeks	11-22 Weeks
4.2	B2150 Hambledon Road and A3 Maurepas Way between Milton Road and A3 London Road	1000	Lane Closure	10 Weeks	14 Weeks
4.31	A3 London Road between Forest End Roundabout and south of the junction with Forest End	100	Shuttle Working	1 Week	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	10 Weeks	17 Weeks
4.33	A3 London Road between Poppy Fields and just south of Post Office Road	250	Shuttle Working	3 Weeks	5 Weeks

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
4.34	A3 London Road between Post Office Road and Rocking Horse Nursery	90	Road Closure	2 Weekends	4 Weekends
4.35	A3 London Road between Rocking Horse Nursery and Ladybridge roundabout	170	Shuttle Working	2 Weeks	3 Weeks
4.41	A3 London Road between Ladybridge roundabout and start of bus lane	80	Shuttle Working	1 Week	1 Week
4.42	A3 London Road between start of bus lane and Lansdowne Avenue	850	Lane Closure	9 Weeks	8 Weeks
4.43	A3 London Road between Lansdown Avenue and start of bus lane (south of The Brow)	250	Shuttle Working	3 Weeks	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 Weeks
4.5	B2177 Portsdown Hill Road between A3 London Road and Farlington Avenue	600	Shuttle Working	6 Weeks	2 Weeks

Table 5 - Section 5 – Farlington

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
5.1	Farlington Avenue between B2177 Portsdown Hill Road and Sea View Road	650	Shuttle Working	7 Weeks	6 Weeks
5.2	Farlington Avenue between Sea View Road and Havant Road	350	Road Closure	4 Weeks	6 Weeks
5.3*	Evelegh Road	150	Road Closure	2 Weeks	3 Weeks
5.4*	Crossing of Havant Road	N/A	Road Closure	1 – 2 Weekends	1 – 2 Weekends
5.5	Havant Road / the A2030 Havant Road and the A2030 Eastern Road between Farlington Avenue and Fitzherbert Road	800	Lane Closure	8 Weeks	6 Weeks

Table 6 - Section 6 –Sainsbury's Car Park

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
6	Fitzherbert Road	60	Lane Closure	1 Week	1 Week

Section 7 – Farlington Junction to Airport Service Road

2.3.1.5. No traffic management is required in Section 7.

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

Table 7 - Section 8 – A2030 Eastern Road to Moorings Way

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
8.1	A2030 Eastern Road between Airport Service Road and Tangier Road	1200	Lane Closures	4 Weeks (24hr, 7-Day construction) 9 Weeks (10hr, 7-Day construction)	5 Weeks (24hr, 7-Day working) 8 Weeks (10hr, 7-Day working)
8.2*	A2030 Eastern Road between Tangier Road and Eastern Avenue				
8.2 Option 1	Both Circuits within Milton Common	300	Lane Closure	1 Week (24 hr, 7-Day working and use of Milton Common) 10 Weeks (Eastern Road only, 7-Day working)	1 Week (24hr, 7-day working) – 2 Weeks (10 hr, 7-day)
8.2 Option 2	One Circuit within Milton Common	1300			8 Weeks (10hr, 7-day working)

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
8.2 Option 3	Both Circuits within the A2030 Eastern Road				11 Weeks (10hr Mon-Fri, 5hr Saturday working)
8.3	Eastern Avenue	220	Road Closure	3 Weeks	4 Weeks

Table 8 – Section 9 – Moorings Way to Bransbury Road

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
9.11*	Moorings Way between Eastern Avenue and Godwit Road (passes Moorings Way Infant School)	250	Shuttle Working	3 Weeks	3 Weeks
9.12*	Moorings Way between Godwit Road and Moorings Way to Furze Lane Bus Link	500	Shuttle Working	5 Weeks	5 Weeks
9.21	Locksway Road between access road to Milton Piece Allotments and Thatched House Public House	90	Shuttle Working	1 Week	1 Week
9.22	Longshore Way	150	Shuttle Working	2 Weeks	2 Weeks
9.31	Kingsley Road between Ironbridge Lane and Yeo Court	150	Shuttle Working	1 Day to 2 Weeks	2 Weeks
9.32	Yeo Court	40	Road Closure	1 Week	1 Week

Table 9 - Section 10 – Eastney (Landfall)

Section	Description	Length (m)	Proposed TM	Previous Duration Per Circuit (100m per week)	Updated Duration Per Circuit (Variable Installation Rate)
10.1	Henderson Road	300	Shuttle Working	3 Weeks	5 Weeks
10.2	Fort Cumberland Road	370	Shuttle Working	4 Weeks	7 Weeks

3. CONSTRUCTION TRAFFIC ACCESS

3.1. INTRODUCTION

3.1.1.1. This section considers the construction access strategy for the Proposed Development focusing on the following key topics:

- Confirmation of estimated number of HGVs that will use the Broadway Lane Converter Station access junction at peak construction (update to information provided in Section 22.4.6 of the ES, paragraph 3.6.6.51 of ES Chapter 3 (APP-118) and Section 3.3 of the Framework CTMP);
- The proposed Broadway Lane Converter Station site access junction (update to information provided in Section 1.3.7 of the TA, Section 6.2 and Appendix 2 of the Framework CTMP);
- Management of HGV movements along Day Lane and Broadway Lane (update to information provided in Section 3.4.2 of the TA and Section 6.2 of the Framework CTMP);
- A revision of proposed HGV routes within Waterlooville to remove the use of Milton Road (update to information provided in 22.4.7.13 of the ES Chapter 22 and Section 3.4 of the Framework CTMP)
- Details of estimated construction traffic movements related to Joint Bays and HDD compounds on the Onshore Cable Corridor;
- The enforcement of HGV movements, in terms of use of permitted routes and timing (an update to Section 8 of the Framework CTMP);
- Details of how abnormal loads associated with cable drum deliveries will access each proposed Joint Bay located on the Onshore Cable Route (update to information provided in Section 2.7.7. of the Framework CTMP); and
- Details of AIL routing from Portsmouth Cargo Port to A3(M) Junction 2 to complete the assessment appended to the submitted Framework CTMP, which included the route from A3(M) Junction 2 to the Converter Station (update to information provided in Section 2.7.7. of the Framework CTMP).

3.1.1.2. Where appropriate these updates have been included as part of an update to the Framework CTMP, which is included in Appendix B of this STA.

3.1.1.3. It should be noted that construction traffic movements related to the Converter Station and Onshore Cable Route will occur during weekday and weekend periods in line with the construction working hours and vehicle movement management strategy outlined within the updated Framework CTMP. The assessment work included throughout this STA however includes only weekday construction working and traffic movements on the basis that weekday baseline peak period traffic flows are higher than weekends. This therefore presents the most robust assessment of the likely impacts of the construction phases of the Proposed Development.

3.2. CONSTRUCTION TRAFFIC MOVEMENTS AT BROADWAY LANE CONVERTER STATION SITE ACCESS JUNCTION

3.2.1.1. This section sets out the assumptions made regarding the peak construction traffic at the Converter Station Area.

3.2.1.2. The peak construction traffic assumptions set out in this section repeat those which were set out in section 22.4.6 of ES Chapter 22. These assumptions are summarised below for reference and have been included for contextual purposes. Further details regarding the assumptions concerning programming of works can be found in Section 3.7 of ES Chapter 3.

Table 10: Estimated construction related traffic using Broadway Lane junction per day at peak construction

Construction Activity	Estimated HGVs	Estimated LGVs / Cars
Converter Station Area	43 two-way movements (86 in total)	150 car two-way movements (300 in in total)
Cable Route (for 6 gangs all using Converter Station Area as main compound)	24 two-way movements (48 in total)	12 LGV two-way movements (24 in total) 48 car two-way movements (96 in total)
Landfall (using Converter Station Area as main compound)	4 two-way movements (8 in total)	2 LGV two-way movements (4 in total) 8 car two-way movements (16 in total)

3.2.1.3. Since submission of the Application the assumptions regarding the maximum number of construction gangs working simultaneously on the Onshore Cable Corridor has been revised. While the maximum number of construction gangs operating within the highway remains at six at any one time, construction may also take place at up to three HDD locations simultaneously. This increases the total number of construction locations from seven (six on highway plus Landfall) as assessed within the ES Chapter 22 to nine (six on highway, plus landfall, plus two other HDD locations). The impact of these additional locations has been considered and the assessment methodology used within the ES Chapter 22 and ES Addendum remains robust for the following reasons:

- Outside mobilisation and de-commissioning of HDD sites (a 2-3 day process), HGV construction traffic generation from construction is anticipated to be very low, with an average demand of 2-3 HGVs per day related to the provision of water and removal of waste material from site. This is detailed in Section 3.8 of this STA;
- Construction workers would be transported to HDD locations via LGV where possible taking account of shift patterns, to reduce the number of construction worker vehicle trips made to each location.

3.2.1.4. On this basis the addition of two further HDD construction sites would not lead to a material change in the assessments completed within Chapter 22 of the ES and therefore no further assessments have been completed using these updated construction traffic estimates. Instead, all additional analysis contained within this STA uses the construction traffic number outlined in Table 10.

3.2.1.5. For traffic associated with construction of the Converter Station the following controls have been applied as outlined within Section 3.3 and Table 2 of the Framework CTMP:

- All HGV movements would occur over an eight-hour window between 09:00 and 17:00, avoiding typically observed AM and PM traffic peaks. This results in a maximum of 10-11 HGV movements on Day Lane per hour in peak construction.
- All 150 construction workers associated with the construction of the Converter Station would be scheduled to arrive at the Converter Station between 07:00-08:00 and depart between 18:00-19:00 to reflect the 08:00 to 18:00 working day. As a robust assessment, it is assumed that all construction workers will arrive by single-occupancy vehicle.

3.2.1.6. For traffic associated with the Onshore Cable Route, the following controls have been applied as outlined within the Table 2 and Section 3.3 of the updated Framework CTMP. These controls directly supersede those which were set out in the submitted

Framework CTMP:

- All construction workers associated with the construction of the Onshore Cable Route will arrive at the Converter Station Area before 07:00 and depart from here after 17:00, to reflect the 07:00 to 17:00 working day at each Cable Route construction location and taking account of travel time to the Converter Station Area at the start and end of the working day. Car parking will be provided for these construction workers at the Converter Station Area, with each cable gang (6-8 workers) then transported to and from the Cable Route construction location by two LGVs per gang(equating to 12 LGVs in total); and
- HGV movements associated with the construction of the Onshore Cable Route will be scheduled to leave from the Converter Station Area after 07:00 and arrive on-site before 08:00. General HGV movements will also and 09:00 to 17:00 to deliver equipment and material to each Cable Route construction location from the Converter Station Area. At the end of the working day, equipment / material will also be transported away from each site, traveling back to the Converter Station between 16:00 and 17:00).

3.2.1.7. Construction at the Landfall and some HDD locations will take place over a longer working day of 07:00 to 19:00 with construction traffic movements to / from the Converter Station Area taking place within these hours. Construction at HDD-3 and HDD-4 may also take place over 24-hours. Where this is the case there may be a need for HGV movements to take place between 19:00 and 07:00 but endeavours will be made to avoid disturbance to nearby residential properties.

3.2.1.8. HGV construction traffic movements will be timed to avoid the AM (08:00-09:00) and PM (17:00-18:00) peak hours, with further consideration for other sensitive receptors (such as schools) required as part of detailed CTMP documents in accordance with Section 3.3 of the Framework CTMP However, some construction traffic movements may occur at the Converter Station Area between the hours of 17:00 to 18:00 (the PM Peak). These movements relate to the following:

- 12 non-HGV construction vehicles returning to the Converter Station Area from the six construction locations along the Onshore Cable Corridor (two vehicles per site) between 16:00 and 17:00 may arrive at the Converter Station after 17:00. For assessment purposes it has been assumed that these arrive at the Converter Station between 17:00 and 18:00; and
- Up to 42-48 construction worker car trips exiting the Converter Station Area at the end of their working day associated with workers on the Onshore Cable Route leaving the site.

3.2.1.9. The information provided above regarding traffic movements related to the Proposed Development during the PM Peak Hour should be taken to directly supersede the statement within Section 1.8 of the TA (APP-448), which stated all construction related traffic movements would be scheduled to avoid the PM peak hour. That statement had been based on an assumption relating to time spent at the actual construction locations, with it being assumed that construction workers would leave the Converter Station Area before 07:00 to arrive on-site for a 07:00 start, before working up to 17:00, shutting down and traveling back to the Converter Station Area for an end-of-day de-brief. With these working arrangements, construction workers associated with installation of the Onshore Cable Route would have left the Converter Station Area after 18:00.

3.2.1.10. Having considered the practicalities of the likely movements of workers further, it is now assumed that construction workers will arrive at the Converter Station Area shortly before 07:00 and then travel to the Onshore Cable Route construction site via LGV, returning to the Converter Station compound for 17:00 and leave the Converter Station Area shortly following 17:00. This change in assumption relates to the need for the Onshore Cable Route construction zones to be shut down before 17:00, so as to provide time in some locations for road-plating and removal of fencing to allow access to residential properties outside of working hours, ensuring access to properties will not be precluded during the PM peak when residents return home from work. Further details regarding access to residential properties, including how access for residents and business which are directly impacted by the construction of the Onshore Cable Route can be found in the 'Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy', which is can be found in Appendix 1 of the updated FTMS.

3.2.1.11. Following this update to the assumptions, revised junction capacity analysis has been undertaken, which accounts for the changes in construction traffic timings. Further details of the revised junction analysis can be found in Section 5 of this STA. This assessment assumes that no other construction compounds are available and therefore all construction traffic trips start and end their day at the Converter Station Area.

3.2.1.12. It should be noted that whilst this assessment is representative of a worst-case scenario in which construction workers travel to the Converter Station Area by car at the start of each day, in reality this may not be the practice undertaken. As outlined with Section 2.4 and 4.3 of the Updated CTMP the following strategy will be employed to reduce construction worker vehicle trips made to the Converter Station Area:

- A shuttle bus service will be operated by the Contractor between the Converter Station Area and nearby locations to reduce the requirement for construction workers to travel to site by private vehicle. The operation of this shuttle bus service will be kept under review for the construction period but at this stage it is assumed that it would provide pick-up and drop-off to the following locations:
  - Havant Railway Station (which provides links from London, Chichester, Portsmouth and Southampton);
  - Waterlooville town centre (which acts as a terminus for a number of local bus routes); and
  - Local hotels used for accommodation by construction workers.
- Provision will be made to allow construction workers working on the Onshore Cable Route to travel directly from hotel accommodation to the site via construction LGVs.

3.2.1.13. As stated in Section 3.4 of the updated Framework CTMP, all construction traffic will be routed to and from the Converter Station Area via Day Lane and Lovedean Lane to the east. No construction related traffic will be permitted to travel south from the Converter Station Area along Anmore Lane, as detailed within 3.4 of the Framework CTMP.

3.3. CONVERTER STATION ACCESS JUNCTION

3.3.1.1. This section provides additional information on the proposals for the access junction which is to be provided on Broadway Lane for the proposed Converter Station, taking account of the construction and operational phases of the Proposed Development.

3.3.1.2. Further, at the request of HCC made at a meeting dated 14/02/2020, this section also provides the following:

- Further detail regarding the southbound visibility at the proposed access junction onto Broadway Lane; and
- Details of updates made to the proposed site access junction to prevent vehicles from accessing the Converter Station Area via Broadway Lane, Anmore Lane and Anmore Road south of the site.

3.3.1.3. These updates have been included in Section 6.2 and Appendix 2 of the updated Framework CTMP, which is included in Appendix B of this STA.

3.3.2. PROPOSED LAYOUT

3.3.2.1. As is set out in Section 1.3.7 of the TA, it is proposed that a permanent access junction will provide access from Broadway Lane to the Converter Station Area during the Construction and Operational Stages.

3.3.2.2. To provide this permanent access junction there will be an upgrade of the junction of Broadway Lane and Day Lane, which will include the construction of a haul road and temporary holding area. The proposed access junction is shown in Drawing AQD-WSP-UK-OS-DR-Z-200215 provided in Appendix C of this STA. and Appendix 2 of the Framework CTMP Drawing AQD-WSP-UK-OS-DR-Z-200215 has been updated from the version submitted in Appendix C of the TA to include details of the Indicative landscaping for the area surrounding the access junction (which accords with the landscaping shown on Figure 15.49 of Chapter 15 Landscape and Visual Amenity of the submitted Environmental Statement (Examination Reference: APP-130).

3.3.2.3. As can be seen in drawing AQD-WSP-UK-OS-DR-Z-200215, the proposed haul road and temporary holding area comprises a new highway link to be provided between Day Lane, east of the existing bend, and at Broadway Lane, south of the existing bend. This will provide a managed facility for vehicles entering the site during the Construction Stage, with vehicle movements across Broadway Lane able to be marshalled. This link also accommodates HGV / abnormal load movements and would be retained as a permanent feature (unadopted) to allow future access for such vehicles should this be required. However, as is stated in paragraph 1.3.11.3 of the TA, HGV or AILs will only be required to travel to the Converter Station Area during the Operational Stage in the event of major equipment failure.

3.3.2.4. General verge / vegetation cutting back will be required on all sides of Broadway Lane within the bounds of the highway to ensure that adequate visibility splay requirements are met, with all required land falling within the Order Limits, as confirmed by drawing AQD-WSP-UK-OS-DR-Z-200215 and the Indicative Landscape Mitigate Plan. The power to carry out such works is provided for at Article 41 (Felling or lopping of trees and removal of hedgerows) of the Draft Development Consent Order (APP-019).

3.3.2.5. It should be noted that the proposed haul road is to be gated at both the junction with Day Lane and the junction with Broadway Lane, with construction vehicles only being able to gain access via dedicated banksmen. The temporary holding area will provide sufficient set back from the gate such that HGV's needing to enter the Converter Station Area can wait clear of the public highway, preventing obstruction to the travelling traffic.

3.3.2.6. In order to prevent vehicles from entering and exiting the Converter Station Area from the south in the operational phases of the development (construction traffic movements will not be permitted to make use of this route), the following design alterations have been included:

- A 'no right turn' sign will be placed on the Converter Station access road approximately 10m from the junction with Broadway Lane to inform drivers that this movement is prohibited; and
- The radii on the southern side of the access road has been reduced from 10m to 1m to discourage vehicles from turning left into the site from Broadway Lane.

3.3.2.7. In addition to these design features, an access strategy document will be produced for the Operational Stage that defines how maintenance vehicles should access the Converter Station. This will include an access route plan, which will follow the same principles as the construction traffic route included within the Framework CTMP which is secured by requirement 17 of the dDCO (APP-019).

3.3.3. SOUTHBOUND VISIBILITY

3.3.3.1. This Section provides further investigation of the southbound visibility from the access junction onto Broadway Lane, as requested by HCC.

3.3.3.2. As can be seen in AQD-WSP-UK-OS-DR-Z-200215, the proposed Converter Station access junction and the gated access junction of the proposed haul road and Broadway Lane have visibility splays provided to the south along Broadway Lane of approximately 45m to the edge of the carriageway. As is set out in Table 7.1 of Manual for Streets (DfT 2007), see Plate 2, this is appropriate as a sight-stopping distance for locations with 85th percentile speeds of up to 31mph. As stated in paragraph 1.3.7.5 of the submitted TA, an 85th percentile speed for northbound traffic was recorded by an Automatic Traffic Count (ATC) as 41mph 300m south of the proposed access junction. HCC have therefore requested further clarity as to the adequacy of the available visibility from the proposed junction.

3.3.3.3. Further to this request from HCC, additional speed surveys were undertaken on the 25th June 2020 between the hours of 10:00 – 12:00 and 14:00 – 16:00. These additional speed surveys were located on Broadway Lane at the access to Broadway Cottages, approximately 75m south of the proposed Convert Station Area access junction. As this additional speed survey was undertaken in closer proximity to the proposed access junction than that undertaken previously, the speed data collected is a more accurate reflection of the speed vehicles currently travel at in this location.

3.3.3.4. The results of this additional speed survey are set out in Table 11.

Table 11: Broadway Lane additional speed survey results

	85th percentile speed (mph)		
	Northbound	Southbound	Two-way average
10:00 – 12:00	29	29	29
14:00 – 16:00	28	30	29

3.3.3.5. As can be seen from the results of the additional speed survey, the 85th percentile speed in the vicinity of the proposed Converter Station Area access junction are 29mph. This is lower than the speeds which were previously recorded further south. As such, according to the guidance set out in Table 7.1 of Manual for Streets (DfT 2007) which is included in Plate 2, the provided southbound visibility of 45m is 2m in excess of that which is required.

Table 7.1 Derived SSDs for streets (figures rounded).

Speed	Kilometres per hour	16	20	24	25	30	32	40	45	48	50	60
	Miles per hour	10	12	15	16	19	20	25	28	30	31	37
SSD (metres)		9	12	15	16	20	22	31	36	40	43	56
SSD adjusted for bonnet length. See 7.6.4		11	14	17	18	23	25	33	39	43	45	59
		Additional features will be needed to achieve low speeds										

Plate 2 - Extract from Manual for Streets (DfT 2007) "Table 7.1 Derived SSDs for streets (figures rounded)."

3.3.3.6. Additional visibility splay assessments have been completed to show the maximum southbound visibility that is achievable to vehicles approaching on Broadway Lane, taking account of on-street parking outside of Broadway Cottages. These assessments are shown on Drawing AQD-WSP-UK-OS-DR-Z-200215 included in Appendix C.

3.3.3.7. The additional assessment show that a stopping sight distance of 56m is achievable when cars are parked outside of Broadway Cottages and 58m when they are not. These are equivalent to approaching northbound vehicle speeds of 36mph and 37mph, which again exceed the recorded 85th percentile speed of 29mph.

3.3.4. CONSTRUCTION STAGE

3.3.4.1. It is recognised that for the period of construction for the Converter Station the nature of the highway network in the immediate vicinity of the proposed access junction will be altered considerably, as is set out in the Section 2.2 of this Supplementary TA. As is stated earlier in this section, any HGVs entering or exiting the site by crossing Broadway Lane from the proposed new haul road to the east of Broadway Lane will be subject to control via banksmen. Vehicles except HGVs egressing the Converter Station Area on to Broadway Lane will not be subject to control by banksmen. However, as is stated above, the 45m visibility southbound is sufficient given the recorded existing 85th percentile speed of 29mph in this location.

3.3.5. OPERATIONAL STAGE

3.3.5.1. As is noted in paragraph 1.3.11.3. of the TA, during the Operational Stage of the Converter Station there will be only very minor increases in traffic flow in the vicinity of the access junction. It is anticipated that vehicular activity would be unlikely to extend beyond occasional servicing by LGVs. It should be noted that due to the very low number of movements expected, it is not anticipated that the existing character of the highway network in this location would be altered significantly, and as such the visibility provided is sufficient.

3.3.5.2. As is stated in paragraph 1.3.7.7. of the TA, during general maintenance and operational outages, HGVs or AILs would not be regularly required to access the proposed Converter Station during the Operational Stage, with access by these larger vehicles only being required following major equipment failure. Where this is required the haul road will be utilised. Where the use of this haul road be required during the Operational Stage of the Converter Station, it will only be used by HGV and AILs, and all access will be supported by a series of banksmen to ensure safe movement secured by Requirement 17 of the dDCO (APP-019).

3.4. MANAGEMENT OF HGV TRAFFIC MOVEMENTS ON DAY LANE AND BROADWAY LANE

3.4.1.1. This section provides further detail on the methodology that will be employed to control HGV construction traffic movements on Broadway Lane and Day Lane.

3.4.1.2. The further detail provided in this section has been included in Section 6.2 of the updated Framework CTMP, which is included in Appendix B of this STA.

3.4.1.3. Management of access to the proposed haul road will be provided during the Construction Stage through the use of coordinated banksmen and the use of STOP/GO boards. . The access and egress arrangements for the haul road from Day Lane to the access junction on Broadway Lane can be seen in Plate 3.

3.4.1.4. The use of STOP/GO boards is chosen as this provides a greater level of flexibility and control in comparison with shuttle working traffic signals and will ensure that delays to other traffic are minimised to only the periods when HGV construction traffic is on Day Lane or entering / exiting the Broadway Lane access junction.

Prevention of conflicting HGV Movement on Day Lane

3.4.1.5. Given its existing width, Day Lane is not able to accommodate two-way HGV traffic in some locations and therefore vehicles exiting the Converter Station Area will be controlled. This control will ensure the meeting of two construction vehicles travelling along Day Lane is prevented. Based upon the peak construction period estimate of 5-6 HGV movements occurring per hour in each direction between 09:00 and 17:00 this is considered to be an appropriate management approach.

3.4.1.6. The movements of both HGVs and AILs accessing and egressing the proposed Converter Station will be coordinated by banksmen. Banksmen will be located at four locations, details of which are set out below and in Plate 3, to allow the arrivals and departures of construction traffic to be coordinated, such that there will not be instances where HGV's approaching from opposite directions will meet one another on Day Lane. These four locations are as follows:

1. *At the eastern entrance to Day Lane, in the vicinity of the Bird in Hand Public House;*
2. *Day Lane in the vicinity of the existing Solar Farm access road;*
3. *At the eastern access point of the haul road on Day Lane; and*
4. *At the western access point of the haul road at Broadway Lane, in the vicinity of the Converter Station access.*

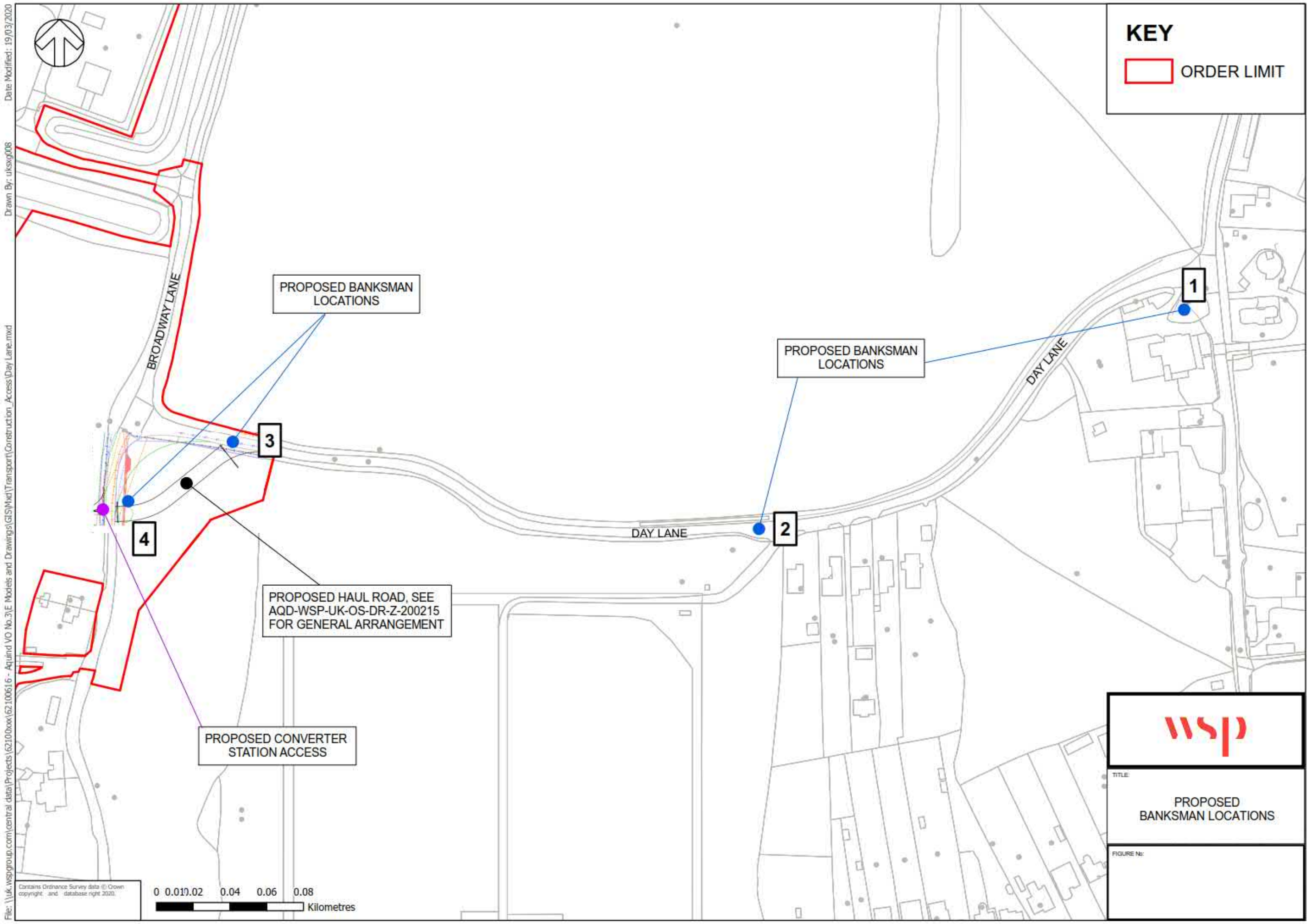

Plate 3 - Proposed banksman locations - will be replaced with full page image when issued as PDF

3.4.1.7. The four banksmen will remain in contact at all times using telecommunication devices during the movement of construction vehicles on Broadway Lane and Day Lane to ensure a coordinated approach to traffic management.

3.4.1.8. Banksman one, located at the eastern entrance to Day Lane, will notify banksman three when an HGV has entered Day Lane and is travelling westbound towards the site access. This notification will prevent the banksman three from releasing an egressing HGV from the holding area within the haul road until the accessing vehicle has also entered the holding area. The proposed holding area has sufficient width to accommodate two HGVs at any given time. This proposed coordination by banksmen will prevent a conflict of HGVs occurring on Day Lane.

3.4.1.9. It should be noted that construction vehicles travelling towards the Converter Station Area westbound will be given priority over those travelling eastbound to prevent the need for HGVs to be held on Day Lane in proximity to the junction with Lovedean Lane. This will mean that HGVs will only be held at this location if an eastbound HGV has already passed banksman three and banksmen two located on Day Lane. This is because there is limited capacity for passing of HGVs in the vicinity of the Day Lane / Lovedean Lane junction. Furthermore, Banksman three would control the egress of HGVs into Day Lane if there is a public vehicle approaching on Day Lane.

Broadway Lane Access

3.4.1.10. Banksman four is to be located at the Broadway Lane entrance of the proposed haul road, and will temporarily halt traffic on Broadway Lane when a construction vehicle is travelling across the highway between the Converter Station Area entrance and the haul road.

3.4.2. PREVENTION OF CONFLICTING HGV AND ORDINARY TRAFFIC MOVEMENTS

3.4.2.1. In some limited locations, the width of Day Lane may make it difficult for a standard car or LGV and an HGV to pass. Vehicular tracking has been undertaken to identify where the locations are on Day Lane where this would be a problem. This tracking can be seen in drawing no. AQD-WSP-UK-OS-DR-Z-2002223 in Appendix D.

3.4.2.2. As is stated in the paragraph 6.2.2.2 of the Framework CTMP, concerns regarding road width on Day Lane will be mitigated using a combination of both regular maintenance and traffic management and construction traffic monitoring and enforcement (as discussed in Section 2.6). The mitigation to be provided by these measures is set out below in Section’s 2.4.3 and 2.4.4.

3.4.3. HIGHWAY MAINTENANCE

3.4.3.1. In terms of highway maintenance, it is proposed that regular 'siding' will take place within the highway boundary to clear the earth that has fallen on to the carriageway edges from the unrestrained verges to ensure maximum carriageway width is maintained on this link. Highway maintenance will also include regular cutting back of verge vegetation on Day Lane within the highway boundary to ensure the maximum achievable forward visibility is retained.

3.4.4. TRAFFIC MANAGEMENT

3.4.4.1. Within the western end of Day Lane, the locations where an HGV and car cannot pass one another are located where there is good forward visibility. In these locations, it is expected that an informal give-way system will take place as commonly occurs along rural roads of a similar nature to Day Lane. In such situations, opposing vehicles stop on carriageway where safe to do so and wait until the oncoming vehicle has passed the point of conflict, with such situations being a common occurrence on rural lanes where the carriageway width reduces the ability for oncoming vehicles to pass each other.

3.4.4.2. However, towards the east of Day Lane visibility decreases. In the vicinity of the residential properties on this link, there is another narrow section where tracking has shown a car and HGV would not be able to pass one another. In order to ensure vehicle movement conflicts do not occur on the eastern part of Day Lane, it is proposed that a one-way shuttle working would be maintained via STOP/GO boards operated by banksmen one and banksmen two in coordination with one another. These STOP/GO boards will simulate shuttle working for this approximately 300m link when HGV construction traffic is on this section of Day Lane.

Feasibility Assessment

3.4.4.3. In order to assess the feasibility of shuttle working via the use of STOP/GO boards on Day Lane, a capacity assessment has been undertaken using Linsig software.

3.4.4.4. For the purpose of robustness, this assessment has been undertaken for the following three scenarios:

- Automated Traffic Count (ATC) traffic survey data for Day Lane with the addition of the anticipated HGV flows associated with construction of the Converter Station;
- SRTM Do Something 1 (DS1): Southbound closures with the addition of the anticipated HGV flows associated with construction of the Converter Station; and
- SRTM Do Something 2 (DS2): Northbound closures with the addition of the anticipated HGV flows associated with construction of the Converter Station.

3.4.4.5. The ATC data for Day Lane can be found in paragraph 1.5.3.9 of the submitted TA, and information regarding the SRTM scenarios can be seen in section 1.10.3 of the TA.

3.4.4.6. This assessment has been undertaken using the assumption that the shuttle working via STOP / GO boards will be in place for a 300m section of Day Lane. This is a robust assessment as it assumes that the STOP / GO boards operate on a fixed cycle, where in reality these will all be on GO except when HGV movements are occurring to and from the Converter Station site access.

3.4.4.7. As is set out in the Section 2.2 of this STA, all HGV movements will take place in the eight-hour period in between the typically observed traffic peaks (09:00 – 17:00). As such, the STOP / GO boards will only be required to be in place for this eight-hour period, and to reflect this, this assessment has been undertaken using interpeak traffic flows. The banksman would be in constant radio contact with the Converter Station Area and would be stood-down once it has been confirmed that the last HGV has entered or exited the site each day. The consequent traffic flows for Day Lane are set out in Table 12**.**

Table 12 - Day Lane Interpeak Traffic Flows

	Interpeak Traffic Flow (vehicles / hr)	
	Eastbound	**Westbound**
Average Do Something scenario Converter Station HGV (10:00-16:00)	102	136

3.4.4.8. The results of the Linsig assessment for each scenario can be seen in Table 13. LinSig models provide an indication of the Degree of Saturation (DoS) as a percentage and the Mean Maximum Queue (MMQ) in PCUs (Passenger Car Units) for each junction approach, the average delay per vehicle on each approach recorded in seconds and the Practical Reserve Capacity (PRC). This then provides a measure of the junction's total capacity (as a percentage). When reviewing the PRC of a signalised junction the following should be considered:

- A positive figure indicates the junction operates with reserve capacity;
- A negative figure less than -10%, suggests that the junction would be broadly at capacity; and
- A negative figure more than -10% indicates that the junction cannot accommodate the demand.

3.4.4.9. For DoS the thresholds can be categorised as follows:

- Less than 90%: Any queues that have built up will be able to disperse during the relevant stage in each cycle;
- 90-100%: Indicates that an arm is close to its theoretical capacity and any queue that has built up does not fully clear within each cycle; and
- More than 100%: Indicates an arm is over its theoretical capacity and significant queues are likely as a result.

Table 13: Linsig results for the temporary shuttle working traffic signals proposed for Day Lane

Scenario	Approach	Interpeak shuttle working traffic signals		
		DoS (%)	MMQ (PCU)	Delay (S/PCU)
Average DS scenario traffic flow + Converter Station HGV	Day Lane (eastbound)	24.1	5	73
	Day Lane (westbound)	23.7	6	58
	Overall Junction:	Cycle Time: 200s PRC:273.5%		

3.4.4.10. As can be seen in the results set out in Table 13, the highest queue is six PCU, with the highest delay being just over one minute. These are considered to be acceptable, given that the relatively rural nature of Day Lane would minimise any additional locations of delay in any given journey. Furthermore, all westbound HGV movements will be given right of way to prevent blocking onto Lovedean Lane from the junction with Day Lane.

3.5. PROPOSED HGV ROUTING WITHIN WATERLOOVILLE

3.5.1.1. This section assesses the impacts of the alteration of the permitted routing of construction traffic in Waterlooville travelling between the proposed Converter Station and construction areas of the Onshore Cable Route. Alterations to the permitted routing have been made to ensure that construction traffic uses the most appropriate routes and avoids sensitive receptors (such as schools) where possible.

3.5.1.2. Paragraph 22.4.7.13 of the ES Chapter 22 (APP – 137) set out the following construction traffic routing in Waterlooville, used in the submitted transport assessment:

- Cable Corridor Section 1: Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road;
- Cable Corridor Section 2: Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road; and
- Cable Corridor Section 3: Broadway Lane – Day Lane – Lovedean Lane – Milton Road – B2150 Hambledon Road – A3 Maurepas Way – A3 London Road.

3.5.1.3. There was an error in the submitted routing stated above as there is no need for construction traffic associated with the construction of the Onshore Cable Route or Joint Bays to route on the public highway network in Cable Corridor Cable Corridor Sections 1 and 2, which will be wholly accommodated by haul roads internal to the proposed Converter Station Area. This construction traffic routing is detailed in Section 3.4 of the updated Framework CTMP.

3.5.1.4. Following further consideration of these routes and the sensitive receptors along them, the use of Milton Road as a construction traffic route has also been removed for construction traffic accessing Sections 3 and 4 of the Onshore Cable Corridor. The A3 London Road is a more appropriate alternative to Milton Road as it is of a higher classification, generally wider and where there is housing, it is generally set back further from the road or in some cases accessed by separate service roads. Overall, it has the characteristics of a more strategic route while Milton Road is more local. Therefore, the revised traffic routes for Sections 1 to 3 and the northern part of Section 4 of the Onshore Cable Corridor avoiding the use of Milton Road, are as follows and as shown on Plate 4:

- Cable Corridor Section 1: Internal Converter Station Site roads only;
- Cable Corridor Section 2: Internal Converter Station Site roads only;
- Cable Corridor Section 3: Broadway Lane – Day Lane – Lovedean Lane – A3 London Road – B2150 Hambledon Road; and

- Cable Corridor Section 4: Broadway Lane – Day Lane – Lovedean Lane – A3 London Road – A3 Maurepas Way – B2150 Hambledon Road or A3 London Road depending upon construction location.

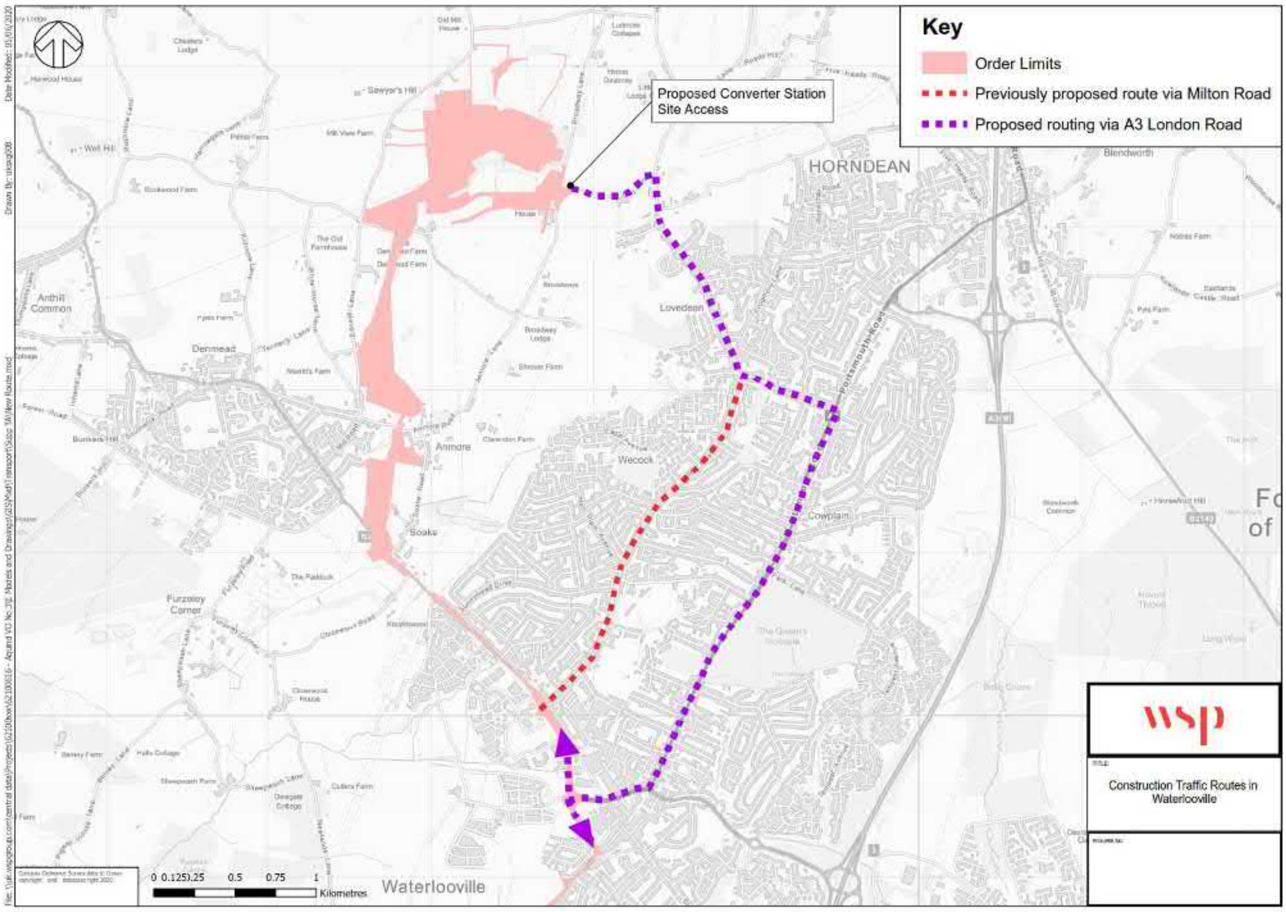

Plate 4 - Construction Traffic Routes in Waterlooville

3.5.1.5. In light of these alterations an assessment has been completed of both the removal of construction traffic from Milton Road and parts of the B2150, and added to A3 London Road / A3 Maurepas Way between Lovedean Lane and the roundabout junction of A3 / B2150 / Houghton Avenue. The changes to construction traffic are shown in Table 14 below.

Table 14: Assessment of Construction Traffic Routing Alterations

Route Description	Two-way Construction Traffic			
	Assessed with ES Chapter 22		Revised Assessment	
	Cable Route LGVs	Cable Route HGVs	Cable Route LGVs	Cable Route HGVs
Milton Road between Lovedean Lane and B2150 Hambledon Road	12	24	0	0
A3 London Road / A3 Maurepas Way between Lovedean Lane and B2150 Hambledon Road	0	0	12	24
B2150 Hambledon Road between Soake Road and A3 Maurepas Way	12	24	4	8

3.5.1.6. The impact of this rerouting of construction traffic on total traffic flow on those routes is set out in Table 15 below.

Table 15: Impact of Construction Traffic Routing Alternations on AADT Traffic Flows

Route Description		Two-way 24hr AADT (route average)							
		Assessed with ES Chapter 22			Revised Assessment				
		DM	DS1	DS2	DM	DS1	% Change	DS2	% Change
Milton Road between Lovedean Lane and B2150 Hambledon Road		10,151	9,718	9,724	10,151	9,682	-0.4%	9,688	-0.4%
A3 between Lovedean Lane and B2150 Hambledon Road	A3 London Road	11,476	11,601	11,594	11,476	11,637	+0.3%	+0.3%	+0.3%
	A3 Maurepas Way	33,208	22,302	22,246	33,208	22,338	+0.2%	+0.2%	+0.2%
B2150 Hambledon Road between Soake Road and A3 Maurepas Way		29,757	21,960	21,967	29,757	21,936	+0.1%	21,943	+0.1%

3.5.1.7. As can be seen in Table 15, in the context of the average annual daily traffic flows for the routes impacted, the re-routing of the construction vehicles is insignificant.

3.5.1.8. The proposed update to construction traffic routing which is set out in this section also supersedes that which was included in Section 3.4.5 of the Framework CTMP and has therefore been updated within the Framework CTMP as included in Appendix B.

3.6. ENFORCEMENT OF HGV MOVEMENTS

3.6.1.1. This section provides a summary of amendments that have been made to Section 8 of the Framework CTMP (included in Appendix B) in relation to the monitoring and enforcement of HGV routing.

3.6.2. OVERVIEW

3.6.2.1. For a Framework CTMP to be effective, a robust monitoring process is required to ensure compliance. This section provides details of management techniques that will be used by the appointed contractors. To ensure effective management, the principal contractor will appoint a dedicated staff member as responsible for the monitoring and enforcement of construction traffic movements to and from the Proposed Development, using the tools and measures identified in this section.

3.6.3. CONSTRUCTION STAFF INDUCTION

3.6.3.1. All construction staff would complete a staff induction meeting to familiarise all workers with requirements of the construction process. As part of this induction an information pack will also be provided to all contractors, which will include the following details:

- Permitted HGV routes;
- HGV timing restrictions;
- Site rules for the Converter Station and all other construction locations;
- Driver behaviour requirements;
- Traffic incident management plan; and
- CTMP Contact information (emergency and non-emergency).

3.6.3.2. All of this information can be found in Section 3 of the submitted Framework CTMP, and where updated in Section 8 of the updated Framework CTMP which is included in Appendix B.

3.6.4. HGV ROUTE SIGNAGE

3.6.4.1. Temporary route signage will be installed at key locations on the local highway network to direct construction traffic along permitted routes agreed with the relevant highway authority and as included in Section 3 of the Framework CTMP.

3.6.4.2. The design and locations of these signs would be agreed with the local highway authority prior to installation and would be used to denote routes to and from the Converter Station and cable route construction locations. This would include routes to temporary off-carriageway vehicle access locations where appropriate.

3.6.5. CONSTRUCTION VEHICLE IDENTIFICATION

3.6.5.1. All construction vehicles associated with the Proposed Development will be identifiable through the use of a dedicated nameplate located on the outside of the vehicle. This will allow vehicles to easily be identified on the local highway network and at site access locations.

3.6.6. MONITORING OF CONSTRUCTION VEHICLE MOVEMENTS

3.6.6.1. To ensure compliance with Framework CTMP, all construction vehicle movements will be recorded as they enter and exit the Converter Station Area and construction locations along the Onshore Cable Corridor, including Landfall. These will be stored to ensure that a log of vehicle movements can be reviewed as necessary. If these records show that vehicles are travelling outside of permitted hours, this will be communicated to contractors to ensure compliance is achieved.

3.6.7. ENFORCEMENT AND CORRECTIVE MEASURES

3.6.7.1. All incidences of non-compliance with measures contained within the Framework CTMP will be investigated by the principal contractor and documented on a Complaints Register, which will include time, date and nature of complaint and the action taken to resolve it. The contractor will also hold meetings with the local highway authorities and relevant stakeholders (e.g. parish councils) and review / update the detailed CTMPs where is it is considered necessary to implement additional mitigation measures.

3.6.7.2. In addition, the Applicant will ensure that contractor behaviour and performance is monitored and enforced, and where appropriate that corrective measures are utilised to resolve issues and improve performance.

3.7. DETAILED CTMPS

3.7.1.1. This Framework CTMP will establish the over-arching principles to guide the individual detailed CTMPs. These will then be approved by the relevant highway authority and will include the following details:

- Construction vehicle routing as is set out in the updated Framework CTMP included in Appendix B;
- A highway condition survey of all routes proposed and assessed, which would include:
    - A photographic record of the condition of the extents of roads identified above as impacted by construction works or traffic routes;
    - A summary table giving a brief description of visible defects where identified;
    - A drawing indicating the approximate location of photographs / defects on plan;
    - A short statement outlining the methodology and providing a summary of the findings;
    - A meeting with HCC / PCC on site to agree findings of the report and make any reasonable adjustments; and
    - A post works report covering the same information and identifying new defects.
- Details of road closures / traffic management measures;
- Specific details regarding abnormal loads;

- Details of the interventions to the highway that are required to enable construction works (permanent or temporary) and reinstatements;
- Specific details regarding traffic management and construction management of vehicle movements such as temporary signage, requirements for a banksman or escort vehicles, wheel washing etc;
- Details of monitoring and enforcement measures, including contact details for the member of staff responsible for these tasks; and
- Details of construction staff travel arrangements / travel plan.

3.7.1.2. The works will be split into a number of sections which may result in multiple contractors being appointed. This will result in a number of individual CTMPs being prepared to cover different sections and stage of works which could include:

- Enabling and permanent works; and
- Specific works including Landfall, the Onshore Cable Route, construction compounds (if applicable), HDD locations and the Converter Station works.

3.8. JOINT BAY AND HDD COMPOUND CONSTRUCTION TRAFFIC ESTIMATES

3.8.1.1. Following submission of the application, further information has been obtained on the number of HGV construction traffic movements which will be generated by:

- The process of constructing Joint Bays, jointing of cables and reinstatement of the site; and
- HDD compounds, including site set-up and demobilisation.

3.8.1.2. Construction traffic estimates for each of these processes is described below.

3.8.2. JOINT BAY CONSTRUCTION TRAFFIC

3.8.2.1. Joint Bays are likely to be required every 600m to 2000m along the Onshore Cable Route and will be positioned within highway verges, fields or car parks where possible. These are required to pull the cable through cable ducts before joining one section of cable to another. Typically, it will take approximately 20 working days to complete one Joint Bay location, which includes excavation, set-up, cable pulling, jointing, bonding connectors, testing and reinstatement of the site.

3.8.2.2. The Joint Bay process will generate a number of different construction traffic movements for each phase of the works, including:

- Delivery of traffic management / site fencing via LGV;
- Low loader HGVs for plant deliveries and removal;
- Grab wagon / loader crane HGV for material removal and deliveries;
- Vacuum tanker for removing excess water;
- Winch / anchor block deliveries for cable pulling;
- Cable drum deliveries (where the cable is being pulled from the Joint Bay);
- Tarmac HGVs for reinstatement works; and
- Staff welfare / transport LGVs.

3.8.2.3. Installation of Fibre Optic cables will also generate construction LGV and HGV movements in relation to delivery of material, plant and jointing but this will only be required at every other Joint Bay location.

3.8.2.4. Overall it is anticipated that the Joint Bay construction and jointing process will generate the following construction traffic movements:

- At Joint Bays where cable pulling will take place: 24-28 HGV movements (48-56 two-way trips) in total depending upon cable pulling strategy and 2 LGV movements (4 two-way LGV trips) in addition to daily construction staff arrival / departure via one works LGV or minibus;
- At Joint Bays where cable pulling and jointing of Fibre Optics will take place: 24-28 HGV movements (48-56 two-way trips) in total depending upon cable pulling strategy and 9 LGV movements (18 two-way LGV trips) in addition to daily construction staff arrival / departure via one works LGV or minibus.

3.8.2.5. Across the 20-day construction period, the Joint Bay process will generate 2-3 HGVs per day and 1-3 LGVs per day depending upon the stage of construction. The majority of these construction traffic movements will also be a similar size to standard delivery HGVs and refuse vehicles, meaning that access will be achievable to all locations without intervention. However, to ensure that adequate highway width is provided for delivery of plant and cable drums, it may be necessary to temporarily suspend on-street parking in some locations for the following periods (through powers included in paragraph 16 of dDCO):

- one day at the start of the construction period for site set-up;
- one day for delivery of cable drums (where required); and
- one day at the end of the construction period to allow for de-mobilisation.

3.8.2.6. In all cases these parking restrictions would be limited to construction working hours only (plus suitable lead-in time to allow for enforcement) and communicated to residents and business in advance of the works taking place, as detailed in the 'Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy' included in Appendix A of the Updated FTMS.

3.8.3. HDD COMPOUND CONSTRUCTION TRAFFIC

3.8.3.1. HDD compounds will be required at six locations along the Onshore Cable Corridor as follows:

- HDD-1A: Landfall (Eastney);
- HDD-2: Milton Allotments;
- HDD-3B: Kendall's Wharf to Farlington Playing Fields;
- HDD-4: Farlington railway crossing (Micro-tunnel);
- HDD-5 King's Pond Meadows (Denmead); and
- HDD-6: Northern end of Milton Common.

3.8.3.2. While each of these compounds will be operational for a different length of time, owing to the different HDD lengths, each will generate a similar number of HGV movements on a day-to day basis due to way in which each site operates. Construction traffic generated by each location will include the following:

- Low loader HGVs for delivery of plant to site;
- Grab wagon / loader crane HGV for material removal and deliveries;
- Water tankers;
- 20t tipper HGVs for stone deliveries and removal; and
- LGVs associated construction staff movements.

3.8.3.3. For all sites, it is estimated that site set-up and de-mobilisation will generate approximately 22 HGV movements (44 two-way trips) over a 2-3 day period. Outside of these times, each HDD compound is likely to generate 2-3 HGVs per day (4-6 two-way trips) related to delivery of water and removal or delivery of material in addition to LGVs for construction workers.

3.8.3.4. As with construction of Joint Bays, the majority of these construction traffic movements will also be a similar size to standard delivery HGVs and refuse vehicles, meaning that access will be achievable to all required locations without intervention. However, to ensure that adequate highway width is provided for delivery of plant it is likely that on-street parking may need to be suspended in some locations for one day at the start and end of the construction period to facilitate start up and de-mobilisation of the site.

3.8.3.5. In all cases these parking restrictions would be limited to construction working hours only (plus suitable lead-in time to allow for enforcement) and communicated to residents and business in advance of the works taking place, as detailed in the 'Onshore Cable Route Construction Impacts on Access to Properties and Car Parking and Communication Strategy' included in Appendix A of the Updated FTMS.

3.8.4. LOCKSWAY ROAD AND KINGSLEY ROAD

3.8.4.1. Taking account of the requirements to temporarily suspend on-street parking, analysis has been completed of existing on-street car parking capacity on Locksway Road and Kinsley Road in Portsmouth in relation to:

- Joint Bay 18 / 19: located in the car park of the Thatched House public house; and
- HDD-2: located at the eastern end of Kingsley Road south of the Milton Allotments.

3.8.4.2. It is estimated that during start-up, demobilisation or delivery of cable drums suspension of approximately 20 on-street parking spaces would be required on Locksway Road and suspension of 70 on-street parking spaces would be required on Kingsley Road to provide adequate highway width for construction vehicles. To inform an analysis of existing demand and capacity of on-street parking of these roads, overnight residential parking surveys were carried out in July 2020 on the following roads within the area of Locksway Road and Kingsley Road:

- 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;

3.8.4.3. These surveys followed the Lambeth parking survey methodology, which is a generally accepted method of surveying residential parking demand, with a snapshot survey completed between the hours of 00:30 and 05:30 on two separate weekday nights (Monday to Thursday) when residential parking demand is likely to be at its highest. 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.

3.8.4.4. These surveys showed that across the surveyed area, there was an average overnight available capacity of approximately 200 vehicles. This means that displaced parking from Locksway Road and Kingsley Road can be accommodated within the surrounding residential streets if required.

3.9. ABNORMAL LOADS ASSOCIATED WITH CABLE DRUM DELIVERIES

3.9.1. INTRODUCTION

3.9.1.1. This section provides an assessment of anticipated routes to be used by HGVs associated with the delivery of cable drums to individual Joint Bay locations along the Onshore Cable Route and responds to the Relevant Representation made by PCC (RR-185) which stated that:

> *"Abnormal loads are briefly referenced within the Framework Traffic Management Plan however incorrectly state that "a vehicle is considered abnormal when…. the gross weight is over 80 tonnes". The official definition of an abnormal load is those in excess of 40 tonnes (amongst other criteria). The applicant's consultants suggested during pre-submission consultations periods that 50 tonne cable drums would be brought to site each day during cable-pulling (possibly from the Ferry port where the cable drums could be stored). This would result in abnormal loads being transported through the centre of Portsmouth on a daily basis, which would inevitably disrupt traffic and bus services even if undertaken outside of peak hours. The frequency and/or proposed route of abnormal loads have simply not been addressed or their impact assessed."*

3.9.1.2. In response to these comments, this section therefore provides details of abnormal load movements related to the delivery of cable drums within Portsmouth but also extends to the remainder the Onshore Cable Route within the HCC highway network. In providing this assessment, it is noted that the correct UK Government definition of an abnormal load (https://www.gov.uk/esdal-and-abnormal-loads) is as follows:

> *"An 'abnormal load' is a vehicle that has any of the following:*
> *A weight of more than 44,000kg*
> *An axle load of more than 10,000kg for a single non-driving axle*
> *A width of more than 2.9 metres*
> *A rigid length of more than 18.65 metres"*

3.9.1.3. While the location of the Joint Bays will only be finalised once a Contractor is appointed, this assessment is based upon the indicative locations provided in Figure 24.2 'Illustrative Cable Route, HDD sites and Joint Bays for noise and vibration assessment' from Chapter 24 of the ES (APP-336).

3.9.2. ACCESS TO JOINT BAYS

3.9.2.1. As noted in Chapter 3 (Description of the Proposed Development) of the ES (Examination Reference APP-118):

> *"Joint Bays will be required at points along the route, and these will be used for pulling the cable through the cable ducts before joining one section of cable to another. The number of joint bays along the length of the cable route is dictated by the length of cable that can fit on a cable drum (the drum-shape reel on which the cable is stored prior to installation) and limits to the pulling tension required to pull the cable through the ducts. Joint Bays are likely to be required every 600m to 2000m along the HVDC Circuits and will be positioned in highway verges, fields or car parks, where possible, to limit the need for road closures. The distance between Joint Bays will depend on the technique employed by the contractor and therefore flexibility as to the number and location of Joint Bays is sought in the Order."*

3.9.2.2. The cable drums will be delivered to each Joint Bay via HGV before being offloaded and pulled through the cable ducts using winches. Typical drum dimensions for a 2,000m cable are 4.9m outside drum diameter and drum width of 3.0m, with a mass of 50 tonnes. Two cable drum deliveries will be required for each Joint Bay (or four deliveries if cables are being pulled in both direction) with these vehicles travelling outside of the AM (08:00-09:00) and PM (17:00-18:00) peak periods. The cable drum delivery vehicles would be on site for approximately one hour, whilst the cable drum is off-loaded from the vehicle.

3.9.3. CABLE DRUM DELIVERY VEHICLES

3.9.3.1. Due to the dimensions and weight of the cable drum these will be delivered to each Joint Bay by specialist vehicles, such as the Hammar 155, which consists of an articulated HGV which is 16.0m long and 3.95m wide. The full dimensions of the vehicle are shown in Plate 5 and a photo example is shown in Plate 6.

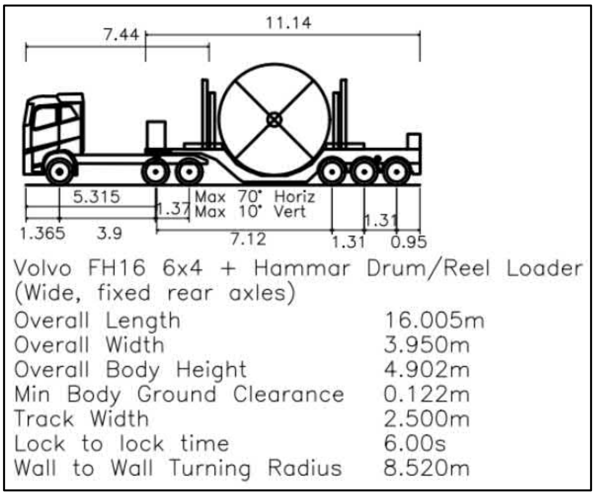

Plate 5 – Typical Specification of Cable Drum Delivery Vehicle

Plate 6 - Photo of Cable Drum Delivery Vehicle

3.9.3.2. The unladen weight of these vehicles is approximately 10 tonnes, while the maximum laden weight with cable drum will be approximately 60 tonnes. These vehicles are therefore categorised as abnormal loads due to both their width and weight.

3.9.3.3. In all cases the cable drum delivery vehicle will be accompanied by an escort vehicle, with radio contact maintained between the two vehicles at all times. The duties of the escort person are as follows:

- to escort the abnormal load along the approved transport route, acting as a warning to other road users and pedestrians;
- to ensure that any special instruction or restrictions either for the escort vehicle or abnormal load are followed (e.g. use of bridges);
- to be the communications interface between the abnormal loads convoy and Police / highway authority control rooms, bridge authorities and emergency services if required;
- to be responsible for traffic management around the abnormal loads when it is stationary for a period of time, for example during off-loading of the cable drum; and
- to ensure the vehicle is fit for purpose.

3.9.3.4. Prior to the movement of all cable drums, the appointed haulier will give at least two working days' notice to the highway authority and Police of proposals to transport the cable drums as specified in The Road Vehicles (Authorisation of Special Types) (General) Order 2003.

3.9.3.5. Vehicle manoeuvres at Joint Bay locations will be supervised by banksmen at all times.

3.9.4. DELIVERY ROUTE ASSESSMENT

3.9.4.1. Given the classification of cable drum delivery vehicles as abnormal loads, an assessment has been completed of delivery routes to Joint Bays along the Onshore Cable Route. This assessment has used the following assumptions:

- All cable drums will be delivered by sea to, and stored at the Cargo Terminal of Portsmouth International Port and transported directly to each Joint Bay from this location;
- All deliveries will take place outside of the AM and PM peak hours to minimise traffic disruption by the delivery vehicles moving along the route or stationary at individual Joint Bay locations;
- The A2030 Eastern Road bridge south of the A27 Havant Bypass junction cannot be used by laden vehicles due to its existing 50 tonne weight limit;
- Access to all Joint Bays on Portsea Island will be via A3 Commercial Road, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North, A2030 Goldsmith Avenue, Fratton Way and Rodney Road until the

junction with A288 Milton Road.

- Cable drum deliveries to all Joint Bays off Portsea Island will be via A3 Mile End Road, M275 and A27, with other Joint Bays within the PCC highway network using the A2030 Eastern Road (north of the A27) and Joint Bays within the HCC highway network using the A3(M) to reach their destination.
- The strategy required for offloading the cable drum has been considered individually at each Joint Bay. At some locations it will be possible for vehicles to be offloaded from the carriageway while at others a turning manoeuvre may be required to allow vehicles to access an off-carriageway location.
- While the Hammar 155 vehicle has rear axle steering this has not been used on tracking assessments to provide a robust assessment of vehicle swept paths.

3.9.4.2. The anticipated route between the Cargo Terminal of Portsmouth International Port and all Joint Bays on Portsea Island consists mainly of dual-carriageway with two lanes in each direction up until reaching A2030 Goldsmith Avenue, which is a wide single carriageway road with advisory cycle lanes. All of this route is subject to a 30mph speed limit and to Double Yellow Lines which restrict parking on carriageway. From the Goldsmith Avenue it is anticipated that the cable drum delivery vehicles will use Fratton Way and Rodney Road before turning onto A2030 Velder Avenue or A288 Milton Road to access individual Joint Bay locations. These routes are discussed in more detail below.

3.9.4.3. The anticipated route to be used for all Joint Bays outside of Portsea Island will use the A3 Mile End Road, M275 and A27 with locations within the HCC highway network also using the A3(M). The A3 Mile End Road and M275 are part of the PCC primary road network and are dual-carriageway roads with 2/3 lanes in each direction. Each of these roads provide direct links from the Cargo Terminal of Portsmouth International Port and can therefore accommodate HGV and abnormal load vehicles. The A27 and A3(M) fall under the jurisdiction of Highways England and form part of the strategic road network. They are dual-carriageway roads subject to a 70mph speed limit.

3.9.4.4. A preliminary assessment has been completed of the indicative Joint Bay locations to confirm if cable drum deliveries will be required to all Joint Bays. This is on the basis that cables do not necessarily need to be pulled from each direction along the Onshore Cable Route. This assessment has confirmed that delivery of cable drums will be required to only 13 Joint Bay locations (out of 22) along the Onshore Cable Route, as follows and as shown on Plate 7:

- Joint Bay 1 / 2: within fields south of Converter Station;
- Joint Bay 2 / 3: within fields at Kings Pond Meadows;

- Joint Bay 4 / 5: adjacent to B2150 Hambledon Road in proximity to BP Petrol Filling Station;
- Joint Bay 6 / 7: A3 London Road south of Mill Road (within bus lane);
- Joint Bay 7 / 8: A3 London Road south of Ladybridge roundabout (within bus lane);
- Joint Bay 9 / 10: Portsdown Hill Car Park, south of Portsdown Hill Road;
- Joint Bay 11 / 12: within Zetland Fields adjacent to A2030 Eastern Road;
- Joint Bay 12 /13: within Sainsbury's car park;
- Joint Bay 13 / 14: within Farlington Playing Fields;
- Joint Bay 14 / 15: within Kendalls Wharf;
- Joint Bay 16 / 17: north of Milton Common, adjacent to A2030 Eastern Road;
- Joint Bay 18 / 19: within the Thatched House public house car park, accessed via Locksway Road;
- Joint Bay 20 / 21: within Bransbury Park Car Park; and
- Landfall at Fort Cumberland open space car park (Transition Joint Bay).

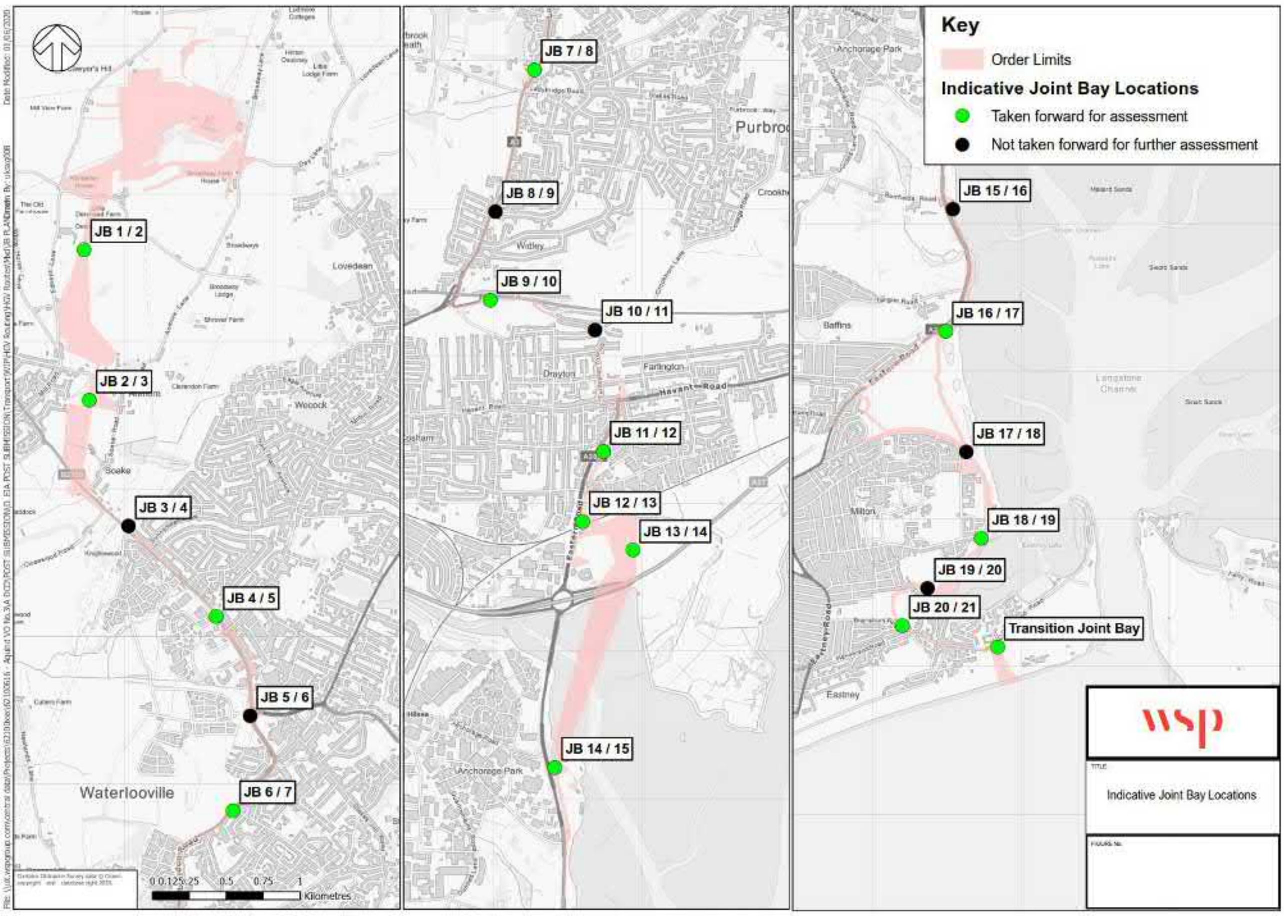

Plate 7 - Indicative Joint Bay Locations

3.9.4.5. The assessment of cable drum delivery routes is based upon these indicative Joint Bay locations which are representative of all the likely locations. The cable drum delivery routes will be provided to PCC and HCC (as appropriate) for approval as part of the approval process for the Joint Bay locations when detailed design approvals are obtained. This is secured by Requirement 17 of the dDCO (APP-019).

3.9.4.6. The routing considers both access and egress from each of the indicative Joint Bay locations. In all instances, a swept path analysis exercise has been undertaken to assess that the necessary manoeuvres can be accommodated. Drawings showing these swept paths are provided in Appendix D.

3.9.4.7. In all cases, the routing to and from each indicative Joint Bay is based upon maximising the use of the strategic and primary routes networks wherever possible, given these generally have suitable infrastructure provision and sufficient weight restrictions to cater for abnormal loads.

3.9.4.8. To facilitate access by cable drum delivery vehicles (and all construction activities) the Draft Development Consent Order includes powers to temporarily alter the layout of any street (Article 10) and implement Temporary Traffic Regulation Orders (TTROs) to permit, prohibit or restrict stopping, parking, waiting or loading of vehicles on any road (Article 16). Details of where such measures may be required would be approved by the relevant highway authority prior to them being carried out, with the necessity for these confirmed as part of the detailed design process secured by Requirement 17 of the dDCO (APP-019).

3.9.4.9. Plate 8, Plate 9, and Plate 10 show the anticipated cable drum delivery routes to all assessed indicative Joint Bays.

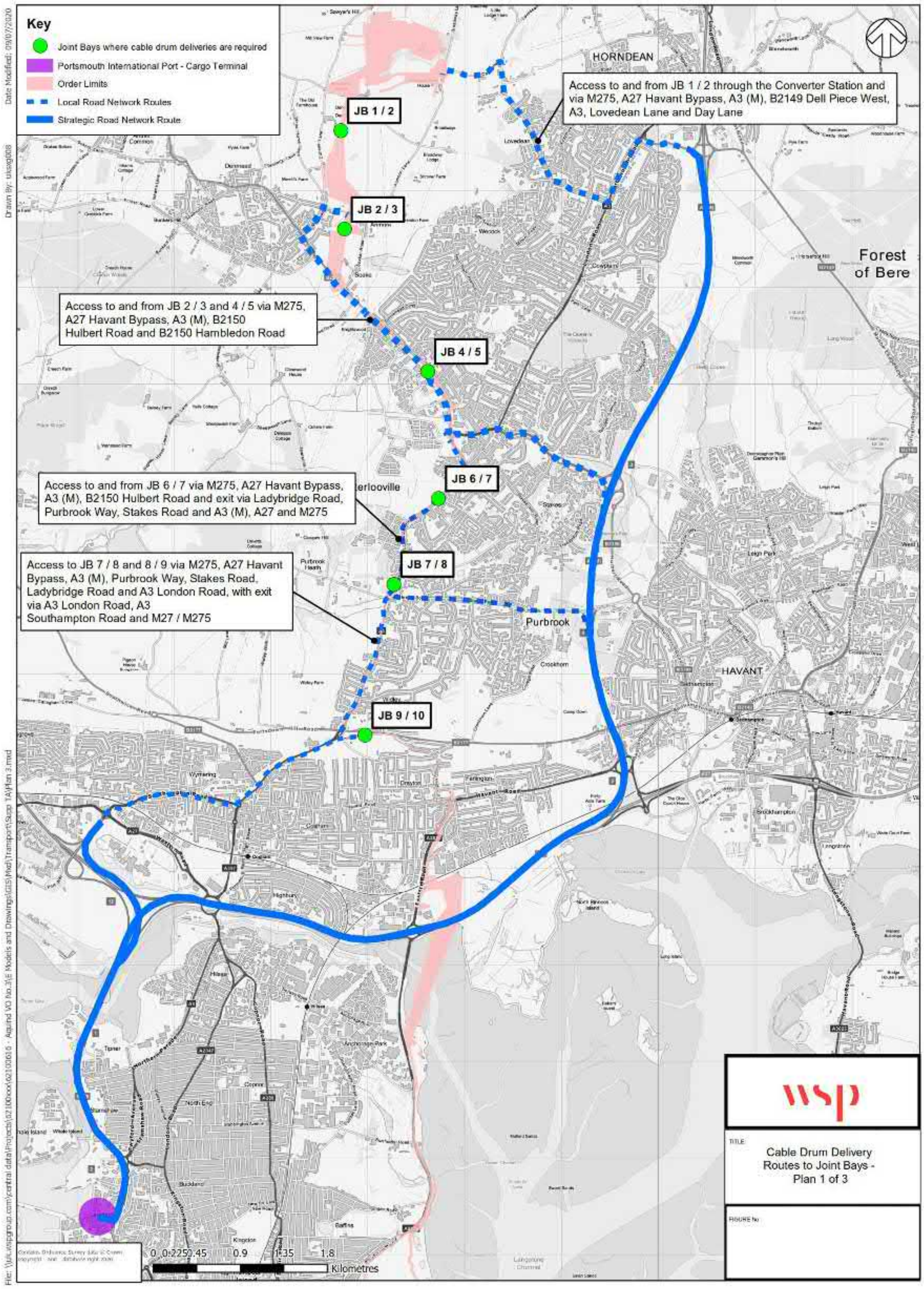

Plate 8 - Joint Bay Cable Drum Delivery Routes 1 of 3

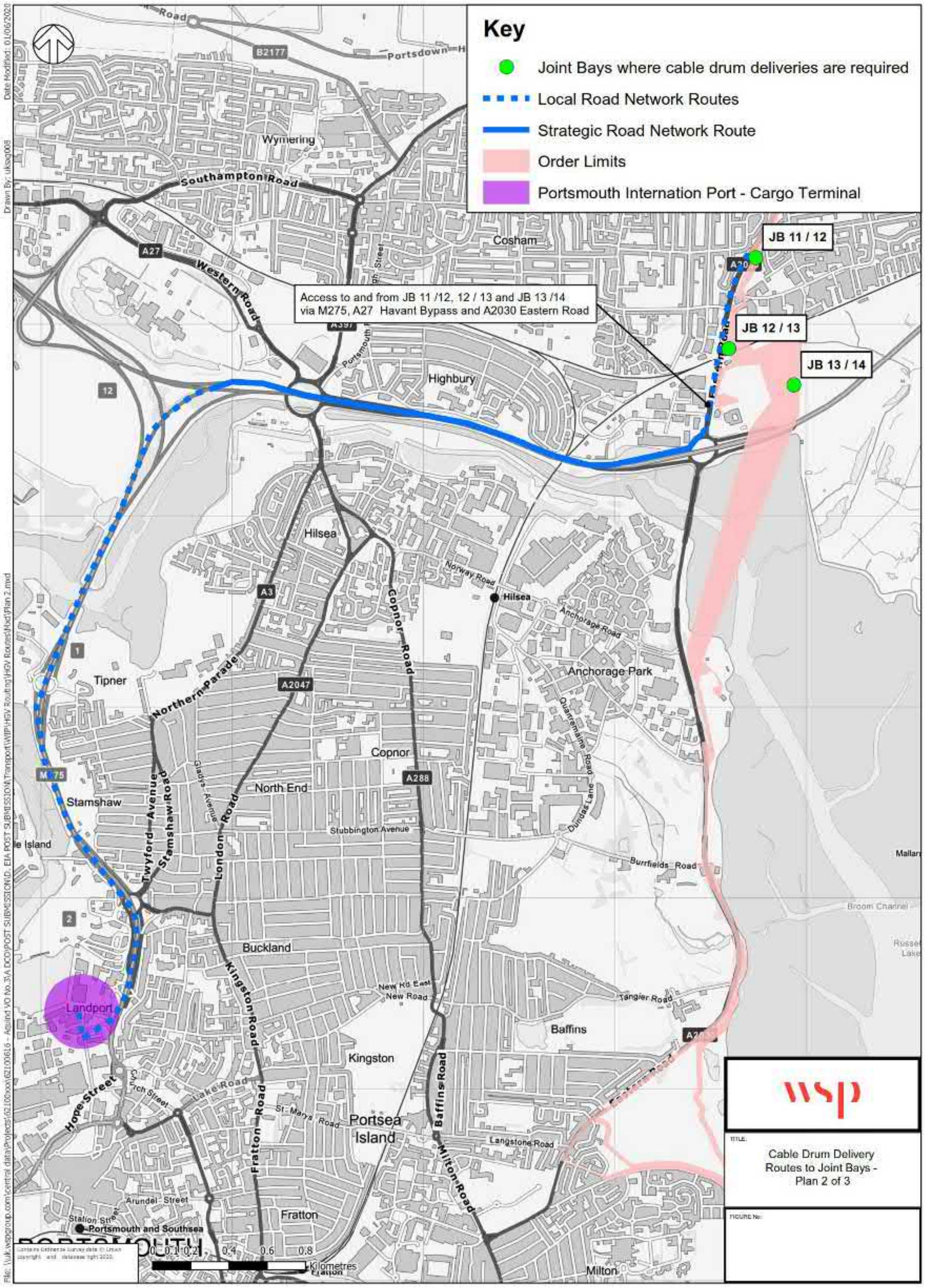

Plate 9 - Joint Bay Cable Drum Delivery Routes 2 of 3

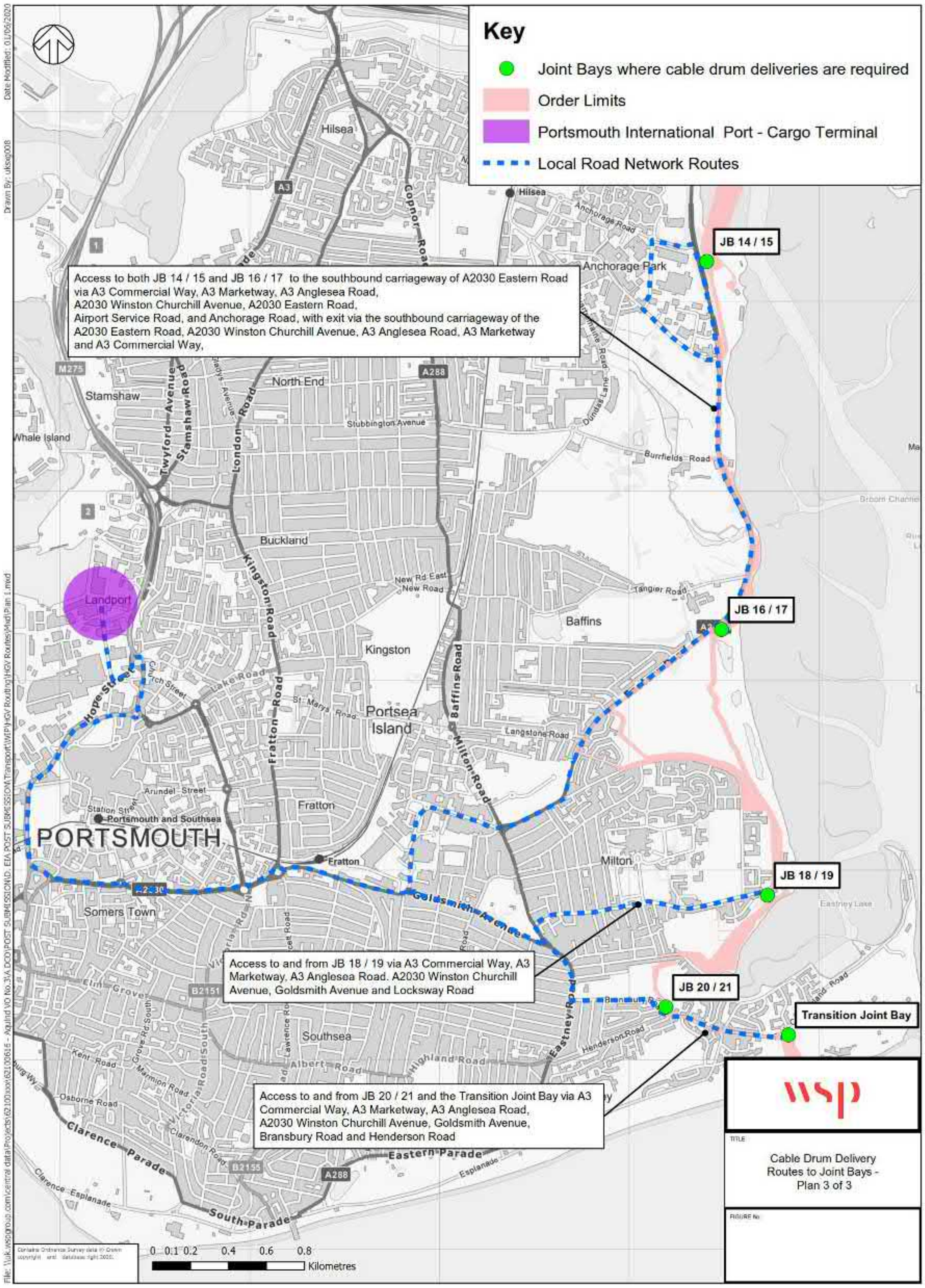

Plate 10 - Joint Bay Cable Drum Delivery Routes 3 of 3

Joint Bay 1 / 2: within fields south of Converter Station

3.9.4.10. The cable drum delivery vehicles would use A3 Mile End Road, M275, A27 and A3(M), exiting at Junction 2 onto:

- B2149 Dell Piece West: a wide single carriageway road which serves Hazleton Industrial Estate and is subject to a 40mph speed limit;
- A3 Portsmouth Rd / London Road: a wide single carriageway road with northbound bus lanes for the majority of the section used as a delivery route, subject to a 30mph speed limit;
- Lovedean Lane: A single carriageway road with a 30mph speed limit, which provides access mainly to residential properties but also some commercial premises; and
- Day Lane: a rural lane, generally wide enough to accommodate normal two-way traffic, subject to national speed limit.

3.9.4.11. This follows the construction traffic route between the A3(M) and Converter Station site for all vehicles associated with construction of the Proposed Development. Access to the Converter Station site would be from the proposed site access at Broadway Lane / Day Lane discussed in Section 3.3 and controlled via the construction vehicle management strategy set-out in Section 3.4 of this Supplementary Transport Assessment.

3.9.4.12. The swept path analysis of this route shown on Drawing 62100616/ATR/010, which is provided in Appendix D, has shown that all manoeuvres can be accommodated within the existing highway layout. At the A3 Portsmouth Road / Dell Piece West / Catherington Lane traffic signals it will be necessary for the cable drum delivery vehicle to use off-side approach lanes through the junction to avoid overrunning traffic signal poles and guard railing located on the traffic islands. This manoeuvre will be completed with use of escort vehicles to manage conflicting traffic movements at the junction.

3.9.4.13. Entry and exit from this Joint Bay location would be achieved via the same route.

Joint Bay 2 / 3: within fields at Kings Pond Meadows

3.9.4.14. The cable drum delivery vehicles would use A3 Mile End Road, M275, A27 and A3(M), exiting at Junction 3 onto:

- B2150 Hulbert Road and A3 Maurepas Way: dual-carriageway roads with two lanes in each direction, subject to a 40mph speed limit;

- B2150 Hambledon Road between Maurepas Way and Milton Road: a dual-carriageway road with two lanes in each direction, subject to a 40mph speed limit, which provides access to Wellington Retail Park, Aston Road industrial estate and Brambles Business Park;
- B2150 Hambledon Road between Milton Road and Mill Road: a single-carriageway road with a 30mph speed limit providing residential access a and primary route between Denmead and Waterlooville;
- Mill Road: a residential road subject to a 30mph speed limit, with unrestricted on-street parking; and
- Anmore Road: a rural lane, generally wide enough to accommodate normal two-way traffic, providing some residential access, subject to a 30mph speed limit.

3.9.4.15. The swept path analysis of this route shown on Drawing 62100616/ATR/020 shows that some vehicle overrun of footways occurs on entry / exit to Mill Road from B2150 Hambledon Road, however, this would not impede access. A TTRO would be required on Mill Road to temporarily restrict on-street car parking when the cable drum is being delivered.

3.9.4.16. As shown on 62100616/ATR/021, the cable drum delivery vehicle would overhang the footway located on the southern side of Anmore Road for approximately 50m. The turning movement to / from fields south of Anmore Road would be facilitated by provision of a temporary construction access point shown as location AC/2/b on Sheet 2 of the Access and Rights of Way Plans (Examination Reference: APP-011).

3.9.4.17. Entry and exit from this Joint Bay location would be achieved via the same route.

Joint Bay 4 / 5: adjacent to B2150 Hambledon Road in proximity to BP Petrol Filling Station

3.9.4.18. The cable drum delivery vehicles would use the same route as for Joint Bay 2 /3, although with use of only 100m of the B2150 Hambledon Road single carriageway section north of Milton Road. During delivery of the cable drums, the delivery vehicle would stop on carriageway either in the northbound lane of B2150 Hambledon Road or the bus stop layby. Suitable traffic management would be employed in this scenario to provide a temporary lane closure, with two-way traffic maintained at all times. The bus stop would also be temporarily relocated as required.

3.9.4.19. Exit from the site, under banksman control, would be via the same route with cable drum delivery vehicles turning within the carriageway to access the southbound lane of the B2150 Hambledon Road.

3.9.4.20. The swept path analysis of this route shown on Drawing 62100616/ATR/030 has shown that all manoeuvres can be accommodated by the existing highway layout.

Joint Bay 6 / 7: A3 London Road south of Mill Road (within bus lane)

3.9.4.21. The cable drum delivery vehicles would use A3 Mile End Road, M275, A27 and A3(M), exiting at Junction 3 onto:

- B2150 Hulbert Road and A3 Maurepas Way: dual-carriageway roads with two lanes in each direction, subject to a 40mph speed limit; and
- A3 London Road: a wide single carriageway road with bus lanes in both directions for the majority of its length, subject to a 30mph speed limit.

3.9.4.22. During delivery of the cable drums, the delivery vehicle would stop on the southbound carriageway of the A3 London Road. Suitable traffic management would be employed in this scenario to provide a temporary lane closure, with two-way traffic maintained at all times.

3.9.4.23. Exit from the site would be via the southbound carriageway of the A3 London Road, with the delivery vehicle continuing to Ladybridge roundabout and Ladybridge Road / Stakes Road / Purbrook Way to access A3(M) Junction 4. Ladybridge Road and Stakes Road are single-carriageway roads subject to a 30mph speed limit while Purbrook Way is a part wide single-carriageway / part dual-carriageway road with a 40mph speed limit.

3.9.4.24. The swept path analysis of this route is shown on Drawings 62100616/ATR/040, 041 and 042. This swept path analysis has shown other than overhang of the traffic island on approach to Forest End roundabout, which may require temporary removal of the existing bollard, all manoeuvres can be accommodated by the existing highway layout

Joint Bay 7 / 8: A3 London Road south of Ladybridge roundabout (within bus lane)

3.9.4.25. The cable drum delivery vehicles would use A3 Mile End Road, M275, A27 and A3(M), exiting at Junction 4 onto:

- Purbrook Way: a part wide single-carriageway / part dual-carriageway road with a 40mph speed limit;
- Ladybridge Road / Stakes Road: a single-carriageway road, subject to a 30mph speed limit; and
- A3 London Road: a wide single carriageway road with bus lanes in both directions for the majority of its length, subject to a 30mph speed limit.

3.9.4.26. During delivery of the cable drums, the delivery vehicle would stop on the southbound carriageway of the A3 London Road. Suitable traffic management would be employed in this scenario to provide a temporary lane closure, with two-way traffic maintained at all times.

3.9.4.27. Exit from the site would be via the southbound carriageway of the A3 London Road to Cosham, with the delivery vehicle continuing along A3 Southampton Road to reach the M275 / M27. The A3 Southampton Road is a dual-carriageway road with two lanes in each direction and is subject to a 40mph speed limit.

3.9.4.28. The swept path analysis of this route shown on Drawing 62100616/ATR/050 and 051 has shown that all manoeuvres can be accommodated by the existing highway layout.

Joint Bay 9 / 10: Portsdown Hill Car Park, south of Portsdown Hill Road

3.9.4.29. The cable drum delivery vehicles would use the M275, A27 Havant Bypass and the A3 (M), upon exiting A3 (M) at Junction 4, the construction vehicle would travel westbound along Purbrook Way, Stakes Road and Ladybridge Road before travelling south on A3 London Road and onto B2177 Portsdown Hill Road. Upon arrival, the delivery vehicles, under control of banksman, would reverse into the Portsdown Hill Car Park to offload the cable drum and avoid blocking the public highway. Exit would then be taken in forward gear onto B2177 Portsdown Hill Road, before travelling onwards southbound on A3 London Road and A3 Southampton Road. Finally, the vehicle would enter M275 and travel southbound towards Portsmouth Cargo Terminal.

3.9.4.30. The swept path analysis of this route shown on Drawing 62100616/ATR/060 has shown that all manoeuvres on approach to Portsdown Hill car park can be accommodated by the existing highway layout. To enter and exit the car park itself, the existing traffic island and posts at the access junction will need to be temporarily removed as shown on Drawing 62100616/ATR/061.

3.9.4.31. It is noted that the vehicle would be required to travel under a road bridge on A3 London Road, a bridge which forms part of B2177 Portsdown Hill Road. The cable drum delivery vehicle will have a maximum height of 4.9m, and as the road bridge in question is not specifically signposted to state otherwise, a headroom of at least 5.03m is available as per guidance set out in paragraph 104 of DfT guidance document "*Prevention of Strikes on Bridges over Highways*"[1].

Joint Bay 11 / 12: within Zetland Fields adjacent to A2030 Eastern Road

3.9.4.32. The cable drum delivery vehicles would use A3 Mile End Road, M275 and A27 and exiting at the junction with A2030 Eastern Road onto:

- A2030 Eastern Road (north of the A27): a dual-carriageway road with two lanes in each direction, subject to a 40mph speed limit.

3.9.4.33. Access to Zetland Fields would be via the A2030 Eastern Road northbound carriageway, under banksman control, towards the northern boundary of the open space area. Access would be facilitated by provision of a temporary construction access junction to / from Zetland Fields shown as location AC/7/a on Sheet 7 of the Access and Rights of Way Plans (APP-011).

3.9.4.34. Exit from the site would be achieved via the same route with delivery vehicles manoeuvring back onto the A2030 Eastern Road southbound carriageway under control of banksman.

3.9.4.35. The swept path analysis of this route shown on Drawing 62100616/ATR/070 shows how the cable drum delivery vehicles would access Zetland Fields from A2030 Eastern Road, requiring overrun of the existing centre island and temporary removal of fencing at the Zetland Fields boundary.

Joint Bay 12 / 13: within Sainsbury's car park

3.9.4.36. The cable drum delivery vehicles would use A3 Mile End Road, M275 and A27 and A2030 Eastern Road as with Joint Bay 11 / 12. Access into Sainsbury's car park would be via the A2030 Eastern Road / Fitzherbert Road traffic signal junction which is designed to accommodate HGV traffic due to it providing an access point to the retail part and Farlington industrial estate.

3.9.4.37. Entry and exit from this Joint Bay location would be achieved via the same route.

3.9.4.38. The swept path analysis of this route shown on Drawing 62100616/ATR/080 has shown that entry into Sainsbury's car park will require overrun of the existing central island. On exit the temporary removal of traffic signal poles may be required on the nearside footway of Fitzherbert Road to provide adequate width for the cable drum delivery vehicles.

Joint Bay 13 / 14: within Farlington Playing Fields

3.9.4.39. The cable drum delivery vehicles would use A3 Mile End Road, M275 and A27 and A2030 Eastern Road as with Joint Bay 11 / 12. Access into Farlington Playing Fields would be via the existing access to the public car park under the control of banksman.

3.9.4.40. As shown on Drawing 0616-ATR-002, the cable drum delivery vehicle can access the site by straddling the offside and nearside lanes of the northbound carriageway

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/350114/network-rail-bridge-strike-protocol.pdf

of the A2030 Eastern Road. At the entrance to the Farlington Playing Fields car park, the cable drum delivery vehicle would overrun the existing central island and grass verge on the inside corner.

3.9.4.41. The verge on the inside corner of the entrance to Farlington Playing Fields car park has a small earth bank, which already appears to have been partly flattened through existing vehicle use and there is no kerb where the overrun is anticipated to occur. This creates a wider carriageway width than shown on the OS mapping but, if required, the bank will be temporarily flattened to facilitate access, before being reinstated once works are complete. The central island is also in a poor state of repair and would be removed to facilitate access and reinstated on completion of construction.

3.9.4.42. Further into the Farlington Playing Fields site there are wooden bollards adjacent to the carriageway and a width / height restricting barrier which would need to be removed to facilitate access and then reinstated once works are complete.

3.9.4.43. Exit from Farlington Playing Fields would use the same access point for entry, with the cable drum delivery vehicle turning left onto the A2030 Eastern Road southbound carriageway under control of a banksman. This is to avoid conflicts with vehicles using the Shell Petrol Filling Station and Holiday Inn site.

3.9.4.44. Vehicle overhang of the existing grass verges at the entrance to the Farlington Playing Fields car park would occur on the nearside and offside of the vehicle. Like ingress, the existing central island would be over-run. To turn left onto the A2030 Eastern Road southbound carriageway, vehicle over-run would occur on the nearside verge and vehicle overhang would occur on the central island separating the two carriageways of the A2030 Eastern Road. The existing Advanced Directional Sign on the nearside verge and guard-railing situated in the central island would not be affected.

Joint Bay 14 / 15: Kendalls Wharf, adjacent to the A2030 Eastern Road

3.9.4.45. The cable drum delivery vehicle would use A3 Commercial Way, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue before turning onto:

- Fratton Way / Rodney Road: a single-carriageway road which provides access into Fratton industrial estate and subject to a 30mph speed limit;
- A2030 Velder Avenue: a single-carriageway road with one lane northbound and two lanes southbound, subject to a 30mph speed limit; and
- A2030 Eastern Road: a mixture of single-carriageway and dual-carriageway with two lanes northbound and two lanes southbound for all but a 1.0km section adjacent to Milton Common, which has two lanes northbound and one lane

southbound. The A2030 also has a mix of speed limits ranging from 30mph to 50mph.

3.9.4.46. At the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction, cable drum delivery vehicles would be required to use the westbound exit lane (to Rodney Road) to travel through the junction to avoid overrunning traffic signal poles on the existing traffic islands. This is shown on Drawing 62100616/ATR/090. This manoeuvre would be completed with support from escort vehicles to manage vehicle conflicts at the junction.

3.9.4.47. The indicative Joint Bay location is in Kendall Wharf, directly accessible via Anchorage Road at the junction of A2030 Eastern Road / Anchorage Road / Kendalls Wharf. As vehicles are not permitted to turn right into Kendalls Wharf when travelling from the A2030 Eastern Road (south) approach, access to this arm must be from the Anchorage Road approach, as such access is proposed using the existing highway network via the following:

- Airport Service Road: a wide single-carriageway road that provides access to various industrial and commercial units, subject to a 30mph speed limit;
- Robinson Way: a single-carriageway road, which provides access to Interchange Park industrial estate and other commercial premises, subject to a 30mph speed limit; and
- Anchorage Road: a part wide single-carriageway / dual-carriageway with two lanes in each direction, subject to a 30mph speed limit.

3.9.4.48. At the A2030 Eastern Road / Anchorage Road traffic signal junction, cable drum delivery vehicles would be required to use the westbound exit lane (to Anchorage Road) to travel through the junction to avoid overrunning traffic signal poles on the existing traffic islands. This is shown on Drawing 62100616/ATR/091 This manoeuvre would be completed with support from escort vehicles to manage vehicle conflicts at the junction.

3.9.4.49. Following this manoeuvre, the cable drum delivery vehicle would gain access to the Joint Bay from the existing Kendalls Wharf access road. Entry and exit would be completed in forward gear under the control of a banksman. Access to this Joint Bay will be facilitated by provision of a temporary construction access point shown as location AC/8/a on Sheet 8 of the Access and Rights of Way Plans (APP-011)

3.9.4.50. Vehicles exiting the site would travel north along the A2030 Eastern Road and onto the A27.

Joint Bay 16 / 17: adjacent to the A2030 Eastern Road north of Milton Common

3.9.4.51. The cable drum delivery vehicle would use A3 Commercial Way, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue before turning onto:

- Fratton Way / Rodney Road: a single-carriageway road which provides access into Fratton industrial estate and subject to a 30mph speed limit;
- A2030 Velder Avenue: a single-carriageway road with one lane northbound and two lanes southbound, subject to a 30mph speed limit; and
- A2030 Eastern Road: a mixture of single-carriageway and dual-carriageway with two lanes northbound and two lanes southbound for all but a 1.0km section adjacent to Milton Common, which has two lanes northbound and one lane southbound. The A2030 also has a mix of speed limits ranging from 30mph to 50mph.

3.9.4.52. The same manoeuvre would be required at the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction as described for access to Joint Bay 14 /15 as shown on Drawing 62100616/ATR/091

3.9.4.53. Given that the indicative Joint Bay location is adjacent to the southern carriageway of the A2030 Eastern Road and on a dual-carriageway link subject to a 50mph speed limit it would not be recommended that cable drum delivery vehicles turn across the carriageway, even if this manoeuvre was to be completed with banksmen. Instead the delivery vehicles would use the existing highway network to access the southbound carriageway of the A2030 via the following:

- Anchorage Road: a part wide single-carriageway / dual-carriageway with two lanes in each direction, subject to a 30mph speed limit;
- Robinson Way: a single-carriageway road, which provides access to Interchange Park industrial estate and other commercial premises, subject to a 30mph speed limit; and
- Airport Service Road: a wide single-carriageway road that provides access to various industrial and commercial units, subject to a 30mph speed limit.

3.9.4.54. Following this manoeuvre, the cable drum delivery vehicle would gain access to the A2030 Eastern Road southbound carriageway. Access to the Joint Bay from A2030 Eastern Road will be facilitated by provision of a temporary construction access point shown as location AC/9/a on Sheet 9 of the Access and Rights of Way Plans (Examination Reference: APP-011). Entry and exit would be completed in forward gear under the control of a banksman.

3.9.4.55. Cable drum delivery vehicles leaving the site would continue southbound along the A2030 Eastern Road and follow A2030 Velder Avenue, Fratton Way / Rodney Road, A2030 Goldsmith Avenue, A2030 Victoria Road North, A2030 Winston Churchill Avenue, A3 Anglesea Road, A3 Marketway and A3 Hope Street to reach Portsmouth Cargo Port.

3.9.4.56. The swept path analysis of this route shown on Drawing ATR/090, which as shown that other than at the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction, all manoeuvres can be accommodated by the existing highway layout.

Joint Bay 18 / 19: within the Thatched House public house car park, accessed via Locksway Road

3.9.4.57. The cable drum delivery vehicle would use via A3 Commercial Way, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue before turning onto:

- Fratton Way / Rodney Road: a single-carriageway road which provides access into Fratton industrial estate and subject to a 30mph speed limit;
- A288 Milton Road: a wide single-carriageway with one lane northbound and two lanes southbound, subject to a 30mph speed limit; and
- Locksway Road: a single-carriageway mainly residential road which also provides access to St James' Hospital and University of Portsmouth Langstone Campus, subject to a 20mph speed limit.

3.9.4.58. At the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction, cable drum delivery vehicles would be required to use the westbound exit lane (to Rodney Road) to turn right at the junction to avoid overrunning traffic signal poles on the existing traffic islands. This is shown on Drawing 62100616/ATR/200. This manoeuvre would be completed with support from escort vehicles to manage vehicle conflicts at the junction.

3.9.4.59. Access to the Thatched House public house car park would be completed in reverse and would be controlled by banksmen, therefore allowing the cable drum delivery vehicles to exit in forward gear. To facilitate access by cable drum delivery vehicles it may be necessary to temporarily remove the existing sign and traffic island at the access junction, as shown on Drawing 62100616/ATR/200. On exit, the cable drum delivery vehicles would head north along Milton Road and A2030 Eastern Road to reach the A27.

3.9.4.60. The swept path analysis of this route shown on Drawing 62100616/ATR/200, 201 and 202 shows that some vehicle overrun occurs on entry and exit at the Milton Road / Locksway Road mini-roundabout. Existing bollards at this roundabout would therefore need to be temporarily removed to facilitate access and reinstated once the cable drums have been delivered.

3.9.4.61. A number of TTROs would be required on Locksway Road to temporarily restrict on-street car parking when the cable drum is being delivered. These restrictions would be kept to a minimum.

Joint Bay 20 / 21: within Bransbury Park car park

3.9.4.62. The cable drum delivery vehicle would use via A3 Commercial Way, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue before turning onto:

- Fratton Way / Rodney Road: a single-carriageway road which provides access into Fratton industrial estate and subject to a 30mph speed limit;
- A288 Milton Road: a wide single-carriageway with on-street parking passing through Milton local centre, subject to a 30mph speed limit; and
- Bransbury Road: a wide single-carriageway residential road with on-street parking, subject to a 30mph speed limit.

3.9.4.63. The same manoeuvre would be required at the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction as described for access to Joint Bay 18 /19.

3.9.4.64. Access to the Bransbury Park car park would be via the existing access junction. Entry and exit from the site would be in forward gear, controlled by banksmen. The existing gate and fence would need to be temporarily removed to facilitate access by cable drum delivery vehicles.

3.9.4.65. The swept path analysis of this route shown on Drawing ATR/110 has shown that all manoeuvres can be accommodated by the existing highway layout, including on-street parking that occurs on Milton Road and Bransbury Road.

3.9.4.66. On exit, the cable drum delivery vehicles would head north along Milton Road and A2030 Eastern Road to reach the A27. At the A288 Milton Road / Goldsmith Avenue traffic signal junction the cable drum delivery vehicles would need to use the southbound exit lane to travel through the junction to avoid overrunning traffic signal poles on the existing traffic islands. This is shown on Drawing 62100616/ATR/303. This manoeuvre would be completed with support from escort vehicles to manage vehicle conflicts at the junction.

<u>Landfall at Fort Cumberland open space car park (Transition Joint Bay)</u>

3.9.4.67. The cable drum delivery vehicle would use via A3 Commercial Way, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue before turning onto:

- Fratton Way / Rodney Road: a single-carriageway road which provides access into Fratton industrial estate and subject to a 30mph speed limit;
- A288 Milton Road: a wide single-carriageway with on-street parking passing through Milton local centre, subject to a 30mph speed limit;
- Bransbury Road: a wide single-carriageway residential road with on-street parking, subject to a 30mph speed limit;
- Henderson Road: a wide single-carriageway with on-street parking, subject to a 30mph speed limit; and
- Fort Cumberland Road: a single-carriageway residential road with some on-street parking, subject to a 30mph speed limit.

3.9.4.68. The same manoeuvre would be required at the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction as described for access to Joint Bay 18 /19.

3.9.4.69. Access to the Fort Cumberland car park would be in the vicinity of the existing access junction, albeit facilitated by construction of a temporary construction access point shown at location AC/10/c on Sheet 10 of the Access and Rights of Way Plans (Examination Reference: APP-011). Entry and exit from the site would be in forward gear, controlled by banksmen.

3.9.4.70. On exit, the cable drum delivery vehicles would head north along Milton Road and A2030 Eastern Road to reach the A27, with the same manoeuvre required at the A288 Milton Road / Goldsmith Avenue traffic signal junction as described for access to Joint Bay 20 /21

3.9.4.71. The swept path analysis of this route shown on Drawing 62100616/ATR/300, 301, 302 and 303 has shown that all manoeuvres can be accommodated by the existing highway layout, with the exception of manoeuvres through the A288 Milton Road / A2030 Velder Avenue / Rodney Road and A288 Milton Road / Goldsmith Avenue traffic signal junctions described above. This includes on-street parking that occurs on Milton Road, Bransbury Road and Henderson Road.

Conclusion

3.9.4.72. This assessment has shown that access by cable drum delivery vehicles is achievable in all circumstances representative of where joint bays will be located. This is considered to be a reasonable and proportionate approach to assessment where the precise joint bay locations cannot be known until following detailed design. Use of either TTROs to restrict on-street parking or temporary removal and reinstatement of street furniture would be required for the short durations that the cable drum delivery vehicles are present in some locations. Powers to facilitate such measures are included for within the Draft DCO (Examination Reference: APP-019), along with the requirement for the reinstatement of any alterations after construction is complete to the satisfaction of the relevant highway authority

3.10. ABNORMAL INDIVISIBLE LOAD ROUTING FROM PORTSMOUTH CARGO PORT TO CONVERTER STATION

3.10.1.1. The specialist abnormal load contractor, Collett, has developed the study titled Route Access Survey. This assessed the route between Junction 2 of the A3(M) and Converter Station and was included within Appendix 5 of the Framework CTMP (APP-450). This assessment has also been included in Appendix A of this document for reference. For the remainder of the delivery route it is anticipated that vehicles would use the same route as National Grid transformer deliveries completed to Lovedean substation in 2018 as follows:

- A3 (Mile End Road): a dual-carriageway with 2/3 lanes in each direction, which directly serves Portsmouth Cargo Port, subject to a 40mph speed limit;
- A3 Twyford Avenue / Northern Parade: a wide single-carriageway road with some on-street parking which mainly provides access to residential properties but also some commercial properties. Twyford Avenue and Northern Parade are subject to a 30mph speed limit;
- A3 London Road: A dual-carriageway with 2/3 lanes in each direction, subject to a 30mph speed limit;
- A27 Havant Bypass: a dual carriageway with 2/3 lanes in each direction, subject to the national speed limit and part of the Strategic Road Network.
- A3(M): a dual carriageway with 2/3 lanes in each direction, subject to the national speed limit and part of the Strategic Road Network.

3.10.1.2. Given that these are all wide high capacity roads a detailed assessment will not be completed prior to determination of the DCO application, as there are unlikely to be significant impacts. Furthermore, this route was used previously for the National Grid transformer deliveries to Lovedean substation in 2018. As stated in Section 2.7 of the updated Framework CTMP states that a haulier must gain approval from relevant highway authorities prior to commencement of work.

4. COLLISION ANALYSIS

4.1. INTRODUCTION

4.1.1.1. This chapter provides an update to the collision analysis set out in Chapter 1.7 of the TA.

4.1.1.2. To inform this assessment updated Personal Injury Collision (PIC) records were received from Hampshire Constabulary via email correspondence in April 2020, the records contain collision data from 1st October 2014 – 30th September 2019. These records supersede the collision information within the TA which were from a period between 1st January 2014 and 31st December 2018.

4.1.1.3. This chapter will also use the updated PIC data to analyse collisions which occurred on the links impacted by traffic redistribution across the wider study area, as demonstrated by the SRTM runs in Chapter 1.11 of the TA.

4.1.1.4. Paragraph 1.11.2 of the TA has been used to inform the core list of redistribution links to be assessed. In line with the TA, the study area has been subdivided into five smaller zones:

- Sections 1-4 of the Onshore Cable Corridor:
  - **West of Waterlooville:** this covers the predominately rural area to the west of the Waterlooville and includes Denmead, Anmore and Furzeley Corner.
  - **Waterlooville:** this encapsulates the urban area stretching across Horndean, Lovedean, Cowplain, Wecock Farm, the town centre, Stakes, Purbrook, Crookhorn and Widley.
  - **East of Waterlooville:** this includes the A3(M) and some key roads / junctions that link the motorway with Havant and wider strategic network.
- Sections 5-6 of Onshore Cable Corridor:
  - **Cosham, Drayton and Farlington:** situated south of the administrative boundary with Hampshire County Council and north of the A27 Havant Bypass / M27.
- Sections 7-10 of Onshore Cable Corridor:
  - **Portsea Island:** all links on the island of Portsea, which included the vast majority of the city of Portsmouth and its associated road network.

4.1.1.5. As with the Transport Assessment, links identified for further assessment across the wider study area were identified if they satisfied the following criteria:

- **Stage 1** – The percentage change in traffic flow on a link increased by 10% or more;
- **Stage 2** – The increase in hourly vehicle numbers was greater than 60 (one per minute); and
- **Stage 3** – The Volume-to-Capacity (V/C) Ratio increased by over 10%

4.1.1.6. The identified additional links are outlined in Tables 60 to 62 of the TA and have been the subject of further collision analysis in Section 4.4 below.

4.2. PREVIOUS COLLISION ANALYSIS

4.2.1. OVERVIEW

4.2.1.1. Chapter 1.7 of the TA sets out the collision analysis for the highways element of the Order Limits and construction traffic route between the A3(M) and Converter Station. Analysis was broken down across the zones as in the TA, these zones are shown in Plate 11 and Plate 12 and set out below.

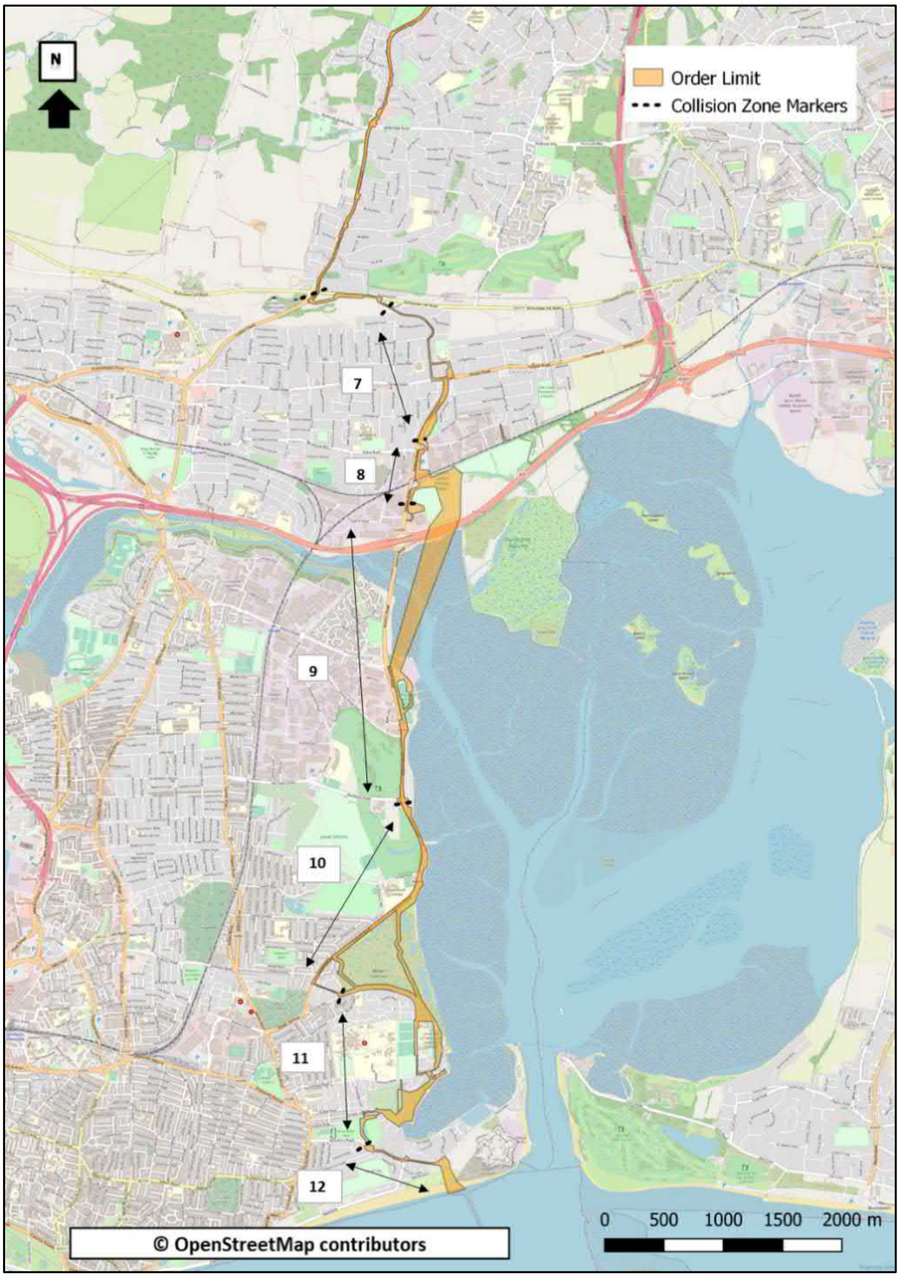

Plate 11 - TA Assessed Zones 1-6

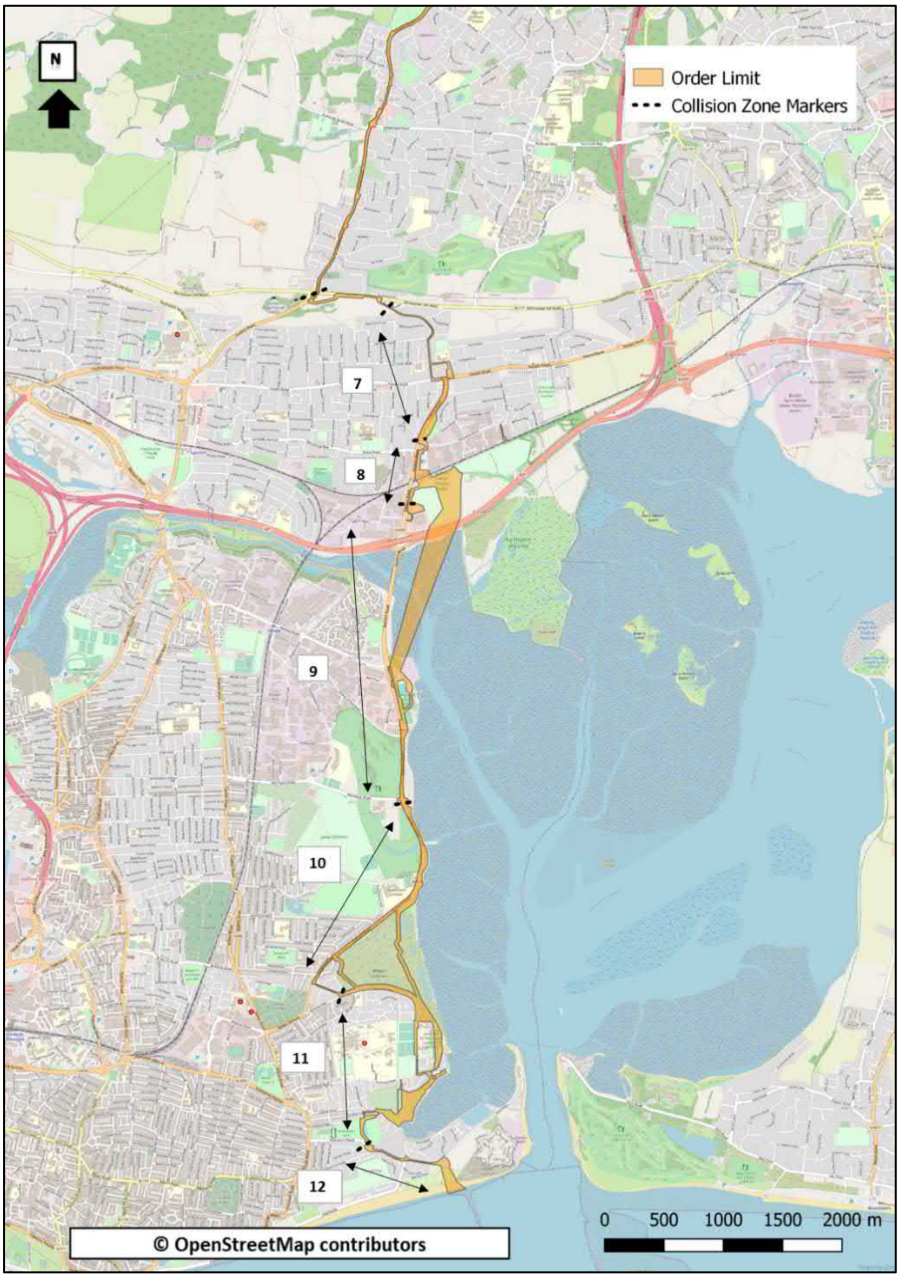

Plate 12 - TA Assessed Zones 7-12

Findings of Original PIC Analysis

4.2.1.2. Previous collision analysis included within the TA showed that there was a total of 343 collisions in the assessed study area which consisted of the following:

- 4 fatal collisions;
- 58 serious collisions; and
- 281 slight collisions.

4.2.1.3. Table 16 below summarises the findings of the previous collision analysis.

Table 16 - Summary of PIC Analysis included in TA (01/01/2014 to 31/12/2018)

Collision Zone	Severity			Total
	Slight	Serious	Fatal	
0	40	7		47
1	-	-	-	-
2	3	-	-	3
3	7	1	-	8
4	31	5	-	36
5	30	10		40
6	10	3	1	14
7	12	2	-	14
8	32	11	-	43
9	35	-	2	37
10	38	9	1	48
11	43	10	-	53
12	-	-	-	-

4.2.1.4. There were a variety of causation factors recorded and there was no clear trend in the incidence of slight, serious or fatal collisions either geographically or as to cause. It was therefore concluded that there was no reason why the temporary works associated with the Proposed Development would increase the frequency or severity of collisions across the area of interest.

4.3. ORDER LIMIT UPDATED COLLISION ANALYSIS

4.3.1.1. This section provides an update to the PIC analysis completed for the Order Limits, using the PIC data received for the period 1st October 2014 – 30th September 2019.

4.3.2. CONSTRUCTION TRAFFIC ZONE (BETWEEN CONVERTER STATION AND A3(M))

4.3.2.1. The PIC data shows that seven serious collisions occurred in this area from Dell Piece West to Lovedean Converter Station (and proposed Converter Station) during the five-year period from 1st October 2014 to 30th September 2019. No fatal collisions were recorded. The number of serious and fatal collisions in the construction traffic zone has not changed between the datasets and no new patterns have emerged.

4.3.2.2. The serious collisions were the following:

- A3 Portsmouth Road / B2149 Dell Piece West signalised junction:
  - Car travelling north-east on A3 suspected of going through red light and collided with car turning right from B2149.
- A3 Portsmouth Road at junction with Keydell Avenue:
  - Car travelling north-east along A3 performs a U turn in the road and collided with a motorcycle travelling in same direction. Motorcycle rider sustained the serious injuries.
- Lovedean Lane at junction with Bowers Close:
  - Car travelling south-east along Lovedean Lane when pedestrian on a child's scooter came off the pavement and collided with the nearside of the vehicle. Pedestrian sustained serious injuries.
- Lovedean Lane near to junction with Gladys Avenue:
  - Motorcycle travelling south-east along Lovedean Lane lost control and collided with rear of stationary car waiting to turn right on Gladys Avenue. Motorcycle rider sustained the serious injuries.
- Lovedean Lane near Frogmore Lane:

- Car travelling along Lovedean Lane turning right onto Frogmore Lane cutting the corner, failed to see motorcycle travelling south down Lovedean Lane. Motorcycle rider sustained serious injuries.

- Lovedean Lane at junction with Frogmore Lane:
  - Car travelling along Lovedean Lane turning right into Frogmore Lane across the path of a cyclist. Cyclist applied brakes causing a fall from the bicycle and sustained serious injuries.
- Day Lane at Junction with Broadway Lane:
  - Two cars travelling on Day Lane collided on the bend with Broadway Lane, one casualty sustained serious injuries. From consideration of the accident details provided, this incident is likely to have been a "head on" collision.

4.3.2.3. It should be noted that a pedestrian and cyclist were each involved in one collision within this zone. There was a total of 41 slight collisions along the construction traffic zone with small clusters occurring at the Dell Piece West / Portsmouth Road and London Road / Lovedean Lane junctions.

4.3.2.4. Plate 13 below shows the collisions which occurred across the construction traffic zone between 1st October 2014 and 30th September 2019.

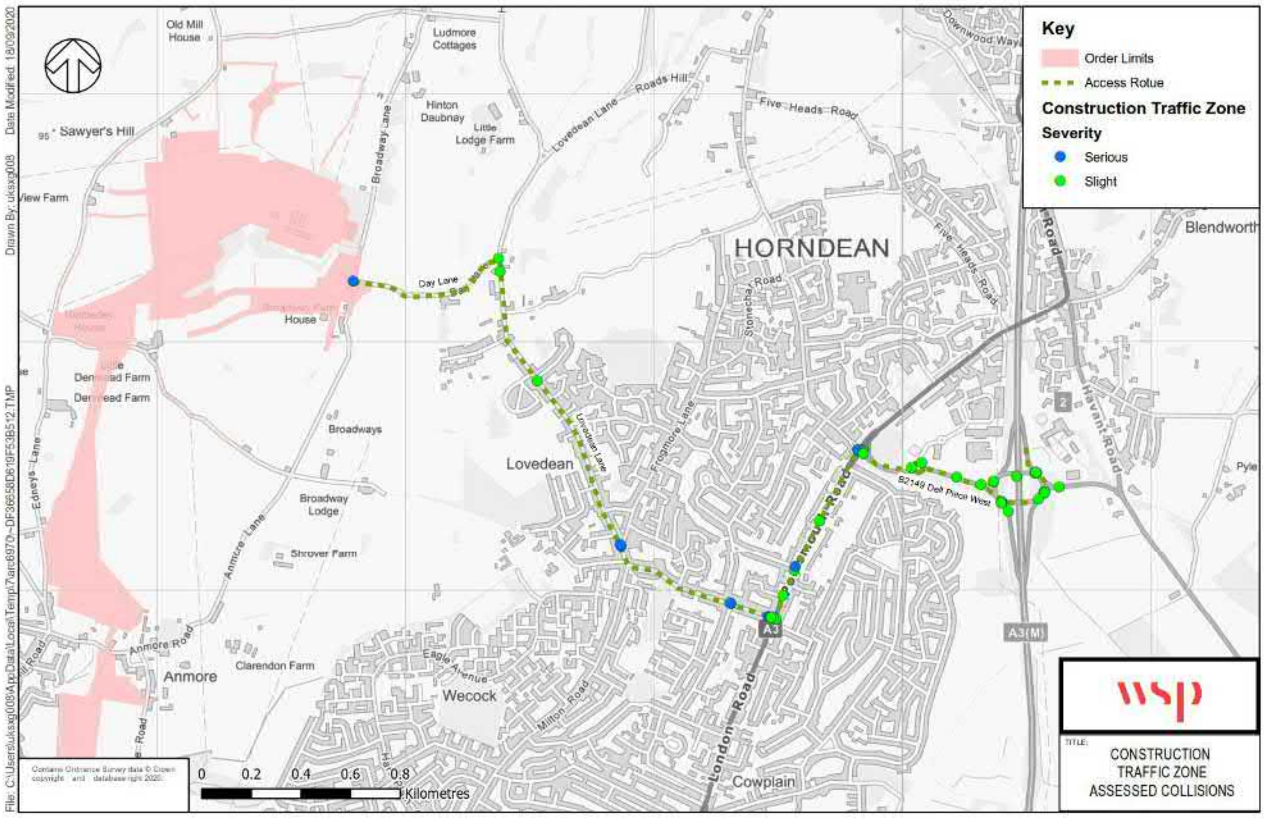

Plate 13 - Construction Traffic Zone – Assessed Collisions

4.3.3. COLLISION ZONES 1-3 (LOVEDEAN SUBSTATION, DENMEAD & ANMORE)

Zone 1 - Lovedean Substation (Broadway Lane, Anmore Lane)

4.3.3.1. No serious or fatal collisions were recorded in this area from Lovedean Substation to Anmore between 1st October 2014 and 30th September 2019. This is in line with the original collision analysis within the TA. (Note that the serious collision at the Broadway Lane / Day Lane junction noted above is recorded as in the ‘construction traffic zone’ rather than zone 1; however, these zones overlap briefly at this point where the construction zone crosses Broadway Lane).

Zone 2 - Denmead / Anmore (Anmore Lane, Anmore Road)

4.3.3.2. No serious or fatal collisions occurred in this area between 1st October 2014 and 30th September 2019. This is line with the original collision analysis within the TA. One slight collision was recorded.

Zone 3 - B2150 Hambledon Road (Martin Avenue to Soake Road)

4.3.3.3. One fatal and two slight collisions occurred on the stretch of B2150 Hambledon Road from Martin Avenue to Soake Road between 1st October 2014 and 30th September

2019. This fatal collision is additional to the original analysis within the TA.

4.3.3.4. The fatal collision occurred at the Hambledon Road / Soake Road junction adjacent to Soake Road bus stop. This was not recorded in the original TA submission due to it occurring on 28th July 2019 and subsequently not being present in the dataset used. No pedestrians or cyclists were involved in the collision, it involved two cars colliding head on.

4.3.3.5. There were 3 slight collisions in zones 1-3, however no clusters or common themes were distinguished. Two cyclists were involved in slight collisions.

4.3.3.6. Plate 14 shows the collisions which occurred across Zones 1-3 between 1st October 2014 and 30th September 2019.

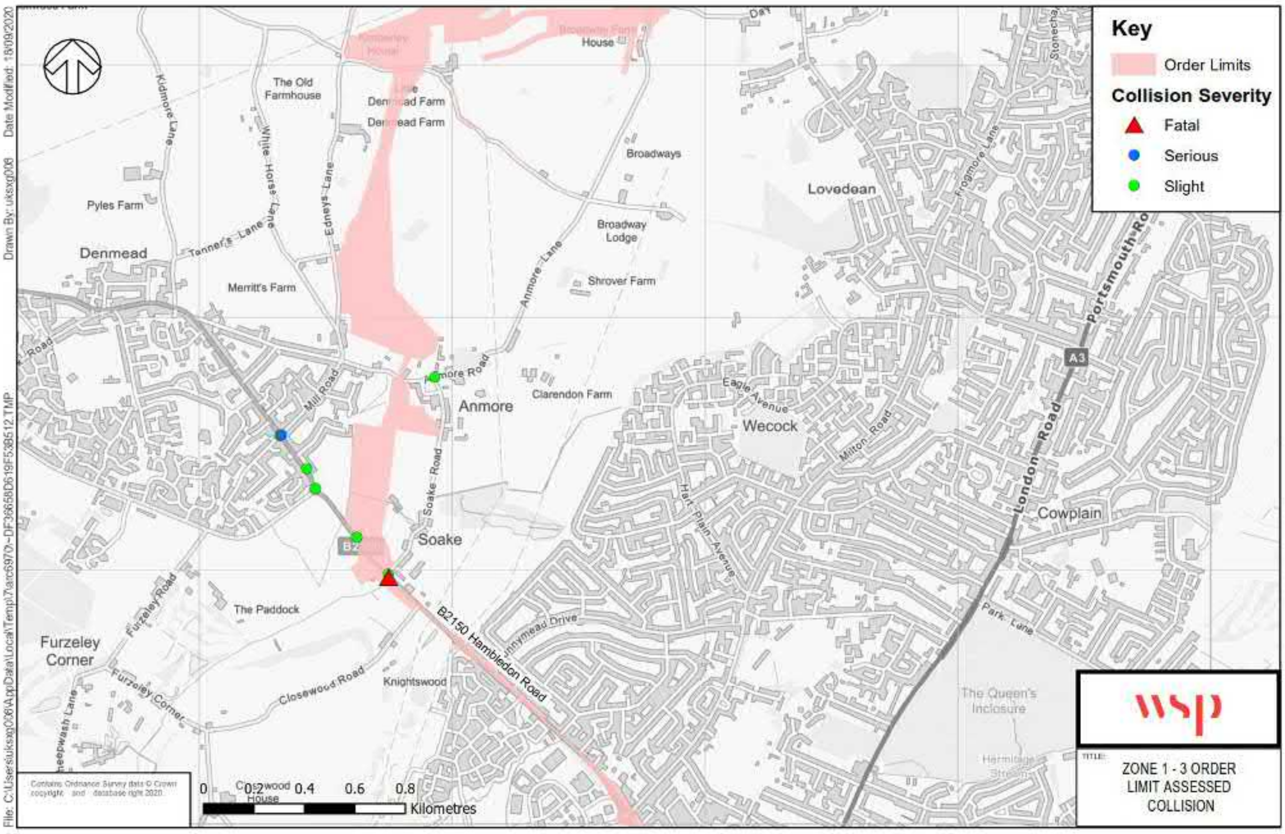

Plate 14 - Zones 1-3 - Order Limit Assessed Collisions

4.3.4. COLLISION ZONES 4-6

Zone 4 - Hambledon Road / Maurepas Way

4.3.4.1. 36 slight and 4 serious collisions occurred in this area which is one less than was recorded in the TA. The TA submission included a serious collision which occurred on the Maurepas Way roundabout on 20th March 2014, however this is no longer included in analysis for the most recent five-year period. No fatal collisions were recorded.

4.3.4.2. The serious collisions were the following:

- B2150 Hambledon Road near to Elettra Avenue:
  - A car travelling along Elettra Avenue entered the roundabout with Hambledon Road and failed to see a motorcycle travelling across the roundabout. The motorcyclist sustained serious injuries.
- Maurepas Roundabout (Houghton Avenue approach):
  - A Motorcycle travelling north on A3 Maurepas Way entered the roundabout and collided with car as it pulled out of Houghton Avenue. The motorcyclist sustained serious injuries.
- A3 Maurepas Way outside of ASDA supermarket:
  - A car collided with a pedestrian who used the pedestrian crossing incorrectly, when the traffic signal was green for vehicles. The pedestrian suffered a serious injury.
- A3 Maurepas Way (approx. 80m from Forest End roundabout):
  - An intoxicated pedestrian crossed the dual-carriageway and collided with a motorcycle which was travelling south-east along Maurepas Way. The pedestrian sustained a serious injury.

Zone 5 - A3 London Road

4.3.4.3. A total of 25 slight collisions and 12 serious collisions were recorded in this area from 1st October 2014 to 30th September 2019, this is two more serious collisions than was noted in the original TA submission. The updated analysis excludes the serious collision which occurred on 15th January 2014 near to the junction with Highbank Avenue and includes additional serious collisions at the following locations:

- A3 London Road / Ladybridge Roundabout:
  - A car travelling north on London Road turned right at the roundabout onto Ladybridge Road and collided with a cyclist who entered the roundabout whilst failing to give way.

- A3 London Road near to Purbrook Heath Road:
  - A pedestrian crossed London Road in front of a car travelling south. The pedestrian sustained serious injuries.
- A3 London Road at Hampshire Rose public house bus stop:
  - A car travelling north-east along London Road mounted the central island and collided with a lamppost. The car driver sustained serious injuries.

4.3.4.4. The other serious collisions as stated in the TA, remain:

- A3 London Road pelican crossing outside no. 82:
  - A car travelling south-west on London Road collided with a mobility scooter which was crossing during pedestrian phase at crossing. The mobility scooter rider sustained serious injuries.
- A3 London Road near to Beatty Gardens:
  - A motorcycle travelling south along A3 London Road collided with a van making a U-turn on the southbound carriageway.
- A3 London Road at the junction with Park Road:
  - A bicycle travelling north along eastern pavement collided with a car when crossing mouth of junction at Park Road. The cyclist sustained serious injuries.
- A3 London Road outside of the Co-op car park:
  - A van travelling north on London Road turned into the Co-op car park and collided with a motorcycle which was attempting to overtake. The motorcyclist suffered serious injuries.
- A3 London Road, outside of no. 67:
  - A motorcycle was travelling along London Road when the rider lost control and fell off, sustaining serious injuries.
- A3 London Road, north of junction with Lansdowne Avenue:
  - A car travelling north-east along London Road mounted the central island and collided with the lamp post.
- A3 London Road at junction with Lansdowne Avenue:
  - A car travelling south-east on Lansdowne Avenue collided with a motorcycle when pulling out onto London Road. The motorcyclist sustained serious injuries.
- A3 London Road, outside of no. 26:

- A cyclist travelling north-east along the shared-use path hit a bollard and fell off bicycle, sustaining serious injuries.
- A3 London Road at junction with Boundary Way:
  - A motorcycle travelling east was waiting to turn left onto A3, when a car behind collided with rear of motorcycle. The motorcyclist sustained serious injuries.

4.3.4.5. No fatal collisions were recorded along A3 London Road between 1st October 2015 and 30th September 2019.

Zone 6 - B2177 Portsdown Hill Road (including A3 under B2177 and slip)

4.3.4.6. Four serious collisions and one fatal collision occurred along Portsdown Hill from Boundary Way to Farlington Avenue between 1st October 2014 and 30th September 2019. The updated data excludes the serious collision which occurred at the junction outside of George Inn on 17th January 2014 and includes the following additional serious collisions:

- B2177 Portsdown Hill Road, 35m East of A3 London Road (8th March 2019):
  - A motorcycle travelling along Portsdown Hill Road braked and skidded causing rider to fall and sustain serious injuries.
- B2177 Portsdown Hill left turn onto A3 London Road (4th January 2016):
  - A vehicle turned left onto A3 London Road from Portsdown Hill Road and collided with a pedal cycle travelling southwest on A3 London Road, resulting in serious injuries to the pedal cyclist.

4.3.4.7. The collision which occurred in 2016 was not originally included in the TA submission as the Portsdown Hill / A3 London Road slip was not accounted for within the PIC data. This collision led to serious injuries to a cyclist.

4.3.4.8. The fatal collision remains the same as was analysed in the TA; involving a motorcyclist on the 2nd May 2016 approaching the B2177 bridge over A3 London Road.

4.3.4.9. Throughout collision zones 4-6 there were 69 slight collisions. A cluster of slight collisions occurred in zone 4 on the A3 Maurepas Way east approach to Maurepas Roundabout and on the B2150 Hambledon Road north approach to Milton Road Roundabout. In zones 5 and 6 no recurring patterns were noted however there was a small cluster on A3 London Road at the junction with Bushy Mead. Plate 15 below shows the collisions which occurred in zones 4-6 between 1st October 2014 and 30th September 2019.

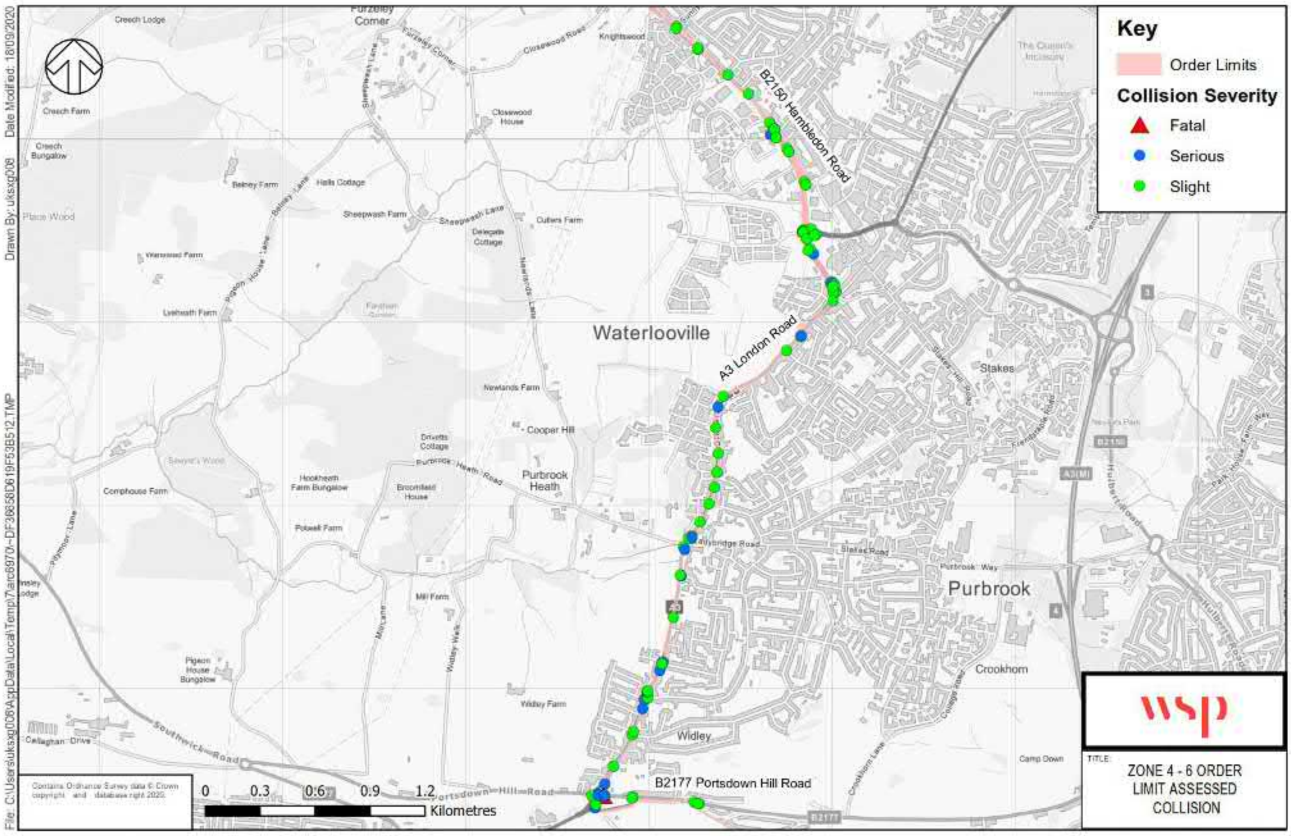

Plate 15 - Zones 4-6 – Order Limit Assessed Collisions

4.3.5. COLLISION ZONES 7-9

Zone 7 - Farlington to Sainsburys (Farlington Avenue, Eastern Road)

4.3.5.1. Four serious and 9 slight collisions were recorded here between 1st October 2014 and 30th September 2019. The updated analysis discounts the serious collision which occurred on 25th June 2014 on A2030 Eastern Road near to Havant Road and includes the following additional serious collisions:

- Farlington Avenue at Evelegh Road:
  - A cyclist travelling west along Evelegh Road collided with nearside of a car travelling south along Farlington Avenue. The cyclist sustained serious injuries.
- Farlington Avenue / Havant Road signalised junction:
  - A car travelling along Havant Road failed to see a traffic island and collided with the street furniture. The car passenger sustained serious injuries.
- A2030 Havant Road near to junction with Waterworks Road:
  - A car travelling east along A2030 Havant Road lost control and collided with wall of no. 265 Havant Road. The car driver and passenger sustained serious injuries.
- A2030 Eastern Road junction with Fitzherbert Road:
  - Bicycle travelling south on A2030 Eastern Road lost control and hit kerb, rider sustained serious injuries.

4.3.5.2. No fatal collisions were recorded in zone 7.

Zone 8 - Sainsburys (Fitzherbert Road to Farlington Playing Fields)

4.3.5.3. One serious collision occurred in this area between 1st October 2014 and 30th September 2019, as did 5 slight collisions. The serious collision occurred approximately 200m south of Grove Road and involved a motorcyclist.

4.3.5.4. Previous analysis for the section showed 11 serious collisions occurring in this area, 10 of which were on the roundabout / roundabout arms. This updated analysis has not included collisions which occurred on Farlington Roundabout or either side on Eastern Road north and Eastern Road south, therefore there is an overall reduction in the number of collisions compared to the TA. Collisions which occurred on Farlington Roundabout, or either side on Eastern Road north and Eastern Road south where included in the TA erroneously due to the use of an outdated Order Limit for the collection of collision data.

4.3.5.5. No fatal collisions were recorded in zone 8.

Zone 9 - A2030 Eastern Road to Burrfields Road

4.3.5.6. One fatal collision and 13 slight collisions were recorded in this area between 1st October 2014 and 30th September 2019. The fatal collision occurred at the signalised junction with Burrfields Road outside Harbourside car park. The updated analysis means that the fatal collision which occurred previously at the junction with Airport Service Road on 21st January 2014 has been outdated and the only fatal collision in this area remains at the Burrfields Road junction where two cyclists collided in June 2017.

4.3.5.7. Throughout zones 7-9 there were a total of 27 slight collisions, 5 serious collisions and 1 fatal collision. Plate 16 below shows the collisions which occurred in zones 7-9 between 1st October 2014 and 30th September 2019.

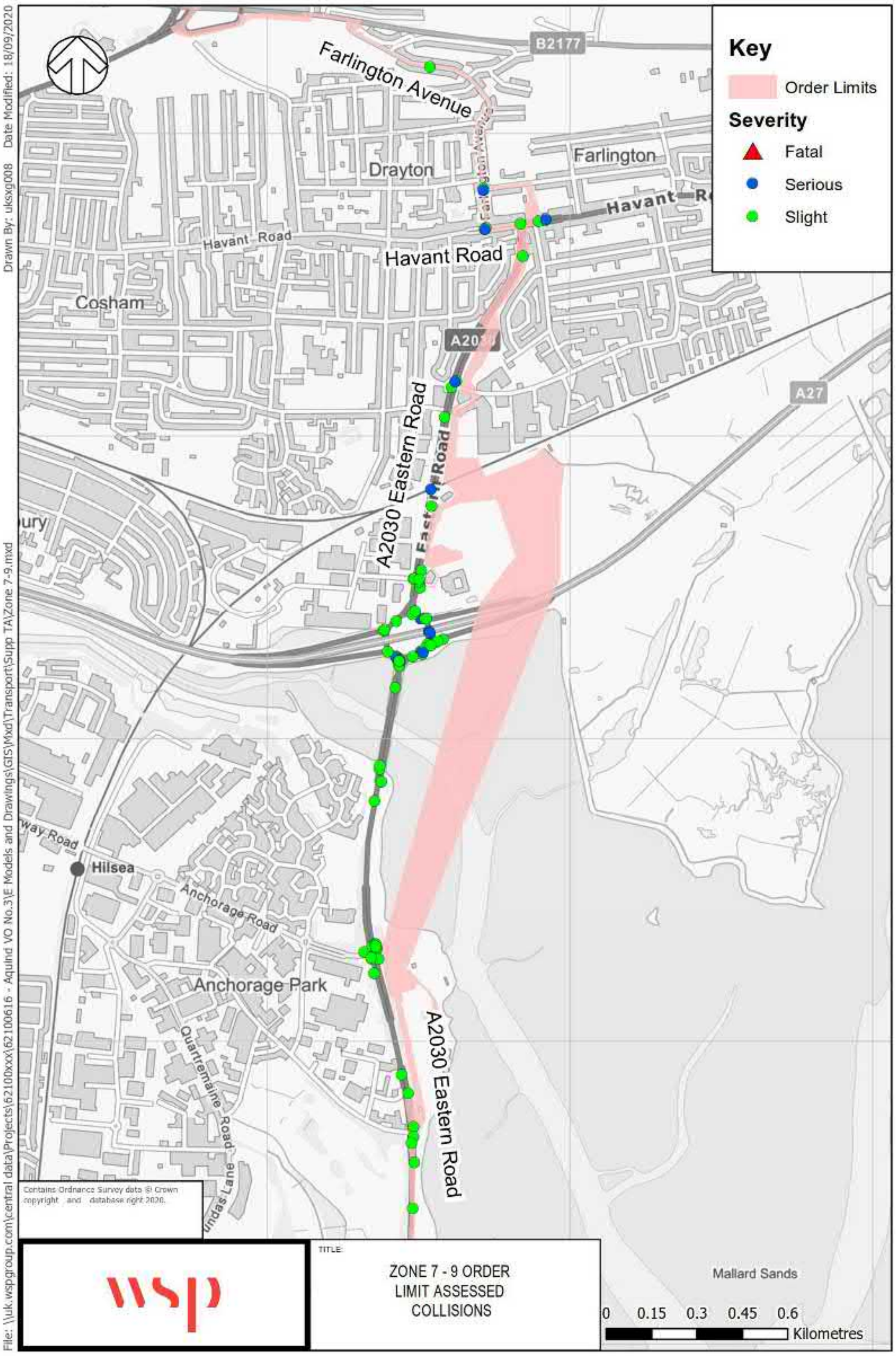

Plate 16 - Zones 7-9 – Order Limit Assessed Collisions

4.3.6. COLLISION ZONES 10-12

The assessment of collision data contained within the TA incorrectly did not assess the final Order Limits for the Proposed Development, and instead was based on an earlier version of the Order Limits. Plate 18 shows the Final Order Limits for the collisions assessed within this STA. Plate 17 shows the route of assessed links within the TA.

Plate 17 - Previous Order Limit **Plate 18 - Final Order Limit**

Zone 10 - Eastern Road to Eastern Avenue

4.3.6.1. Between 1st October 2014 and 30th September 2019 there were seven serious collisions and one fatal collision on A2030 Eastern Road between Burrfields Road and Eastern Avenue. The one fatal collision remains the same as within the TA collision analysis, occurring at the A2030 Eastern Road junction with Kirpal Road on 26th October 2016. This fatal collision involved a van colliding with a motorcycle.

Zone 11 - Langstone Campus (updated zone)

4.3.6.2. Updated collision analysis has highlighted that there was one serious collision in the area from Eastern Avenue to Locksway Road between 1st October 2014 and 30th September 2019. This occurred at the Furze Lane / Locksway Road junction on 3rd August 2017 and involved a pedestrian being struck by a car.

4.3.6.3. 10 serious collisions previously occurred in zone 11 compared to the 1 which has now been highlighted. Analysis therefore shows that the updated Order Limits will avoid areas where high numbers of collisions occur on Velder Avenue and Milton Road which reduces the negative impacts upon road safety.

Zone 12 - Eastney (Bransbury Road, Fort Cumberland Road)

4.3.6.4. From Locksway Road to Fort Cumberland Road there were three serious collisions which occurred between 1st October 2014 and 30th September 2019. Two of these collisions occurred close to the junction with Henderson Road and Fort Cumberland Road. Previous analysis included in the TA did not highlight the following collisions (due to the different time period of the collision data assessed within the TA):

- Bransbury Road at junction with Halliday Crescent:
  - A motorcycle lost control around a tight bend and collided with a parked car. The motorcyclist rider sustained a serious injury.
- Fort Cumberland Road at junction with Henderson Road:
  - A cyclist travelling across Fort Cumberland Road emerged from behind a parked vehicle, colliding with a car. The cyclist sustained serious injuries.
- Henderson Road outside no. 6:
  - A car travelling collided with a tree, with the passenger sustaining a serious injury.

4.3.6.5. Through zones 10-12, 29 slight collisions were recorded and no clusters have been identified. Plate 19 shows the collisions through zones 10-12 which occurred between 1st October 2014 and 30th September 2019.

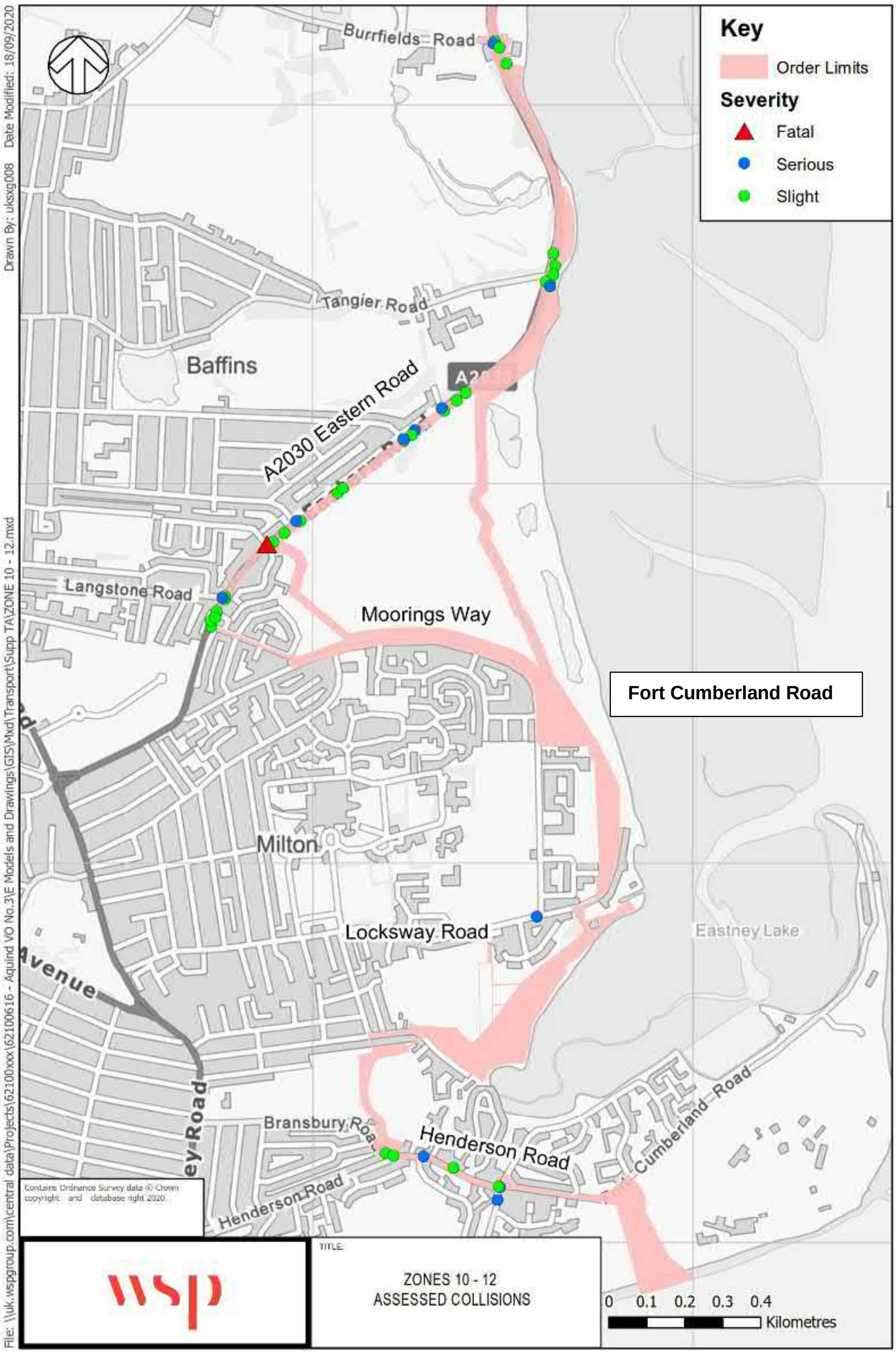

Plate 19 - Zones 10-12 - Assessed Collisions

4.3.7. SUMMARY AND COMPARISON

4.3.7.1. Table 17 below shows how receipt of the updated PIC data for the most recent five years between October 1st 2014 and September 2019 has changed the number of serious and fatal collisions across the Order Limits and construction traffic route between Converter Station and A3(M).

Table 17 – Collision Comparison by Zone

Zone	Slight		Serious		Fatal	
	Previous	Update	Previous	Update	Previous	Update
0	40	41	7	7	-	-
1	3	1	-	-	-	-
2	4	1	-	-	-	-
3	2	2	1	-	-	1
4	31	36	5	4	-	-
5	30	25	10	12	-	-
6	10	8	3	4	1	1
7	12	9	2	4	-	-
8	33	5	11	1	-	-
9	35	13	-	-	2	1
10	38	25	9	7	1	1
11	43	-	10	1	-	-
12	-	4	-	3	-	-
Total	**281**	**170**	**58**	**42**	**4**	**4**

4.3.7.2. Table 17 highlights that the updated collision data shows an overall decrease in the number of serious collisions compared to that of the original TA. The number of fatal collisions remains the same, however one more has been attributed to zone 3 (B2150 Hambledon Road) and one less occurred in zone 9 (A2030 Eastern Road to Burrfields Road).

4.3.7.3. The update to the assessment so that the correct Order Limits were assessed for zones 10, 11 and 12 has meant that there is an overall decrease in the number of collisions throughout the study area. This is largely attributed to a change in route through zone 11 and that Milton Road will no longer be directly impacted by the Order Limits. The Order Limits do not in fact include Farlington Roundabout and the approach arms which has led to a significant decrease in the number of collisions identified.

4.3.7.4. Along the Order Limits there are no clear repetitions of causation factors and there is no serious concern regarding the number of serious of fatal collisions. Four fatal collisions occurred across the entirety of the Order Limits study area and occurred on differing sections, two involved motorcycles, one involved a cyclist and one involved a car. The collision involving the cyclist was not due to road design or speed limit and was attributed to individual rider error.

4.3.7.5. Analysis has shown that the frequency and severity of PICs is typical for the road types and traffic volumes within the study area. Although there will be some temporary redistribution of traffic during the construction phase, the overall safety impact on the road network within the study area is anticipated to be neutral. The analysis of PIC history in this chapter has not identified any sections considered sensitive in road safety terms to localised temporary increases in traffic flow during the Construction Stage, where mitigation as proposed in the Framework CTMP and FTMS is secured.

4.4. LINKS AFFECTED BY REDISTRIBUTION

4.4.1.1. As detailed above, in order to support the traffic redistribution analysis as per Chapter 1.11 of the TA, further PIC analysis has been conducted for links affected by traffic redistribution away from traffic management locations assessed within the SRTM and as shown by Plates 36-39 of the TA.

4.4.1.2. Collision analysis has also been conducted for the wider highway network which is located within 5km of the Cable Corridor and is likely to face temporary increase in traffic flows. Links shown in Table 60-62 of the TA have been assessed, based on the three-stage sifting process detailed earlier.

4.4.1.3. These areas of analysis are the following:

- Sections 1-4 of Onshore Cable Corridor

- **West Waterlooville**: this covers the predominantly rural area to the west of Waterlooville and includes Denmead, Anmore and Furzeley Corner.
    - **Waterlooville**: this encapsulates the urban area stretching across Horndean, Lovedean, Cowplain, Wecock Farm, the town centre, Stakes, Purbrook, Crookhorn and Widley.
    - **East of Waterlooville:** This includes the A3 (M) and some key roads / junctions that link the motorway with Havant and wider strategic network.
- Sections 5-6 of Onshore Cable Corridor
    - **Cosham, Drayton and Farlington:** south of the administrative boundary with Hampshire County Council and north of the A27 Havant Bypass / M27.
- Sections 7-10 of Onshore Cable Corridor
    - **Portsea Island:** all links on the island of Portsea, which included the vast majority of the city of Portsmouth and its associated road network.

4.4.2. SECTIONS 1-4

4.4.2.1. As modelled within the SRTM section of the TA, traffic is forecast to redistribute away from traffic management in the following locations in section 1-4 of the Onshore Cable Corridor:

- Shuttle working traffic signals on B2150 Hambledon Road between Soake Road and Closewood Road;
- Temporary traffic signals on the B2150 / A3 / Houghton Avenue roundabout; and
- Shuttle working traffic signals on the A3 London Road between Poppy Fields and Ladybridge roundabout.

West Waterlooville

4.4.2.2. The SRTM forecast suggests that diverting traffic in West Waterlooville is likely to be concentrated on the core set of routes shown on Plate 20 below. These being:

- Furzeley Road – Newlands Lane – Purbrook Heath Road; and
- Closewood Road – Newlands Lane – Purbrook Heath Road.

4.4.2.3. Collision analysis shows that nine collisions occurred on the links likely to be affected by traffic redistribution in west Waterlooville. Three of these collisions occurred along Newlands Lane, of which two were serious, 4 slight collisions occurred on Belney Lane and one slight collision occurred at each of Pigeon House Lane and Purbrook Heath Road.

The two serious collisions involved a car, motorcyclist and an agricultural vehicle. A pedestrian was involved in a slight collision on Purbrook Heath Road.

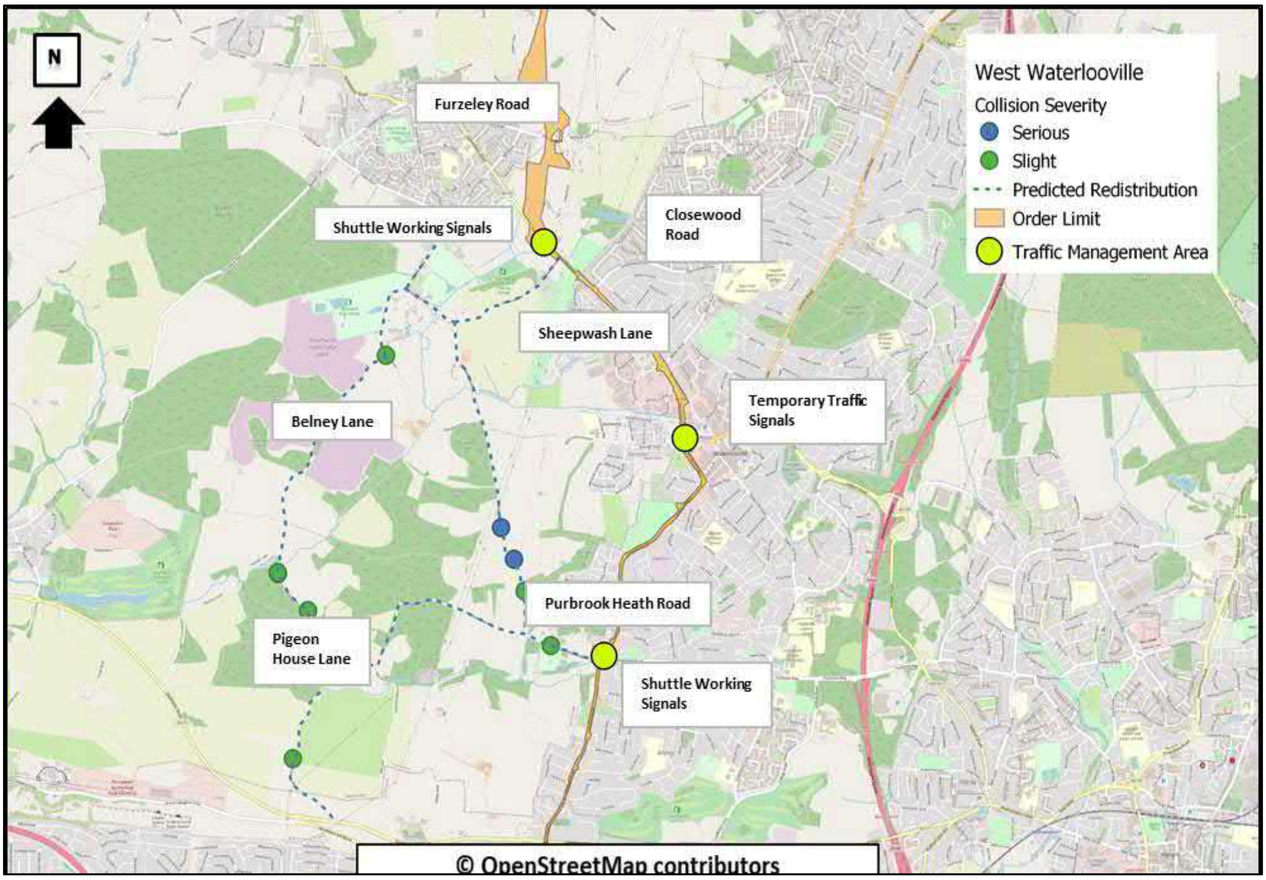

Plate 20 - West Waterlooville Redistribution - Collisions

Waterlooville

4.4.2.4. Within Waterlooville, the forecasted primary diversion routes have been identified as the following:

- Roads linking B2150 Hambledon Road and A3 London Road;
- Roads linking A3 London Road to B2150 Hulbert Road;
- Roads offering an alternative to the A3 London Road Corridor; and
- Roads surrounding the Lovedean converter station.

4.4.2.5. From 1st October 2014 and 30th September 2019, 69 slight and 19 serious collisions occurred on the redistribution links in the Waterlooville area. The most collisions occurred on Milton Road, with a particular cluster outside of Milton Parade stores; 10 collisions occurred on the stretch of Milton Road between the Sunnymead Drive and Pyrford Close junction which is close to Hart Plain Infant School and Cowplain Community School.

4.4.2.6. Further south, through Purbrook, along the redistribution links, 3 serious collisions occurred along Elizabeth Road, one on Mill Road and two further south on Park Avenue. Again, there was no obvious cluster observed along these links.

4.4.2.7. Across the Waterlooville area, cyclists were involved in 10 collisions and a pedestrian involved in one, no fatal collisions were recorded. Plate 21 below shows the collisions which occurred on the links of predicted traffic redistribution through Waterlooville.

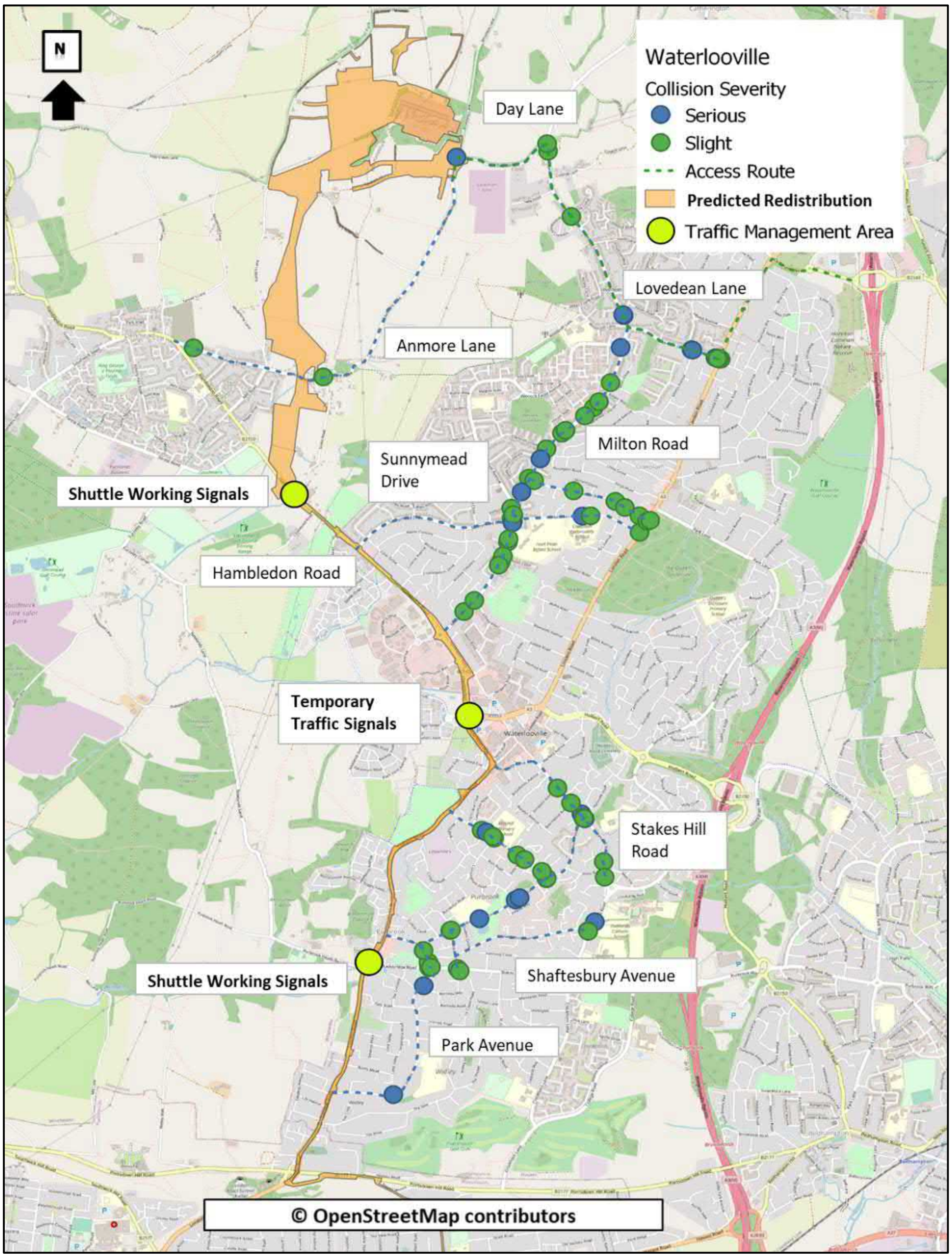

Plate 21 - Waterlooville Redistribution – Collisions

East of Waterlooville

4.4.2.8. Collision analysis for East of Waterlooville shows that a total of 64 collisions occurred on the redistribution links between 1st October 2014 and 30th September 2019. Of which, 46 were of slight severity and 18 were serious. A cluster of collisions occurred at Purbrook Way roundabout, of these 3 were classified as serious, cyclists were involved in 2 of the serious collisions and one slight collision at this roundabout. There were no other distinguishable patterns identified as shown on Plate 22.

4.4.2.9. A cluster of collisions can also be seen on the Hulbert Road Roundabout, 11 slight collisions and one serious collision occurred here. Along Frendstaple Road, a further three serious collisions were recorded close to the Lavender Road junction and the local centre at Stakes Hill. To the south, along Stakes Hill Road and Crookhorn Lane, five further serious collisions are recorded, dispersed along the length of the links. Again, they occur close to local retail centres where additional vehicular activity can be expected.

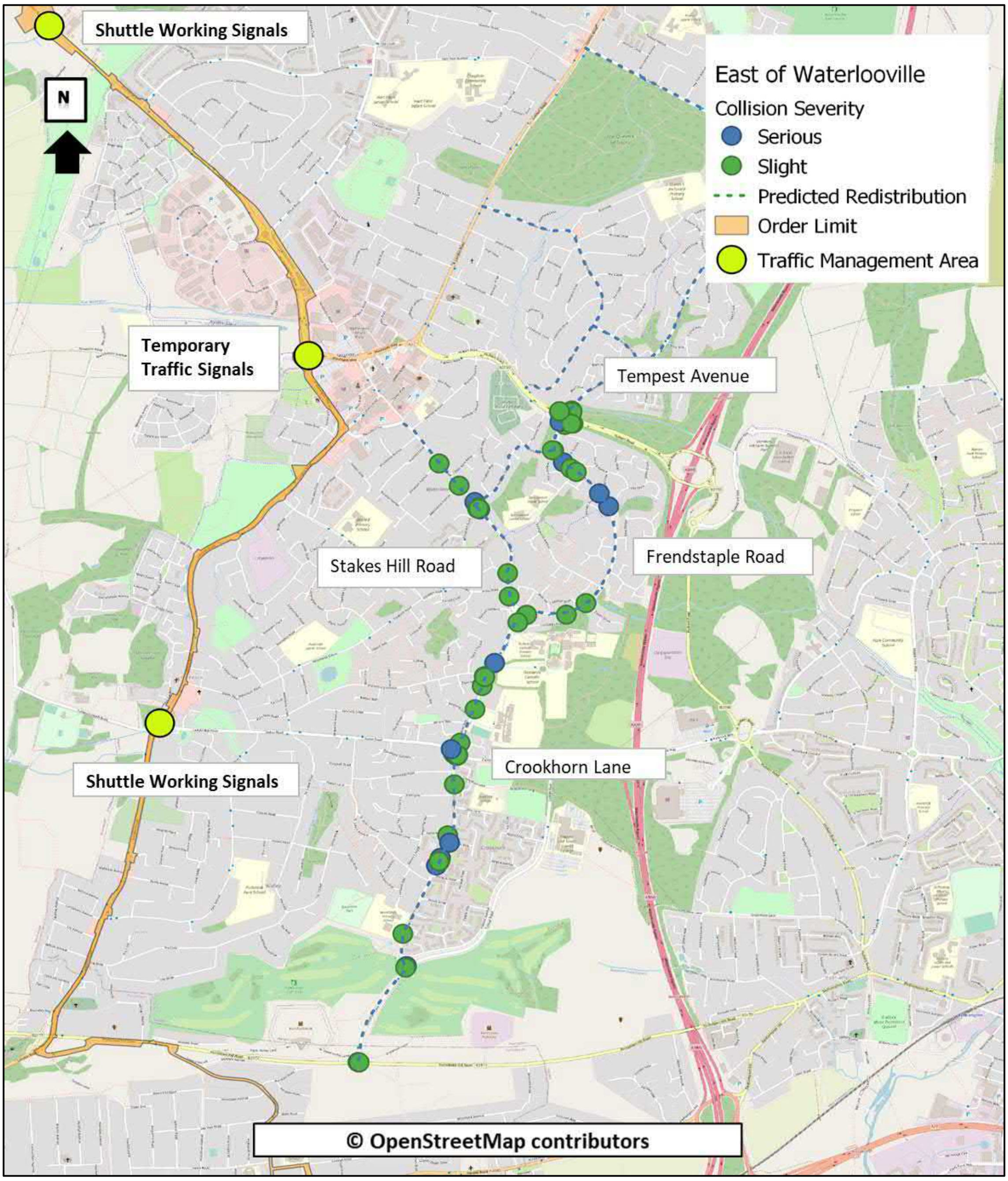

Plate 22 - East Waterlooville – Collisions

4.4.3. SECTIONS 5-6

Cosham, Drayton and Farlington

4.4.3.1. In the Cosham, Drayton and Farlington area, traffic is primarily forecast to be diverted away from the single lane closure on Havant Road between Farlington Avenue and A2030 Eastern Road onto the following routes:

- B2177 Portsdown Hill;
- Evelegh Road;
- A2030 Havant Road;
- Grove Road (South Road, Station Road & Lower Drayton Lane); and
- Fitzherbert Road

4.4.3.2. A total of 115 collisions occurred on the redistribution links mentioned above between October 1st 2014 and September 30th 2019, of these collisions 28 were serious and 87 were slight. Collision clusters have been identified at Bedhampton Roundabout, through the local centre along Havant Road and at Spur Road Roundabout. 3 pedestrians and 7 cyclists were involved in serious collisions within this study area. When considered on the map below, the collisions are again distributed along a considerable length of carriageway, through a local centre where vehicular activity and interaction with pedestrians are likely to be increased.

4.4.3.3. Plate 23 below shows collisions which occurred on the links forecast to be impacted by traffic redistribution in the Cosham area.

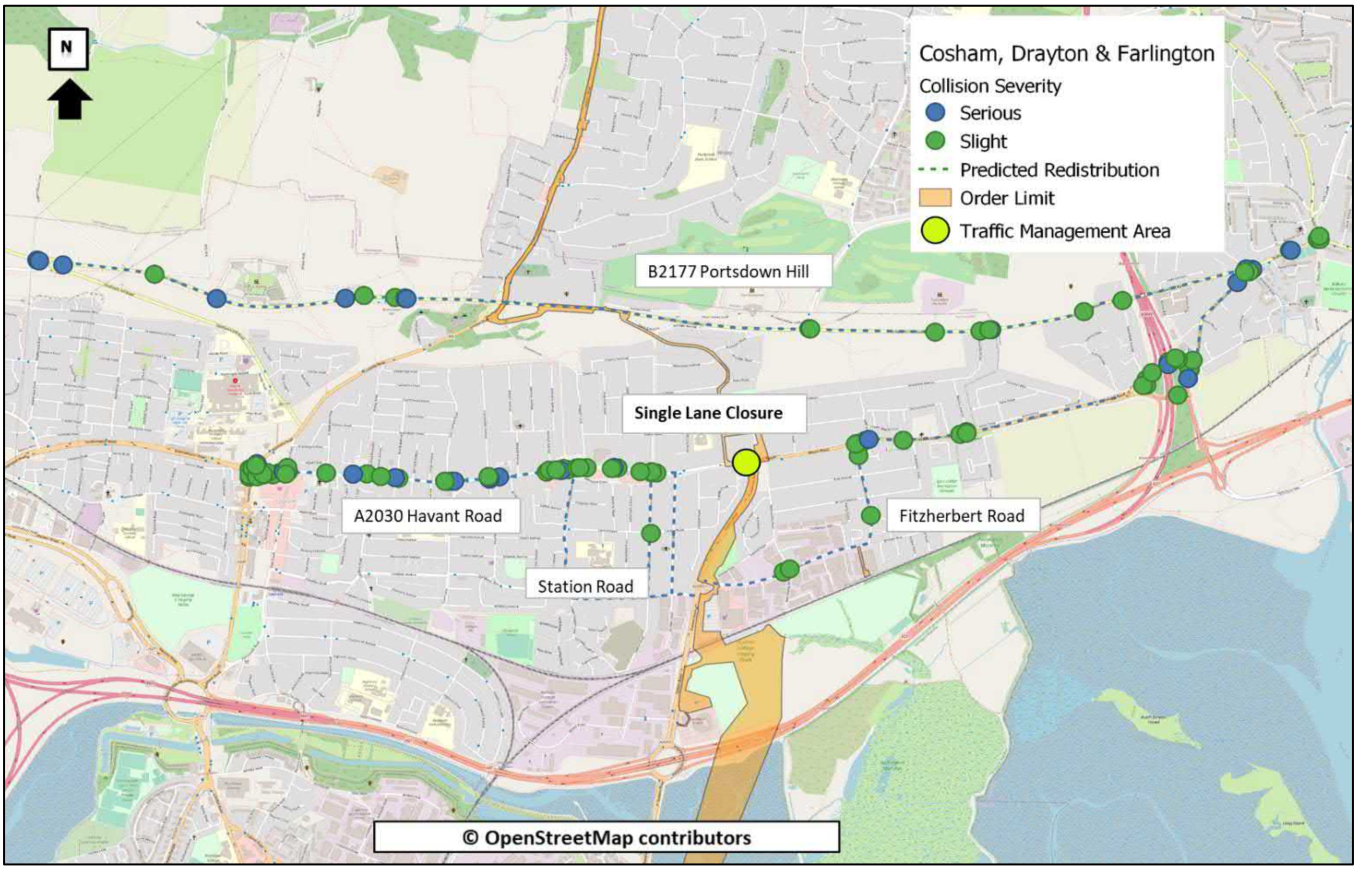

Plate 23 - Cosham & Bedhampton Redistribution - Collisions

4.4.4. SECTION 7-10

Portsea Island

4.4.4.1. On Portsea Island the only traffic management along key radial roads into and out of Portsmouth will be along A2030 Eastern Road between the junctions with Burrfields Road and Tangier Road. Traffic redistribution is therefore forecast to be most pronounced in the Anchorage Park / Copnor area along:

- Airport Service Road
- Dundas Lane
- Quartremaine Road
- Burrfields Road / Stubbington Avenue; and
- A288 Copnor Road between Norway Road and A2030 Velder Avenue.

4.4.4.2. Collision analysis has shown that a total of 306 collisions occurred on the predicted redistribution links throughout Portsea Island. Of these collisions, 59 were serious and 247 were slight. Approximately 35% of all collisions which occurred on these links from 1st October 2014 to 30th September 2019 involved either a pedestrian or bicycle however the large majority of these were slight collisions.

4.4.4.3. Collision clusters were noted along Copnor Road at the Amberley Road, Kirby Road, Chichester Road junctions. There were also collision clusters along Milton Road at either end of the Baffins / Milton Road one-way system and at the junction with Velder Avenue. Burrfields Road had a higher incidence of serious collisions than other links with 9 serious collisions occurring between Burrfields Road roundabout and the junction with Copnor Road (inclusive). Copnor Road, Baffins Road and Milton Road form the A288, one of the main north-south routes on Portsea Island. The links therefore carry high levels of traffic and travel through densely populated areas. Interactions between vehicles, pedestrians and cyclists are therefore expected to be higher and reflected in higher collision rates. The clusters are not considered unusual for this area of the network.

4.4.4.4. Of the total 306 collisions, 52 occurred on the M275, 254 were on main links in the centre of Portsea Island.

4.4.4.5. Plate 24 below shows collisions which occurred along links forecast to be impacted by redistribution on Portsea Island. The figure also shows that there were some redistribution links where no collisions were recorded. Winston Churchill Avenue and Elm Grove notably show no collisions.

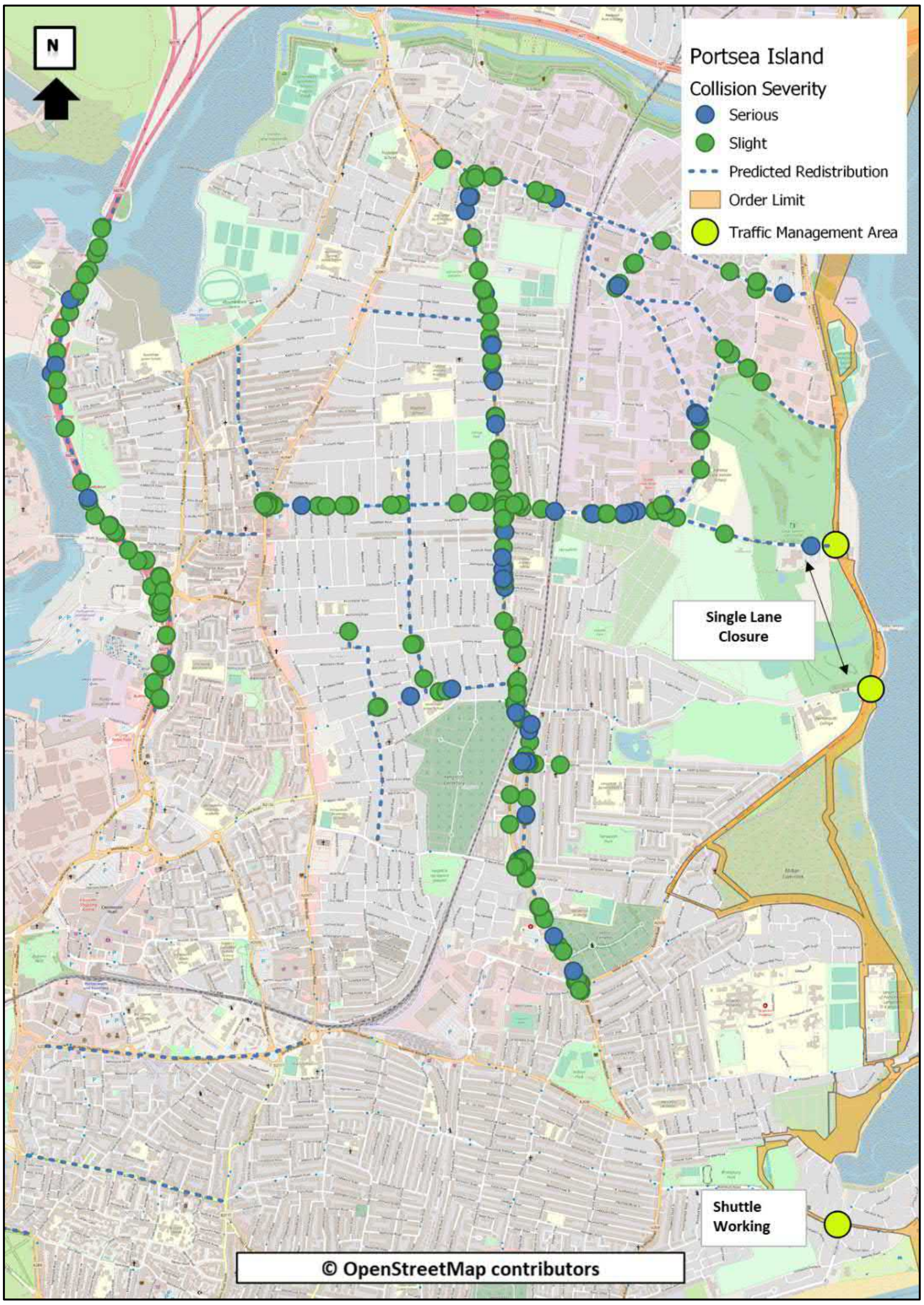

Plate 24 - Portsea Island Redistribution - Collisions

4.5. TOTAL COLLISIONS ON REDISTRIBUTION LINKS

Table 18 Total Collisions on Redistribution Links

Area of Redistribution		**Collisions**			**Total**
		Slight	Serious	Fatal	
Section 1-4	West Waterlooville	7	2	-	9
	Waterlooville	69	19	-	88
	East Waterlooville	46	18	-	64
Section 5-6	Cosham, Drayton & Farlington	87	28	-	115
Section 7-10	Portsea Island	247	59	-	306
Total		456	126	-	582

4.5.1.1. Table 18 shows that a total of 582 collisions occurred between October 1st 2014 and September 30th 2019 on links which are forecast to be impacted by traffic redistribution.

4.5.1.2. No fatal collisions were recorded on redistribution links and there was low incidence in the number of collisions which included vulnerable users. There were few distinguishable collision cluster points however Milton Parade near to Hart Plain Infant School and Cowplain community school did see 10 collisions on the small stretch of road in the studied period. Redistribution links past other schools do not experience clusters of collisions, Purbrook School and Mill Hill are not near to cluster points nor a high number of serious collisions.

4.5.1.3. The M275 onto Portsea Island does show a high number of collisions across the studied period however only 6 of these were serious collisions. This reflects the high traffic volumes along the M275. Generally, an increase in traffic flows in redistribution areas is not likely to increase the risk of collisions as it is forecast that vehicle speeds will be reduced.

4.6. CONCLUSION

4.6.1.1. Analysis has shown that the frequency and severity of PICs is typical for the road types and traffic volumes within the study area. Although there will be some temporary redistribution of traffic during the Construction Stage, the overall safety impact on the road network within the study area is anticipated to be neutral. The analysis of PIC history in this chapter has not identified any sections considered sensitive in road safety terms to localised temporary increases in traffic flow during the Construction Stage , assuming mitigation as proposed in the Framework CTMP (APP-450 Aquind Limited 6.3.22.2 Environmental Statement - Volume 3 - Appendix 22.2 Framework Construction Traffic Management Plan) and the FTMS (APP- 449 Aquind Limited 6.3.22.1A Environmental Statement - Volume 3 - Appendix 22.1A Framework Traffic Management Strategy).

4.6.1.2. Along the Order Limits there is no evidence showing significant clusters of collisions or unusual levels of serious or fatal collisions. Four fatal collisions occurred across the entirety of the Order Limits study area and occurred on differing sections, two involved motorcycles, one involved a cyclist and one involved a car. A significant majority of collisions were not due to any particular causation factor and no patterns have emerged which are uncommon in terms of expectancy.

4.6.1.3. There are no locations highlighted which raise concerns about a worsening impact due to the temporary works. Temporary construction works would not increase traffic flows across the study area, traffic may be dispersed into other zones but there would be no net change across the entirety of the study area, therefore not worsening overall road safety.

4.6.1.4. Within the wider study area, some clusters of collisions have been identified, particularly on the busier routes. However, it is not considered that the collision levels are significantly higher than expected and any redistributed traffic during the temporary construction works on the identified links detailed above is not expected to cause an increase in the likelihood of collisions.

4.6.1.5. The results of the SRTM assessment are a worst-case scenario and therefore the links affected by redistribution will experience less traffic than is actually forecast. Redistribution is also mainly caused by the implementation of temporary traffic management measures, and these measures in individual locations will only account for a short period of the overall construction works.

5. TRAFFIC ASSESSMENTS

5.1. INTRODUCTION

5.1.1.1. As set out in Chapter 1, this section of the STA will provide additional assessment relating to:

- Junction capacity assessment of the following junctions which were missing signal timing data in the TA (the data was not received from HCC):
  - B2150 Hambledon Road/ Aston Road Traffic Signal Junction in Waterlooville; and
  - Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction in Horndean.
- An assessment of the impacts of construction works associated with the Onshore Cable Route leaving the Converter Station compound between 17:00 and 18:00;
- An additional assessment of the impact of the traffic management required to facilitate construction of the Onshore Cable Route on A2030 Eastern Road (the chapter includes a summary of the full Technical Note which is appended to this STA at Appendix E); and
- Further sensitivity testing of shuttle working traffic signal locations and junctions with temporary signals assessed within the TA.

5.1.1.2. Each of these topics is set out individually below.

5.2. JUNCTION CAPACITY ASSESSMENTS WHERE TRAFFIC SIGNAL SPECS WERE UNAVAILABLE AT SUBMISSION

5.2.1.1. As an update to the junction capacity assessments undertaken within the TA, this section provides updated junction capacity assessments for two traffic signal junctions for which the traffic signal specifications were not received before submission. These were:

- B2150 Hambledon Road/ Aston Road Traffic Signal Junction; and
- Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction

5.2.1.2. On receiving the specifications for these two signal junctions LinSig models have been produced to match these specifications for the two signal junctions. LinSig is a modelling software produced by JCT Consultancy that provides junction capacity assessment for signalised junctions. LinSig provides an assessment of the impact of traffic signals on traffic capacity, queues and delays at the junction.

5.2.1.3. LinSig models provide an indication of the Degree of Saturation (DoS) as a percentage and the Mean Maximum Queue (MMQ) in PCUs (Passenger Car Units) for each junction approach, the average delay per vehicle on each approach recorded in seconds and the Practical Reserve Capacity (PRC). This then provides a measure of the junction's total capacity (as a percentage). When reviewing the PRC of a signalised junction the following should be considered:

- A positive figure indicates the junction operates with reserve capacity;
- A negative figure less than -10%, suggests that the junction would be broadly at capacity; and
- A negative figure more than -10% indicates that the junction cannot accommodate the demand.

5.2.1.4. For DoS the thresholds can be categorised as follows:

- Less than 90%: Any queues that have built up will be able to disperse during the relevant stage in each cycle;
- 90-100%: Indicates that an arm is close to its theoretical capacity and any queue that has built up does not fully clear within each cycle; and
- More than 100%: Indicates an arm is over its theoretical capacity and significant queues are likely as a result.

5.2.1.5. For ease of understanding, the results have been colour coded (Red, Amber, Green) according to the Level of Service grading in Junctions 9 software. For LINSIG analysis results, DoS has been graded in a similar way.

5.2.2. MODELLED SCENARIOS

5.2.2.1. Section 1.2 of this STA included details of the SRTM modelled scenarios. The following scenarios have been assessed in the AM and PM peaks in line with the submitted TA using SRTM turning counts:

- 2026 Do Minimum Scenario (DM);
- 2026 Do Something 1 Scenario (DS1); and
- 2026 Do Something 2 Scenario (DS2).

5.2.2.2. An additional scenario has also been tested for the B2150 Hambledon Road/ Aston Road traffic signal junction. The additional assessment uses the 2019 traffic surveys in combination with the SRTM and is a sensitivity test of the operation of this junction. This sensitivity test is required as in the SRTM the Wellington Retail Park arm of the junction is a proxy access point for the overall traffic model zone for Waterlooville town centre. As such, in the DS scenarios, traffic is able to redistribute away from this access point in order to gain access from the Waterlooville Town Centre zone from another point and therefore avoid the assessed traffic management. The sensitivity test is required however as in reality the demand for the Retail Park is fixed, with there being no other entry points to it on the highway network, and traffic is unable to gain access using any other route.

5.2.2.3. Therefore, in order to provide a robust analysis, a sensitivity test has been completed using traffic survey turning movements to / from Aston Road arm in combination with SRTM flows for the B2150 Hambledon Road arms, in order to represent the fixed demand to and from Wellington Retail Park, and reflect the inability of traffic to redistribute and gain access elsewhere on the highway network in reality.

5.2.3. HAMBLEDON ROAD/ ASTON ROAD TRAFFIC SIGNAL JUNCTION

5.2.3.1. The future flows for the 2026 DM, 2026 DS1 and 2026 DS2 (as assessed within the TA) are taken from the SRTM outputs and the results summarised in Table 19, Table 20 and Table 21. The scenario using a combination of SRTM and observed traffic flows are shown in Table 22 and 23.

Table 19 – B2150 Hambledon Road / Aston Road 2026 Do-Minimum AM and PM Peak

Do Minimum AM and PM Peak		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Arm	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	Aston Road (Left Turn)	0%	0	0	0%	0	0
1/2+ 1/3	Aston Road (Left + Right Turn)	10%	1	46	3%	1	0
3/1	Hambledon Road (S) Ahead	51%	9	11	56%	11	16
3/2+ 3/3	Hambledon Road (S) Ahead + Right Turn	51%	9	11	56%	11	16
5/1+ 5/2	Hambledon Road (N) Ahead + Left Turn	71%	13	31	87%	20	40
5/3	Hambledon Road (N) Ahead	77%	14	31	89%	20	40
Overall Junction		PRC: 17% Cycle Time: 90s			PRC: 2% Cycle Time: 90s		

5.2.3.2. The 2026 Do Minimum scenario indicates that the junction operates within capacity in the AM peak and at capacity in the PM peak. The highest DoS of 89% during the PM Peak is anticipated on the Hambledon Road North (Ahead) approach, with a queue of 20 PCUs. This queue length would extend approximately halfway to the upstream Maurepas Roundabout.

Table 20 - B2150 Hambledon Road / Aston Road 2026 Do-Something 1 AM and PM Peak

DS1 AM and PM Peak		**AM Peak 08:00-09:00**			**PM Peak 17:00-18:00**		
Arm	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	Aston Road (Left Turn)	1%	1	23	4%	1	22
1/2+ 1/3	Aston Road (Left + Right Turn)	79%	6	75	70%	8	46
3/1	Hambledon Road (S) Ahead	36%	6	10	38%	6	15
3/2+ 3/3	Hambledon Road (S) Ahead + Right Turn	36%	6	10	38%	6	15
5/1+ 5/2	Hambledon Road (N) Ahead + Left Turn	67%	10	29	74%	12	34
5/3	Hambledon Road (N) Ahead	57%	9	29	68%	11	34
Overall Junction		PRC: 15% Cycle Time: 90s			PRC: 23% Cycle Time: 90s		

5.2.3.3. Table 20 presents the results for the 2026 DS1 scenario, indicating improved performance compared to the 2026 Do Minimum results as a result of traffic redistributing away from the assessed traffic management. A highest DoS of 79% is forecast on the Aston Road (Left + Right Turn) approach during the AM Peak, with an associated queue of 6 PCUs. The forecast queuing at the signal junction will not have an impact on the adjacent junctions.

Table 21 - B2150 Hambledon Road / Aston Road 2026 Do-Something 2 AM and PM Peak

DS2 AM and PM Peak		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Arm	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	Aston Road (Left Turn)	1%	1	23	4%	1	22
1/2+ 1/3	Aston Road (Left + Right Turn)	79%	6	75	69%	8	46
3/1	Hambledon Road (S) Ahead	36%	6	10	38%	6	15
3/2+ 3/3	Hambledon Road (S) Ahead + Right Turn	36%	6	10	38%	6	15
5/1+ 5/2	Hambledon Road (N) Ahead + Left Turn	68%	10	29	74%	12	34
5/3	Hambledon Road (N) Ahead	58%	9	29	69%	11	34
Overall Junction		PRC: 15% Cycle Time: 90s			PRC: 23% Cycle Time: 90s		

5.2.3.4. Modelling results for the 2026 DS2 Scenario indicate similar results to the 2026 DS1 scenario, with the junction operating within capacity. The highest DoS of 79% is seen on the Aston Road (Left + Right Turn) arm in the AM peak with a queue of 6 PCUs. The forecast queuing at the signal junction will not have an impact on the adjacent junctions.

Table 22 - B2150 Hambledon Road / Aston Road 2026 Do-Something 1 AM and PM Peak Observed Traffic Counts on Aston Road AM and PM Peak

DS1 AM and PM Peak		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Arm	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	Aston Road (Left Turn)	35%	5	27	62%	10	31
1/2+ 1/3	Aston Road (Left + Right Turn)	66%	5	56	76%	9	43
3/1	Hambledon Road (S) Ahead	71%	16	16	76%	17	24
3/2+ 3/3	Hambledon Road (S) Ahead + Right Turn	68%	7	47	74%	6	69
5/1+ 5/2	Hambledon Road (N) Ahead + Left Turn	69%	10	29	77%	12	35
5/3	Hambledon Road (N) Ahead	56%	9	29	70%	12	35
Overall Junction		PRC: 27.3% Cycle Time: 90s			PRC: 17.3% Cycle Time: 90s		

5.2.3.5. presents the results for the combined 2026 DS1 / overserved traffic flows on Aston Road scenario, indicating improved performance compared to the 2026 Do Minimum results as a result of traffic redistributing away from the assessed traffic management. A highest DoS of 77% is forecast on the Hambledon Road North (Ahead / Left) approach during the PM Peak, with an associated queue of 12 PCUs. The forecast queuing at the signal junction will not have an impact on the adjacent junctions.

Table 23 - B2150 Hambledon Road / Aston Road 2026 Do-Something 2 / Observed Traffic Counts on Aston Road AM and PM Peak

DS2 AM and PM Peak		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Arm	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	Aston Road (Left Turn)	35%	5	27	64%	10	31
1/2+ 1/3	Aston Road (Left + Right Turn)	66%	5	56	75%	9	44
3/1	Hambledon Road (S) Ahead	71%	16	16	75%	17	23
3/2+ 3/3	Hambledon Road (S) Ahead + Right Turn	68%	7	47	74%	6	69
5/1+ 5/2	Hambledon Road (N) Ahead + Left Turn	69%	10	30	78%	13	35
5/3	Hambledon Road (N) Ahead	57%	9	29	70%	12	34
Overall Junction		PRC: 28.1% Cycle Time: 90s			PRC: 16.8% Cycle Time: 90s		

5.2.3.6. Modelling results for the combined 2026 DS2 / observed traffic flows from Aston Road Scenario indicate similar results to the 2026 DS1 scenario, with the junction operating within capacity. The highest DoS of 78% remains on the Hambledon Road North (Ahead / Left) approach during the PM Peak, with a queue of 13 PCUs. The forecast queuing at the signal junction will not have an impact on the adjacent junctions.

5.2.3.7. Based upon the results included in Table 20 to Table 23 it can be concluded that the impact of the traffic management associated with construction of the Onshore Cable Route will not lead to any capacity concerns at the junction of Hambledon Road / Aston Road. This is materially the same as the results presented in Table 72, 73 and 74 of the submitted TA, which summarised the assessments of this junction completed without traffic signal specifications.

5.2.4. DELL PIECE WEST / A3 PORTSMOUTH ROAD / CATHERINGTON LANE JUNCTIONS

5.2.4.1. The 2026 Do-Minimum scenario results are presented in Table 24. The 2026 DS1 and 2026 DS2 (as assessed within the TA) are taken from the SRTM outputs and the results summarised in Table 25 and Table 26.

Table 24 - Dell Piece West / A3 Portsmouth Road / Catherington Lane Junction 2026 Do-Minimum

Do Minimum AM and PM Peak		**AM Peak 08:00-09:00**			**PM Peak 17:00-18:00**		
Lane	Approach	DoS (%)	MM Q (PCU)	Av. Delay (s)	DoS (%)	MM Q (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	73%	12	27	103%	31	133
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	104%	29	170	95%	18	104
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	102%	30	145	95%	17	103
2/3	A3 Portsmouth Road South Right Turn	101%	28	133	79%	12	66
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	103%	41	144	103%	47	132
6/1	A3 Portsmouth Road North Left Turn	19%	3	38	18%	3	40
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0	0%	0	0

6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	53%	4	70	79%	6	86
Overall		PRC: -14.6% Cycle Time: 120s			PRC: -14.1% Cycle Time: 120s		

5.2.4.2. As outlined in the above table, the junction is forecast to operate over capacity in the AM and PM peak in the 2026 DM scenario with long queues and delays forming on the B2149 Dell Piece West, A3 Portsmouth Road southern approach and Catherington Lane approaches during each of the AM and PM peaks. In the AM peak the highest DoS of 104% is forecast on the B2149 Dell Piece West approach, with an associated queue of 29 PCUs and an average delay of 170 seconds. In the PM peak the highest DoS of 103% is experienced B2149 Dell Piece West and Catherington Lane, leading to queues of 31 and 47 vehicles respectively. In each of the peak hours the average delay per vehicle at this junction is over 100 seconds on 3 of the 4 approaches.

5.2.4.3. These results are used as a benchmark for comparison with the DS1 and DS2 models, which are presented in Table 25 and Table 26.

Table 25 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS1 Modelling Results

Do Something 1		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	72%	12	26	107%	44	181
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	102%	28	155	95%	20	95
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	104%	34	169	95%	17	108
2/3	A3 Portsmouth Road South Right Turn	101%	29	138	81%	12	71
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	106%	48	182	108%	60	196
6/1	A3 Portsmouth Road North Left Turn	19%	3	37	16%	3	36
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	53%	4	70	78%	5	85
Overall		PRC: -17.4% Cycle Time: 120s			PRC: -19.0% Cycle Time: 120s		

5.2.4.4. Table 25 shows the LinSig forecast for the DS1 scenario. The results presented forecast the junction to operate over capacity in the AM and PM peak, the reduction in overall PRC indicates a slight worsening of performance compared to the 2026 DM results. In the AM peak, the impact of the Proposed Development is generally minor with queue lengths increasing on all arms by seven vehicles or less. In the PM peak however, there is a notable increase in queue length and delay on the Dell Piece West and Catherington Lane approaches as traffic redistributes to avoid the assessed traffic management locations. On Dell Piece West and A3 Portsmouth Road the queue increases by 13 vehicles, adding approximately 50-60 seconds to the average delay per vehicle. This would result in the queue on Dell Piece West extending through the upstream Lakesmere Road roundabout, which provides access to Morrisons Supermarket and Horndean Interchange Industrial Estate.

Table 26 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS2 Modelling Results

Do Something 2		AM Peak 08:00-09:00			PM Peak 17:00-18:00		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	72%	12	26	107%	44	181
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	102%	28	155	95%	20	95
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	104%	34	170	96%	17	109
2/3	A3 Portsmouth Road South Right Turn	101%	29	138	81%	12	70
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	106%	48	182	107%	60	195
6/1	A3 Portsmouth Road North Left Turn	19%	3	37	16%	3	36
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	53%	4	70	77%	5	85
Overall		PRC: -17.4% Cycle Time: 120s			PRC: -18.9% Cycle Time: 120s		

5.2.4.5. The DS2 scenario produces very similar results to the DS1 scenario with the junction forecast to operate over capacity in each of the AM and PM peak hours. Much like the DS1 scenario, there is relatively minimal impact upon the junction in the AM peak, with minor increases in queue lengths and delay. In the PM peak however, the queue on Dell Piece West extends through the upstream Lakesmere Road roundabout, which provides access to Morrisons Supermarket and Horndean Interchange Industrial Estate.

5.2.4.6. The overall PRC figures for this scenario do not differ significantly from the DM or DS1 scenarios. For the AM, a figure of -17.4% is produced again, the same as for the DS1 scenario. For the PM, the figure increases by 0.1% producing a PRC of -18.9%. These show a relatively insignificant change in performance.

5.2.4.7. In conclusion, there is an overall minimal impact on the junction for both Do Something 1 and 2 scenarios. The junction is already operating above capacity, and the proposed works do not increase the strain by a significant amount. This is demonstrated by the 2.8% and 4.9% reductions in PRC during the AM and PM peaks of DS1 and DS2 compared to the 2026 future baseline.

5.2.4.8. In viewing the results for this junction, it should be noted that the 2026 SRTM DM, DS1 and DS2 scenarios include a degree of committed development assumptions beyond that likely to occur prior to the construction of the Onshore Cable Route between 2021 to 2023. Specifically related to this junction is the inclusion within the SRTM of the up to 800-unit residential development at Land East of Horndean (Planning Application Ref: 55562/005), located 1km to the east. As a result of this and other committed development schemes included within the SRTM DM scenario the traffic flows modelled are likely to be higher than will be experienced in reality. Therefore, in practice this is very much a worst-case; which is unlikely to occur in reality.

5.3. JUNCTION CAPACITY ASSESSMENTS OF PM PEAK CONSTRUCTION WORKER TRIPS

5.3.1.1. Following amendments to the assumptions for construction worker traffic movements, details of which can be found in paragraph 3.2.1.2 of this STA, it has been necessary to undertake additional junction capacity assessments for the following three junctions with the addition of construction worker vehicle trips during the PM peak:

- Lovedean Lane / A3 London Road / Prochurch Road staggered priority junction;
- Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction; and
- A3 (M) Junction 2.

5.3.1.2. As is stated in paragraph 3.2.1.2 of this STA, amendments to the assumptions related to movements associated with working hours in respect of the construction of the Onshore Cable Route will see the movement of construction traffic to and from the proposed Converter Station Area in the typically observed PM peak hour between 17:00 and 18:00. This traffic is anticipated to amount to a maximum of six LGVs travelling towards the proposed Converter Station Area from the construction locations on the Onshore Cable Corridor, and a maximum of 48 private vehicles of construction workers departing from the Converter Station Area at the end of their working day.

5.3.1.3. In line with proposed construction traffic routing, it is assumed that the LGVs travelling toward the Converter Station Area will do so via A3 (M), B2149 Dell Piece West, A3 Portsmouth Road, Lovedean Lane and Day Lane. It is assumed that the construction workers vehicles travelling away from the Converter Station Area undertake the reverse of this journey, travelling eastwards on the previously described route towards the A3 (M). The construction traffic route is shown on Plate 25 for reference.

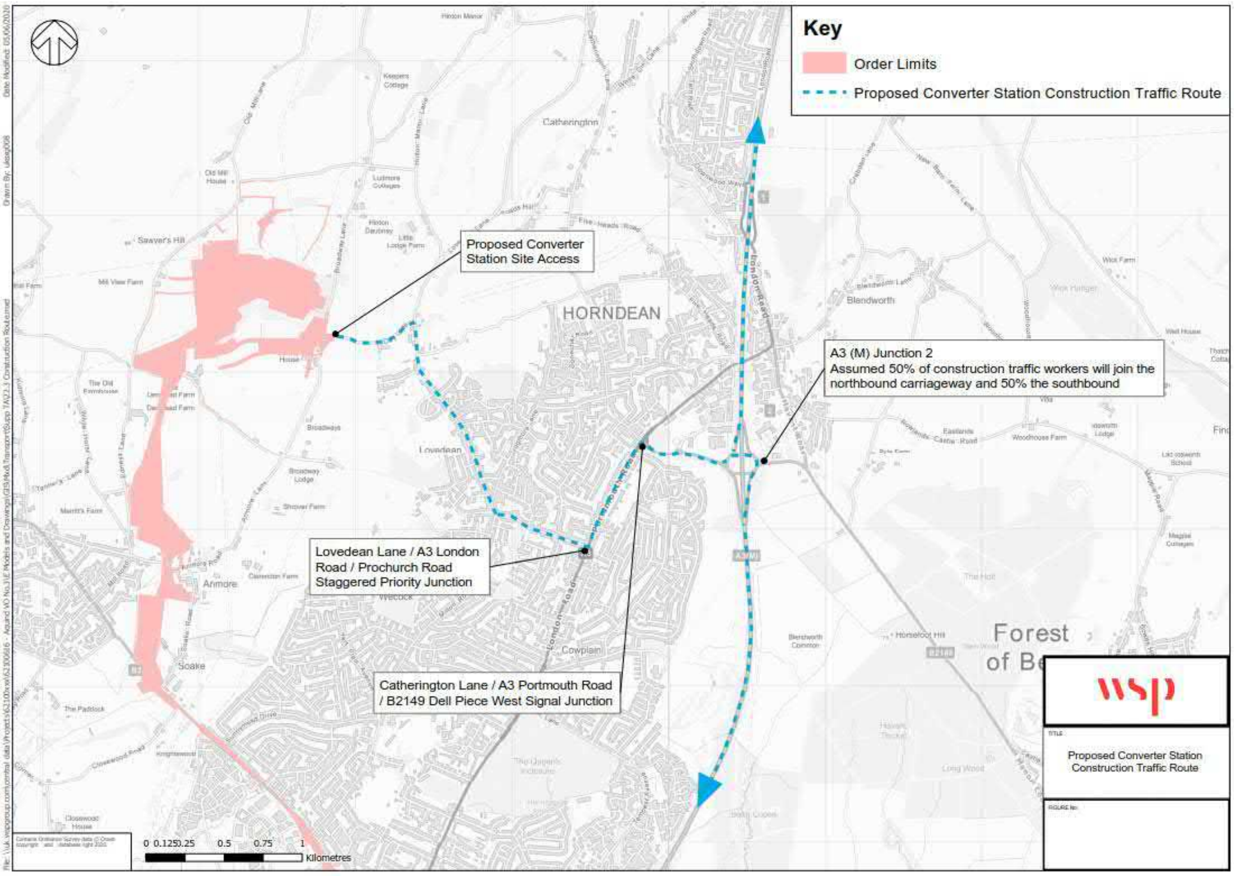

Plate 25 – Construction Traffic Route between Lovedean Converter Station and A3(M)

5.3.1.4. For the purposes of this assessment it has been assumed that upon joining the A3 (M) at Junction 2, the construction workers vehicles are divided equally with 24 vehicles joining the northbound carriageway and 24 joining the southbound carriageway.

5.3.1.5. This assessment is representative of a worst-case scenario in which construction workers travel to the Converter Station Area by car at the start of each day, whereby in reality this may not be the practice undertaken. As outlined with Section 2.4 and 4.3 of the Updated CTMP the following strategy will be employed to reduce construction worker vehicle trips made to the Converter Station Area:

- A shuttle bus service will be operated by the Contractor between the Converter Station Area and nearby locations to reduce the requirement for construction workers to travel to site by private vehicle. The operation of this shuttle bus will be kept under review during the construction period but at this stage it is assumed that it would provide pick-up and drop-off to the following locations:
    - Havant Railway Station (which provides links from London, Chichester, Portsmouth and Southampton);
    - Waterlooville town centre (which acts as a terminus for a number of local bus routes); and
    - Local hotels used for accommodation by construction workers.
- Provision will be made to allow construction workers working on the Onshore Cable Route to travel directly from hotel accommodation to the site via construction LGVs.

5.3.1.6. It should also be noted that in addition to the two junctions included in this section, these construction traffic movements have been included in the assessment of the traffic signal junction of Dell Piece West / A3 Portsmouth Road / Catherington Lane included in Section 4.2 of this STA, as this junction also falls within the proposed construction traffic routing.

5.3.1.7. For the signal-controlled junction of Dell Piece West / A3 Portsmouth Road / Catherington Lane, LinSig modelling software was used, and the results from this assessment can be interpreted using the guidance set out in Section 4.2 of this STA.

5.3.1.8. For the junction of Lovedean Lane / A3 London Road / Prochurch Road and Junction 2 of the A3 (M), industry standard priority junction modelling software Junction 9 was utilised. Junctions 9 was developed by Transport Research Laboratory and ARCADY and PICADY computer modelling software modules which assesses the traffic capacity, queues and delays at roundabouts and priority junctions.

Interpreting Junctions 9 outputs

5.3.1.9. The results of the roundabout and priority junction assessments are expressed in terms of the predicted Ratio of Flow to Capacity (RFC) for each arm of the junction. The RFC provides a numerical indication of the likely performance of a junction. Volume 6 Section 2 of Design Manual for Roads and Bridges (Highways England) previously contained the document TA23/81 Junctions and Access: Determination of Size of Roundabouts and Major/Minor Priority Junctions, which provides advice on the interpretation of RFC values. The document states that if any arm has an RFC ratio of 85% (0.85) queuing will theoretically be avoided in five out of six cases. Therefore, an RFC below 0.85 is regarded as demonstrating that the junction would work satisfactorily with minimal delay to vehicular traffic. RFC values over 1.0 indicate that the junction is over design capacity and significant delays are likely to result on at least one arm of the junction. The DMRB was updated in 2020; TA 23/81 has now been replaced by CD 116 "*Geometric design of roundabouts*". CD 116 does not contain any references to the interpretation of RFC values; however, the above extract from TA 23/81 is still considered relevant as in practice, highway authorities will give regard to RFC values when considering the implications of development traffic on operation of both roundabouts and priority junctions.

5.3.1.10. The junction assessments for roundabouts and priority junctions also produce an estimate of the maximum queue lengths for each arm. Queue lengths are expressed in the number of vehicles or PCUs. Total Delay experienced by a vehicle at the junction is reported in seconds.

5.3.2. LOVEDEAN LANE / A3 LONDON ROAD / PROCHURCH ROAD STAGGERED PRIORITY JUNCTION

5.3.2.1. The results of the 2026 DM scenario at this junction in the PM peak are included in Table 27, and the results of the DS1 and DS2 scenarios, which include the additional construction traffic, in Table 28 and Table 29 respectively.

Table 27 - 2026 DM PM Peak Lovedean Lane / A3 London Road / Prochurch Road

	RFC	Queue PCU	Delay (s)
Prochurch Road	0.00	0	0
London Road (North) right turn	0.07	1	7
Lovedean Lane (left turn)	0.13	1	8
Lovedean Lane (right turn)	0.16	1	15
London Road (S) right turn	0.00	0	0

Table 28 -2026 DS1 PM Peak Lovedean Lane / A3 London Road / Prochurch Road with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Prochurch Road	0.00	0	0
London Road (North) right turn	0.03	0	7
Lovedean Lane (left turn)	0.22	1	10
Lovedean Lane (right turn)	0.30	1	17
London Road (S) right turn	0.00	0	0

Table 29 -2026 DS2 PM Peak Lovedean Lane / A3 London Road / Prochurch Road with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Prochurch Road	0.00	0	0
London Road (North) right turn	0.03	0	7
Lovedean Lane (left turn)	0.23	1	10
Lovedean Lane (right turn)	0.30	1	17
London Road (S) right turn	0.00	0	0

5.3.2.2. The results of these assessments demonstrate that the additional construction traffic travelling through this junction in the PM peak does not prevent it from operating within its theoretical capacity in either DS scenario.

5.3.3. DELL PIECE WEST / A3 PORTSMOUTH ROAD / CATHERINGTON LANE JUNCTIONS

5.3.3.1. The turning count for this junction assessment have been taken directly from the SRTM outputs and have been modelled in the PM peak with the addition of the movements associated with construction which are anticipated to travel through this junction in this time period.

5.3.3.2. The results of this junction with the inclusion of additional construction traffic from DS1 and DS2 are included in Table 30 and Table 31.

Table 30 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS1 Modelling Results with addition of Construction Traffic

Do Something 1		**PM Peak 17:00-18:00**		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	108%	46	196
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	99%	22	120
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	92%	15	90
2/3	A3 Portsmouth Road South Right Turn	91%	15	87
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	108%	60	196
6/1	A3 Portsmouth Road North Left Turn	17%	3	38
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	78%	5	85
Overall		PRC: -19.0% Cycle Time: 120s		

Table 31 - Dell Piece West / A3 Portsmouth Road / Catherington Lane DS2 Modelling Results with addition of Construction Traffic

Do Something 2		PM Peak 17:00-18:00		
Lane	Approach	DoS (%)	MMQ (PCU)	Av. Delay (s)
1/1	B2149 Dell Piece West Left Turn	108%	46	196
1/2 + 1/3	B2149 Dell Piece West Ahead + Right Turn	99%	22	120
2/1 + 2/2	A3 Portsmouth Road South Ahead + Left Turn	92%	15	91
2/3	A3 Portsmouth Road South Right Turn	90%	15	86
4/1 + 4/2	Catherington Lane Left + Ahead + Right Turn	107%	59	196
6/1	A3 Portsmouth Road North Left Turn	17%	3	38
6/2	A3 Portsmouth Road Bus Lane Ahead	0%	0	0
6/3 + 6/4	A3 Portsmouth Road North Ahead + Right Turn	77%	5	85
Overall		PRC: -18.9% Cycle Time: 120s		

5.3.3.3. The modelling results in Table 30 and Table 31 forecast a minor adverse impact on the operation of the signal junction in both DS1 and DS2 scenarios. The approach from the A3 Portsmouth Road South Right turn forecasts 16 seconds increase in delay with the mean maximum queue extending by three PCUs in both scenarios due to the increase in construction vehicles. The queue on Dell Piece West will extend through the upstream Lakesmere Road roundabout, which provides access to Morrisons Supermarket and Horndean Interchange Industrial Estate, although noting that this is also expected to occur in the DS1 and DS2 scenarios without the addition of construction traffic movements.

5.3.4. A3 (M) JUNCTION 2

5.3.4.1. The turning counts for this junction assessment have been taken directly from the SRTM outputs and have been modelled in the PM peak with the addition of the movements associated with construction which are anticipated to travel through this junction in this time period.

5.3.4.2. The assessment included in this section should be taken to supersede that which was included for the DS1 and DS2 PM peak at this junction in Table 106 and Table 107 in Section 1.12.4 of the TA. The DM flows have not been altered from those included in the submitted TA and the outputs for this scenario are reproduced below; however, these should now be compared to the now updated DS scenarios which include additional construction traffic in the PM peak.

5.3.4.3. The 2026 DM results can be seen in Table 32 below, the results for DS1 in Table 33 and DS2 in Table 34.

Table 32 - 2026 DM PM peak A3 (M) Junction 2

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.40	1	4
A3 (M) south	0.89	8	24
B2149 Dell Piece West	0.61	2	4
A3 (M) north	0.93	12	28

5.3.4.4. The results for the DM demonstrate that the junction operates approaching its theoretical capacity on the two A3 (M) arm in the PM peak with, the longest queue being of 12 PCU and the maximum delay being of 28 seconds.

Table 33 -2026 DS1 PM peak A3 (M) Junction 2 with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.44	1	5
A3 (M) south	0.98	21	57
B2149 Dell Piece West	0.58	2	4
A3 (M) north	0.93	13	30

5.3.4.5. The results of the DS1 assessment, much like those for the DM show both of the A3 (M) arms to be approaching capacity, with both Dell Piece East and B2149 Dell Piece West being able to operate well within their theoretical capacities. This is an increase of a maximum of two additional queueing PCU in comparison to the results presented in the PM peak in DS1 in Table 106 of the submitted TA

Table 34 -2026 DS2 PM peak A3 (M) Junction 2 with addition of Construction Traffic

	RFC	Queue PCU	Delay (s)
Dell Piece East	0.44	1	5
A3 (M) south	0.98	21	56
B2149 Dell Piece West	0.58	2	4
A3 (M) north	0.93	13	31

5.3.4.6. The results of the DS2 assessment, again much like those for the DM and DS1 show both of the A3 (M) arms to be approaching capacity, with both Dell Piece East and B2149 Dell Piece West being able to operate well within their theoretical capacities. This is an increase of a maximum of two additional queueing PCU in comparison to the results presented in the PM peak in DS2 in Table 107 of the submitted TA.

5.3.4.7. Also, as noted in paragraph 5.2.4.8, the 2026 SRTM DM, DS1 and DS2 scenarios include as a committed development the 800-unit residential development at Land East of Horndean (Planning Application Ref: 55562/005) located to the east of the A3(M) Junction 2. In relation to this junction, the SRTM does not however include the proposed traffic signalisation of the A3(M) Junction 2 roundabout that acts as mitigation to the 800-unit committed scheme. These results should therefore be viewed as a worst-case assessment, where a far greater level of traffic has been modelled to use the A3(M) Junction 2 than will be experienced in reality during construction of the Onshore Cable Route. Therefore, in practice this is very much a worst-case; which is unlikely to occur in reality.

5.4. EASTERN ROAD ASSESSMENT

5.4.1.1. This section considers the A2030 Eastern Road and specifically PCC's Relevant Representation: RR-185) which in response to the proposals stated that:

> *"The traffic modelling has been carried out in line with the scoping note previously submitted to and agreed by the LHA. In line with this approach, the Applicant has attempted to replicate a "worst case" scenario. However, the modelling does not cover a possible cable route along the A2030 between Tangier Road and Eastern Avenue nor does it account for cumulative residual impacts of traffic merging to pass-by works or diverting away from works. It is noted that SRTM does make an assumption as to the redirection of traffic however it does not accurately predict vehicle movements at a microscopic level and as a consequence, the overall impacts of the works are likely to be greater/wider than anticipated."*

5.4.1.2. This concerns raised by PCC are addressed in detail within the "Eastern Road Traffic Assessment Technical Note" (ERTN01) included in Appendix E of this STA, which addresses the following key topics:

- An explanation of the methodology used in the Transport Assessment (APP-448), which assesses the impact of construction works on the A2030 Eastern Road. This includes details of how this methodology was agreed with PCC during the pre-application phase, how the Transport Assessment has robustly assessed the cumulative impact of traffic redistribution across the wider network and confirms that it is not necessary to undertake a microscopic assessment of the overall impacts of the works upon the Highway Network.

- An analysis of baseline traffic data for the A2030 Eastern Road. This is additional analysis to that contained within the Transport Assessment and has been completed to highlight that in the context of existing traffic flows, the Sub-Regional Transport Model (SRTM) analysis of traffic management on the A2030 Eastern Road is robust.
- A summary of data derived from the SRTM to show that the traffic management assessed on the A2030 Eastern Road results in a robust assessment of temporary impacts, on the A2030 Eastern Road itself and across the wider highway network.
- At the request of PCC, an assessment of traffic management being located on the A2030 Eastern Road between Tangier Road and Eastern Avenue. This has been completed to provide a comparison of impacts identified within the Transport Assessment.

5.4.1.3. A summary of these key points is provided below for reference.

5.4.2. METHODOLOGY AND SCOPE OF ASSESSMENT

5.4.2.1. The TA (APP-448) used a combination of the SRTM and localised junction assessments to fully assess the cumulative temporary impacts relating to construction of the Onshore Cable Route. The scope of the TA was agreed with PCC and HCC prior to the assessment being carried out, as is set out in the agreed TA Scoping Note (Appendix A of TA). As is set out in paragraph 2.9.2 of the TA Scoping Note (APP-448), the macroscopic modelling undertaken using the SRTM assessed the temporary impacts of construction activities on traffic flows across the highway network as a result of traffic redistribution. This strategic modelling was supplemented by additional local junction capacity models where appropriate to assess the implications of the SRTM modelling and temporary impacts of the proposed construction works at an individual junction / traffic management location level.

5.4.2.2. As with the TA Scoping Note, the SRTM Coding Note (APP-448) was also agreed with PCC and HCC prior to the running of the model. The SRTM coding approach, as is stated in paragraph 1.10.3.4 of the TA, included six traffic management locations at various points on the Onshore Cable Corridor. The six traffic management locations agreed are reflective of the maximum number of six construction gangs that may be in place on the highway in connection with the construction of the Onshore Cable Route at any one time. Further to this, and to assess the implications of the SRTM modelling, the requirements for local junction capacity assessments were agreed with PCC and as set-out and agreed within the TA Scoping Note and upon initial review of the SRTM outputs.

5.4.2.3. The Applicant maintains the position that the methodology agreed with PCC and HCC and which is clearly set within the TA Scoping Note, is sufficiently robust to assess the cumulative residual temporary impacts of the proposals.

5.4.3. OBSERVED TRAFFIC FLOWS

5.4.3.1. A review has been completed of observed traffic flow data collected via traffic surveys on A2030 Eastern Road to demonstrate why it was appropriate to model the temporary impacts of a single lane closure on the A2030 between Burrfields Road and Airport Service Road rather than on the link between Tangier Road and Eastern Avenue, and in turn confirm that a robust assessment of the potential impacts has been carried out.

5.4.3.2. This review has highlighted that where the capacity of the A2030 Eastern Road carriageway is most impacted by the construction works, the observed traffic flows and volume to capacity ratios on A2030 Eastern Road within the Order Limits are consistently higher on the section between Airport Service Road and Burrfields Road than those which have been recorded further south. Therefore the Applicant maintains the position that the modelled scenario, with traffic management between the junctions with Airport Service Road and Burrfields Road, is robust for the purpose of determining the impacts of traffic management along Eastern Road past Milton Common.

5.4.4. FURTHER ANALYSIS OF SRTM OUTPUTS

5.4.4.1. In addition to an analysis of observed traffic survey data, further analysis of the SRTM outputs has been completed in addition to that completed within the TA which demonstrates how the SRTM robustly estimates the temporary impacts of construction works on the A2030 Eastern Road and the consequential redistribution of traffic across the wider highway network. This has been completed by reporting how the modelled traffic management lanes closures temporarily impacts link speeds and journey times, decreases traffic flow and leads to a redistribution of traffic across the wider highway network.

5.4.4.2. A summary of the temporary impacts of the modelled traffic management single lane closures on traffic flows on their respective carriageways is as follows:

- DS1 (Southbound closure): Maximum decrease in traffic of 295 vehicles (18%) on southbound carriageway between Airport Service Road and Burrfields Road in the AM peak and 699 vehicles (31%) in the PM peak; and
- DS2 (Northbound closure): Maximum decrease in traffic of 417 vehicles (25%) on northbound carriageway between Airport Service Road and Burrfields Road in the AM peak and 299 vehicles (20%) in the PM peak.

5.4.4.3. This section has also summarised, as a result of the above, how the cumulative impacts of traffic redistribution have been considered across the wider highway network, with 20 links within Portsea Island identified as meeting the following criteria as a result of construction works:

- The percentage change in traffic flow on a link increased by 10% or more;
- The increase in hourly vehicle numbers was greater than 60 (one per minute); and
- The volume to capacity ratio increased by 10%.

5.4.4.4. This has shown, for example, the increases in traffic flows on Winston Churchill Avenue, Elm Grove, Derby Road, Gladys Avenue, Southsea Terrace and Torrington Road that highlight the east to west redistribution of traffic across the city, with the M275 as the western strategic corridor to / from Portsea Island experiencing an expected increase in traffic flow as a result of the construction works.

5.4.4.5. Further to this, it should again be noted that the TA has included a detailed analysis of these temporary impacts, based on an agreed scope of assessment, through the completion of local junction capacity assessments and link assessments where appropriate.

5.4.4.6. The Applicant therefore maintains the position that the local junction capacity and link-based assessments undertaken in the TA, using the SRTM traffic flows which account for the redistribution of traffic, robustly assess the temporary impacts on the wider highway network in the assessed scenarios.

5.4.5. SUPPLEMENTARY CAPACITY ASSESSMENT OF A2030 EASTERN ROAD

5.4.5.1. Further to PCCs Relevant Representation and discussion relating to this at a subsequent meeting held on 12/03/20, a supplementary assessment has been completed of temporary impacts of traffic management required to facilitate construction of the Onshore Cable Route on the A2030 Eastern Road adjacent to Milton Common.

5.4.5.2. These assessments which are additional to the agreed scope of the TA, have been completed specifically to provide a comparison against the submitted material and include:

- an assessment of the A2030 Eastern Road / Tangier Road traffic signal junction using the industry standard traffic signal junction modelling software LinSig. This additional assessment uses modelling inputs which separately simulate a single lane closure in each direction as a result of traffic management through the junction.

5.4.5.3. The assessment of the A2030 Eastern Road / Tangier Road traffic signal junction has shown that the junction operates over theoretical capacity in either the AM or PM peak as a result of the TM lanes closures. This is expected as the junction is designed to serve the current level of traffic.

5.4.5.4. In the DS1 (southbound) scenario it is noted that the delays experienced in the southbound direction in the PM peak hour, where the junction is predicted to operate over capacity, are not uncommon for PM peak hour conditions along the A2030 Eastern Road. The driver experience is therefore likely to be similar to the existing conditions where some degree of traffic congestion is present along much of the A2030 Eastern Road southbound carriageway.

5.4.5.5. In the DS2 scenario in the AM peak, the LinSig modelling shows the junction operating over capacity and an increase in delay and queues in comparison with the DM scenario of the A2030 Eastern Road northbound approach. These queues, however, can be accommodated without having a detrimental impact on the wider highway network. In a similar nature to the southbound direction, these queues will partly form a relocation of existing traffic congestion further upstream and therefore the driver experience across the whole of the A2030 Eastern Road route is likely to remain similar.

5.4.5.6. Overall, the further assessment undertaken of the impacts of traffic management at the A2030 Eastern Road / Tangier Road traffic signal junction provide similar results to those reported by the SRTM where traffic management was located between Airport Service Road and Burrfields Road. This again highlights that the assessment of the A2030 Eastern Road completed in the TA and using the SRTM is robust and representative.

5.4.6. CONCLUSION

5.4.6.1. The evidence presented in the Technical Note ERTN01 supports the Applicant's position that the SRTM modelling undertaken and assessments included within the TA is reflective of a robust scenario.

5.5. JUNCTION AND SHUTTLE WORKING SENSITIVITY TESTING

5.5.1.1. This section contains traffic modelling sensitivity tests of locations modelled within Section 1.10.3 of the TA where temporary traffic management is proposed to facilitate the construction of the Onshore Cable Route. The locations of the proposed traffic management which are assessed are as follows:

- 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 south of Forest End roundabout;
- Shuttle working traffic signals on the A3 London Road north of Ladybridge roundabout;
- Temporary traffic signal operation of the A3 London Road / Ladybridge roundabout;
- Shuttle working traffic signals on the A3 London Road south of Ladybridge roundabout;
- Shuttle working traffic signals on Portsdown Hill Road;
- Shuttle working traffic signals on Farlington Avenue (north of Sea View Road);
- Single lane closure on Havant Road between Farlington Avenue and the A2030 Eastern Road;
- Shuttle working traffic signals on Moorings Way; and
- Shuttle working traffic signals on Henderson Road between Bransbury Road and Fort Cumberland Road.

5.5.1.2. The sensitivity tests included within this section are complimentary to the assessments which were included in the TA. In Section 1.10.3 of the TA, the traffic management locations were assessed using both DS1 and DS2 traffic flows generated by the SRTM.

5.5.1.3. The approach used in this sensitivity test is intended to reflect a scenario that incorporates a lower level of traffic redistribution away from the Onshore Cable Route. It therefore represents an extremely robust assessment when compared to the level of redistribution and associated traffic flows of DS1 and DS2 scenarios that were generated by the SRTM.

5.5.2. ASSESSMENT METHODOLOGY

5.5.2.1. To generate traffic flows for the sensitivity tests at traffic management locations a combination of the 2026 DM, DS1 & DS2 traffic flows have been derived from the SRTM. For the sensitivity test, the percentage change between the DM and DS traffic flows has been calculated and then half of this percentage change has been subtracted from the DM traffic flows. The methodology has been detailed in the steps below:

- Calculate the percentage change between the DM and DS1 & DS2 traffic flows.
- Review the percentage change difference between DM-DS1 and DM-DS2 traffic flows. If the change is greater than a 5% threshold, then individual DM-DS1 and

DM-DS2 traffic flows will be calculated. If the change is less than a 5% threshold, then an average between the percentage changes of DM-DS1 and DM-DS2 should be calculated (which forms a DM-DS percentage change). This 5% threshold is considered to be reasonable based on professional judgement, as it is unnecessary to determine individual differences for a sensitivity test where the overall difference is minor.

- The DM-DS percentage change is then reduced by 50% (halved).
- The halved DM-DS percentage change is subtracted from the DM traffic flows.
- The resulting traffic flows are submitted into the LinSig model.

5.5.2.2. An example of this methodology has been set out in below in Plate 26.

	Initial Flows											
	DM Traffic Flows				**DS1 Traffic Flows**				**DS2 Traffic Flows**			
AM		**A**	**B**	**Tot**		**A**	**B**	**Tot**		**A**	**B**	**Tot**
	A		833	833	A	0	719	719	A	0	719	719
	B	676		676	B	533	0	533	B	534	0	534
	Tot	676	833	1509	Tot	533	719	1252	Tot	534	719	1253
PM		**A**	**B**	**Tot**		**A**	**B**	**Tot**		**A**	**B**	**Tot**
	A		851	851	A	0	660	660	A	0	659	659
	B	926		926	B	671	0	671	B	674	0	674
	Tot	926	851	1777	Tot	671	660	1331	Tot	674	659	1333

	Step 1 - Calculate % Change							
	DM - DS1				**DM - DS2**			
AM		**A**	**B**	**Tot**		**A**	**B**	**Tot**
	A		16%		**A**		16%	
	B	27%			**B**	27%		
	Tot				**Tot**			
PM		**A**	**B**	**Tot**		**A**	**B**	**Tot**

	A		29%		A		29%	
	B	38%			B	37%		
	Tot				Tot			

Step 2 - Review Difference

When the percentage change between DM-DS1 and DM-DS2 is greater 5% then separate DM1 and DM2 average flows should be used. When the percentage difference is less than 5% then average of the two can be used (As used in this example I.E. 16% & 16%, 27% & 27%, 29% & 29%, 38% & 37%)

Step 3 - Half the average % change

AM		A	B	Tot
	A		8%	
	B	13%		
	Tot			
PM		A	B	Tot
	A		15%	
	B	19%		
	Tot			

Step 4 - Subtract the halved % change from the DM Flows

AM		A	B	Tot
	A		767	
	B	586		
	Tot			
PM		A	B	Tot
	A		727	

	B	751		
	Tot			

Plate 26 - Sensitivity Test Traffic Flow Calculation Methodology

5.5.2.3. The use of this methodology has resulted in the traffic flows shown in Table 35 and Table 36 being used within the sensitivity tests.

Table 35 - Traffic Management Sensitivity Tests AM Peak Traffic Flows

Road / TM Location	Direction	SRTM Traffic Flows			Sensitivity Test Traffic Flows
		DM	DS1	DS2	
B2150 Hambledon Road Shuttle Working Traffic Signals					
B2150 Hambledon Road	NB	833	719	719	776
	SB	676	533	534	605
B2150 Hambledon Road / Maurepas Way Traffic Signals					
B2150 Hambledon Road (North)	EB /SB / WB	975	735	741	857
A3 Maurepas Way (East)	NB / WB /SB	1142	788	784	964
A3 Maurepas Way (South)	NB / WB / EB	772	473	470	621
Houghton Avenue (West)	NB / EB /SB	156	0	0	78
A3 London Road at Forest End Shuttle Working Traffic Signals					
A3 London Road	NB	908	596	592	751
	SB	767	428	439	600
A3 London Road North of Ladybridge Roundabout Shuttle Working Traffic Signals					
A3 London Road	NB	842	451	448	646
	SB	1085	607	620	849
A3 London Road / Ladybridge Roundabout Shuttle Working Traffic Signals					

A3 London Road (North)	EB / SB / WB	1085	607	620	851
Ladybridge Road	NB / SB / WB	340	99	99	222
A3 London Road (South)	NB / EB / WB	864	538	533	704
Marrels Wood Gardens	NB / EB / SB	76	0	0	76
A3 London Road South of Ladybridge Roundabout Shuttle Working Traffic Signals					
A3 London Road	NB	864	537	533	700
	SB	916	564	577	743
B2177 Portsdown Hill Road Shuttle Working Traffic Signals					
Portsdown Hill Road	WB	1155	579	575	866
	EB	600	519	529	562
Farlington Avenue Shuttle Working Traffic Signals					
Farlington Avenue	NB	194	205	204	199
	SB	117	76	76	97
Farlington Avenue / Havant Road / A2030 Eastern Road Traffic Signals					
Havant Road (East)	WB / SB / NB	708	815	825	764
A2030 Eastern Road	NB / EB / WB	255	115	118	186
Havant Road (West)	NB / EB / SB	755	856	853	805
Farlington Avenue	WB / EB / SB	292	45	45	169
Moorings Way Shuttle Working Traffic Signals					
Moorings Way	WB	192	192	192	192
	EB	131	131	131	131
Locksway Road Shuttle Working Traffic Signals					
Locksway Road	WB	6	17	17	11
	EB	6	13	13	9
Bransbury Road Shuttle Working Traffic Signals					

Bransbury Road / Henderson Road	WB	303	266	262	283
	EB	147	137	137	142

*Full DM flows have been retained both to and from Marrells Wood Gardens as this arm is a cul-de-sac and thus access to residents must be maintained at current level in DS scenarios

Table 36 - Traffic Management Sensitivity Tests PM Peak Traffic Flows

Road / TM Location	Direction	SRTM Traffic Flows			Sensitivity Test Traffic Flows
		DM	DS1	DS2	
B2150 Hambledon Road Shuttle Working Traffic Signals					
B2150 Hambledon Road	NB	851	660	659	755
	SB	926	671	674	799
B2150 Hambledon Road / Maurepas Way Traffic Signals					
B2150 Hambledon Road (North)	EB /SB / WB	1290	868	868	1079
A3 Maurepas Way (East)	NB / WB /SB	1291	730	729	1010
A3 Maurepas Way (South)	NB / WB / EB	854	533	530	693
Houghton Avenue (West)	NB / EB /SB	55	0	0	28
A3 London Road at Forest End Shuttle Working Traffic Signals					
A3 London Road	NB	812	521	513	665
	SB	852	598	602	726
A3 London Road North of Ladybridge Roundabout Shuttle Working Traffic Signals					
A3 London Road	NB	969	562	559	765
	SB	947	514	514	730
A3 London Road / Ladybridge Roundabout Shuttle Working Traffic Signals					
A3 London Road (North)	EB / SB / WB	947	514	514	735
Ladybridge Road	NB / SB / WB	431	143	157	302

A3 London Road (South)	NB / EB / WB	988	605	596	811
Marrels Wood Gardens	NB / EB / SB	27	0	0	27
A3 London Road South of Ladybridge Roundabout Shuttle Working Traffic Signals					
A3 London Road	NB	988	604	596	794
	SB	890	549	558	722
B2177 Portsdown Hill Road Shuttle Working Traffic Signals					
Portsdown Hill Road	WB	1100	555	557	828
	EB	767	699	699	733
Farlington Avenue Shuttle Working Traffic Signals					
Farlington Avenue	NB	221	264	238	236
	SB	160	130	135	146
Farlington Avenue / Havant Road / A2030 Eastern Road Traffic Signals					
Havant Road (East)	WB / SB / NB	710	812	827	764
A2030 Eastern Road	NB / EB / WB	435	197	197	316
Havant Road (West)	NB / EB / SB	879	1073	1065	974
Farlington Avenue	WB / EB / SB	171	37	38	104
Moorings Way Shuttle Working Traffic Signals					
Moorings Way	WB	148	148	148	148
	EB	176	169	176	174
Locksway Road Shuttle Working Traffic Signals					
Locksway Road	WB	6	13	13	9
	EB	6	17	17	11
Bransbury Road Shuttle Working Traffic Signals					
Bransbury Road / Henderson Road	WB	179	109	107	143
	EB	246	234	238	241

*Full DM flows have been retained both to and from Marrells Wood Gardens as this arm is a cul-de-sac and thus access to residents must be maintained at current level in DS scenarios

5.5.2.4. The sensitivity test results have been displayed and analysed in the sections below. The results have been compared to the previous results for DS1 and DS2 traffic flows that were used as part of the TA for the traffic management locations.

5.5.3. SENSITIVITY TEST RESULTS

5.5.3.1. In this section, the results to the Sensitivity Test have been labelled ‘Sensitivity Test’ and the results for the previous shuttle working assessments have been labelled ‘original TA’ and their respective table number.

5.5.4. B2150 HAMBLEDON ROAD (BETWEEN SOAKE ROAD AND CLOSEWOOD ROAD)

Table 37 - B2150 Hambledon Road (150 second cycle time) – Sensitivity Test

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Northbound	92.80%	36	65	104.6%	58	176
Southbound	91.90%	29	75	103.4%	56	153
	PRC: -3.1%			PRC: -16%		

5.5.4.1. The results set out in Table 37 indicate that a moderate level of delay is expected when the B2150 Hambledon Road is subjected to temporary shuttle working traffic signals. The results show that the temporary signals are working just over theoretical capacity, and that the delays expected are just over one minute in the AM Peak and over two minutes in the PM peak. It should be noted that the junction is operating on a 150 second cycle time and most vehicles can be expected to be released during each cycle in the AM peak and every other cycle in the PM peak.

5.5.4.2. The results set out in Table 163 (DS1) & Table 164 (DS2) of the TA show that the B2150 Hambledon Road link is likely to experience maximum queues of approximately 30 PCUs and delays of just over one minute with the temporary signals in place as part of the traffic management that will be required.

5.5.4.3. When compared to Table 37, the sensitivity test results predict the average delay per PCU is 10 seconds longer in the AM peak and is 90 seconds longer in the PM.

5.5.4.4. As is stated in Table 5 of the FTMS, traffic management on this link is likely to be in place for a duration of 13 weeks per circuit.

5.5.5. B2150 HAMBLEDON ROAD / A3 MAUREPAS WAY / HOUGHTON AVENUE ROUNDABOUT

Table 38 - B2150 Hambledon Road / A3 Maurepas Way Roundabout (200 seconds Cycle Time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
B2150 Hambledon Road (left/ahead)	99.3%	27	153	100.7%	36	157
B2150 Hambledon Road (U-turn/ahead/right)	94.5%	20	153	97.5%	26	157
A3 Maurepas Way E (left)	31.9%	9	47	58.2%	18	62
A3 Maurepas Way E (right/U-turn/left/ahead)	99.5%	53	120	99.9%	47	137
A3 Maurepas Way S (ahead/left)	99.2%	25	178	101.0%	30	190
A3 Maurepas Way S (ahead/right/U-turn)	98.9%	25	176	101.2%	30	193
Houghton Avenue	52.1%	3	118	17.4%	1	107
	PRC: -10.6%			PRC: -12.4%		

5.5.5.1. The results set out in Table 38 show that the proposed temporary traffic management measures are predicted to result in the junction operating slightly over theoretical capacity. The expected delay at this junction ranges from 47 seconds to 193 seconds. The longest anticipated queue on the A3 Maurepas Way east arm comprises of 53 PCUs, equating to approximately 305m and thus may queue back onto the Maurepas Way / Hambledon Road signal-controlled junction during the AM peak hour. The predicted queues on all other arms can be accommodated on the approaches.

5.5.5.2. The modelling results set out in Table 76 (DS1) & Table 77 (DS2) of the TA show that the junction is predicted to remain operating within theoretical capacity in the DS scenarios with the temporary signals in place as part of the FTMS. It is evident that the queuing and delay at the junction will increase with this temporary arrangement in place, with the potential for queues to extend back to the Hambledon Road/A3 Maurepas Way signalised junction to the east. Significant increases in delay would be inevitable with the introduction of signals due to the inherent delay during red phases. Based on the LINSIG results showing operation within capacity, the queue would clear completely in each phase and therefore be operating effectively.

5.5.5.3. When compared to Table 38, the sensitivity test is predicting the junction to be operating slightly over theoretical capacity whereas the DS scenarios contained in the TA are predicting the junction to be operating within theoretical capacity. In both the sensitivity test and DS1 &DS2 scenarios, there is a risk that queues extend back to the Hambledon Road/A3 Maurepas Way signalised junction.

5.5.5.4. As is set out in paragraph 6.3.2.2 of the FTMS, traffic management is likely to be required at this junction for approximately one week.

5.5.6. A3 LONDON ROAD - SOUTH OF FOREST END ROUNDABOUT

Table 39 - A3 London Road south of Forest End Roundabout (120 second cycle time) – Sensitivity Test

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Northbound	96.80%	33	77	100.0%	35	109
Southbound	97.20%	28	92	99.70%	37	101
	PRC: -8.0%			PRC: -0.5%		

5.5.6.1. The modelling results show that the A3 London Road link (south of Forest End Roundabout) is predicted to operate within theoretical capacity in the AM peak and is predicted to be approaching theoretical capacity in the PM peak. It is likely to experience maximum queues of approximately 37 PCUs and delays of up to 109 seconds with the temporary shuttle working traffic signals in place as part of the traffic management that will be required. The junction is set up based on a 120-second cycle time. With an average delay of up to 101 seconds, all traffic can be expected to be released during every other cycle.

5.5.6.2. The results set out in Table 165 (DS1) & Table 166 (DS2) of the TA show that the London Road link (south of Forest End Roundabout) is likely to experience maximum queues of approximately 20 PCUs and delays of up to 50 seconds with the temporary signals in place as part of the traffic management that will be required.

5.5.6.3. When compared to Table 39, the sensitivity test results have predicted an average delay per PCU 40 seconds longer in the AM and PM peaks.

5.5.6.4. As is set out in Table 7 of the FTMS, traffic management in this location is likely to be in place for one week per circuit.

A3 London Road - North of Ladybridge Roundabout

Table 40 - A3 London Road north of Ladybridge Roundabout (120 second cycle time) – Sensitivity Test

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Northbound	107.4%	52	214	107.4%	60.1	207
Southbound	107.2%	65	196	107.2%	56.5	203
	PRC: -19.3%			PRC: -19.3%		

5.5.6.5. The modelling results show that the temporary signal operation is expected to operate within theoretical capacity in the AM Peak and slightly over theoretical capacity in the PM Peak. The A3 London Road (north of Ladybridge Roundabout) is likely to experience maximum queues of approximately 65 PCUs and delays of up to three minutes. Not all traffic will be able to pass through the junction in each cycle in the PM Peak.

5.5.6.6. The results set out in Table 167 (DS1) & Table 168 (DS2) of the TA show that the London Road link (north of Ladybridge Roundabout) is likely to experience maximum queues of approximately 19 PCUs and delays of up to 50 seconds with the temporary shuttle working traffic signals in place as part of the traffic management that will be required.

5.5.6.7. When compared to Table 40, the sensitivity test results have predicted the average delay per PCU is roughly 130 seconds longer in the AM peak and is 150 seconds longer in the PM. It should be noted that the cycle timing of 120 seconds could be changed to provide improved theoretical performance.

5.5.6.8. As is set out in Table 11 of the FTMS, traffic management in this location is likely to be in place for two weeks per circuit.

5.5.7. A3 LONDON ROAD / LADYBRIDGE ROAD (LADYBRIDGE ROUNDABOUT)

Table 41 - Ladybridge Roundabout (140 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
A3 London Road N	115.4%	98	332	114.9%	84	330
Ladybridge Road	103.0%	15	218	107.1%	20	230
A3 London Road S	116.7%	85	350	117.5%	100	357
Marrels Wood Gardens	76.4%	5	134	27.5%	2	89
	PRC: -29.6%			PRC: -30.6%		
	PRC: -29.6%			PRC: -30.6%		

5.5.7.1. The results set out in Table 41 show that the junction is predicted to operate over theoretical capacity in both the AM and PM Peaks. The delay on London Road north is expected to be 6 minutes and a maximum queue of 98 vehicles (roughly 600m). This queue would block a few junctions that serve residential areas however would not block a major junction. The predicted maximum queue of 20 vehicles (roughly 120m) on Ladybridge Road will not cause any disruption to the operation of the network, and the max predicted queue of 100 vehicles on London Road south (roughly 600m) will not block any major junctions.

5.5.7.2. The modelling results set out in Table 82 (DS1) & Table 83 (DS2) of the TA show that the junction is predicted to operate within theoretical capacity in the DS with temporary signals in place. The improvements to the operation of the junction in the DS scenarios are most likely due to a reduction in traffic flow at the junction as a result of some traffic being redistributed away from the Onshore Cable Corridor.

5.5.7.3. The modelling undertaken in these sensitivity tests also assumes continued access to residents of Marrells Wood Gardens and thus the DM flows travelling to and from this arm have been retained in their entirety.

5.5.7.4. When compared to Table 41, the sensitivity test results show that there is a difference in delays and queues between the sensitivity test and DS1 and DS2 scenarios. However, the sensitivity test has assumed a smaller number of trips will have redistributed in comparison with the DS1 & DS2 scenarios modelled in the SRTM. In reality, during the periods of lane closures, traffic is likely to disseminate across the network following identification of alternative routes to avoid the temporary signals.

5.5.7.5. As is set out in Table 11 of the FTMS, traffic management in this location is likely to be in place for two weeks per circuit.

5.5.8. A3 LONDON ROAD (SOUTH OF LADYBRIDGE ROUNDABOUT)

Table 42 - A3 London Road south of Ladybridge Roundabout (120 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Northbound	102.80%	43	143	109.0%	68	231
Southbound	104.3%	49	158	108.6%	60	224
	PRC: -15.9%			PRC: -21.1%		

5.5.8.1. The results set out in Table 42 show that the junction is predicted to be approaching theoretical capacity in the AM Peak and operating over theoretical capacity in the PM Peak and that a moderate level of delay is expected when subjected to temporary shuttle working traffic signals. The delays experienced are roughly over two minutes in the AM Peak and over three minutes in the PM peak. Most vehicles can be expected to be released during every other cycle.

5.5.8.2. The results in in Table 169 (DS1) & Table 170 (DS2) of the TA show that the London Road link (south of Ladybridge Roundabout) is likely to experience maximum queues of approximately 21 PCUs and delays of up to 51 seconds with the temporary shuttle working traffic signals in place as part of the traffic management that will be required.

5.5.8.3. When compared to Table 42, the sensitivity test results predict the average delay per PCU is 100 seconds longer in the AM peak and is 120 seconds longer in the PM. It should be noted that the cycle timing of 120 seconds could be changed to provide improved theoretical performance.

5.5.8.4. As is set out in Table 12 of the FTMS, traffic management in this location is likely to be in place for one week per circuit.

5.5.9. PORTSDOWN HILL ROAD

Table 43 - Portsdown Hill Road (140 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Westbound	98.20%	44	84	107.0%	69	207
Eastbound	96.30%	29	97	105.90%	57	191
	PRC: -9.1%			PRC: -18.9%		

5.5.9.1. The results set out in Table 43 indicate that the junction will be operating within theoretical capacity in the AM Peak and will be approaching theoretical capacity in the PM Peak. The average delay is approximately 97 seconds in the AM Peak and roughly 3 minutes in the PM peak. The junction is operating on a 140 second cycle time so all vehicles can be expected to be released during every other cycle.

5.5.9.2. The results in in Table 171 (DS1) & Table 172 (DS2) of the TA show that Portsdown Hill Road link is likely to experience maximum queues of approximately 27 PCUs and delays of one minute with the temporary signals in place as part of the traffic management that will be required. The junction is set up based on a 140-second cycle time. With delay of up to 60 seconds, all traffic can be expected to be released within each cycle.

5.5.9.3. When compared to Table 43, the sensitivity test results predict the average delay per PCU is 30 seconds longer in the AM peak and is two minutes longer in the PM. The cycle timing of 140 seconds could be changed to provide improved theoretical performance.

5.5.9.4. As is set out in Table 16 of the FTMS, traffic management in this location is likely to be in place for six weeks per circuit.

5.5.10. FARLINGTON AVENUE – NORTH OF SEA ROAD

Table 44 - Farlington Avenue (120 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Northbound	20.60%	4	19	26.90%	5	23
Southbound	19.90%	2	43	27.40%	4	39
	PRC: 322.5%			PRC: 226.1%		

5.5.10.1. The results set out in Table 44 show that the temporary signals will be operating within theoretical capacity and that a moderate level of delay is expected. The average delay is 19-43 seconds in the AM Peak and between 23-39 seconds in the PM peak. The junction is set up based on a 120-second cycle time. With delay of up to 43 seconds, all traffic can be expected to be released within each cycle.

5.5.10.2. The results set out in Table 173 (DS1) & Table 174 (DS2) of the TA show that the Farlington Avenue (north of Sea View Road) link is likely to experience maximum queues of approximately 5 PCUs and delays of 46 seconds with the temporary signals in place as part of the traffic management that will be required. The junction is set up based on a 120-second cycle time. With delay of up to 46 seconds, all traffic can be expected to be released within each cycle.

5.5.10.3. When compared to Table 44, it can be seen that there is very little difference in delays and queues between the sensitivity test and DS1 and DS2 scenarios.

5.5.10.4. As is set out in Table 17 of the FTMS, traffic management in this location is likely to be in place for seven weeks per circuit.

5.5.11. HAVANT ROAD BETWEEN FARLINGTON AVENUE AND THE A2030 EASTERN ROAD

Table 45 - Farlington Avenue / Havant Road / A2030 Eastern Road (120 cycle time) - Sensitivity test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue	Av. Delay per PCU (s/pcu)
J1 Farlington Avenue / Havant Road						
Havant Road WB (internal) (ahead)	38.0%	6	6	36.9%	1	2
Havant Road WB (internal) (right)	28.1%	3	46	63.0%	5	86
Havant Road W (left/ahead)	58.1%	12	10	64.6%	13	7
Farlington Avenue (left)	58.4%	6	60	62.7%	4	81
J2 A2030 Eastern Road / Havant Road						
Havant Road (ahead/left)	54.1%	10	12	58.3%	12	15
Eastern Road (left)	16.5%	2	39	22.5%	3	35
Eastern Road (right)	54.9%	4	70	63.1%	7	61
Havant Road EB (internal) (ahead)	49.2%	7	5	58.4%	9	8
Havant Road EB (internal) (right)	48.8%	3	61	48.9%	3	79
	PRC: 54.0%			PRC: 39.4%		

5.5.11.1. The results set out in Table 45 demonstrate that all arms of the junction are able to operate within theoretical capacity and the predicted queues are not likely to block any other junctions on the local highway network.

5.5.11.2. The modelling results set out in Table 85(DS1) & Table 86 (DS2) of the TA also show the junction to be operating within theoretical capacity in all assessed scenarios.

5.5.11.3. As is set out in paragraph 7.8.2.1 of the FTMS, traffic management in this location is likely to be in place for two weeks per circuit.

5.5.12. MOORINGS WAY

Table 46 - Moorings Way (120 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)
Westbound	23.30%	4	24	23.40%	4	33
Eastbound	23.00%	3	36	22.90%	4	27
	PRC: 285.9%			PRC: 285.1%		

5.5.12.1. The results set out in Table 46 indicate that the temporary signals will be operating within theoretical capacity and a moderate level of delay is expected. The average delay is 24-36 seconds in the AM Peak and between 27-33 seconds in the PM peak. The junction is set up based on a 120-second cycle time. With delay of up to 36 seconds, all traffic can be expected to be released within each cycle.

5.5.12.2. The modelling results set out in Table 175 (DS1) & Table 176 (DS2) of the TA show that the Moorings Way link is likely to experience maximum queues of approximately 4 PCUs and delays of 36 seconds with the temporary signals in place as part of the traffic management that will be required. When compared to Table 46, there is very little difference in delays and queues between the sensitivity test and DS1 and DS2 scenarios.

5.5.12.3. As is set out in Table 27 and Table 28 of the FTMS, traffic management in this location is likely to be in place for a total duration of eight weeks per circuit.

5.5.13. LOCKSWAY ROAD (120 SECOND CYCLE TIME)

Table 47 - Locksway Road (120 second cycle time) – Sensitivity Test

	AM Peak (08:00 – 09:00)			PM Peak (17:00 – 18:00)		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue	Av. Delay per PCU (s/pcu)
Westbound	1.10%	1	27	1.10%	0.2	29
Eastbound	1.10%	1	27	1.10%	1	25
	PRC 6118.2%			PRC 6118.2%		

5.5.13.1. The modelling results in Table 47 show that the signals are predicted to operate within theoretical capacity and the Locksway Road link is likely to experience maximum queues of less than 1 PCU and delays of 29 seconds with the temporary shuttle working traffic signals in place as part of the traffic management that will be required. The junction is set up based on a 120-second cycle time. With delay of up to 29 seconds, all traffic can be expected to be released within each cycle.

5.5.13.2. The modelling results set out in Table 177 (DS1) & Table 178 (DS2) of the TA show that the Locksway Road link is likely to experience maximum queues of less than 1 PCU and delays of 31 seconds with the temporary signals in place as part of the traffic management that will be required. With delay of up to 31 seconds, all traffic can be expected to be released within each cycle.

5.5.13.3. When compared to Table 47, there is very little difference in delays and queues between the sensitivity test and DS1 and DS2 scenarios.

5.5.13.4. As is set out in Table 31 of the FTMS, traffic management in this location is likely to be in place for one week per circuit.

5.5.14. BRANSBURY ROAD / HENDERSON ROAD (120 SECOND CYCLE TIME)

Table 48 - Bransbury Road / Henderson Road (120 second cycle time) – Sensitivity Test

	AM Peak			PM Peak		
	Deg Sat (%)	Mean Max Queue (PCU)	Av. Delay per PCU (s/pcu)	Deg Sat (%)	Mean Max Queue	Av. Delay per PCU (s/pcu)
Westbound	29.00%	6	21	26.10%	3	42
Eastbound	28.80%	4	42	25.80%	5	20
	PRC: 210.7%			PRC: 225.2%		

5.5.14.1. The modelling results in Table 48 show that the signals are predicted to operate within theoretical capacity and the Bransbury Road / Henderson Road link is likely to experience maximum queues of fewer than 6 PCU and maximum average delays of 42 seconds with the temporary shuttle working traffic signals in place as part of the traffic management that will be required. The junction is set up based on a 120-second cycle time. With delay of up to 42 seconds, all traffic can be expected to be released within each cycle.

5.5.14.2. The modelling results set out in Table 179 (DS1) & Table 180 (DS2) of the TA show that the Bransbury Road / Henderson Road link is likely to experience maximum queues of 6 PCUs and delays of 43 seconds with the temporary signals in place as part of the traffic management that will be required. All traffic can be expected to be released within each cycle.

5.5.14.3. When compared to Table 48, there is very little difference in delays and queues between the sensitivity test and DS1 and DS2 scenarios.

5.5.14.4. As is set out in Table 35 of the FTMS, traffic management in this location is likely to be in place for three weeks per circuit.

5.6. SUMMARY

5.6.1.1. In summary, the sensitivity test assessment results of the temporary shuttle working traffic signals and traffic management have shown that at most links and junctions the impact is likely to be moderate and most traffic will pass through the junction in one cycle.

5.6.1.2. Two of the junctions are predicted to operate at a level over theoretical capacity. The B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue Roundabout is predicted to generate queues on the Maurepas Way East Arm that back onto the Maurepas Way / Hambledon Road signal-controlled junction during the AM peak hour. The Ladybridge Roundabout is predicted to operate at a level over theoretical capacity and cause delays of up to 6 minutes on the A3 London Road, although none of the associated queues will block major junctions.

5.6.1.3. The sensitivity test has assumed a smaller number of trips will have redistributed in comparison with the DS1 & DS2 scenarios modelled in the SRTM. In reality, during the periods of lane closures, traffic is likely to redistribute across the network following communication of the proposed works in locations and the identification of alternative routes to avoid the temporary signals. It is likely this will occur to a point that the level of traffic remaining on routes with shuttle working traffic signals adjust to operate closer to capacity.

6. BUS JOURNEY TIME ASSESSMENT

6.1. INTRODUCTION

6.1.1.1. This section analysed bus journey times for a number of bus routes that may be affected by the construction of the Onshore Cable Route. While it does not cover all bus routes within the study area, a cross-section of routes has been selected for analysis to provide an overall assessment of impacts along key corridors across Onshore Cable Corridor and the wider area impacted by the redistribution of traffic.

6.2. METHODOLOGY

6.2.1.1. The assessment has been undertaken for the AM, PM and Inter peak time periods using the SRTM 2026 DM, DS1 and DS2 scenarios.

6.2.1.2. Bus journey times have been derived using a combination of SRTM vehicle journey time data and link speeds to calculate the length of time a bus would to travel between the start and end of its route. As bus dwell times were not available from the SRTM, this assessment does not account for time spent at bus stops and therefore does not fully align with existing bus timetables. This is considered to be a robust assessment as the dwell times are not anticipated to change between the DM and DS scenarios. This assessment also excludes potential layover times (for example, when a bus stops at a bus station for five minutes part way along a route) which may occur along the assessed bus routes and allow for mitigation of any journey time increases.

6.3. AFFECTED BUS ROUTES

6.3.1.1. A desktop study has been undertaken to analyse which bus routes could be assessed to provide an overall indication of the impact on services across the study area. The bus routes taken forward for assessment are First Group bus service 7, 9, 13 and D2 and the Stagecoach bus service 21, 37 and 39. Each of these services is shown on Plate 27.

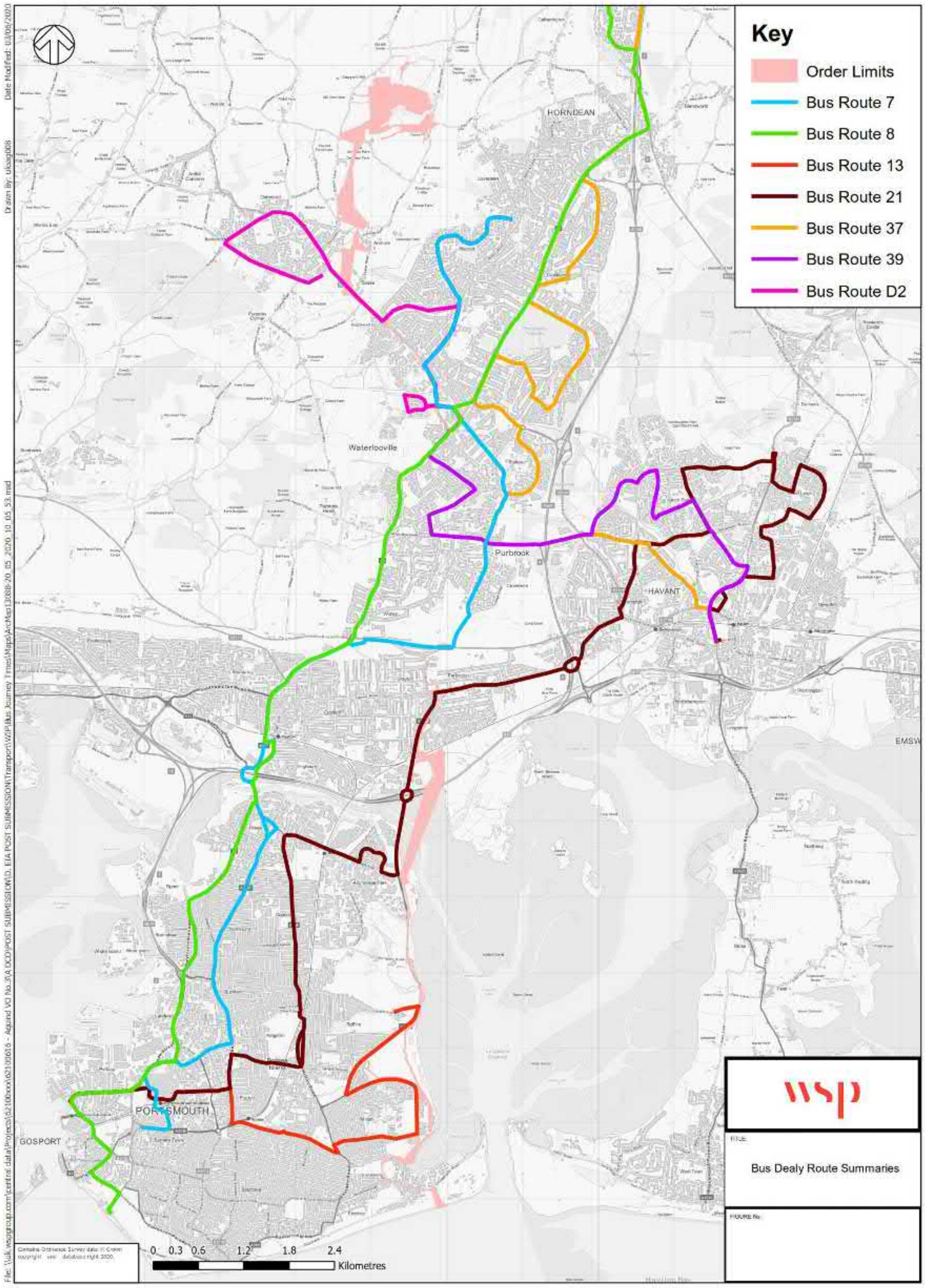

Plate 27 - Bus Services Assessed within Study Area

6.3.1.2. A short summary for each bus service selected for assessment is outlined below and summarises the part of the route that will be impacted by construction of the Onshore Cable Route and associated traffic management.

6.3.2. FIRST BUS NO. 7

6.3.2.1. The No. 7 bus service is operated by First Group and runs between Portsmouth City Centre, Cosham, Waterlooville and Wecock Farm with a peak frequency of every 12 minutes. It will be impacted directly by traffic management installed on B2150 Hambledon Road between Milton Road and A3 Maurepas Way to facilitate construction of the Onshore Cable Route. Any disruption will therefore last approximately eight weeks per circuit.

6.3.3. FIRST BUS NO. 8

6.3.3.1. The No. 8 bus service is also operated by First Group, with the route running from Old Portsmouth to Clanfield. The service has a peak hour frequency of every 15 minutes. This bus service will be directly impacted by traffic management installed on the A3 London Road between Maurepas Way and Portsdown Hill Road to facilitate construction of the Onshore Cable Route. Any disruption will therefore last approximately 43 weeks per circuit, although noting that construction works along the A3 London Road where there are bus lanes will maintain bus priority wherever possible. This is as stipulated in Section 2.10 of the FTMS. This would reduce the period of disruption resulting from shuttle working traffic signals to 14 weeks per circuit.

6.3.4. FIRST BUS NO. 13

6.3.4.1. The number 13 bus service is operated by First and runs between Portsmouth and Baffins via Fratton Station and Milton with a peak frequency of one bus per hour. The bus service travels along the A2030 Eastern Road between Tangier Road and Moorings Way, Moorings Way, and Locksway Road as part of the Onshore Cable Route. Any disruption will therefore last for up to 19 weeks per circuit, while noting that options for the Onshore Cable Route could significantly reduce this period of disruption. For example, if the route across Milton Common is used, the period of disruption will be reduced to two weeks per circuit

6.3.5. FIRST BUS NO. D2

6.3.5.1. The No. D2 bus service is operated by First and runs between Denmead and Waterlooville via the B2150 Hambledon Road which operates a service of every other hour. This bus service will be directly impacted by traffic management located between north of Soake Road and Sunnymead Drive. Any disruption will therefore last approximately 10 weeks per circuit.

6.3.6. STAGECOACH BUS NO.21

6.3.6.1. The No. 32 bus service runs between Havant and the Hard (Portsmouth) via Farlington, Hilsea and Portsmouth City Centre with a peak hour frequency of a service every 10 minutes. The bus route travels along a section of the A2030 Eastern Road from Havant Road to Anchorage Road and will therefore be directly impacted by construction of Onshore Cable Route and associated traffic management for approximately six weeks per circuit.

6.3.7. STAGECOACH BUS NO. 37

6.3.7.1. The No. 37 bus service is operated by Stagecoach and runs between Petersfield and Havant in operates with a peak frequency of one bus per hour in each direction. It does not run along the Onshore Cable Corridor but routes through Waterlooville town centre and Purbrook to the west of the Order Limits and therefore may be impacted by traffic redistributing away from construction along the A3 London Road.

6.3.8. STAGECOACH BUS NO. 39

6.3.8.1. The No. 39 bus service is also operated by Stagecoach and runs between Wecock and Havant which operates a peak hour frequency of every 12 minutes. The service runs along A3 London Road between Mill Road and A3 Maurepas Way and also along B2150 Hambledon Road between A3 Maurepas Way and Milton Road. Any direct disruption will therefore last approximately 21 weeks per circuit.

6.4. BUS JOURNEY IMPACTS

6.4.1.1. Table 49 below shows the derived bus journey times all assessed bus routes, including all three scenarios.

Table 49 – Calculated journey times for each Bus Service

Bus Route	Journey Time (Minutes: Seconds)								
	2026 (Do Minimum)			2026 (Do Something 1)			2026 (Do Something 2)		
	AM	IP	PM	AM	IP	PM	AM	IP	PM
No 7 NB	35:00	30:37	36:11	37:05	33:48	38:06	36:07	31:21	37:03
No.7 SB	32:52	28:34	31:56	34:21	29:55	34:11	34:36	30:18	33:25
No.8 NB	29:36	26:10	27:23	30:37	30:21	31:53	32:23	28:19	32:06
No.8 SB	31:56	27:00	30:32	33:14	28:55	32:13	33:30	28:46	31:58
No. 13 NB	22:08	22:35	25:03	22:11	22:37	24:58	22:06	22:32	24:51
No. 13 SB	20:47	19:18	21:47	20:45	19:14	20:02	20:54	19:17	21:37
No. D2 NB	11:45	11:25	11:50	13:38	13:05	14:09	13:37	13:05	14:08
No. D2 SB	11:41	11:20	12:21	14:03	13:43	14:30	14:05	13:43	14:30
No. 21 NB	48:52	43:09	47:40	48:35	43:03	47:44	49:30	43:24	48:07
No. 21 SB	49:18	44:58	48:01	44:32	44:52	48:53	49:13	44:55	47:57
No.37 NB	33:26	31:16	35:01	33:23	31:20	35:59	33:41	31:19	35:58
No.37 SB	38:38	33:16	37:54	39:16	33:13	37:59	39:17	33:14	37:59
No.39 NB	27:27	28:21	27:30	30:27	27:47	30:10	30:26	27:47	30:07
No.39 SB	26:02	26:07	26:18	34:00	31:04	33:05	34:02	31:03	33:02

6.4.1.2. The difference in journey times and that difference in percentage terms for both Do-Something scenarios is outlined in Table 50 below.

Table 50 – Do Something 1 and Do Something 2 Journey Time Differences

Bus Route	Do Something 1 Journey Time Difference (Minutes and Seconds)			Do Something 1 - % Difference			Do Something 2 Journey Time Difference (Minutes and Seconds)			Do Something 2 - % Difference		
	AM	IP	PM	AM	IP	PM	AM	IP	PM	AM	IP	PM
No 7 NB	02:04	03:10	01:54	6%	10%	5%	01:06	00:44	00:51	3%	2%	2%
No.7 SB	01:28	01:21	02:14	4%	5%	7%	01:43	01:44	01:28	5%	6%	5%

No.8 NB	01:01	04:11	04:29	3%	16%	16%	02:46	02:08	04:42	9%	8%	17%
No.8 SB	01:38	01:54	01:41	5%	7%	6%	01:34	01:45	01:25	5%	7%	5%
No. 13 NB	00:03	00:02	-00:05	0%	0%	0%	00:02	00:03	00:12	0%	0%	-1%
No. 13 SB	00:02	00:03	-01:45	0%	0%	-8%	00:07	00:00	00:10	1%	0%	-1%
No. D2 NB	01:53	01:40	02:19	16%	15%	20%	01:53	01:40	02:18	16%	15%	19%
No. D2 SB	02:22	02:23	02:08	20%	21%	17%	02:24	02:24	02:11	20%	21%	18%
No. 21 NB	00:17	00:06	00:04	-1%	0%	0%	00:18	00:16	00:28	1%	1%	1%
No. 21 SB	00:14	00:00	00:51	0%	0%	2%	- 00:05	-00:03	-00:05	0%	0%	0%
No.37 NB	00:17	00:03	00:58	1%	0%	3%	00:15	00:03	00:57	1%	0%	3%
No.37 SB	00:37	-00:02	00:05	2%	-0%	0%	00:39	-00:02	00:05	2%	-0%	0%
No.39 NB	02:59	-00:34	02:40	11%	-2%	10%	02:59	-00:34	02:37	11%	-2%	10%
No.39 SB	07:57	04:57	06:46	31%	19%	26%	07:59	04:56	06:44	31%	19%	26%

6.4.1.3. Focusing on the DS1 scenario, Table 50 presents the forecast increases or decreases in journey time in minutes and seconds and the percentage of change compared to DM scenario. In summary the main findings are follows:

- The No. 7 service is forecast to experience an increase in journey time by approximately two minutes in the AM and PM peaks and by 3 minutes in the inter-peak northbound. The southbound journey time is forecast to increase by just over 2 minutes in the PM peak with only a minute and half increase in the AM and inter-peak periods. The Do-Minimum total journey time for this route is approximately 30-35 minutes. The forecast delay to the No. 7 service is minimal with the largest impact of 10% on the northbound service in the Inter-peak period.
- The No. 8 bus service journey time is forecast to increase by approximately four and a half minutes in the Inter and PM peak in the northbound direction. The Do-

Minimum total journey time for this route is approximately 30 minutes across all peak hours. This represents an increase of 16-17% on Do-Minimum journey times.

- The D2 bus service is forecast to experience an increase in journey time of approximately two minutes across all journeys and in each of the AM, PM and interpeak periods. This represents an increase in journey time of 15-21% in comparison with the DM scenario due the relatively short total journey time of this route (11-12 minutes).
- The No. 39 bus service is forecast to experience a reduction in travel time on the northbound direction during the inter-peak, whilst all the other forecast journeys northbound and southbound experience an increase of at least two and half minutes. This equates to at a least 10% longer journey time on the Do-Minimum 26-28 minutes total journey time.

6.4.1.4. Analysing the DS2 scenario Table 50 presents the following key changes to bus journey times:

- For the No. 7 bus service the SRTM forecasts at least a 40 second delay with a maximum increase in journey time of less than two minutes on the southbound journey towards Portsmouth City Centre in the Inter-peak. The maximum journey time increase is 5-6% over the Do-Minimum total journey time of 30-35 minutes.
- The No. 8 bus service journey time will be extended by a minimum of approximately 90 seconds and up-to nearly five minutes in the northbound direction in the PM and Interpeak periods. This represents an increase in journey time 16-17% on Do-Minimum total journey of approximately 30 minutes.
- The D2 bus service is forecast to experience an increase in journey time of approximately two minutes across all journeys and in each of the AM, PM and interpeak periods. This represents an increase in journey time of 15-20% in comparison with the DM scenario due the relatively short total journey time of this route (11-12 minutes).

- The No. 39 bus service is forecast to experience a reduction in travel time on the northbound direction during the inter-peak, whilst all the other forecast journeys northbound and southbound experience an increase of at least two and half minutes. This equates to at a least 10% longer journey time on the Do-Minimum 26-28 minutes total journey time.

6.5. SUMMARY

6.5.1.1. This section analyses the difference between bus journey times across the study area by using a comparison of Do Minimum and the two Do Something scenarios contained within the SRTM. Overall, it can be concluded that the works will generally have a minor impact on bus routes across the study area and where this is more pronounced, the impact will be limited to a short-time period.

7. SUMMARY AND CONCLUSIONS

7.1.1.1. This STA has been completed in response to Relevant Representations and further discussions with PCC and HCC following the submission of the Development Consent Order (DCO) Application in November 2019. A summary of overall topics and covered within this document and the findings of the additional assessment work is included below.

7.1.1.2. On the subject of construction traffic access, the following has been completed, with a full update to the Framework CTMP included in Appendix B to reflect this additional information:

- The design of the Converter Station highway access junction has been updated to respond to comments received by HCC, while an additional speed survey has confirmed that achievable visibility splays at the access junction are appropriate for existing traffic conditions;
- Further information has been provided on the proposed traffic control strategy to prevent vehicle and HGV conflicts along Day Lane. This strategy, through the use of banksman and Stop / Go boards along the length of Day Lane will prevent HGV conflicts from occurring. Importantly, this strategy also avoids the requirement for HGVs to be held on highway at the eastern end of Day Lane except in exceptional circumstances for a very short period of time.
- Additional commitments have been provided, which detail how the monitoring and enforcement of HGV routing will be completed throughout the Construction Stage. This will ensure that mitigation strategies related to the timing and construction traffic routes are observed throughout the Construction Stage.
- Following a review of proposed construction traffic routing within Waterlooville and Cowplain and update has been provided to remove the use of Milton Road from the construction traffic routing strategy. This update, which proposes the use of the A3 London Road as the alternative, reducing the exposure of sensitive receptors to HGV construction traffic related to the Proposed Development.
- Further to the Relevant Representation from PCC, a full assessment has been completed of cable drum delivery routes to indicative Joint Bay locations on the Onshore Cable Corridor. This assessment has included consideration of representative Joint Bay locations within HCC and PCC where delivery of cable drums will be required and has shown that access will be achievable to all locations without the need for significant highway layout alterations.

7.1.1.3. This STA also includes an updated analysis of Personal Injury Collision data for the Onshore Cable Corridor and the wider area, specifically the areas that will serve as likely diversion routes as a result of the traffic management required to facilitate construction of the Onshore Cable Route. This analysis has extended beyond the study area within the submitted TA and has used outputs from the SRTM modelling to inform the scope of assessment.

7.1.1.4. Through the analysis of existing accident trends within the study area the overall safety impact on the road network within the study area is anticipated to be neutral. The analysis of PIC history has not identified any sections considered sensitive in road safety terms to localised temporary increases in traffic flow during the construction phase, with mitigation as proposed in the Framework CTMP and FTMS.

7.1.1.5. The results of the SRTM assessment are a worst-case scenario and therefore the links affected by redistribution will experience less traffic than is actually forecast. Redistribution is also mainly caused by the implementation of temporary traffic management measures at six specific locations, with these measures only accounting for a very short period of the overall construction works. Therefore, existing accident trends are unlikely to be exacerbated by the construction of the Proposed Development.

7.1.1.6. The traffic assessments completed within Chapter 4 have been completed to cover a range of different subjects and locations, with a summary of key points provided below.

7.1.1.7. The Junction capacity assessment updates to include traffic signal specifications has shown the Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction to be operating over capacity in each of the future year DM and DS scenarios. In the DS1 and DS2 scenarios, the impact of traffic redistribution does worsen the performance of this junction in the PM peak with queues blocking back to the upstream Lakesmere Road roundabout. This situation however is reflective of the worst-case traffic management scenario assessed within the SRTM, which will not occur as a result of the construction programme outlined within the FTMS. This situation is therefore unlikely to occur in reality, while any impact would also be temporary in nature in reflection of the transient nature of the construction works along the Onshore Cable Corridor. In addition, the demand associated with the up-to 800 unit residential scheme at Horndean (55562/005) is included within the SRTM model, but the associated mitigation for A3(M) Junction 2 is not included due to it not being a committed highway improvement. This again highlights that the assessments completed represent a worst-case scenario, with traffic flows likely to be far greater than will be experienced in reality when the construction works take place

7.1.1.8. The assessment of the change to the assumptions for the construction worker traffic movements associated with the construction of the Onshore Cable Route only during the PM peak has shown that these trips on the highway network would have little impact on the operation of the Lovedean Lane / A3 Portsmouth Road priority junction, the Dell Piece West/ A3 Portsmouth Road/ Catherington Lane Traffic Signal Junction nor the A3(M) Junction 2

7.1.1.9. Further analysis of the impact of traffic management on the A2030 Eastern Road has confirmed that assessment carried out within the TA is robust. It has also confirmed how the cumulative impacts of the construction works and resultant traffic redistribution across the wider network has been assessed in agreement with PCC and HCC. Additional traffic assessments of the impacts of traffic management on the A2030 Eastern Road adjacent to Milton Common leads to similar impacts to those already reported through use of the SRTM, confirming the robustness of the assessment already undertaken.

7.1.1.10. In addition to further analysis of the SRTM, further sensitivity testing of shuttle working traffic signal locations and junctions with temporary signals has been undertaken by way of comparison to the assessment reported in the TA. With an assumed 50% reduction in traffic redistribution through each of the assessed traffic management locations, these tests have shown traffic delays in the region of 3-4 minutes in most locations and queue lengths in the region of 300-400m. As a result, these tests are considered to represent an unrealistic overly worst-case estimate of actual traffic conditions at locations where temporary traffic signals are required, as in reality traffic will redistribute away from the works as per the SRTM assessments included within the TA. This situation also reflects the transient nature of how the Onshore Cable Route will be constructed, with drivers being aware of the works as it progresses along the Onshore Cable Corridor and therefore having the opportunity to alter trip patterns. The implications of such traffic redistribution have been assessed at a robust level within the TA.

7.1.1.11. The difference between bus journey times across the study area has been considered by undertaking a comparison of Do Minimum and the two Do Something scenarios provided by the SRTM. Overall, it can be concluded that the works will generally have a minor impact on bus routes across the study area and where this is more pronounced, the impact will be limited to short-time period.

7.2. CONCLUSION

7.2.1.1. In conclusion, the assessments completed within this document do not alter the findings of the TA. As a result of the construction of the Proposed Development there will be localised areas on the highway network that experience an increase in traffic levels and associated congestion. Any impacts however are temporary in nature and will be mitigated through measures set out within the FTMS and Framework CTMP.

Appendix A – Abnormal Indivisible Load Study

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Route Access Survey
333100

A3(M) J2 to AQUIND Lovedean

WSP
September 2019

wsp

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Contents

Report Details

Report for
Stewart Urquhart
WSP
Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Attendees of Survey
Steven Mangham

Time / Date of Survey: 2nd July 2019

General weather conditions: Mixed

Issued by
Steven Mangham

Approved by
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Document Revisions

No	Date	Details
1	04/11/2019	Updated to client comments
2	08/11/2019	Updated to client comments

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COLLETT
EXPERTS IN MOTION

Company Profile

Collett & Sons Ltd established in Halifax over 45 years ago specialise in the multimodal logistics throughout the UK, Europe and Worldwide.

Our Company owns a modern fleet of over 60 vehicles and over 100 trailers, operating from 3 depots located in Halifax, Goole and Grangemouth.

The depots situated in Google and Grangemouth offer strategically located sites suitable to provide central hubs for distribution throughout the UK. Each facility is complete with up to 110 tonnes lifting capacity in order to be able to handle all various abnormal load types. As logistical partners, the company is able to offer the complete transport solution from point of manufacture through to job site.

Collett & Sons Limited operate an in-house consultancy that deals with transport feasibility, route and site access surveys, Swept Path Analysis, Traffic Management Plans, Test Drives and Environment Statements.

In addition to consulting services, Collett & Sons Limited delivers the following services;

Marine
Port Operation
Heavy Lift Storage
Heavy Transport
Project Management
Freight Forwarding
Heavy Lift
General Haulage
Warehousing
Test Station (DVSA-authorised)
SHEQ Training





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1. Executive Summary

1.1. This report comprises of a study of the road route as detailed here in for the road transport of a transformer to the proposed AQUIND Lovedean site, Lovedean, Hampshire.

1.2. One route has been assessed from the A3(M) Junction 2 to the Day Lane/Broadway Lane junction, Lovedean.

1.3. Due to the height of the proposed transformer and subsequent vehicle configuration, a suitable high load route is required from Port to start of the route detailed in this report body.

Third party land

1.4. Third party land is required that the Day Lane/Broadway Lane junction if Option 2 is selected as the preferred method of navigating that junction.

Road widening

1.5. Road widening within highways owned land is required at the A3/Lovedean Lane junction on the nearside footpath. Area to be made suitable to withstand axle loadings.

Modifications to street furniture

1.6. Modifications to street furniture will be required along the route at a number of locations. The locations where street furniture removal is required are: B2149/A3 Junction, A3/Lovedean Lane Junction, Right bend on Lovedean Lane, Lovedean Lane/Day Lane Junction and Day Lane/Broadway Lane Junction.

Vertical Alignment and Height Clearances

1.7. Due to the length and nature of the route there are a high number of overhead utility lines. The heights of these lines have not been assessed as part of this survey and further investigation is required with the utility companies, once the final load dimensions are determined, to establish their cable heights and any remedial measures that may be required.

1.8. There are no overhead structures on the routes.

1.9. On Day Lane, there is an incline gradient which will require the loaded vehicle to be towed. Towing vehicles will be required for deliveries.

Structural Assessment

1.10. Consultation with the relevant authorities has not been undertaken as part of this assessment due to the high G.V.W of the loaded configuration.

1.11. For loads of this nature, it is usually expected/recommended that full structural surveys are undertaken of any structures on the route. Once the exact load dimensions are established, consultation with the relevant authorities is required to determine the structural suitability of the route.

1.12. It should be noted that this route has been used for delivery of transformers to the Lovedean facility although that does not necessarily mean that this route is suitable for loads of this nature.

Other areas of note

1.13. Tree pruning will be required at numerous locations to ensure that a clear envelope is present for the vehicle.

1.14. As part of the delivery convoy, tree surgeons and utility companies will be required to accompany the loads to make any necessary amendments.

Unloading on site to Bund/Plinth

1.15. Once the loaded vehicle arrives at the proposed site, the load will require unloading to the bund/plinth.

1.16. It is recommended that the proposed site is designed to allow the loaded girder set to navigate alongside the plinth, where the transformer can then be unloaded from the Girder set and then moved into position using the Jack and Skate method.

1.17. If this site cannot be designed to achieve the above, transhipment on site to a SPMT vehicle will be required to move then transformer to the plinth for Jacking and Skating.

2. Introduction

2.1 Collett & Sons Ltd. were commissioned by WSP to undertake an abnormal loads route access study to assess the transportation of a transformer components to the proposed AQUIND Lovedean Facility at Lovedean, Hampshire.

2.2 The road routes as detailed herein are for the road transport of the transformer component identified in Section 4.

2.3 The purpose of this report is to detail access from Junction 2 of the A3(M).

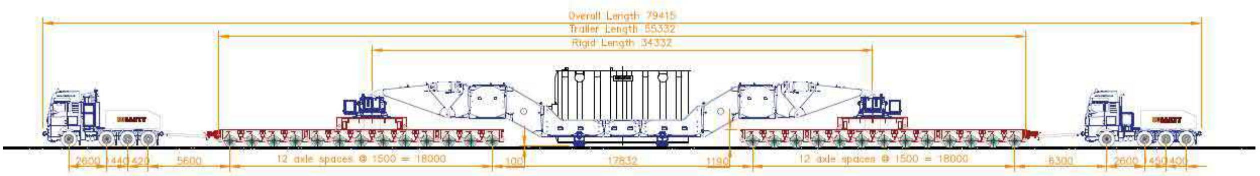
3. Candidate Abnormal Loads

3.1. WSP have requested that the assessment on which this report is compiled be based on the following Cargo Details: Length 10200mm, depth 4100mm, height 5100mm.

4. Abnormal Indivisible Load Profiles

4.1. The abnormal load components are assessed based on weight, length, width and height and loaded to the most appropriate vehicle the weights and dimensions of these are detailed below. The loading diagrams are detailed in Appendix 1.

4.2.	COL-D-333100-1-1
LIN STORAGE TANK	



	Loaded vehicle dimensions
Overall vehicle Length	79.415m
Rigid Length	34.332m
Width	6.20m
Height	5.452m
Gross Vehicle Weight exc. Tractor Units	492.82Te
Maximum axle line weight	15.275Te

5. Responses from Statutory Consultees (Structures Suitability)

Summary of Structural Issues

5.1. Consultation with the relevant authorities has not been undertaken as part of this assessment due to the high G.V.W of the loaded configuration.

5.2. For loads of this nature, it is usually expected/recommended that full structural surveys are undertaken of any structures on the route. Once the exact load dimensions are established, consultation with the relevant authorities is required to determine the structural suitability of the route.

5.3. It should be noted that this route has been used for delivery of transformers to the Lovedean facility although that does not necessarily mean that this route is suitable for loads of this nature.

6. Route Assessment Overview

6.1. This section of the report illustrates the route assessed for the delivery of the storage tank components from Ellesmere Port to Air Liquide Facility at Coleshill.

6.2. For the purpose of this report, one route to the site was surveyed. All the routes surveyed in this report have been identified by Collett Consulting.

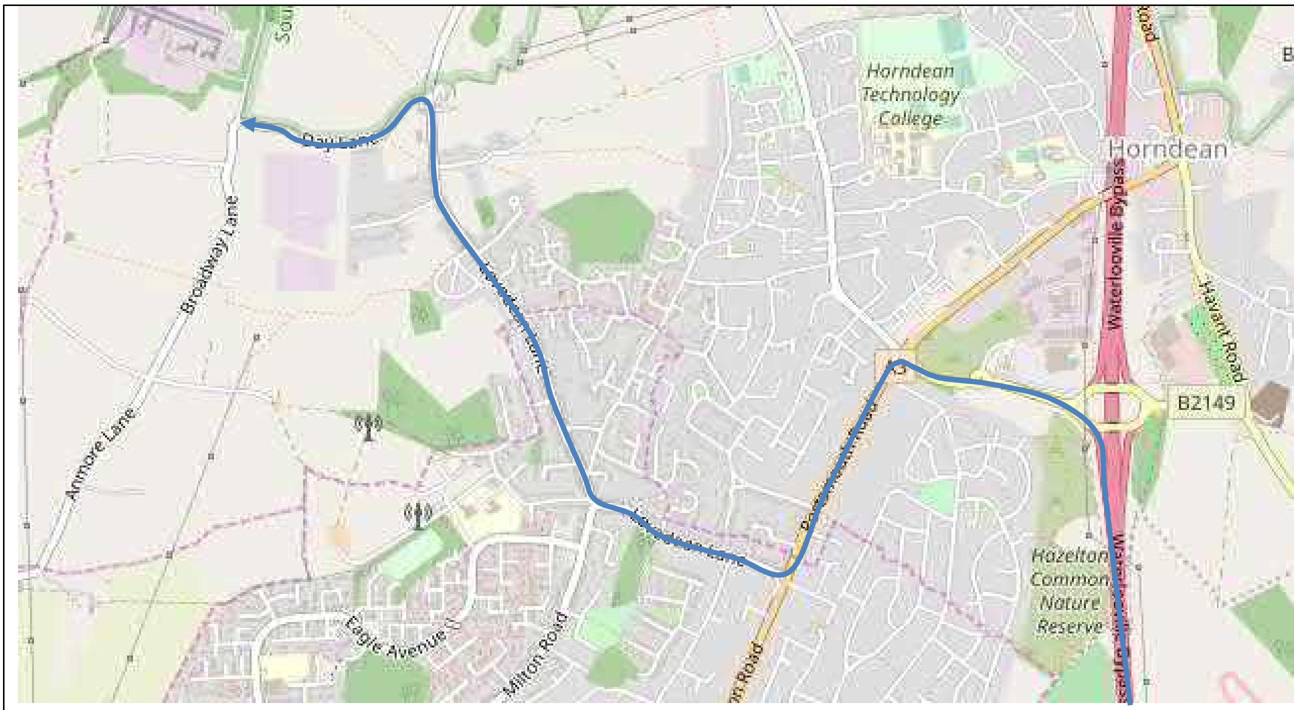
6.3.

Route A

Start Location	M3 Junction 2	Distance of Route	Km	Miles
Via:	B2149/A3/Lovedean Ln		4.1	2.5

- Exit M3 Northbound at Junction 2
- At roundabout, turn left onto B2149
- At roundabout, continue straight on B2149
- Turn left onto A3
- Turn right onto Lovedean Lane
- Turn left onto Day Lane
- At junction with Broadway Lane, continue onto new access road.

6.4. Map Overview



6.5. Amendment Categorisation

For the purposes of this report, the route amendments have been identified into 3 categories.

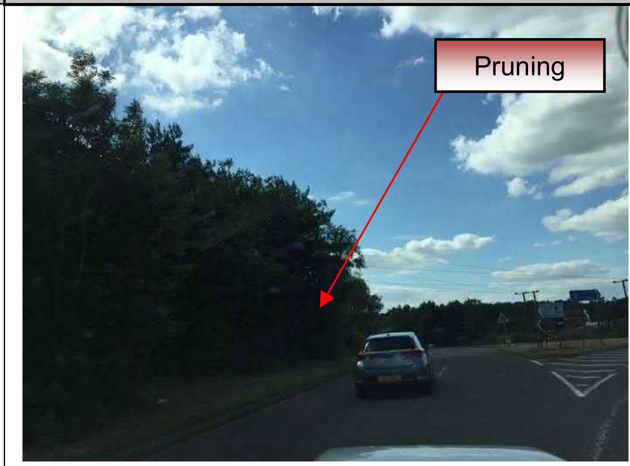
Major Amendments – Third Party Land, Road Widening
Minor Amendments – Modifications to Street Furniture, Pruning, Contraflow Manoeuvre, Manual Steering
No Amendments - Location is suitable as assessed during this survey

The categories have been colour coded for each report item as per the below key.

KEY					
	Major Amendments		Minor Amendments		No Amendments

6.6. Map extract of survey locations

ITEM NUMBER	6.6.1	LOCATION	A3(M) JUNCTION 2/B2149 ROUNDABOUT
DIRECTION	Take 1st Exit at the roundabout		
GRID REFERENCE	SU 70411 12347		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Swept path analysis indicates that pruning of vegetation on the nearside will need to be made in order for the vehicle to pass through this section of the route.	 View of exiting the roundabout  Vehicle Direction

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS	COL-D-333100-10-2		

ITEM NUMBER	6.6.2	LOCATION	B2149 ROUNDABOUT
DIRECTION	Take 1st Exit at the roundabout		
GRID REFERENCE	SU 70065 12480		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Visual inspection indicates that the vehicle will have no issues at this location.	 Entry to roundabout  Vehicle Direction

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

ITEM NUMBER	6.6.3	LOCATION	B2149/A3 JUNCTION
DIRECTION	Turn left at this junction		
GRID REFERENCE	SU 69831 12559		

MODIFICATION AND DESCRIPTION

Swept path analysis indicates that modifications to street furniture are required at this location. The filter splitter lane, traffic lights and bollards to be removed.

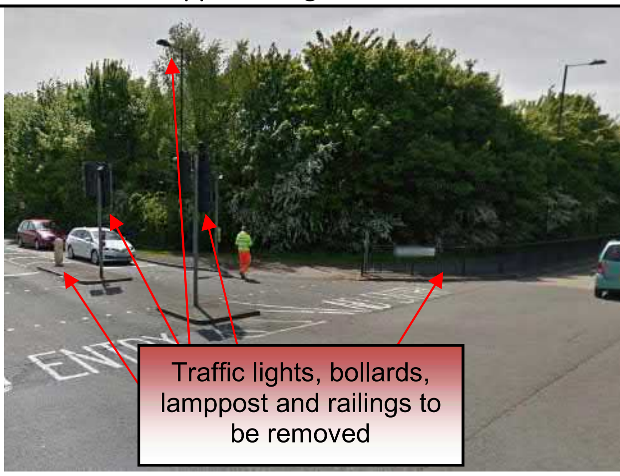
The central reservation needs to be cleared to allow over sail, removal of traffic lights and barriers on the offside are also required.

Loaded vehicle will contraflow the central reservation on the A3.

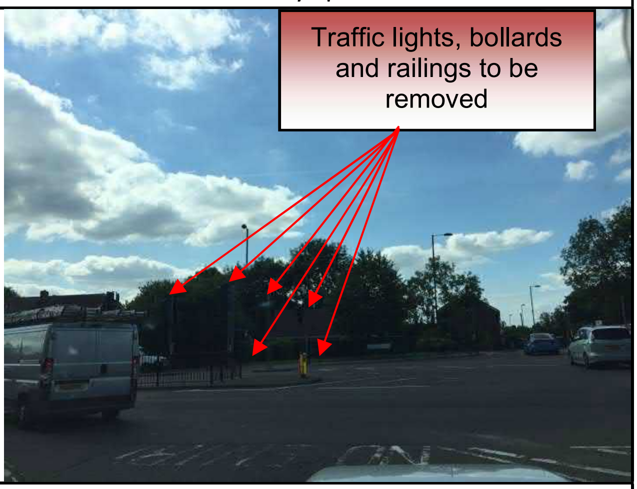
PHOTOGRAPH OF LOCATION

Approaching Crossroads

Aerial View of Location



View of entry splitter island



View of spliter island

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS	COL-D-333100-10-3		

ITEM NUMBER	6.6.4	LOCATION	SPLITTER ISLAND ON A3
DIRECTION	Continue straight at this location		
GRID REFERENCE	SU 69566 12079		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Visual inspection indicates that pruning of vegetation will be requried at this location. Tree on nearside to be pruned to provide a clear envelope.	 View of splitter island

Vehicle Direction

View of splitter island

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

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ITEM NUMBER	6.6.5	LOCATION	A3/LOVEDEAN LANE JUNCTION
DIRECTION	Turn right at this junction		
GRID REFERENCE	SU 69483 11884		

MODIFICATION AND DESCRIPTION

Swept path analysis indicates that road widening is required on the nearside of the A3 to allow axles to run on the footpath area. Area to be made suitable to withstand axle loadings.

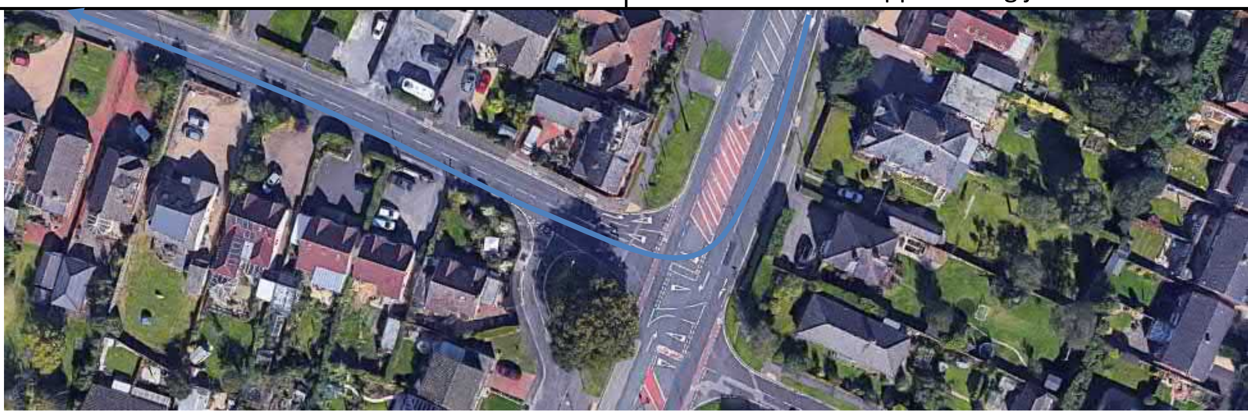
Swept path analysis indicates that modifications to street furniture are required on the nearside at this location.

Road signs to be removed in order for the trailer to oversail the grass patch.

PHOTOGRAPH OF LOCATION

Reverse view of junction

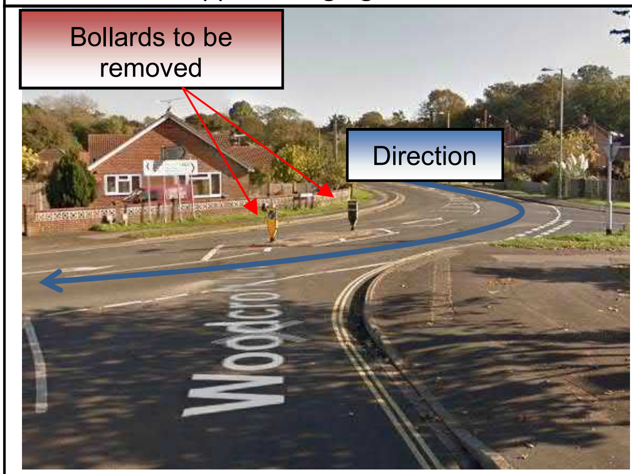
View of approaching junction



Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS	COL-D-333100-10-4		

ITEM NUMBER	6.6.6	LOCATION	RIGHT BEND ON LOVEDEAN LANE
DIRECTION	Continue straight at this location		
GRID REFERENCE	SU 68900 12105		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Swept path analysis indicates that modifications to street furniture will be required at this location. Bollards on the splitter island to be removed to allow trailer oversail.	 Approaching right bend  Bollards to be removed Direction Reverse view of vehicle direction

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS	COL-D-333100-10-5		

6.7. Map extract of survey locations

ITEM NUMBER	6.7.1	LOCATION	LOVEDEAN LANE/DAY LANE JUNCTION
DIRECTION	Turn left at this junction		
GRID REFERENCE	SU 68375 13325		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION

Swept path analysis indicates that modifications to street furniture on the nearside will be needed at this location,

Road sign to be removed to allow the vehicle to oversail land on the nearside of the bend.

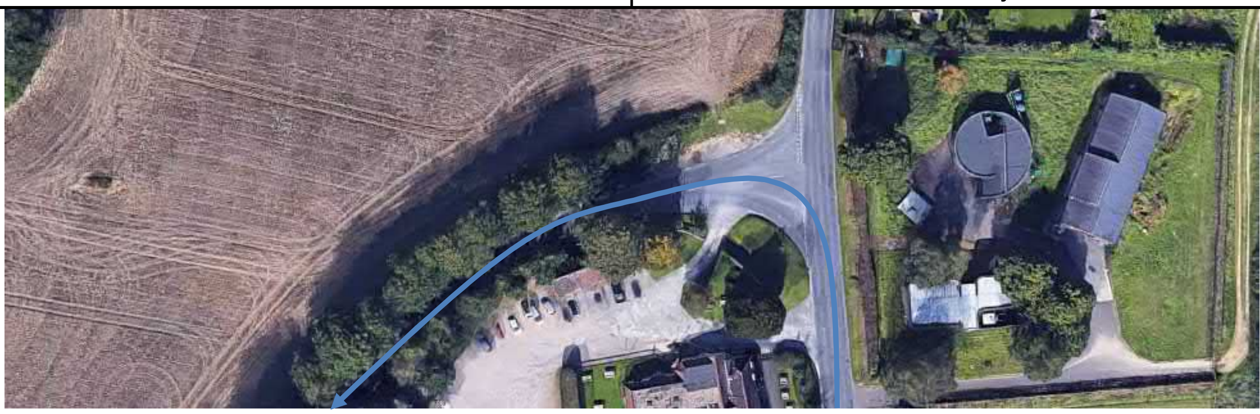
Trailer to be raised to oversail area.

NOTE
From this junction to the junction with Broadway Lane, there is an incline in the road levels.

It is anticipated that a towing vehicle(s) will be required on this stretch of road.

Vehicle Direction

Reverse view of junction

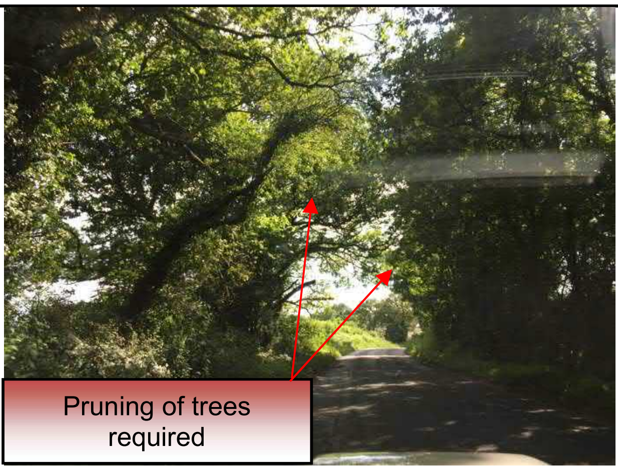


Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	Swept Path Analysis
RELATED DOCUMENT NUMBERS	COL-D-333100-10-6		

ITEM NUMBER	6.7.2	LOCATION	RIGHT BEND ON DAY LANE
DIRECTION	Continue straight at this location		
GRID REFERENCE	SU 68227 13211		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Visual inspection indicates that pruning will be required on both sides of the road.	 View of approaching right bend



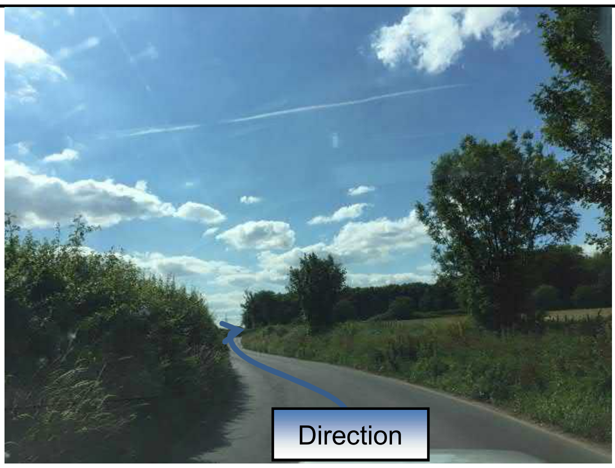
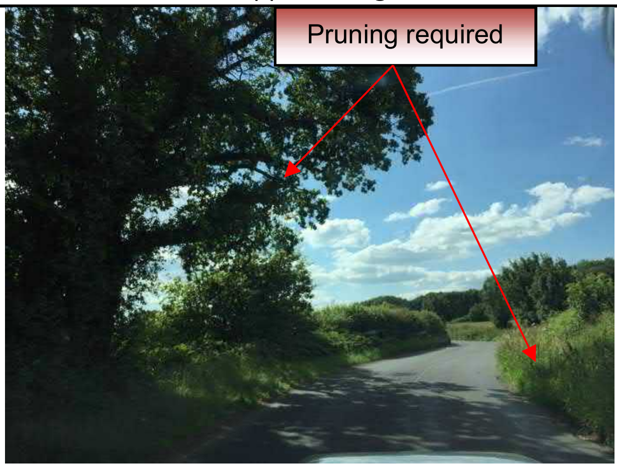
Pruning of trees before right bend

Vehicle Direction

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

ITEM NUMBER	6.7.3	LOCATION	S-BEND ON DAY LANE
DIRECTION	Continue straight at this location		
GRID REFERENCE	SU 67975 13207		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION
Visual inspection indicates that pruning will be required on both sides of the road at this location.	 View of approaching S-Bend
 Vehicle Direction	 View of S-Bend

Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	NO	TYPE	N/A
RELATED DOCUMENT NUMBERS	N/A		

ITEM NUMBER	6.7.4	LOCATION	DAY LANE/PROPOSED ACCESS TRACK JUNCTION
DIRECTION	Continue straight at this location		
GRID REFERENCE	SU 67788 13245		

MODIFICATION AND DESCRIPTION	PHOTOGRAPH OF LOCATION

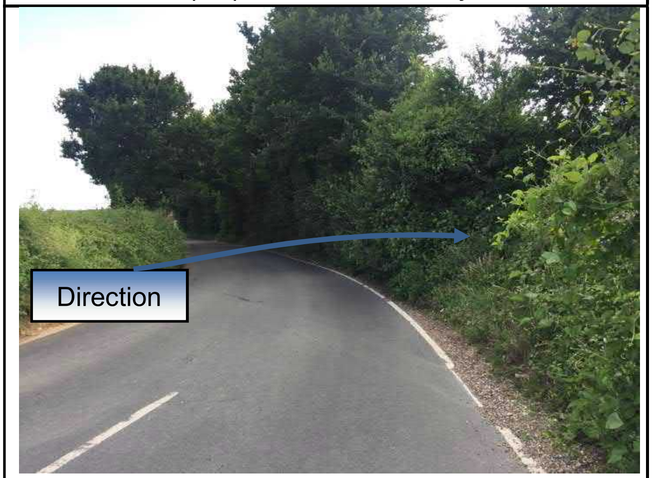
OPTION 1 – COL-D-333100-10-7
Swept path analysis indicates that hedgerow on the nearside to be removed and cleared to allow the girder set to navigate onto the road.
New access as per drawing required and modifications undertaken to accommodate this.

OPTION 2 – COL-D-333100-10-8
Swept path analysis indicates that new track to be constructed through third party land on the nearside.
Hedgerow to be removed to allow new track to be constructed.
New access as per drawing required and modifications undertaken to accommodate this.

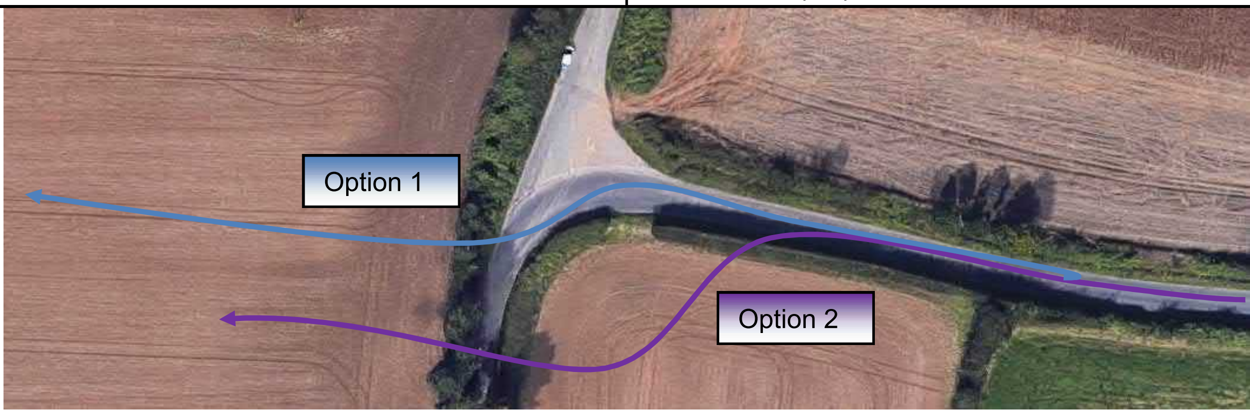
GENERAL
Both these options are considered to be more cost effective and less disruptive than creating a transhipment area in land on the nearside at the Solar frame.

Both these options allow for the load to be transported to the final destination without the need to tranship to a SPMT vehicle or similar.

View of proposed access track junction



View of proposed access track enterance



Aerial View of Location

FURTHER INVESTIGATION UNDERTAKEN?	YES	TYPE	SWEPT PATH ANALYSIS
RELATED DOCUMENT NUMBERS	COL-D-333100-10-7/8		

7. Important Notes

7.1. The recommendations in this report are made from a purely transport orientated view, and do not consider any political issues in terms of land ownership, or any other precincts raised that may otherwise be restrictive.

7.2. The information contained in this report is privileged and confidential and is for the exclusive use of the client nominated herein.

7.3. A Police escort or pilot car will be required in order to assist with traffic control for the entire route surveyed.

7.4. Permits will be required for the movement of all loads. These permits are at the discretion of the Highways Agency (H.A). Therefore, approval of these permits by the H.A is a major consideration before any movements can be undertaken.

7.5. It is recommended to have adequate warning signs implemented to warn other road users at critical points.

7.6. All hedges, shrubs, bushes, trees and overhanging branches along the nominated routes must be trimmed to allow a suitable minimum envelope.

7.7. All street furniture, signage etc. along the nominated route must be removed to allow a suitable minimum envelope on the road. Other specific street furniture has been nominated in this report to facilitate over-sailed and swept areas.

7.8. Overhead utility cables have not been measured as part of this survey and correspondence with the utility companies regarding cable heights and possible remedial solutions should be undertaken prior to any delivery.

7.9. It should be noted that all assessments and inspections have been done so with the intention of producing information to highlight anticipated problems. This includes highlighting of potential land take requirements, possible street furniture implications, and highway alignment issues.

7.10. Land take is usually referred to when land is required from private land owners; road widening is usually referred to when land is required within highways boundaries. However the details of the nominated land take and road widening contained in this report are highlighting the expected areas of concern, and can only be confirmed by swept path analysis. The boundaries between private land and highways property are assumed by using obvious demarcation such as fence lines/hedges etc. It should be noted that actual boundaries between highways and private land are not substantiated in this report and can only be authenticated by carrying out land searches.

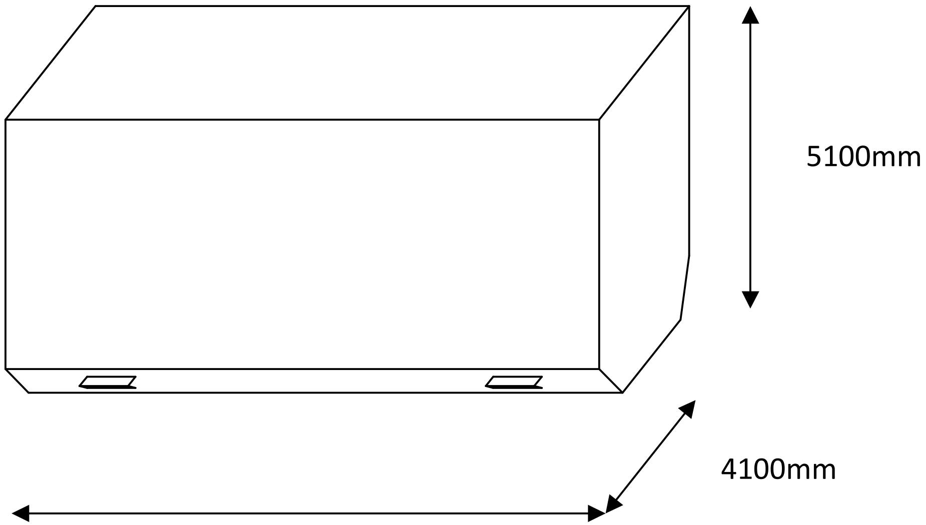
7.11. All inspections and assessments are made for the road movement of loaded trailer equipment carrying specific storage tank components. These dimensions are based on the turning circles and specification of Collett & Sons trailer equipment.

7.12. All route inspections and assessments, and subsequent conclusions and recommendations are deemed accurate by Collett & Sons Limited at the date that this report is created. We cannot be held responsible for the development of future road schemes or alterations to the routes surveyed that may leave this report inaccurate.

7.13. This report is based solely on a preliminary visual inspection. Nothing in this report shall be construed in any way as committing Collett & Sons Limited to being able to deliver to site using this route before further structural analysis has been undertaken, and any accommodation/remedial works undertaken which are to Collett & Sons satisfaction.

APPENDIX 1
TRANSFORMER DRAWING

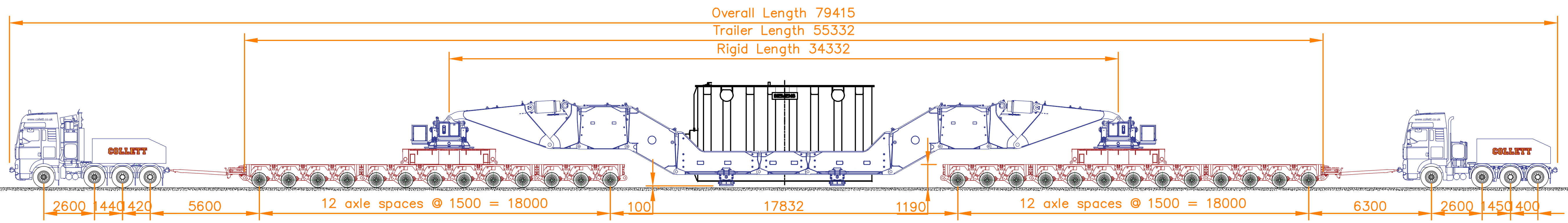
Estimated Transformer Dimensions



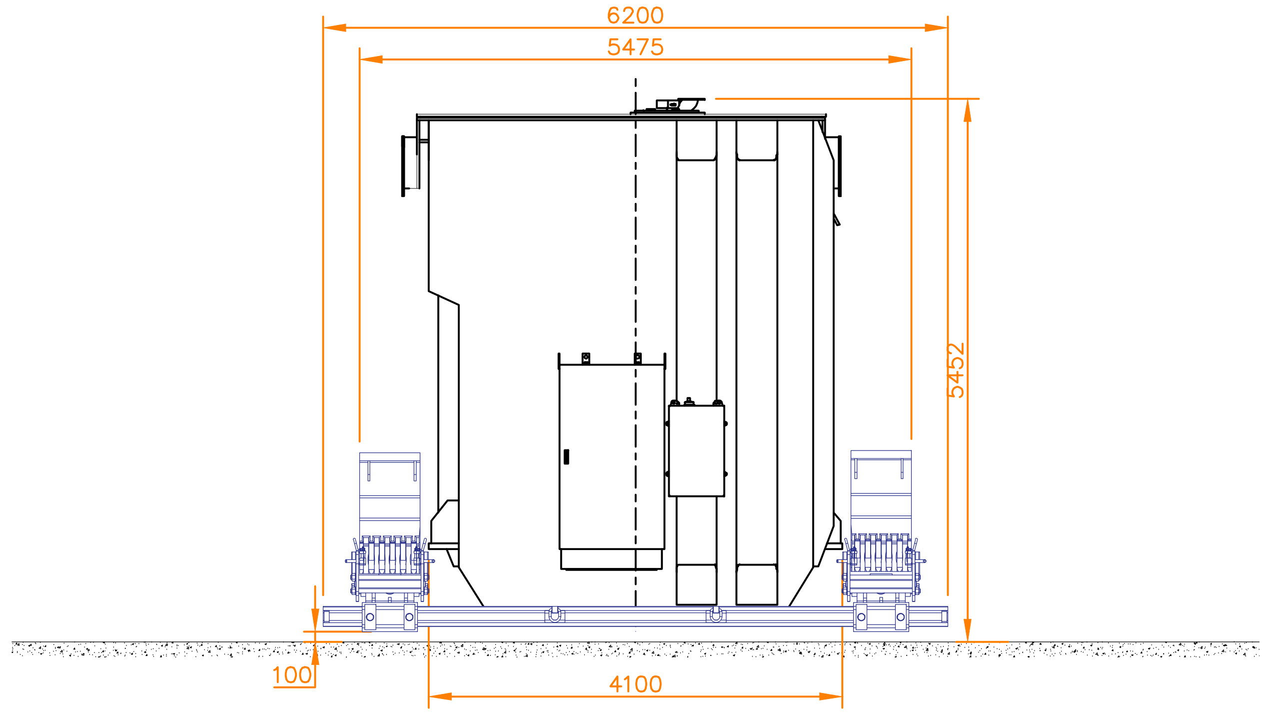
Shipping mass 332000 Kg

APPENDIX 2
LOADED CONFIGURATION DRAWING

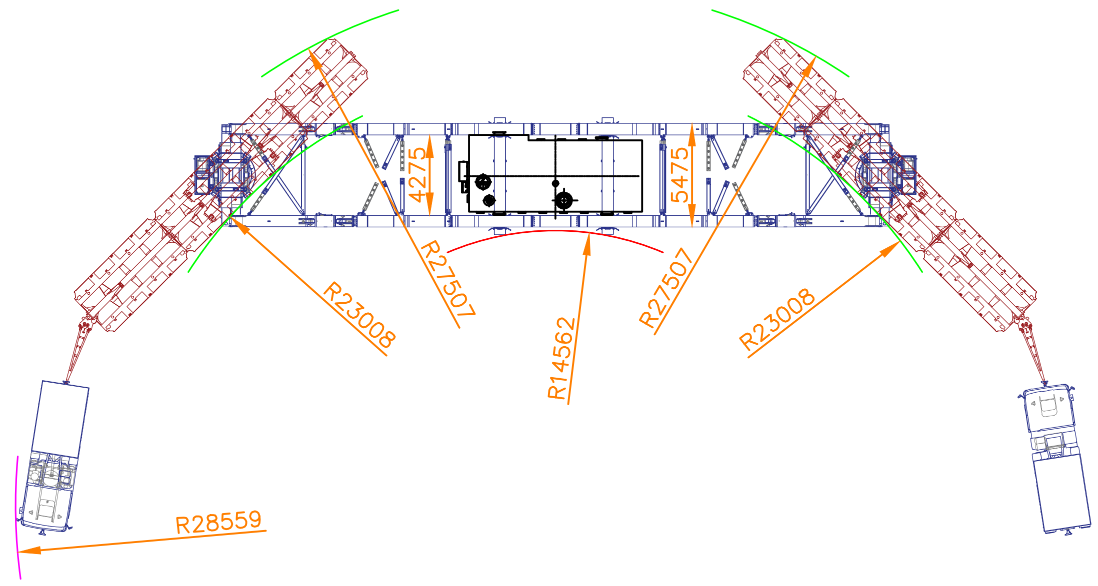
SIDE ELEVATION VIEW. SCALE 1:225



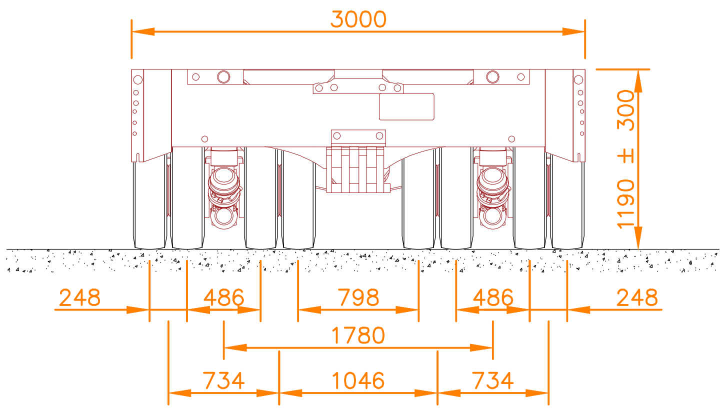
TRAFO ON BEAMS REAR ELEVATION VIEW. SCALE 1:75



TURNING PLAN VIEW. SCALE 1:400



END ELEVATION VIEW OF MODULAR AXLES. SCALE 1:50



For Information

Weights Table		
Type	Description	Weight
Type of Trailer	13 Axle Girder Set 13 Axle	160.820 t
Type of Load	Transformer	332.000 t
	Total loaded weight excluding tractor units	492.820 t
	Load per axle line on trailer	15.275 t
	Load per axle per file	7.638 t
	Load per wheel on trailer	1.909 t
Abnormal Load Classification: **Special Order (BE16)**		

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00	A.Abdallah	27/08/2019	E.Crosby	27/08/2019

Description: First issue.

Client: **WSP**

Project: **AQUIND**

Title: **Transformer Transport Arrangement**

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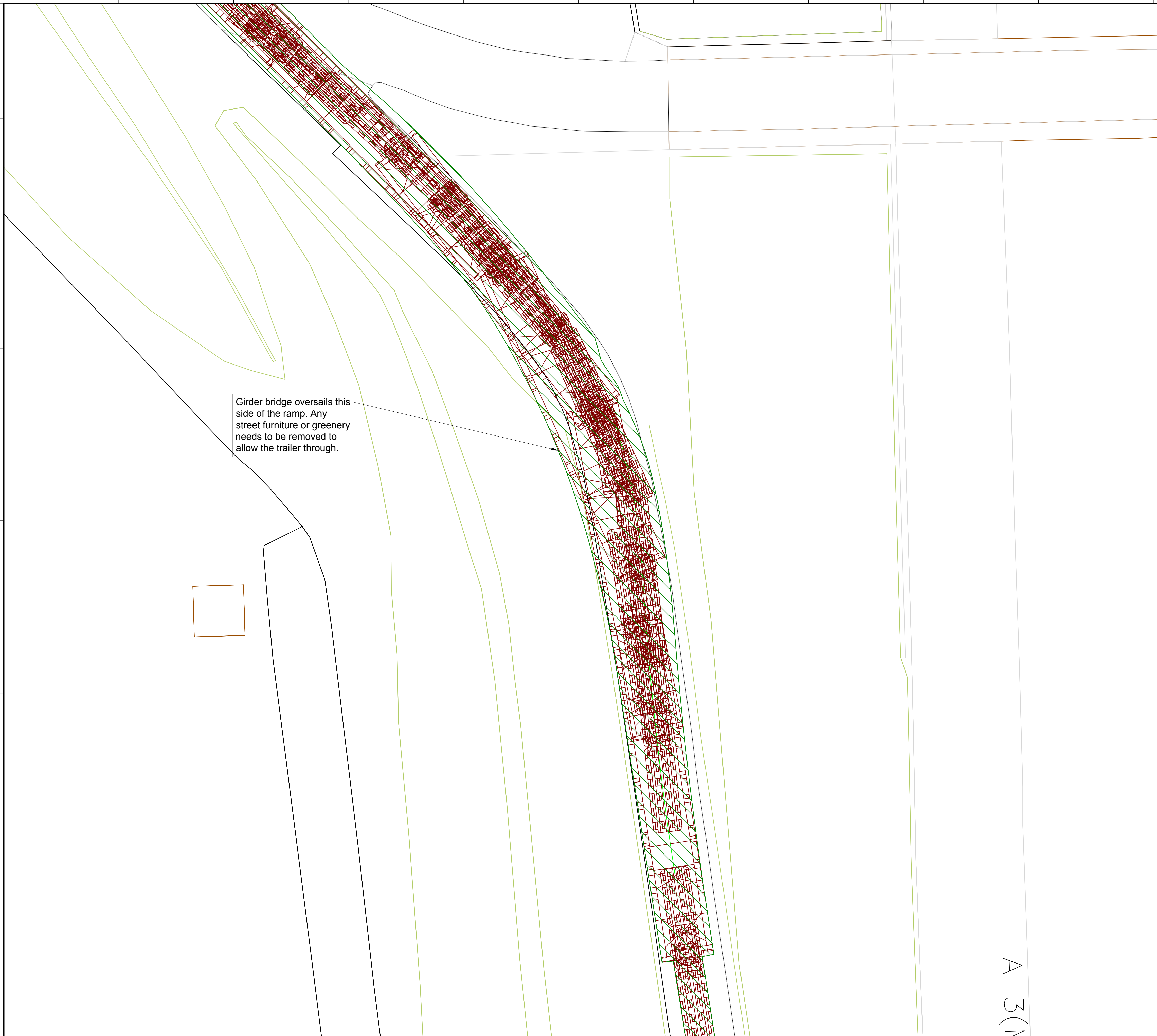
A3	As Noted	333100	COL-D-333100-1-1	1 of 1

APPENDIX 3

SWEPT PATH ANALYSIS DRAWINGS



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Client: **WSP**

Project: **AQUIND**

Title: **A3 (M) Jct. 2 SPA**

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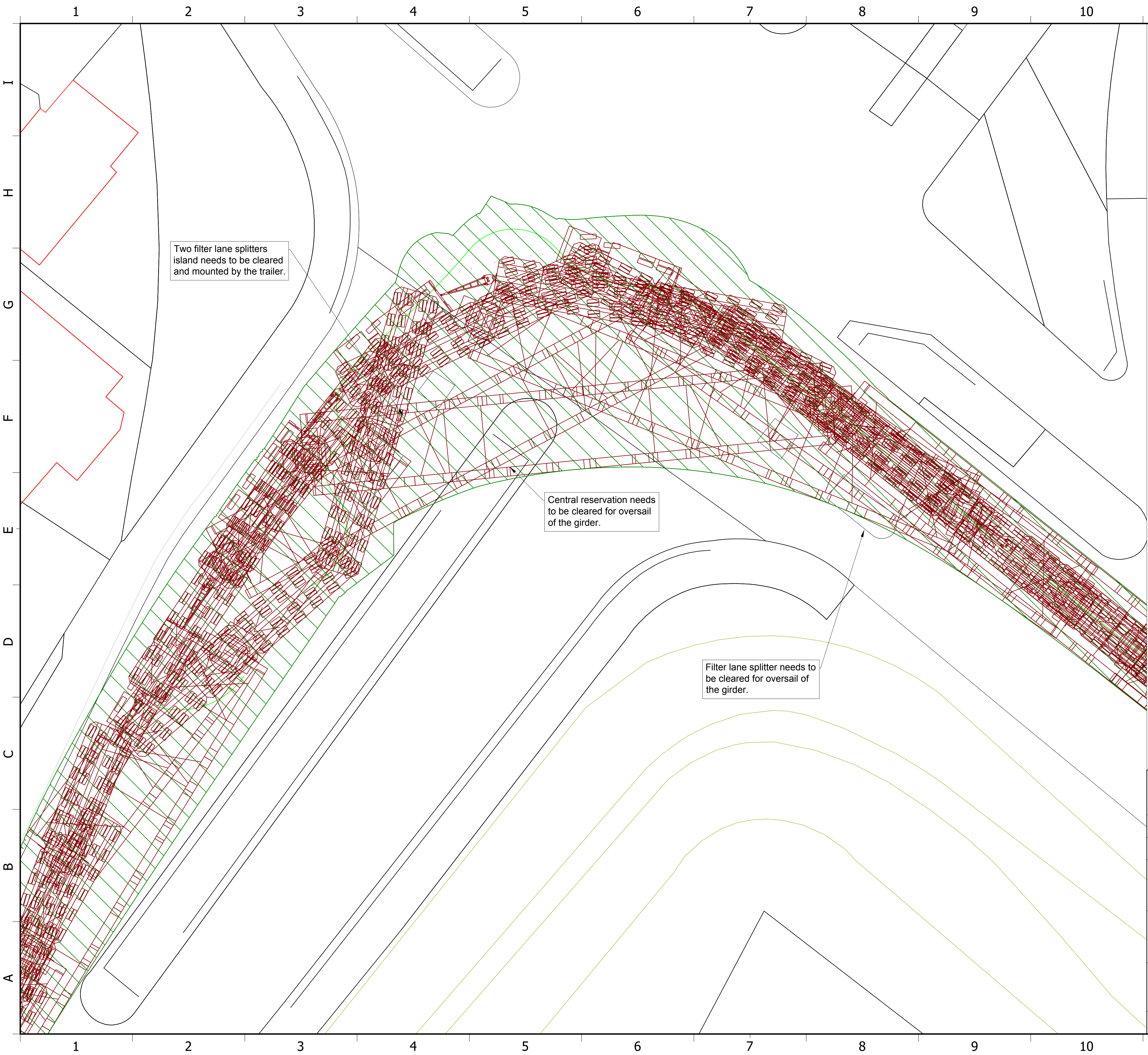

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Client: **WSP**

Project: **AQUIND**

Title: **Portsmouth Road Jct. SPA**

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Client: **WSP**

Project: **AQUIND**

Title: **Lovedean Lane Jct. SPA**

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Client: **WSP**

Project: **AQUIND**

Title: **Lovedean Lane Milton Road Jct. SPA**

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Client: **WSP**

Project: **AQUIND**

Title: **Day Lane Jct. SPA**

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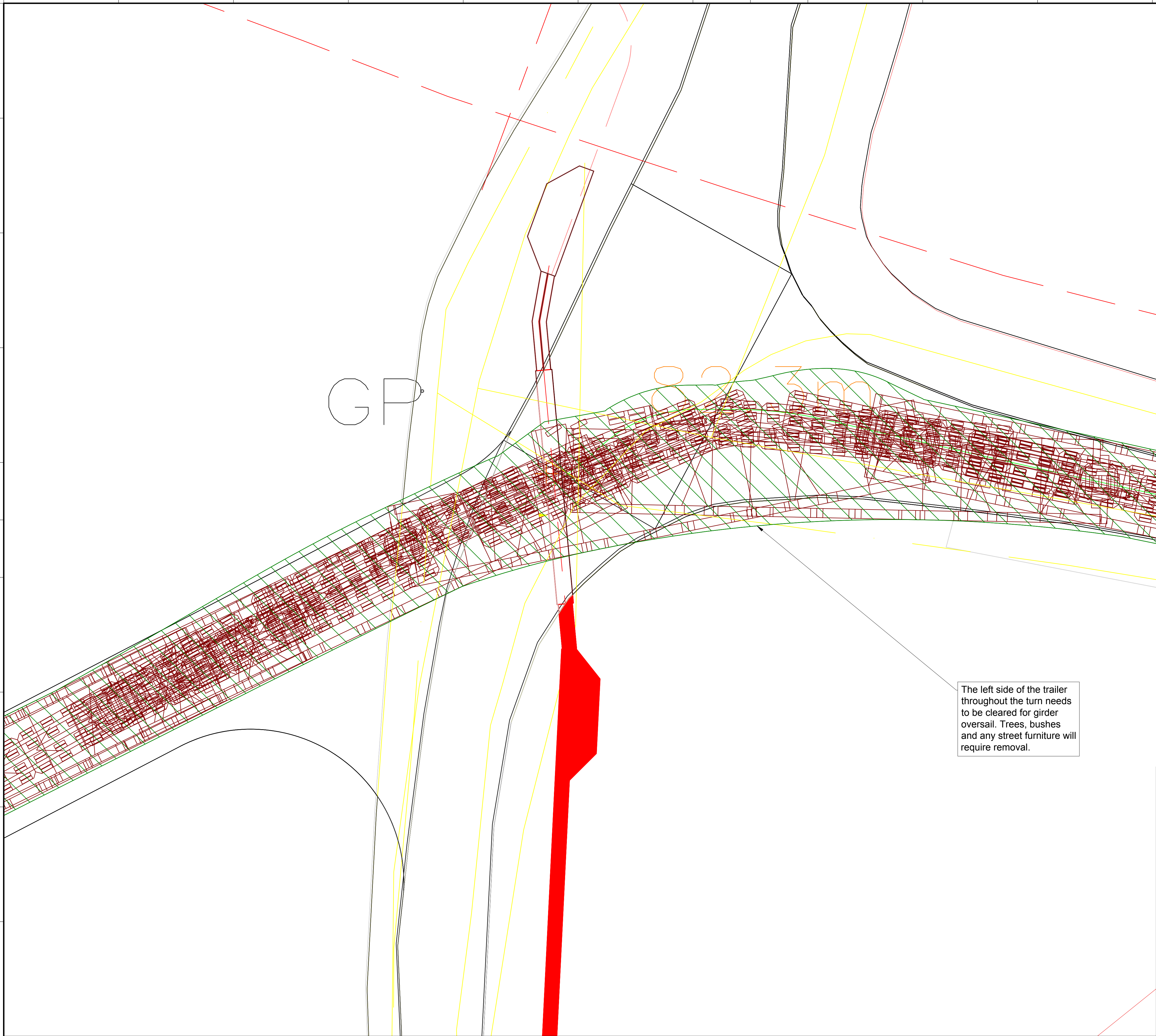

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Project: **AQUIND**

Title: **Site Entrance Option 1 SPA**

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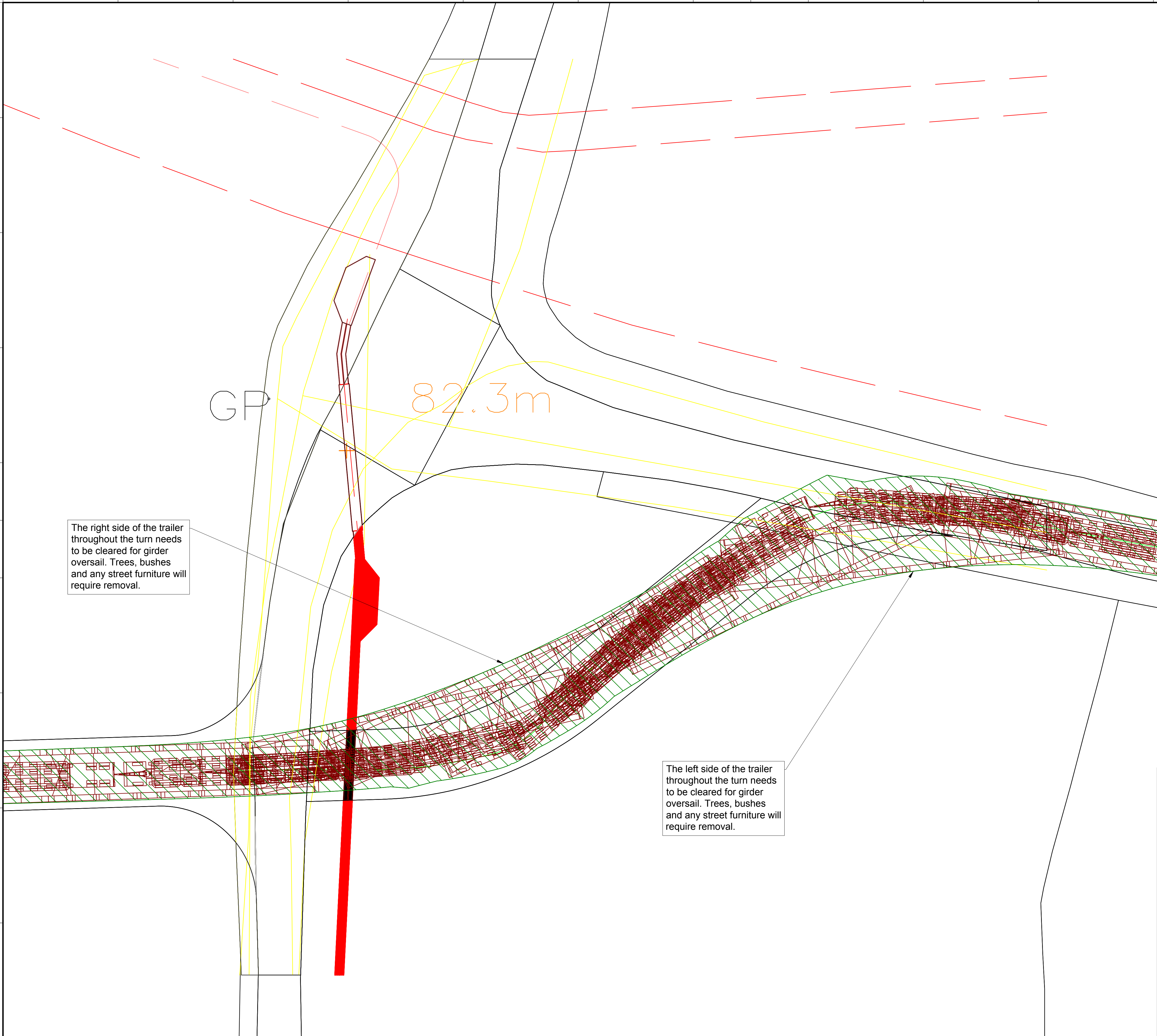

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Appendix B – Updated Framework Construction Traffic Management Plan

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 – Appendix 22.2 Framework Construction Traffic Management Plan

The Planning Act 2008

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

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Document Ref : 6.3.22.2

PINS Ref. : EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Environmental Statement – Volume 3 – Appendix 22.2 – Framework Construction Traffic Management Plan

PINS REF.: EN020022

DOCUMENT: 6.3.22.2

DATE: OCTOBER 2020

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DOCUMENT

Document	**6.3.22.2 Framework Construction Traffic Management Plan**
Revision	003
Document Owner	WSP UK Limited
Prepared By	S. Gander and D. Jenkins
Date	18 September 2020
Approved By	C. Williams
Date	18 September 2020

CONTENTS

TABLES

PLATES

APPENDICES

1. INTRODUCTION

1.1. OVERVIEW

1.1.1.1. This document sets out the proposed construction traffic arrangements and mitigation measures associated with the Onshore Components of the Proposed Development. The terminology used in this document is consistent with that used in the Glossary (APP-006 Rev 002). For ease of reference, the Glossary terms relevant to this document are repeated below.

Table 1 - CTMP Glossary

Term	Definition
Abnormal Load	An Abnormal Load is a vehicle that has any of the following: a mass of more than 44,000 kilograms ('kg'), an axle load of more than 10,000 kg for a single non-driving axle and 11,500 kg for a single driving axle, a width of more than 2.9 m ('m'), a rigid length of more than 18.65 m.
Abnormal Indivisible Load	An Abnormal Indivisible Load (AIL) is a load which can't be divided into two or more loads to be transported by road.
Access Road	The permanent road that will be constructed to facilitate vehicular access to the Converter Station from the existing highway network.
AQUIND Interconnector	The Project
Cable Joint	The components required to connect together two sections of Cable.
Cables	Insulated metallic electrical conductors used for the transfer of power.
Construction Environmental Management Plan (CEMP)	Document setting out methods to avoid, minimise and mitigate Impact on the environment and surrounding area and the protocols to be followed in implementing these measures in accordance with environmental commitments during the Construction Stage.
Converter Station	The fenced compound, adjacent to Lovedean Substation, comprising the necessary equipment to convert AC to Direct Current ('DC') and vice versa.

Term	Definition
Converter Station Area	This is the area of land identified to accommodate: • The Converter Station and associated equipment; • The connection between the AC Cables and the National Electricity Transmission System ('NETS') at Lovedean Substation; • The AC Cable Corridor to accommodate the AC Cables and Fibre Optic Cable ('FOC') between the Converter Station and Lovedean Substation; • The High Voltage Direct Current ('HVDC') Cables and FOC corridor from the Converter Station southwards; • A Works Compound and Laydown Area; Access Road and associated haul roads; • Surface water drainage and associated attenuation ponds; • Landscape and ecology measures; • Utilities such as potable water, electricity and telecom; • the compound comprising the Telecommunications Building(s) and associated equipment.
Development Consent Order (DCO)	A Development Consent Order ('DCO') is a statutory instrument made by the Secretary of State ('SoS') pursuant to the Planning Act 2008 (as amended) ('PA 2008')
Direct Current (DC)	A flow of continuous electrical current which flows in one direction.
Ducted Installation	An installation method where ducts are installed in the ground and cables are subsequently pulled into them.
Fibre Optic Cable	A telecommunications cable made from thin strands of glass fibre, which uses pulses of light to transfer data. Each Pole will have a FOC, which will be used to provide a dedicated communications link between the UK and French converter stations for the purposes of control, protection and monitoring of the Project. Capacity provided by strands that

Term	Definition
	are not utilised for these functions will be available for third parties to purchase for other telecommunication purposes.
Fibre Optic Cable (FOC) Infrastructure	The physical infrastructure associated with the fibre optic telecommunication system. This includes: • Fibre Optic Cables; • up to two Optical Regeneration Stations (ORS) at the Landfall; • up to two Telecommunications Buildings in the vicinity of the Converter Station; • auxiliary power supply and fuel supply to buildings; • securely fenced compounds around buildings; access and parking to buildings.
Haul Road	A temporary road constructed for use during the Construction Stage.
Highway Boundary	The area which is adopted road, maintained at public expense.
Horizontal Directional Drilling (HDD)	A trenchless technology that involves drilling into the ground to create a bore with a generally horizontal profile, along a planned pathway.
HVAC Cable	The Cable designed to transfer power using High Voltage Alternating Current (HVAC) at a nominal voltage of 400 kV, which will connect Lovedean Substation to the Converter Station.
HVAC Cable Corridor	The area within which the HVAC Cable Route and all associated Temporary Works will be located.
HVAC Cable Route	The final refined route for the HVAC Cable that lies within the HVAC Cable Corridor.
HVDC Cable	The Cable designed to transfer power using High Voltage Direct Current (HVDC) at a nominal voltage of 320 kV. For the purpose of the Proposed Development, this comprises the Onshore Cable and the Marine Cable.

Term	Definition
HVDC Cable Corridor	Comprises the Onshore Cable Corridor and the Marine Cable Corridor.
HVDC Circuit	One of two pairs of HVDC Cables, an associated Fibre Optic Cable (FOC), and any ancillaries, each of which will carry half of the specified rating.
Interconnector	An electrical system which provides the connection between electricity transmission systems, usually between areas over long distances or different frequencies.
Joint Bay	The location where sections of Cable are connected together. Each Joint Bay will be an excavation containing two joints for the HVDC Cables that form a HVDC Circuit and, at some locations, a joint for the Fibre Optic Cable (FOC) and / or equipment for testing the cable sheaths, to ensure the performance of the Cables.
Landfall	The Landfall is the area where the Onshore Cable Corridor and Marine Cable Corridor meet and includes the Transition Joint Bay (TJB), HDD compound and works where the Marine Cables come ashore, and the Optical Regenerations Stations (s) including their compounds and mitigations.
Laydown Area	Temporary area required during the Construction Stage of the Proposed Development for short-term storage of materials, which will be reinstated to its original state following demobilisation.
Lovedean Substation	The existing National Grid electrical substation located at Lovedean, Hampshire.
Marine Components	The Marine Components of the Proposed Development are all of that part below the Mean High Water Springs (MHWS).
Micro-Tunnelling	Driving tunnel sections, usually steel tubes or reinforced concrete section, in a straight line, between pits excavated on either side of the obstruction to be crossed. Hydraulic rams are used to drive the tunnel sections.
Mitigation Measures	Actions proposed to prevent, reduce and where possible, offset significant adverse Effects arising from the whole or specific elements of the Proposed Development.

Term	Definition
Onshore Cable	The part of the HVDC Cable installed inland from the Mean High Water Springs (MHWS).
Onshore Cable Corridor	The area within which the Onshore Cable Route and all associated Temporary Works will be located. This runs landward from the Mean Low Water Springs (MLWS).
Onshore Cable Route	The final refined route for the Onshore Cable that lies within the Onshore Cable Corridor.
Onshore Components	The Onshore Components of the Proposed Development are all of that part landward from the Mean Low Water Springs (MLWS).
Operational Stage	The stage after which the Proposed Development is handed over by the relevant contractor and signed off as operational. It would remain in its Operational Stage until it is decommissioned.
Optical Regeneration Station(s) **(ORS)**	Structural unit housing telecommunication equipment for the Proposed Development and responsible for optical signal amplification .
Order Limits	The limits shown on the Works Plans (document reference 2.4) within which the Authorised Development may be carried out.
Project	The Project comprises the Proposed Development, as well as the development proposed within French borders and the French Exclusive Economic Zone (EEZ) which do not fall within the remit of the Application.
Proposed Development	The development for which a Development Consent Order (DCO) is sought. This is equivalent to the Authorised Development that is set out in Schedule 1 of the draft Development Consent Order (dDCO) submitted with the Application (document reference 3.1).
Site	The land within the Order Limits that is shown on the Works Plans (document reference 2.4).
Telecommunications Building(s)	A building or buildings housing telecommunication equipment. For the Proposed Development, this / these will

Term	Definition
	be contained within (a) dedicated building(s) within its / their own perimeter adjacent to the Converter Station perimeter.
Temporary Works	Those parts of the works that allow or enable construction of the Proposed Development and which do not remain in place at the completion of the works.
Transition Joint Bay (TJB)	The underground onshore point at which the HVDC Cable is jointed at the Landfall.
Trenching	The excavation and reinstatement of a narrow trench, typically 700 – 1,000 mm wide and 1,200 mm deep, into which the Cable ducts will be placed. The trench may be internally supported and will be reinstated as per the original construction.
Trenchless	Any technique~~s~~ for installing the HVDC Cable ducts and Fibre Optic Cable (FOC) ducts that does not require the excavation of a trench, enabling infrastructure and sensitive locations to be crossed with limited disruption. Examples include Horizontal Directional Drilling (HDD), whereby a hole is bored from, and exits at, ground level, and Micro-Tunnelling, auger boring and thrust boring, whereby a bore is drilled to and from excavated pits, using hydraulic ramming equipment.

1.2. BACKGROUND

1.2.1.1. AQUIND Interconnector is a proposed electricity interconnector between France and the UK. The Project includes a new marine and onshore High Voltage Direct Current (‘HVDC’) power cable transmission link between Normandy in France and the south coast of England, converter stations in both England and France, and fibre optic data transmission cables.

1.2.1.2. With a net capacity of 2000 megawatts (‘MW’), it will significantly increase the cross-border capacity between the UK and France, increasing competition and security of the electricity supply in each of the respective countries. To enhance the security of supply and availability of its power transfer capability, it is being designed as two independent pairs of cables, each with the net capacity of 1000 MW with a total net transmission capacity of up to 2000 MW. The Proposed Development is a part of the Project and comprises the Onshore and Marine Components.

1.2.1.3. Extensive consultation has been undertaken with the Local Highway Authorities and Highways England in relation to the draft Development Consent Order ('dDCO') for the Proposed Development, which this Framework Construction Traffic Management Plan (herein referred to as the Framework CTMP) is part. This document should be read in conjunction with the following documents:

- Chapter 3 (Description of the Proposed Development) of the ES Volume 1 (Examination Library Reference: APP-118);
- Appendix 22.1 (Transport Assessment) of the ES Volume 3 (Examination Library Reference: APP-448);
- Onshore Outline Construction Environmental Management Plan ('CEMP') (Examination Library Reference: APP-505); and
- Appendix 6 (Framework Traffic Management Strategy) of Appendix 22.1 (Transport Assessment) ES Volume 3 (Examination Library Reference: App-449).

1.3. SCOPE OF FRAMEWORK CTMP

1.3.1.1. This Framework CTMP provides an overarching plan as to how the construction traffic and site operations will be managed across the extent of the Onshore Components. Individual CTMP documents will be approved in relation to relevant work site locations, which will be required to accord with the relevant to them contained in this Framework CTMP. These will be prepared and approved by the relevant Local Highway Authority(s) for the area in which the works to which they relate are located, ahead of the relevant works commencing.

1.3.1.2. The Onshore Cable Corridor passes through a number of administrative boundaries which include East Hampshire District Council ('EHDC'), Winchester City Council ('WCC'), Havant Borough Council ('HBC'), and Portsmouth City Council ('PCC'). Hampshire County Council (HCC) is the Local Highway Authority for the roads within the WCC, HBC and EHDC administrative areas and PCC, as a unitary authority, is highway authority for Portsmouth. The Onshore Cable Corridor crosses or runs adjacent to the A3(M) and the A27 which fall under Highways England's jurisdiction, albeit no part of the Onshore Cable Corridor is located on the strategic road network for which Highways England has responsibility.

1.3.1.3. The Framework CTMP sets out the framework for the detailed CTMP's to be approved, including hours of operation, traffic routing, safe vehicular access and manoeuvring and minimising traffic impacts.

1.3.1.4. The individual CTMPs to be prepared and approved post grant of the DCO for the Proposed Development must contain relevant details of:

- Vehicle routing plans;

- Proposed programme and duration;
- Number of construction personnel including travel arrangements and mitigation;
- Alterations to the highway to enable construction, including temporary and permanent;
- Details of the number of construction and delivery vehicles using the public highway, including abnormal and indivisible loads;
- Traffic management details;
- Compounds and Laydown Area details; and
- Highway condition surveys.

1.4. OBJECTIVES OF CTMP

1.4.1.1. The Framework CTMP sets out the measures that can be implemented to provide mitigation for the construction traffic associated with the Onshore Components of the Proposed Development. The Framework CTMP has the primary objective of minimising impact and disruption to existing users of the public highway network and the surrounding community, forming the framework the individual CTMP's to be approved and which must be complied with during the construction of the Onshore Components. This will be achieved by:

- Minimising the number of vehicular trips required for the movement of material and people;
- Ensuring construction traffic trips and routes used are planned to be safe, efficient and timely;
- Ensuring the impact to residents, local sensitive receptors and the travelling public are minimised; and
- The CTMP and the individual CTMPs being monitored, reviewed and updated as necessary and improvements incorporated throughout the duration of the works being undertaken.

1.5. REPORT STRUCTURE

1.5.1.1. The following sections are included in this Framework CTMP and will form, in part, the basis of the individual CTMPs;

- Section 1 – Introduction – this section including scope and objectives;
- Section 2 – The Proposed Development – Onshore Cable Corridor, site compounds and Laydown Areas, typical construction vehicles, Abnormal Loads (including AIL's) and construction activities;

* Section 3 – Vehicular Movement Management – vehicle routing strategy, timing of movements, sensitive receptors, reducing impacts of Heavy Goods Vehicle (‘HGVs’), local highway issues and constraints and section specific constraints, management of Abnormal Loads and construction HGV routes;
* Section 4 – Construction Workforce – descriptions of controls to mitigate the impact of construction staff traffic;
* Section 5 – Site Accesses/Haul Road – location, design, management and mitigation of permanent and temporary accesses points;
* Section 6 – Highway/Railway Crossings – details of interventions required ;
* Section 7 – Management of Road Safety – Existing collision records and highway condition surveys; and
* Section 8 – Implementation and Monitoring – Implementation, compliance and monitoring of the individual CTMPs.

2. THE PROPOSED DEVELOPMENT

2.1. OVERVIEW

2.1.1.1. This section summarises the Construction Stage for the Onshore Components, including construction techniques and the indicative construction programme. The main construction activities for the Onshore Component include the following:

- Landfall works, including the erection of the Optical Regeneration Station ('ORS') buildings at Eastney;
- Construction of the Onshore Cable Route, with an approximate length of 20 km, including Horizontal Directional Drilling ('HDD') at;
  - Landfall UK-HDD-1;
  - Milton and Eastney Allotments UK-HDD-2;
  - Langstone Harbour UK-HDD-3;
  - Farlington Railway Crossing (Trenchless) UK-HDD-4;
  - Kings Pond UK-HDD-5; and
  - Milton Common UK-HDD-6.
    - Substation works at Lovedean Substation;
    - Cable jointing bays at intervals on the Onshore Cable Route;
    - Permanent highway interventions;
    - Permanent access from the highway; and
    - Temporary construction haul roads and accesses from public highway.
- Construction activities at the Lovedean Converter Station Area;

2.1.1.2. The Order Limits for the Onshore Components of the Proposed Development are shown in Appendix 1.

2.2. CONVERTER STATION AREA

2.2.1.1. The Converter Station will be erected to the west of the existing Lovedean substation and will be connected to the substation by HVAC cables and FOC. A new Access Road, proposed to act as the construction and permanent access, will be built from Broadway Lane across farmland to access the new Converter Station Area from the south. This road will also serve as the new permanent access to the Converter Station. The Telecommunications Buildings will be constructed to the south of the

Converter Station. The Converter Station Area will also contain attenuation ponds, various mitigations measures and a part of the Onshore Cable Route as well as areas of temporary use.

2.3. CABLE CORRIDOR SECTIONS

2.3.1.1. The Onshore Cable Corridor has been divided into ten sections for ease of understanding, planning and consultation. The sections are as follows from the north at the site of the Converter Station in Lovedean to south where the cables make Landfall at Eastney;

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

2.3.1.2. Please refer to Figure 3.9 of the ES Volume 2 (Examination Library Reference: App-154) for a plan identifying the section of the Onshore Cable Corridor.

2.3.1.3. Below are brief descriptions of the works associated within each section of the Onshore Cable Corridor..

2.3.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

2.3.2.1. The Onshore Cable Corridor will head south through farm land for approximately 800 m crossing Broadway Lane west of Denmead Farm and east of Edney's Lane (The Crossways).

2.3.3. SECTION 2 – ANMORE

2.3.3.1. This 1.2 km section of Onshore Cable Corridor will cross agricultural farm land between Broadway Lane to Anmore Road in the land bound by Edney's Lane in the west and Anmore Lane in the east. The Onshore Cable Corridor then crosses Anmore Road.

2.3.4. SECTION 3 – DENMEAD/ KINGS POND MEADOW

2.3.4.1. This section covers the Onshore Cable Corridor from Anmore Road east of Denmead to B2150 Hambledon Road, following an off-road route via land known as Kings Pond Meadows. The section length is approximately 760 m. This Section partially comprises installation via HDD (HDD-5), in the fields to the south of Anmore Road and to the north of B2150 Hambledon Road.

2.3.5. SECTION 4 – HAMBLEDON ROAD TO FARLINGTON AVENUE

2.3.5.1. This section of the Onshore Cable Corridor passes from the administrative boundary of HCC into PCC. The Onshore Cable Corridor heads south for approximately 5.4 km through the HCC area following the B2150 Hambledon Road from Waterlooville and the A3 Maurepas Way/London Road through Purbrook and Widley to the highway boundary of HCC and PCC, which is north of B2177 Portsdown Hill Road.

2.3.5.2. The Onshore Cable Corridor within the PCC area is 1.2 km long and continues east along B2177 Portsdown Hill Road to Farlington Avenue as far as the junction with Burnham Road.

2.3.6. SECTION 5 – FARLINGTON

2.3.6.1. This 1 km section leads the Onshore Cable Corridor south from the junction of Burnham Road on Farlington Road, to the junction with A2030 Havant Road and turning east to the A2030 Eastern Road and continuing south until Zetland Field.

2.3.7. SECTION 6 – ZETLAND FIELD & SAINSBURY'S CAR PARK

2.3.7.1. This 600 m section will leave the carriageway of A2030 Eastern Road and use Zetland Field to continue south to Fitzherbert Road which it will cross and enter the car park of the retail park and Sainsbury's supermarket. Following the western side of the car park, it will reach the south coast railway.

2.3.7.2. A trenchless solution will be utilised for the Onshore Cable Route to pass under the railway embankment (HDD-4). This will require a compound for the launch/reception pit.

2.3.8. SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

2.3.8.1. After passing under the south coast railway into Farlington Playing Fields (HDD-4), the Onshore Cable Corridor will follow the eastern boundary of Farlington Playing Fields where it will be required to pass under the A27 Havant Bypass (maintained by Highways England) for which HDD beneath Langstone Harbour will be utilised (HDD-3).

2.3.8.2. South of the A27, the Onshore Cable Corridor will cross beneath the mud flats of Langstone Harbour to reach Portsea Island, re-joining the A2030 Eastern Road at Kendall's Wharf opposite Anchorage Road, where it will proceed south to Airport

Service Road junction. This section has a total distance of approximately 2.3 km.

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

2.3.9.1. This section has three potential routes for the Onshore Cable Corridor. The first route utilises the A2030 Eastern Road and the residential street of Eastern Avenue. The second crosses the western and southern boundary of Milton Common from Eastern Road to Moorings Way. The third follows the eastern boundary of Milton Common to reach Moorings Way. Milton Common is a former landfill site, and as a consequence there remains uncertainty it will be fully suitable for the laying of the Onshore Cables. For this reason, the options are retained to ensure engineering feasibility.

2.3.10. SECTION 9 – MOORINGS WAY TO BRANSBURY ROAD

2.3.10.1. The Onshore Cable Corridor leads from Moorings Way to head south through the sports grounds of University of Portsmouth where it will cross Locksway Road into the Thatched House public house car park and pass under the Milton and Eastney Allotments (through use of HDD-2). It will then enter Kingsley Road and passing into Bransbury Park via Yeo Court or via the access opposite Ironbridge Lane (or potentially a Cable Circuit utilising each depending on final confirmed engineering feasibility). The route will continue across Bransbury Park to join Henderson Road.

2.3.11. SECTION 10 – EASTNEY (LANDFALL)

2.3.11.1. This section of the Onshore Cable Corridor leads to the Landfall, where the Transition Joint Bays (TJB) and Optical Regeneration Station (ORS) buildings are to be located. After exiting Bransbury Park, the Onshore Cable Corridor will travel east along Bransbury Road, Fort Cumberland Road and Henderson Road to the Fraser Range access road to the Landfall site, which is currently a car park with unmade ground. The car park will serve as a contractor’s compound and lay-down area for the construction of the TJB, ORS and in respect of the jointing of the Onshore Cables and the Marine Cables.

2.4. PERMANENT ACCESS POINTS

2.4.1.1. There will be two permanent accesses delivered by the completion of the Proposed Development. The first will be at the proposed Converter Station from Broadway Lane in Lovedean and the second to the ORS off Fort Cumberland Road, discussed further below.

2.4.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA) ACCESS

2.4.2.1. To provide a permanent access junction to and facilitate construction of the Converter Station the junction of Broadway Lane and Day Lane will be upgraded, which will include the construction of a Haul Road and temporary holding area. The proposed access junction is shown in Drawing AQD-WSP-UK-OS-DR-Z-200215 included at Appendix 2.

2.4.2.2. As can be seen in drawing AQD-WSP-UK-OS-DR-Z-200215, the proposed Haul Road and temporary holding area comprise a new highway link to be provided between Day Lane, east of the existing bend, and at Broadway Lane, south of the existing bend. This will provide a managed facility for vehicles entering the Site during the Construction Stage with vehicle movements across Broadway Lane able to be marshalled. This link also accommodates HGV / abnormal load movements and would be retained as a permanent feature (unadopted) to allow future access for such vehicles should this be required in connection with the operation and maintenance of the Converter Station and the Telecommunications Buildings.

2.4.3. SECTION 10 – EASTNEY (LANDFALL)

2.4.3.1. A new formal access arrangement is required for the ORS buildings to be located in the public car park south of Fort Cumberland Road. This access will be located on the southern side of the ORS compound and directly from the public car park. A new permanent access will therefore not be required onto Fort Cumberland Road.

2.5. COMPOUND AND LAYDOWN AREAS

2.5.1.1. The contractor's compound will be located at the proposed Converter Station Area. This compound will be accessed from Broadway Lane via the new junction (described in 2.4), which will provide access to the Access Road which will serve as a Haul Road during the Construction Stage. The Access Road will also provide a permanent access to the Converter Station during operation.

2.5.1.2. To facilitate construction, temporary Laydown Areas may be created at Joint Bay locations (which are to be confirmed as part of the detailed design approvals) to store materials such as cable ducting and arisings from the works. This will prevent double handling of materials and additional vehicular trips.

2.5.1.3. A generic layout for Laydown Areas is shown in Plate 1 below. The areas will be fenced from the public and vehicular access to them will be managed.

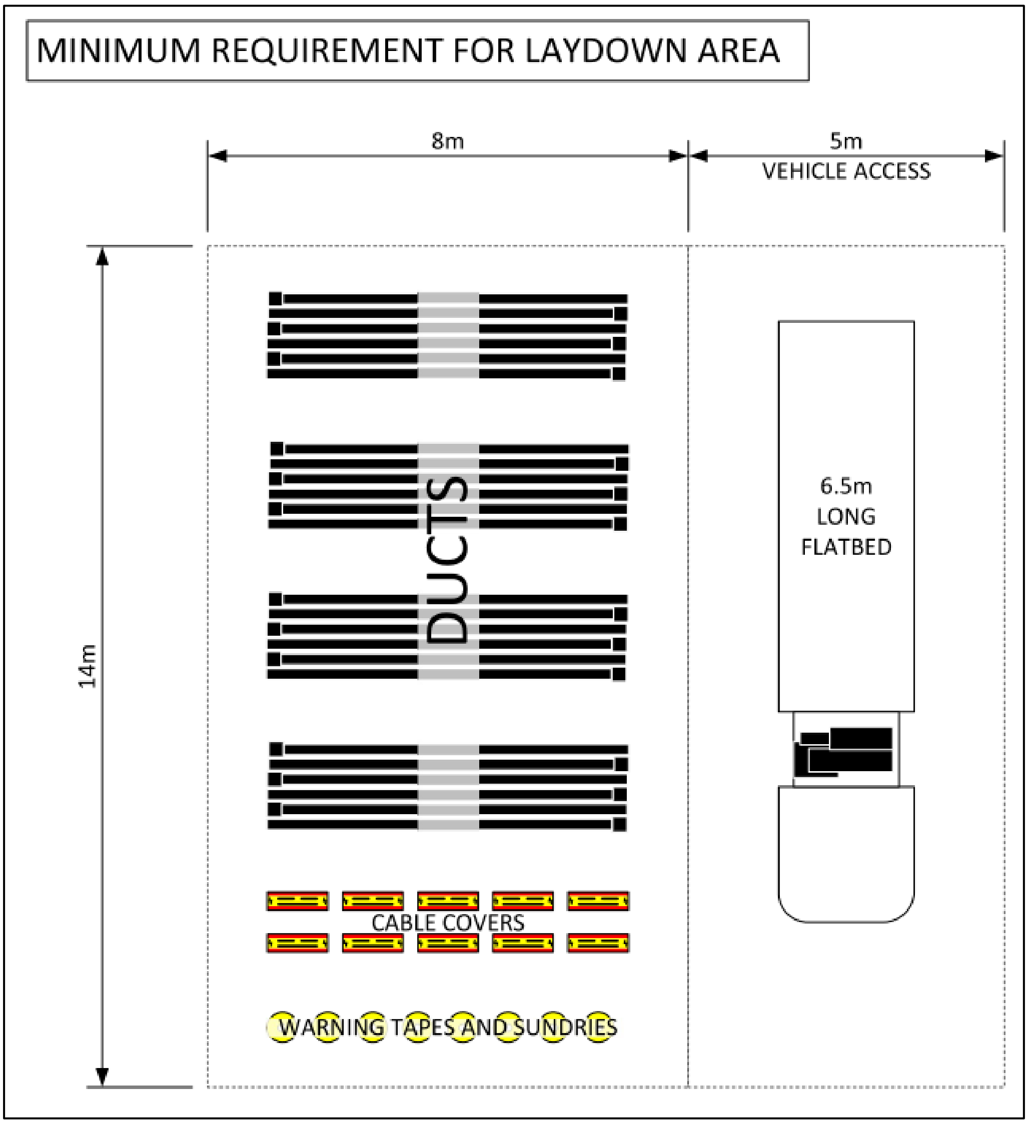


Plate 1 - Typical Laydown Area Dimensions

2.5.1.4. Welfare facilities, usually in the form of a mobile welfare unit, will be provided with each individual works area and therefore no additional facilities will be provided at Laydown Areas.

2.5.1.5. At Joint Bays, a compound area of 20 m by 6 m will be required, which will include space of welfare facilities within the areas identified for winch/drum land-take shown in Plate 2.

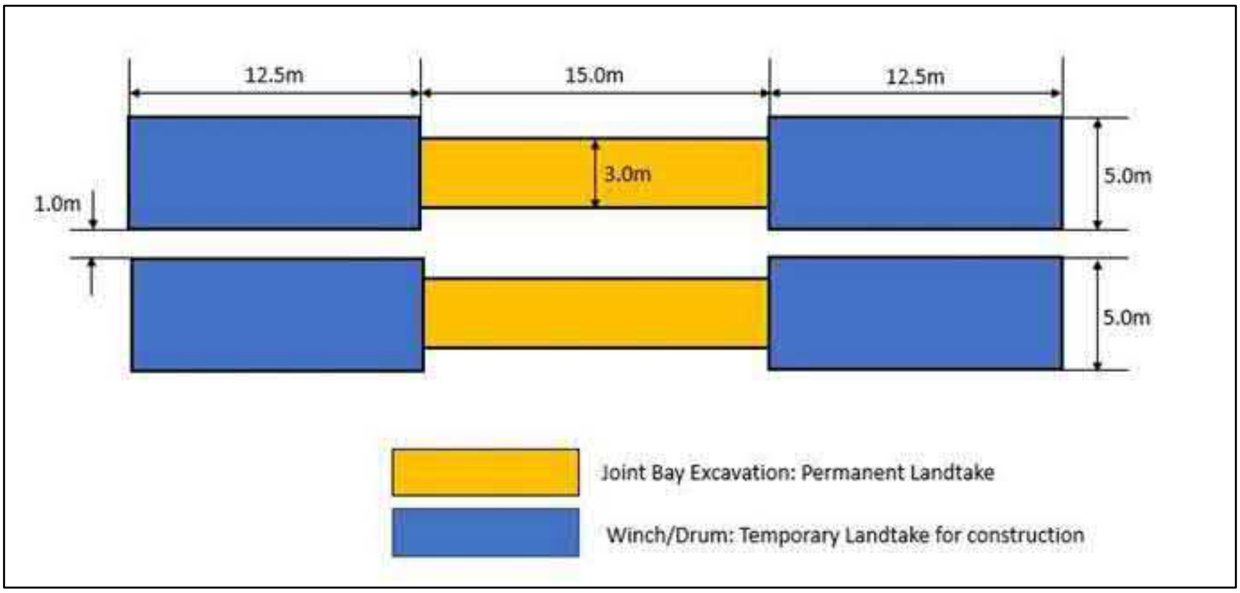


Plate 2 – Typical Compound Area for Joint Bay

2.6. INDICATIVE PROGRAMME

2.6.1.1. The indicative construction programme is anticipated to extend over three years, with further information provided within Chapter 3 (Description of the Proposed Development) of the Environmental Statement Volume 1 (Examination Library Reference: APP-118). The indicative construction programme is shown in the Table 2 below. These timescales are subject to cable production, installation rates and environmental considerations. A Gantt chart of the proposed programme is provided in Appendix 3.

Table 2 - Indicative Construction Programme – Converter Station & Onshore Cable Corridor

Construction Activity	Anticipated Programme
HDD and Landfall installation	Q3 2021 – Q1 2024
Onshore HVDC Route Construction / Installation	Q3 2021 – Q4 2023

2.6.1.2. Enabling works are indicatively anticipated to take place in quarter three of 2021 and last approximately 12 months through to the middle of 2022. These works would include site clearance, such as tree and hedge pruning and clearance and modifications to junctions and roads to accommodate construction activities and vehicles.

2.6.1.3. The construction of the Converter Station at Lovedean is anticipated to take approximately two and a half years from Q3 2021. The construction of the Landfall for the TJB, HDD works and ORS is anticipated to last up to 18 months.

2.6.1.4. The installation of the Onshore Cable Route is anticipated to start in the third quarter of 2021 and continue for 27 months to Q3 2023.

2.6.1.5. The following ecological considerations are taken into account in the phasing of enabling and construction works for the Converter Station Area and Onshore Cable Route:

- 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.

2.6.1.6. Public activities and events that the Applicant has been aware of which are likely to be planned in proximity to the Converter Station Area and Onshore Cable Corridor, include but are not limited to the following:

- School term times (as required);
- Football season;
- Coastal Waterside Marathon;
- Great South Run;
- South Central Festival; and
- Victorious Festival.

2.6.1.7. The Framework Traffic Management Strategy (Examination Library Reference: App-449 Rev 002) provides more detailed information regarding the anticipated duration of the construction programme for each individual section of the Onshore Cable Route and provides restrictions in relation to which sections and subsections may constructed in parallel so as to avoid unacceptable levels of cumulative effects.

2.6.1.8. The controls provided for within the FTMS mitigate the impacts of the construction works on the highway network. Traffic Management Strategies for the works are to be prepared in accordance with the FTMS and approved by the relevant local highway authorities separately to the approval of the individual CTMP's.

2.7. SENSITIVE RECEPTORS

2.7.1.1. Identification of local sensitive receptors that would be negatively impacted by the construction of the Onshore Cable Route is taken into account in this Framework

CTMP. Mitigation measures are to be developed in the detailed CTMPs in terms of construction requirements and programme constraints in relation to them. The identified sensitive receptors include:

- Schools, nurseries and places of learning;
- Hospitals, medical centres and doctor surgeries;
- Places of worship; and
- Leisure facilities.

2.7.1.2. The following table identifies the main receptors per section which are required to be considered in relation to works proximate to them. Additional receptors may be identified by when and the individual CTMP's are prepared for approval in liaison with HCC and PCC. A plan locating all the identified sensitive receptors listed below is contained within Appendix 4.

Table 3 – Identified Sensitive Receptors

Section	Location	Receptor
1	Broadway Lane, Day Lane, Lovedean Lane	Campsite, pub, school, local shops, B&B
2	No Sensitive Receptors	
3	Anmore Road, Hambledon Road, Soake Road	Retail, pub, community centre, infant and junior school, care home
4	Hambledon Road, London Road, Portsdown Hill Road	Retail, industrial estates, pubs, schools, places of worship, care home, medical centre, guest house
5	Farlington Avenue, Solent Road, Evelegh Road	Pub, infant and junior school, Scout hut
6	Eastern Road	Retail
7	Eastern Road	Hotel, sports ground, retail, football club, sailing club, Victorious Music Festival (Farlington Playing Fields)
8	Eastern Road, Tangier Road, Burrfields Road, Moorings Way	Golf club, pub/restaurant, caravan park, hotel, retail, college, infant school, places of worship, cemetery
9	Milton Road, Bransbury Road, Longshore Way	Places of worship, community centre, park, retail, nurseries, junior schools,

Section	Location	Receptor
		museum, adult day care, medical centre, university campus, pub/restaurants, sailing club, hospital
10	Henderson Road, Fort Cumberland Road, Ferry road	Museum, adult day care, holiday park, playground, marina, lifeboat station

2.8. CONSTRUCTION VEHICLES

2.8.1.1. The following section provides details of typical vehicles which are expected to be used during the construction of the Onshore Cable Route, Converter Station and Landfall works.

2.8.2. HEAVY GOODS VEHICLES FOR CONVERTER STATION WORKS

2.8.2.1. These are vehicles that will be utilised for the delivery of materials and equipment and removal of waste. These vehicles will be in the form of articulated and rigid vehicles. All vehicles will have engines with the minimum standard of Euro 6 for diesel and Euro 4 for petrol. This will ensure that vehicular emissions are minimised as much as possible during construction. These vehicles may include;

- Six axle articulated tractor and trailer units including low-loader trailers for the delivery of materials and plant with gross weights up to 44 tonnes;
- Ready-mix concrete in the form of four axle rigid vehicles up to 32 tonnes in gross weight
- Rigid four axle tipper trucks with and without loader cranes for delivery of bulk aggregates and waste removal. Lorries will be of low and high visibility cabs for cyclist safety;
- Six axle articulate tractor and modified trailer for cable drum delivery to jointing bays; and
- Rigid flatbed trucks for delivery of construction materials for offloading with loader crane or forklift truck.

2.8.3. LIGHT GOODS VEHICLES AND CARS FOR CONVERTER STATION WORKS

2.8.3.1. Vehicles such as cars, vans and Light Goods Vehicles ('LGVs') under 7.5 tonne in gross weight will be used during the construction process for the movement of staff, equipment and deliveries. The individual CTMPs will propose measures to reduce the number of movements in so far is as possible in connection with the works.

Further details of possible measures to reduce movements are provided later in this report in Section 3.7.

2.8.4. CONSTRUCTION VEHICLES FOR DUCT INSTALLATION, JOINT-BAY CONSTRUCTION/BACK FILL & REINSTATEMENT

2.8.4.1. The following vehicles will be used for duct installation, joint bay construction and reinstatement works along the Onshore Cable Route:

- Low loader for plant deliveries;
- Grab wagon for muck away/stone & deliveries;
- HGV with loader crane for material deliveries;
- Vacuum tanker for dewatering excessive amounts of ground water;
- Tarmac lorries; and
- Welfare vehicle.

2.8.5. CONSTRUCTION VEHICLES FOR CABLE INSTALLATION AND CABLE JOINTING

2.8.5.1. The following vehicles will be used for cable installation and cable jointing works along the Onshore Cable Route:

- HGV with loader crane /low loader for plant deliveries;
- Low loader for cable deliveries;
- Welfare vehicle;
- Light vehicles, including security vehicle; and
- Vacuum tanker for dewatering excessive amounts of ground water.

2.8.6. CONSTRUCTION VEHICLES FOR HORIZONTAL DIRECTIONAL DRILLING

2.8.6.1. The following vehicles will be used in connection with HDD works:

- Low loader for plant deliveries;
- HGVs for material deliveries, including water, fuel, bentonite etc;
- HGV with loader crane for moving equipment from pipe side to rig side, delivery of cabins, storage and welfare;
- Vacuum tanker for mud return;
- Water tankers;
- Grab wagon for muck away;
- 20t tipper for stone deliveries; and

- Light vehicles.

2.8.7. ABNORMAL LOADS

2.8.7.1. The construction of Onshore Cable Route and Converter Station requires a number of abnormal loads, although it is expected the number of such vehicle movements will be low and most construction activities will take place with standard vehicles. The delivery of abnormal loads will primarily relate to delivery of infrastructure and construction plant at the Converter Station and cable drums to Joint Bays along the Onshore Cable Route.

2.8.7.2. The assessment of cable drum delivery routes is included within the Supplementary Transport Assessment [*document reference number:* 7.8.1.11]. The assessment is based on indicative Joint Bay locations. The cable drum delivery routes will be provided to PCC and HCC (as appropriate) for the Joint Bay locations when detailed design approvals are obtained. A summary of the route restrictions which impact upon likely Abnormal Load delivery routes is included in Section 3.5 “Abnormal Load Routes” of this Framework CTMP.

2.8.7.3. Management of Abnormal Loads will be the responsibility of the contractor appointed to undertake the works. They will be required to comply with the statutory regulations in terms of consulting with the relevant highway authority, police and other stakeholders and this will be confirmed in the individual CTMP’s.

2.8.8. ABNORMAL INDIVISIBLE LOADS

2.8.8.1. In addition to abnormal loads, the construction of the Proposed Development will require the delivery of some AILs. These will be required for the delivery of transformers to the Converter Station.

2.8.8.2. All such deliveries will be required to comply with the statutory regulations in terms of consulting with the relevant highway authority, police and other stakeholders. The routing and timing of the AILs will be agreed and communicated to minimise impact to residents and other road users as appropriate. Arrangements to confirm this is secured will be included in the individual CTMP’s as necessary.

2.8.8.3. Given the anticipated size of the AIL deliveries and the traffic management required, it is expected that the deliveries would be undertaken overnight or at weekends, require temporary road closures, temporary adjustment of highway geometry and temporary removal of street furniture.

2.8.8.4. A specialist abnormal load contractor, Collett, has developed the study titled Route Access Survey contained within Appendix A of the Supplementary Transport Assessment [document reference number 7.8.1.11]. This considers the local highway requirements for the delivery of large transformers to the Converter Station via AILs. It is anticipated that AILs would use the same route as National Grid transformer deliveries completed to Lovedean substation in 2018 as follows:

- A3 (Mile End Road): a dual-carriageway with 2/3 lanes in each direction, which directly serves Portsmouth Cargo Port, subject to a 40mph speed limit;
- A3 Twyford Avenue / Northern Parade: a wide single-carriageway road with some on-street parking which mainly provides access to residential properties but also some commercial properties. Twyford Avenue and Northern Parade are subject to a 30mph speed limit;
- A3 London Road: A dual-carriageway with 2/3 lanes in each direction, subject to a 30mph speed limit;
- A27 Havant Bypass: a dual carriageway with 2/3 lanes in each direction, subject to the national speed limit and part of the Strategic Road Network.
- A3(M): a dual carriageway with 2/3 lanes in each direction, subject to the national speed limit and part of the Strategic Road Network.

2.9. CONSTRUCTION ACTIVITIES

2.9.1.1. This section provides further detail on the different construction methods to be employed along the Onshore Cable Corridor. These methods are determined according to the complexity and constraints of the surrounding environment, and the type of infrastructure being installed.

2.9.2. OPEN CUT TRENCH

2.9.2.1. The majority of the Onshore Cable Route will be constructed utilising an open cut trench method. The cable ducts will be installed and the trenches reinstated before the cables are pulled through the ducts and connected at Joint Bays. The installation of ducts minimises the duration of trenching operations, allowing highways to be reinstated more quickly. Plate 3 provides a typical cross-section of open cut trench works. The trenches will typically be in the region of 700 mm wide and a minimum of five metres apart, although this may vary to respond to specific constraints encountered.

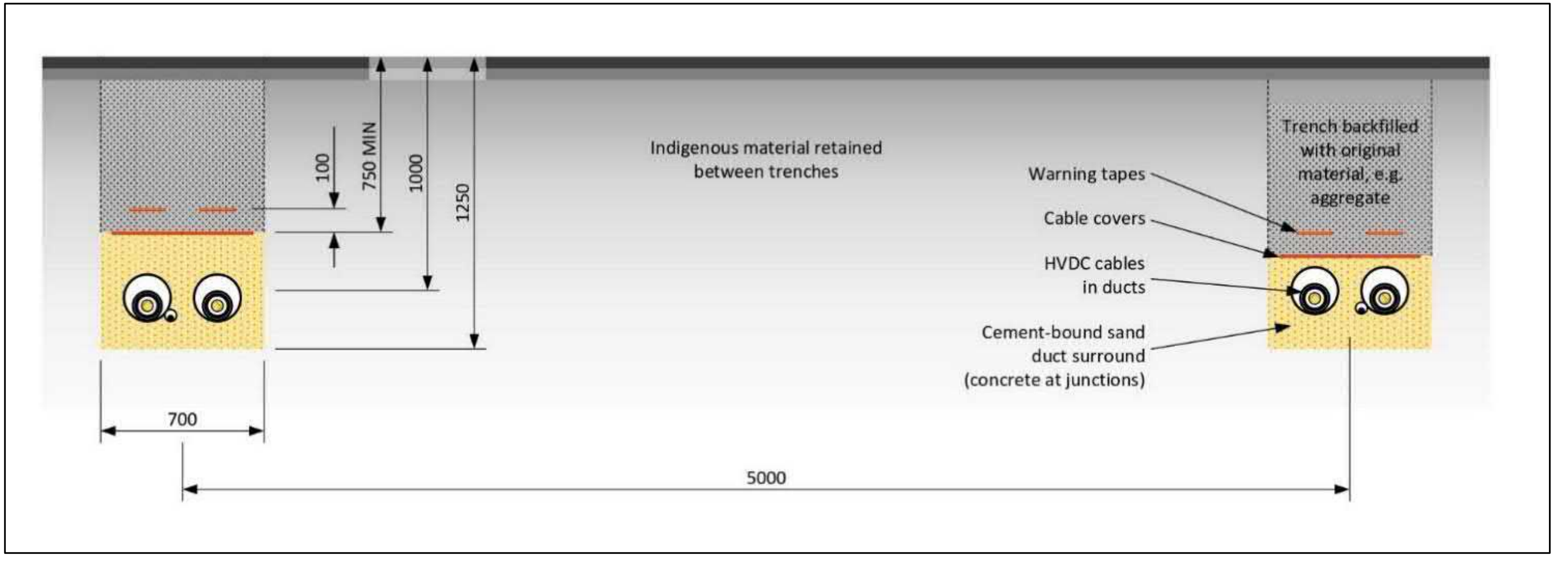


Plate 3 - Typical arrangement of HVDC and FOC cables in roads, verges and footpaths (all measurements in mm)

2.9.2.2. A large proportion of the Onshore Cable Route will be within the public highway and typically one trench will be opened and reinstated before the second trench is opened in any particular section. In some locations the Onshore Cable Route may cross fields or open land. The width of the temporary construction corridor within these locations will include land necessary for temporary access and construction works. Typically, the width of the temporary construction corridor required through fields/open land is approximately 23 m (this includes a five metre haul road and safety clearance distance of one metre either side of this haul road) between safety barriers. This is shown in Plate 4.

2.9.2.3. The installation rate for cable ducts is approximately 12 m to 30 m per 10-hour day shift, on average, 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 the impacts during the Construction Stage. Further information on the anticipated rates of installation along the Onshore Cable Corridor is available at Appendix 2 to the ES Addendum (document reference 7.8.1.2).

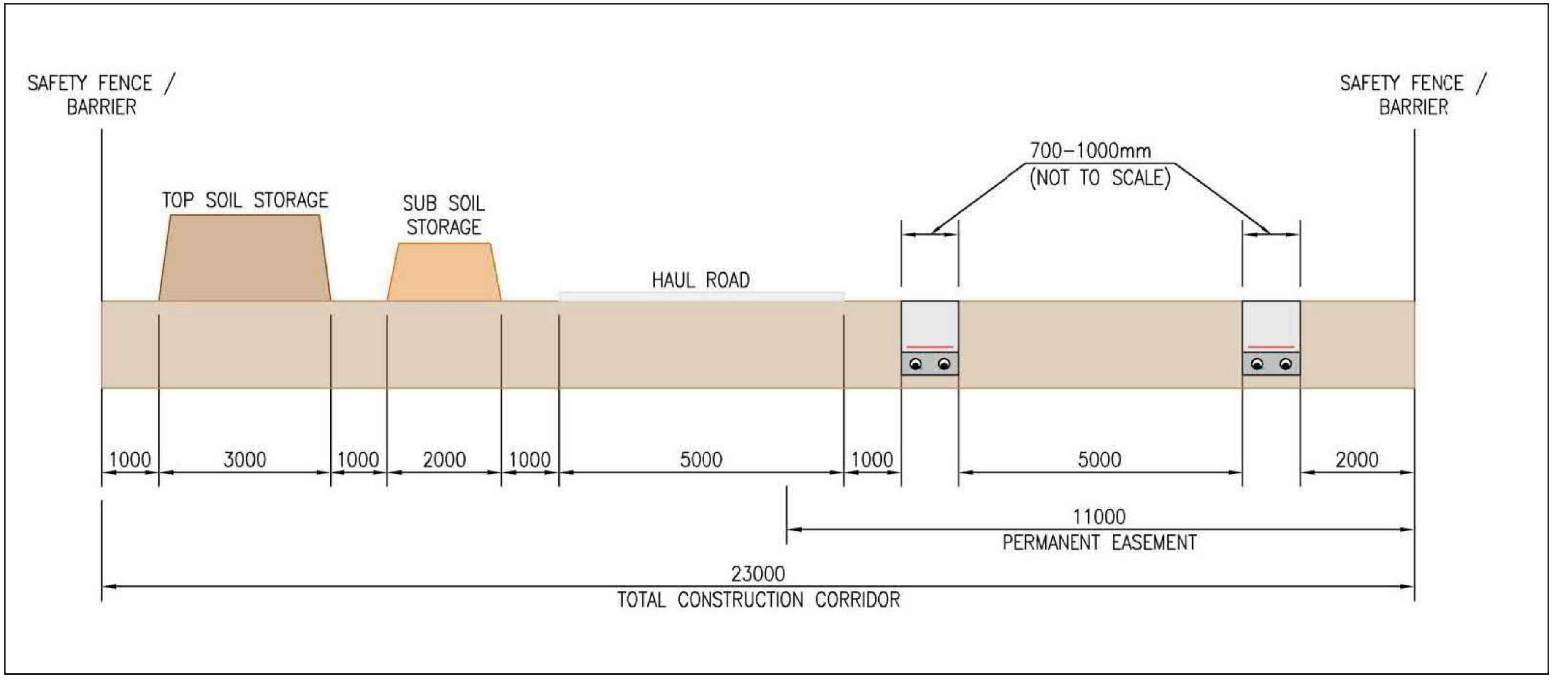


Plate 4 - Typical Onshore Cable Route Cross-Section within Fields or Open Land (all measurements in millimetres)

2.9.3. HORIZONTAL DIRECTIONAL DRILLING/TRENCHLESS

2.9.3.1. There are six locations along the Onshore Cable Corridor where the ducts will be installed by HDD or a similar Trenchless Technique. This allows for the Cable Circuits to cross under certain constraints along the route, namely water ways and environmentally sensitive areas, without causing any adverse impacts. This method will also be used to bring the Marine Cables to the Landfall. It limits disturbance to the environment when compared with open trenching techniques. The 6 HDD locations are:

- HDD-1: Landfall at Eastney (located within section 10);
- HDD-2: Milton and Eastney Allotments (between north-east of Bransbury Park and Thatched House public house car park) (located within section 9);
- HDD-3: Langstone Harbour crossing (between Kendall’s Wharf and Farlington Playing Fields) (located within section 7);
- HDD-4: Farlington Railway Crossing (between Farlington Playing Fields and southern extent of Sainsbury’s car park) (located within section 6 and section 7);
- HDD-5: Kings Pond near Anmore (between Kings Pond Field and field north of Anmore Road) (located within section 3); and
- HDD-6: Milton Common, crossing under the sea defence (located within section 8).

2.9.3.2. The HDD operations require a suitable space for the temporary construction area (including temporary access/egress routes) which will vary depending on the length and size of the HDD works in the respective locations. The HDD operations require a working area at the start and finish point (or entry and exit point) to locate the drilling rig, water bowser/pump, generator, layout of ducts/pipes and other construction equipment. Land within the Order Limits is to be utilised to facilitate the HDD construction works. Further information on the requirements for the individual HDD locations is provided within the HDD Position Statement (document reference 7.7.3). For each individual HDD location, a delivery plan will be formulated which will provide a management strategy for the offloading of materials arriving on-site. The delivery plan will also include details of the anticipated frequency of deliveries and time restrictions as set-out in this FCTMP.

2.9.3.3. For HDD-4, a Trenchless methodology similar to HDD has been selected for the installation of the Cable Route under the railway north of Farlington Railway Crossing from the playing fields, known as Micro-Tunnelling. Micro-Tunnelling enables the Cables to be installed within ducts or pipes under a feature such as a railway with minimal impact on that feature, and for this reason is the preferred method of crossing railway infrastructure.

2.9.4. JOINT BAYS

2.9.4.1. At specific intervals along the Onshore Cable Route Joint Bays will be situated from which the operation of pulling the Cables and jointing of the Cables will take place. Plate 5 shows a typical schematic of a joint bay which will be in the region of 15 m by 3 m excavation per joint bay plus compound requirements. The operation will require a compound and Laydown Area for material and parking to be created and will be situated out of the public highway unless unfeasible to do so. Access to each Joint Bay will be required from the highway. The completed Joint Bay footprint will be approximately 6 m by 3 m, and each Joint Bay will be approximately 1.85 m in depth.

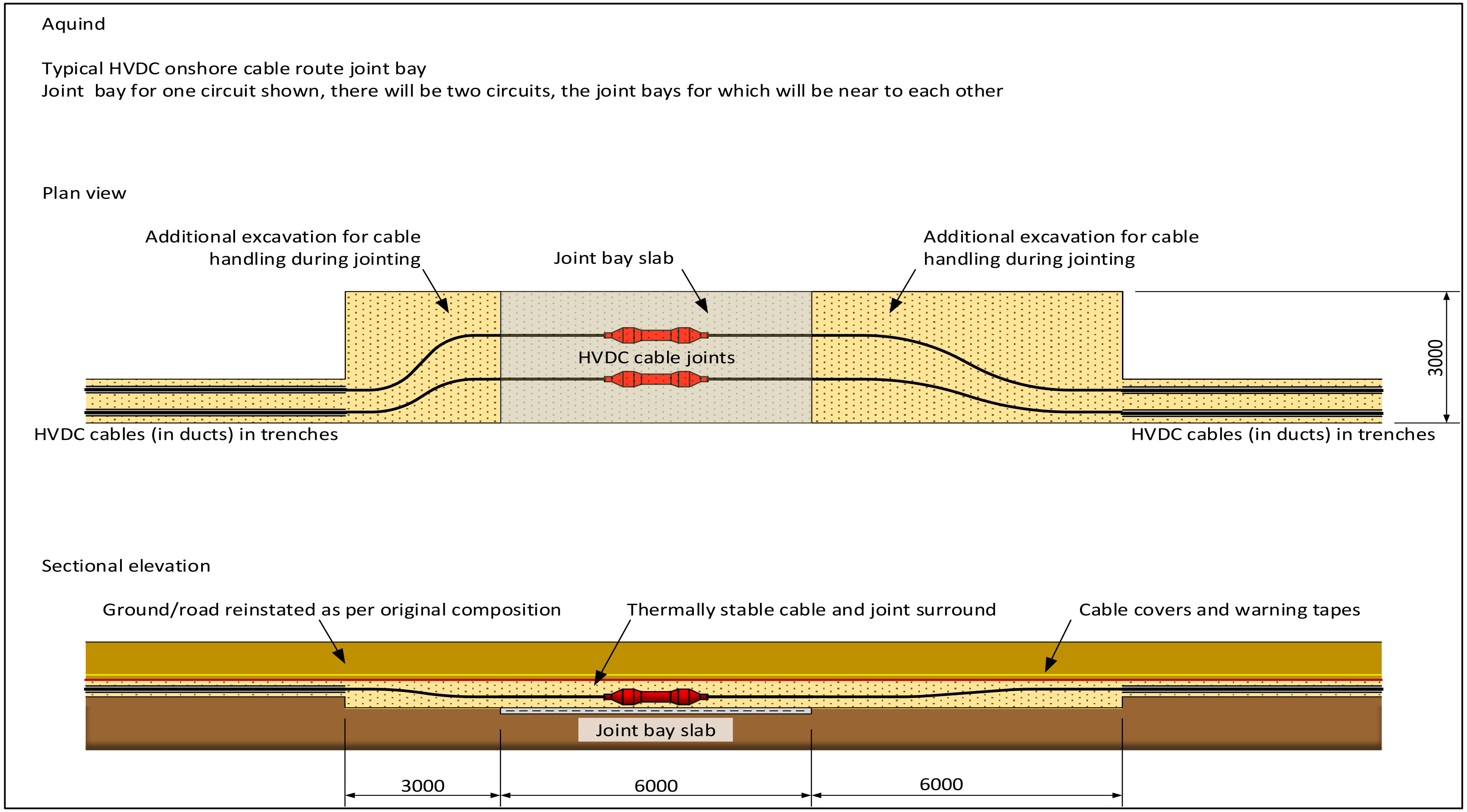


Plate 5 – Typical Schematic of Joint Bay (distances in millimetres)

3. VEHICULAR MOVEMENT MANAGEMENT

3.1. OVERVIEW

3.1.1.1. The Framework CTMP's purpose is to consider the Construction Stage only. This section discusses the vehicular access and route strategy for construction vehicles. The vehicular movement strategy for construction is based on a number of core principles:

- Ensuring a safe and efficient use of road space to provide access to the construction site;
- Minimising the number of vehicle movements and reducing impact as far as practical by the use of mitigation measures as required;
- Use of the shortest but most suitable routes to the construction sites; and
- Avoiding residential areas and those near sensitive receptors such as schools etc.

3.1.1.2. The Framework CTMP should also be read in conjunction with the following transport reports completed for the Project:

- Appendix 6 (Framework Traffic Management Strategy) of Appendix 22.1 of ES Volume 3 ((Examination Library Reference: App-449 Rev 002)): This document provides details of the traffic management required to facilitate construction of the Onshore Cable Route within or adjacent to public highway. The Framework Traffic Management Strategy sets out the overarching principles and methodology for traffic management to be used during the Construction Stage. Individual traffic management strategies in relation to works along the Onshore Cable Route in the highway are required to be prepared and approved by the relevant highway authority..
- Appendix 22.1 of ES Volume 3 (Transport Assessment) (Examination Library Reference: APP-448: This document provides an assessment of the impacts of the Construction Stage, both in relation to the Converter Station and Onshore Cable Route. It also provides details of proposed mitigation measures that will be provided as part of the Proposed Development.

- This Supplementary Transport Assessment [document reference 7.8.1.11], which details the anticipated impact on all forms of traffic and travel as a consequence of the construction of the Proposed Development.

3.2. VEHICLE ROUTING STRATEGY

3.2.1.1. Vehicular access to the construction works will follow three levels of road hierarchy.

- Level 1 Strategic Road Network – These are roads managed by Highways England being motorways and trunk roads which provide access to the construction sites from a wide catchment area to be distributed by the lower levels of road.
- Level 2 Primary and Local Road Networks – These being roads under the authority of Hampshire County Council and Portsmouth City Council, which provide access to the Converter Station from the Strategic Road Network and most of the Onshore Cable Corridor.
- Level 3 Access Road – These will be temporary haul roads created by the construction contractors linking back to the Level 2 road network. These also may be existing privately owned roads utilised for the construction purposes.

3.2.1.2. Taking account of this road hierarchy, all construction traffic related to the Converter Station will be required to use the A3, M27, M3 or A27 Strategic Road Network to access the A3(M) where access to the Converter Station will be achieved only from A3(M) Junction 2, Dell Piece West, A3 Portsmouth Road, Lovedean Lane and Day Lane. A plan showing these construction traffic routes is included within Appendix 5 of this FTCMP.

3.3. WORKING HOURS

3.3.1.1. Working hours for the installation of the Onshore Route are shown in

3.3.1.2. Table 4.

Table 4 - Working Hours

Activity	Anticipated working hours per day	Anticipated working days per week
Converter Station Area Construction	10 hour shifts, 08:00 – 18:00	6 days*
Marine Cable Installation	24 hour shifts	7 days
Onshore Cable Installation	10 hour shifts, 07:00 – 17:00	6 days*

Activity	Anticipated working hours per day	Anticipated working days per week
Landfall Installation ***(including HDD-1, TJB and ORS)***	07:00 – 19:00	7 days
HDD-2, HDD-5 and HDD-6 Installation	07:00 - 19:00	6 days*
HDD-3 and HDD-4 Installation	12hr (07:00 to 19:00) to 24 hour shifts	7 days

**Day 6 is Saturday working which is typically a 5-hour shift 08:00 to 13:00.*

3.3.2. TIMING OF MOVEMENTS

3.3.2.1. HGV movements to the works sites will be as restricted to reduce impact to the surrounding road network. .

3.3.2.2. For all sections of the Onshore Cable Corridor, additional restrictions on HGV movements will be included to suit local sensitive receptors, such as schools. Local schools include:

- Lovedean Lane: Woodcroft Primary School, located on Woodcroft Lane 250m from Lovedean Lane;
- B2150 Hambledon Road: Denmead Junior School and Denmead Infant School, located on Bere Road and Hambledon Road and located approximately 250 m from Mill Road (Denmead);
- A3 London Road: Mill Hill Primary School, located on Mill Road (Purbrook) approximately 300 m from the from Onshore Cable Corridor;
- Farlington Avenue: Solent Junior School located approximately 90 m from the Onshore Cable Corridor on Solent Road and Solent Infant School located on the Onshore Cable Corridor on Evelegh Road;
- Moorings Way: Moorings Way Infant School, located on the Onshore Cable Corridor; and
- Locksway Road: Mary Rose Academy, located on Locksway Road which will provide direct access to the Onshore Cable Corridor

3.3.2.3. Vehicle marshals will be required direct construction traffic/HGV movements at the Site entrances through to site compound areas. Flash cards will be issued to all HGV drivers and visitors entering and vehicles/deliveries will be provided with escorts where required.

LOVEDEAN (CONVERTER STATION AREA)

3.3.2.4. General HGV movements will take place between 09:00 and 17:00 for HGVs relating to construction of the Converter Station, therefore avoiding the AM and PM peaks of 08:00-09:00 and 17:00-18:00.

3.3.2.5. HGV trips may occur in relation to construction of the Onshore Cable Route to deliver equipment to each location, leaving the compound between 07:00- 08:00 in addition to movements between 09:00 – 17:00.

3.3.2.6. On Saturdays, working hours will be 08:00 to 13:00. HGV movements associated with construction of the Converter Station and construction HGVs traveling to and from the Onshore Cable Route will also occur between these hours.

3.3.3. EASTNEY (LANDFALL) (HDD-1)

3.3.3.1. On weekdays general HGV movements will take place between 07:00-08:00, 09:00 -17:00 and 18:00-19:00 for HGVs relating to construction of the ORS and Landfall, therefore avoiding the AM and PM peaks of 08:00-09:00 and 17:00-18:00 and matching the proposed working hours of 07:00-19:00.

3.3.3.2. With regards to the HDD, once drilling plant and cabins have been delivered (a 1-2 day process) the Landfall construction site will only generate HGV movements associated with water, bentonite, fuel and removal of spoil. These movements however will be restricted to outside of the 08:00-09:00 and 17:00-18:00 peak traffic hours.

3.3.3.3. At weekends, HGV movements will occur between 07:00 and 19:00 in line the construction working hours.

3.3.4. ONSHORE CABLE ROUTE

3.3.4.1. On weekdays HGVs carrying equipment and material will leave the from the Converter Station Area at 07:00 and arrive on-site before 08:00. General HGV movements will take place between 09:00-17:00 to avoid the peak traffic hours. At the end of the working day, equipment/material will also be transported away from each site, traveling back to the Converter Station Area between 16:00 and 17:00.

3.3.4.2. On Saturdays, normal working hours will be 08:00 to 13:00. HGV movements associated with construction of the Converter Station and construction HGVs traveling to and from the Onshore Cable Route will also occur between these hours.

3.3.4.3. HGV movements outside the above stated hours may be required where 24-hour or weekend Onshore Cable Route works are permissible. These movements however will be restricted to outside of the 08:00-09:00 and 17:00 to 18:00 peak traffic hours.

3.3.5. HORIZONTAL DIRECTION DRILLING WORKS

3.3.5.1. On weekdays where working hours are 07:00-19:00 HGV movements associated with HDD works will occur over the same period but be restricted to outside of the

08:00-09:00 and 17:00-18:00 peak traffic hours. Where 24-hour construction working hours are used HGV movements between 19:00-07:00 will be restricted to avoid disturbance to nearby residential properties. However, in areas that are not in close proximity to residential properties, some HGV movements may occur within this timeframe.

3.3.5.2. On Saturdays where 08:00 to 13:00 working hours are utilised; HGV construction traffic movements will occur between these hours.

3.3.5.3. On weekends where 07:00-19:00 working hours are utilised; HGV construction traffic movements will occur between these hours. Where 24-hour construction working hours are used HGV movements between 19:00-07:00 will be restricted to avoid disturbance to nearby residential properties. However, in areas that are not in close proximity to residential properties, some HGV movements may occur within this timeframe.

3.3.5.4. For each individual HDD location, a delivery plan will be formulated which will provide a management strategy for the offloading of materials arriving on-site. The delivery plan will also include details of the anticipated frequency of deliveries and time restrictions as set-out in this FCTMP.

3.3.5.5. Non HGV construction vehicle movements will be required throughout the day at HDD locations due to the different functions performed by specialist construction workers. To accommodate for this, a small car parking area (less than 10 vehicles) will be provided within each HDD compound to provide for construction worker parking. Construction staff working normal shift patterns will arrive / depart by minibus or works van wherever practicable and parking of construction worker vehicles outside of HDD compound will not be permitted and will be enforced by the contractor.

3.3.6. TRENCHLESS SOLUTION UNDER SOUTH COAST RAILWAY (HDD-4)

3.3.6.1. On weekdays where working hours are 07:00-19:00 HGV movements will occur 07:00-08:00, 09:00-17:00 and 18:00-19:00 therefore avoiding the AM and PM peaks of 08:00-09:00 and 17:00-18:00. There may be a requirement for some HGV movements outside of those time periods presented above to support 24 hour working (though not during the peak traffic hours of 08:00-09:00 and 17:00-18:00)). However, endeavours will be made to avoid HGV movements between the hours of 19:00 to 07:00 to avoid disturbance to nearby residential properties.

3.3.6.2. On weekends where 07:00-19:00 working hours are utilised; HGV construction traffic movements will occur between these hours. Where 24-hour working is required endeavours will be made to avoid HGV movements between the hours of 19:00-07:00 to avoid disturbance to nearby residential properties.

3.3.7. ISSUES AND CONSTRAINTS IDENTIFIED

3.3.7.1. There are a number of common issues that extend over the Onshore Cable Corridor. Table 5 lists those common issues and constraints and identifies the mitigations proposed to address them in so far as reasonably practicable.

Table 5 - Common Issues and Constraints – Onshore Cable Route

Issue/constraint	Mitigation stage	Proposed Mitigations
Narrow rural roads/no pedestrian footways/ unrestricted speed limit	Route planning and CTMP	Routing strategy, traffic management and signage to be agreed with HCC and PCC
Narrow residential streets with on-street parking	Route planning	Parking suspension, HGV routing strategy
Congestion and impact on strategic roads	Route planning, Framework Traffic Management Strategy and CTMP	Traffic capacity assessments. Vehicle movements restricted.
Geometry of junctions and roads not suitable and visibility constrained for proposed construction vehicles	Route planning and design stage	Interventions proposed and agreed with highway authority
Long diversion routes for closed roads	Route planning and design stage	Construction techniques to avoid road closures if possible. Advanced signage/communication with local communities

3.4. HGV ROUTES

3.4.1.1. An assessment has been made of potential HGV routes to access the Converter Station Area and Onshore Cable Corridor and is detailed in sections 3.4.2 to 3.4.11. These routes will be communicated to all hauliers and managed/enforced via inclusion within the individual CTMP's as necessary.

3.4.1.2. Drivers will be required to adhere to all existing restrictions such as weight and height restrictions. Temporary signage will be utilised to direct construction traffic to compounds and site accesses. The signage required will be agreed with the relevant local highway authorities.

3.4.1.3. A plan identifying construction access points is presented in Appendix 4.

3.4.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

3.4.2.1. HGV construction traffic will use junction 2 of A3(M), B2149 Dell Piece West, A3 Portsmouth Road, Lovedean Lane and Day Lane and Broadway Lane.

3.4.2.2. No construction traffic (HGVs and constructions workers) will use the route from the south from Hambledon Road via Soake Road, Anmore Road, Anmore Lane and Broadway Lane.

3.4.2.3. There are no vehicular restrictions in this section other than geometric constraints along Day Lane and Broadway Lane. Day Lane and Broadway Lane are rural country lanes with a general width of 6.0 m or less. Each are bordered by hedgerow/grass verges without footways. Given its existing width, Day Lane will not be able to accommodate two-way HGV traffic and therefore vehicles exiting the Converter Station Area will be controlled to avoid meeting a vehicle travelling along Day Lane towards the Site. This strategy vehicle routing and management strategy is discussed in further detail in Section 6.2.2.

3.4.3. SECTION 2 – ANMORE

3.4.3.1. HGV construction traffic within Section 2 will travel directly from the Converter Station compound via the internal haul road and therefore HGV movements on highway will be limited to the assigned route to from the A3(M).

3.4.3.2. No construction traffic will use the route from the south from B2150 Hambledon Road via Soake Road, Anmore Road and Anmore Lane.

3.4.3.3. There are no vehicular restrictions in this section other than those mentioned in Section 1.

3.4.4. SECTION 3 – DENMEAD/KINGS POND MEADOWS

3.4.4.1. HGV construction traffic to/from Anmore Road and Kings Pond will be routed either via the Converter Station Area and A3 London Road, B2150 Hambledon Road and Mill Lane or directly from junction 3 A3(M), Hulbert Road, A3 London Road, B2150 Hambledon Road and Mill Road.

3.4.4.2. No construction traffic will use routes along Broadway Lane south of the Converter Station Area or Soake Road. This will be managed and enforced by provision of route planning information by the contractor.

3.4.4.3. There are no vehicular restrictions in this section but the width of Mill Lane in combination with exiting on-street parking may restrict access by abnormal loads. This on-street parking would therefore need to be temporarily suspended.

3.4.5. SECTION 4 – HAMBLEDON ROAD TO FARLINGTON AVENUE

3.4.5.1. Given the length of this section, HGV construction traffic will use different routes depending upon the location of the Onshore Cable Corridor construction works unless it is travelling to /from the Converter Station Area. All HGVs using the Converter Station Area will use Day Lane, Lovedean Lane, A3 London Road and B2150 Hambledon Road to reach the relevant construction location.

3.4.5.2. HGV construction traffic not travelling via the Converter Station Area will use the following routes:

- B2150 Hambledon Road: Junction 3 A3(M), Hulbert Road and A3 London Road;
- A3 Maurepas Way/London Road north of Ladybridge Roundabout: Junction 3 A3(M), Hulbert Road, A3 Maurepas Way and A3 London Road;
- A3 London Road south of Ladybridge roundabout: Junction 4 A3(M), Purbrook Way, Stakes Road, Ladybridge Road and A3 London Road;
- Portsdown Hill Road: Junction 5 A3(M), Bedhampton Hill and B2177 Portsdown Hill Road; and
- Farlington Avenue: A27, A2030 Eastern Road, Havant Road and Farlington Avenue.

3.4.5.3. No construction traffic will use Frendstaple Road, Stakes Hill Road and Crookhorn Lane. This will be managed and enforced by provision of route planning information by the contractor.

3.4.5.4. Restrictions in this section include the 'Access Only' 7.5 tonne weight restriction on Farlington Avenue which will be required to be rescinded for the duration of the works on Farlington Avenue. This weight restriction has been implemented in conjunction with the existing traffic calming measures to reduce use of Farlington Avenue as a through-route.

3.4.6. SECTION 5 – FARLINGTON

3.4.6.1. HGV construction traffic will use junction 5 A3(M), A2030 Havant Road, Farlington Avenue and A2030 Eastern Road or A27 junction with A2030 Eastern Road.

3.4.6.2. No construction traffic will use any surrounding residential roads. This will be managed and enforced by provision of route planning information by the contractor.

3.4.6.3. Restrictions in this section include the 'Access Only' 7.5 tonne weight restriction on Farlington Avenue which will be required to be rescinded for the duration of the works on Farlington Avenue.

3.4.7. SECTION 6 – ZETLAND FIELD & SAINSBURY'S CAR PARK

3.4.7.1. HGV construction traffic will use junction 5 A3(M), A2030 Havant Road, and A2030 Eastern Road or A27 junction with A2030 Eastern Road.

3.4.7.2. No construction traffic will use Lower Farlington Road or Fitzherbert Road. This will be managed and enforced by provision of route planning information by the contractor.

3.4.7.3. There are no vehicular restrictions in this section and no geometric constraints have been identified.

3.4.8. SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

3.4.8.1. HGV construction traffic will use the A27 junction with the A2030 Eastern Road northbound for the Farlington Playing Fields works and southbound for Portsea Island works.

3.4.8.2. No construction traffic will use the London Road, Copnor Road and Norway Road. This will be managed and enforced by provision of route planning information by the contractor.

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

3.4.9.1. HGV construction traffic will use the A27 junction with A2030 Eastern Road for access.

3.4.9.2. No construction traffic will use the section from Copnor Road to Milton Road. This will be managed by provision of route planning information by the contractor.

3.4.10. SECTION 9 – MOORINGS WAY TO BRANSBURY ROAD

3.4.10.1. HGV construction traffic will use A27 junction with A2030 Eastern Road, A288 Eastney Road, Milton Avenue, Moorings Way, Locksway Road, Kingsley Road, and Bransbury Road.

3.4.10.2. No construction traffic will enter the 5-tonne restricted zone of Salterns Avenue residential area. Traffic will not use other residential side streets to travel north or south but will return to A88 Eastney Road or A2030 Milton Road. Construction traffic will leave Portsea Island via A2030 Eastern Road only.

3.4.10.3. There are no vehicular restrictions in this section other than geometric constraints associated with use of residential roads such as Locksway Road, Kingsley Road and Bransbury Road. These are generally 6.0-7.0 m in width with on-street parking on at least one-side of the carriageway. Taking this into account, the contractor will be required to use smaller construction vehicles and plant when accessing these roads and there may be a need to temporarily suspend on-street parking on parts of Locksway Road and Kingsley Road.

3.4.11. SECTION 10 – EASTNEY (LANDFALL)

3.4.11.1. HGV construction traffic will use the A27 junction with A2030 Eastern Road, A288 Eastney Road and Bransbury Road, Henderson Road and Fort Cumberland Road.

3.4.11.2. No construction traffic will use the section of Henderson Road to the roundabout with A288 Cromwell Road. This will be managed and enforced by provision of route planning information by the contractor.

3.4.11.3. There are no vehicular restrictions in this section, no geometric constraints have been identified other than removal of the existing height restriction gate at the existing public car park.

3.5. ABNORMAL LOAD ROUTES

3.5.1.1. An assessment has been made of potential Abnormal Load routes to access the Converter Station Area and Onshore Cable Corridor and is detailed in sections 3.5.2 to 3.5.9. These routes will be communicated to all hauliers and managed/enforced via inclusion within the individual CTMP's as necessary.

3.5.1.2. This section sets out elements relevant to Abnormal Loads, over and above the general information applicable to HGVs set out above.

3.5.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

3.5.2.1. Geometric constraints at the A3 Portsmouth Road / Dell Piece West / Catherington Lane signalised junction mean AIL manoeuvres associated with transformer deliveries to the Converter Station may require temporary removal of traffic signal poles and other street furniture. These removals will be undertaken with support of escort vehicles.

3.5.3. SECTION 4 – HAMBLEDON ROAD TO FARLINGTON AVENUE

3.5.3.1. Due to their size and weight, cable drum delivery vehicles accessing Joint Bays on Portsdown Hill Road and Farlington Avenue will use A3(M) Junction 4, Purbrook Way, Stakes Road, Ladybridge Road and A3 London Road. Exit would be via A3 London Road to Cosham, with the delivery vehicle continuing along A3 Southampton Road to reach the M275 / M27.

3.5.4. SECTION 5 – FARLINGTON

3.5.4.1. Due to their size and weight, cable drum delivery vehicles accessing Joint Bays on Portsdown Hill Road and Farlington Avenue will use A3(M) Junction 4, Purbrook Way, Stakes Road, Ladybridge Road and A3 London Road. To gain access to the Portsdown Hill car park, the existing traffic island and posts will need to be temporarily removed. Exit would be via A3 London Road to Cosham, with the delivery vehicle continuing along A3 Southampton Road to reach the M275 / M27.

3.5.5. SECTION 6 – ZETLAND FIELD & SAINSBURY'S CAR PARK

3.5.5.1. There are no vehicular restrictions in this section and no geometric constraints have been identified for general construction traffic but abnormal loads associated with cable drum deliveries may require temporary removal of traffic signal poles on Fitzherbert Road to facilitate access.

3.5.6. SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

3.5.6.1. Due to the 50t weight limit on the Eastern Road bridge south of the A27, cable drum delivery vehicles will route through Portsmouth to gain access to Section 7. Access to Joint Bays in Section 7 from Portsmouth Cargo Terminal will be via A3 Commercial Road, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue, Fratton Way, Rodney Road, A2030 Velder Avenue and A2030 Eastern Road. A loop of Airport Service Road, Robinson Way and Anchorage Road will also be required to access construction locations on or adjacent to the southbound carriageway of the A2030 Eastern Road. This routing will also apply to other abnormal loads that are heavier than the A2030 Eastern Road bridge weight restriction.

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

3.5.7.1. Restrictions in this section include the 5 tonne weight restrictions on Eastern Avenue and Moorings Way. These are environmental weight restrictions usually intended to protect the character of the area rather than restrictions for structural reasons, which restricts use of these links by HGVs between midnight and 07:00 and 19:00 to midnight Monday to Saturday and all day on Sunday. These restrictions will be required to be disapplied on Saturday and Sunday in relation to Abnormal Loads in connection with the construction of the Onshore Cable Route. The impacts of lifting this restriction can therefore be mitigated by ensuring that access by construction vehicles follows these restrictions through the contractors CTMP.

3.5.7.2. Due to the 50t weight limit on the Eastern Road bridge south of the A27, cable drum delivery vehicles will need to route through Portsmouth to gain access to Section 8. Access to Joint Bays in Section 8 from Portsmouth Cargo Terminal will be via A3 Commercial Road, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North and A2030 Goldsmith Avenue, Fratton Way, Rodney Road, A2030 Velder Avenue and A2030 Eastern Road. A loop of Airport Service Road, Robinson Way and Anchorage Road will also be required to access construction locations on or adjacent to the southbound carriageway of the A2030 Eastern Road. This routing will also apply to other abnormal loads that are heavier that the A2030 Eastern Road bridge weight restriction.

3.5.7.3.

3.5.8. SECTION 9 – MOORINGS WAY TO BRANSBURY ROAD

3.5.8.1. Due to the 50t weight limit on the Eastern Road bridge south of the A27, cable drum delivery vehicles will route through Portsmouth to gain access to Section 9. Access to Joint Bays in Section 9 from Portsmouth Cargo Terminal will be via A3 Commercial Road, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North, A2030 Goldsmith Avenue, Fratton Way, Rodney Road and A288 Milton Road. At the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction cable drum delivery vehicles will be required to turn right, which is a prohibited manoeuvre, and will therefore need to be undertaken with support of escort vehicles. This routing will also apply to other abnormal loads that are heavier than the A2030 Eastern Road bridge weight restriction.

3.5.9. SECTION 10 – EASTNEY (LANDFALL)

3.5.9.1. Due to the 50t weight limit on the Eastern Road bridge south of the A27, cable drum delivery vehicles will route through Portsmouth to gain access to Section 10. Access to Joint Bays in Section 9 from Portsmouth Cargo Terminal will be via A3 Commercial Road, A3 Marketway, A3 Anglesea Road, A2030 Winston Churchill Avenue, A2030 Victoria Road North, A2030 Goldsmith Avenue, Fratton Way, Rodney Road, A288 Milton Road and Bransbury Road. At the A288 Milton Road / A2030 Velder Avenue / Rodney Road traffic signal junction cable drum delivery vehicles will be required to turn right, which is a prohibited manoeuvre, and will therefore need to be undertaken with support of escort vehicles. This routing will also apply to other abnormal loads that are heavier than the A2030 Eastern Road bridge weight restriction.

3.6. SECTION SPECIFIC CONSTRAINTS AND ISSUES

3.6.1.1. Table 6 details the specific constraints and issues identified. The individual CTMPs will include specific detailed mitigation in relation to these constrains and issues that will be agreed with the relevant highway authorities.

Table 6 - Cable Route Section Specific Issues and Constraints

Section	Description	Mitigation stage	Proposed mitigation
1	Geometry of Broadway Lane junction with Day Lane	Design / Construction	Junction modification, traffic management and construction traffic marshalling
1	Geometry of A3 Portsmouth Road / Dell Piece West / Catherington	Design / Construction	Temporary Junction modification, traffic management and construction traffic marshalling

Section	Description	Mitigation stage	Proposed mitigation
	Lane traffic signal junction for abnormal loads		
1	A3 Portsmouth Road / Lovedean Lane	Design / Construction	Temporary Junction modification, traffic management and construction traffic marshalling
1	Lovedean Lane / Day Lane	Design / Construction	Temporary Junction modification, traffic management and construction traffic marshalling
2	Anmore Road open cut trench crossing	Design	Traffic management/diversions
2	Anmore Road access to haul roads / HDD site due to narrow carriageway width	Design / Construction	Temporary junction design/traffic management/construction traffic marshalling
3	Mill Road narrow width / on-street parking	Construction	Temporary suspension of on-street parking to allow abnormal load deliveries
4	Farlington Road 7.5 tonne weight restriction and geometry	Construction	Suspension of weight restriction / traffic routing
5	Farlington Road 7.5 tonne weight restriction and geometry	Construction	Suspension of weight restriction / traffic routing
6	A2030 Eastern Road Zetland Field access	Design / Construction	Left turn in left turn out junction and / or construction traffic marshalling
6	A2030 Eastern Road / Fitzherbert Road traffic signal junction	Design / Construction	Temporary Junction modification, traffic management and construction traffic marshalling
7	A2030 Eastern Road access Farlington sports fields	Design / Construction	No right turn out from car park to Eastern Road / construction traffic marshalling

Section	Description	Mitigation stage	Proposed mitigation
9	Eastern Avenue 5 tonne vehicular weight restriction	Construction	Suspension of weight restriction
9	Furze Lane bus only road narrow carriageway	Construction	Bus route diversion
9	Kingsley Road / Locksway Road on-street parking	Construction	Temporary suspension of on-street parking to allow abnormal load deliveries
9	Ironbridge Lane/Tideway Gardens too narrow for rigid HGVs	Construction	Hand carting of materials from Laydown Area.
8,9,10	A2030 Eastern Road bridge 50t weight restriction	Construction	Vehicle routing

3.7. HGV IMPACT REDUCTION

3.7.1.1. The programme will be developed to minimise the overall impact on the road network, by taking account of seasonal peak traffic, events and the impact of reassigned traffic as a result of concurrent works as far as is practicable. The impact of HGV construction traffic on the local community will be required to be mitigated. Mitigation could include, where practicable, restriction of movements at certain times of day, maximising loads to reduce vehicular trips, using local suppliers to reduce vehicular mileage, reusing bulk aggregate delivery HGVs for waste spoil removal, consolidation of deliveries and the use of smaller plant to minimise working widths where constraints require.

3.7.1.2. Where sections of the highway have an insufficient width for construction, HGVs should pass without reversing or overrunning the verge or footways especially on the narrow rural roads and residential roads. HGV movements will be controlled and managed where required to ensure conflicts do not arise or are minimised wherever possible. Special measures will be detailed in the individual CTMPs to mitigate the impact to pedestrians on roads that do not have footways, especially the rural roads.

3.7.1.3. Wheel washing facilities will be provided where required and public roads in the vicinity will be monitored to ensure that they are not contaminated with debris that could become a hazard and will be required to have road sweeping arrangements on call. Dust suppression from the works and movement of vehicles will also be required to be provided.

3.8. COMMUNICATION OF CONSTRUCTION TRAFFIC MOVEMENTS

3.8.1.1. A targeted strategy will be developed to inform the community and road users of upcoming works which may be undertaken through newsletters, road signage and websites (including providing updates to various travel apps/websites). Information could include;

- Duration of works;
- Timing of the works;
- Number of construction movements; and
- Complaint procedure.

3.8.1.2. Further details in relation to the required communication strategy in connection with the construction of the Onshore Cable Corridor are provided within the Framework Traffic Management Strategy (Examination Library Reference: APP-449 Rev 002).

3.9. CONSTRUCTION WORK SIGNAGE

3.9.1.1. A works signage strategy (including wayfinding across the project for staff) relevant to the works to be undertaken will be agreed with the relevant authorities in the individual CTMP's, to communicate the construction vehicle routes to access the temporary accesses, laydown areas and compounds. The use of communications technology to ensure efficient staff movements will be explored.

4. CONSTRUCTION WORKFORCE

4.1. OVERVIEW

4.1.1.1. The Proposed Development is expected to have a maximum of 150 construction workers for Converter Station plus 50-60 construction workers for construction of the Onshore Cable Route at the peak construction year. It is anticipated that up to six construction gangs will be working concurrently along sections of the Onshore Cable Route, and construction may also take place at up to three HDD locations simultaneously. Mitigating the number of vehicular trips generated by construction staff travelling to and from their place of work and between work site locations is a key objective of the individual CTMPs.

4.2. CABLE ROUTE CONSTRUCTION WORKERS

4.2.1.1. Up to six construction worker gangs working on the Onshore Cable Route will be permissible at any one time, in addition to those at up to three HDD locations. The Converter Station will act as the main site compound for all construction workers associated with the Onshore Cable Route. This means that construction workers will generally travel to the Converter Station at the start of each day before being transported to site via minibus or works van where practicable, noting that opportunities to reduce construction worker vehicle trips included in Section 4.3.

4.3. STAFF TRAVEL PLANNING STRATEGY

4.3.1.1. This Framework CTMP provides a framework to enable the production of the individual CTMPs. Measures to encourage the use of sustainable modes will be encouraged and promoted in the individual CTMPs. Examples of potential mitigation and management measures include:

- Minibuses / construction LGVs will be provided to transport staff to sites as required from the construction compound at the Converter Station. Consolidating all trips to one location will aid the promotion of travel to work by sustainable modes, for example, it could provide greater potential for car sharing options;
- A shuttle bus service(s) will operate between the main local transport hubs (Havant Railway station and Waterlooville town centre) and local hotels where construction workers are accommodated to avoid the need for workers to drive to the Converter Station Area construction compound. This service will be kept under review during the construction period to ensure that is providing an effective mitigation of private car trips.

- Parking will be controlled and prevented at construction sites to ensure construction workers do not park inappropriately on surrounding roads causing nuisance to residents. This will be managed by construction workers being transported to site via minibus / works LGV either directly from local accommodation or Converter Station Area compound wherever practicable;
- Parking will be controlled at HDD compounds through provision of a small suitable parking area to allow for construction workers with atypical shift patterns
- Information boards will be used at the construction compounds detailing public transport information to encourage sustainable travel and to hubs where collection by minibuses is possible;
- Secure cycle parking will be provided at construction compounds;
- Welfare facilities at work sites such as canteens will reduce the need to travel during the working day; and
- Sustainable travel measures, including car sharing, will be encouraged.

4.3.1.2. A Framework Construction Worker Travel Plan is contained within Appendix 6.

4.4. WORKER COMMUNICATION STRATEGY

4.4.1. WORKER INDUCTION

4.4.1.1. All construction workers will complete a staff induction meeting to familiarise them with requirements of the construction process. As part of this induction an information pack will also be provided to all workers, which will include the following information relevant to construction travel and traffic:

- Permitted HGV routes;
- HGV timing restrictions;
- Site rules for the Converter Station and all other construction locations;
- Driver behaviour requirements;
- Traffic incident management plan; and
- CTMP Contact information (emergency and non-emergency).

5. TEMPORARY SITE ACCESSES

5.1. OVERVIEW

5.1.1.1. Locations for site access to haul roads and compounds from the public highway are required. These will be designed to ensure they are safe and delay and impact to the public is minimised.

5.2. DESIGN, MANAGEMENT AND MITIGATION

5.2.1.1. Any site access will be designed taking into account existing constraints including speed limit, highway width, traffic restrictions, traffic flows and visibilities. In some cases where geometry and sight lines are limited it may be necessary to temporarily reduce the speed limit in proximity to the entrance via a Traffic Regulation Order. Each access will be designed to comply with the appropriate design guidelines (DMRB, HCC/PCC design standards).

5.2.1.2. All vehicles will enter and exit via a site access in forward gear, other than in exceptional circumstances, in which case any reversing required will only be undertaken with the aid of a banksman and vehicle warning equipment. Layouts will ensure that vehicles can be checked and rejected if necessary off the public highway or in an area that is demarcated from the public highway. All site accesses will be laid out to avoid vehicles queuing back on to the highway.

5.2.1.3. Parking of private vehicles of the construction work force will be only permitted within a specifically designated location within the Converter Station Area.

5.2.1.4. The design of all highway accesses is to be required to be agreed with the relevant highway authority before the commencement of works in relation to the relevant phase of works which the access is required in connection with, and a plan of the accesses anticipated to be required is contained within Appendix 4.

5.3. SITE ACCESS LOCATIONS

5.3.1.1. The following site accesses have been identified through the proposed design for the Onshore Cable Corridor, all of which are identified on the Access and Rights of Way (AROW) Plans (Examination Library Reference: APP-011 Rev 02)

5.3.2. SECTION 1 LOVEDEAN (CONVERTER STATION)

5.3.2.1. A site access which will become a permanent access will be situated on Broadway Lane just south of the junction with Day Lane. This will provide access to the Converter Station and the fields between the Converter Station and Anmore Lane (as shown in Appendix 2) via an internal haul road. This is shown as point AC/1/a, AC/1/b and AC/1/c on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.3. SECTION 2 – ANMORE

5.3.3.1. The site access in Section 1 and internal haul road will be utilised as the access point. There will be a required crossing of Broadway Lane between Anmore Lane and Edney's Lane. However, construction traffic will not be allowed to use this road owing to its narrow nature and geometry which is only suitable for small vehicles. The crossing of Broadway Lane is shown as points AC/1/d and AC/1/e on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.4. SECTION 3 – DENMEAD/KINGS ROAD MEADOW

5.3.4.1. An access will be required from Anmore Road to the agricultural fields to the north and south into Kings Pond Meadow via an existing gate. This southern access will be utilised as an entry and exit for the HDD-5 compound. This is shown as points AC/2/a and AC/2/b on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.5. SECTION 4 - HAMBLEDON ROAD TO FARLINGTON AVENUE

5.3.5.1. An access will be made from B2150 Hambledon Road north-west of the junction with Soake Road in Kings Pond Meadow.. Access may be required to the north and south of B2150 Hambledon Road at this location, depending upon the final alignment of the Onshore Cable Route and its construction methodology. This is shown as points AC/3/a and AC/3/b on the AROW Plans (Examination Library Reference: APP-011).

5.3.5.2. An access may also be required from the B2150 Hambledon Road into the Billy's Lake public open space car park. This however would only be required if use of the existing car park access is deemed impracticable during construction of the Onshore Cable Route. This is shown as point AC/3/c on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.5.3. An access will be required to the triangular plot of land that may serve as a Laydown Area on A3 London Road opposite No. 200 and 208 London Road, Waterlooville. This is shown as point AC/4/a on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.5.4. The car park on the southside of Portsdown Hill Road near Hilltop Crescent will be utilised for construction purposes and will require the height restriction barrier to be removed. This is shown as point AC/6/a on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.6. SECTION 5 – FARLINGTON

5.3.6.1. An access will be required into the Portsmouth Water land to the south of Evelegh Road as shown in point AC/6/b on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.7. SECTION 6 – ZETLAND FIELD & SAINSBURY'S CAR PARK

5.3.7.1. An access to the works in Zetland Field will be required as shown on point AC/7/a on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.7.2. There will be a construction compound in the Sainsbury's car park for the reception pit of Trenchless solution under the south coast railway embankment from Farlington Playing Fields. However, this access will be made from within the Sainsbury's car park (private).

5.3.8. SECTION 7 – FARLINGTON JUNCTION TO AIRPORT SERVICE ROAD

5.3.8.1. The Farlington Playing Fields construction works will be assessed from A2030 Eastern Road and the Farlington Playing Fields access road which is not adopted public highway.

5.3.8.2. The HDD compound at the land adjacent to Kendall's Wharf will utilise the existing access to the land at point AC/8/a as shown on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.8.3. Access to the sports pitches south of the Tudor Sailing Club may also be required at points AC/8/b and AC/8/c as shown on the AROW Plans (Examination Library Reference: APP-011 Rev 02)

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

5.3.9.1. Access may be required for the area of greenspace located immediately south of the Harvester Restaurant car park, as shown on point AC/8/d on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.9.2. If the final alignment of the Onshore Cable Route uses Milton Common, to the contractor may use the East Solent Coastal Partnership (ESCP) compound that will be used as part of the current sea defence works in this area, if this is no longer required by ESCP. This will be accessed from the A2030 Eastern Road south of the Langstone Harbour viewing car park once their works are completed in October 2022 and is shown on point AC/9/a on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.9.3. Should the Onshore Cable Route alignment use the western and southern boundary of Milton Common an additional construction access will also be required at point AC/9/d on the A2030 Eastern Road as shown on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.10. SECTION 9 – MOORINGS WAY TO BRANSBURY ROAD

5.3.10.1. Should the Onshore Cable Route alignment use the western and southern boundary of Milton Common a construction access will also be required at point AC/9/b on

Moorings Way as shown on the AROW Plans (Examination Library Reference: APP-011 Rev 02)

5.3.10.2. The route through Milton Common or the University of Portsmouth playing fields to Longshore Way requires access from Moorings Way where it meets Sanderling Road and Furze Lane and from Longshore Way. This is shown as points AC/9/c, AC/9/e and AC/10/a on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.10.3. The car park to the rear of the Thatched House public house from Locksway Road will be utilised for construction access to HDD-2

5.3.10.4. A construction access from Kingsley Road to the common land south of the allotments will also be required for HDD-2 as shown on points AC/10/b and AC/10/d on the AROW Plans (Examination Library Reference: APP-011 Rev 02).

5.3.10.5. The car park access from Bransbury Park from Bransbury Road will be utilised and require the height restriction barrier to be removed.

5.3.11. SECTION 10 – EASTNEY (LANDFALL)

5.3.11.1. The existing car park off Fort Cumberland Road, which is the Landfall and ORS will be utilised for construction access as shown on point AC/10/c on the AROW Plans (Examination Library Reference: APP-011 Rev 02)

6. REQUIRED HIGHWAY INTERVENTIONS

6.1. OVERVIEW

6.1.1.1. The planning stage has identified interventions in Section 1 at the Converter Station access and Day Lane that will be required to facilitate the construction of the Proposed Development. The individual CTMPs may identify further interventions that alleviate narrow/constrained roads and junctions with geometry that cannot accommodate the manoeuvring of larger vehicles. This will allay any safety concerns regarding visibility and sight lines. Traffic management measures will be implemented to ensure general traffic can continue to flow safely and effectively around the construction sites related to both the Converter Station and Onshore Cable Route, as well as ensuring construction vehicles can access the relevant worksites safely and with limited delay.

6.1.1.2. This Framework CTMP provides an overview of the interventions that have been identified at this stage. The individual CTMPs will include detail design and independent safety auditing. All will require approval by the relevant Highway Authority.

6.2. INTERVENTIONS IDENTIFIED

6.2.1.1. The following measures will be required.

6.2.2. SECTION 1 – LOVEDEAN (CONVERTER STATION AREA)

Converter Station Access Junction

6.2.2.1. The geometry of the Broadway Lane/Day Lane junction has been identified as a constraint by the design team, third parties during consultation and the abnormal load contractor (as shown in Appendix A of the Supplementary Transport Assessment [document reference number: 7.8.1.11]). The geometry of the junction cannot be eased owing to the location of existing electrical cable jointing. Therefore, to provide a permanent access junction and facilitate construction there will be an upgrade of the junction of Broadway Lane and Day Lane, which will include the construction of a Haul Road and temporary holding area that 'smooths' the corner for large vehicles.

6.2.2.1. As can be seen in drawing AQD-WSP-UK-OS-DR-Z-200215, the proposed Haul Road and temporary holding area comprise a new link to be provided between Day Lane, east of the existing bend, and at Broadway Lane, south of the existing bend. This will provide a managed facility for vehicles entering the Site during the

Construction Stage with vehicle movements across Broadway Lane able to be marshalled. This link also accommodates HGV / abnormal load movements and would be retained as a permanent feature (unadopted) to allow future access for such vehicles where required in connection with the operation and maintenance of the Converter Station. However, as is stated in paragraph 1.2.11.3 of the Transport Assessment (APP-448), HGV, Abnormal Loads or AILs will only be required to travel to the Converter Station site in the event of major equipment failure.

6.2.2.2. General verge / vegetation cutting back will be required on all sides of Broadway Lane within the bounds of the highway to ensure that adequate visibility splay requirements are met, with all required land falling within the Order Limits, as confirmed by drawing AQD-WSP-UK-OS-DR-Z-200215, included in Appendix 2 and the Indicative Landscape Mitigation Plan (APP-281). The power to carry out such works is included within Paragraph 10 of the Draft Development Consent Order (Examination reference: APP-019).

6.2.2.3. It should be noted that the proposed Haul Road is to be gated at both the junction with Day Lane and the junction with Broadway Lane, with construction vehicles only being able to gain access via dedicated banksmen.

6.2.2.4. In order to discourage vehicles from entering and exiting the Converter Station from the south during the Operational Stage (construction traffic movements will not be permitted to make use of this route under banksman control), the following design alterations have been included:

- A 'no right turn' sign will be placed on the Converter Station access approximately 10m from the junction with Broadway Lane to inform drivers that this movement is prohibited; and
- The radii on the southern side of the access road has been reduced from 10m to 1m to discourage vehicles from turning left into the Site from Broadway Lane.

6.2.2.5. In addition to these design features, an access strategy document will be produced for the Operational Stage that defines how maintenance vehicles should access the Converter Station. This will include an access route plan, which will follow the same principles as the construction traffic route included within the CTMP.

Management of HGVs on Day Lane

6.2.2.6. It has been identified within the Supplementary Transport Assessment ([document reference number: 7.8.1.11] that in places the effective carriageway width of Day Lane between Lovedean Lane and Broadway Lane is not be wide enough for two HGVs to pass. This will be mitigated with a combination of regular maintenance and traffic management. Regular 'siding' within the highway boundary will take place to clear the earth that has fallen on to the carriageway edges from the unrestrained verges to ensure maximum carriageway width is maintained. This will include regular cutting back of the verge vegetation within the highway boundary.

6.2.2.7. Management of access to the proposed Haul Road will be provided during the Construction Stage through the use of coordinated banksmen and the use of STOP/GO boards. This control will ensure the meeting of two construction vehicles travelling along Day Lane is prevented.

6.2.2.8. The movements of all HGVs accessing and egressing the proposed Converter Station Area will be coordinated by banksmen. Banksmen will be located at four locations, details of which are set out below and in Plate 6, to allow the arrivals and departures of construction traffic to be coordinated, such that there will not be instances where HGV's approaching from opposite directions will meet one another on Day Lane. These four locations are as follows:

1. At the eastern entrance to Day Lane, in the vicinity of the Bird in Hand Public House;
2. Day Lane in the vicinity of the existing Solar Farm access road;
3. At the eastern access point of the haul road on Day Lane; and
4. At the western access point of the haul road at Broadway Lane, in the vicinity of the Converter Station access.

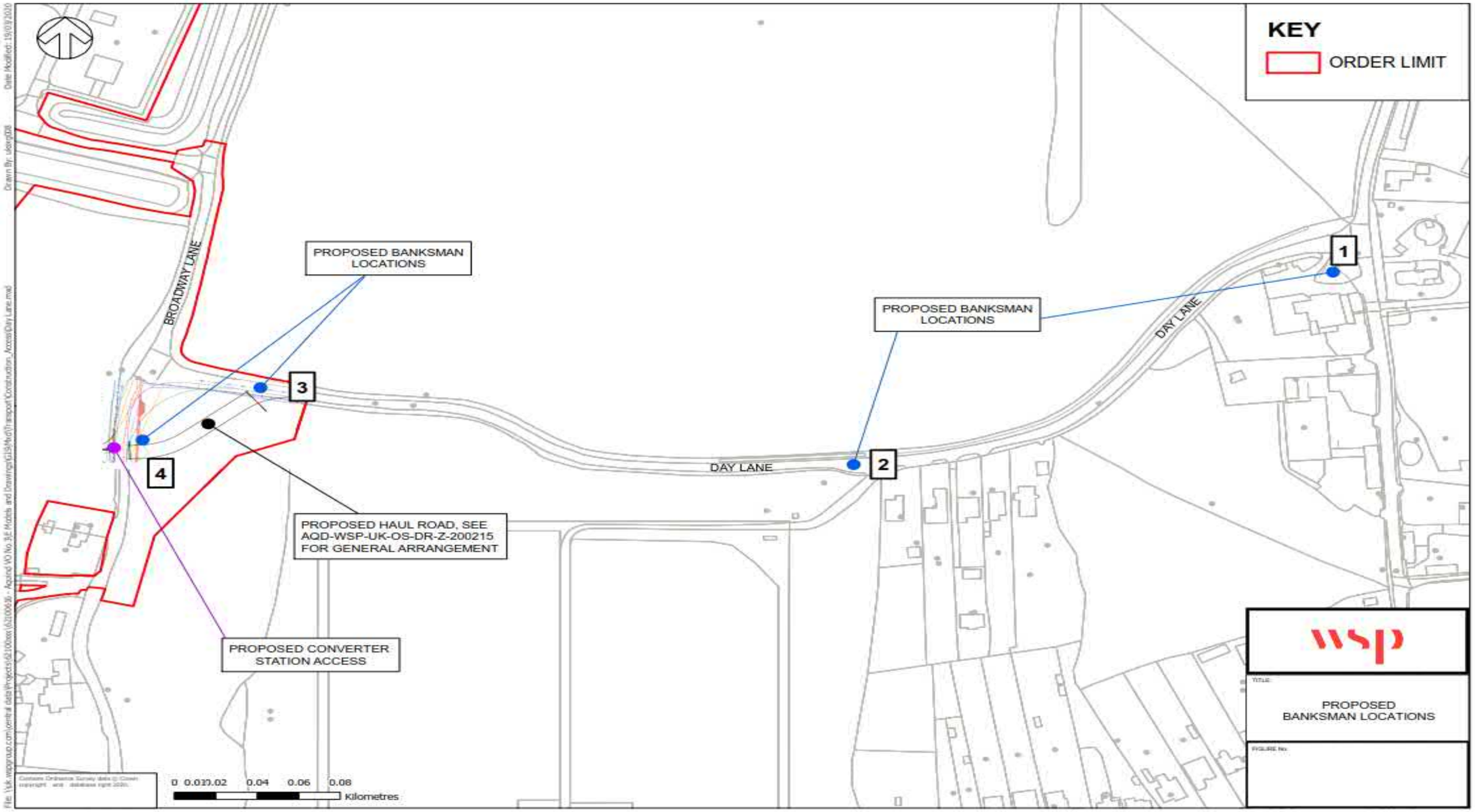


Plate 6 - Proposed banksman locations - will be replaced with full page image when issued as PDF

6.2.2.9. The four banksmen will remain in contact at all times using telecommunication devices during the movement of construction vehicles on Broadway Lane and Day Lane to ensure a coordinated approach to traffic management.

6.2.2.10. Banksman 1, located at the eastern entrance to Day Lane, will notify banksman 3 when an HGV has entered Day Lane and is travelling westbound towards the Site access. This notification will prevent banksman 3 from releasing an egressing HGV from the holding area within the Haul Road until the accessing vehicle has also entered the holding area. This proposed coordination of banksmen will prevent a conflict of HGVs occurring on Day Lane.

6.2.2.11. It should be noted that construction vehicles travelling towards the Converter Station Area westbound will be given priority over those travelling eastbound to prevent the need for HGVs to be held on Day Lane in proximity to the junction with Lovedean Lane. This will mean that HGVs will only be held at this location if an HGV has already passed banksman 3 and 2 located on Day Lane. This is because there is limited capacity for passing of HGVs in the vicinity of the Day Lane / Lovedean Lane junction.

6.2.2.12. Banksman 4 is to be located at the Broadway Lane entrance of the proposed Haul Road. This banksman will temporarily halt traffic on Broadway Lane when a construction vehicle is travelling across the highway between the Site entrance and the Haul Road.

6.2.2.13. In some limited locations, the width of Day Lane may make it difficult for a standard car or LGV and an HGV to pass. This will be mitigated using a combination of regular maintenance discussed in paragraph 6.2.2.6 and traffic management set out below:

- The majority of locations where an HGV and car cannot pass one another are located on the western side of Day Lane in location where there is good forward visibility. In these locations, it is expected that an informal give-way system will take place as commonly occurs along rural roads of a similar nature to Day Lane. In such situations, opposing vehicles stop on carriageway where safe to do so and wait until the oncoming vehicle has passed the point of conflict.
- Towards the east of Day Lane visibility decreases. In the vicinity of the residential properties on this link, there is a narrow section a car and HGV would not be able to pass one another. In order to ensure conflicting vehicle movements do not occur on the eastern part of Day Lane, it is proposed that one-way shuttle working would be maintained via STOP/GO boards operated by the both the first and second banksmen in coordination with one another. These STOP/GO boards will simulate shuttle working for this approximately 300m link when HGV construction traffic is on this section of Day Lane.

Lovedean Lane

6.2.2.14. A section of approximately 50 metres length of Lovedean Lane between the junction with Day Lane and New Road has also been identified as an area that may not be wide enough for two HGVs to pass as shown on swept path analysis included in Appendix 6. In this location the road has no defined edge and the verges are earth and unrestrained. A centre line has not been provided. South of New Road, Lovedean Lane enters the residential conurbation and has a hard kerb edge increasing the effective width and a centre line is provided. For the identified narrower section, similarly as described above for Day Lane, regular 'siding' will take place and cutting back of the verge within the highway boundary to ensure the maximum carriageway width is available. The section is short and straight and drivers could be expected to priority work as they would on any narrow road or when an obstruction is met.

6.3. TRAFFIC MANAGEMENT

6.3.1.1. Traffic management will be required for the construction of the entire Onshore Cable Route on the highway network and this will be laid out to the requirements of the TSRGD 2016 Chapter 8. The Framework Traffic Management Strategy (Examination Library Reference: APP-449 Rev 002) details the requirements for traffic management in connection with the construction on the Onshore Cable Route.

7. MANAGEMENT OF ROAD SAFETY

7.1. OVERVIEW

7.1.1.1. This section details strategy and measures that will be taken to ensure road safety is maintained during the Construction Stage. Highway condition is related to road safety and therefore included in this section.

7.2. EXISTING COLLISION RECORD

7.2.1.1. The existing collision record has been assessed in the Supplementary Transport Assessment [document reference number: 7.8.1.11], taking account of the construction traffic routes to / from the Converter Station Area, Onshore Cable Corridor and wider highway network that may be impacted by construction of the Proposed Development. No issues in relation to the existing highway layout or geometries were identified as part of this assessment.

7.3. LIAISON, MONITORING AND MITIGATION

7.3.1.1. Near misses or collisions resulting in personal injury from construction traffic associated with the Proposed Development will be monitored throughout the programme to identify areas for improvements. A road safety and liaison officer will be appointed and be responsible for continuous monitoring of traffic management and signage. They will make improvements where necessary within the confines of the temporary Traffic Regulation Orders ('TTRO's) and liaise with the highway authorities. They will also respond to public concerns and contact details will be provided.

7.3.1.2. The road safety liaison officer will also be responsible for the continual monitoring of traffic management measures required to facilitate construction of the Onshore Cable Route to ensure the proactive management of road safety. It will be ensured there is sufficient road signage to warn the public and inform construction related traffic to ensure compliance and route choice. There will also be contact telephone numbers for members of the public to raise concerns and the provision of a website will be explored. Receptors that attract vulnerable people will be updated on a regular basis (e.g. schools) as necessary.

7.3.1.3. If during the construction localised mitigation measures are required these will be agreed with the relevant highway authorities and incorporated in to the individual CTMPs.

7.4. HIGHWAY CONDITION

7.4.1.1. Highway condition is closely related to road safety and construction traffic, particularly HGVs can have a negative impact to road condition. Therefore, it is proposed before and after construction pavement condition surveys are undertaken and to assess whether construction activities have resulted in worsening road conditions. The highway condition surveys would include the following:

- A photographic record of the condition of the extents of roads identified above as impacted by construction works or traffic routes;
- A summary table giving a brief description of visible defects where identified;
- A drawing indicating the approximate location of photographs / defects on plan;
- A short statement outlining the methodology and provide a summary of the findings;
- A meeting with HCC / PCC on site to agree findings of the report and make any reasonable adjustments; and
- A post works report covering the same information and identifying new defects.

7.4.1.2. Weekly conditions surveys will also be produced during the works programme to identify areas that are worsening and will become a hazard to other road users that require immediate action.

8. ENFORCEMENT OF HGV MOVEMENTS

8.1. OVERVIEW

8.1.1.1. For a CTMP to be effective a robust monitoring process is required to ensure compliance. This section provides details of management techniques that will be used. To ensure effective management, the principal contractor will appoint a dedicated staff member as responsible for the monitoring and enforcement of construction traffic movements to and from the Proposed Development, using the tools and measures identified in this section.

8.2. CONSTRUCTION STAFF INDUCTION

8.2.1.1. All construction staff would complete a staff induction meeting to familiarise all workers with requirements of the construction process. As part of this induction an information pack will also be provided to all contractors, which will include the following details:

- Permitted HGV routes;
- HGV timing restrictions;
- Site rules for the Converter Station and all other construction locations;
- Driver behaviour requirements;
- Traffic incident management plan; and
- CTMP Contact information (emergency and non-emergency).

8.3. HGV ROUTE SIGNAGE

8.3.1.1. Temporary route signage will be installed at key locations on the local highway network to direct construction traffic along permitted routes agreed with the relevant highway authority and as included in Section 3 of this CTMP.

8.3.1.2. The design and locations of these signs would be agreed with the local highway authority prior to installation and would be used to denote routes to and from the Converter Station and cable route construction locations. This would include routes to temporary off-carriageway vehicle access locations where appropriate.

8.4. CONSTRUCTION VEHICLE IDENTIFICATION

8.4.1.1. All construction vehicles associated with the Proposed Development will be identifiable through the use of a dedicated nameplate located on the outside of the vehicle. This will allow vehicles to easily be identified on the local highway network and at site access locations.

8.5. ENFORCEMENT AND CORRECTION MEASURES

8.5.1.1. All incidences of non-compliance with measures contained within the CTMP will be investigated by the principal contractor and documented on a Complaints Register, which will include time, date and nature of complaint and the action taken to resolve it. The contractor will also hold meetings with the local highway authorities and relevant stakeholders (e.g. parish councils) and review / update individual CTMPs where is it is considered necessary to implement additional mitigation measures.

8.5.1.2. In addition, the Applicant will ensure that contractor behaviour and performance is monitored and enforced, and where appropriate that corrective measures are utilised to resolve issues and improve performance.

8.6. INDIVIDUAL CTMPS

8.6.1.1. This Framework CTMP will form the basis for individual CTMPs to be produced. These will be approved by the relevant Highway Authority. The individual CTMPs will provide details of:

- Construction vehicle routing;
- A highway condition survey of all routes proposed and accesses;
- Details of road closures / traffic management measures;
- Specific details regarding abnormal loads;
- Details of the interventions to the highway that are required to enable construction works (permanent or temporary) and reinstatements;
- Specific details regarding traffic management and construction management of vehicle movements such as temporary signage, requirements for a banksman or escort vehicles, wheel washing etc;
- Details of monitoring and enforcement measures, including contact details for the member of staff responsible for these tasks; and
- Details of construction staff travel arrangements / travel plan.

8.6.1.2. The works will be broken down into a number of phases. . This will result in a number of individual CTMPs being prepared to cover different phases and also stage of works which could include:

- Enabling and permanent works; and

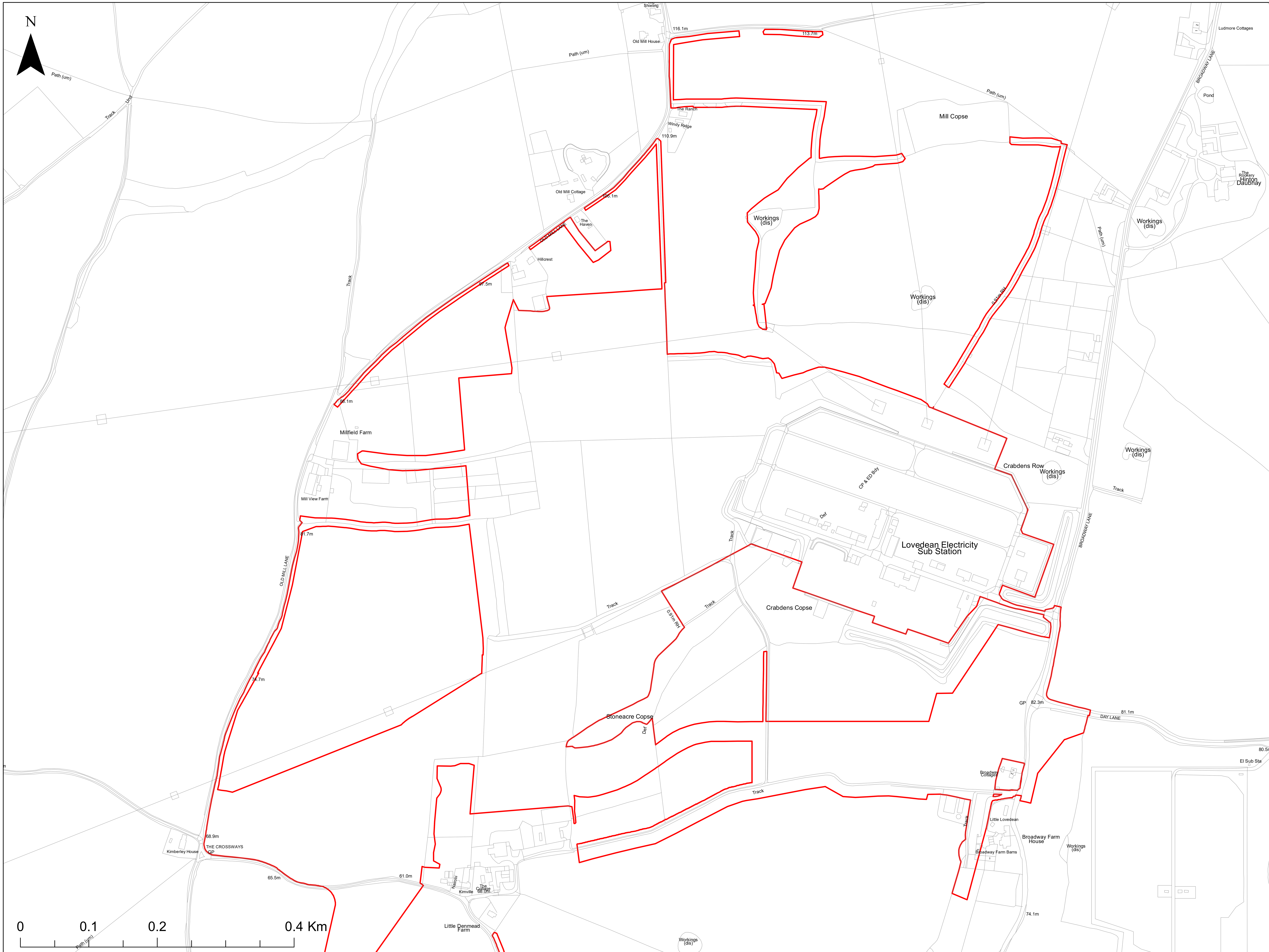
- Specific works including Landfall, landfall head house, the Onshore Cable Route, construction compounds, HDD, Trenchless Solutions at the south coast railway, and the Converter Station works.

8.7. COMPLIANCE AND MONITORING

8.7.1.1. Several key points of contact will be made for the project who will liaise with relevant planning/highway authority and ensure coordination between contractors for all the section of works during the entire construction programme. This will facilitate a clear communication channel to ensure compliance.

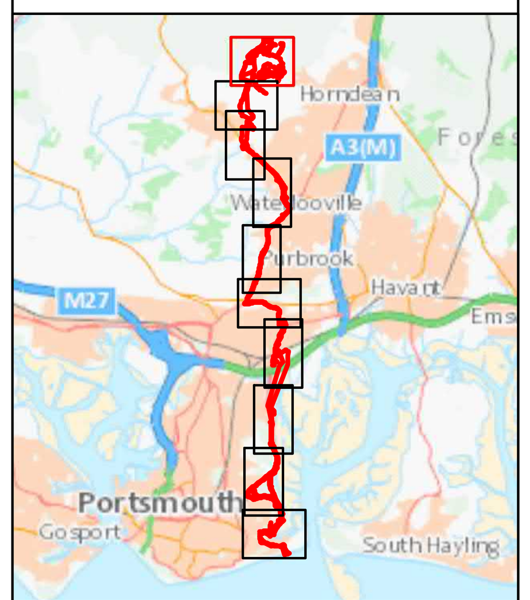
8.7.1.2. The individual CTMPs will provide details of the monitoring process and who is responsible with contact details. These will be developed and agreed with the relevant Highway Authority.

Appendix 1 – Order Limits



AQUIND Interconnector
Sheet 1

Order Limits v8.0



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TITLE: AQUIND Interconnector Order Limits version 8.0 Sheet 1

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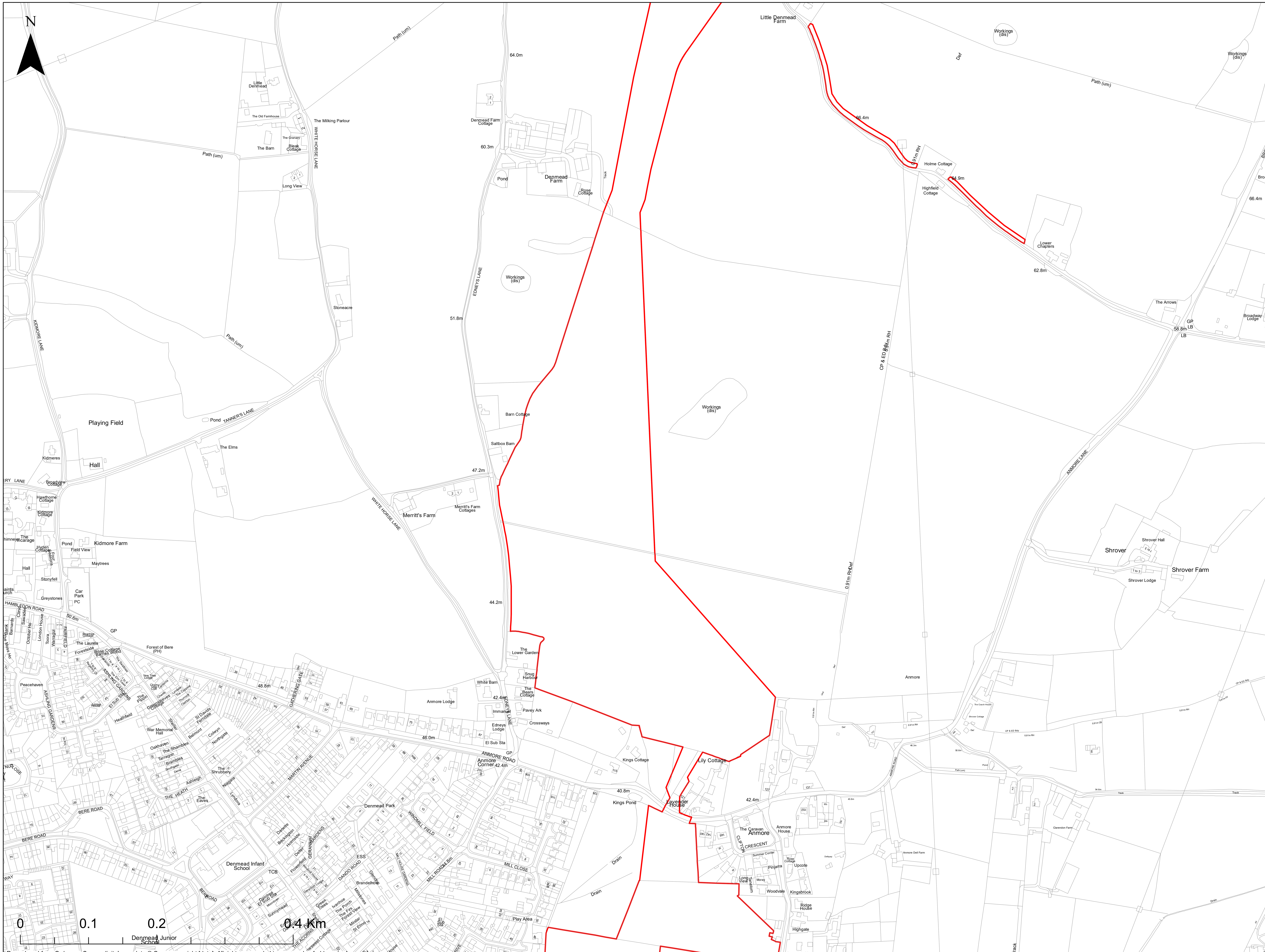

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Sheet 2

Order Limits v8.0

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AQUIND Interconnector
Sheet 3

Order Limits v8.0

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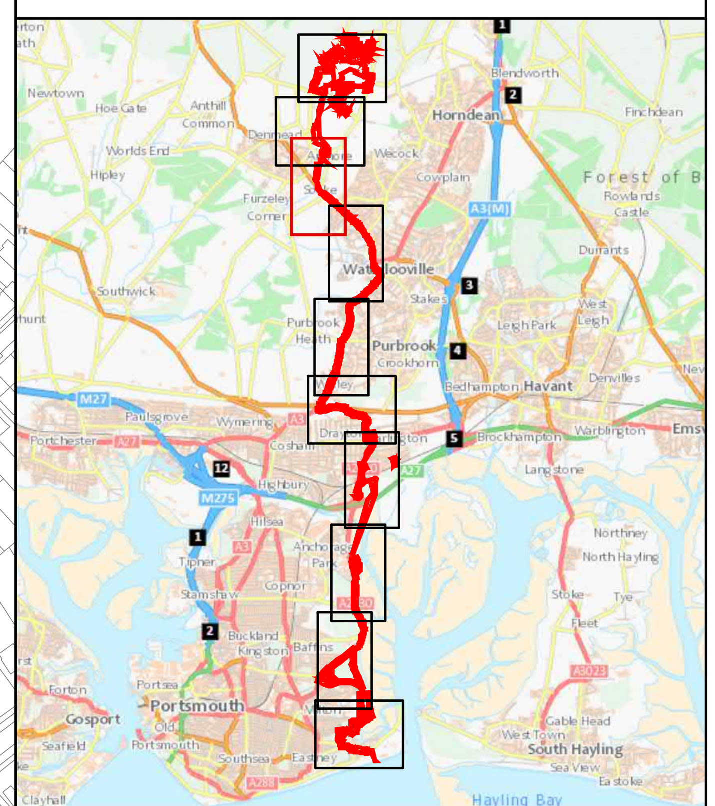

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Sheet 3

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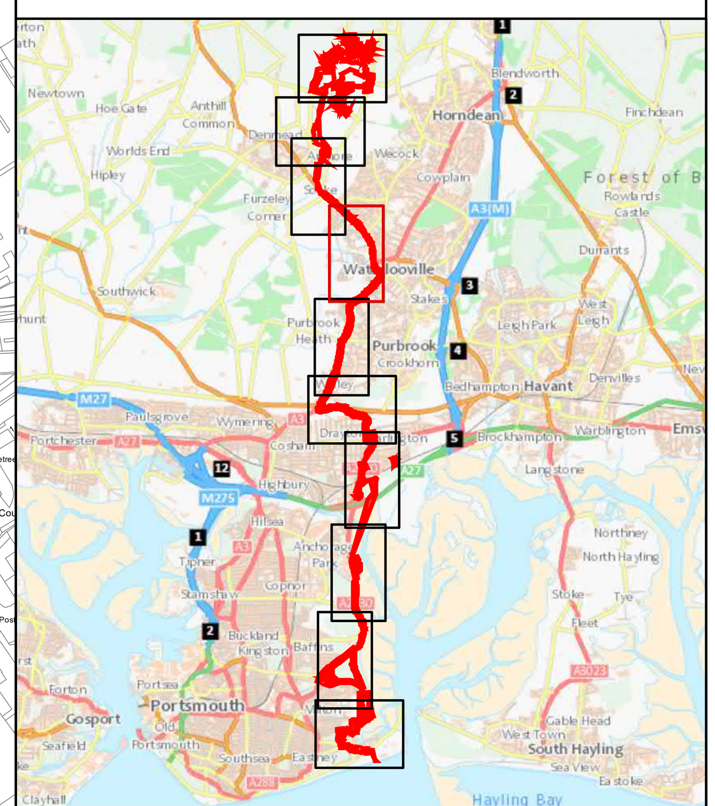
DRAWING NO:			REV NO: 01

AQUIND Interconnector
Sheet 4

Order Limits v8.0

0 50 100 200 Metres



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AQUIND Interconnector
Sheet 5

Order Limits v8.0

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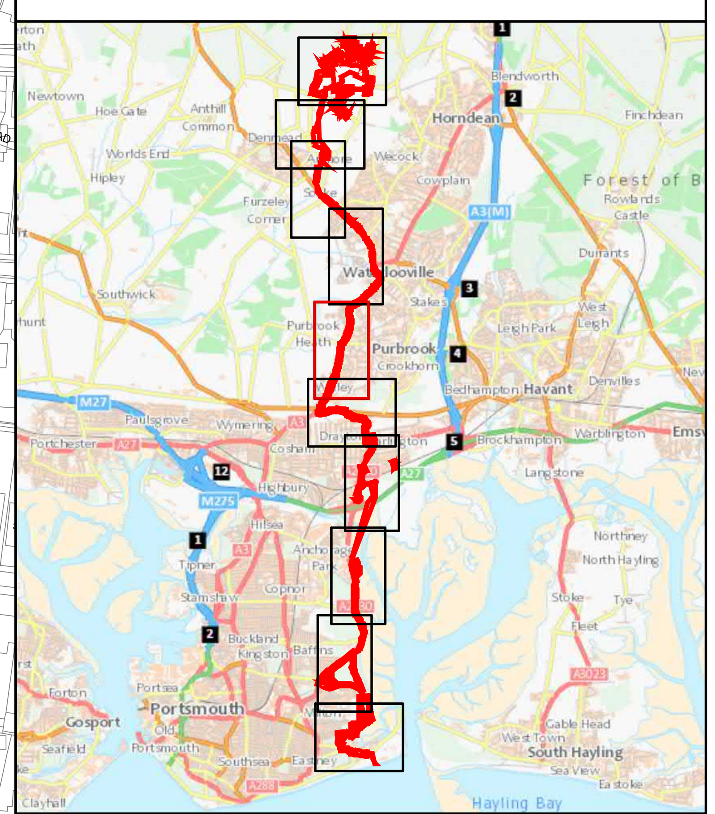

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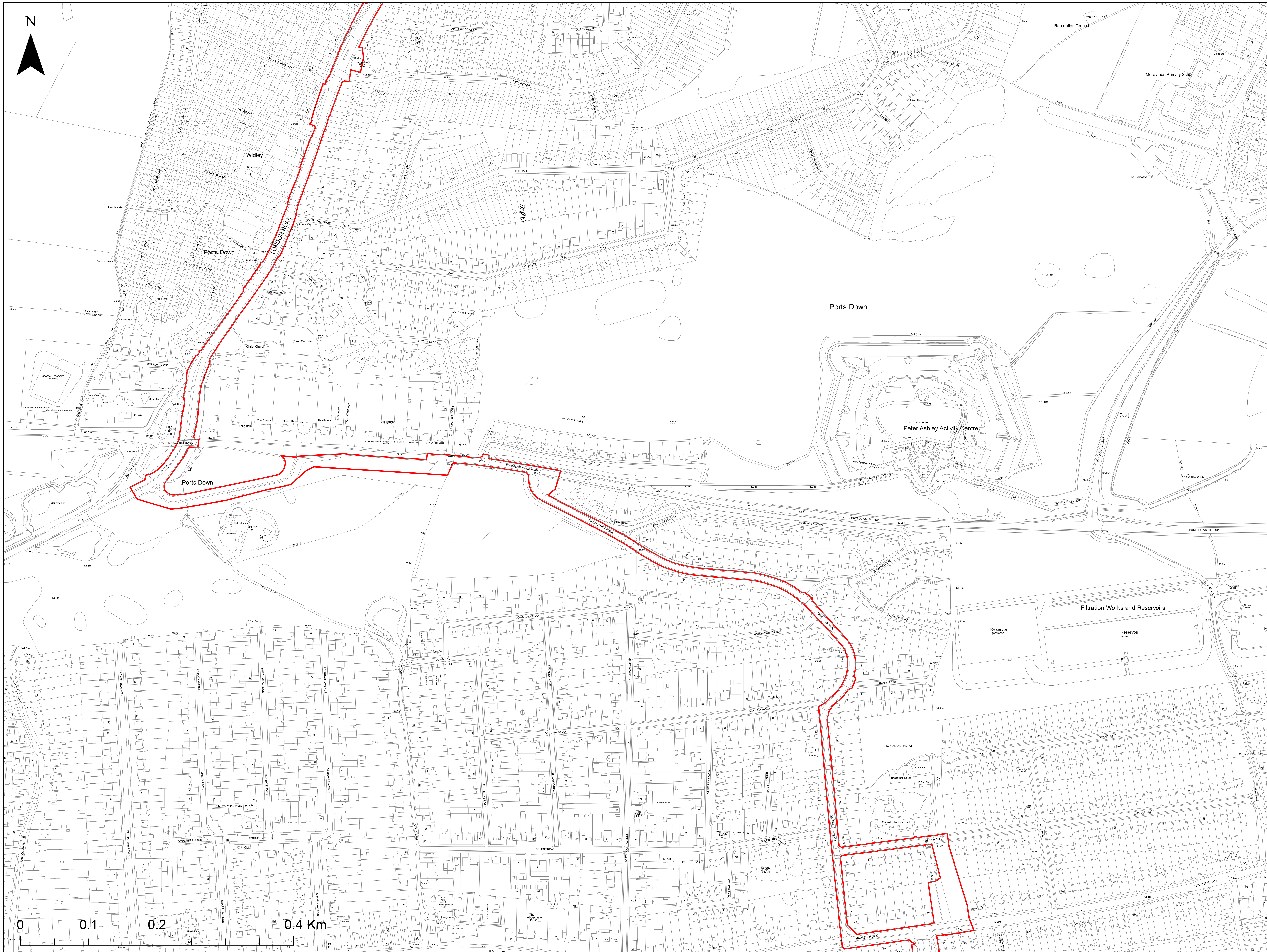
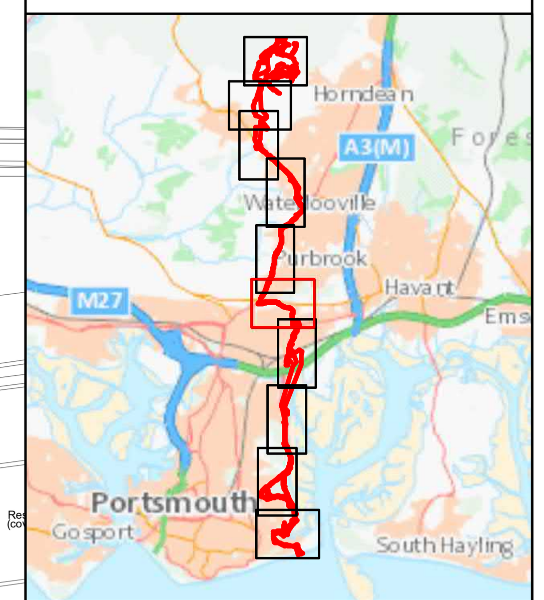
DRAWING NO:	REV.NO:
	01

AQUIND Interconnector
Sheet 6

Order Limits v8.0





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Sheet 7

Order Limits v8.0

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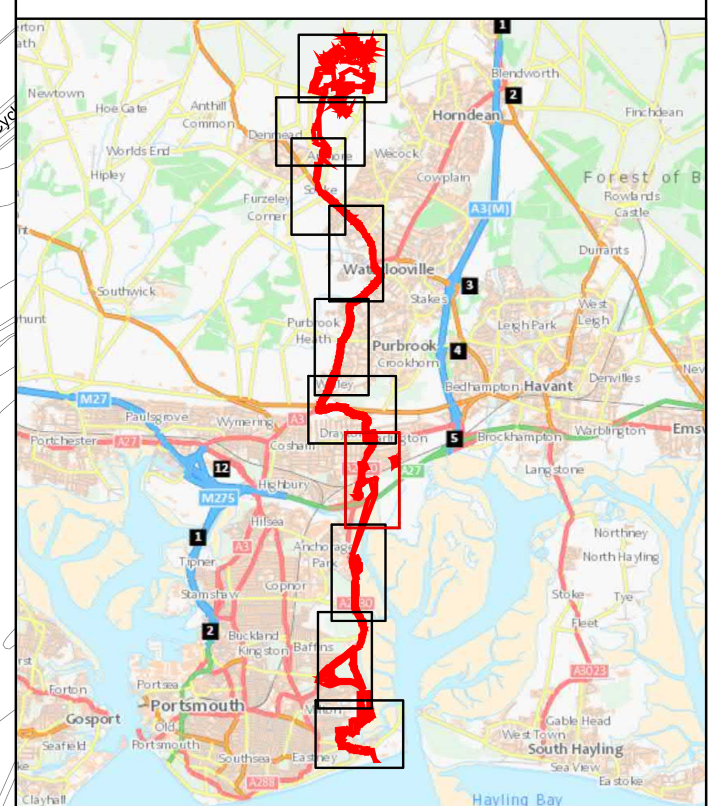

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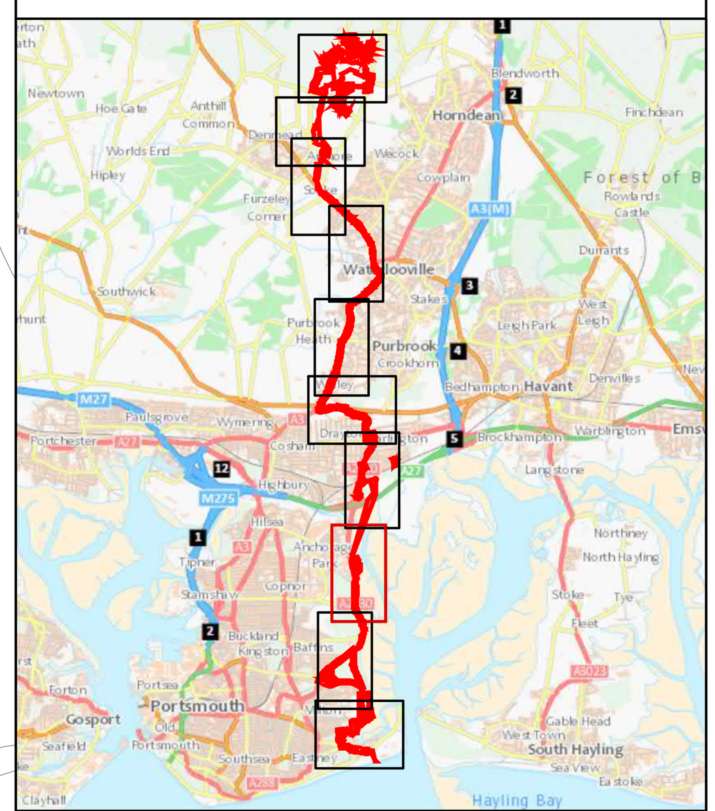

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Sheet 9

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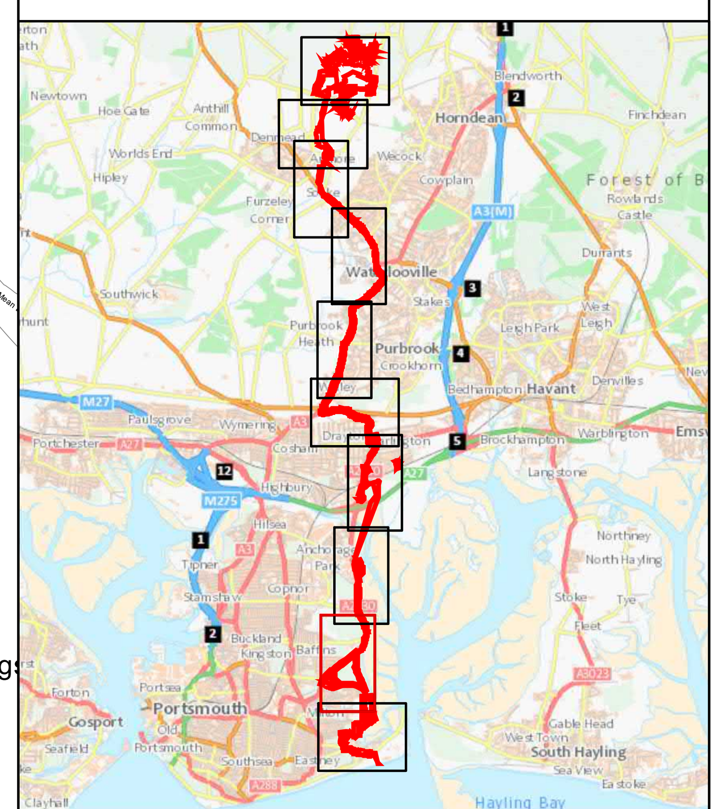

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Sheet 9

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Sheet 10

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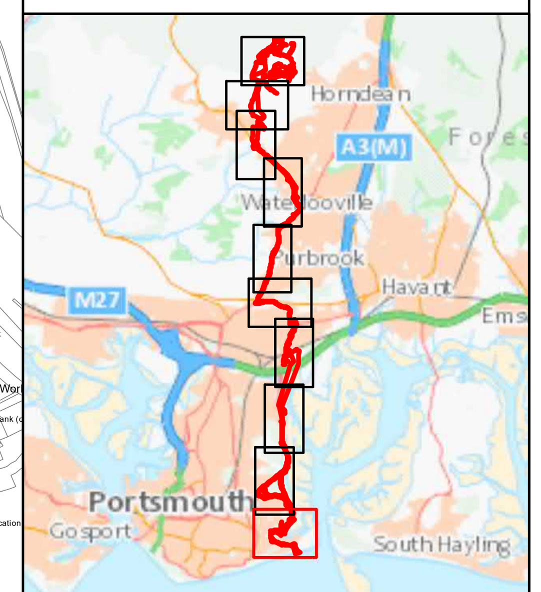

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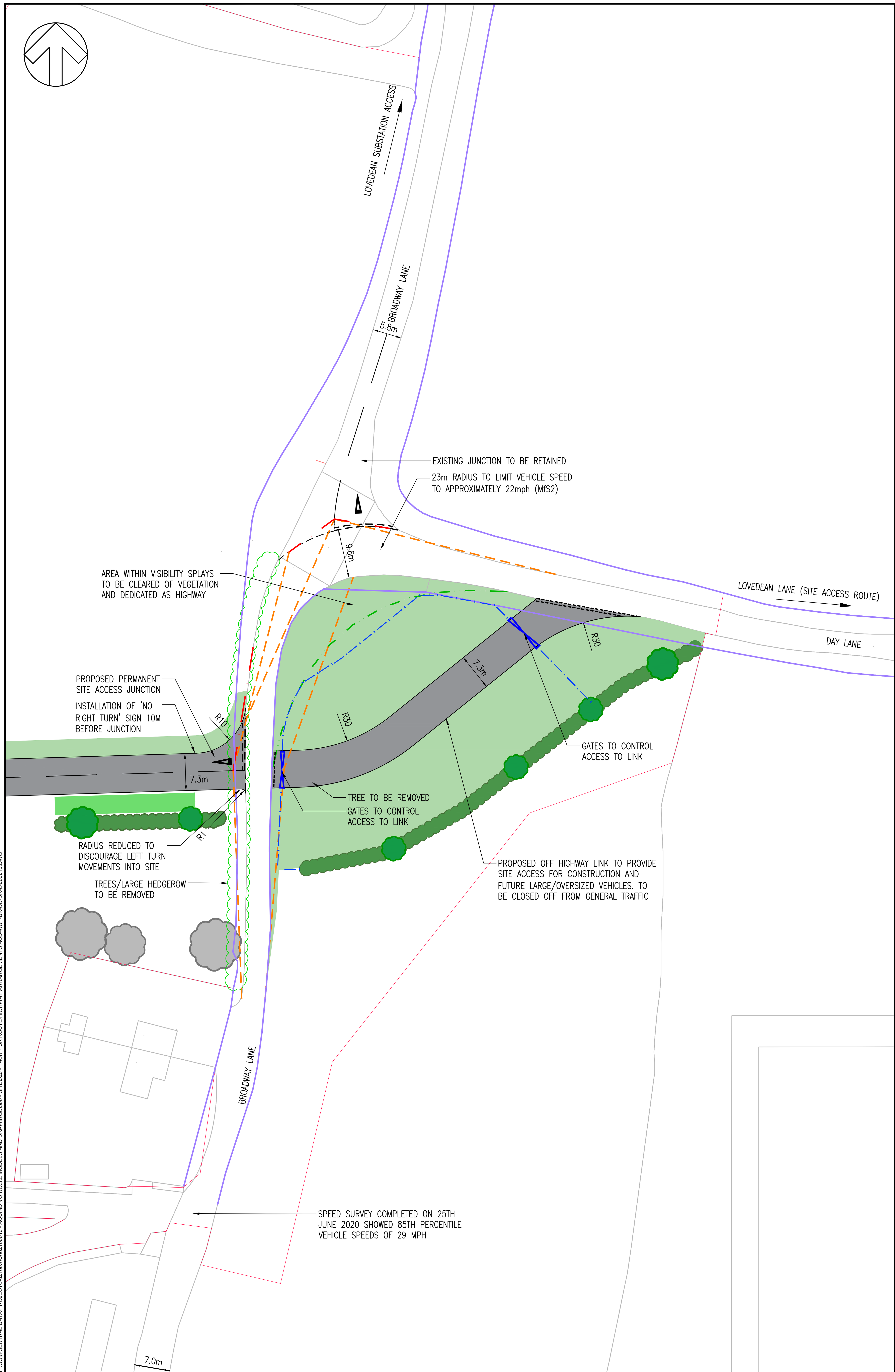
Appendix 2 – Converter Station Access Drawing



NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED.
2. CONFLICTING INFORMATION SHOWN ON THE ENGINEER'S DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.
3. MANUAL FOR STREETS (MfS) AND MANUAL FOR STREETS 2 (MfS2) STANDARDS HAVE BEEN ADOPTED TO EVALUATE APPROPRIATE VISIBILITY AND SPEEDS. THIS STANDARD IS TYPICALLY APPLIED TO URBAN AREAS BUT FOR THESE ELEMENTS IS MORE SUITABLE FOR MINOR RURAL ROADS THAN DMRB STANDARDS.
4. 85^{TH} PERCENTILE SPEEDS OF 31mph MEASURED SOUTHBOUND JUST BEFORE BEND TO NORTH OF ACCESS, AND 29mph MEASURED NORTHBOUND SOUTH OF THE ACCESS.
5. 45m SSD BASED ON MfS TABLE 7.1
6. ARTICULATED LORRY / LOW LOADER VEHICLE MOVEMENTS INTO ACCESS JUNCTION AND EXISTING SUBSTATION JUNCTION WILL TAKE UP WIDTH OF CARRIAGEWAY SO WILL REQUIRE CONTROL.

KEY

- DEVELOPMENT CONSENT ORDER BOUNDARY
- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- 45m FORWARD VISIBILITY
- 2.4m x 45m VISIBILITY SPLAY
- 2.4m x OUTSIDE OF BEND VISIBILITY SPLAY
- MAXIMUM VISIBILITY WITHOUT PARKING
- MAXIMUM VISIBILITY WITH PARKING
- PROPOSED FENCING
- PROPOSED GATE

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
04	18/09/2020	AVI	AMENDED AS PER HCC COMMENTS	CW	CW
03	30/04/2020	AVI	ADDITION OF LANDSCAPE MITIGATION DETAILS AND ADDITIONAL VISIBILITY SPLAYS	CW	CW
02	31/10/2019	MFB	UPDATED DRG FRAME & ADDED TREE LOCATIONS	CW	CW
01	19/09/2019	MFB	FIRST ISSUE	CW	CW

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TITLE:
BROADWAY LANE SITE ACCESS JUNCTION - OPTION B GENERAL ARRANGEMENT

SCALE AT A1: 1:500	CHECKED: CW	APPROVED: CW	
PROJECT No: 62100616	DESIGNED: MFB	DRAWN: MFB	DATE: 19/09/2019
DRAWING No: AQD-WSP-UK-OS-DR-Z-200215			REV: 04

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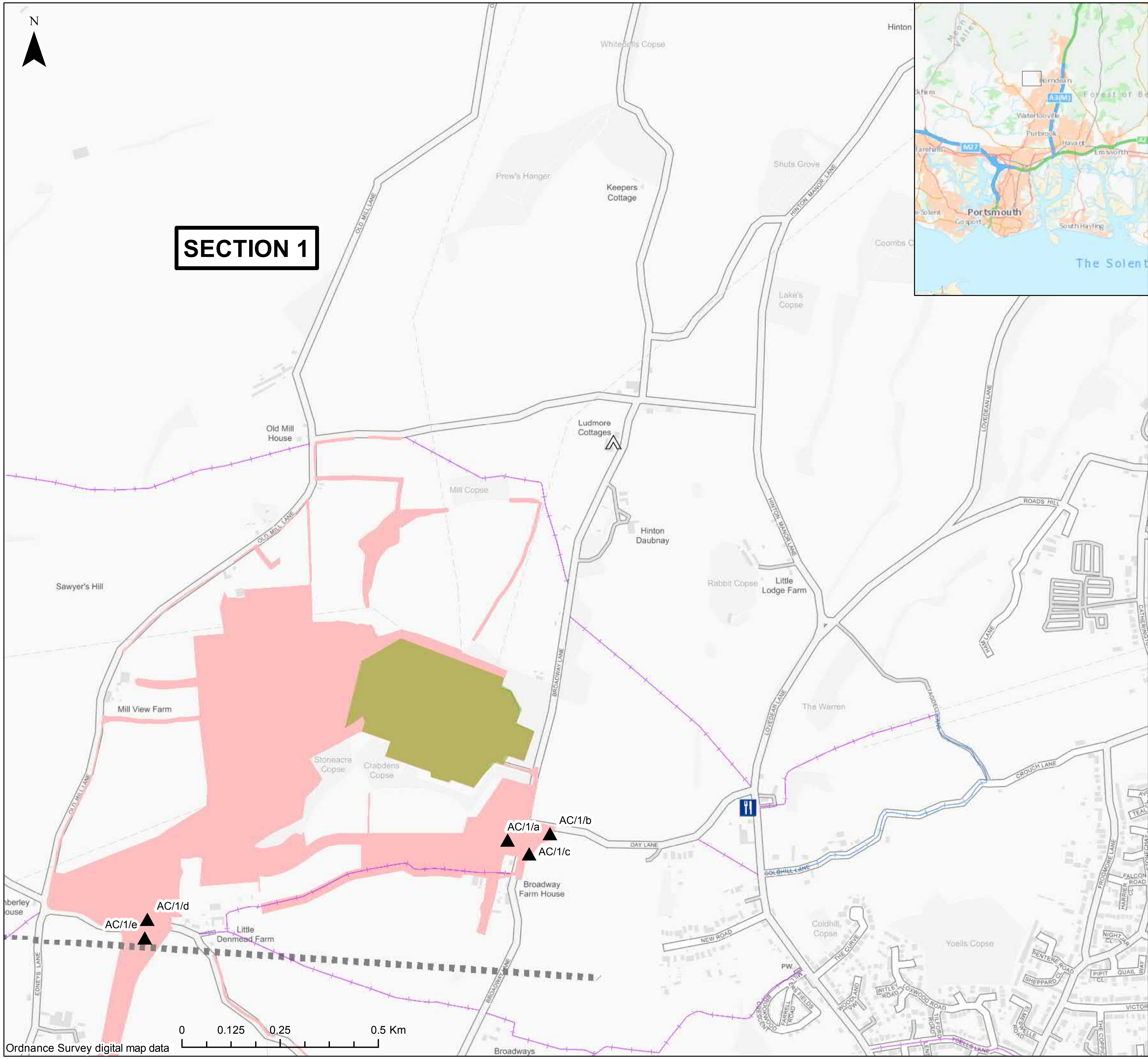
Appendix 3 – Construction Programme

Indicative Programme

Key Task	2021		2022				2023				2024	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
HDD and Landfall Construction (Onshore)												
Onshore HVDC Route Construction / Cable Installation												
HDD and Landfall Construction (Onshore)												
Converter Station Commissioning												

Appendix 4 – Sensitive Receptors and Temporary Access Locations



AQUIND Interconnector

▲ Access Point

TYPE

Campsite

Pub

Order Limits

Section Breaks

Public Rights of Way

BOAT

Footpath

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PROJECT:

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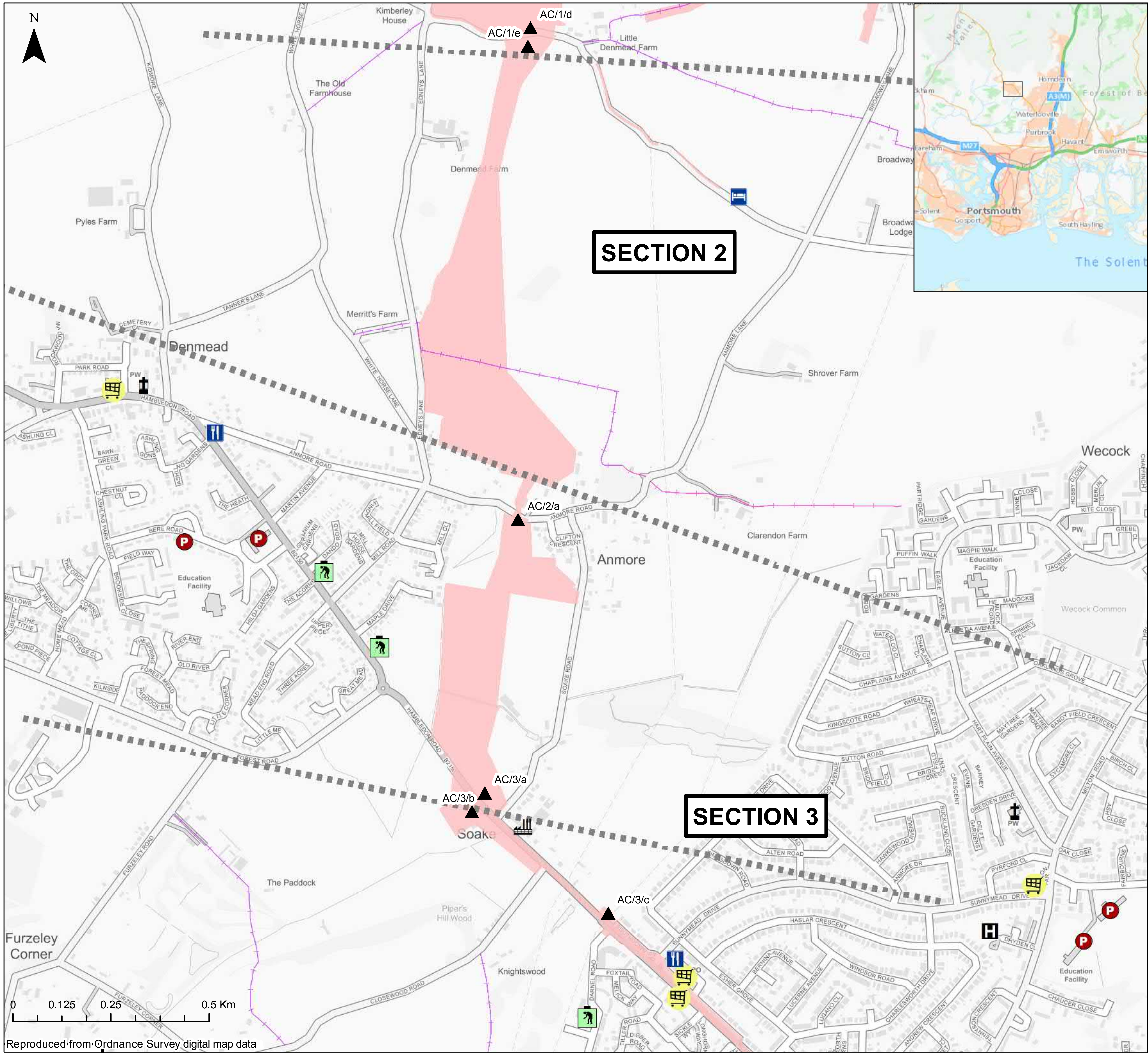
TITLE:

Sensitive Receptors and Access Points
Section 1

SCALE AT A3	CHECKED:		APPROVED:
1:9,651	CW		CW
PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.F.1

REV.NO. 02



AQUIND Interconnector

- Access Point

TYPE
- B&B
- Campsite
- Caravan Park
- Care Home
- Church
- Community Centre
- Education
- Guesthouse
- Industrial Estate
- Leisure
- Lifeboat Station
- Marina
- Medical Group
- Pub
- Retail
- Scout Hut
- Section Breaks

- Order Limits

Public Rights of Way
- Bridleway
- Footpath

School Type
- Primary

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

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PROJECT:
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TITLE:
Sensitive Receptors and Access Points
Section 2/3

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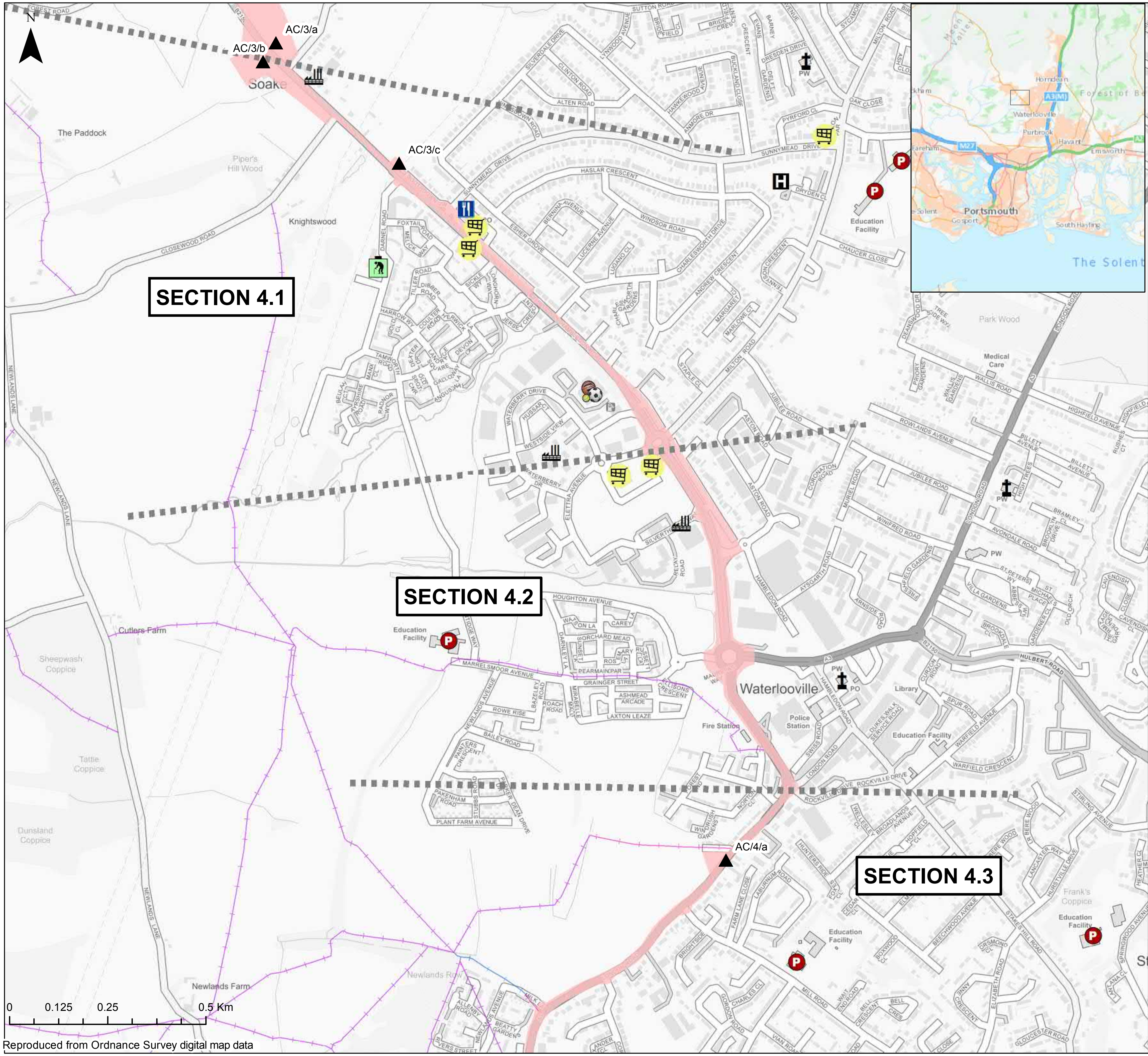
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO:	REV.NO.
EN020022-ESAPPENDIX-22.1.F.2	02



▲ Access Point

TYPE

Care Home

Church

Industrial Estate

Leisure

Medical Group

Pub

Retail

Section Breaks

Order Limits

Public Rights of Way

Bridleway

Footpath

Restricted Byway

Primary

Secondary

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TITLE: Sensitive Receptors and Access Points Section 4.1 / 4.2 / 4.3

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PROJECT NO: EN020022	DESIGNED: SG	DRAWN: SG	DATE: 18/09/2020

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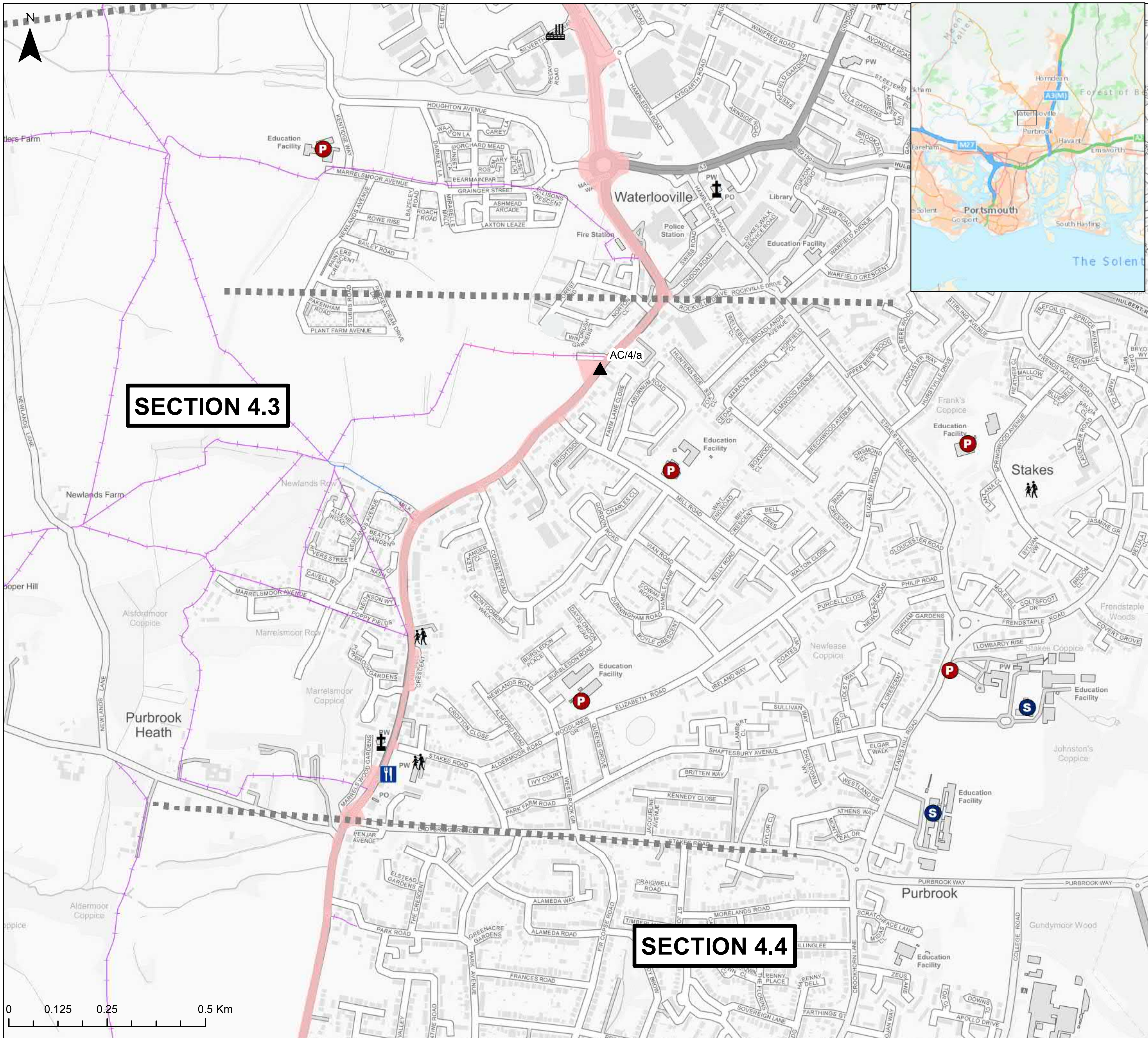
REV.NO. 02



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AQUIND Interconnector

▲ Access Point

TYPE

Church

Community Centre

Industrial Estate

Pub

School Type

Primary

Secondary

Public Rights of Way

BOAT

Bridleway

Footpath

Restricted Byway

Section Breaks

Order Limits

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PROJECT:

AQUIND Interconnector

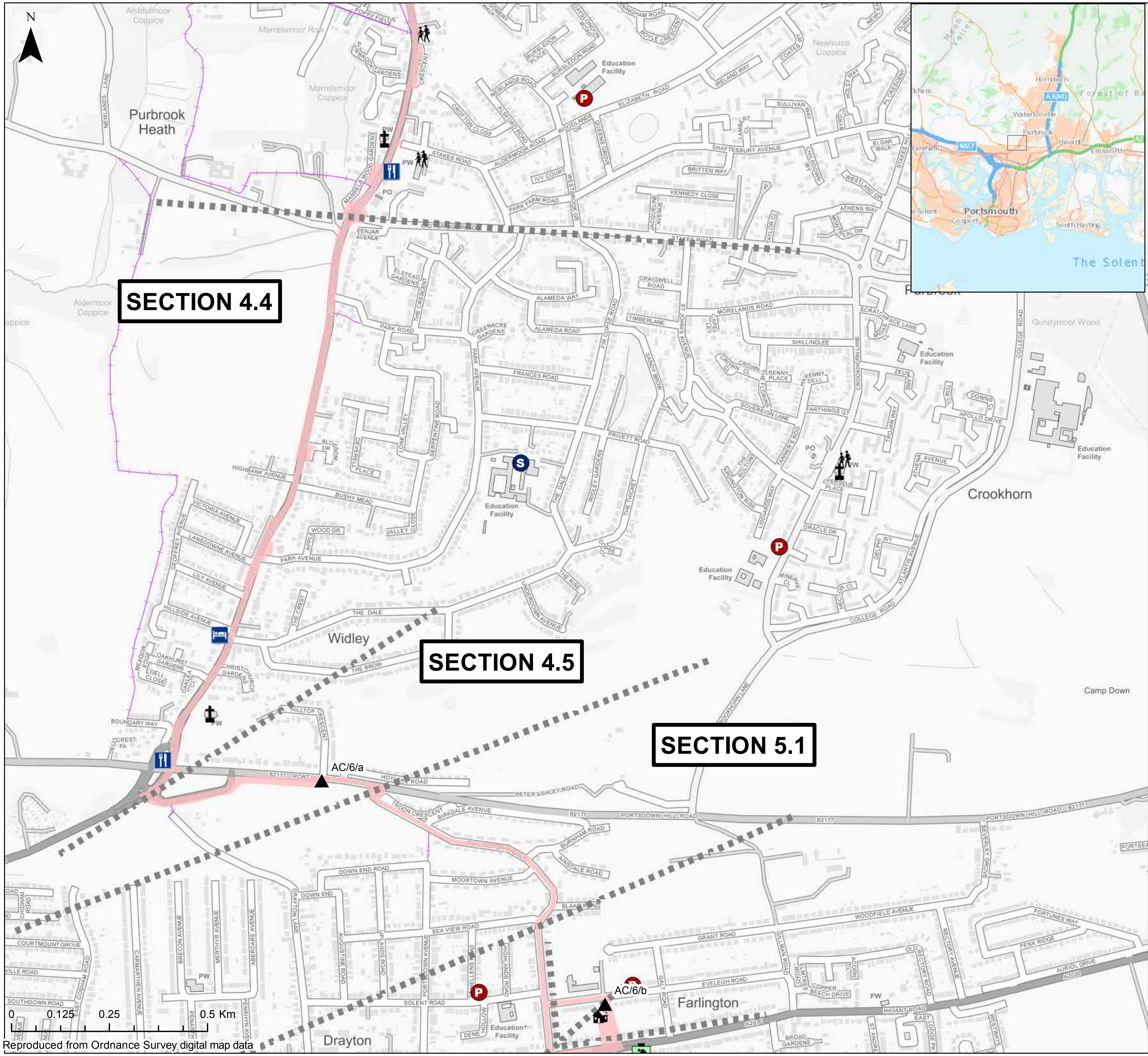
TITLE:

Sensitive Receptors and Access Points
Section 4.3 / 4.4

SCALE AT A3	CHECKED:		APPROVED:
1:9,651	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.F.4

REV.NO. 02



Access Point

TYPE

Care Home

Church

Community Centre

Guesthouse

Pub

Scout Hut

Section Breaks

Order Limits

School Type

Primary

Secondary

Public Rights of Way

Footpath

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 DRAFT	CW	CW

DRAWING STATUS:

FINAL

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CLIENT:

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PROJECT:

AQUIND Interconnector

TITLE:

Sensitive Receptors and Access Points
Section 4.4 / 4.5 / 5.1

SCALE AT A3	CHECKED:		APPROVED:
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PROJECT NO:	DESIGNED:	DRAWN:	DATE:
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DRAWING NO: EN020022-ESAPPENDIX-22.1.F.5

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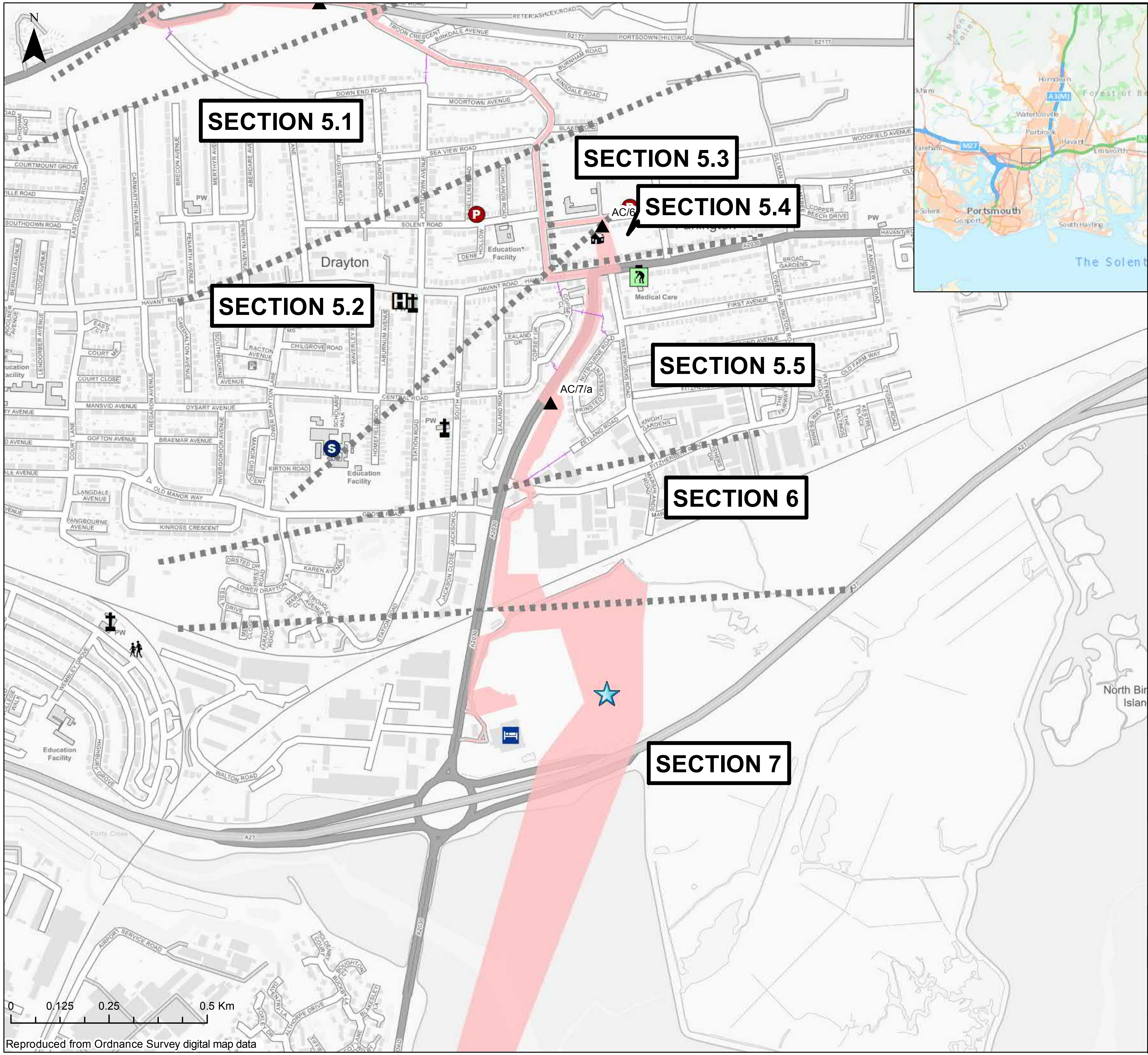

Access Point
TYPE
Care Home
Church
Community Centre
Guesthouse
Medical Group
Scout Hut
Victorious Music Festival
Section Breaks
Order Limits
Public Rights of Way
Footpath
School Type
Primary
Secondary

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

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AQUIND Interconnector

TITLE:
Sensitive Receptors and Access Points
Section 5.1 / 5.2 / 5.3 / 5.4 / 5.5 / 6 / 7

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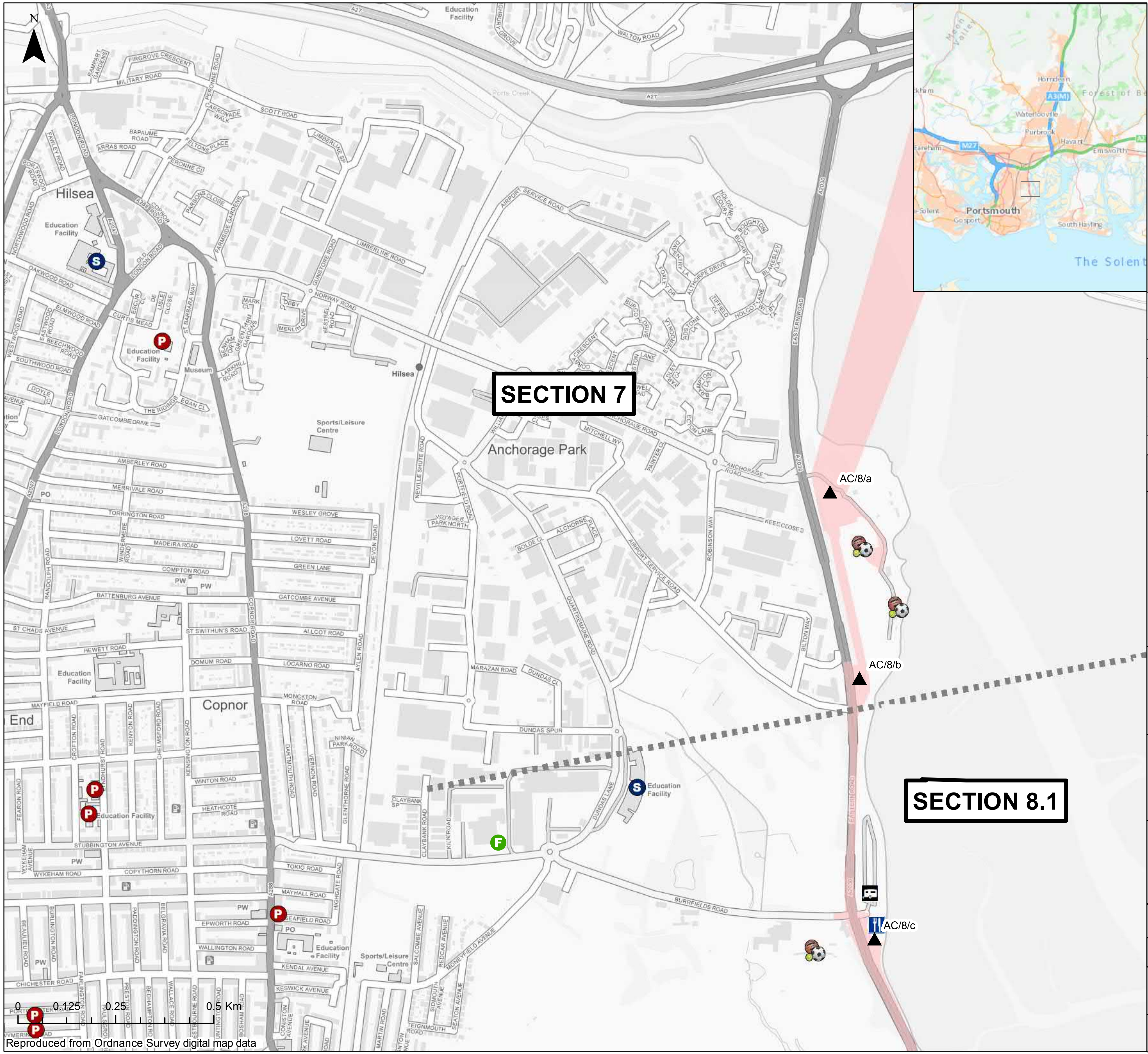

Access Point

TYPE

- Caravan Park
- Leisure
- Pub

Section Breaks

Order Limits

Public Rights of Way

- BOAT
- Bridleway
- Footpath
- Restricted Byway

School Type

- N Nursery
- P Primary
- M Middle Deemed Primary
- S Secondary
- M Middle Deemed Secondary
- F Further Education
- A All Through
- O Other Educational Facility

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

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PROJECT:
AQUIND Interconnector

TITLE:
Sensitive Receptors and Access Points
Section 7 / 8.1

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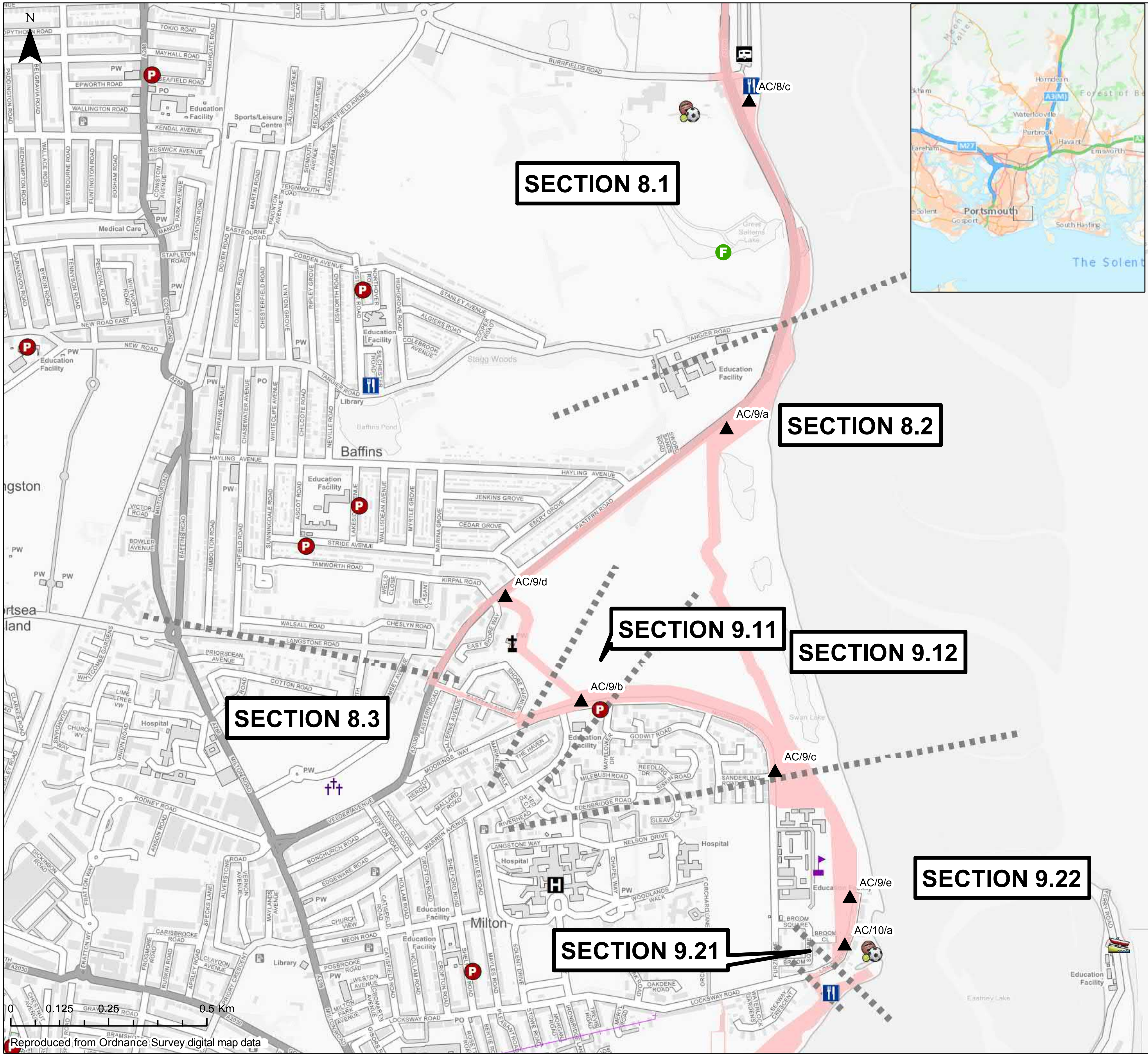
EN020022	SG	SG	18/09/2020

DRAWING NO: EN020022-ESAPPENDIX-22.1.F.7

REV.NO. 02



Access Point
Section Breaks
Order Limits
Public Rights of Way
Footpath

TYPE
Caravan Park
Cemetery
Church
Education
Leisure
Lifeboat Station
Medical Group
Pub

School Type
Primary
Secondary
Further Education

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
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PROJECT: AQUIND Interconnector

TITLE: Sensitive Receptors and Access Points
Section 8.1 / 8.2 / 8.3 / 9.11 / 9.12 / 9.21 / 9.22

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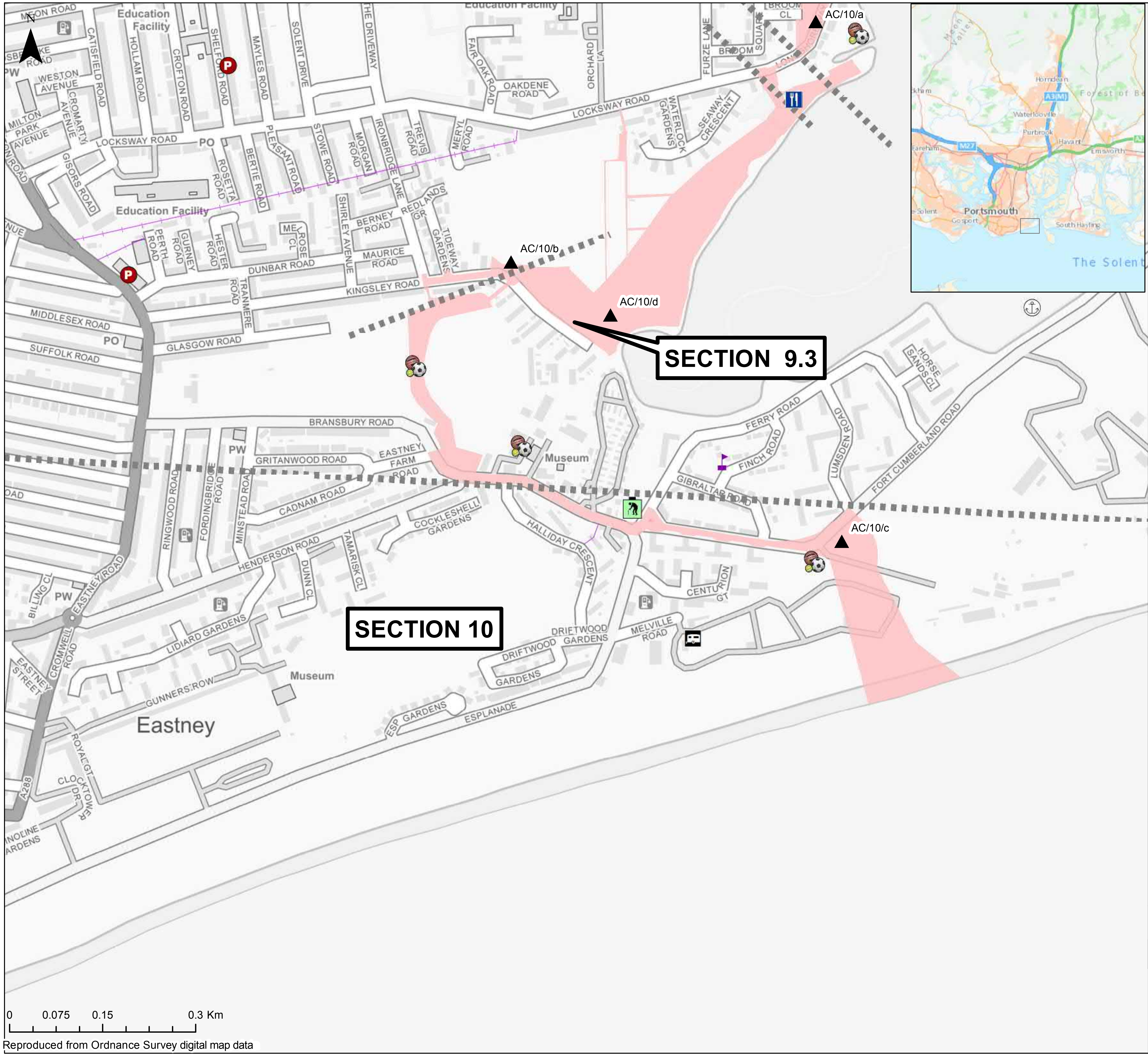

AQUIND Interconnector

▲ Access Point

TYPE

Caravan Park

Care Home

Education

Leisure

Marina

Pub

Section Breaks

Public Rights of Way

Footpath

Order Limits

School Type

Primary

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

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PROJECT:

AQUIND Interconnector

TITLE:

Sensitive Receptors and Access Points
Section 9.3 / 10

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EN020022	SG	SG	18/09/2020

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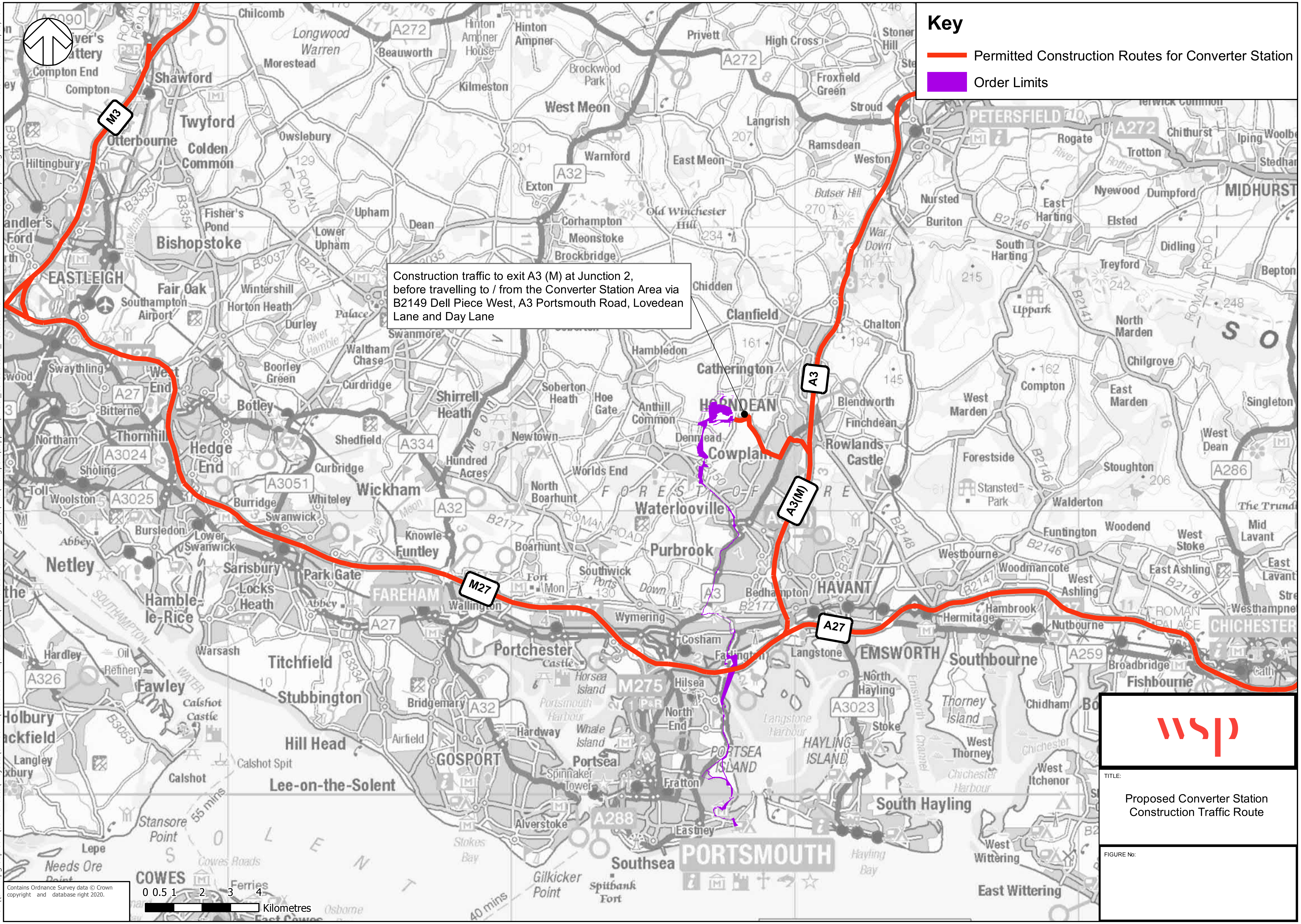
REV.NO. 02

Appendix 5 – Construction Traffic Routes



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TITLE:

Proposed Converter Station Construction Traffic Route

FIGURE No:

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Drawn By: uksxg008

Date Modified: 15/09/2020

Appendix 6 – Framework Construction Worker Travel Plan

AQUIND Limited

AQUIND INTERCONNECTOR

Framework Construction Worker Travel Plan

The Planning Act 2008

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

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Document Ref: 6.3.22.2

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Framework Construction Worker Travel Plan

PINS REF.: EN020022

DOCUMENT: 6.3.22.2

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DOCUMENT

Document	Framework Construction Worker Travel Plan
Revision	002
Document Owner	WSP UK Limited
Prepared By	S. Gander
Date	01 October 2020
Approved By	C. Williams
Date	06 October 2020

CONTENTS

TABLES

PLATES

1. INTRODUCTION

1.1. INTRODUCTION

1.1.1.1.1 This Framework Construction Worker Travel Plan (CWTP) has been prepared by WSP on behalf of AQUIND Limited, the Applicant for the AQUIND Interconnector - an electricity interconnector between France and UK (the "Project"), in support of the Promoter's application for a Development Consent Order (DCO) (the "Application") in respect of the components of the Project located in the UK, the UK Territorial Waters and UK Exclusive Economic Zone (the 'Proposed Development'). Such components include the Onshore Components, comprising the Converter Station Area, the Onshore Cable Corridor and the Landfall, and the Marine Components.

1.1.1.1.2 The Framework CWTP relates to construction stage of the Converter Station Area and Onshore Cable Route of the Proposed Development.

1.1.1.1. The Framework CWTP applies to the construction workforce for the Onshore components of the Proposed Development, using the Converter Station Area as the primary construction compound. For the purposes of assessment within the Transport Assessment and Supplementary Transport Assessment, together with this Framework CWTP, it has been assumed all workers associated with the construction of the Onshore Components of the Proposed Development will start and finish their working day at the Converter Station Area. This provides a robust assessment of impacts associated with constructer worker trips.

1.1.1.2. This document is an Appendix to the Framework Construction Traffic Management Plan (FCTMP). It is a requirement of the draft Development Consent Order that appointed contractors will have to prepare their own final Construction Traffic Management Plans and this will necessitate preparation of final CWTP.

1.1.1.1.3 The Framework CWTP details the tasks involved in developing initiatives for the Travel Plan, including management and co-ordination, which are set in the context of clear objectives to increase use of sustainable travel options and reduce single-occupancy car trips to and from the Proposed Development.

1.2. BENEFITS OF A WORKPLACE TRAVEL PLAN

1.2.1.1.1 This Framework CWTP is a requirement of the planning application process, to support the aims of sustainable development and to help mitigate the transport demands and potential traffic impacts of the construction of the Converter Station and Onshore Cable Route.

1.2.1.1.2 Travel Plans establish a number of key benefits that extend to employees and the broader local area. These key benefits include:

- Improved quality of life for employees - through adopting healthier lifestyles e.g. replacing short car journeys with walking and cycling;
- Improved local air quality - through reduced traffic congestion in the local community, as a result of the use of alternative modes of the private car for many local journeys;
- Less vehicle congestion on local roads - as a result of fewer cars attempting to depart and access the construction site; and
- Cost savings for car sharers - by sharing journeys with colleagues, employees can benefit from sharing the financial and time cost of making these journeys.

1.2.1.1.3 By identifying an appropriate package of measures and ensuring a consistent approach to delivering a CWTP, a number of stakeholders will experience the benefits.

1.3. TRAVEL PLAN DOCUMENT STRUCTURE

1.3.1.1.1 This Framework CWTP is set out in a further seven chapters:

- **Chapter 2** outlines the site access opportunities including current walking, cycling and public transport links, and the development proposals;
- **Chapter 3** sets out the Travel Plan vision and objectives;
- **Chapter 4** sets out the Travel Plan management strategy;
- **Chapter 5** outlines the Travel Plan measures;
- **Chapter 6** details the Travel Plan implementation action plan;
- **Chapter 7** presents targets and monitoring; and
- **Chapter 8** concludes the Travel Plan.

2. DEVELOPMENT PROPOSALS AND ACCESSIBILITY

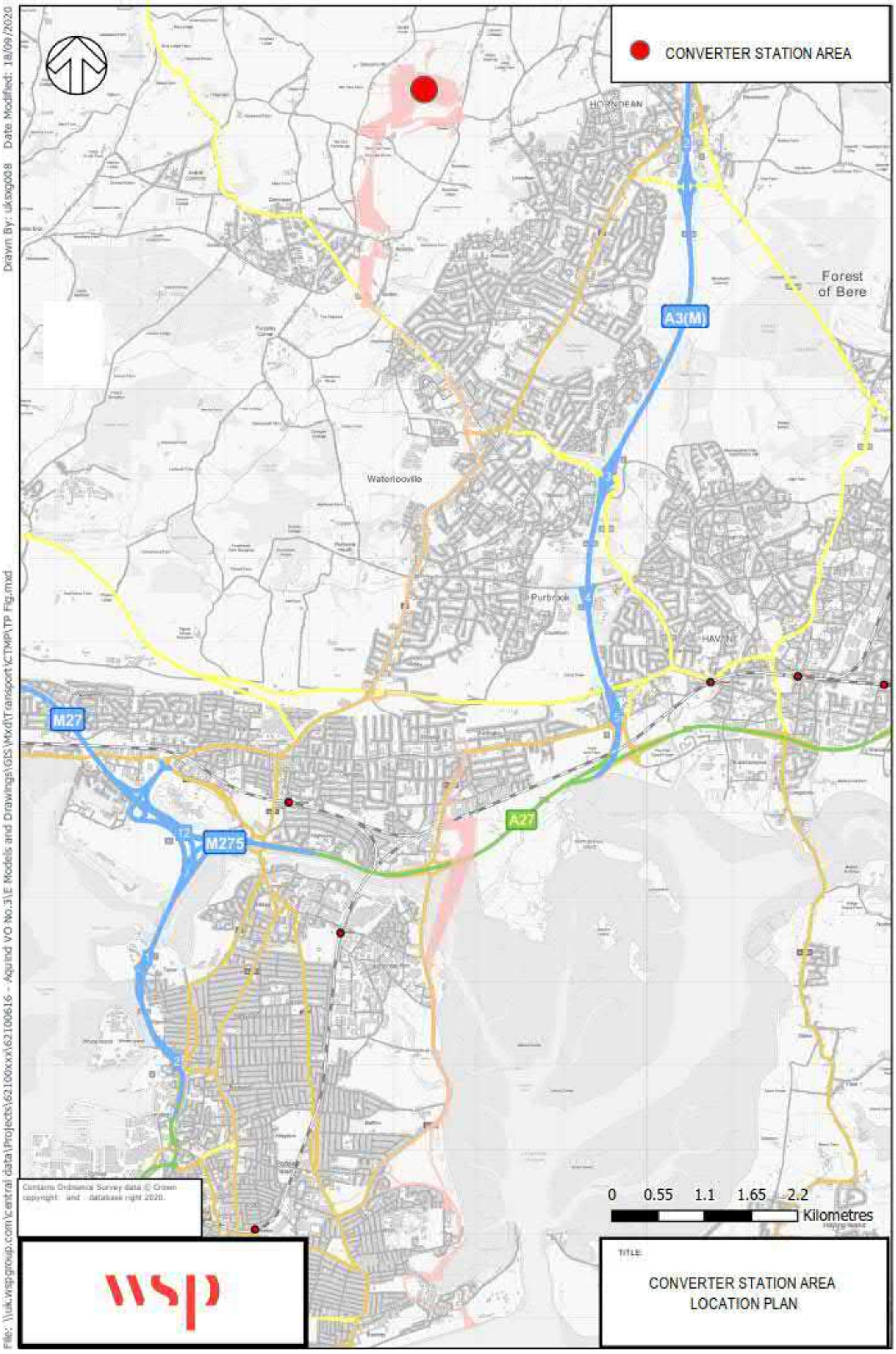
2.1. INTRODUCTION

2.1.1.1.1 This chapter outlines the development proposals and reviews the existing transport conditions near the proposed construction site. Details of the existing walking and cycling networks, and public transport services are presented, along with a brief description of the local highway network.

2.2. SITE LOCATION

2.2.1.1.1 The proposed site location for the construction of the Converter Station is located within agricultural land in proximity to the village of Lovedean, Hampshire. Lovedean is located approximately 13.5km to the north of Portsmouth city centre.

Figure 2.1 – Site location



2.2.1.1.2 The Converter Station Area spans a number of small fields divided by hedgerows.

2.2.1.1.3 Individual farm properties are situated to the north, west and south of the Converter Station Area, connected by rural lanes. The existing Lovedean substation, associated pylons and overhead lines are dominant elements in the landscape of the proposed location and immediate surrounding area. It is located approximately 180m – 200m from the South Downs National Park boundary at its closest point, to the north and west.

2.3. PROPOSED DEVELOPMENT

2.3.1.1.1 The Applicant is proposing to construct and operate the Project.

2.3.1.1.2 The Project comprises a new marine and onshore High Voltage Direct Current ('HVDC') power cable transmission link 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 both countries.

2.3.1.1.3 The Onshore Components of the Proposed Development comprise the Converter Station, the Onshore Cable Corridor and the Landfall.

2.3.1.1.4 The UK Converter Station is proposed to be located adjacent to the existing National Grid Electricity Transmission ('NGET') substation, north-west of the village of Lovedean within the administrative boundary of Winchester City Council ('WCC').

2.3.1.1.5 The proposed Onshore Cable Route will travel through the administrative boundaries of WCC, Havant Borough Council ('HBC') and PCC, reaching the proposed Landfall location at Eastney, a district in the south-east of Portsmouth.

2.3.1.1.6 Car parking for a maximum of 206 persons engaged with the construction of the Onshore Components is proposed to be provided at the Converter Station Area, ensuring adequate facilities for all personnel. Whilst it is expected the measures in the CWTP, the framework for which is detailed in this document, will mean the number of persons parking vehicles at the Converter Station Area will be less, it is necessary to include provisions to accommodate all personnel so as to ensure no impediment to the timely construction of the Onshore Components.

2.3.1.1.7 Working hours for the Converter Station will be 08:00-18:00 Monday to Friday and 08:00-13:00 on Saturdays. For the Onshore Cable Route, general working hours will be 07:00-17:00 Monday to Friday and 08:00-13:00 on Saturdays.

2.4. PROPOSED CONSTRUCTION ACCESS TO THE CONVERTER STATION SITE

2.4.1.1.1 The proposed access to the Converter Station for the Construction and Operational Stages will be taken from Broadway Lane via a new proposed access junction. The proposed design of this junction can be seen in Appendix C of the Supplementary Transport Assessment (STA).

2.4.1.1.2 As well as the proposed access junction, a gated highway link is proposed between Day Lane, east of the existing bend, and at Broadway Lane, south of the existing bend. This will provide a managed facility for Heavy Goods Vehicles (HGVs) and Abnormal and Indivisible Loads (AILs) which are required to enter the site during the construction stage with vehicle movements across Broadway Lane able to be marshalled. Further information regarding the proposed marshalling of this link can be found in Section 3.4 of the STA. The proposed highway link also provides for abnormal load movements and would be retained as a permanent feature (unadopted) to allow future access with such vehicles should it be required during the operational stage. General verge / vegetation clearance will be required on all sides of Broadway Lane to ensure that adequate visibility splay requirements are met, with all required land falling within the proposed Order Limit.

2.4.1.1.3 Construction worker trips by car to and from the Converter Station will all be required to us the follow permitted route:

- A3(M) Junction 2 – B2149 Dell Piece West – A3 Portsmouth Road – Lovedean Lane – Day Lane – Broadway Lane.

2.4.1.1.4 These routes are described briefly in the following paragraphs.

A3(M)

2.4.1.1.5 The A3(M) is a dual carriageway subject to national speed limit which routes to the east of the study area, it merges with the A27 at Havant and continues onto Guildford and London. Converter Station traffic will exit the A3(M) at Junction 2 (Horndean).

B2149 DELL PIECE WEST

2.4.1.1.6 Dell Piece West is a section of road between A3 (M) Junction 2 and Lakesmere Road. The route is subject to national speed limit and has narrow footway provision on its northern carriageway. After passing the Morrisons roundabout the speed limit reduces to 40 mph and a wide shared use footway/cycleway is provided on the northern carriageway.

A3 PORTSMOUTH ROAD

2.4.1.1.7 A3 Portsmouth Road routes for approximately 2.6km from A3 London Road to the junction with B2149 Dell Piece West. The road is subject to a 30mph speed limit and has footway provision on both sides of the carriageway. Residential properties are located on both sides of the carriageway but are separated from traffic by wide footways / shared-use paths.

2.4.1.1.8 There are bus stops located on either side of the road however only 4 bus stops are located along the construction traffic section of the road. Two bus stops are located on either side of the road approximately 100m from the junction with B2149 Dell Piece West and two bus stops are located either side of the road outside the junction with Keydell Avenue.

LOVEDEAN LANE

2.4.1.1.9 Lovedean Lane routes from A3 (Cowplain) to Downhouse Road for approximately 4.3km, providing access mainly to residential properties. Footways are provided up until the route leaves Lovedean and Coldhill Lane. The speed limit along this route is 30mph until Lovedean Lane passes Day Lane, here the speed limit is extended to 60mph. No bus stops are located along this route.

DAY LANE

2.4.1.1.10 Day Lane is a rural lane with a length of approximately 630 metres and connects Lovedean Lane to Broadway Lane. The lane is subject to a 60mph speed limit and has no footway provision or bus stops.

2.5. PUBLIC TRANSPORT

BUS

2.5.1.1.1 The nearest bus stops which are served by bus routes with timetables that align with the proposed working hours for the Converter Station and Onshore Cable Route are located on Blackbird Close. This stop is served by First Bus route Number 7 which provides a suitable arrival time to be used at the start of the day. At a typical walking speed of 4.8km/h, the stop will comprise of a 30-minute journey by foot from the site, via Day Lane, Lovedean Lane and Day Lane.

2.5.1.1.2 A summary of all bus routes accessible from the Converter Station are shown in Table 1 below.

Table 1 - Local Bus Services

Service No.	Route	Start / Finish Times Monday-Friday	Start / Finish Times Saturday	Nearest bus stop from Converter Station
7 / 7C	Portsmouth City Centre – Cosham – Waterlooville – Wecock Farm	Bus arrival time at start of day: 06:20, 07:30 Bus departure times at end of day: 17:33, 18:43	Bus arrival time at start of day: 07:20 Bus departure times at end of day: 13:33, 13:53	Blackbird Close 30-minute walk
8	Clarence Pier – City Centre – Cosham – Waterlooville - Clanfield	Bus arrival time at start of day: 06:26, 07:14 Bus departure times at end of day: 17:38. 18:38	Bus arrival time at start of day: 07:16 Bus departure times at end of day: 13:39	A3 Portsmouth Road, 33-minute walk
39	Havant – Purbrook – Waterlooville – Wecock Farm	Bus arrival time at start of day: 06:37, 07:17 Bus departure times at end of day: 17:35, 18:38	Bus arrival time at start of day: N/A Bus departure times at end of day: 13:35	Blackbird Close, 30-minute walk

RAIL

2.5.1.1.3 Bedhampton Railway station is located approximately 10.4km south-east from the construction site but has no direct bus route from the station to the site or a cycle route.

2.5.1.1.4 Havant Railway station is also located approximately 12.3km south-east from the construction site. This could be accessed using bus service 39, which starts and ends at Havant bus station which is a six minute walk from the railway station. A summary of destinations that can be reached from Havant railway station are shown in Table 2.

Table 2 - Destination available from Havant Railway Station

Destination	Frequency	Travel Time
Portsmouth	4-5 per hour	16-21 minutes
Southampton	3-4 per hour	38-56 minutes
Chichester	3-5 per hour	10-20 minutes
Brighton	2 per hour	60-74 minutes
Guildford	2-3 per hour	44-56 minutes
London Waterloo	2 per hour	83-100 minutes

2.6. CYCLE ACCESS

2.6.1.1.1 The closest Sustrans route in proximity to the site is National Cycle Network (NCN) Route 222, which is approximately 24km long and provides a connection between Portsmouth and Petersfield. The route is located approximately 2.8km to the south-east of the construction site on A3 Portsmouth Road, connecting into Petersfield in the north and Waterlooville and Portsmouth tot the south.

2.6.1.1.2 In addition to the NCN 222, other roads around the Converter Station are suitable for cycling, including Lovedean lane, Milton Road, Day Lane and Broadway Lane.

3. TRAVEL PLAN VISION AND OBJECTIVES

3.1. TRAVEL PLAN VISION

3.1.1.1.1 The overarching vision for the development and implementation of the Framework CWTP is outlined below:

"The proposed construction of the Proposed Development will accommodate employees and visitor journeys through a variety of integrated and sustainable transport options, with people able to access travel information on demand to make informed travel choices."

3.1.1.1.2 This vision will assist in guiding the development, implementation and evolution of this Framework CWTP helping to ensure employee and visitor journeys can be undertaken through a variety of integrated and sustainable travel options and thereby minimising the volume of single-occupancy car trips to and from the Converter Station Area. As a result, this will reduce traffic impacts on the surrounding highway network, reduce traffic congestion, improve air quality and enhance the operational road safety of the surrounding highway network.

3.2. TRAVEL PLAN OBJECTIVES

3.2.1.1.1 In pursuit of the vison set out above, the Framework CWTP will be guided by specific objectives as outlined below:

- To manage the volume of single-occupancy car travel and the impact on local roads and communities;
- To ensure the site is accessible by sustainable transport options; and
- To facilitate informed travel choices, by ensuring both employees and visitors have access to real-time on demands travel information.

3.2.1.1.2 These objectives will help define and shape the package of measures to be introduced, collectively helping to achieve the vision statement.

4. TRAVEL PLAN MANAGEMENT

4.1.1.1.1 A Travel Plan Co-ordinator (TPC) will be identified who is responsible for implementing and promoting the CWTP.

4.1.1.1.2 The role will initially mean planning for all agreed deliverables to be established, integrated and available for use by employees and visitors as intended. More generally the role of TPC will encompass:

- Maintaining day-to-day responsibility for delivering the plan, including the agreed programme of measures;
- Acting as the main point of contact for queries relating to visitor and employee travel and liaising with transport service providers as required;
- Monitoring the plan to determine progress against the objectives, and preparing a concise annual monitoring report summarising modal outcomes for employee and visitor travel; and
- Working in partnership with the Applicant and its contractors and other local employers to explore area-wide travel planning opportunities

4.1.1.1.3 The TPC will be a part-time position and will be appointed by the Applicant prior to occupation of the construction site.

5. TRAVEL PLAN MEASURES

5.1. INTRODUCTION

5.1.1.1.1 This Framework CWTP has been developed to provide a range of measures to facilitate and encourage sustainable travel at the development.

5.1.1.1.2 Promoting car sharing, public transport and cycling will play a vital role in achieving a desirable outcome. Whilst many employees and visitors are likely to access the site using their own private vehicles, there remains opportunities to support car sharing.

5.1.1.1.3 The section presents travel planning measures proposed for the site, in four specific areas, and concludes by summarising how each element directly support the Framework CWTP objectives. The four areas are summarised in Figure 5-1 and presented in further detail throughout this section.

Figure 5-1- Travel planning approach

5.2. TRAVEL INFORMATION AND ADVICE

TRAVEL INFORMATION NOTICE BOARD

5.2.1.1.1 A travel information board will be created for the site that draws together multi-modal travel information into a single place for employees and visitors to view. The notice board will be placed in an area visible to employees and will be regularly updated by the TPC. The notice board will include bus service and rail connections, car sharing opportunities and parking information.

5.2.1.1.2 This will represent a primary means of promoting sustainable travel options to all site users. The notice board will also promote information relating to new travel initiatives that may be introduced, transport service improvements and timetable where appropriate.

PROMOTION EVENTS

5.2.1.1.3 The promotion of sustainable travel throughout the year will be undertaken through involvement in national activities such as ‘Ride to Work Week’ and car sharing awareness events. These events will be advertised on the travel information notice board to actively encourage uptake. The coordination of these events will be facilitated by the TPC.

5.3. MANAGING CAR BASED TRAVEL

PARKING CONTROLS

5.3.1.1.1 Parking will be controlled through the provision of parking permits for construction worker vehicles. This will limit the number of construction workers driving to the site through the provision of a maximum of one permit for every 1.5 construction workers as an average across the construction work force. This will encourage the use of car / vehicle sharing (see Paragraph 5.3.1.1.4), which is considered normal behaviour for construction workers travelling to site from nearby accommodation or home locations. It will be for the appointed contractor to confirm the size of the work force prior to construction commencing in order to determine the number of available permits.

5.3.1.1.2 The contractor will also be responsible for ensuring that construction workers do not park inappropriately on surrounding roads causing nuisance to residents. This will also be prevented by construction workers who do not car share being transported to site via minibus / works LGV either directly from local accommodation or Converter Station Area compound.

CAR SHARING

5.3.1.1.3 Promoting shared car journeys will be facilitated through the limited provision of car parking permits and through advertising opportunities to partake in the car share scheme on the travel information board and promoted to staff by the TPC. Given the likelihood of many construction workers being accommodated in nearby hotels and other rental accommodation it is considered that car / vehicle sharing would occur between construction works as a matter of course.

PROMOTING ACTIVE TRAVEL

5.3.1.1.4 Information on local walking and cycling routes will be promoted to staff via the travel information notice board. Secure cycle parking facilities will also be provided at the Converter Station compound

CYCLE TO WORK SCHEME

5.3.1.1.5 Cycle to work schemes are a popular initiative for employees to source a bicycle and cycling equipment as a tax-free benefit. Cyclescheme is one such provider in the UK. The scheme is based on a tax-efficient salary-sacrifice arrangement and allows employees to be loaned bikes and accessories through their employer, with costs typically over 12-18 months, before purchasing the bike for a small sum at the end of the hire period. The scheme allows employees to spend up to £1,000 on bikes and equipment, tax-free, potentially saving a significant proportion of the overall value. The TPC will notify employees of cycle to work schemes available to them.

5.4. PROMOTING PUBLIC TRANSPORT

5.4.1.1.1 Timetabling information for local bus and rail services will be included on the travel information notice board and will be regularly updated by the TPC.

5.4.1.1.2 Given the distance from the nearest train station to the construction site, it is anticipated that rail will not be a chosen mode of travel. However, as is set out in Section 4.3 of the Updated Framework CTMP, the Applicant will operate a shuttle bus services between the main local transport hubs (Havant Railway Station and Waterlooville town centre) and local hotels where construction workers are to be accommodated. This shuttle bus is intended to avoid the need for all workers to drive to the construction compound. This service will be kept under review throughout the construction period in order to ensure that it is providing effective mitigation of private car trips.

5.5. SUMMARY

5.5.1.1.1 This chapter has highlighted a variety of travel planning measures to be introduced at the Converter Station Area to encourage the use of sustainable transport options by employees and visitors. Some measures focus on raising awareness and providing travel information and advice so individuals can make informed choices on how to access the site and not otherwise assume car-based travel is the only viable option.

5.5.1.1.2 Other measures are designed to then actively encourage individuals to use these modes, ensuring the Framework CWTP remains proactive in achieving its stated objectives over time. This includes investing in supporting infrastructure and services and rewarding sustainable travel patterns.

5.5.1.1.3 The TPC will provide a focal point for overseeing delivery and responding to changing travel demands over time with either revised or additional measures where benefits become apparent, and where investment can be focussed to achieve the most benefit.

6. IMPLEMENTATION ACTION PLAN

The site management will ultimately be responsible for implementing the measures set out within this Travel Plan. The measures will be implemented by the appointed TPC, who will assume day-to-day responsibility.

Table. 6-1. Implementation Action Plans

Travel Plan Measures	Delivery Date / Trigger	Delivery Responsibility
Appointment of TPC	Prior to initial occupation of construction site	Site Management
Full Travel Survey Undertaken	6 months post occupation of construction site	TPC
Provision of Shuttle Bus	Provided continuously through-out construction	TPC
Travel Information Notice Board	From occupation of construction site, and to be regularly up-dated through-out occupancy	TPC
Promotional events	One month after occupation of construction site, and at regular intervals through-out occupancy	TPC
Control of Car Parking and Promotion of car sharing	From occupation of construction site, and at regular intervals through-out occupancy	TPC
Provision of timetabling information	From occupation of construction site, to be updated when appropriate	TPC
Cycle to work scheme	From first occupation of construction site	Employer

7. TARGETS AND MONITORING

7.1. TRAVEL PLAN TARGET

7.1.1.1.1 The measures presented by this Framework CWTP will ensure both employees and visitors are made aware of different travel options to access the Converter Station Area, and that sustainable travel options are actively promoted. The success of the measures set out in this Framework CWTP will be assessed through a series of specific, measurable, achievable, realistic and time-bound (SMART) targets.

7.1.1.1.2 When considering the targets set out for these purposes, and the subsequent monitoring of these targets, it is important to note the temporary nature of the construction site. As the proposed construction of the convertor will only be short term, it is not feasible to implement the type of long-term targets that would be typically included in a workplace travel plan. Therefore, all included targets are intended for short-term implementation and monitoring.

7.1.1.1.3 Due to the nature of the specialist construction skills workers required for the project, it is determined that these workers may travel from further afield than typical construction workers. Therefore, it has been determined the use of Census Data relating to the method of travel to work will not be a representative example of workers modal share. To provide a robust and representative method of determining initial travel modal shares it is assumed that all workers will drive to the site with a private car occupancy rate of 1.0.

7.1.1.1.4 Therefore, due to the limited public transport opportunities close to the site and the distance travelled by the workers, the most appropriate measures for reducing trip generation are the control of car parking and subsequent promotion of car sharing and provision of a shuttle bus service to / from Havant railway station, Waterlooville town centre and local hotel accommodation. As such, the following framework targets are considered appropriate for the Converter Station Area,:

- A limit on the provision of parking permits at the Converter Station to a maximum of 1 permit per 1.5 construction workers to promote car sharing and limit the number of single occupancy vehicle trips made to the Converter Station;; and
- 10% of construction workers traveling to the site by shuttle bus.

7.1.1.1.5 The modal share target for use of the shuttle bus can be adjusted dependent on the results from the Full Travel Survey undertaken six months post occupation of the construction site.

7.2. MONITORING

7.2.1.1.1 The Framework CWTP target, and construction workers modal travel splits will be monitored by the TPC through the undertaking of travel surveys at 6 months, 1 year and 2 years into the construction stage. This will enable monitoring/ potential adjustments in respect of the use of the shuttle bus to be made to the final CWTP to reduce single occupancy vehicle travel to/from the site.

8. CONCLUSION

8.1. SUMMARY

8.1.1.1.1 This Framework CWTP has been prepared by WSP on behalf of the Applicant in support of the DCO Application to construct and operate an electricity interconnector between France and UK, known as AQUIND Interconnector. The Framework CWTP relates to construction stage of the Onshore components of the Proposed Development and specifically the following:

- The Onshore Cable Route consisting of two HVDC Circuits between Landfall in Eastney and Lovedean Converter Station;
- A Converter Station and associated electrical and telecommunications infrastructure in Lovedean; and
- HVAC Cables, and associated infrastructure connecting the Converter Station to the Great Britain electrical transmission network, the National Grid, at Lovedean Substation.

8.1.1.1.2 The Framework CWTP applies to the construction workforce for each of the Onshore components of the Proposed Development, nothing that the Converter Station will form the main compound for all construction works. This means that all construction workers will start and end their working day at the Converter Station.

8.1.1.1.3 CWTP's will be iterative documents, managed and implemented by a Travel Plan Co-ordinator (TPC), to provide relevant information relating to initiatives and measures aimed to reduce single occupancy car trips generated by the construction site.

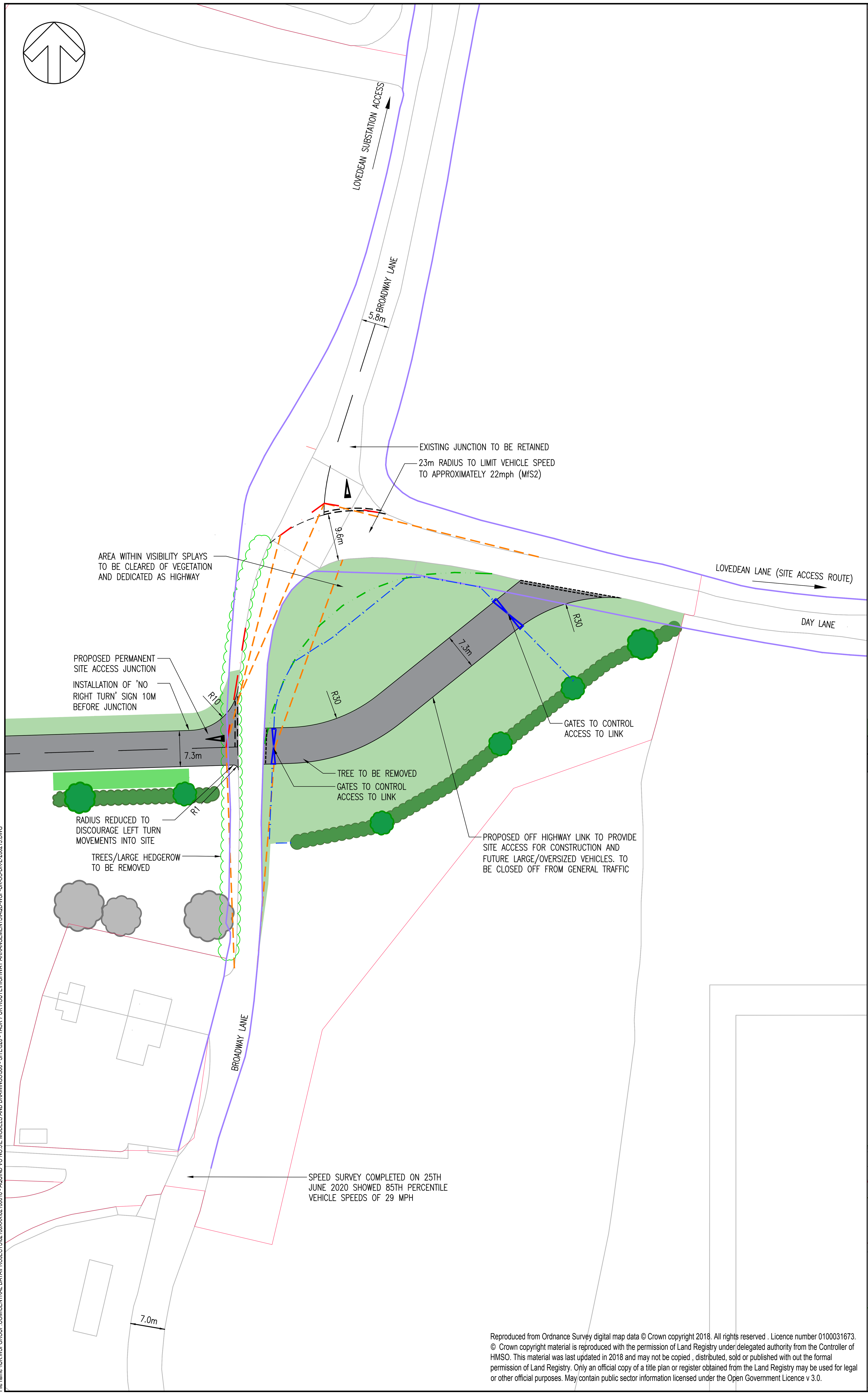
8.1.1.1.4 Due to the nature of the specialist construction skills workers required for the project, it is determined that these workers will travel from further afield than typical construction workers. Therefore, due to the limited public transport opportunities close to the site and the distance travelled by the workers, the most appropriate measures are the use of limited car parking permits and subsequent promotion of car sharing and provision of a shuttle bus service to / from Havant railway station, Waterlooville town centre and nearby hotel accommodation where construction workers are residing..

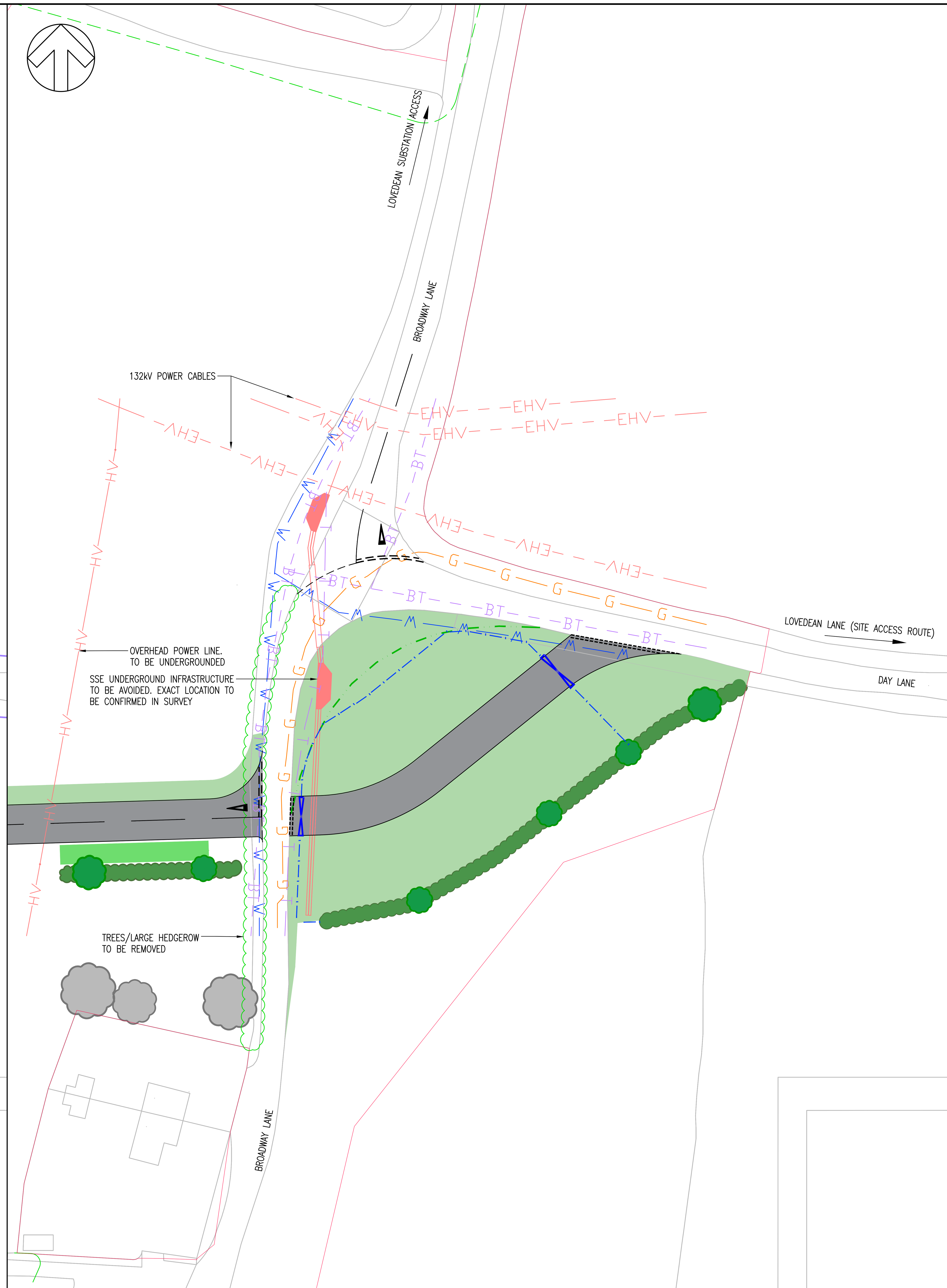
8.2. CONCLUSION

8.2.1.1.1 The Framework CWTP has considered the sustainable transport initiatives and measures that can be implemented to promote a reduction in single occupancy car use to the proposed Converter Station Area during the construction stage. Having regard to the nature of the proposals, and the specialist workers required for construction, this Framework CWTP includes measures to limit car movements to a maximum of 1 trip per 1.5 employees through provision of limited car parking permits and a target of a 10% shift towards travel by shuttle bus. The final CWTP will be actively managed and monitored by a TPC.

8.2.1.1.2 It is therefore concluded that the Framework CWTP provides a sustainable access strategy for the proposed development.

Appendix C – Construction Traffic Access Drawings





KEY TO HEALTH AND SAFETY SYMBOLS

SERVICES SHOWN ON RECORD MAPPING WITHIN PROPOSED WORKS:
- 132kV POWER CABLES
- 11kV OVERHEAD POWER LINES
- GAS
- POTABLE WATER
- TELECOM SERVICES

UTILITY RECORDS OVERLAY

SERVICES KEY

DISCLAIMER NOTE

INFORMATION ON THE LOCATION AND SIZE FOR EACH SERVICE HAS BEEN BASED ON RECORD INFORMATION PROVIDED BY THE RELEVANT SERVICE COMPANIES. THE POSITIONS SHOWN ARE INDICATIVE ONLY AND MAY NOT BE COMPLETE. THE PRESENCE OF SERVICES ON SITE SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION WORK OR INTRUSIVE INVESTIGATIONS.

- G — EXISTING GAS PIPE
- EXISTING HIGH VOLTAGE (OVERHEAD)
- EXISTING EXTRA HIGH VOLTAGE (U/G)
- T — EXISTING VODAFONE CABLE
- EXISTING BRITISH TELECOM (U/G)
- W — EXISTING POTABLE WATER PIPE

NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED.
2. CONFLICTING INFORMATION SHOWN ON THE ENGINEER'S DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.
3. MANUAL FOR STREETS (MfS) AND MANUAL FOR STREETS 2 (MfS2) STANDARDS HAVE BEEN ADOPTED TO EVALUATE APPROPRIATE VISIBILITY AND SPEEDS. THIS STANDARD IS TYPICALLY APPLIED TO URBAN AREAS BUT FOR THESE ELEMENTS IS MORE SUITABLE FOR MINOR RURAL ROADS THAN DMRB STANDARDS.
4. 85TH PERCENTILE SPEEDS OF 31mph MEASURED SOUTHBOUND JUST BEFORE BEND TO NORTH OF ACCESS, AND 29mph MEASURED NORTHBOUND SOUTH OF THE ACCESS.
5. 45m SSD BASED ON MfS TABLE 7.1
6. ARTICULATED LORRY / LOW LOADER VEHICLE MOVEMENTS INTO ACCESS JUNCTION AND EXISTING SUBSTATION JUNCTION WILL TAKE UP WIDTH OF CARRIAGEWAY SO WILL REQUIRE CONTROL.

KEY

- DEVELOPMENT CONSENT ORDER BOUNDARY
- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- 45m FORWARD VISIBILITY
- 2.4m x 45m VISIBILITY SPLAY
- 2.4m x OUTSIDE OF BEND VISIBILITY SPLAY
- MAXIMUM VISIBILITY WITHOUT PARKING
- MAXIMUM VISIBILITY WITH PARKING
- PROPOSED FENCING
- PROPOSED GATE

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
04	18/09/2020	AVI	AMENDED AS PER HCC COMMENTS	CW	CW
03	30/04/2020	AVI	ADDITION OF LANDSCAPE MITIGATION DETAILS AND ADDITIONAL VISIBILITY SPLAYS	CW	CW
02	31/10/2019	MFB	UPDATED DRG FRAME & ADDED TREE LOCATIONS	CW	CW
01	19/09/2019	MFB	FIRST ISSUE	CW	CW

DRAWING STATUS:
SUBMISSION FOR APPROVAL

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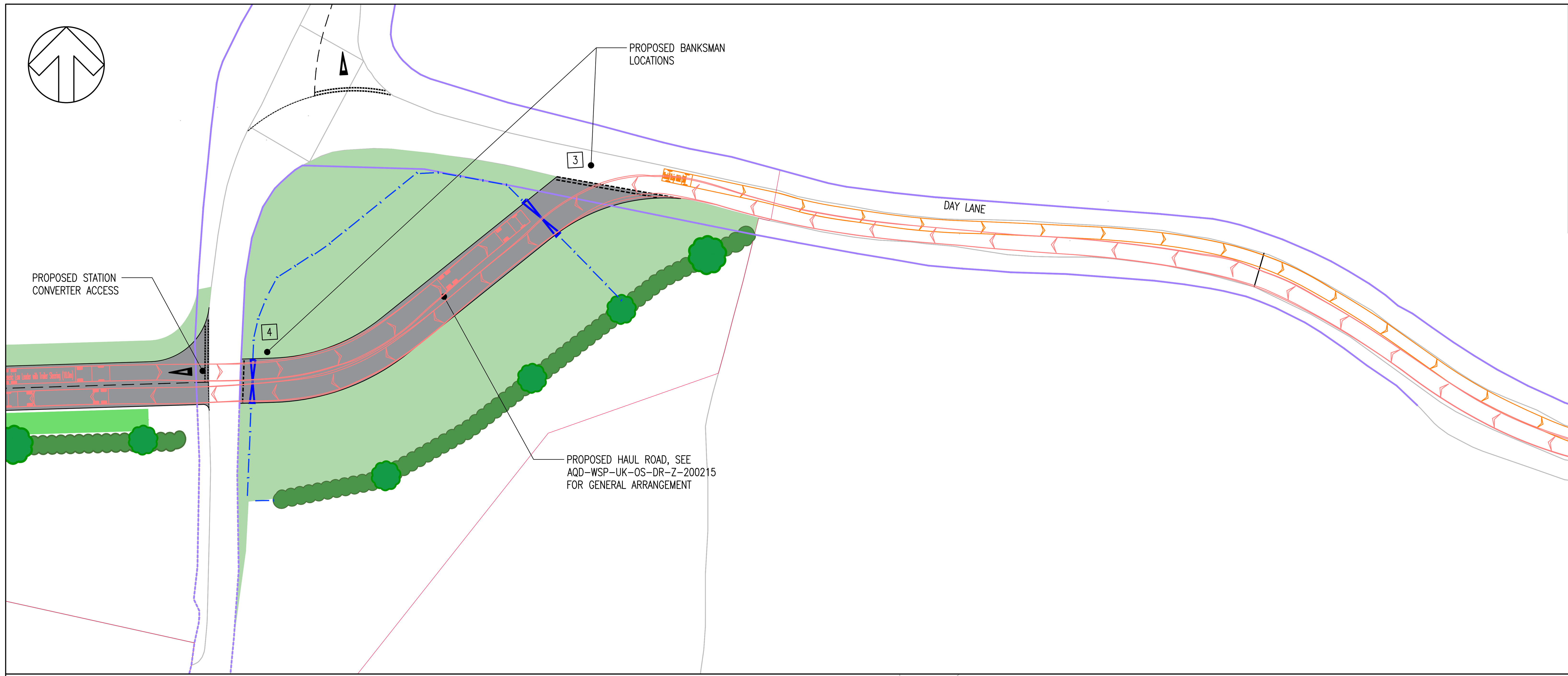
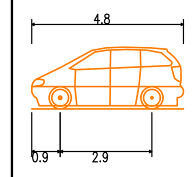
CLIENT:

PROJECT:
AQUIND Interconnector

TITLE:
BROADWAY LANE SITE ACCESS JUNCTION - OPTION B GENERAL ARRANGEMENT

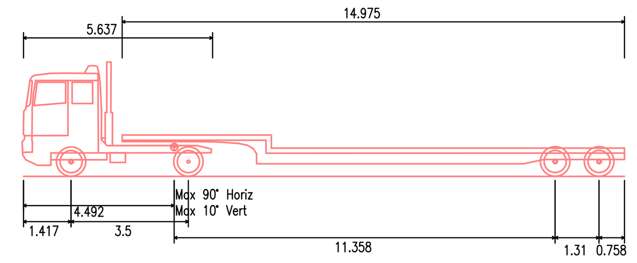
SCALE AT A1: 1:500	CHECKED: CW	APPROVED: CW
PROJECT No: 62100616	DESIGNED: MFB / DRAWN: MFB	DATE: 19/09/2019
DRAWING No: AQD-WSP-UK-OS-DR-Z-200215		REV: 04





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



GENERIC LOW LOADER WITH TRAILER STEERING (18.0m)

OVERALL LENGTH	17.918m
OVERALL WIDTH	2.540m
OVERALL BODY HEIGHT	3.408m
MIN BODY GROUND CLEARANCE	0.332m
MAX TRACK WIDTH	2.520m
LOCK TO LOCK TIME	6.00s
KERB TO KERB TURNING RADIUS	6.350m

File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND VO NO.3\E MODELS AND DRAWINGS\300 - SITE\320 - TASK 7 UK ROUTE\HIGHWAY ARRANGEMENTS\AQD-WSP-UK-OS-DR-Z-200223.DWG

NOTES

1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED.
2. CONFLICTING INFORMATION SHOWN ON THE ENGINEER'S DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.
3. VEHICLES TRACKED AT 10mph.
4. TRACKING IS BASED ON OS MAPPING DATA. THIS MAY BE INACCURATE AND THE AVAILABLE CARRIAGEWAY MAY BE WIDER OR NARROWER THAN INDICATED.
5. MANAGEMENT OF HGVS WILL BE PROVIDED DURING THE CONSTRUCTION STAGE THROUGH THE USE OF COORDINATED BANKSMEN AND THE USE OF STOP/GO BOARDS. THIS CONTROL WILL ENSURE THE MEETING OF TWO CONSTRUCTION VEHICLES TRAVELLING ALONG DAY LANE IS PREVENTED.

   THE MOVEMENTS OF ALL HGVS ACCESSING AND EGRESSING THE PROPOSED CONVERTER STATION AREA WILL BE COORDINATED BY BANKSMEN. BANKSMEN WILL BE LOCATED AT FOUR LOCATIONS AS SHOWN ON THE DRAWING, TO ALLOW THE ARRIVALS AND DEPARTURES OF CONSTRUCTION TRAFFIC TO BE COORDINATED, SUCH THAT THERE WILL NOT BE INSTANCES WHERE HGV'S APPROACHING FROM OPPOSITE DIRECTIONS WILL MEET ONE ANOTHER ON DAY LANE. THESE FOUR LOCATIONS ARE AS FOLLOWS:

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   LOCATION 2: DAY LANE IN THE VICINITY OF THE EXISTING SOLAR FARM ACCESS ROAD;

   LOCATION 3: AT THE EASTERN ACCESS POINT OF THE HAUL ROAD ON DAY LANE; AND

   LOCATION 4: AT THE WESTERN ACCESS POINT OF THE HAUL ROAD AT BROADWAY LANE, IN THE VICINITY OF THE CONVERTER STATION ACCESS.

   THE FOUR BANKSMEN WILL REMAIN IN CONTACT AT ALL TIMES USING TELECOMMUNICATION DEVICES DURING THE MOVEMENT OF CONSTRUCTION VEHICLES ON BROADWAY LANE AND DAY LANE TO ENSURE A COORDINATED APPROACH TO TRAFFIC MANAGEMENT. FURTHER INFORMATION ON THE USE OF THESE BANKSMAN CAN BE FOUND IN SECTION 6 OF THE FRAMEWORK CONSTRUCTION TRAFFIC MANAGEMENT PLAN (APP-450).

KEY

- DEVELOPMENT CONSENT ORDER BOUNDARY
- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- PROPOSED FENCING
- PROPOSED GATE

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
03	01/10/2020	AVI	UPDATED TO INCLUDE BROADWAY LANE ACCESS OPTION B LAYOUT	CW	CW
02	30/04/2020	AVI	UPDATED TO INCLUDE ACCESS JUNCTION	CW	CW
01	25/10/2019	MB	FIRST ISSUE	DP	CW

DRAWING STATUS:

SUBMISSION FOR APPROVAL

wsp

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wsp.com

CLIENT:

AQUIND

PROJECT:

AQUIND Interconnector

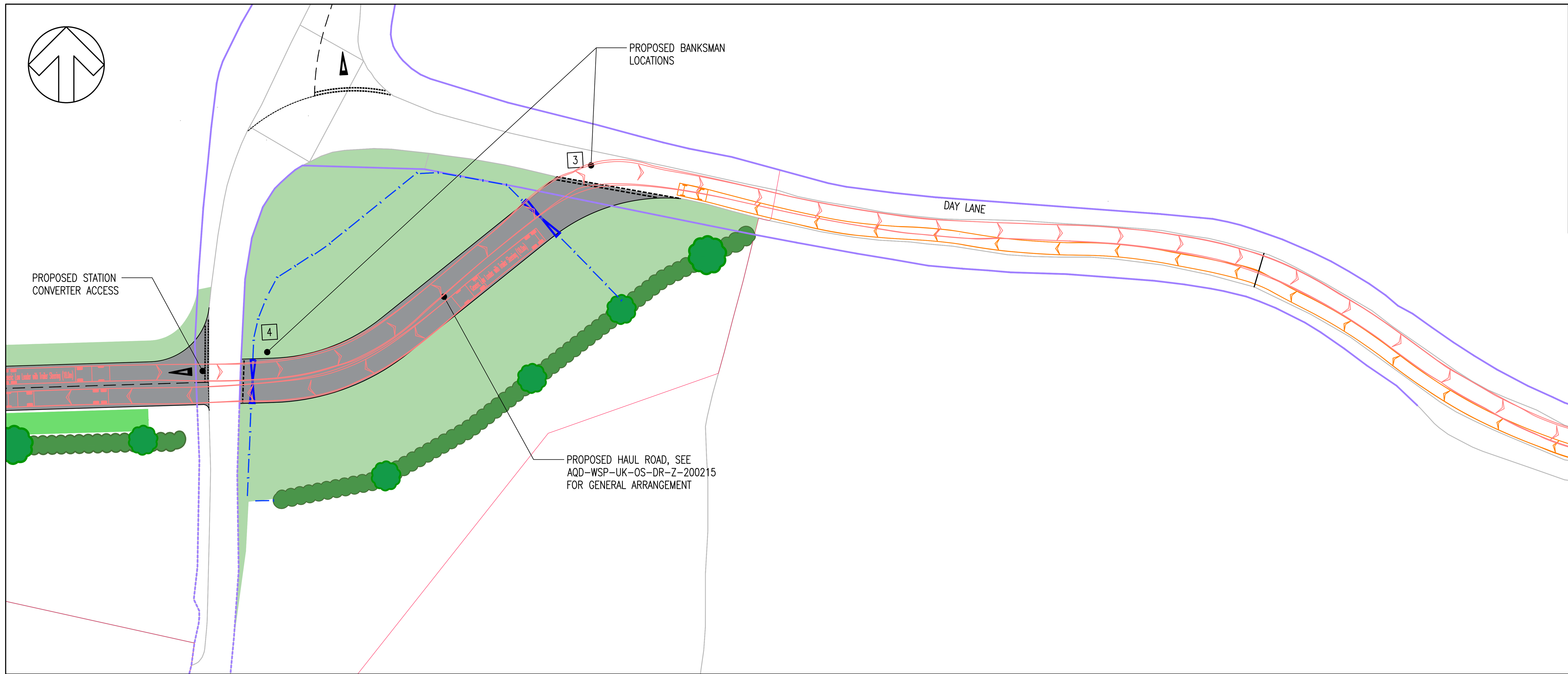
TITLE:

DAY LANE
LOW LOADER TRACKING
SHEET 1 OF 1

SCALE AT A1:	CHECKED:		APPROVED:
1:500	DP		CW
PROJECT No:	DESIGNED:	DRAWN:	DATE:
62100616	MB	MB	25/10/2019

DRAWING No: AQD-WSP-UK-OS-DR-Z-200223

REV: 03



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

GENERIC LOW LOADER WITH TRAILER STEERING (18.0m)

OVERALL LENGTH	17.918m
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KERB TO KERB TURNING RADIUS	6.350m

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KEY

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- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- PROPOSED FENCING
- PROPOSED GATE

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
01	01/10/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: SUBMISSION FOR APPROVAL

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CLIENT: AQUIND

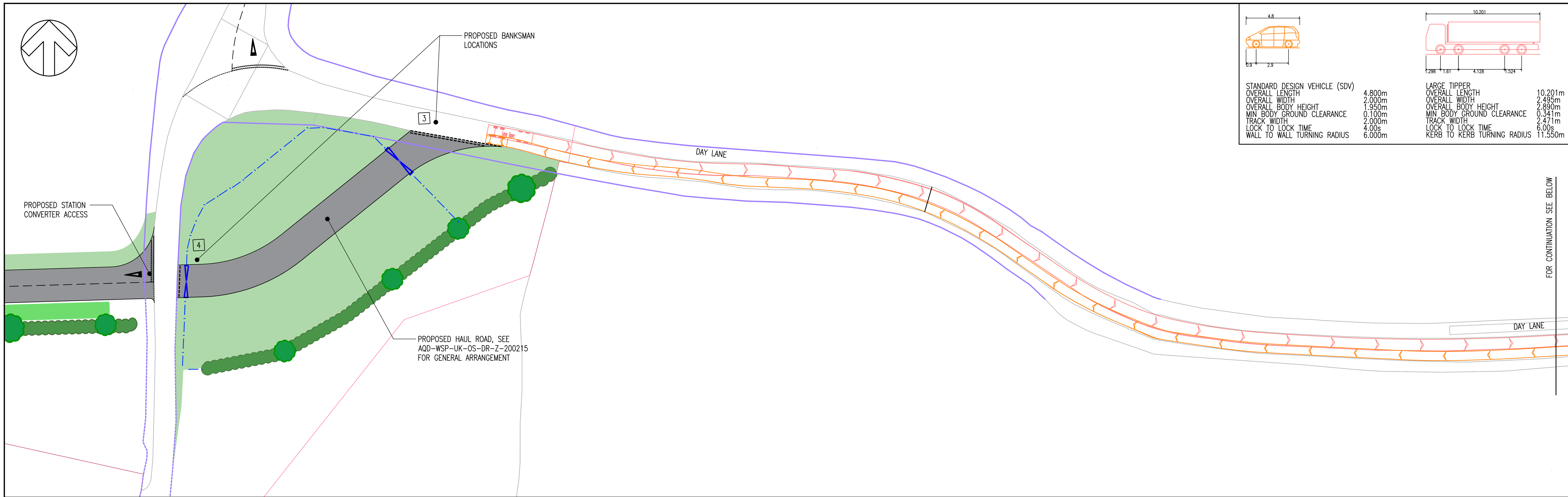
PROJECT: AQUIND Interconnector

TITLE: DAY LANE LOW LOADER TRACKING SHEET 1 OF 1

SCALE AT A1: 1:500	CHECKED: CW	APPROVED: CW
PROJECT No: 62100616	DESIGNED: AVI / DRAWN: AVI	DATE: 01/10/2020

DRAWING No: AQD-WSP-UK-OS-DR-Z-200224 REV: 01

File name: UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND\03 WIP\TP TRANSPORT PLANNING\03 DESIGN\DRAWINGS\300 - SITE\320 - TASK 7 UK ROUTE\HIGHWAY ARRANGEMENTS\AQD-WSP-UK-OS-DR-Z-200224.DWG



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MIN BODY GROUND CLEARANCE	0.100m
TRACK WIDTH	2.000m
LOCK TO LOCK TIME	4.00s
WALL TO WALL TURNING RADIUS	6.000m

LARGE TIPPER	
OVERALL LENGTH	10.201m
OVERALL WIDTH	2.495m
OVERALL BODY HEIGHT	2.890m
MIN BODY GROUND CLEARANCE	0.341m
TRACK WIDTH	2.471m
LOCK TO LOCK TIME	6.00s
KERB TO KERB TURNING RADIUS	11.550m

DO NOT SCALE

NOTES

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KEY

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- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- PROPOSED FENCING
- PROPOSED GATE

REV	DATE	BY	DESCRIPTION	CHK	APP
B	01/10/2020	AVI	UPDATED TO INCLUDE BROADWAY LANE ACCESS OPTION B LAYOUT AND RIGHT TURN OUT OF DAY LANE ADDED	CW	CW
A	09/10/2019	MFB	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

wsp

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T+ 44 (0) 2380 101 700
wsp.com

CLIENT:
AQUIND LIMITED

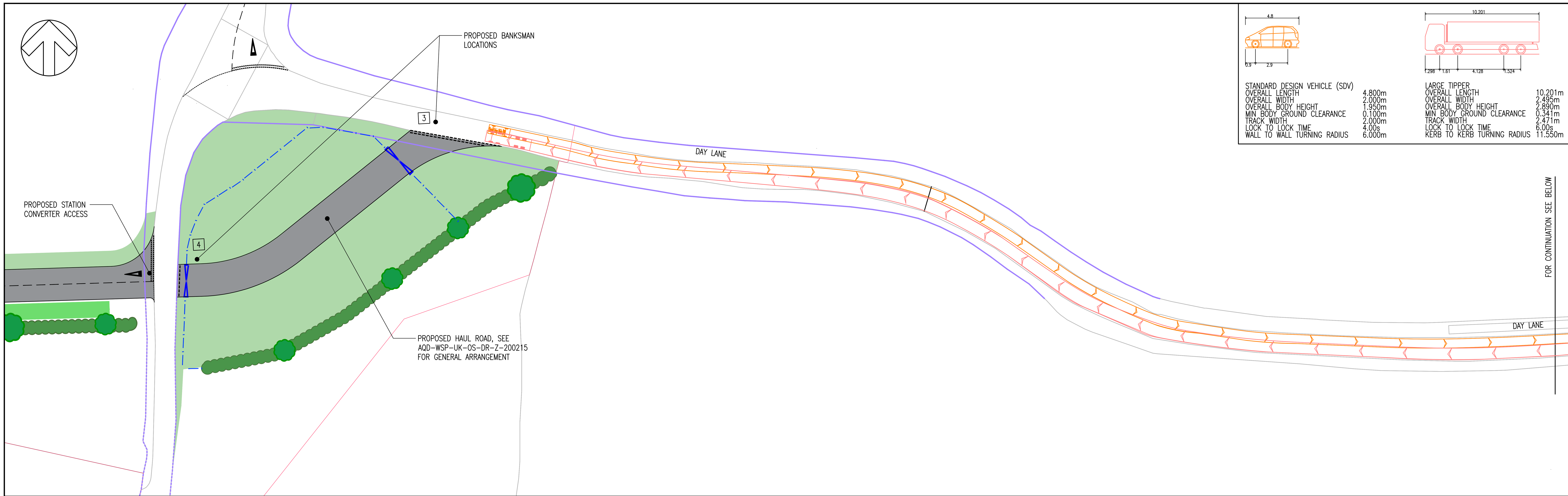
ARCHITECT:
-

SITE/PROJECT:
AQUIND INTERCONNECTOR

TITLE:
BROADWAY LANE
SITE ACCESS JUNCTION
DAY LANE ACCESS TRACKING
SHEET 1 OF 2

SCALE @ A1:	CHECKED:		APPROVED:
1:500	CW		CW
PROJECT NO: 62100616	DESIGNED: MFB	DRAWN: MFB	DATE: October 19

DRAWING No: AQD-WSP-UK-OS-DR-Z-200219 REV: B



DO NOT SCALE

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   LOCATION 3: AT THE EASTERN ACCESS POINT OF THE HAUL ROAD ON DAY LANE; AND

   LOCATION 4: AT THE WESTERN ACCESS POINT OF THE HAUL ROAD AT BROADWAY LANE, IN THE VICINITY OF THE CONVERTER STATION ACCESS.

   THE FOUR BANKSMEN WILL REMAIN IN CONTACT AT ALL TIMES USING TELECOMMUNICATION DEVICES DURING THE MOVEMENT OF CONSTRUCTION VEHICLES ON BROADWAY LANE AND DAY LANE TO ENSURE A COORDINATED APPROACH TO TRAFFIC MANAGEMENT. FURTHER INFORMATION ON THE USE OF THESE BANKSMAN CAN BE FOUND IN SECTION 6 OF THE FRAMEWORK CONSTRUCTION TRAFFIC MANAGEMENT PLAN (APP-450).

KEY

- DEVELOPMENT CONSENT ORDER BOUNDARY
- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- PROPOSED FENCING
- PROPOSED GATE

REV	DATE	BY	DESCRIPTION	CHK	APP
B	01/10/2020	AVI	UPDATED TO INCLUDE BROADWAY LANE ACCESS OPTION B LAYOUT	CW	CW
A	09/10/2019	MFB	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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T+ 44 (0) 2380 101 700
wsp.com

CLIENT:
AQUIND LIMITED

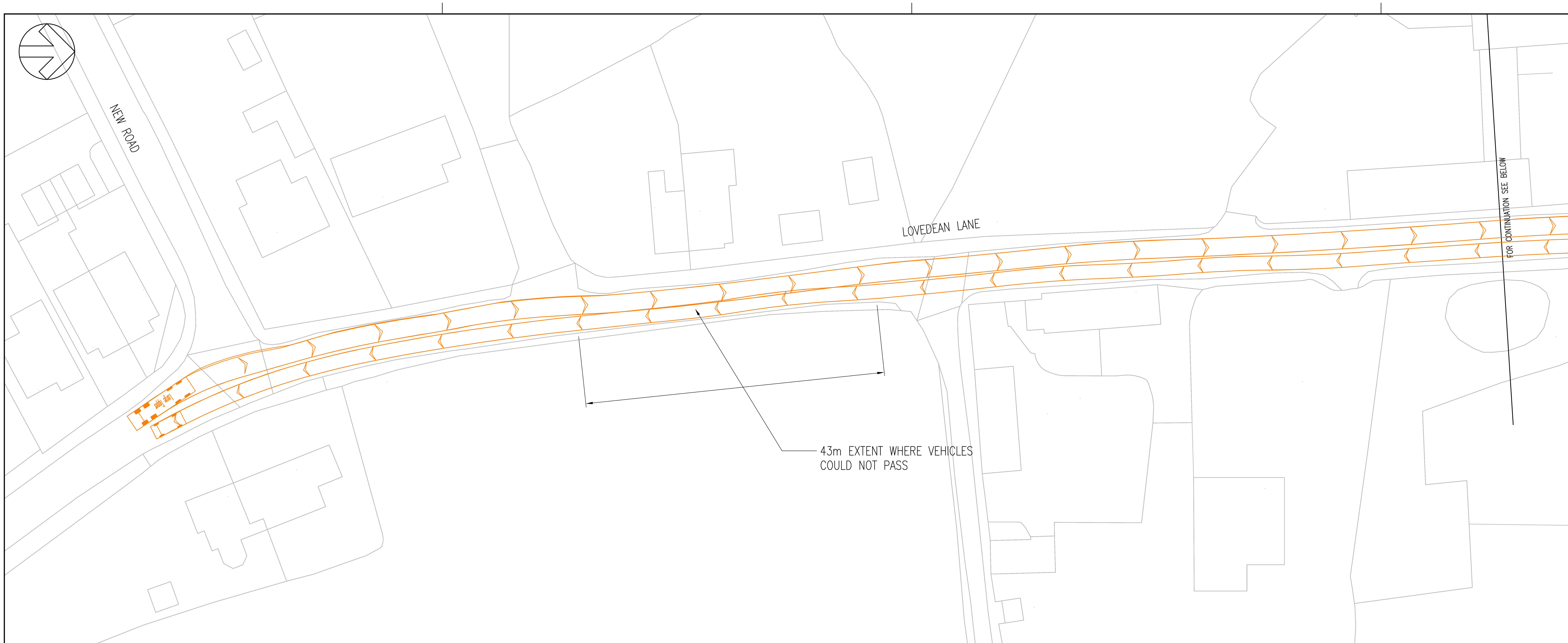
ARCHITECT:
-

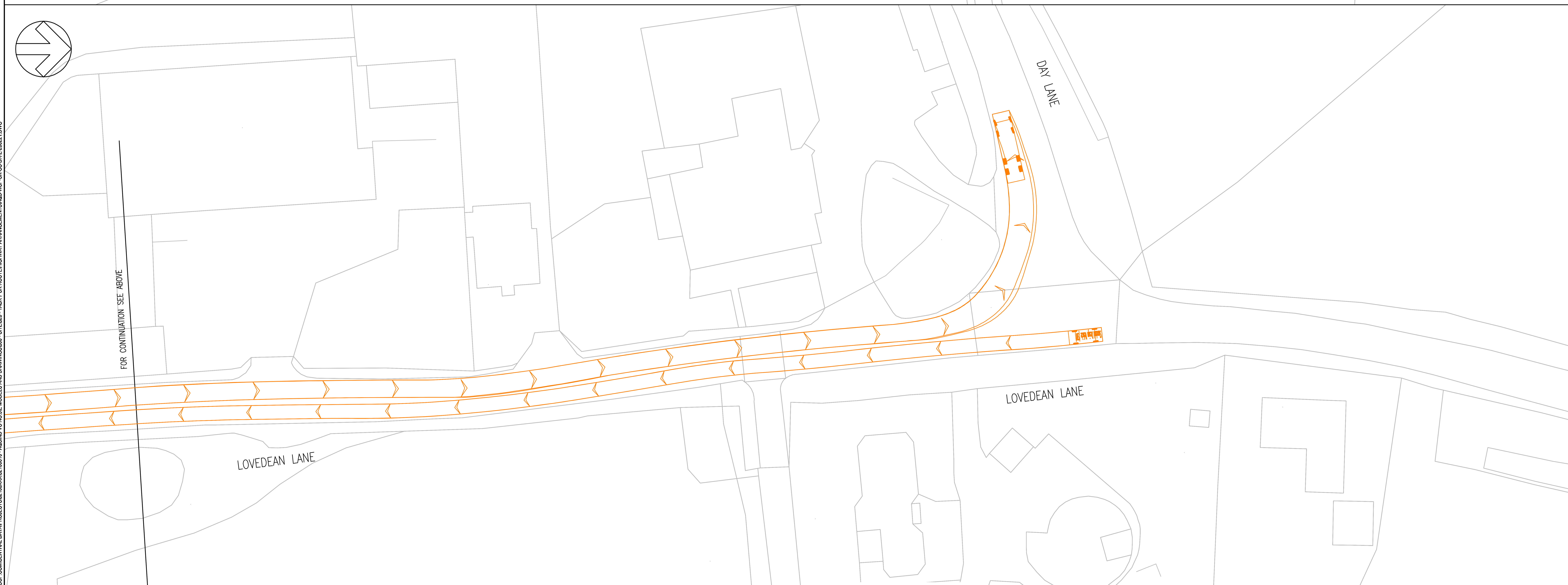
SITE/PROJECT:
AQUIND INTERCONNECTOR

TITLE:
BROADWAY LANE
SITE ACCESS JUNCTION
DAY LANE ACCESS TRACKING
SHEET 2 OF 2

SCALE @ A1: 1:500	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: MFB	DRAWN: MFB	DATE: October 19

DRAWING No: AQD-WSP-UK-OS-DR-Z-200220 REV: B



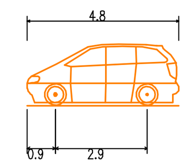


NOTES

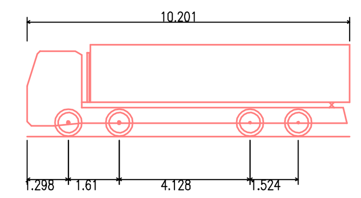
1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED.
2. CONFLICTING INFORMATION SHOWN ON THE ENGINEER'S DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.
3. VEHICLES TRACKED AT 10mph.
4. TRACKING IS BASED ON OS MAPPING DATA. THIS MAY BE INACCURATE AND THE AVAILABLE CARRIAGEWAY MAY BE WIDER OR NARROWER THAN INDICATED.

KEY

DEVELOPMENT CONSENT ORDER BOUNDARY



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



LARGE TIPPER	
OVERALL LENGTH	10.201m
OVERALL WIDTH	2.495m
OVERALL BODY HEIGHT	2.890m
MIN BODY GROUND CLEARANCE	0.341m
TRACK WIDTH	2.471m
LOCK TO LOCK TIME	6.00s
KERB TO KERB TURNING RADIUS	11.550m

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
01	25/10/2019	MB	FIRST ISSUE	DP	CW

DRAWING STATUS:

SUBMISSION FOR APPROVAL

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wsp.com

CLIENT:

AQUIND

PROJECT:

AQUIND Interconnector

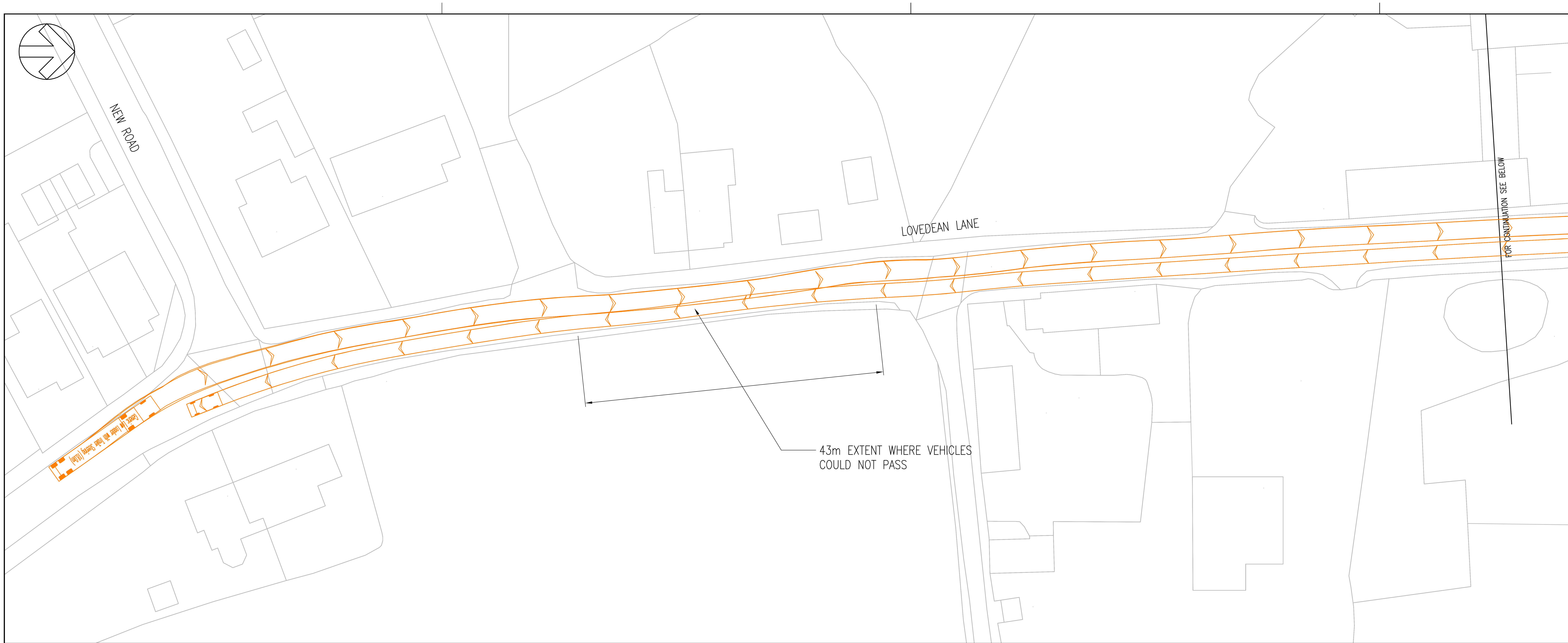
TITLE:

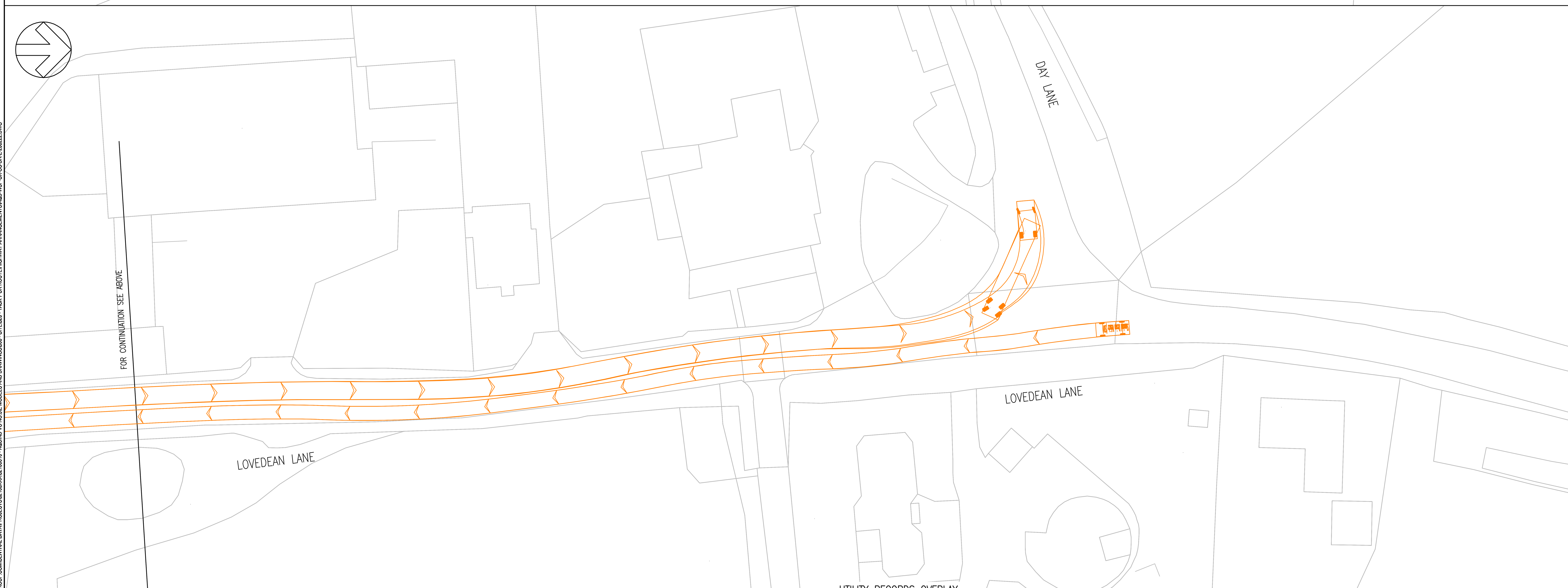
LOVEDEAN LANE
FOUR AXLE TIPPER TRACKING
SHEET 1 OF 1

SCALE AT A1:	CHECKED:		APPROVED:
1:500	DP		DP
PROJECT No:	DESIGNED:	DRAWN:	DATE:
62100616	MB	MB	25/10/2019

DRAWING No: AQD-WSP-UK-OS-DR-Z-200215

REV: 01



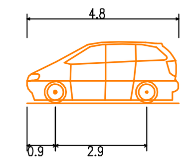


NOTES

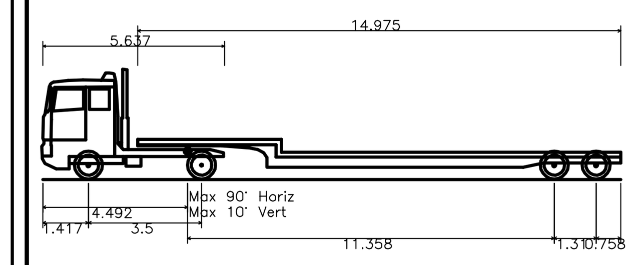
1. ALL DIMENSIONS SHOWN ARE IN METRES UNLESS OTHERWISE STATED.
2. CONFLICTING INFORMATION SHOWN ON THE ENGINEER'S DRAWINGS OR DISCREPANCIES BETWEEN THE INFORMATION GIVEN BY THE ENGINEER AND THAT PROVIDED BY OTHERS MUST BE REFERRED TO THE ENGINEER BEFORE THE WORKS COMMENCE.
3. VEHICLES TRACKED AT 10mph.
4. TRACKING IS BASED ON OS MAPPING DATA. THIS MAY BE INACCURATE AND THE AVAILABLE CARRIAGEWAY MAY BE WIDER OR NARROWER THAN INDICATED.

KEY

DEVELOPMENT CONSENT ORDER BOUNDARY



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



Generic Low Loader with Trailer Steering (18.0m	
Overall Length	17.918m
Overall Width	2.540m
Overall Body Height	3.408m
Min Body Ground Clearance	0.332m
Max Track Width	2.520m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.350m

Infrastructure Planning (Applications: Prescribed Forms & Procedure) Regulations 2009 - Regulation 5(2)(i)

REV	DATE	BY	DESCRIPTION	CHK	APP
01	25/10/2019	MB	FIRST ISSUE	DP	CW

DRAWING STATUS: SUBMISSION FOR APPROVAL

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CLIENT: AQUIND

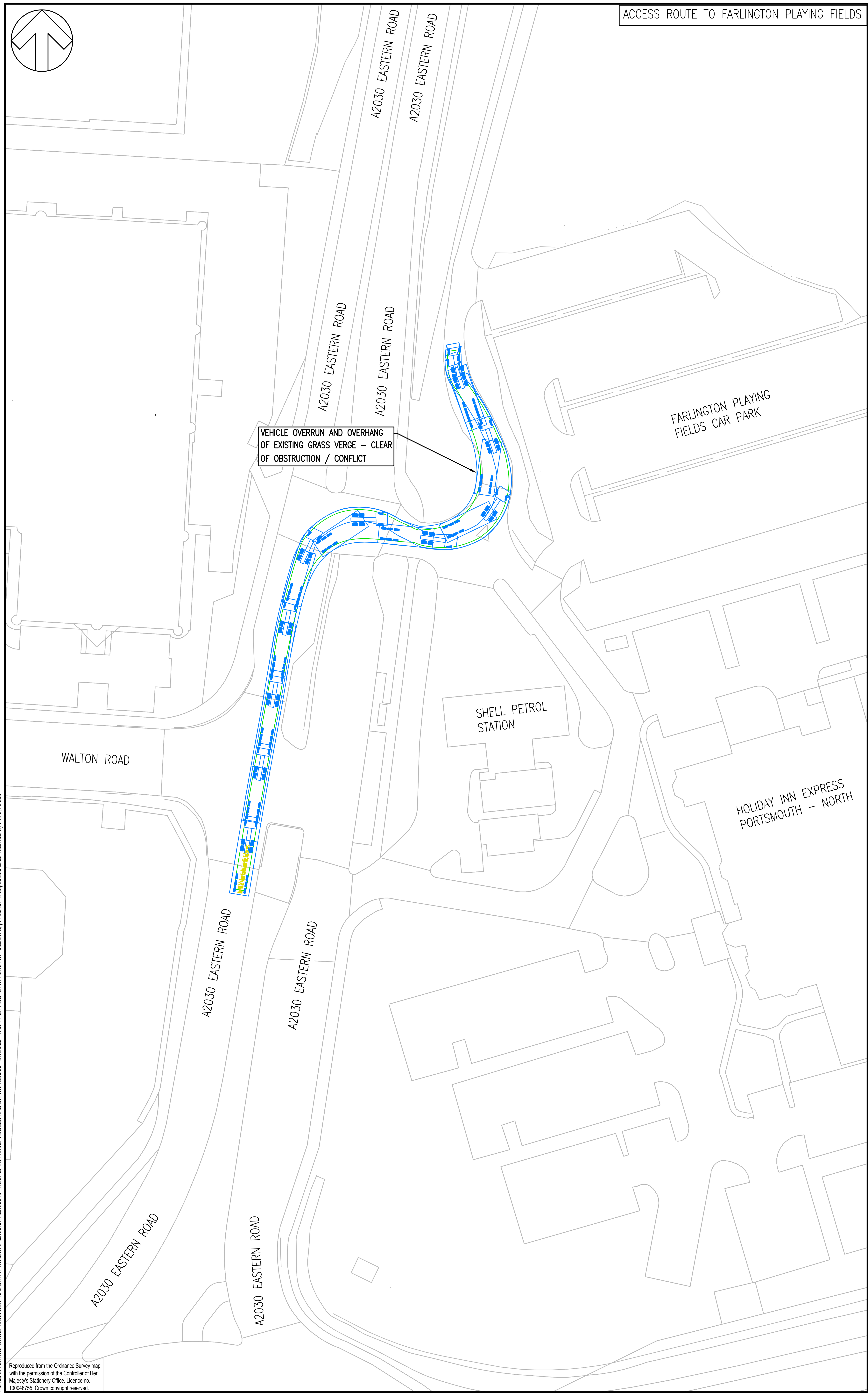
PROJECT: AQUIND Interconnector

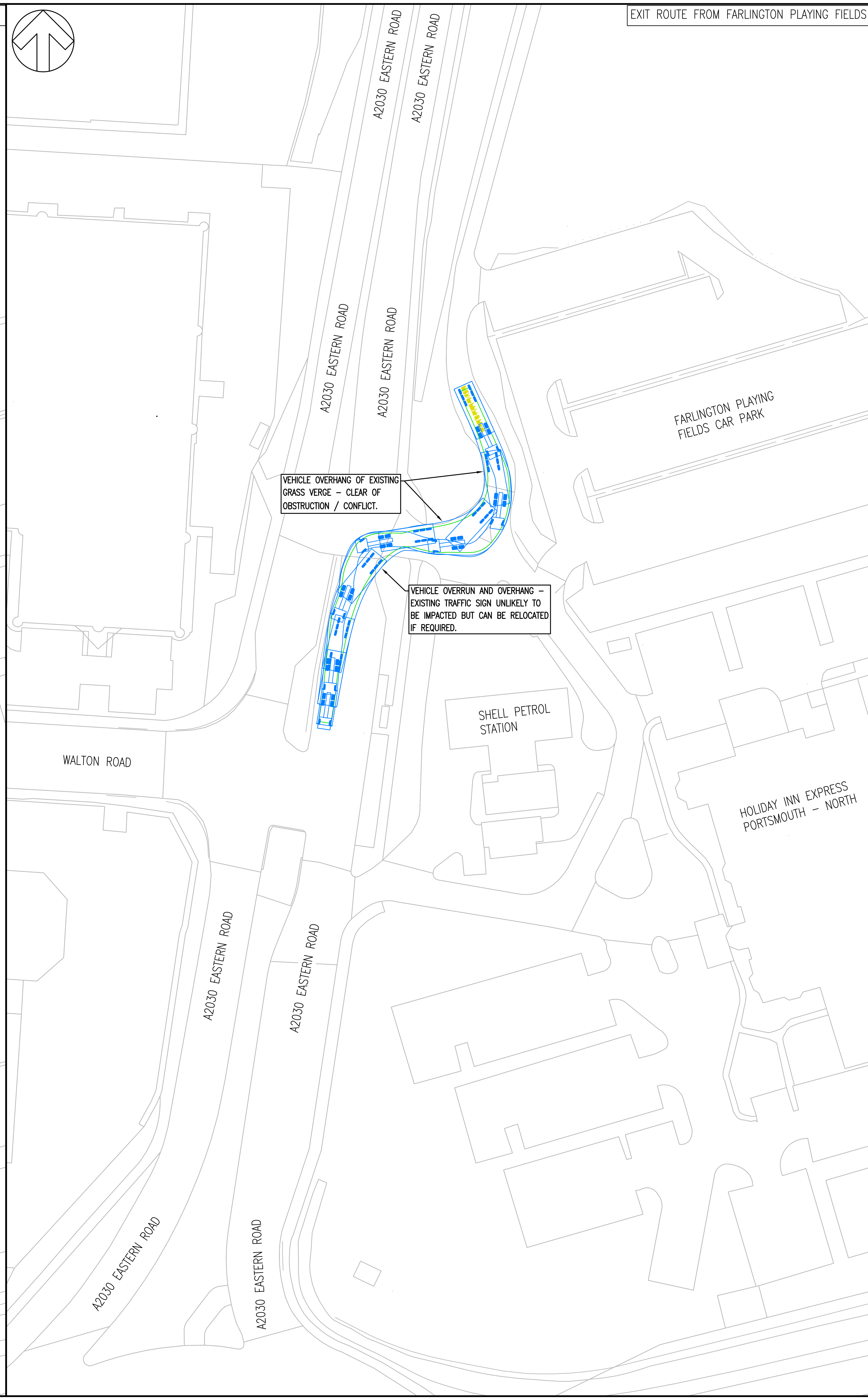
TITLE: LOVEDEAN LANE LOW LOADER TRACKING SHEET 1 OF 1

SCALE AT A1: 1:500	CHECKED: DP		APPROVED: DP
PROJECT No: 62100616	DESIGNED: MB	DRAWN: MB	DATE: 25/10/2019

DRAWING No: AQD-WSP-UK-OS-DR-Z-200215 REV: 01

Appendix D – Cable Drum Delivery Swept Path Analysis

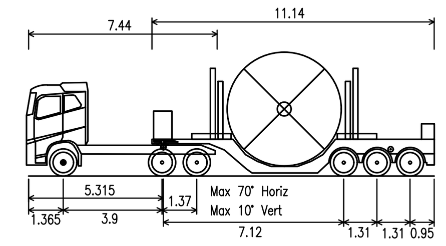




DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
C	14/09/2020	AVI	UPDATE TO LABELS	CW	CW
B	26/05/2020	AVI	UPDATED VEHICLE	GCB	CW
A	18/03/2020	AVI	FIRST ISSUE	GCB	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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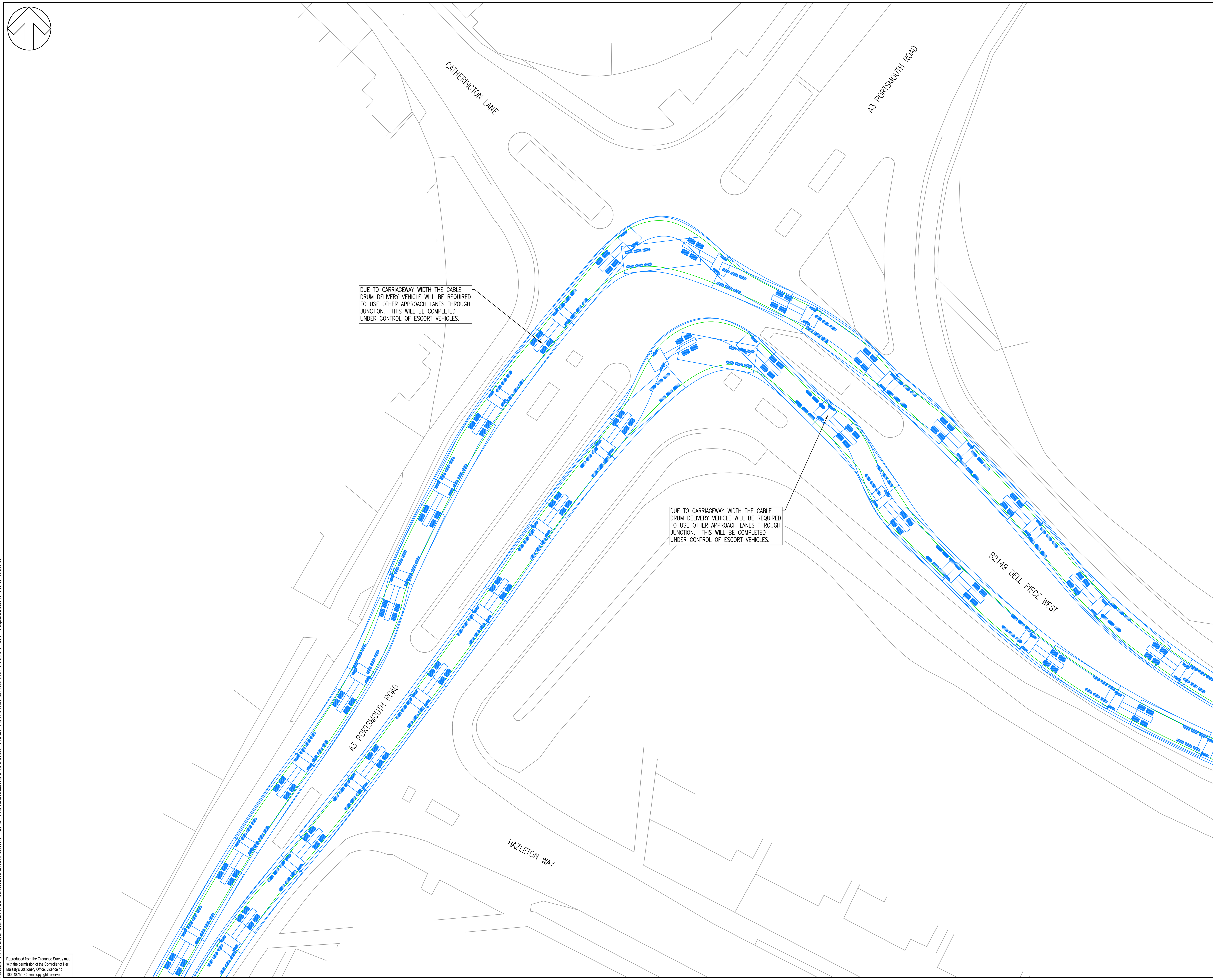
CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE:
SWEPT PATHS OF CONSTRUCTION VEHICLE ACCESS TO FARLINGTON PLAYING FIELDS FOR HDD-3 INSTALLATION

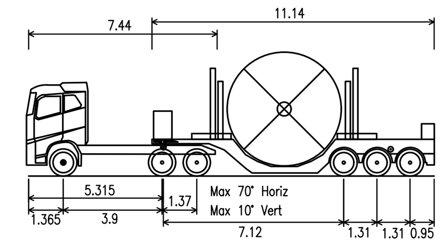
SCALE @ A1: 1:500	CHECKED: GCB	APPROVED: CW
PROJECT NO: 62100616	DESIGNED: - / DRAWN: AVI	DATE: March 20
DRAWING No: 0616-ATR-002		REV: C



DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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CLIENT: AQUIND

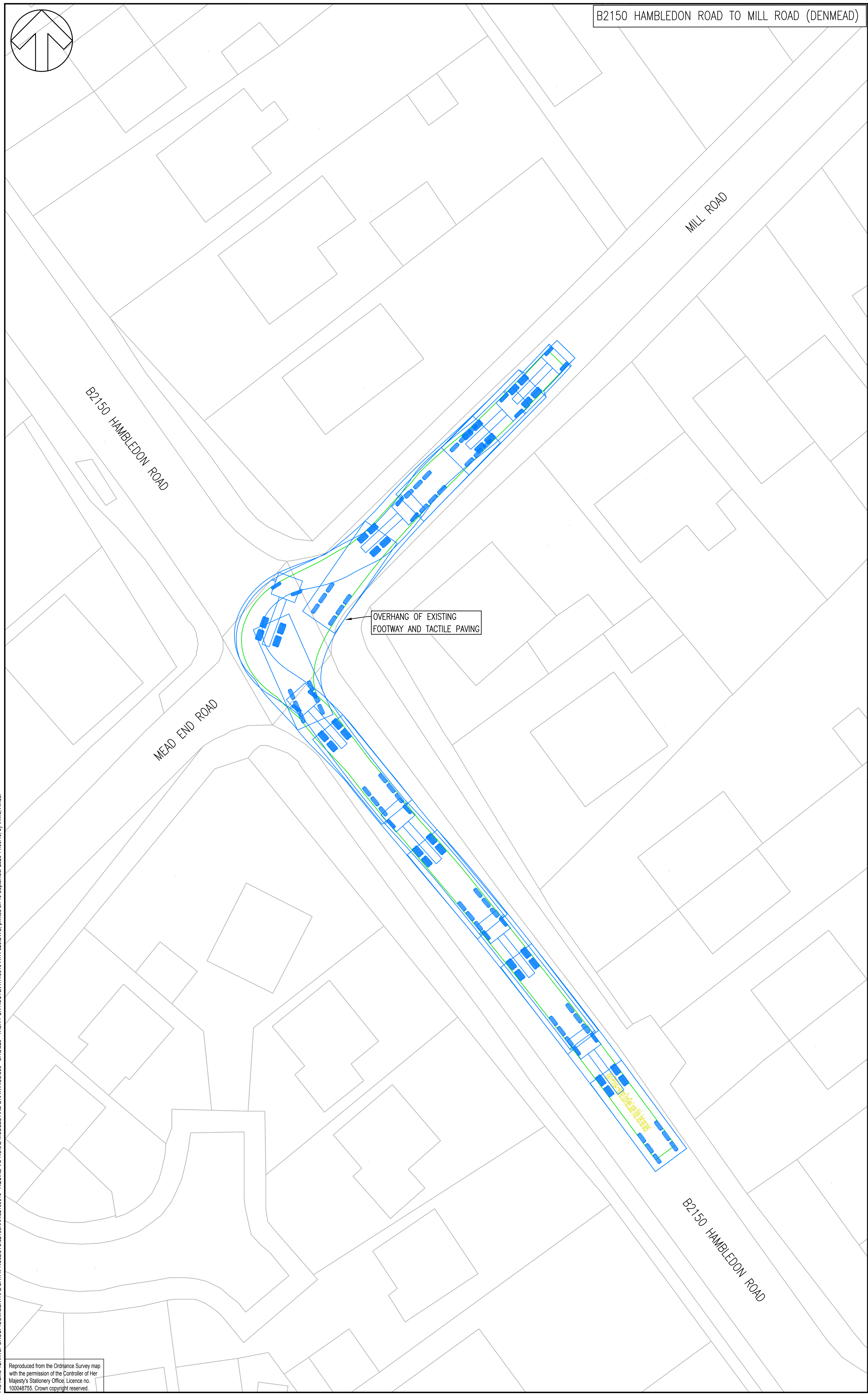
ARCHITECT: -

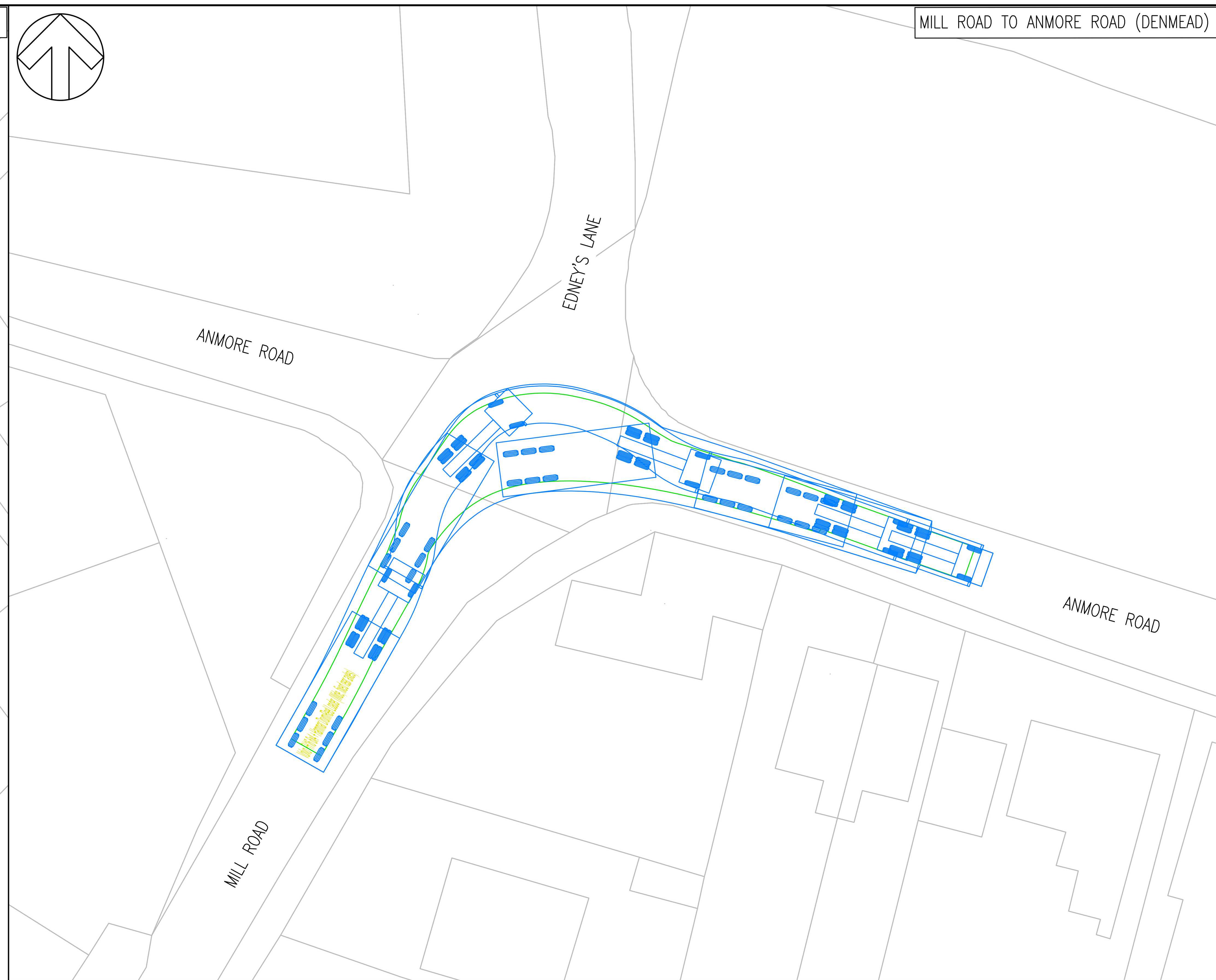
SITE/PROJECT: AQUIND

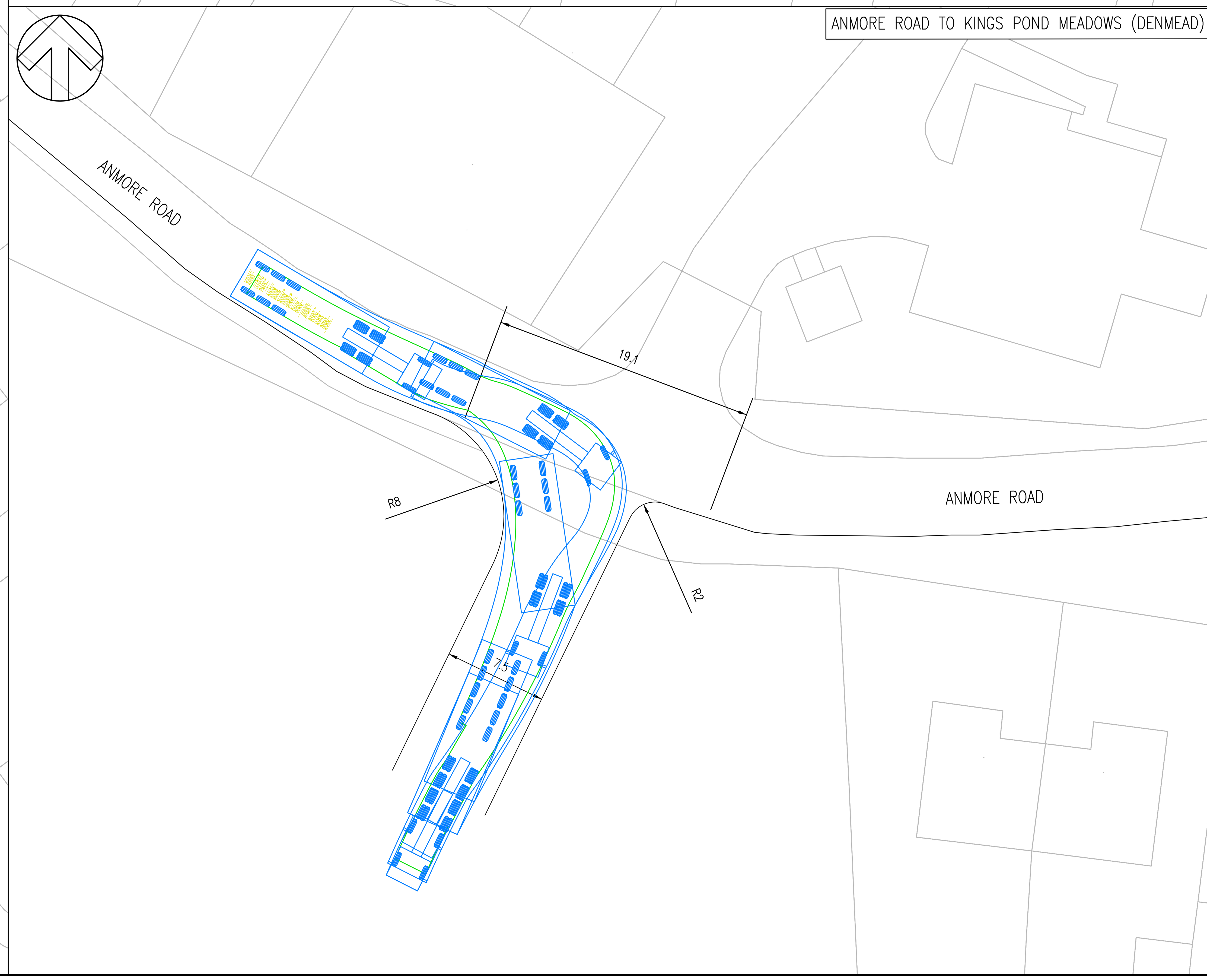
TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 1 / 2: WITHIN FIELDS SOUTH OF CONVERTER STATION

SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-010 | REV: A



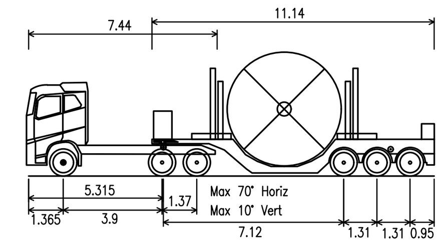




DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'.
   VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 2 / 3: WITHIN FIELDS AT KINGS POND MEADOWS SHEET 1 OF 2

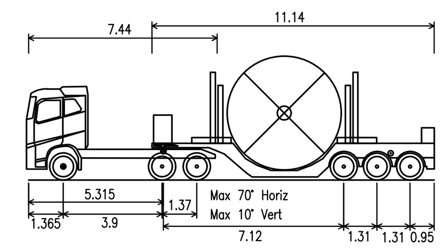
SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-020 | REV: A

DO NOT SCALE

NOTES:

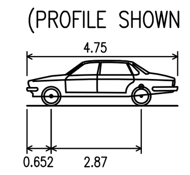
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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CLIENT: AQUIND

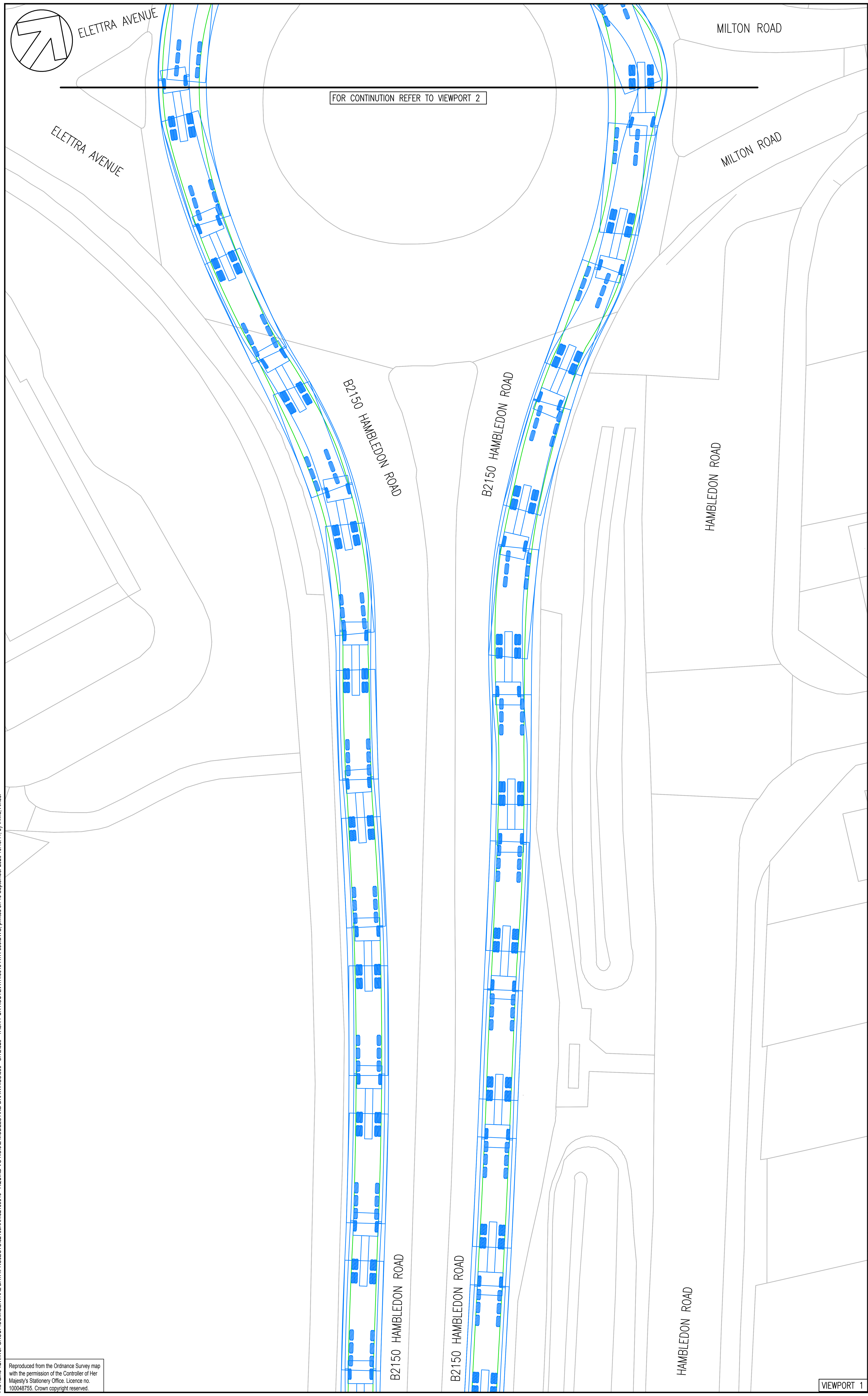
ARCHITECT: -

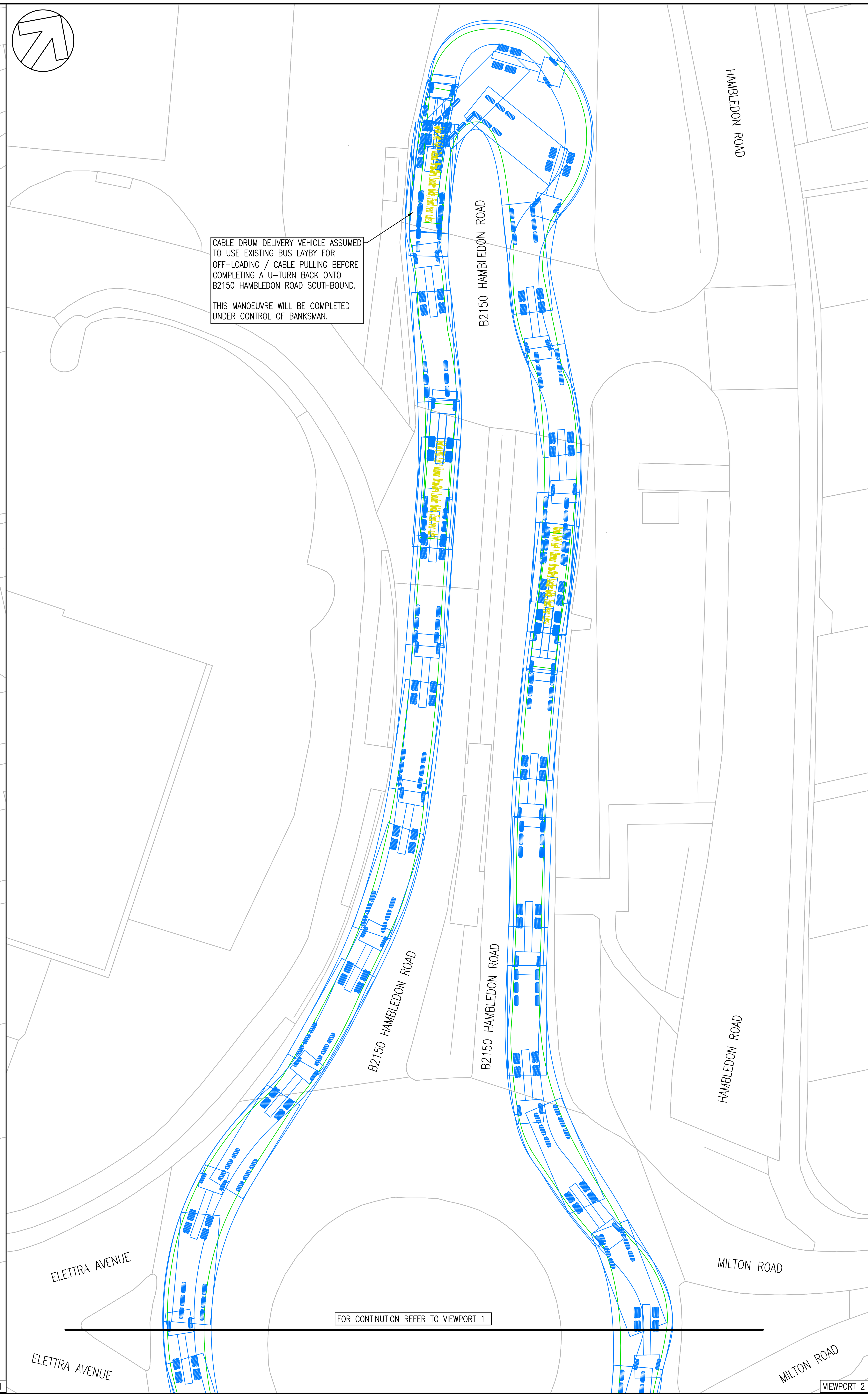
SITE/PROJECT: AQUIND

TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 2 / 3: WITHIN FIELDS AT KINGS POND MEADOWS SHEET 2 OF 2

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-021
REV: A

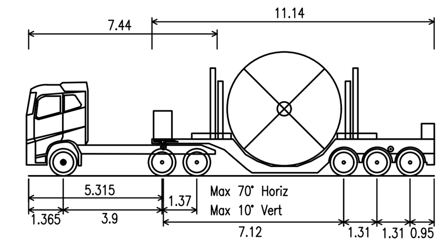




DO NOT SCALE

NOTES:

1. VEHICLE MOVEMENTS ARE TRACKED AT A DESIGN SPEED OF 10mph. EXCLUDING THE U-TURN MANOEUVRE WHICH IS TRACKED AT 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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CLIENT: AQUIND

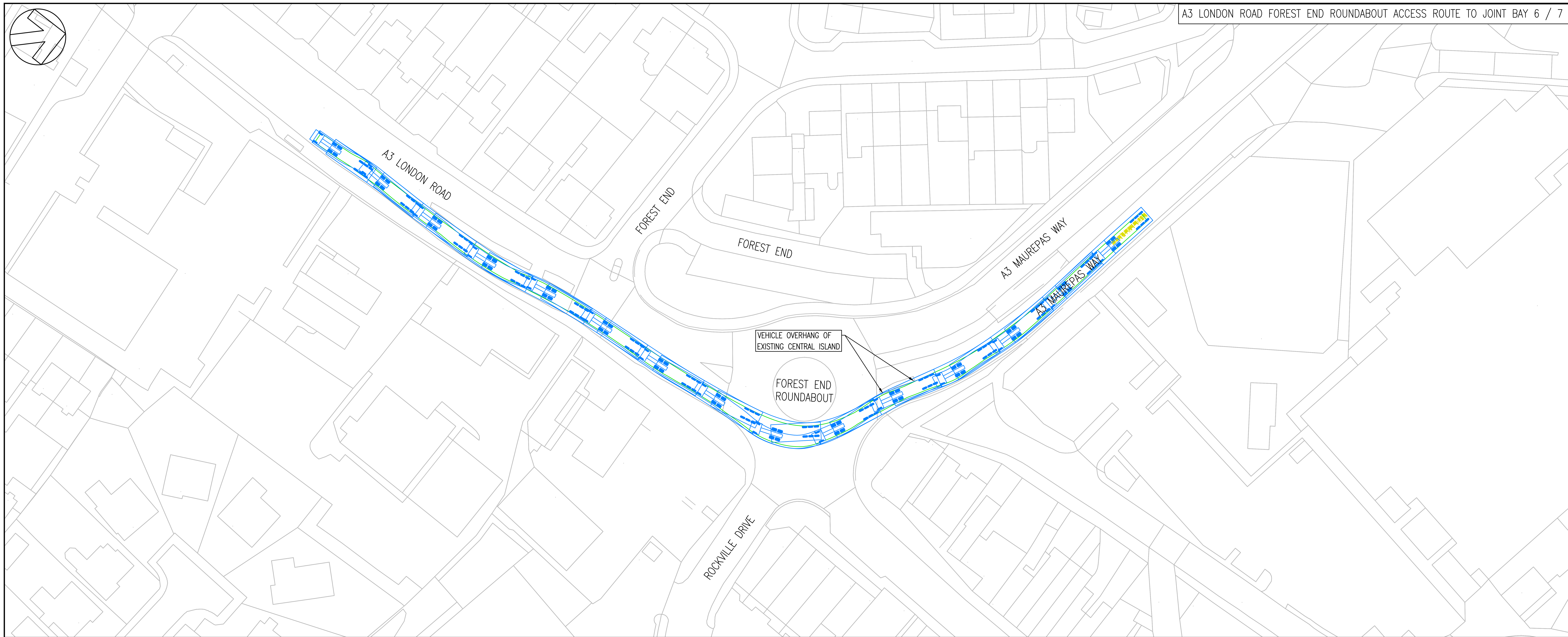
ARCHITECT: -

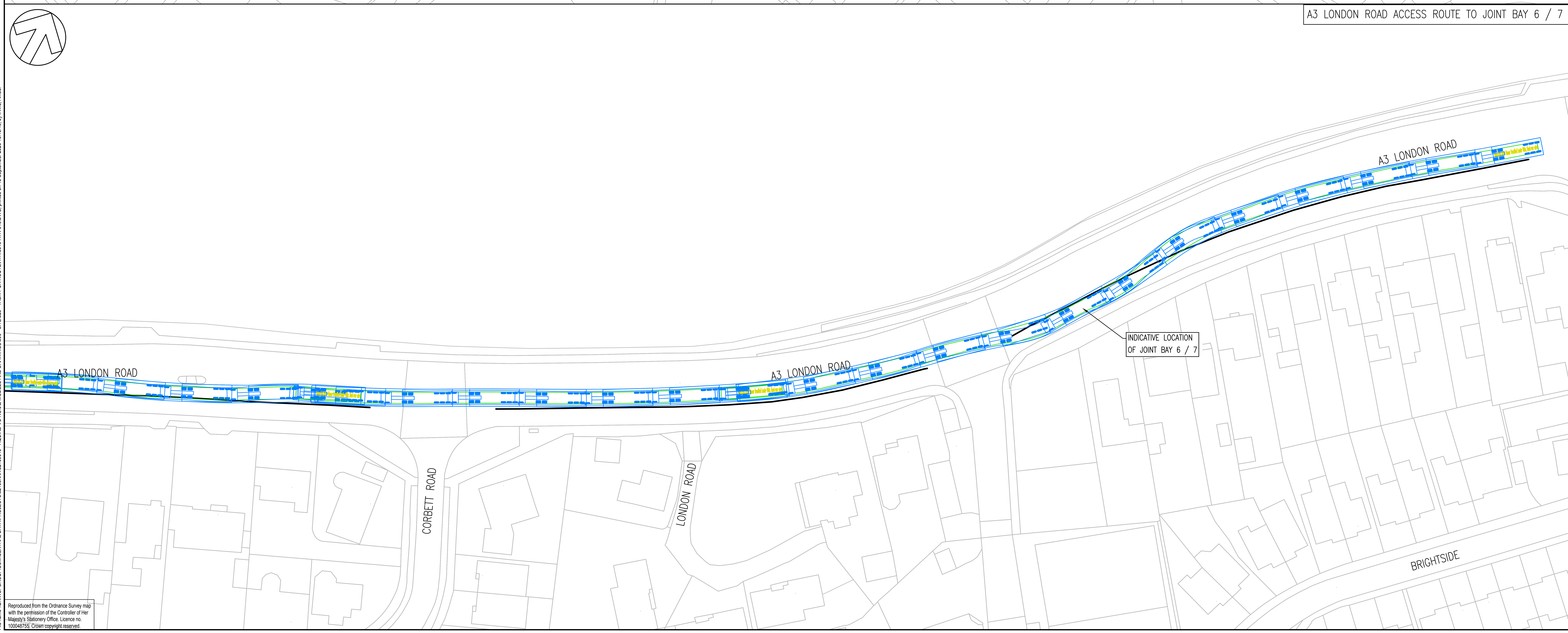
SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE ADJACENT TO B2150 HAMBLEDON ROAD IN PROXIMITY TO BP PETROL FILLING STATION

SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-030 | REV: A

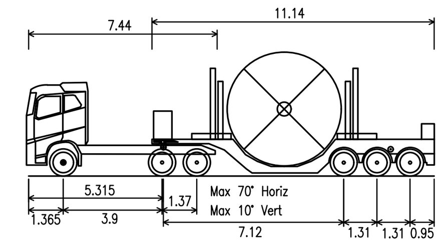




DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS
- INDICATIVE WIDTH OF BUS LANE ON SOUTHBOUND CARRIAGEWAY

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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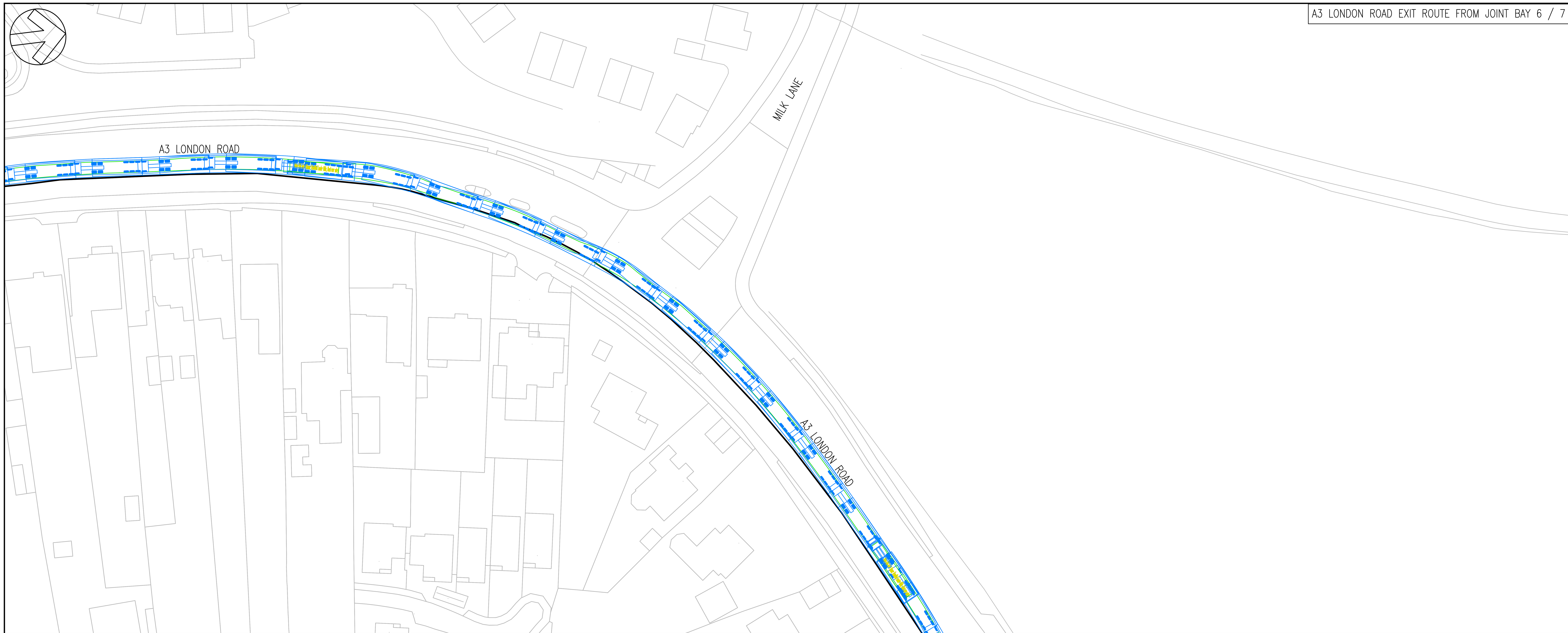
CLIENT: AQUIND

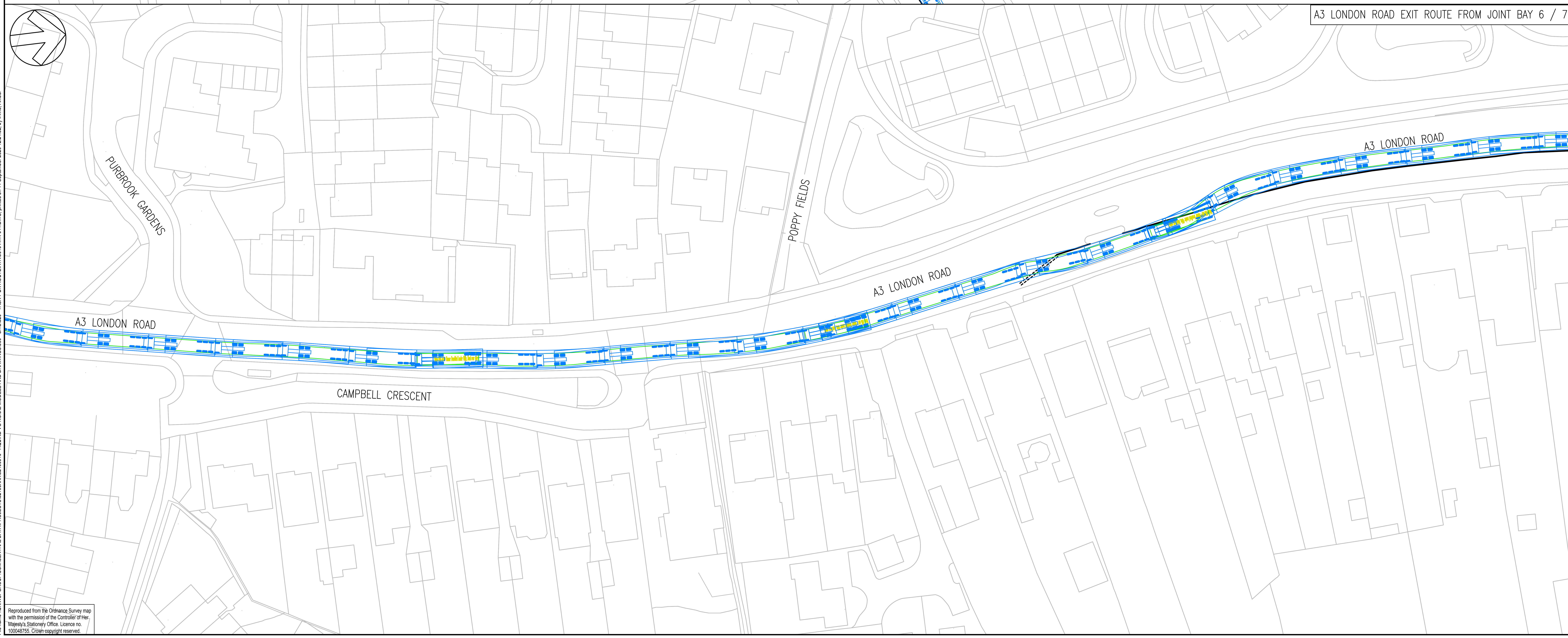
ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 6 / 7: A3 LONDON ROAD SOUTH OF MILL ROAD (WITHIN BUS LANE) SHEET 1 OF 3

SCALE @ A1:	CHECKED:		APPROVED:
1:500	CW		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-040			REV: A

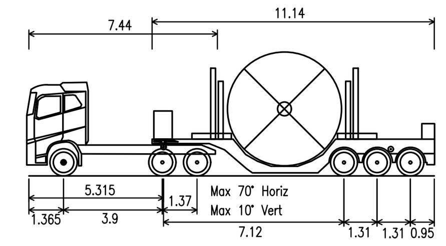




DO NOT SCALE

NOTES:

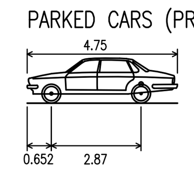
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS
- INDICATIVE WIDTH OF BUS LANE ON SOUTHBOUND CARRIAGEWAY
- 5 Series INDICATIVE LOCATION OF ON–STREET PARKING PARKED CARS (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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CLIENT: AQUIND

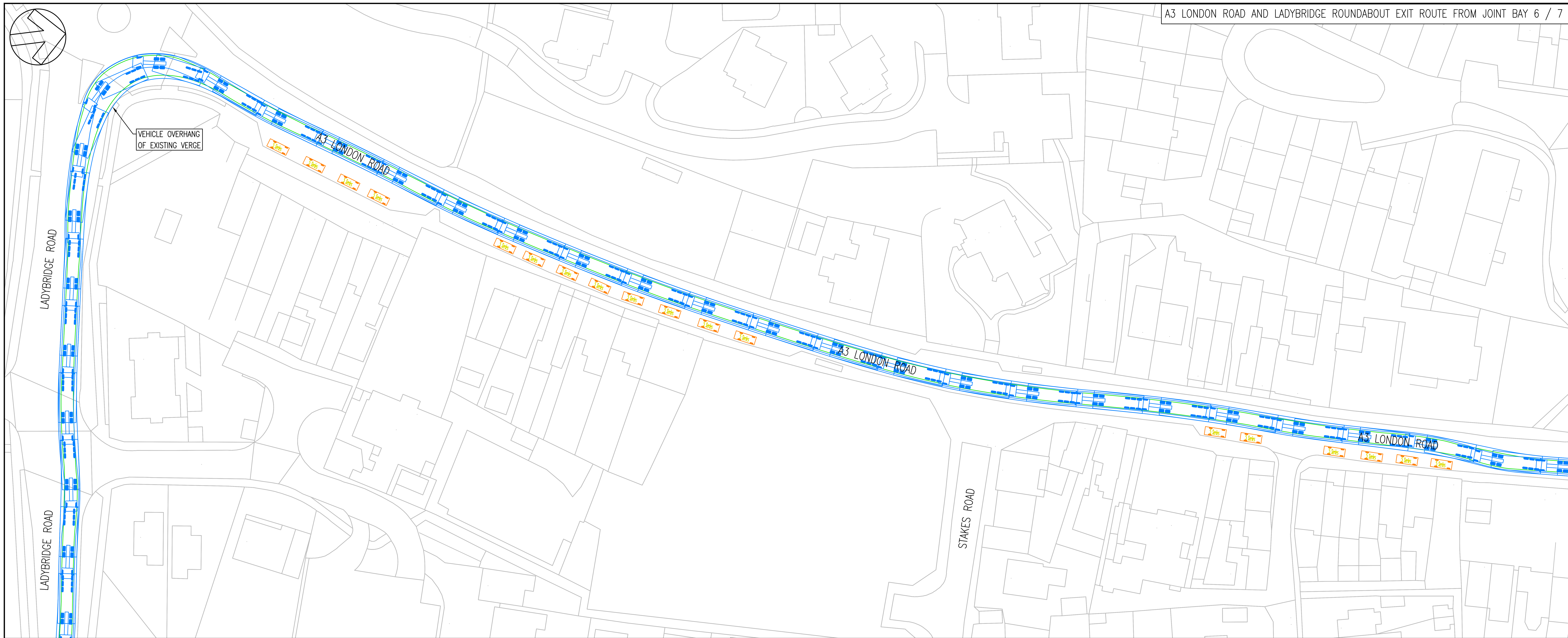
ARCHITECT: -

SITE/PROJECT: AQUIND

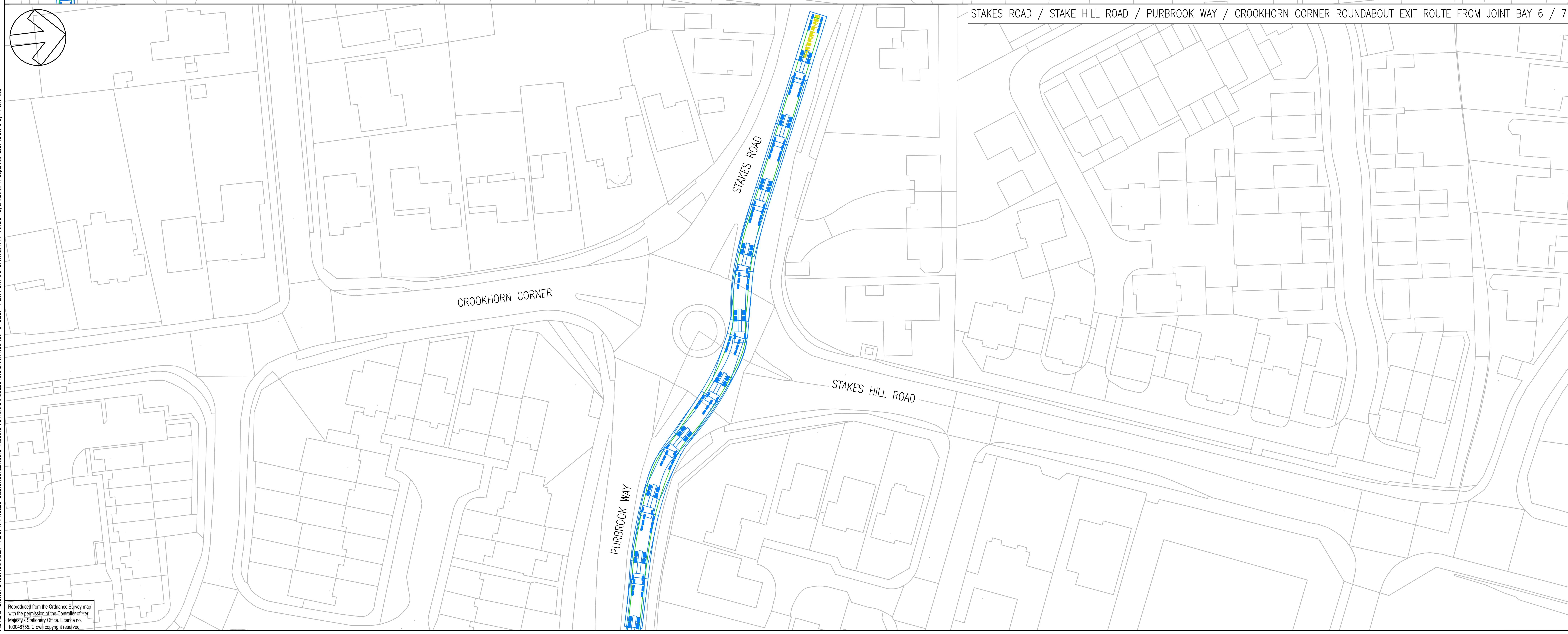
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 6 / 7: A3 LONDON ROAD SOUTH OF MILL ROAD (WITHIN BUS LANE) SHEET 2 OF 3

SCALE @ A1: 1:500	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-041			REV: A

A3 LONDON ROAD AND LADYBRIDGE ROUNDABOUT EXIT ROUTE FROM JOINT BAY 6 / 7



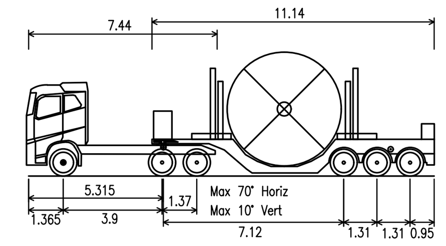
STAKES ROAD / STAKE HILL ROAD / PURBROOK WAY / CROOKHORN CORNER ROUNDABOUT EXIT ROUTE FROM JOINT BAY 6 / 7



DO NOT SCALE

NOTES:

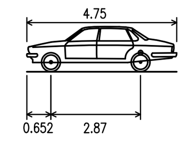
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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ARCHITECT:
-

SITE/PROJECT:
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TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 6 / 7: A3 LONDON ROAD SOUTH OF MILL ROAD (WITHIN BUS LANE) SHEET 3 OF 3

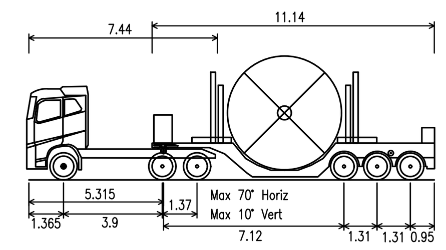
SCALE @ A1:	CHECKED:		APPROVED:
1:500	CW		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-042 | REV: A

DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

THIS PROVISIONAL PRELIMINARY DESIGN IS FOR GUIDANCE PURPOSES ONLY. WSP ACCEPTS NO LIABILITY FOR ANY DAMAGE, LOSS, EXPENSES OR COST INCURRED AS A RESULT OF RELYING ON THE INFORMATION PROVIDED IN THE DESIGN APPRAISAL ESTIMATE. THE APPRAISAL ESTIMATE WAS DERIVED FROM A MIXTURE OF THIRD PARTY INFORMATION AND THE APPLICATION OF WSP'S REASONABLE SKILL AND CARE, BUT MAY BE SUBJECT TO OTHER SUCH INFORMATION AND VARIATIONS OF WHICH WSP IS UNAWARE. THE DESIGN APPRAISAL ESTIMATE SHOULD NOT BE RELIED UPON FOR TENDER OR PROCUREMENT PURPOSES. FOR ACCURATE ADVICE A DETAILED DESIGN SHOULD BE CARRIED OUT AT THE APPROPRIATE DESIGN STAGE, THEREFORE, USE OF THE INFORMATION IS ENTIRELY AT YOUR OWN RISK.

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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CLIENT: AQUIND

ARCHITECT: -

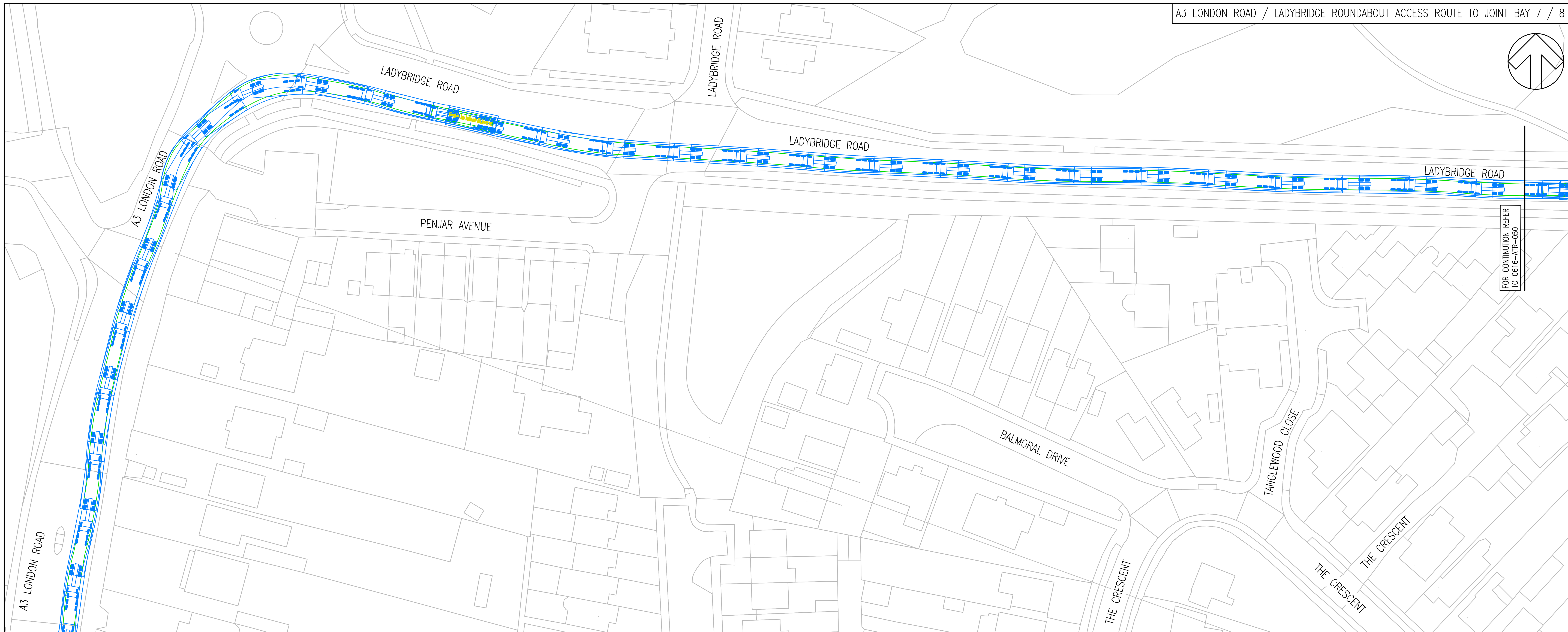
SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 7 / 8: A3 LONDON ROAD SOUTH OF LADYBRIDGE ROUNDABOUT (WITHIN BUS LANE) SHEET 1 OF 2

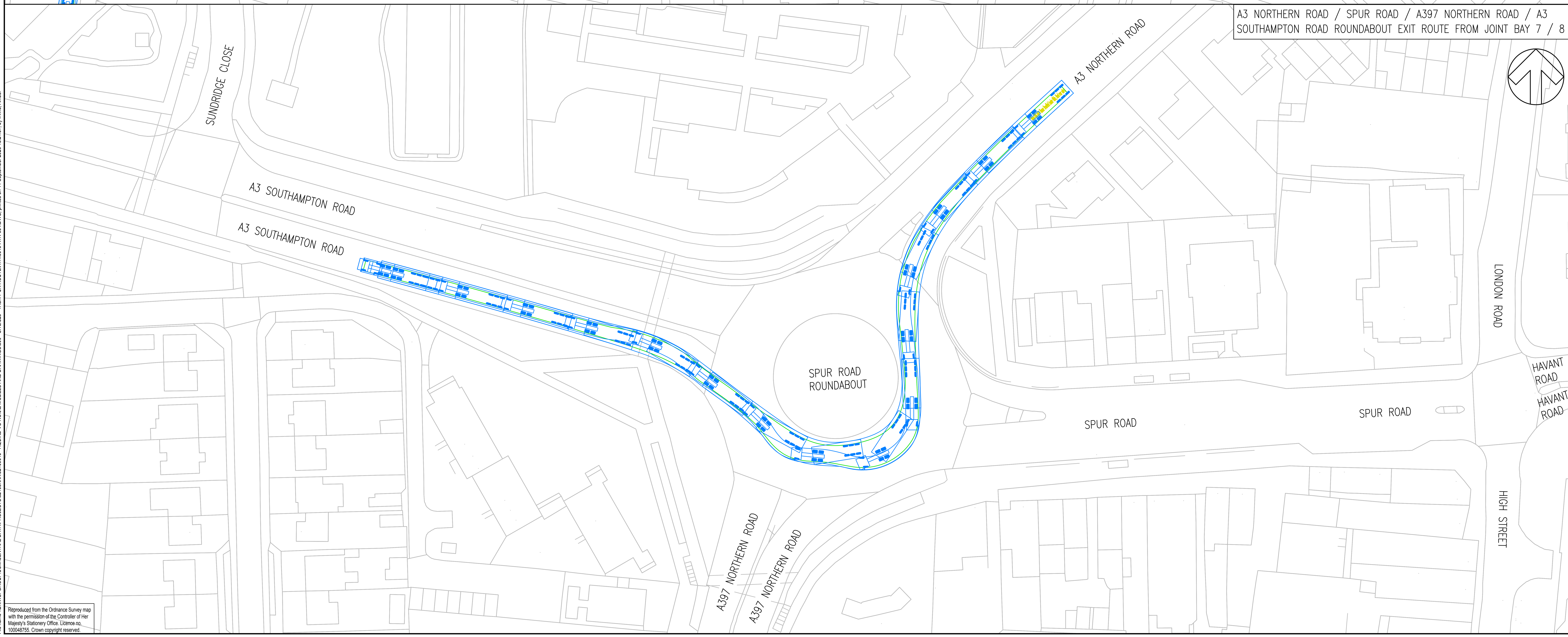
SCALE @ A1:	CHECKED:		APPROVED:
1:500	CW		CW
PROJECT No:	DESIGNED:	DRAWN:	DATE:
62100616	-	AVI	September 20

DRAWING No: 0616-ATR-050 — REV: A

A3 LONDON ROAD / LADYBRIDGE ROUNDABOUT ACCESS ROUTE TO JOINT BAY 7 / 8



A3 NORTHERN ROAD / SPUR ROAD / A397 NORTHERN ROAD / A3 SOUTHAMPTON ROAD ROUNDABOUT EXIT ROUTE FROM JOINT BAY 7 / 8

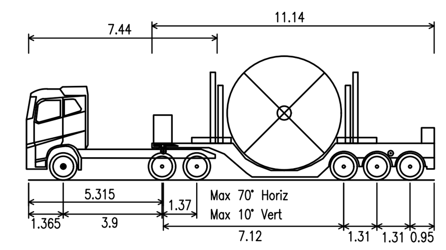


File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND VO NO.3\E MODELS AND DRAWINGS\300 - SITE\320 - TASK 7 UK ROUTE\ATR\0616-ATR-051.DWG, printed on 11 September 2020 13:21:57, by Irvine, Amber

DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

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REV	DATE	BY	DESCRIPTION	CHK	APP
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ARCHITECT: -

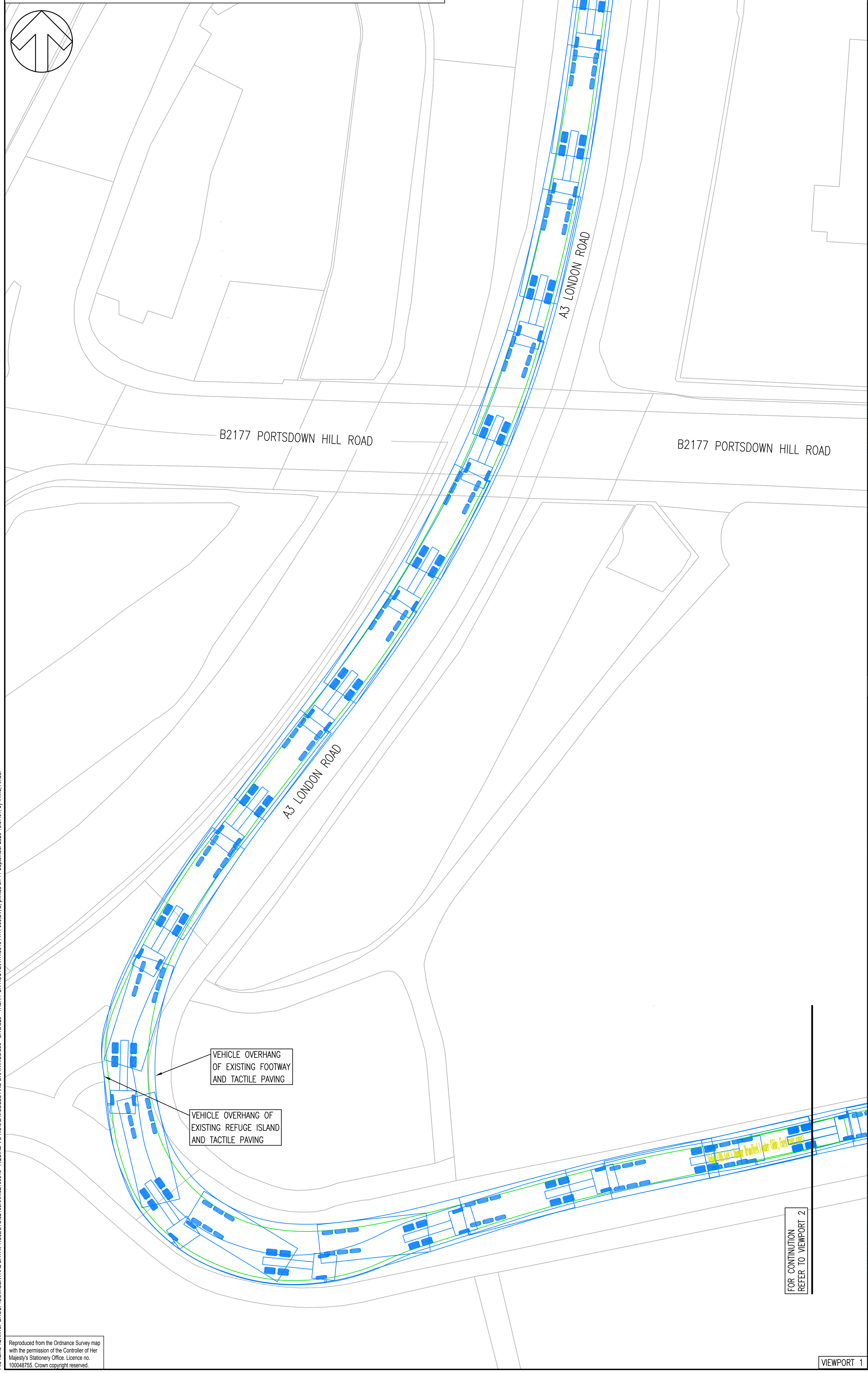
SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 7 / 8: A3 LONDON ROAD SOUTH OF LADYBRIDGE ROUNDABOUT (WITHIN BUS LANE) SHEET 2 OF 2

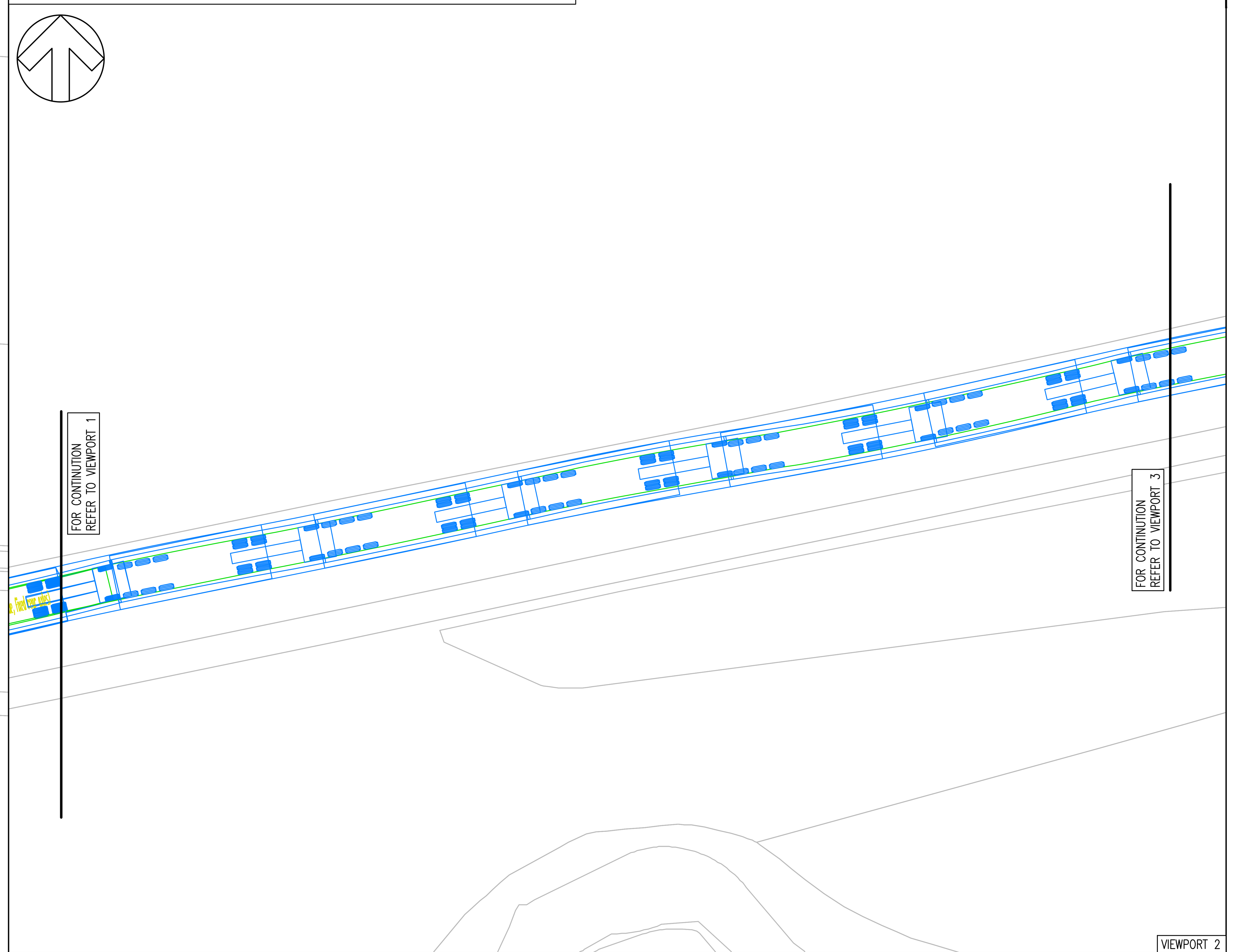
SCALE @ A1: 1:500	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No:	REV:
0616-ATR-051	A

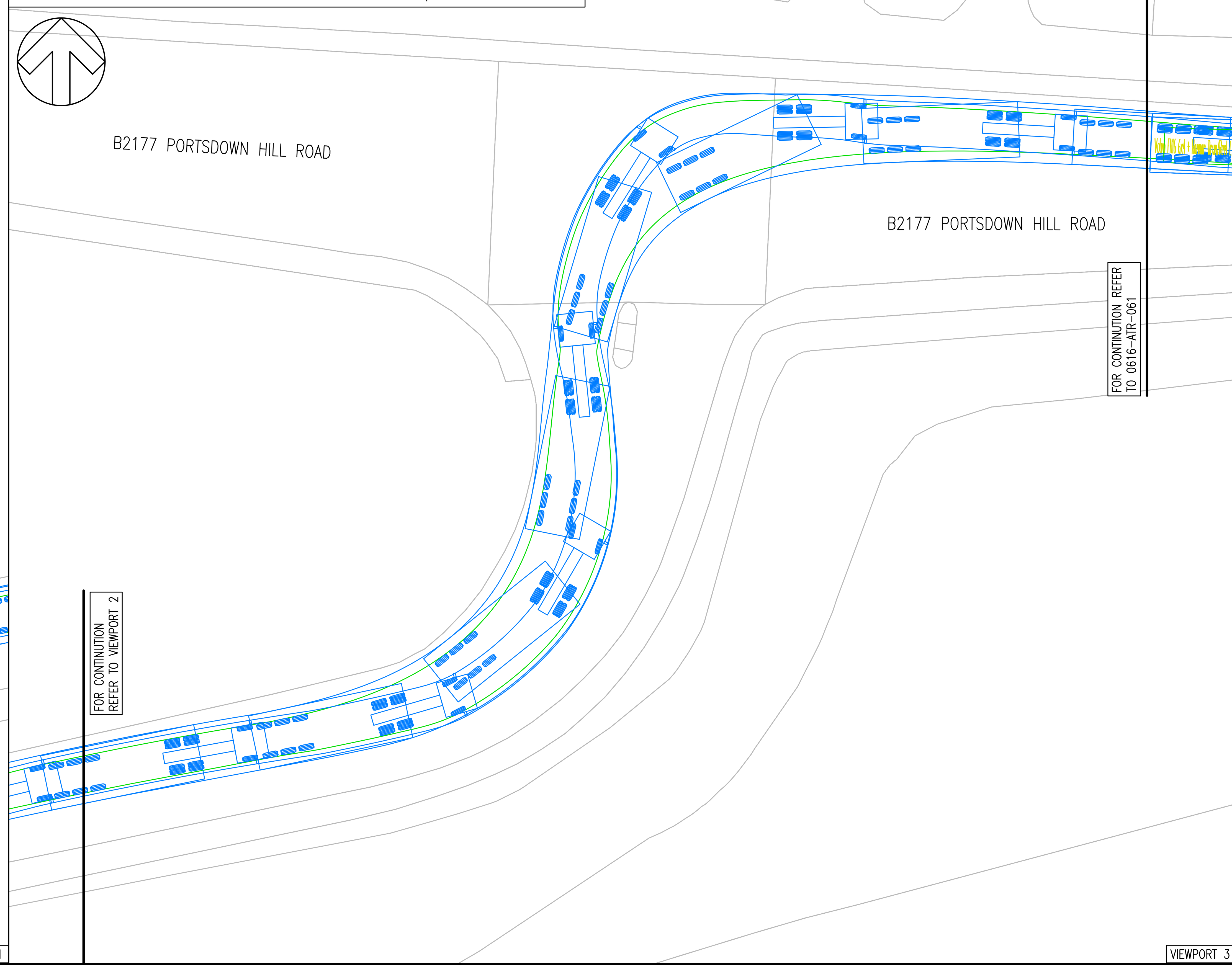
A3 LONDON ROAD TO PORTSDOWN HILL ROAD ACCESS ROUTE TO JOINT BAY 9 / 10



PORTSDOWN HILL ROAD ACCESS ROUTE TO JOINT BAY 9 / 10 - VIEWPORT 1



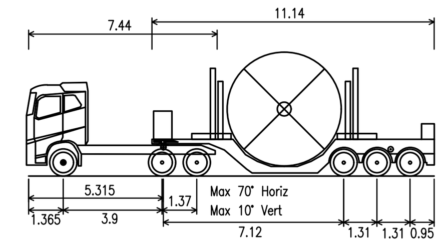
PORTSDOWN HILL ROAD ACCESS ROUTE TO JOINT BAY 9 / 10 - VIEWPORT 2



DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'.
   VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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CLIENT: AQUIND

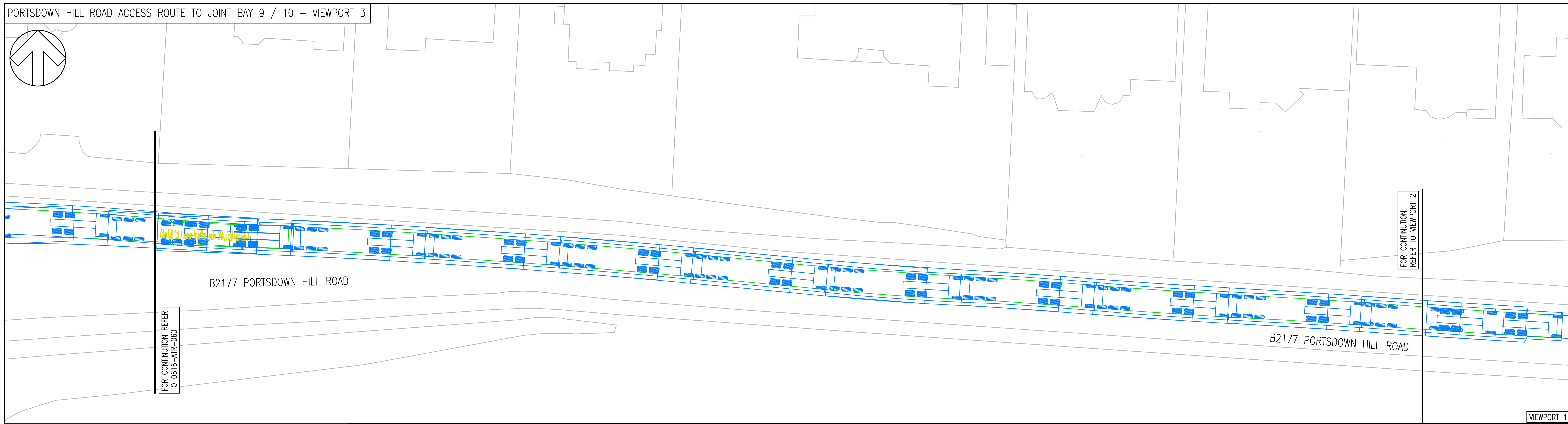
ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE
JOINT BAY 9 / 10: WITHIN PORTSDOWN HILL CAR PARK
SHEET 1 OF 3

SCALE @ A1: 1:250	CHECKED: CW	APPROVED: CW
PROJECT NO: 62100616	DESIGNED: - / DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-060 REV: A

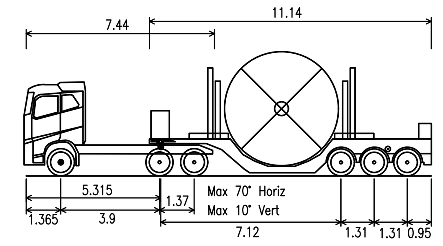


DO NOT SCALE

NOTES:

1. ALL VEHICLE MOVEMENTS ARE TRACKED AT A DESIGN SPEED OF 5mph. EXCLUDING IN VIEWPORT 1 WHERE THE MOVEMENT IS TRACKED AT 10mph.

2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- VEHICLE WHEELS

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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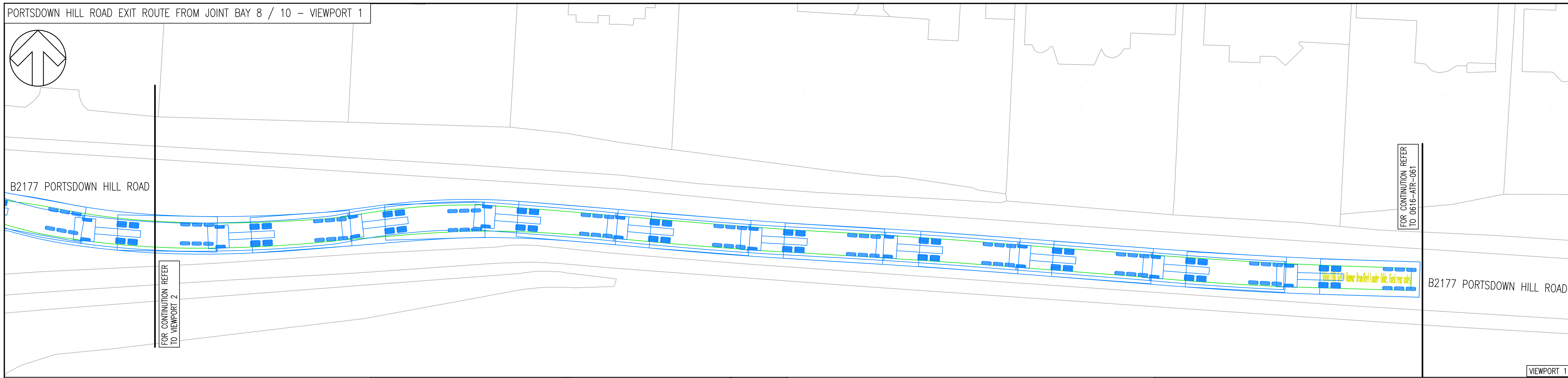
ARCHITECT: -

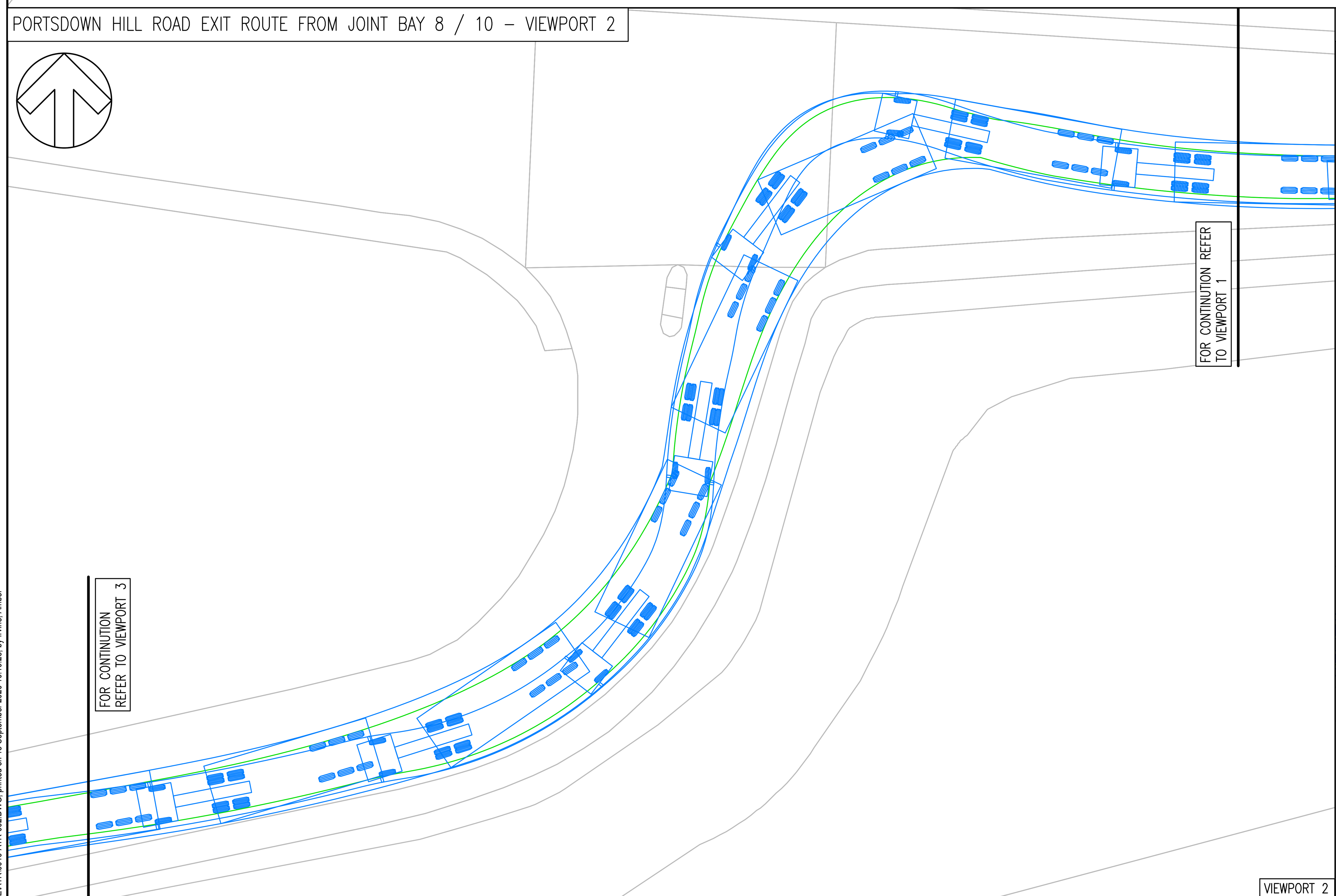
SITE/PROJECT: AQUIND

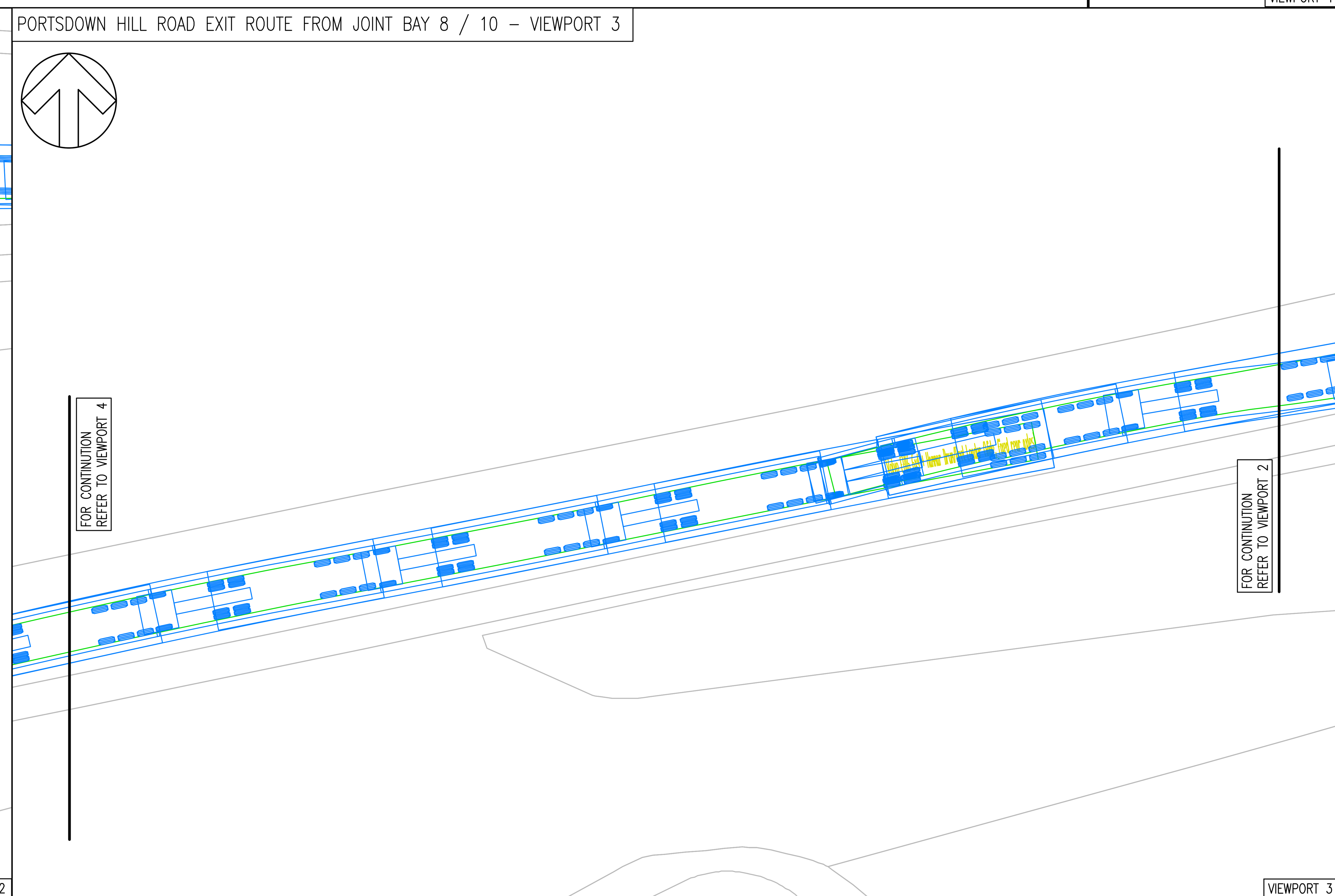
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 9 / 10: WITHIN PORTSDOWN HILL CAR PARK SHEET 2 OF 3

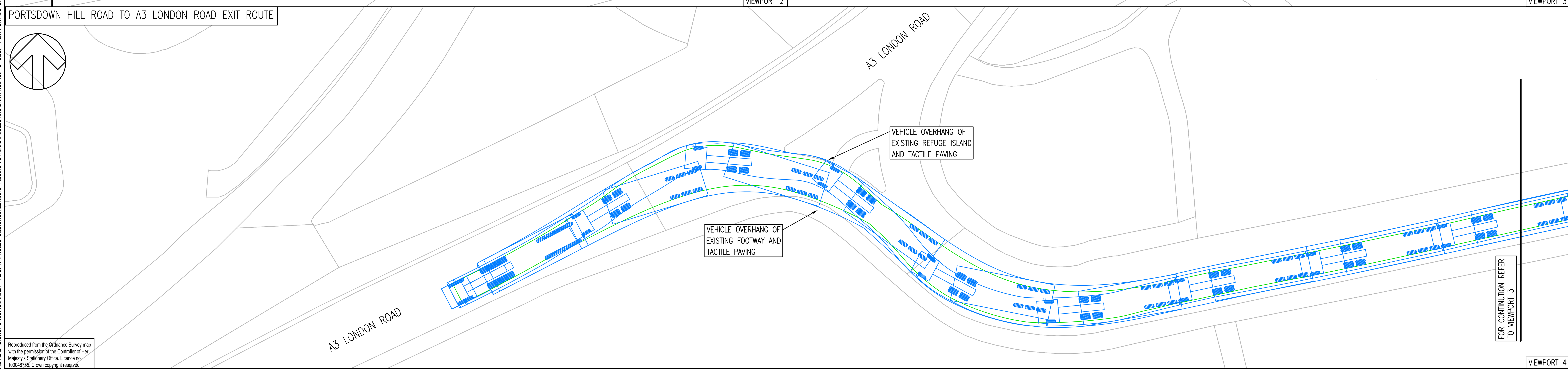
SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: August 20

DRAWING No: 0616-ATR-061 | REV: A







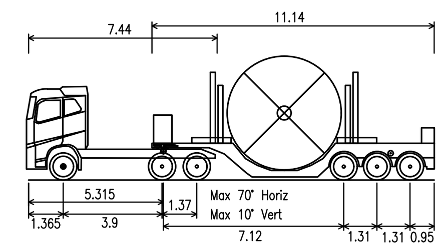


File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND VO NO.3\E MODELS AND DRAWINGS\300 - SITE\320 - TASK 7 UK ROUTE\ATR\0616-ATR-062.DWG, printed on 18 September 2020 10:19:28, by Irvine, Amber

DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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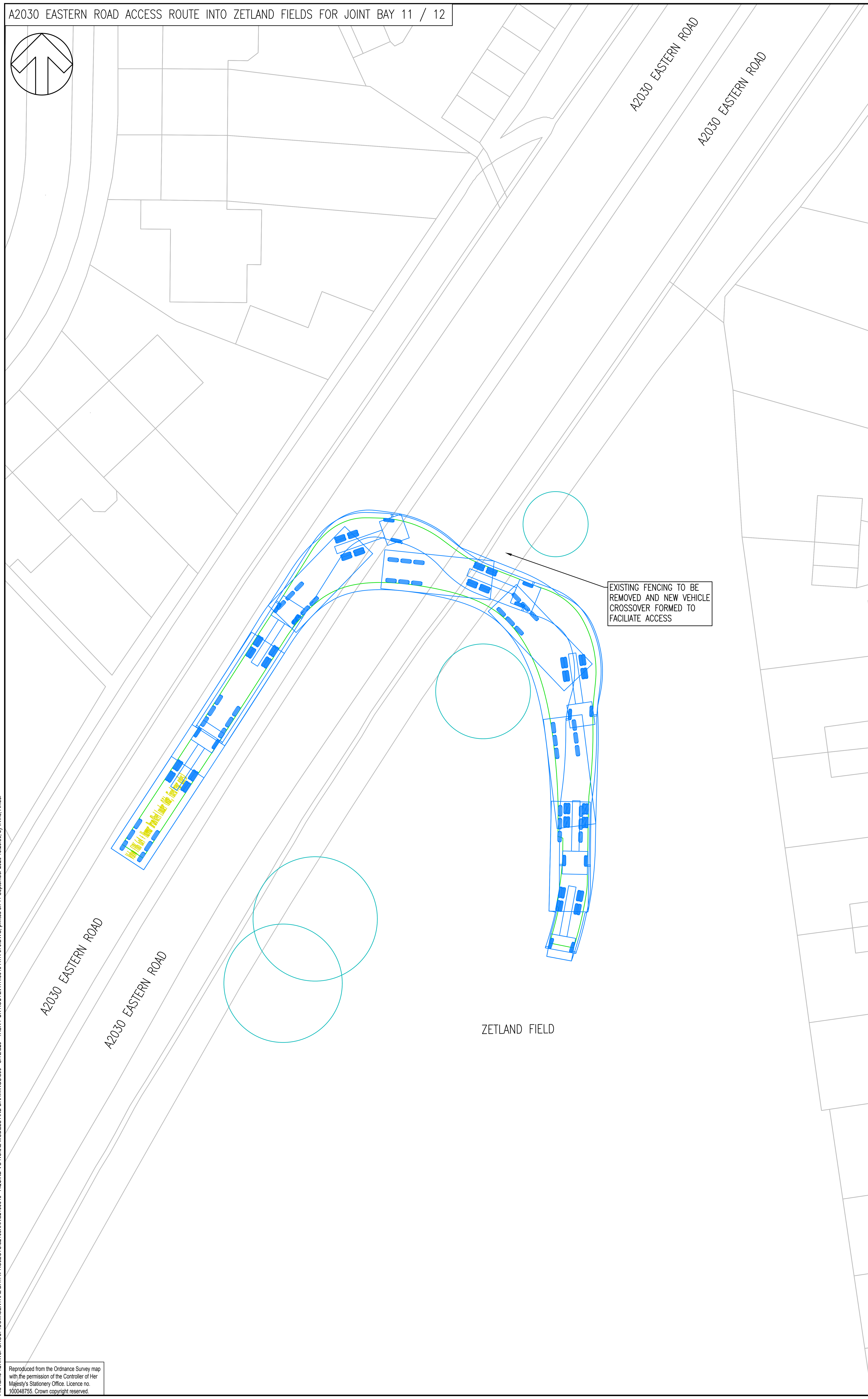
CLIENT: AQUIND

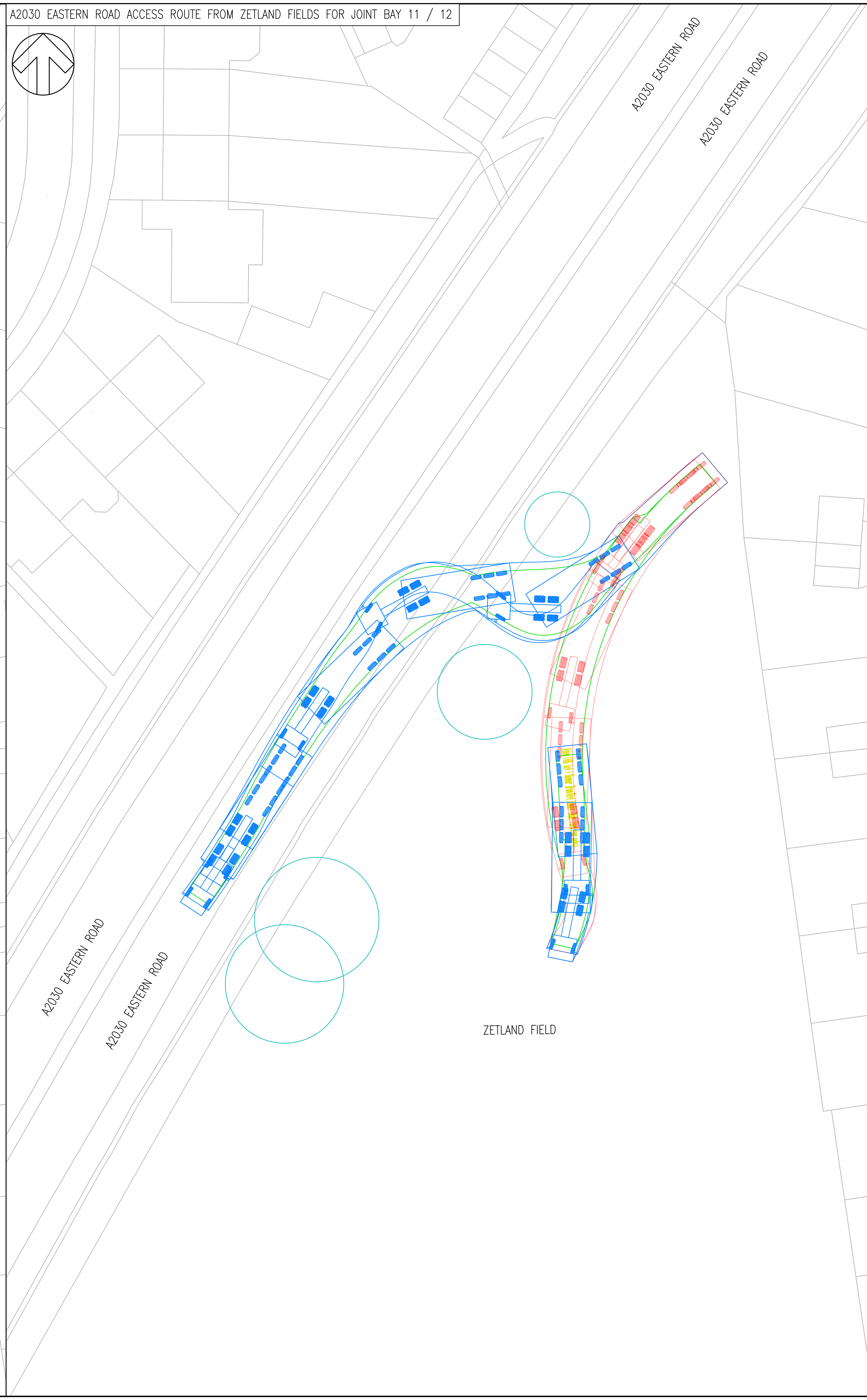
ARCHITECT: -

SITE/PROJECT: AQUIND

TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 9 / 10: WITHIN PORTSDOWN HILL CAR PARK SHEET 3 OF 3

SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-062			REV: A





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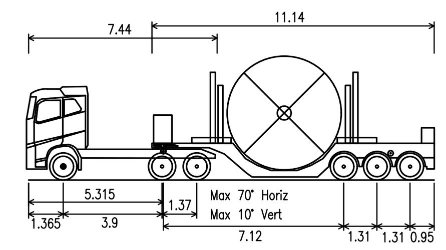
File name \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\62100XXX\62100616 - AQUIND VO NO.3\E MODELS AND DRAWINGS\300 - SITE\320 - TASK 7 UK ROUTE\ATR\0616-ATR-070.DWG, printed on 11 September 2020 15:29:56, by Irvine, Amber

DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- VEHICLE WHEELS
- EXISTING TREES

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

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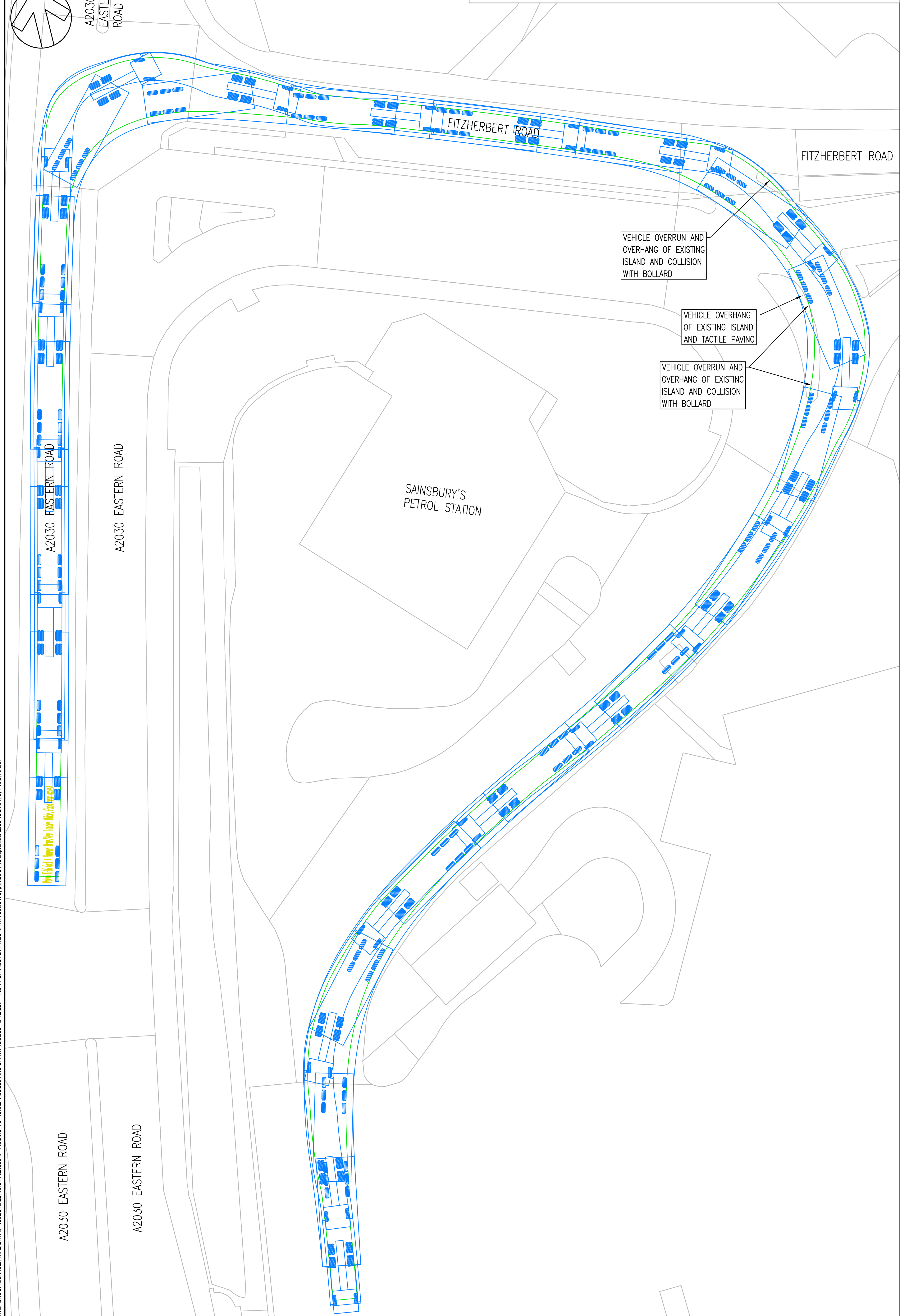
ARCHITECT:
-

SITE/PROJECT:
AQUIND

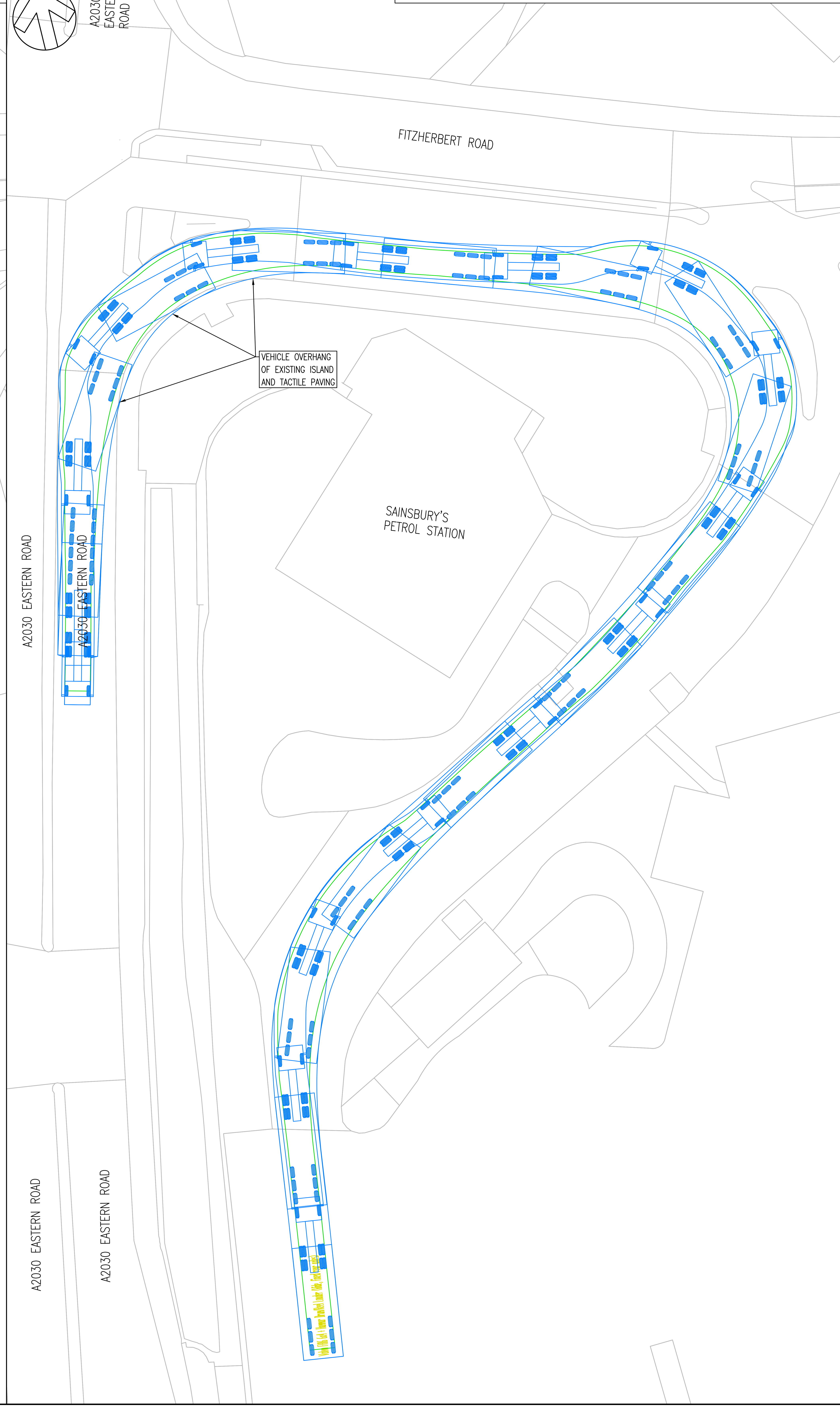
TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 11 / 12: WITHIN ZETLAND FIELDS ADJACENT TO A2030 EASTERN ROAD

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
62100616	-	AVI	September 20
DRAWING No:			REV:
0616-ATR-070			A

A2030 EASTERN ROAD / FITZHERBERT ROAD ACCESS ROUTE TO JOINT BAY 12 / 13



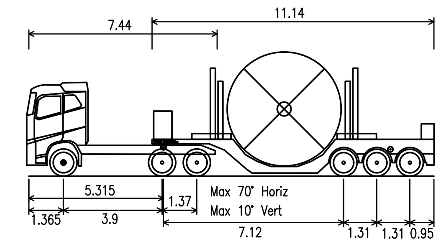
A2030 EASTERN ROAD / FITZHERBERT ROAD EXIT ROUTE FROM JOINT BAY 12 / 13



DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'.
VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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wsp.com

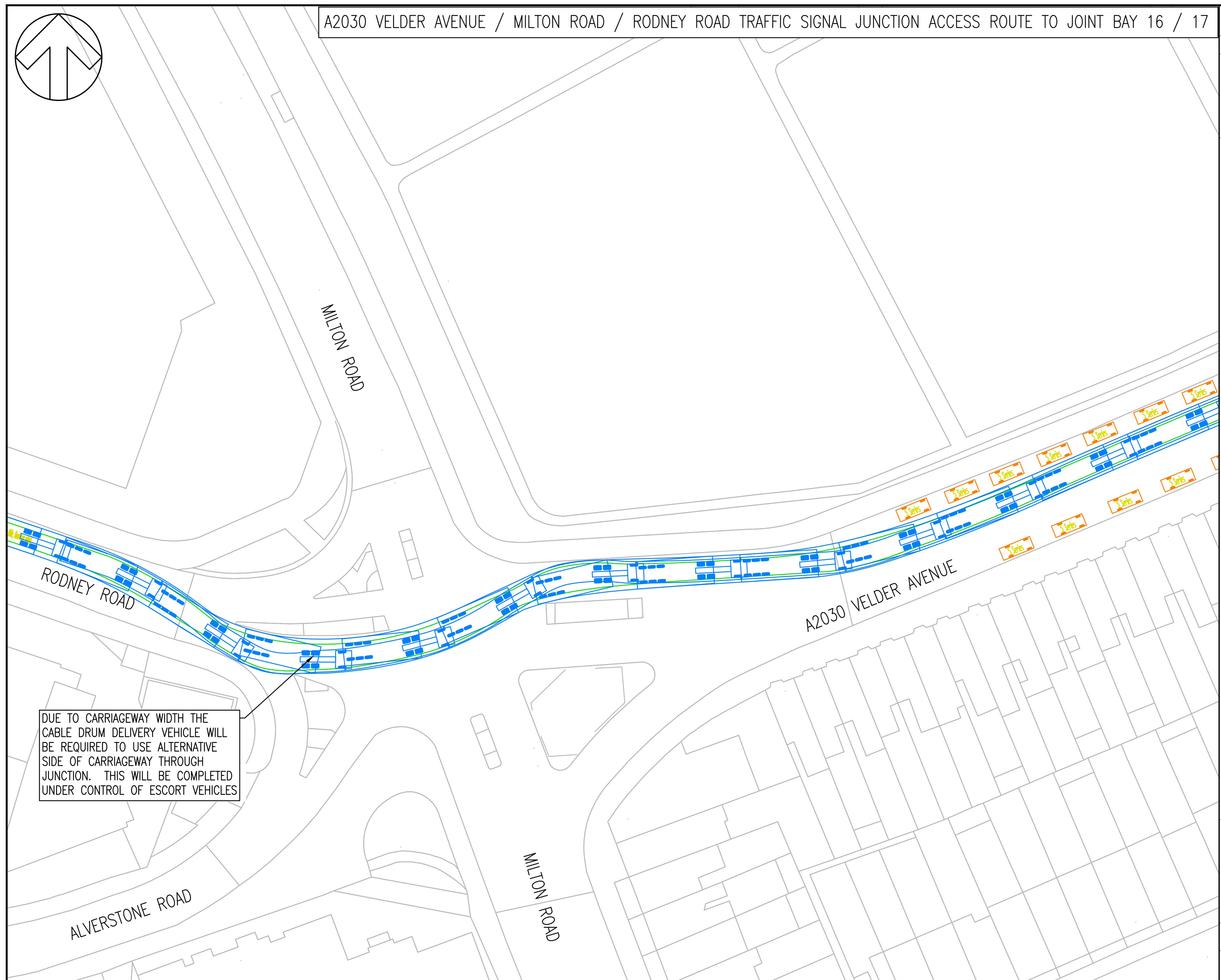
CLIENT: AQUIND

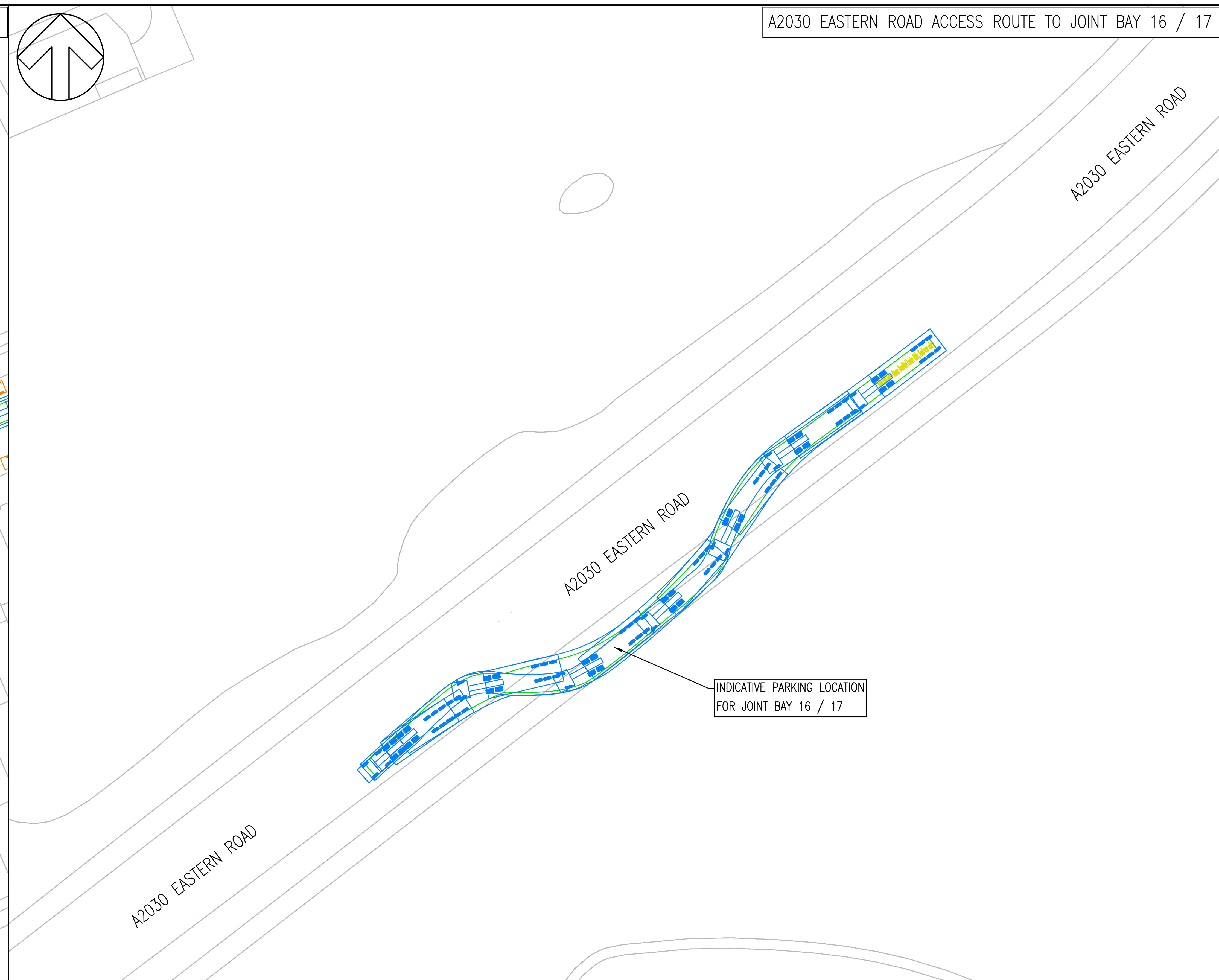
ARCHITECT: -

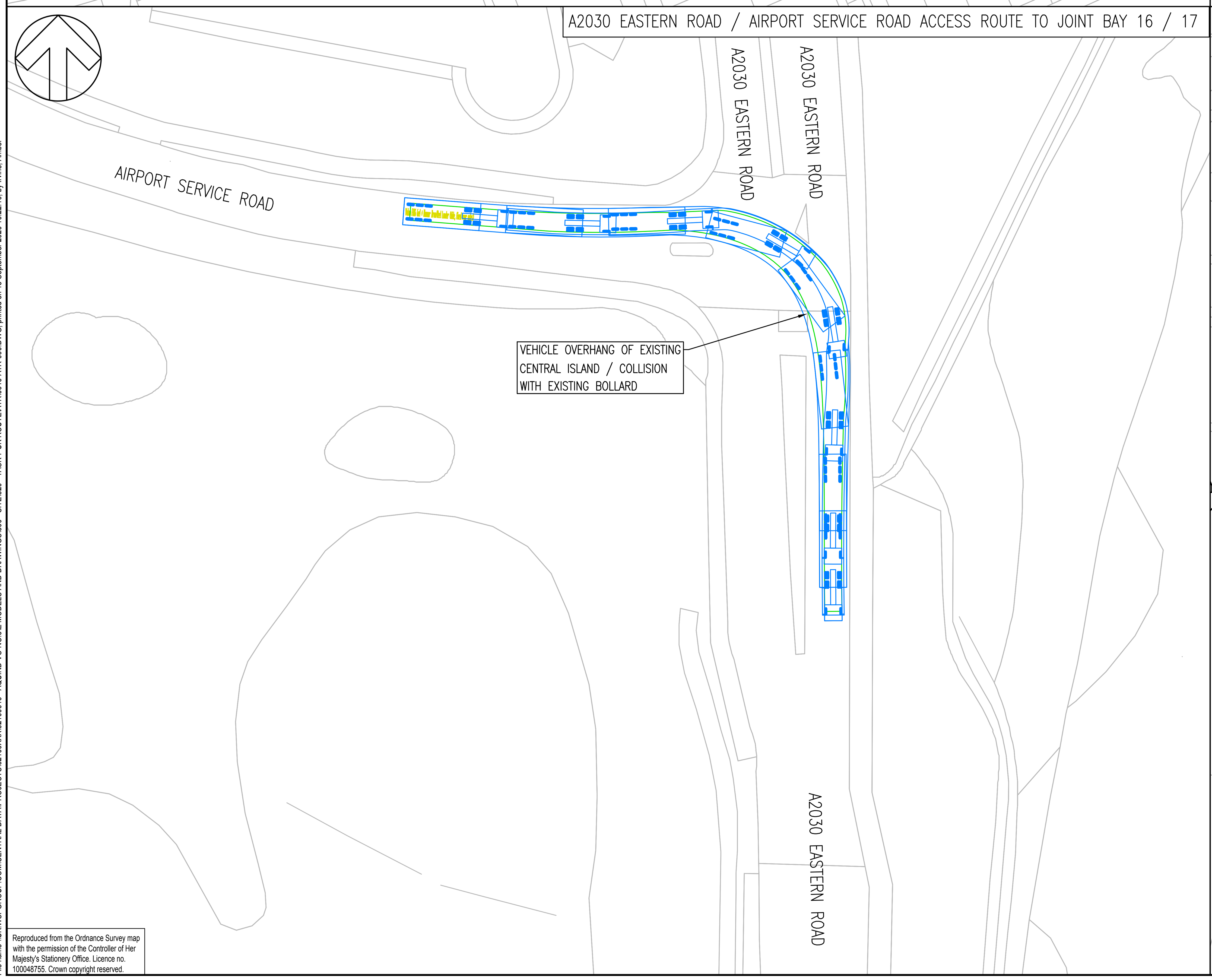
SITE/PROJECT: AQUIND

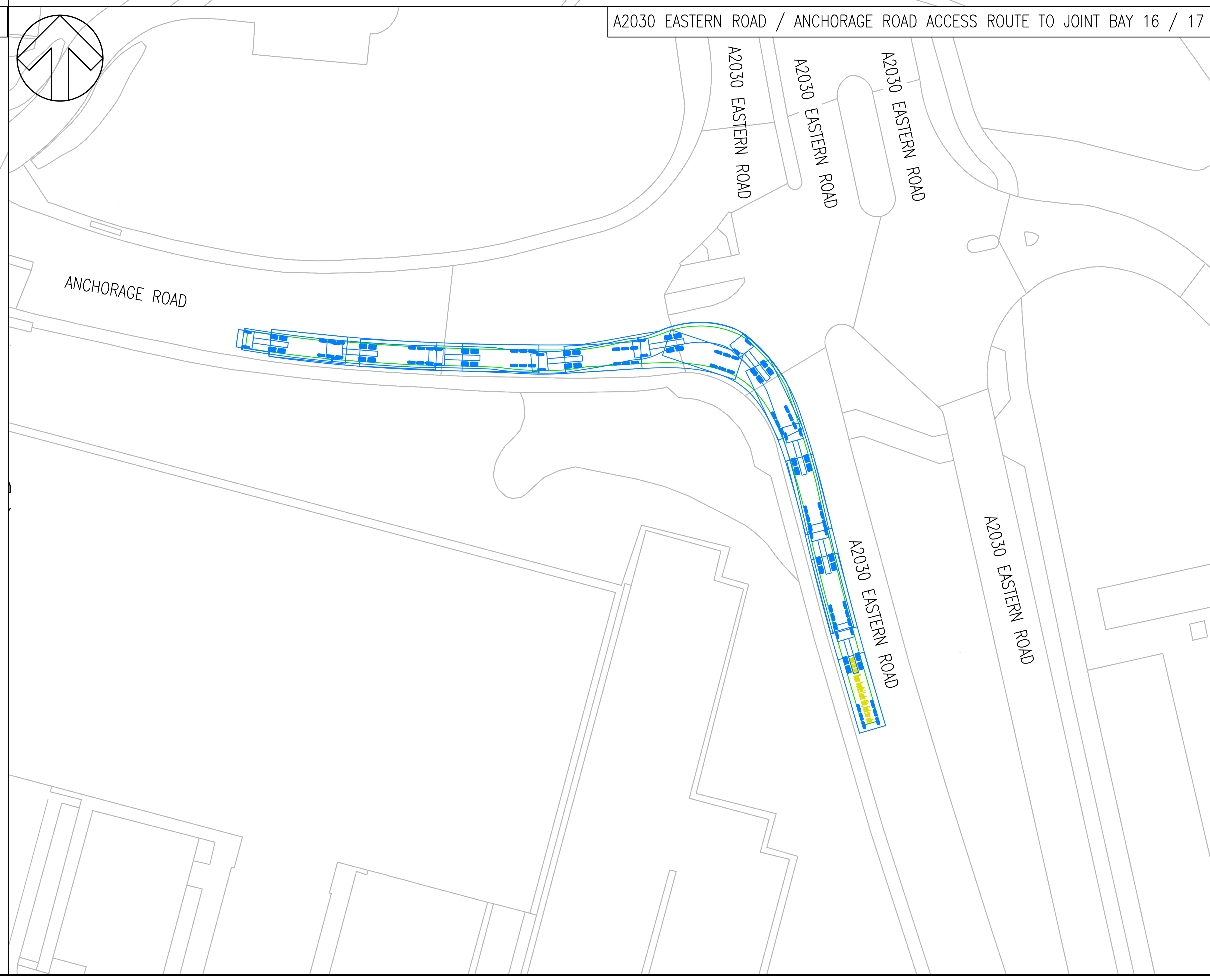
TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE
JOINT BAY 12 /13: WITHIN SAINSBURY'S CAR PARK

SCALE @ A1: 1:250	CHECKED: CW	APPROVED: CW
PROJECT NO: 62100616	DESIGNED: - / DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-080		REV: A







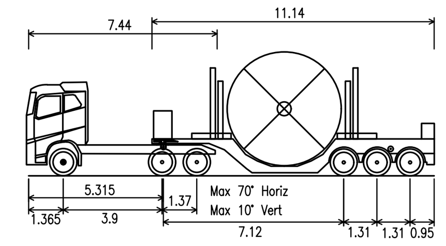


DO NOT SCALE

NOTES:

1. VEHICLE MOVEMENTS ARE TRACKED AT A DESIGN SPEED OF 5mph. EXCLUDING IN VIEWPORT 1 WHERE THE MOVEMENT IS TRACKED AT A DESIGN SPEED OF 10mph.

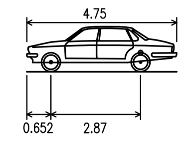
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
REVERSE MANOEUVRE
5 Series INDICATIVE LOCATION OF ON–STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
S0 - WORK IN PROGRESS

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CLIENT: AQUIND

ARCHITECT: -

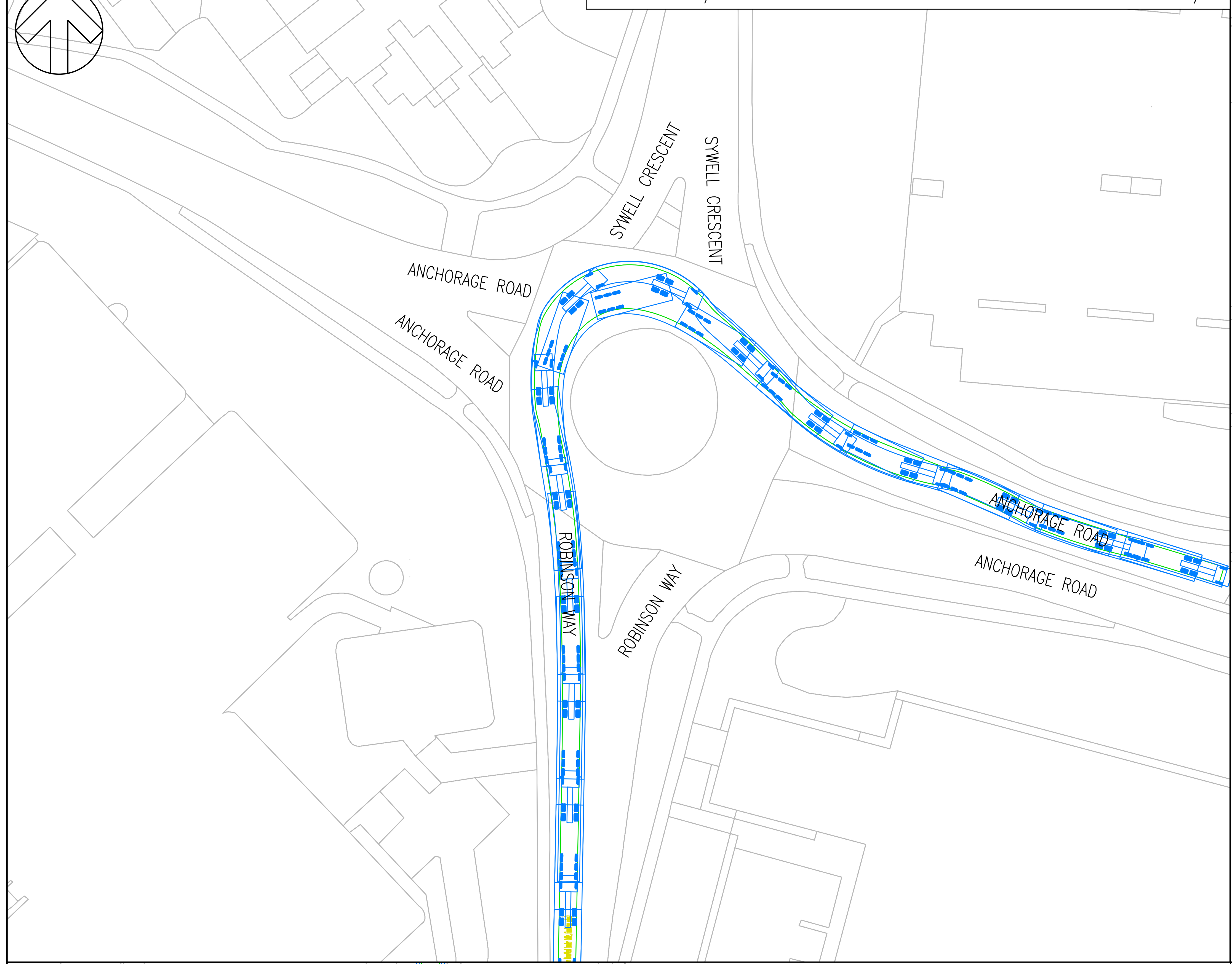
SITE/PROJECT: AQUIND

TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 16/17: ADJACENT TO THE A2030 EASTERN ROAD NORTH OF MILTON COMMON

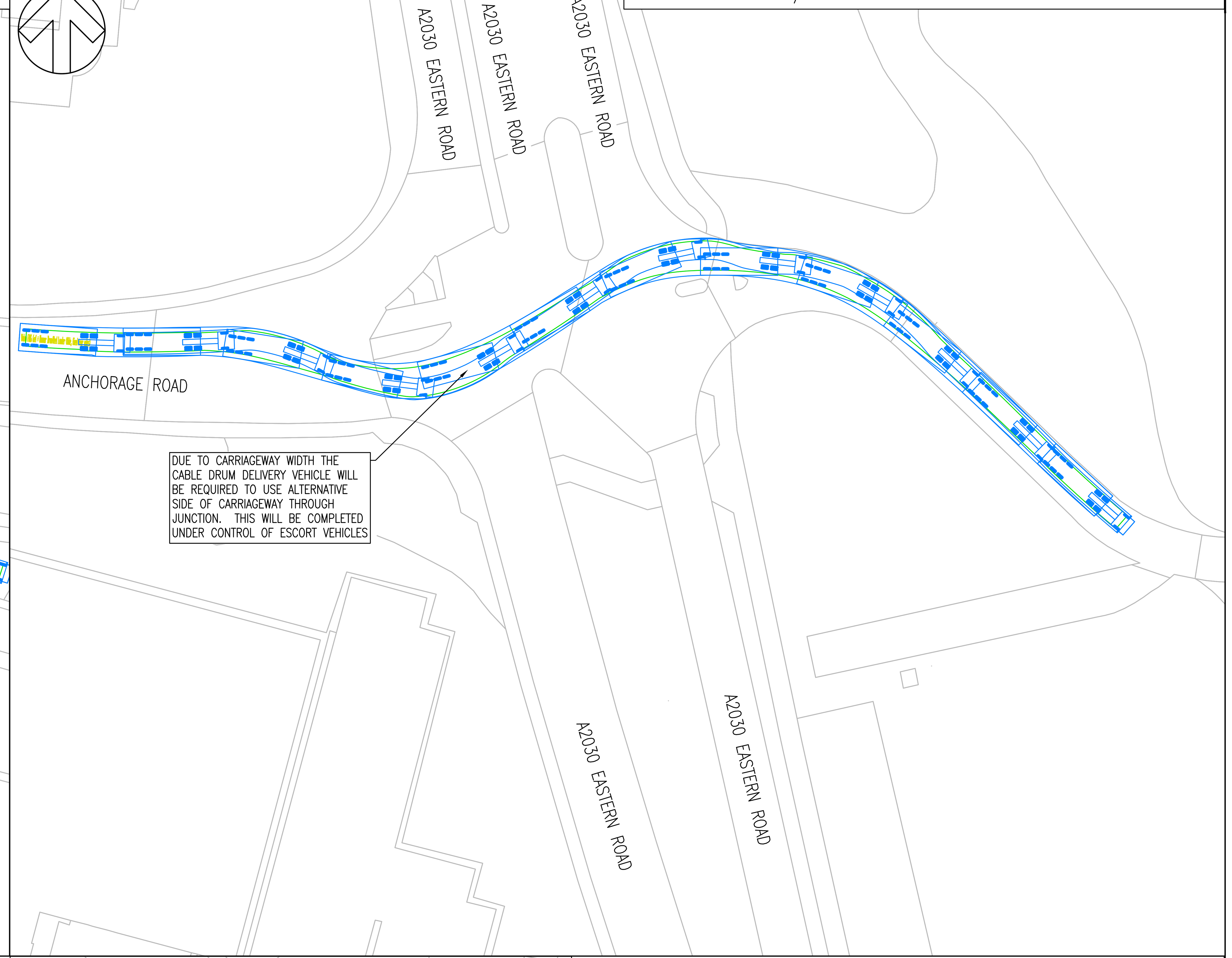
SCALE @ A1: 1:500	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-090 | REV: A

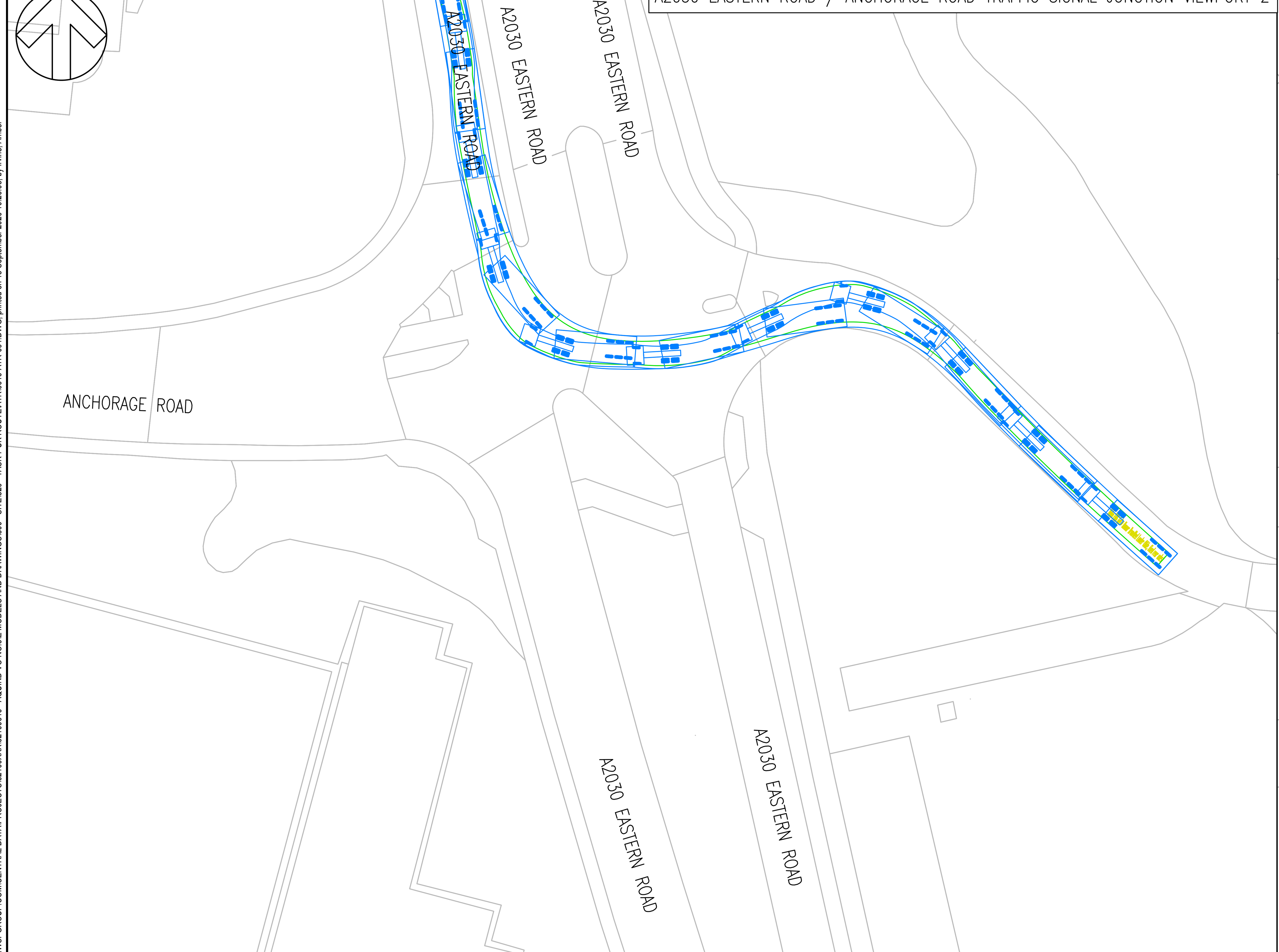
ROBINSON WAY / ANCHORAGE ROAD ROUNDABOUT ACCESS ROUTE TO JOINT BAY 14/15



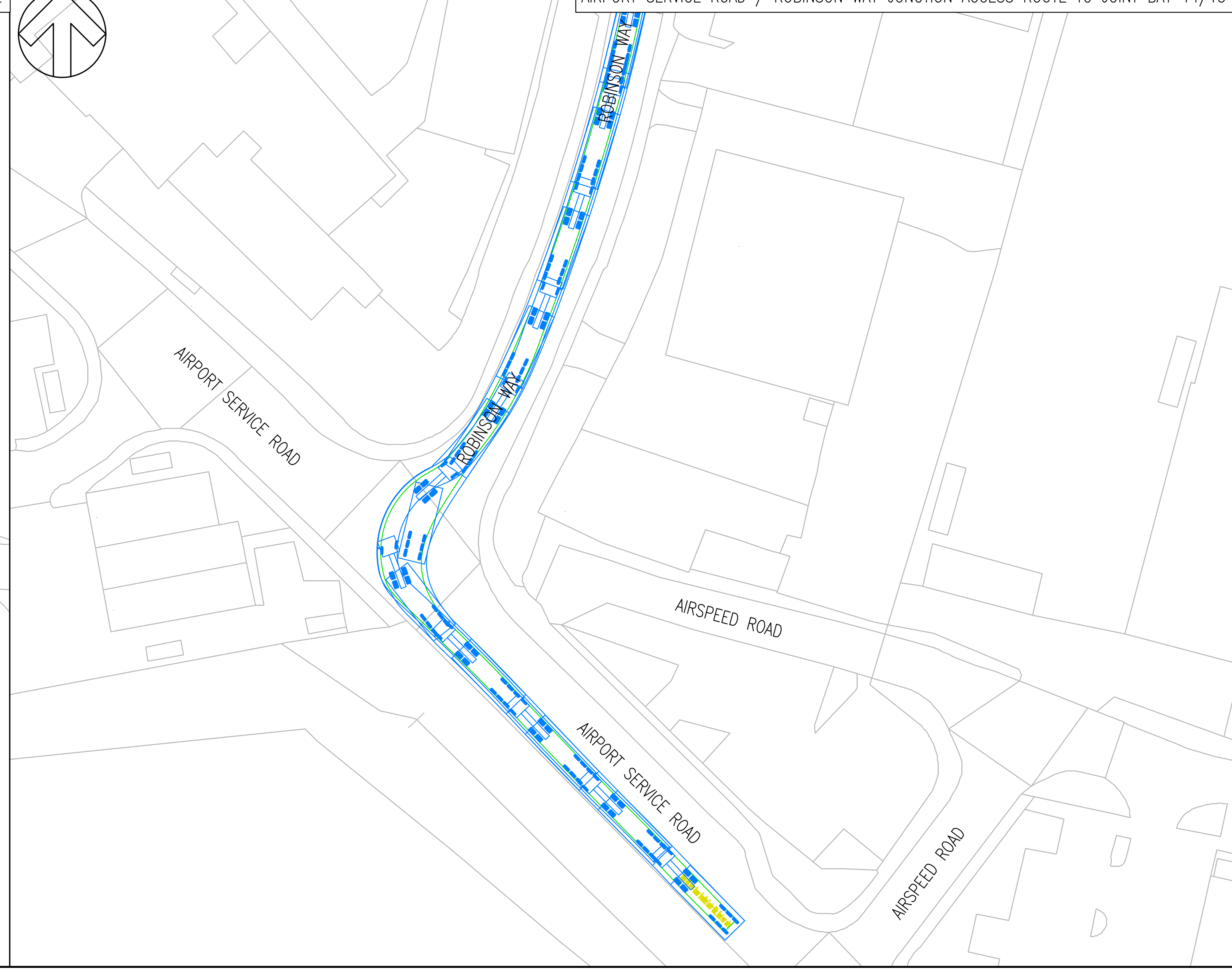
A2030 EASTERN ROAD / ANCHORAGE ROAD TRAFFIC SIGNAL JUNCTION VIEWPORT 1



A2030 EASTERN ROAD / ANCHORAGE ROAD TRAFFIC SIGNAL JUNCTION VIEWPORT 2



AIRPORT SERVICE ROAD / ROBINSON WAY JUNCTION ACCESS ROUTE TO JOINT BAY 14/15



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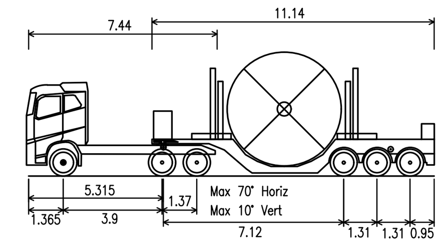
DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS: S0 - WORK IN PROGRESS

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CLIENT: AQUIND

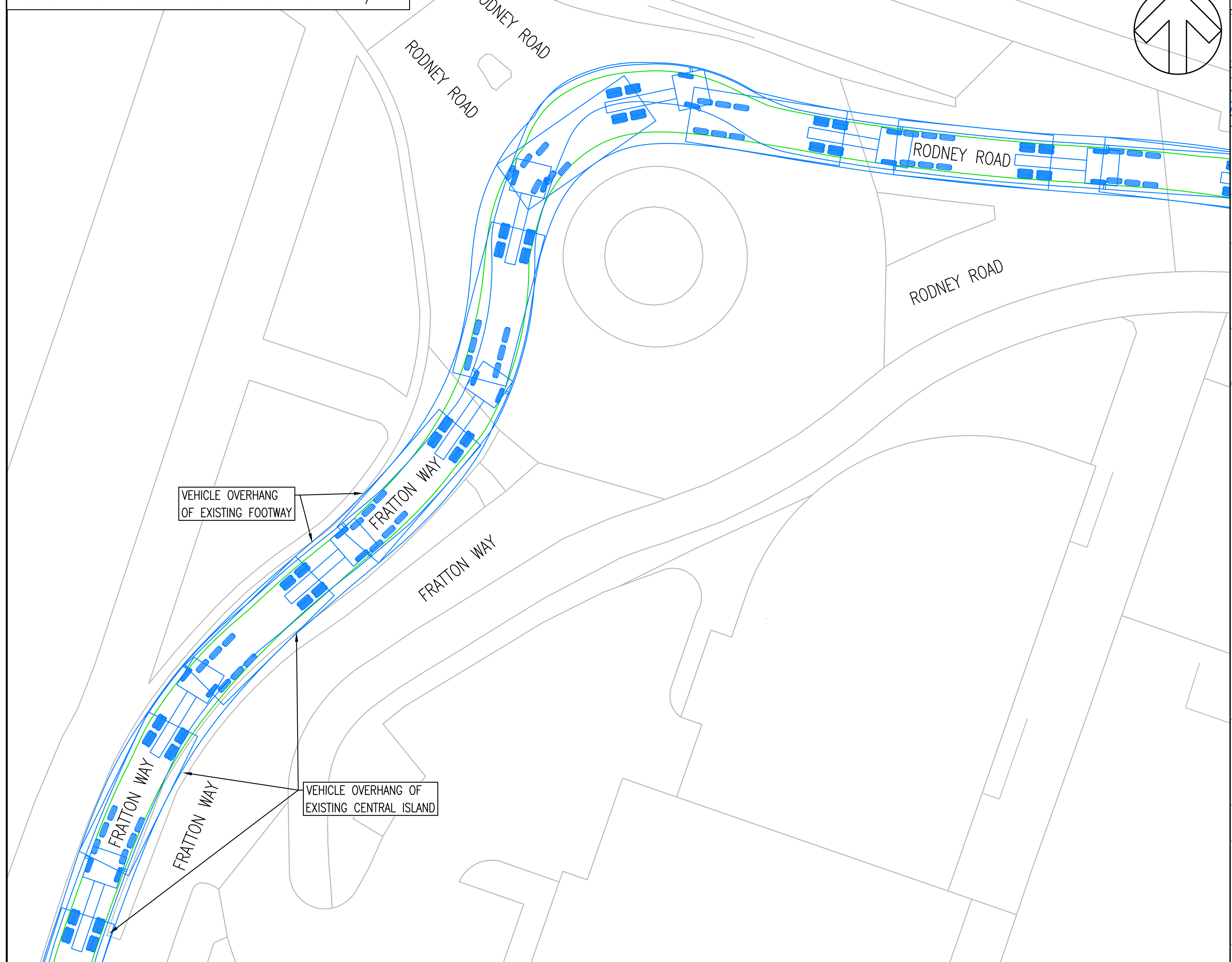
ARCHITECT: -

SITE/PROJECT: AQUIND

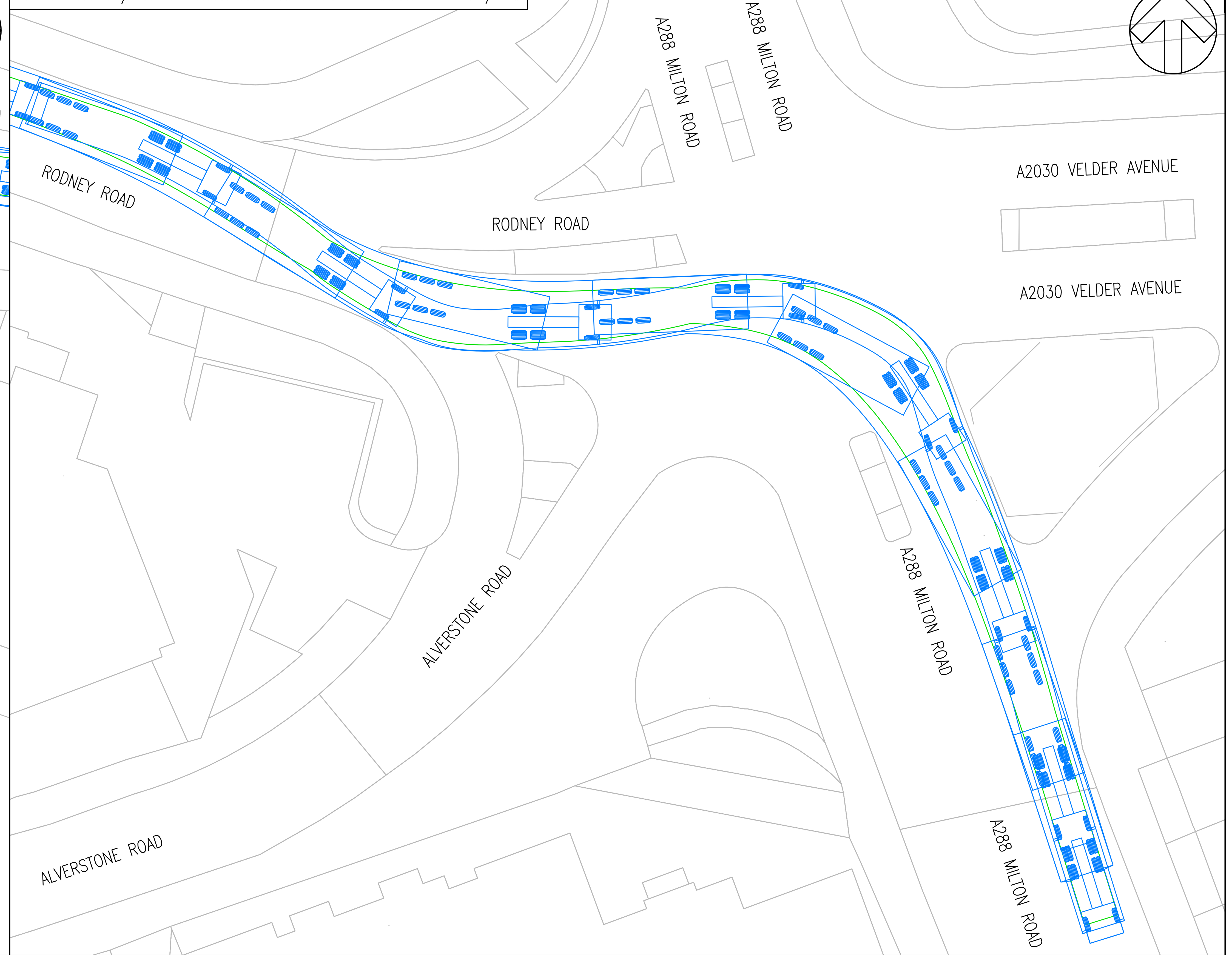
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 14/15: WITHIN KENDALLS WHARF

SCALE @ A1: 1:500	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: HL / AVI	DATE: September 20
DRAWING No: 0616-ATR-091			REV: A

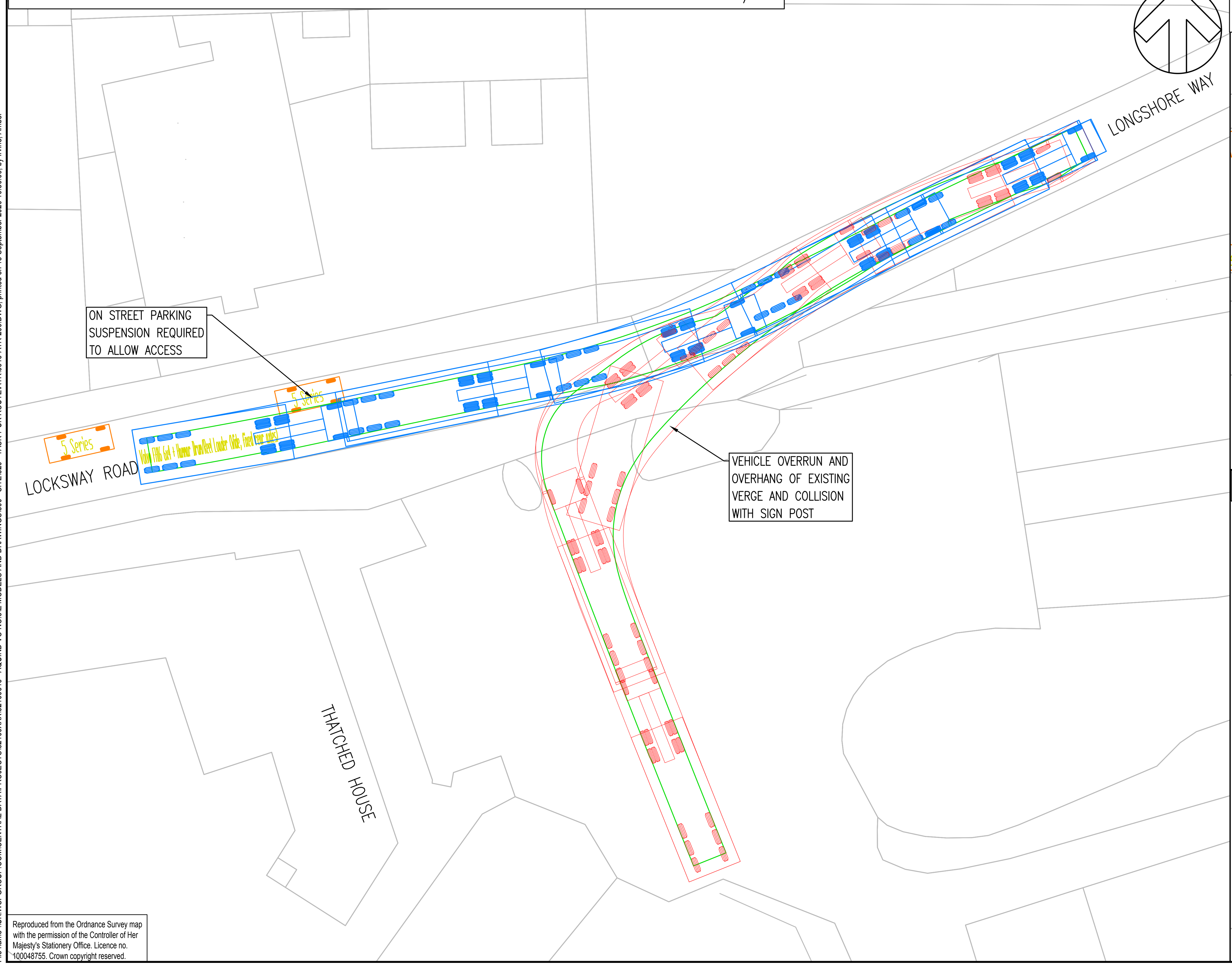
RODNEY ROAD ACCESS ROUTE TO JOINT BAY 18 / 19



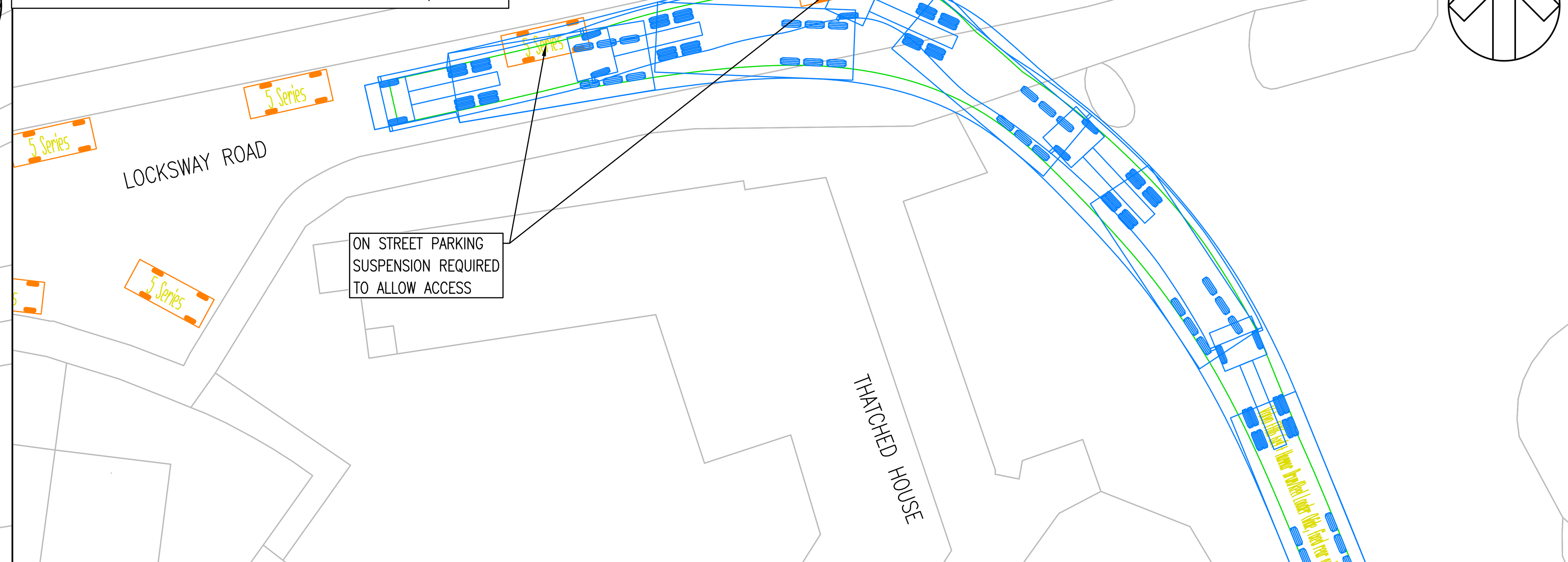
RODNEY ROAD / MILTON ROAD ACCESS ROUTE TO JOINT BAY 18 / 19



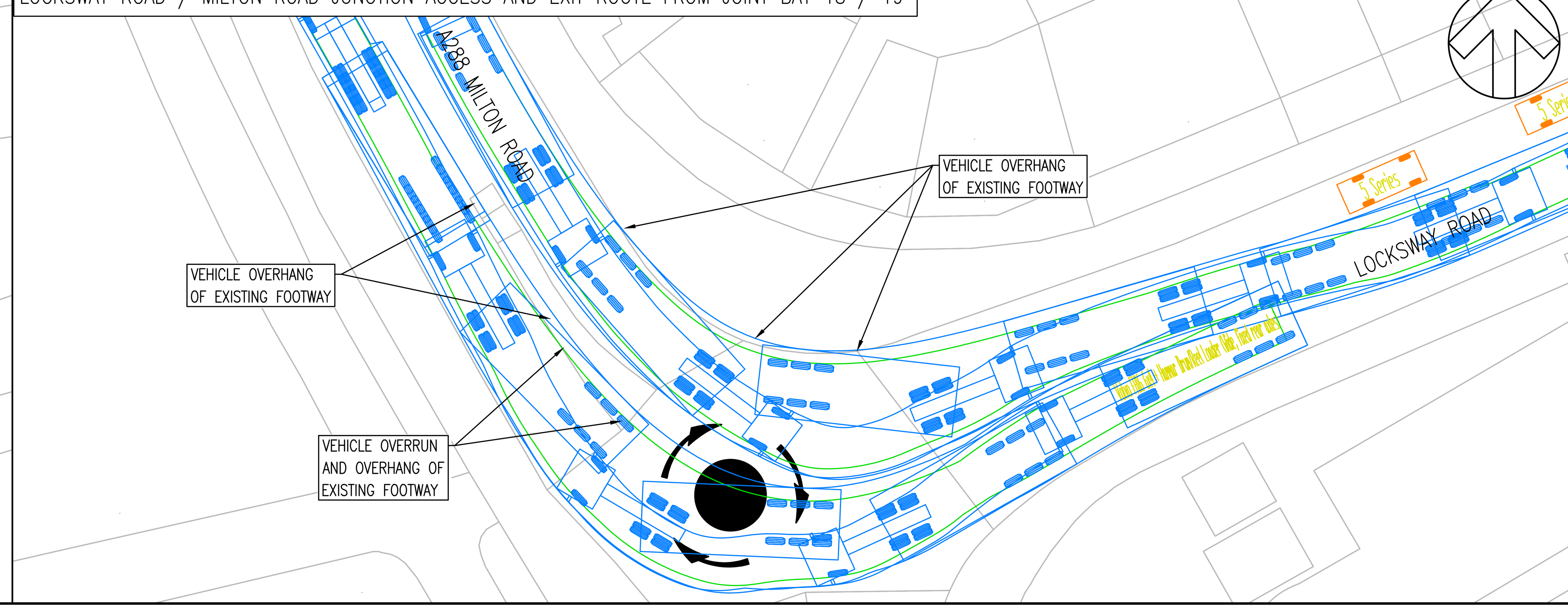
LOCKSWAY ROAD ACCESS ROUTE TO THATCHED HOUSE PUBLIC HOUSE CAR PARK FOR JOINT BAY 18 / 19



LOCKSWAY ROAD / THATCHED HOUSE PUBLIC HOUSE CAR PARK EXIT ROUTE FROM JOINT BAY 18 / 19



LOCKSWAY ROAD / MILTON ROAD JUNCTION ACCESS AND EXIT ROUTE FROM JOINT BAY 18 / 19

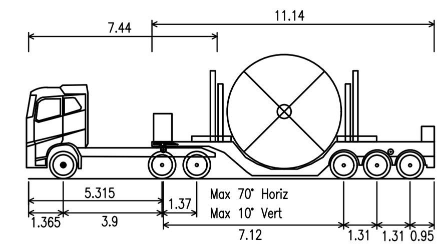


DO NOT SCALE

NOTES:

ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph. EXCLUDING THE RODNEY ROAD / MILTON ROAD ACCESS ROUTE MOVEMENT WHICH IS TRACKED AT A SPEED OF 10mph.

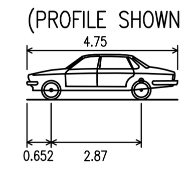
1. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- VEHICLE WHEELS
- 5 Series — INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

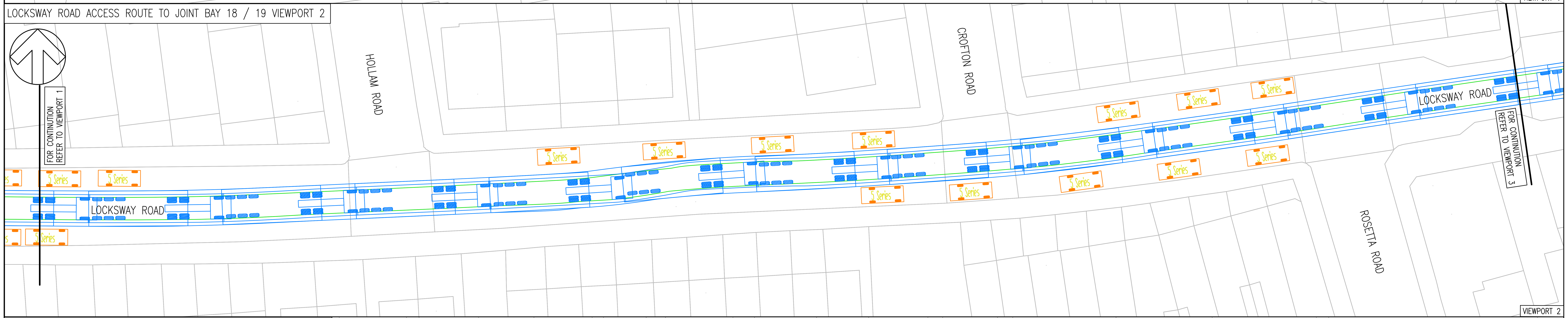
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 18 / 19: WITHIN THE THATCHED HOUSE PUBLIC HOUSE CAR PARK, ACCESSED VIA LOCKSWAY ROAD SHEET 1 OF 3

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
62100616	-	AVI	September 20

DRAWING No: 0616-ATR-200 REV: A

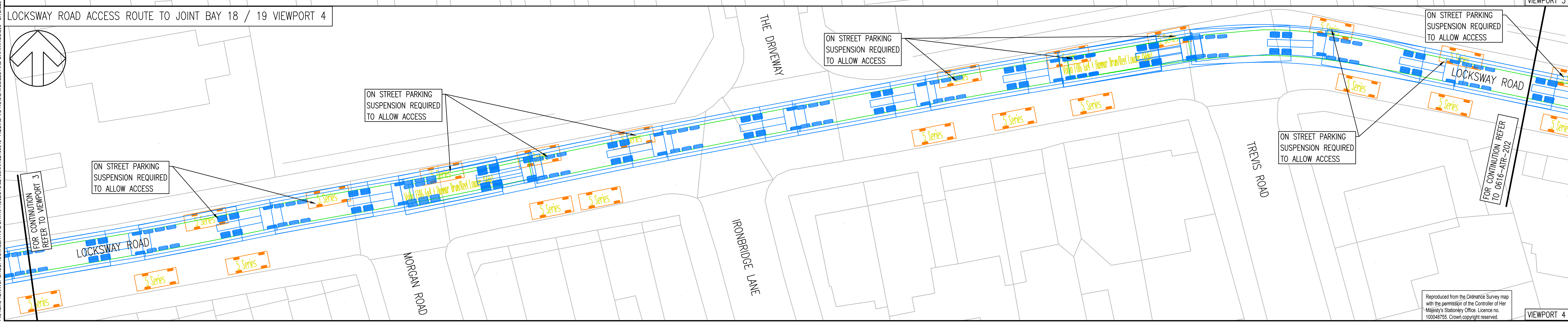
LOCKSWAY ROAD ACCESS ROUTE TO JOINT BAY 18 / 19 VIEWPORT 1

LOCKSWAY ROAD ACCESS ROUTE TO JOINT BAY 18 / 19 VIEWPORT 2



LOCKSWAY ROAD ACCESS ROUTE TO JOINT BAY 18 / 19 VIEWPORT 3

LOCKSWAY ROAD ACCESS ROUTE TO JOINT BAY 18 / 19 VIEWPORT 4



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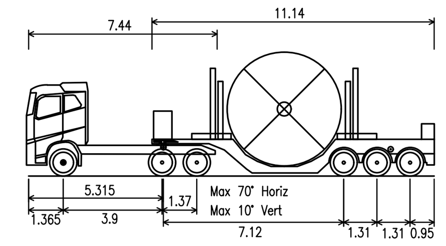
DO NOT SCALE

NOTES:

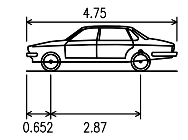
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- VEHICLE WHEELS
- PARKED CARS (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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wsp.com

CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND

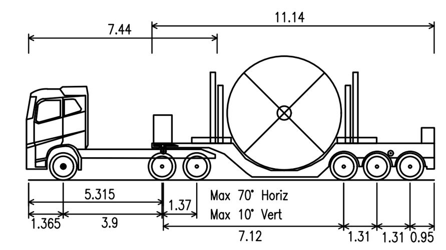
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 18 / 19: WITHIN THE THATCHED HOUSE PUBLIC HOUSE CAR PARK, ACCESSED VIA LOCKSWAY ROAD SHEET 2 OF 3

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
62100616	-	AVI	September 20
DRAWING No:			REV:
0616-ATR-201			A

DO NOT SCALE

NOTES:

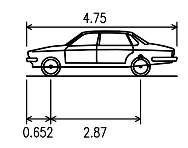
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS
PARKED CARS (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

DRAWING STATUS:
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wsp.com

CLIENT: AQUIND

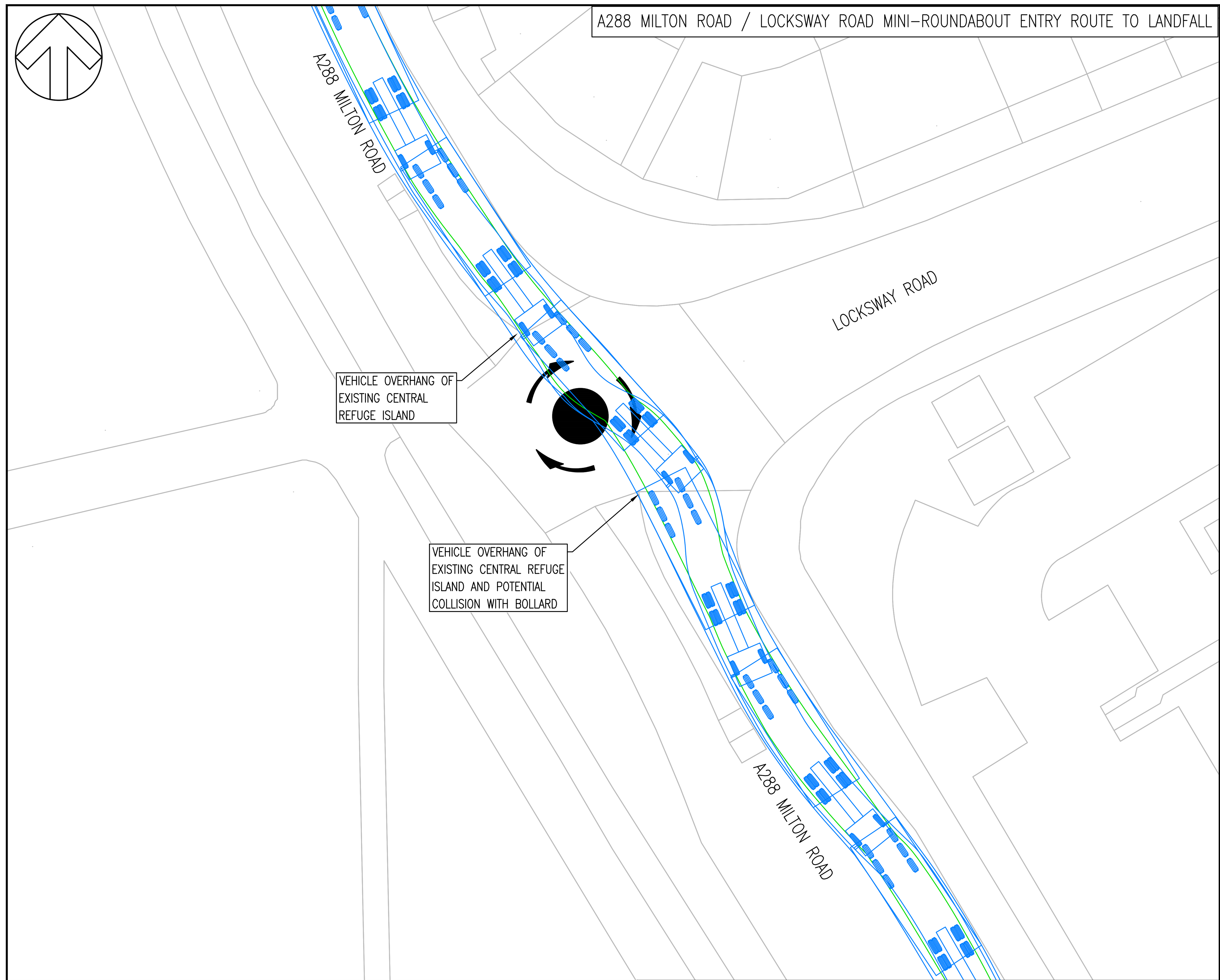
ARCHITECT: -

SITE/PROJECT: AQUIND

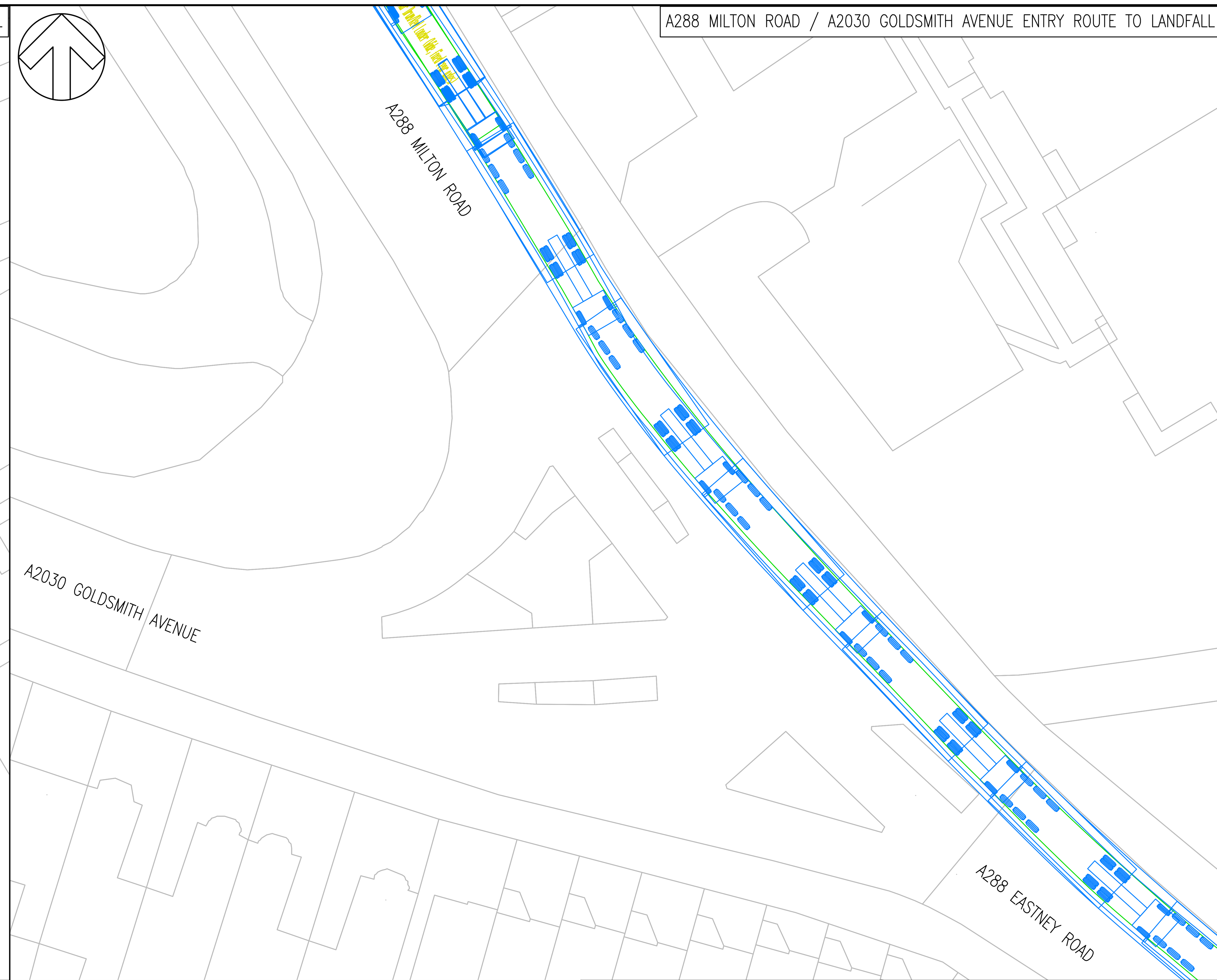
TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE JOINT BAY 18 / 19: WITHIN THE THATCHED HOUSE PUBLIC HOUSE CAR PARK, ACCESSED VIA LOCKSWAY ROAD

SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

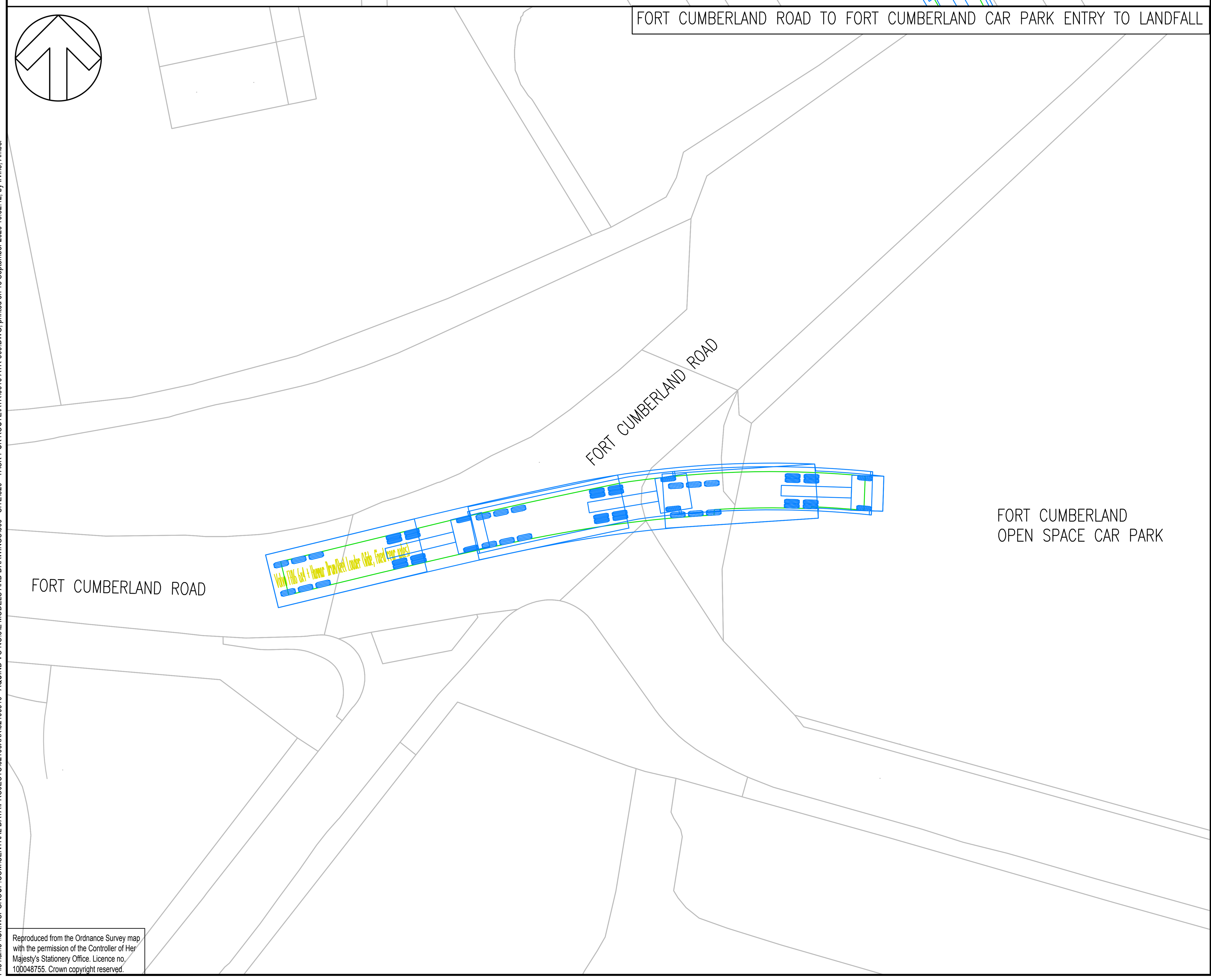
DRAWING No: 0616-ATR-202 REV: A



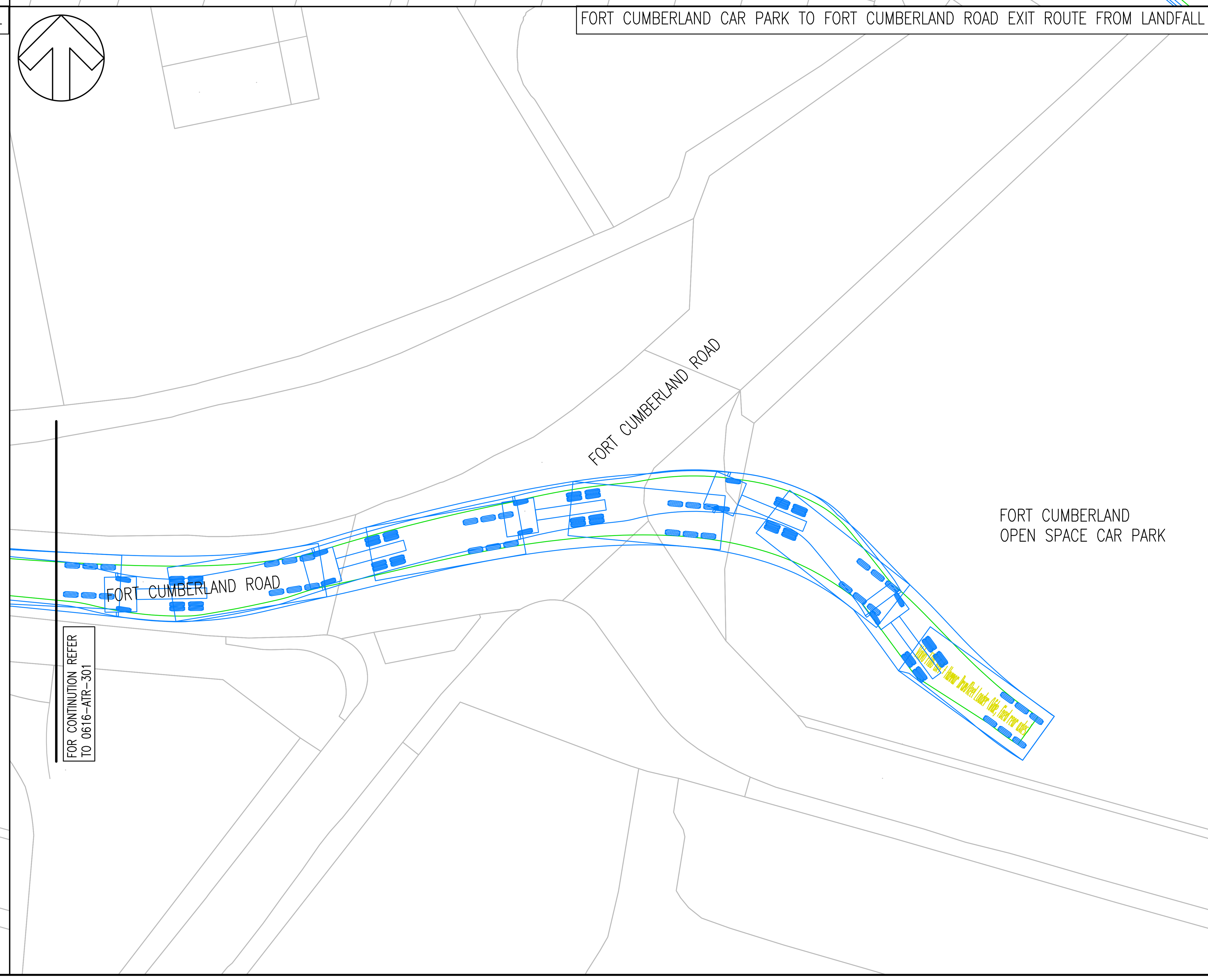
A288 MILTON ROAD / LOCKSWAY ROAD MINI–ROUNDABOUT ENTRY ROUTE TO LANDFALL



A288 MILTON ROAD / A2030 GOLDSMITH AVENUE ENTRY ROUTE TO LANDFALL



FORT CUMBERLAND ROAD TO FORT CUMBERLAND CAR PARK ENTRY TO LANDFALL

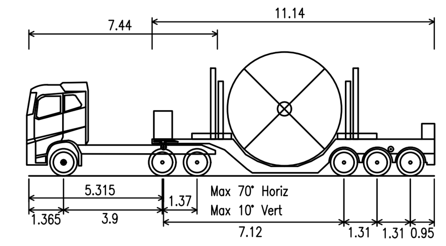


FORT CUMBERLAND CAR PARK TO FORT CUMBERLAND ROAD EXIT ROUTE FROM LANDFALL

DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
VEHICLE WHEELS

REV	DATE	BY	DESCRIPTION	CHK	APP
A	14/09/2020	AVI	FIRST ISSUE	CW	CW

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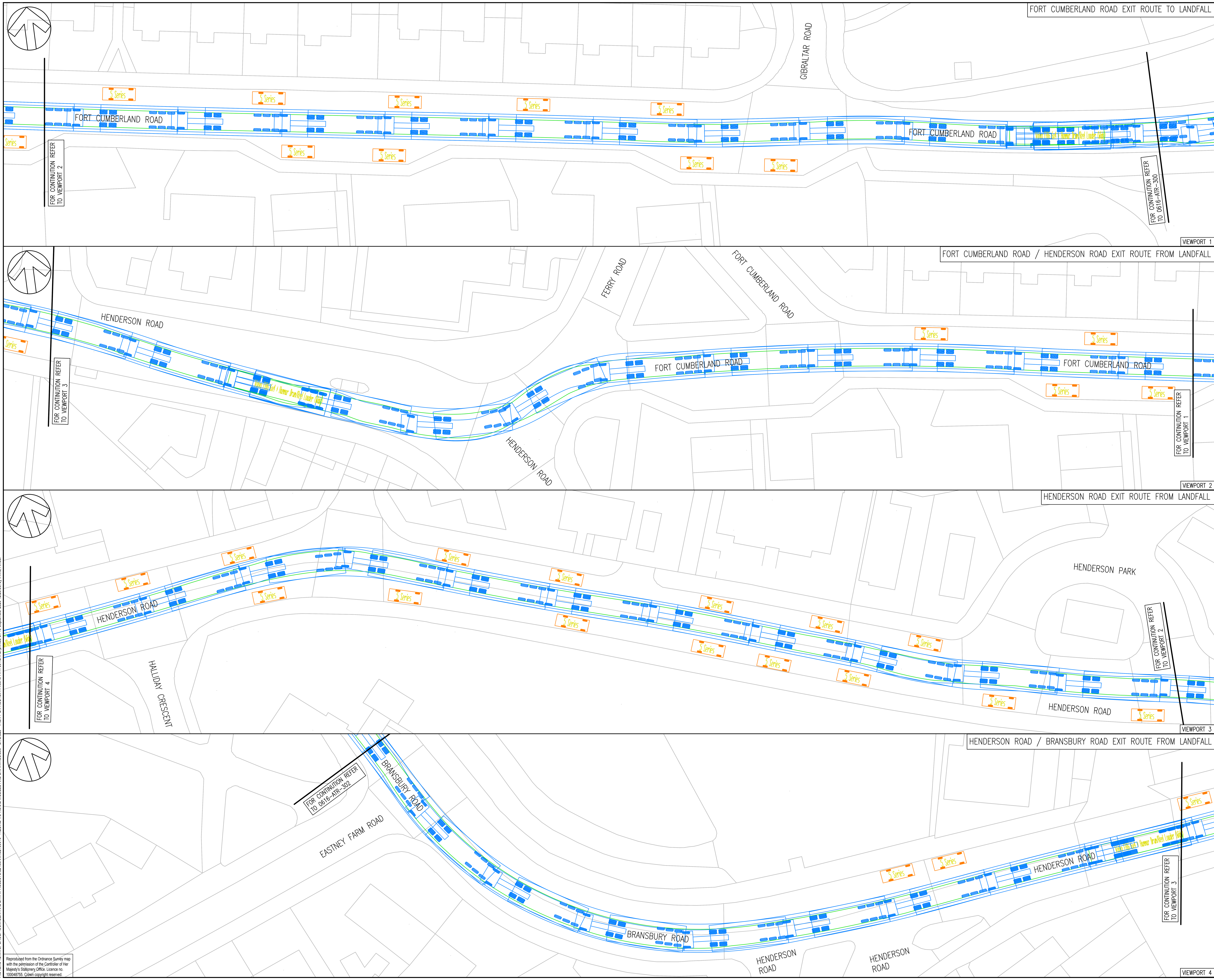
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE LANDFALL AT FORT CUMBERLAND OPEN SPACE CAR PARK (TRANSITION JOINT BAY) SHEET 1 OF 4

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-300			REV: A



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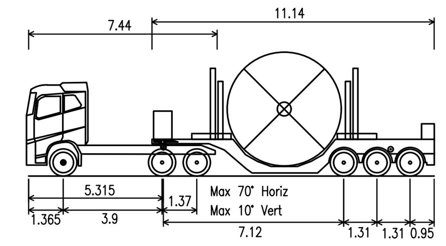
NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:

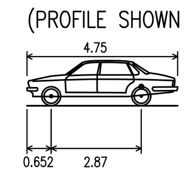


Volvo FH16 6x4 + Hammar Drum/Reel Loader

Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
REVERSE MANOEUVRE
INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series

Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE LANDFALL AT FORT CUMBERLAND OPEN SPACE CAR PARK (TRANSITION JOINT BAY) SHEET 2 OF 4

SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT NO: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20

DRAWING No:	REV:
0616-ATR-301	A

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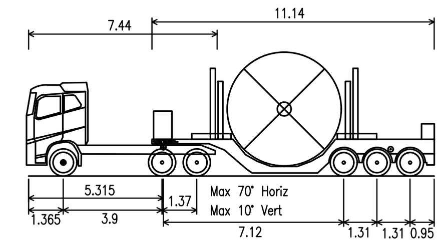
NOTES:

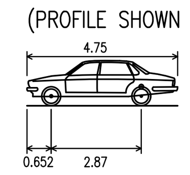
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

FORWARD MANOEUVRE
REVERSE MANOEUVRE
INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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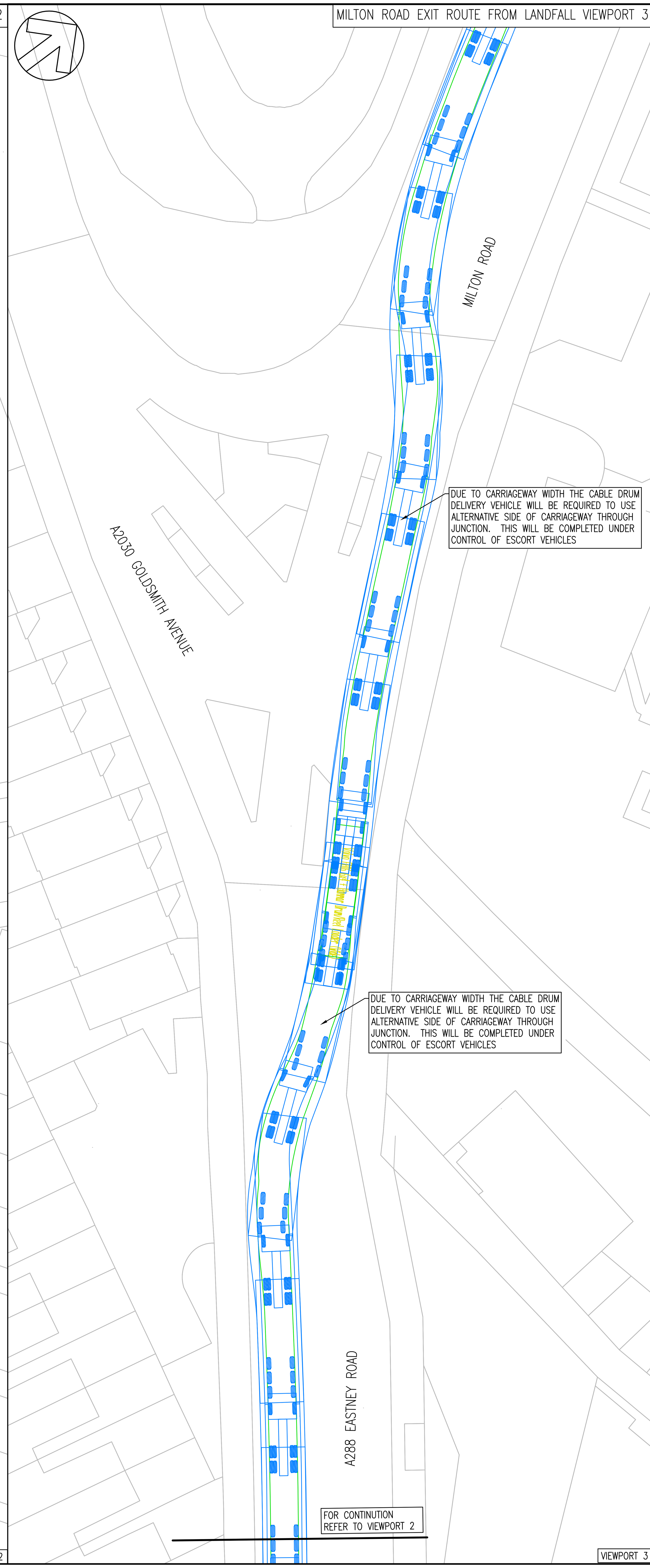
TITLE: SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE LANDFALL AT FORT CUMBERLAND OPEN SPACE CAR PARK (TRANSITION JOINT BAY) SHEET 3 OF 4

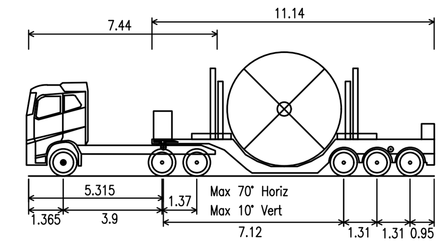
SCALE @ A1: 1:250	CHECKED: CW		APPROVED: CW
PROJECT No: 62100616	DESIGNED: -	DRAWN: AVI	DATE: September 20
DRAWING No: 0616-ATR-302			REV: A



DO NOT SCALE

NOTES:

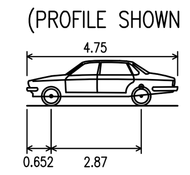
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 10mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'.
   VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- 5 Series — INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

REV	DATE	BY	DESCRIPTION	CHK	APP
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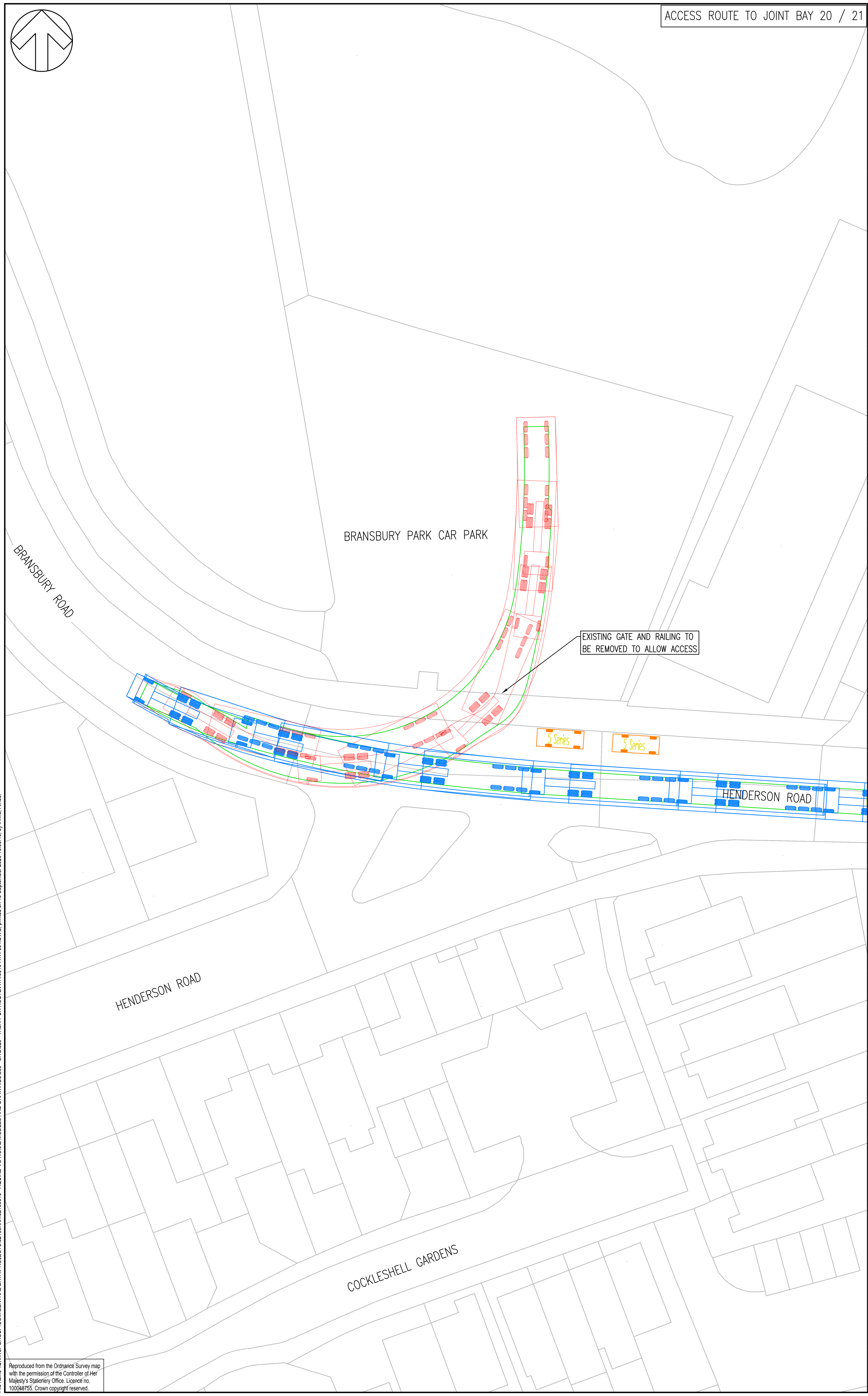
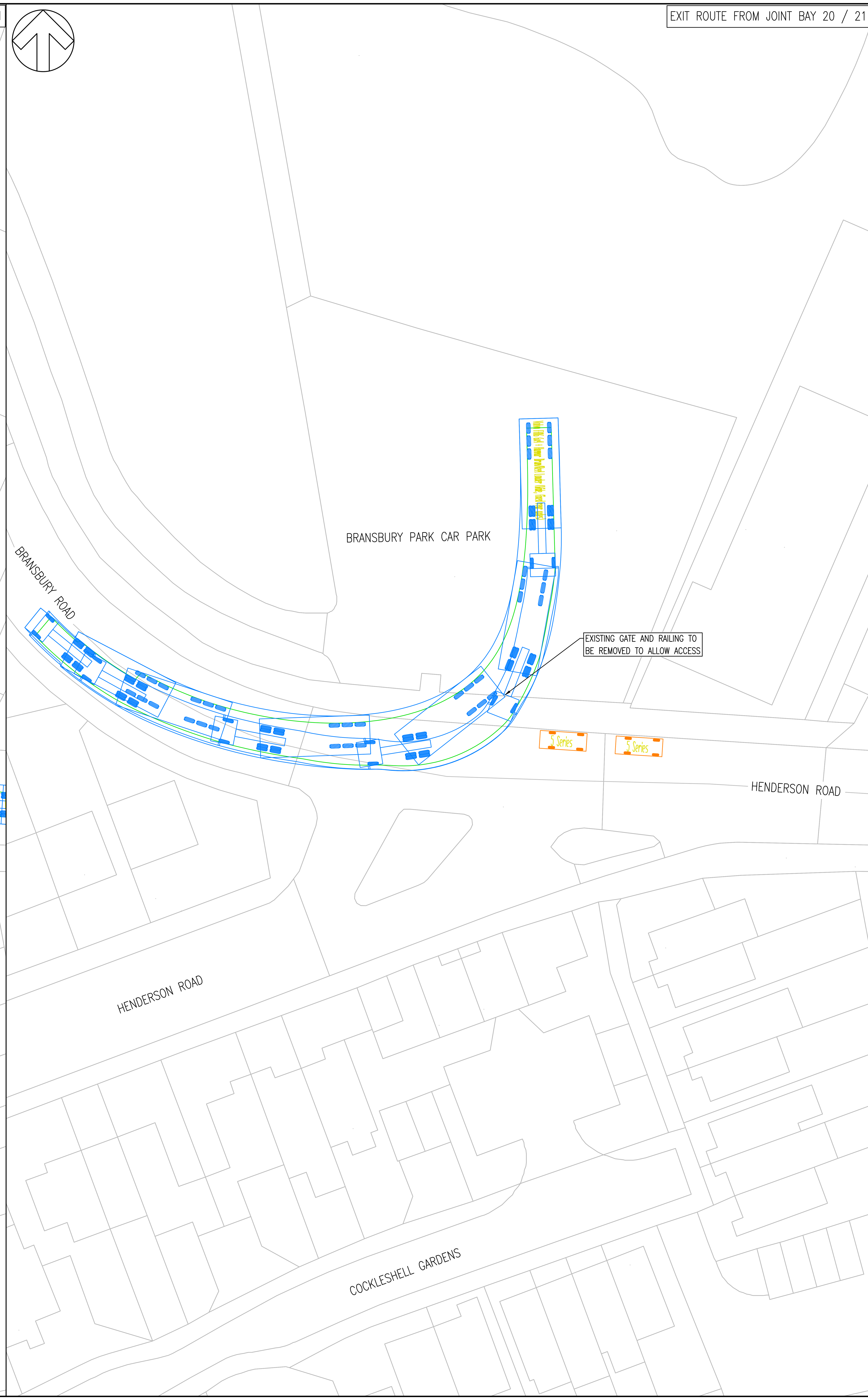
TITLE:
SWEPT PATHS OF CABLE DRUM DELIVERY VEHICLE LANDFALL AT FORT CUMBERLAND OPEN SPACE CAR PARK (TRANSITION JOINT BAY) SHEET 4 OF 4

SCALE @ A1:	CHECKED:		APPROVED:
1:250	CW		CW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
62100616	-	AVI	September 20

DRAWING No:	REV:
0616-ATR-303	A





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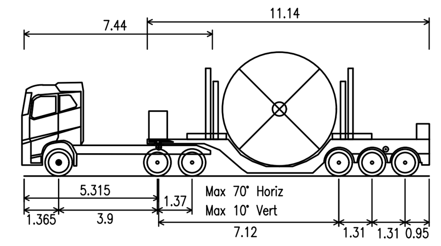
NOTES:

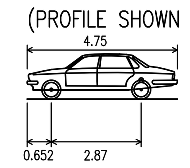
1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. A CUSTOM VEHICLE WAS CREATED TO REPRESENT THE SIZE OF PROPOSED VEHICLE 'HAMMAR 155'. VEHICLE PROFILE SHOWN BELOW FOR REFERENCE:



Volvo FH16 6x4 + Hammar Drum/Reel Loader	
Overall Length	16.005m
Overall Width	3.950m
Overall Body Height	4.902m
Min Body Ground Clearance	0.122m
Track Width	2.500m
Lock to lock time	6.00s
Wall to Wall Turning Radius	8.520m

VEHICLE TRACKING KEY:

- FORWARD MANOEUVRE
- REVERSE MANOEUVRE
- VEHICLE WHEELS
- INDICATIVE LOCATION OF ON-STREET PARKING (PROFILE SHOWN BELOW):



5 Series	
Overall Length	4.750m
Overall Width	1.800m
Overall Body Height	0.325m
Min Body Ground Clearance	0.325m
Track Width	1.700m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	6.200m

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TITLE: SWEPT PATH OF CABLE DRUM DELIVERY VEHICLES JOINT BAY 20 / 21: WITHIN BRANSBURY PARK CAR PARK EXIT MOVEMENTS

SCALE @ A1: 1:250	CHECKED: CW	APPROVED: CW
PROJECT NO: 62100616	DESIGNED: - / DRAWN: AVI	DATE: September 20

DRAWING No: 0616-ATR-304 REV: A

Appendix E – Eastern Road Traffic Assessment Technical Note

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note ERTN01 – Eastern Road Further Traffic Assessments

The Planning Act 2008

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

Document Ref: 7.8.1.11

PINS Ref.: EN020022

AQUIND Limited

AQUIND INTERCONNECTOR

Technical Note ERTN01 – Eastern Road Further Traffic Assessments

PINS REF.: EN020022

DOCUMENT: 7.8.1.11

DATE: 6 OCTOBER 2020

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DOCUMENT

Document	Technical Note ERTN01 – Eastern Road Further Traffic Assessments
Revision	001
Document Owner	WSP UK Limited
Prepared By	S. Gander / L. Jones
Date	17 August 2020
Approved By	Chris Williams
Date	17 August 2020

AQUIND

CONTENTS

TABLES

FIGURES

APPENDICES

1. INTRODUCTION

1.1.1.1. This Technical Note (ERTN01) has been prepared in response to queries raised by Portsmouth City Council (PCC) in respect to the AQUIND Interconnector DCO Application (the 'Application'). The Relevant Representation made by PCC (RR-185, received 19th February 2020) in response to the proposals stated that:

"The traffic modelling has been carried out in line with the scoping note previously submitted to and agreed by the LHA. In line with this approach, the Applicant has attempted to replicate a "worst case" scenario. However, the modelling does not cover a possible cable route along the A2030 between Tangier Road and Eastern Avenue nor does it account for cumulative residual impacts of traffic merging to pass-by works or diverting away from works. It is noted that SRTM does make an assumption as to the redirection of traffic however it does not accurately predict vehicle movements at a microscopic level and as a consequence, the overall impacts of the works are likely to be greater/wider than anticipated."

1.1.1.2. The concerns raised by PCC are addressed within this Technical Note (TN) through the following structure:

- Section 2 provides an explanation of the methodology used in the Transport Assessment (Examination Library Reference: APP-448), which assesses the impact of construction works on the A2030 Eastern Road. This section also details how this methodology was agreed with PCC during the pre-application phase, how the Transport Assessment has robustly assessed the cumulative impact of traffic redistribution across the wider network and confirms that it is not necessary to undertake a microscopic assessment of the overall impacts of the works upon the Highway Network.
- Section 3 includes analysis of baseline traffic data for the A2030 Eastern Road. This is additional analysis to that contained within the Transport Assessment and has been completed to highlight that in the context of existing traffic flows, the Sub-Regional Transport Model (SRTM) analysis of traffic management on the A2030 Eastern Road is robust.
- Section 4 provides a summary of data derived from the SRTM to show that the traffic management assessed on the A2030 Eastern Road results in a robust assessment of temporary impacts, on the A2030 Eastern Road itself and across the wider highway network.

- At the request of PCC, Section 5 includes an assessment of traffic management being located on the A2030 Eastern Road between Tangier Road and Eastern Avenue. This has been completed to provide a comparison with the impacts identified within the Transport Assessment.
- Section 6 provides a summary and conclusion to this TN, based upon the supplementary analysis completed for the A2030 Eastern Road.

1.1.1.3. Throughout this TN, the impacts identified on the A2030 Eastern Road and wider highway network are categorised as temporary. This reflects the transient nature of the construction process of the Onshore Cable Route, with no permanent impact resulting from the Proposed Development.

2. BACKGROUND AND CONTEXT

2.1. INTRODUCTION

2.1.1.1. This Section sets out the background and context for this TN, including the use of the SRTM to assess the impacts of traffic management associated with construction of the Onshore Cable Route. It also provides a summary of the relevant parts of the following documents submitted as part of the DCO Application:

- Transport Assessment (TA) (APP-448);
- Framework Traffic Management Strategy (FTMS) (APP-449); and
- Chapter 22 Traffic and Transport of the Environmental Statement (ES) (APP-137).

2.2. USE OF THE SRTM

2.2.1.1. The SRTM is a strategic transport model developed by Solent Transport (comprising Hampshire County Council, Portsmouth City Council, Southampton City Council and Isle of Wight Council). The Solent Transport website describes the SRTM as "*fully WebTAG compliant and is capable of providing outputs which can robustly support the development of transport strategies and schemes, provide information to support development of funding bids and business cases, and can inform land use strategies and development transport assessments*" (https://www.solent-transport.com/srtm), and as such it has been used successfully by the relevant Local Authorities to complete "*numerous Local Plans, major development transport assessments and transport strategies and studies*". Within Portsmouth the SRTM has already been used or will be used to provide an evidence base to the following PCC schemes:

- City Centre Road Scheme (17/02066/CS3): A major upgrade and realignment of the of the existing highway network in Portsmouth City Centre, for which the SRTM was used as part of the evidence base for the planning application;
- Portsmouth City Council new Local Plan: A Transport Assessment will be completed as part of the evidence base for PCC's new Local Plan (up to 2036), with the SRTM being used to test the impacts of potential development and identify locations and options for transport improvement works.

2.2.1.2. Further to this, as can be seen in Figure 2-1 of the SRTM Coding Note (Appendix B of the Transport Assessment, APP-448), the entirety of the Onshore Cable Corridor is included within the core "Fully Modelled Area" of the SRTM, and as such it offers the highest degree of accuracy available with regard to route choice and traffic redistribution. In addition, it should be noted that the assessment of the Traffic

Management (TM) required to facilitate construction of the Onshore Cable Route was completed only using the Road Traffic Model component of the SRTM. This excluded the use of the Main Demand Model, meaning that no changes to travel demand were estimated as a result of the construction works. Through this exclusion, the SRTM assessments provide no reduction in peak hour vehicular traffic which may have otherwise been achieved through changes in travel demand, such as the time of day trips are made or changes in mode choice (e.g. from car to train).

2.2.1.3. On this basis the Applicant views the use of the SRTM to be an acceptable and appropriate basis for the assessment of temporary impacts associated with construction of the Onshore Cable Route, noting too that it has also been considered to provide an acceptable evidence base to other historical and future PCC projects.

2.3. TRANSPORT ASSESSMENT METHODOLOGY

2.3.1.1. The Transport Assessment (TA) (APP-448) submitted as part of the Application used a combination of the SRTM and localised junction capacity assessments to fully and robustly assess the cumulative temporary impacts relating to construction of the Onshore Cable Route. The scope of the Transport Assessment was agreed with PCC (and Hampshire Country Council) prior to the assessment being carried out, as is set out in the agreed TA Scoping Note (Appendix A of TA). Such agreement was sought prior to undertaking the assessment to ensure that the methodology was considered to be robust and appropriate to assess the temporary impacts of the construction works.

2.3.1.2. As is set out in paragraph 2.9.2 of the TA Scoping Note (Appendix A of ES Appendix 22.1, APP-448), the macroscopic modelling undertaken using the SRTM assessed the temporary impacts of construction activities on traffic flows across the highway network as a result of traffic redistribution. This macroscopic modelling was supplemented by additional junction capacity models where appropriate to assess the implications of the SRTM modelling and temporary impacts of the proposed construction works at an individual junction / TM location level. The scope of junction capacity assessments was also agreed within PCC, with further details of junction selection provided in section 2.3.3 below.

2.3.2. ASSESSED TRAFFFIC MANAGEMENT LOCATION WITHIN THE SRTM

2.3.2.1. As with the TA Scoping Note, the SRTM Coding Note (Appendix B of ES Appendix 22.1, Examination Library Reference: APP-448) was also agreed with PCC prior to the running of the SRTM model.

2.3.2.2. The SRTM coding approach, as is stated in paragraph 1.10.3.4 of the TA (APP-448), included six TM locations at various points on the Onshore Cable Corridor. The six TM locations agreed are reflective of the maximum number of six construction gangs that may be in place on the highway in connection with the construction of the Onshore Cable Route at any one time. The six modelled TM locations are set out in paragraph 1.10.3.4 of the TA and are repeated here for ease of reference:

- 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.

2.3.2.3. As is stated in paragraph 1.10.3.3. of the TA, the six TM locations modelled were agreed for use within the SRTM as they were assumed to represent a robust scenario of TM requirements. For reference the email correspondence with PCC on the TA Scoping Note is included in **Appendix 1** of this TN.

2.3.2.4. The SRTM was run for three scenarios described in the table below:

Table 1 - SRTM Scenarios

Scenario Year and Name	Scenario details
2026 Do Minimum (DM)	Base future year, as modelled with no interventions. This scenario is included for comparative purposes.
2026 Do Something 1 (DS1)	Traffic Management is in place on the six specified locations but on the A2030 Eastern Road a lane **closure applies to the southbound carriageway** only.

Scenario Year and Name	Scenario details
2026 Do Something 2 (DS2)	Traffic Management is in place on the six specified locations but on the A2030 Eastern Road a lane **closure applies to the northbound carriageway** only.

2.3.3. JUNCTION CAPACITY ASSESSMENTS INCLUDED WITHIN THE TA

2.3.3.1. Within the TA Scoping Note the following junctions within Portsmouth, but outside of the Order Limits, were agreed with PCC to require local junction capacity assessments to be included within the TA. The inclusion of these further junctions was based upon the Applicant's professional judgement of the potential temporary impacts resulting from the construction of the Onshore Cable Route on A2030 Eastern Road. The junctions proposed for local junction capacity assessments were:

- A2030 Velder Avenue / Milton Road traffic signal junction;
- Burrfields Road / Copnor Road traffic signal junction;
- Norway Road / Copnor Road traffic signal junction;
- Milton Road / St Marys Road roundabout;
- A27 / A3 Portsbridge roundabout; and
- A3 Mile End Road / Church Street / Hope Street / Commercial Road roundabout.

2.3.3.2. These assessments were completed to fully consider the interaction of traffic flow at an individual junction location, thereby providing a detailed analysis of the cumulative effects of the construction works.

2.3.3.3. Following on from this and further to an initial review of the SRTM outputs, an assessment was completed at all junctions that were part of the classified or key distributor highway network within PCC. A specific Technical Note was prepared by the Applicant and issued to all relevant parties. This Note is provided at **Appendix 2**. Following further discussions and in agreement with PCC, additional junctions were identified for junction capacity assessments where:

- There was a 10% of greater increase in traffic flow on any junction approach between the DM and DS1 or DS2 scenarios; and
- The volume to capacity ratio for the junction approach was over 100% in the DS1 or DS2 scenarios.

2.3.3.4. This test identified the following junctions should be included within the TA and subject to local junction capacity assessments beyond those identified in the TA Scoping Note:

- A3 Southampton Road / A3 London Road / Spur Road / Havant Road roundabout;
- Stubbington Avenue / A2047 / Gladys Avenue / Angerstien Road mini-roundabout;
- Burrfields Road / Moneyfield Avenue / Dundas Lane roundabout; and
- A2030 Eastern Road / Hayling Avenue priority junction.

2.3.3.5. The Applicant therefore maintains the position that the methodology agreed with PCC has considered a sufficient cordon of the highway network to allow a sufficiently robust assessment of the cumulative temporary impacts of the proposals. This has been completed through the cumulative impacts identified by the SRTM being assessed at specific and agreed locations by the completion of local junction capacity assessments. Accordingly, it remains the view of the Applicant that the highway implications of the Onshore Cable Route construction have been satisfactorily assessed and it is not therefore necessary to undertake a microscopic assessment of the construction works on the A2030 Eastern Road.

2.3.3.6. FRAMEWORK TRAFFIC MANAGEMENT STRATEGY

2.3.3.7. This TN should also be reviewed in the context of the proposed traffic management strategy and associated mitigation measures set out in the FTMS, given that this will provide the mitigation for the traffic and transport effects of the Onshore Cable Route construction.

2.3.4. OVERALL STRATEGY OF FTMS

2.3.4.1. The FTMS 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.

2.3.4.2. 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 and which will need to be agreed with each relevant highway authority.

2.3.5. RESPONSIVE TRAFFIC MANAGEMENT PROTOCOL

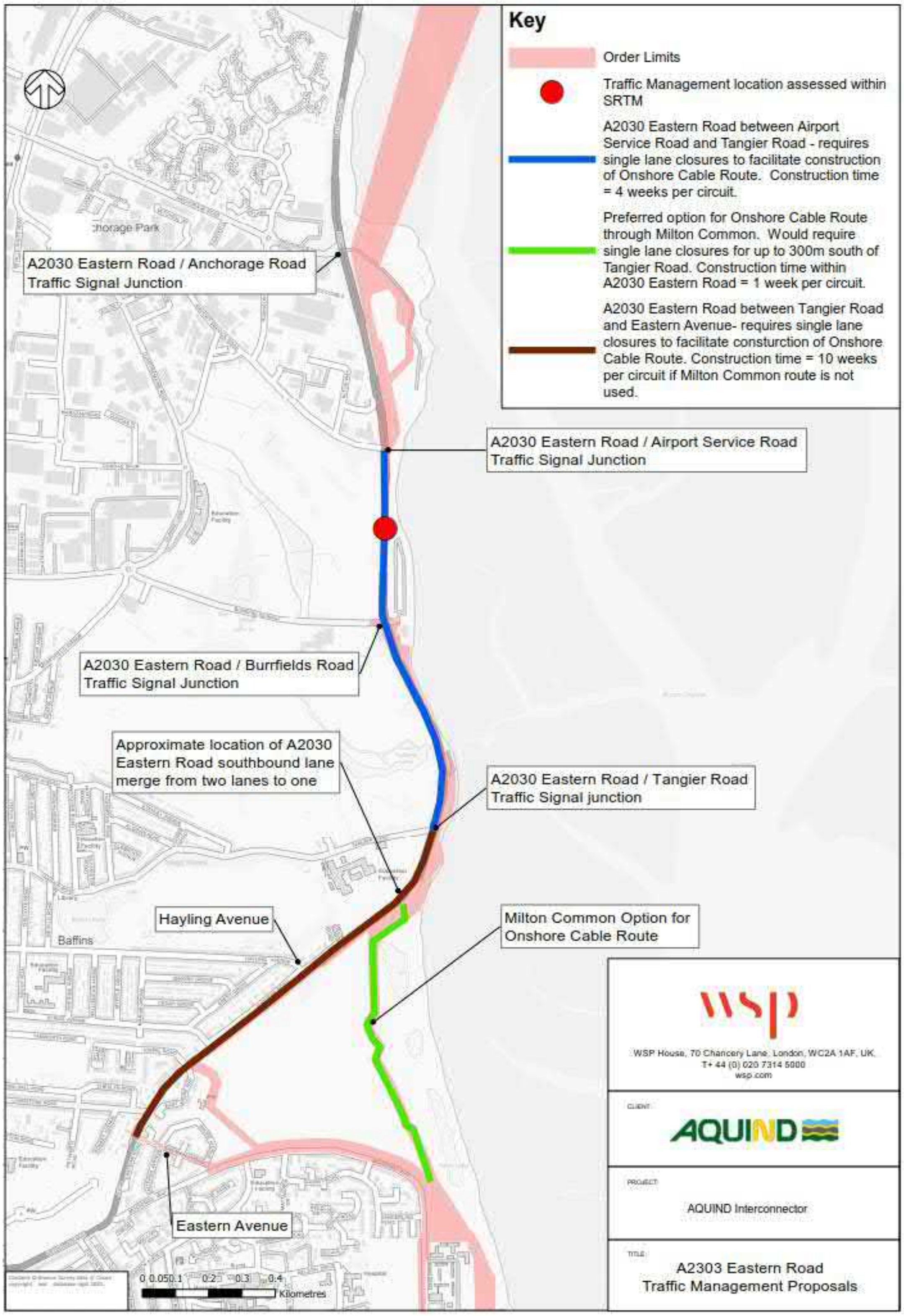
2.3.5.1. Section 2.12 of the FTMS gives further details of the proposed 'live' and responsive nature of the strategy. Within Section 2.12 it is proposed that there will be a continuous liaison with both HCC and PCC in order to ensure an approved Traffic Management Strategy (TMS) can be amended where required to reflect traffic conditions and events such as road traffic impacts which may impact upon the construction works or the capacity of the highway network surrounding the Onshore Cable Corridor.

2.3.5.2. It is specifically noted in paragraph 2.12.1.2 of the FTMS that the dynamic nature of the strategy is fundamental in respect to the proposed works on A2030 Eastern Road, which is sensitive to changes in traffic flow as one of the three routes to / from Portsea Island.

2.3.6. PROPOSED TRAFFIC MANAGEMENT ON A2030 EASTERN ROAD

2.3.6.1. A summary of the FTMS proposals for the A2030 Eastern Road is illustrated on Figure 1.

Figure 1 - A2030 Traffic Management Proposals



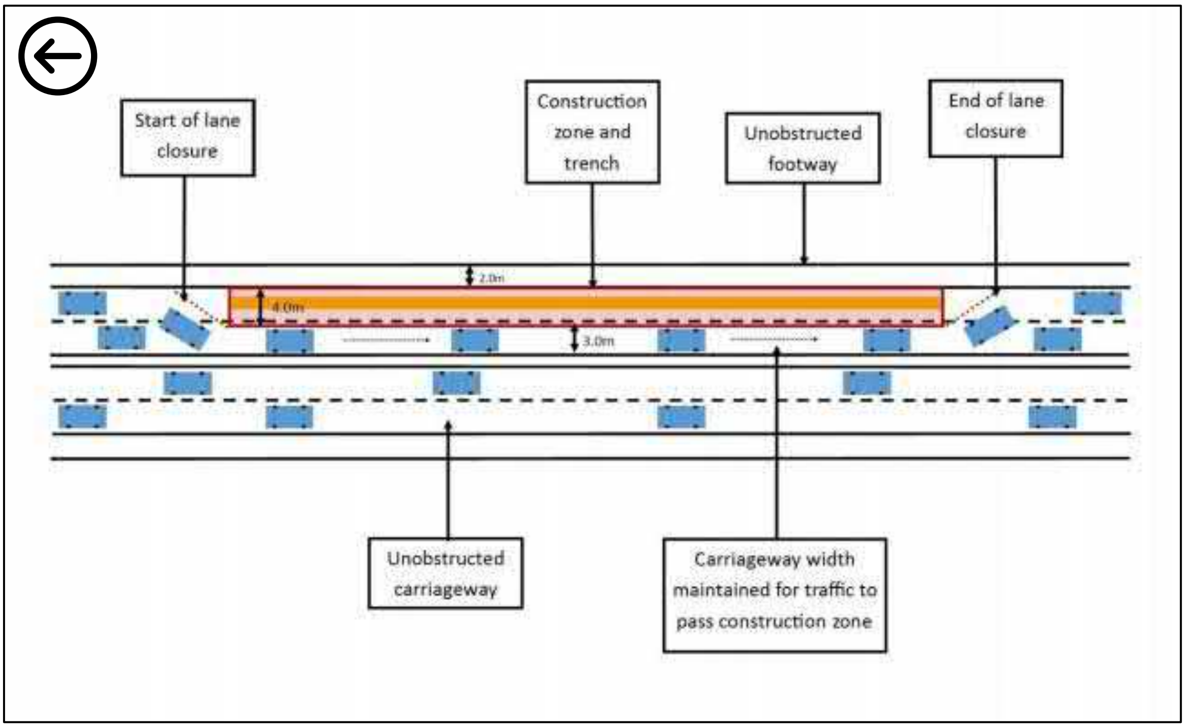
Proposed Traffic Management

2.3.6.2. 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 (APP-449). These proposals are reproduced below for context:

"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)"

Figure 2 – Plate 3 of FTMS – 'Lane Closure without Shuttle Working Traffic Signals' (Examination Library Reference: APP-448)



2.3.6.3. Specifically, in relation to A2030 Eastern Road past Milton Common, the FTMS (APP-448) included three separate Traffic Management (TM) 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. A lane closure on the southbound carriageway at this location will move the existing lane merge northwards by a minimum of 50 m and a maximum of 300 m from its current location as a result of the TM. South of this location both circuits will be installed within Milton Common.
- **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).
- **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.

2.3.6.4. 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 TM required to facilitate construction either relocating the existing lane merge or re-providing the southbound lane as part of a contra-flow arrangement.

Total Duration and Programme of Works

2.3.6.1. 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 also includes 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 close proximity to one another. 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.

2.3.6.2. As with all construction works, the duration is a temporary and the works will not be a permanent feature on the A2030 Eastern Road.

2.4. ENVIRONMENTAL STATEMENT CHAPTER 22 – TRAFFIC AND TRANSPORT

2.4.1.1. The assessment of likely significant effects reported within Chapter 22 - Traffic and Transport of the Environmental Statement (ES) (Examination Library Reference: APP-137) provided an assessment of effects as a consequence of Traffic Delay both along the Onshore Cable Corridor and across the wider study area.

2.4.1.2. The wider study area included all highway links where traffic flows were predicted to increase by more than 30% and any specifically sensitive areas where traffic flows were predicted to increase by 10% or more. Table 2 provides a summary of likely significant effects reported within Section 7 and 8 of Chapter 22 to the ES in relation to traffic delay.

Table 2 – Summary of likely significant effects

Location	Reported Effect
A2030 Eastern Road / Anchorage Road traffic signal junction	Moderate to Minor adverse effect
A2030 Eastern Road / Airport Service Road traffic signal junction	Moderate to Minor adverse effect
A2030 Eastern Road / Burrfields Road traffic signal junction	Moderate adverse effect
A2030 Eastern Road / Tangier Road	Moderate adverse effect
A2030 Eastern Road between Airport Service Road and Tangier Road	Major to Moderate adverse effect
A2030 Eastern road between Tangier Road and Eastern Avenue	Major to Moderate adverse effect (if construction is within carriageway)
Norway Road / Copnor Road traffic signal junction	Negligible adverse effect
Copnor Road / Burrfields Road traffic signal junction	Major to Moderate adverse effect
Stubbington Avenue / Gladys Avenue / Angerstein Road roundabout	Negligible adverse effect
Burrfields Road / Moneyfield Avenue / Dundas Lane roundabout	Negligible adverse effect
Airport Service Road (between Dundas Lane and A2030 Eastern Road)	Minor adverse effect

Location	Reported Effect
Dundas Lane (Airport Service Road and Quartremaine Road)	Moderate adverse effect
A3 Mile End Road / Church Street / Hope Street / Commercial Road roundabout	Major to Moderate adverse effect
Milton Road / St Marys Road	Negligible adverse effect

2.4.1.3. All of the likely significant effects will be experienced for a temporary period only whilst the works in the relevant location are carried out. As can be seen from the above table, Major to Moderate effects are shown at certain locations on the A2030 Eastern Road on a temporary basis.

2.4.1.4. In response to PCC's Relevant Representation, an assessment of the likely significant effects as a consequence of TM located on the A2030 Eastern Road has been completed as part of the DCO submission, as summarised above and detailed in Section 7 and 8 of Chapter 22 of the ES.

2.5. SUMMARY

2.5.1.1. This section has showed how the agreed methodology is appropriate for assessing the impacts of construction of the Onshore Cable Route. It has shown how the traffic impacts were assessed on a macroscopic level using the SRTM, as agreed with PCC, before the implications of this modelling were assessed at the local level through the use of individual junction capacity assessments, TM location and link based assessments.

3. OBSERVED TRAFFIC CONDITIONS

3.1. INTRODUCTION

3.1.1.1. This section reviews the observed traffic flow data collected via traffic surveys on A2030 Eastern Road to demonstrate existing traffic conditions and establish the baseline for all subsequent assessment on this link. In doing so, it will also demonstrate why it was more robust to model temporary TM on the A2030 between Burrfields Road and Airport Service Road, rather than on the link between Tangier Road and Eastern Avenue.

3.2. DATA CORRECTIONS

3.2.1.1. Following the DCO submission, an error in summation in the tables included in Section 1.5 of the TA (Examination Library Reference: APP- 448), entitled "*Existing conditions – local highway network*" was identified. This Technical Note contains a correction to this erroneous data which supersedes the submitted data to the extent set out in Table 3.

3.2.1.2. For the avoidance of further doubt, the full set of traffic survey results for the A2030 Eastern Road is included in **Appendix 3** of this Technical Note.

Table 3 - Data corrections

Historic data reference (including Examination Library reference)	Corresponding superseding data reference
Table 23 "*A2030 Eastern Road (1) – Average Weekday Flows"* ES Appendix 22.1 (Transport Assessment) (Examination Library Reference: APP- 448)	Table 5 and Table 6 of this TN
Table 24 *"A2030 Eastern Road (2) – Average Weekday Flows"* ES Appendix 22.1 (Transport Assessment) (Examination Library Reference: APP- 448)	Table 5 and Table 6 of this TN
Table 27 "A2030 Eastern Road (5) – Average Weekday Flows" ES Appendix 22.1 (Transport Assessment) (Examination Library Reference: APP- 448)	Table 5 and Table 6 of this TN

3.3. OBSERVED TRAFFIC FLOWS

3.3.1.1. During the preparation of the TA, Automated Traffic Count surveys (ATCs) were undertaken at four locations on the A2030 Eastern Road to support the understanding of existing traffic flows on this link.

3.3.1.2. Details of the traffic surveys are included in Table 4, with a map showing their locations included at Figure 3 - ATC locations

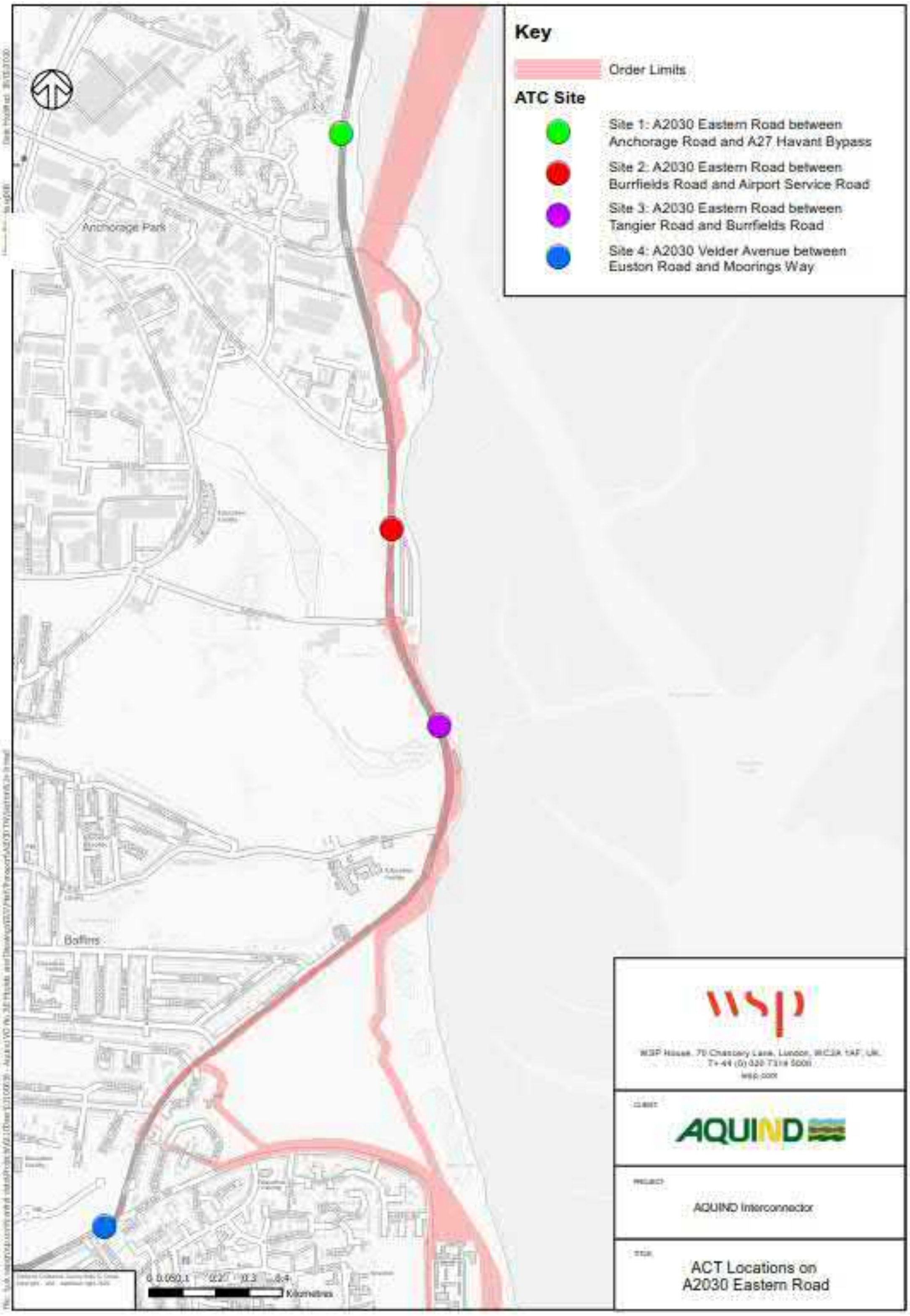
Table 4 – ATC Survey Information

Site	ATC location	Date undertaken	Duration
1	A2030 Eastern Road between Anchorage Road and A27 Havant Bypass	June 2018	7 days
2	A2030 Eastern Road between Burrfields Road and Airport Service Road	July 2019	7 days
3	A2030 Eastern Road between Tangier Road and Burrfields Road	June 2018	7 days
4	A2030 Velder Avenue between Euston Road and Moorings Way	June 2018	7 days

3.3.1.3. Sites 1 and 4 do not fall directly within the Order Limits, however, as can be seen in Figure 3 below, Site 1 and Site 4 are located in proximity to the Order Limits, with Site 1 850m to the north and Site 4 300m to the south. Due to the proximity to the Order Limits and the nature of the A2030 Eastern Road as an arterial route between the A27 and southern areas of Portsea Island, the flows at Site 1 and Site 4 are indicative of the flows on the parts of the A2030 Eastern Road which are included in the Order Limits.

3.3.1.4. Traffic flow information from Site 1 and Site 4 has been used within this TN, alongside those at Sites 2 and 3 located within the Order Limits, to demonstrate how the traffic on the A2030 Eastern Road differs across different sections of the link.

Figure 3 - ATC locations



3.3.1.5. A summary of northbound and southbound traffic flows for the AM and PM peak hours (08:00-09:00 and 17:00-18:00) taken from the ATCs are included respectively in Table 5 and Table 6 below. The traffic flows are averages derived from the five weekdays surveyed and are presented alongside the percentage of link capacities for each location. The link capacities have been derived from TA79/99 Traffic Capacity of Urban Roads (DRMB, Volume 5, Section 1, Part 3), which within Table A1 and A2 provides capacities or different road types in one-way hourly flows.

3.3.1.6. It is noted that TA 79/99 was withdrawn in the most recent update to the DMRB. As this document was withdrawn without replacement in Spring 2020, and in lieu of any suitable alternative guidance, use of it is considered to remain the most suitable means of assessing highway link capacities.

NORTHBOUND

Table 5 – Northbound Observed Peak Traffic Flows

Site	Location	Link Capacity (one-way per hour)	AM	Volume / Capacity (%)	PM	Volume / Capacity (%)
1	A2030 Eastern Road between Anchorage Road and A27 Havant Bypass	3,050	1,495	49%	1,615	53%
2	A2030 Eastern Road between Burrfields Road and Airport Service Road (Location of TM within SRTM assessment)	3,050	1,201	39%	908	30%
3	A2030 Eastern Road between Tangier Road and Burrfields Road	3,600	1,048	29%	734	20%
4	A2030 Velder Avenue between Euston Road and Moorings Way	2,100	1,001	48%	845	40%

3.3.1.7. As can be seen from the data set out above, in the AM peak, northbound traffic flows recorded for the two Sites further south (Sites 3 and 4) are broadly similar and lower than those recorded further north on the A2030 Eastern Road (Sites 1 and 2). In the PM peak, traffic flows are highest at Site 1 and 2 and there is only a slight reduction at the Sites further south. Site 2, where the TM has been assessed within the SRTM has the has the highest volume to capacity ratio of the Sites located within the Order Limits, therefore identifying that a robust assessment has been undertaken when considering observed northbound traffic flows on the A2030 Eastern Road and the impacts of the introduction of TM measures.

SOUTHBOUND

Table 6 - Southbound Observed Peak Traffic Flows

Site	Location	Link Capacity (one-way per hour)	AM	Volume / Capacity (%)	PM	Volume / Capacity (%)
1	A2030 Eastern Road between Anchorage Road and A27 Havant Bypass	3,050	2045	67%	2106	69%
2	A2030 Eastern Road between Burrfields Road and Airport Service Road (Location of Traffic Management within SRTM assessment)	3,050	1306	43%	1819	60%
3	A2030 Eastern Road between Tangier Road and Burrfields Road	3,600	1014	28%	492	14%
4	A2030 Velder Avenue between Euston Road and Moorings Way	2,100	895	43%	1020	49%

3.3.1.8. As with the northbound data, the southbound traffic flows set out in Table 6 see a decrease in traffic flows further south on the A2030 Eastern Road in the AM peak, with Site 2 having the highest volume to capacity percentage of the locations included within the Order Limits at 43%. In the PM peak, Site 1 and 2 have a significantly higher traffic flow than Site 3 and 4, with Site 2 again experiencing the highest volume to capacity ratio within the Order Limits.

3.3.1.9. The observed traffic flows at Site 3 however should be treated with caution. Guidance set out by MetroCount[1], a manufacturer of ATC counters, states that the quality of traffic count data can be directly impacted at a Site where vehicles are likely to be decelerating or stopping on the counter points. As such, whilst ATCs are the most appropriate industry standard method for collecting traffic flows, the data at this Site in the PM peak may lack reliability due to the lane merge from two lanes into one approximately 400m south of the Eastern Road / Tangier Road traffic signal junction. This lane merge reduces the capacity of the A2030 Eastern Road at this location, leading to a reduction in traffic flow and approaching vehicle speeds.

3.3.1.10. This caution is validated by the average speed captured by the ATC on the southbound carriageway at Site 3. This Site saw a five-weekday average speed during the PM hour peak of 7mph, compared to the five-day average speed for the 24 hour period, which was 40mph.

3.3.1.11. As such, it is likely that the traffic flows captured at Site 4 are a more accurate representation of traffic volume on the southern section of A2030 Eastern Road during peak hours.

ESTIMATED VOLUME TO CAPACITY OF A2030 EASTERN ROAD SOUTHBOUND CARRIAGEWAY ADJACENT TO MILTON COMMON

3.3.1.12. Further to the review of peak hour ATC data, the volume to capacity ratio has been calculated for the A2030 Eastern Road southbound carriageway adjacent to Milton Common where there is only one lane. This has been completed to assess the existing operation of the link where it has a lower capacity than Site 1, 2 or 3.

3.3.1.13. It should be noted that this assessment has been undertaken only for the southbound carriageway as a result of the northbound carriageway in this location providing two lanes. This means that there is no lane merge on the northbound carriageway which would impact upon traffic speeds and flow, and thus the observed survey data set out above is considered reliable.

[1] http://metrocount.com/downloads/flyers/RoadPodVT-OperatorGuide.pdf

3.3.1.14. The section of the A2030 Eastern Road which is south of the merge down from two lanes to one lane can be categorised as UAP2 as per the guidance set out in TA79/99 given its 40mph speed limit, side road accesses and at-grade pedestrian crossings. Such link types have an estimated capacity of 1,650 vehicles per hour and this has been used to estimate volume to capacity ratio of the link as set out in Table 7.

Table 7 - Volume to Capacity of A2030 Eastern Road southbound adjacent to Milton Common (south of the merge)

Site	Location	Link Capacity (one-way per hour)	AM	Volume / Capacity (%)	PM	Volume / Capacity (%)
3a	A2030 Eastern Road adjacent to Milton Common (single lane section south of the merge)	1650	895	54%	1,020	62%

3.3.1.15. This assessment produces an estimated volume to capacity of 54% in the AM peak and 62% in the PM peak for the A2030 single lane section adjacent to Milton Common, which is higher than for Site 2 (43% in the AM peak and 60% in the PM peak) where the TM was assessed within the SRTM. The northbound volume to capacity ratios at this location, as shown in Table 5, are lower than Site 2 at 29% for the AM peak and 20% for the PM peak.

3.3.1.16. Whilst the single lane section of the A2030 Eastern Road southbound carriageway is estimated to have a higher V/C in the baseline environment than the TM location assessed within the SRTM, the implementation of TM on the single lane section will be less impactful. This is because the proposed TM strategy for this location continues to provide one lane in the southbound direction in all options for the Onshore Cable Route (as discussed in Section 2). As such whilst the capacity may be impacted by the TM due to reduced traffic speeds, this will be to a lesser extent than locations further north, where the TM strategy requires the closure of one lane of traffic, thereby halving the existing capacity of the link.

3.3.1.17. This therefore validates that the assessed TM location on A2030 Eastern Road between Airport Service Road and Burrfields Road is representative of a more robust scenario than had the TM been modelled south of the merge.

WEEKDAY 24 HOUR TRAFFIC FLOW PROFILES

3.3.1.18. Included in Figure 4 and Figure 5 respectively are the northbound and southbound 24 hour weekday (Monday – Friday) traffic flow profiles for the four ATC traffic sites discussed above. The traffic flows presented are average hourly flows derived from the five weekdays surveyed.

Figure 4 - 24-hour weekday traffic flow profile for A2030 Eastern Road northbound

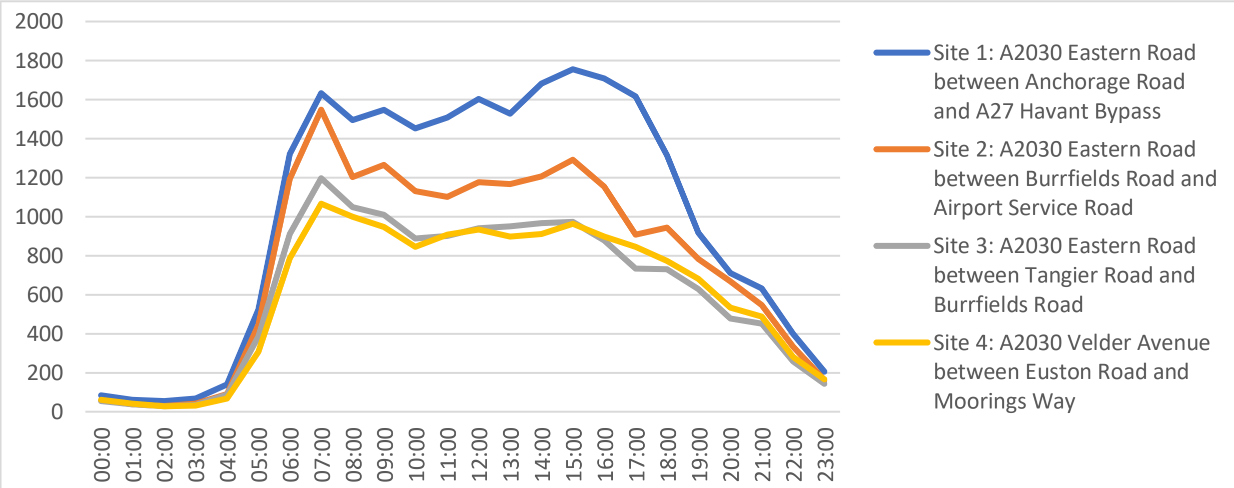
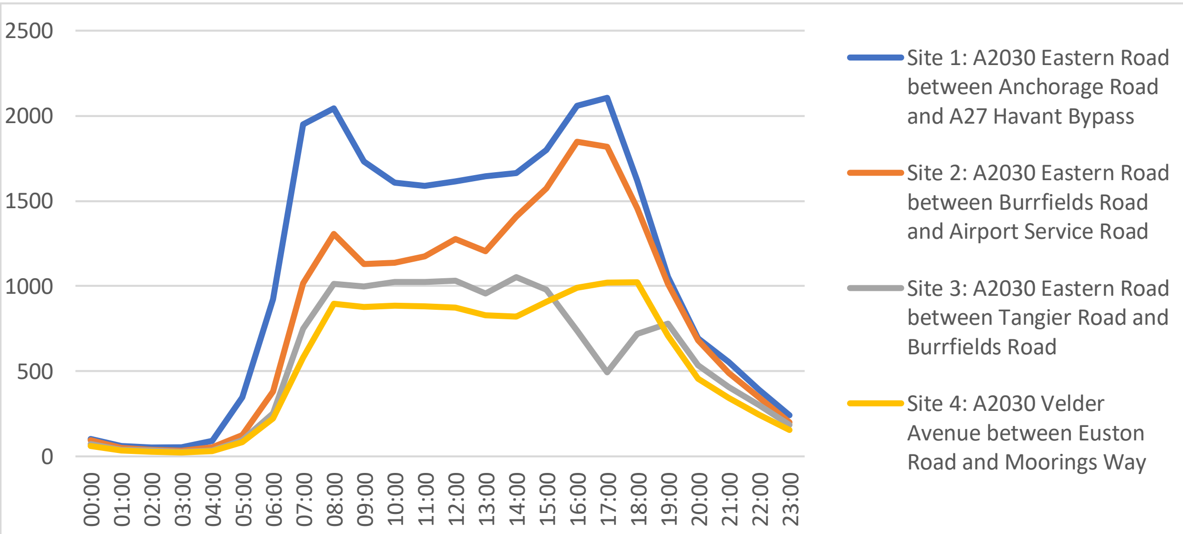


Figure 5 - 24-hour weekday traffic flow profile for A2030 Eastern Road southbound



3.3.1.19. As can be seen in Figure 4 and Figure 5, the 24 hour weekday flow profiles for the three ATC Sites on the A2030 Eastern Road show broadly the same pattern as those seen in the AM and PM peak periods, with traffic flows typically decreasing further south on the road.

3.3.1.20. As is discussed above, the main departure from this trend is the lower traffic flows at Site 3 in the PM peak on the southbound carriageway, although this follows a similar trend to the other Sites over the rest of the 24-hour period.

3.3.1.21. It is again noted that the lower levels of traffic counted at Site 3 on the southbound carriageway indicate congestion in the PM peak at this location. This congestion is associated with the merge from two lanes down to one just south of this location, coupled with the tidal nature of traffic on this road which typically sees the high volumes of traffic heading southbound into Portsmouth in the PM peak.

3.3.1.22. With regard to establishing a baseline condition for this road, the data presented above indicates that the southbound carriageway of the A2030 Eastern Road on a weekday is typically characterised by congestion and queueing associated with the existing lane merge located south of the A2030 Eastern Road / Tangier Road traffic signal junction. This is therefore considered normal conditions for drivers using this route in the PM peak.

WEEKEND 24 HOUR TRAFFIC FLOW PROFILES

3.3.1.23. Further to the analysis of the weekday traffic flows on the A2030 Eastern Road set out above, analysis of the average 24-hour flow profiles for the weekend has also been undertaken. This analysis has been undertaken given the possibility of seven-day working weeks during the construction phase of the proposals on the A2030 Eastern Road to minimise the total duration of construction time on this link, and to minimise as far as practicably possible disruption to the travelling public.

3.3.1.24. The 24 hour flow profiles for the A2030 Eastern Road travelling northbound and southbound can be seen respectively in Figure 6 and Figure 7. The flows presented are average hourly flows derived from the two weekend days surveyed.

Figure 6 - 24-hour weekend traffic flow profile for A2030 Eastern Road northbound

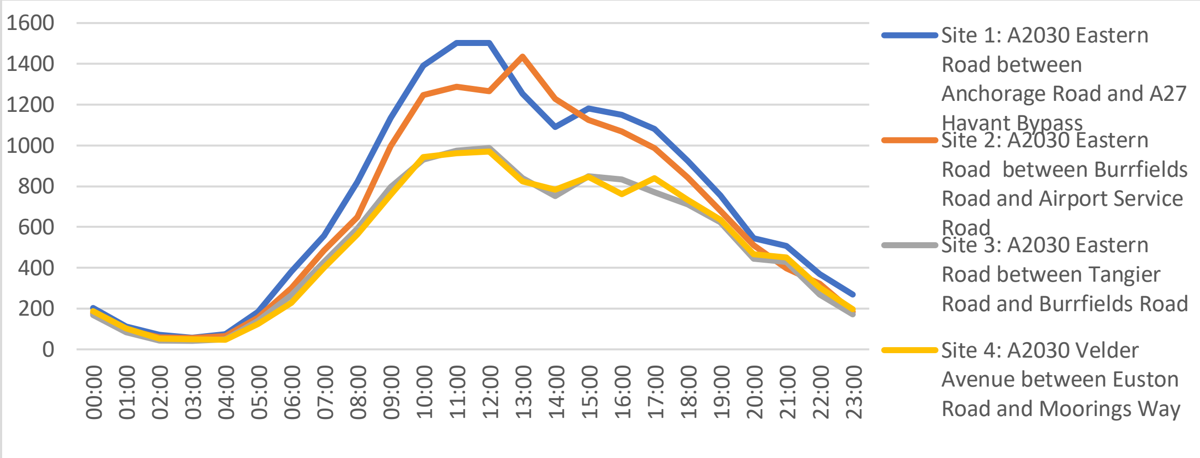
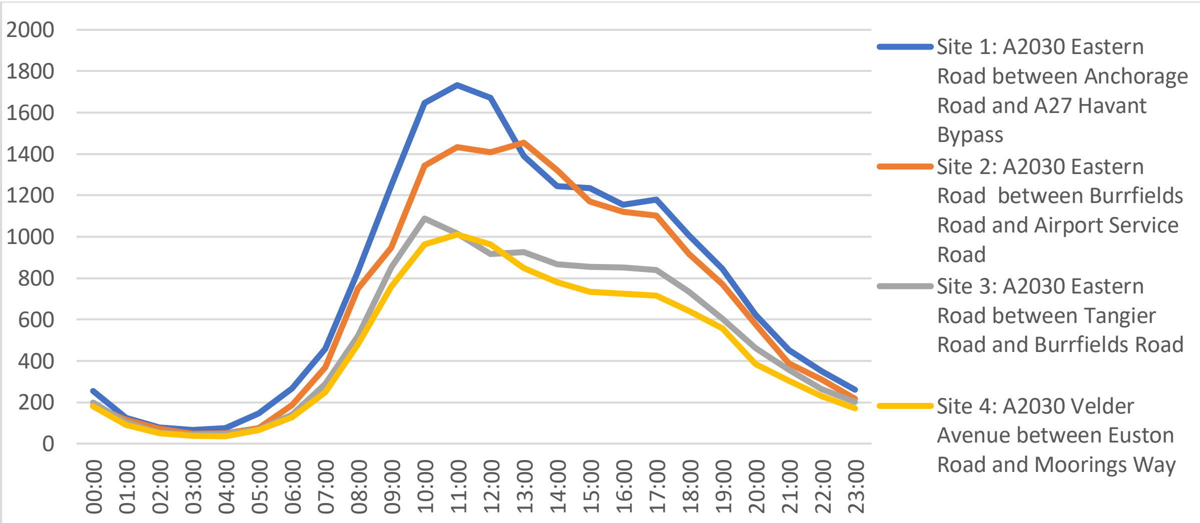


Figure 7 - 24-hour weekend traffic flow profile for A2030 Eastern Road southbound



3.3.1.25. The data profiles provided demonstrate that traffic flows on the A2030 Eastern Road do not show the same level of peak traffic flow during the weekend survey period in comparison to the weekday average. For the northbound carriageway, the weekend peak saw the highest average hourly traffic flow of 1,503 vehicles at Site 1, whilst the weekday peak on the same carriageway saw 1,755 vehicles. Similarly, the highest average traffic flow seen in any one hour on the weekend on the southbound carriageway was of 1,733 vehicles at Site 1, whilst on the weekday average, this figure was 2,106. This means that the weekday periods assessed within the SRTM provide a robust assessment of temporary impacts for weekend periods where levels of traffic are lower.

3.3.1.26. In general the traffic flows included in Figure 6 and Figure 7 show a similar trend with traffic flows decreasing in survey locations further south. As was noted for the weekday traffic flows, the highest flows on the A2030 Eastern Road at the weekend were seen at Site 1, outside of the Order Limits.

3.4. SUMMARY OF BASELINE TRAFFIC DATA

3.4.1.1. The review of baseline traffic data has shown that observed traffic flows and volume to capacity ratios on the A2030 Eastern Road within the Order Limits where the proposed Onshore Cable Route works will be undertaken are highest at the location which will be the most impacted by the proposed TM, between Airport Service Road and Burrfields Road.

3.4.1.2. The single lane section of A2030 Eastern Road is estimated to have a higher volume to capacity ratio in comparison to the two-lane section between Airport Service Road and Burrfields Road. However, the two-lane section was chosen for assessment within the SRTM as the impact here would be greater than in the single lane section. This is as the existing capacity of the two lane section would effectively be halved by the temporary suspension of one lane due to TM, whilst in the single lane section, the existing single lane capacity would be retained at all times whilst TM was in place. This validates that a more robust worst case assessment has been carried out by modelling the impacts of the proposed TM between Airport Service Road and Burrfields Road.

3.4.1.3. This position takes account of the proposed TM in terms of duration for which construction works will be present, the existing carriageway layout and traffic flows in direction each direction in each peak hour.

3.4.1.4. On this basis, and in the context of observed traffic flows, it can be confirmed that the TA has assessed the worst-case scenario for the A2030 Eastern Road, through the inclusion in the SRTM of TM located between Airport Service Road and Burrfields Road.

4. FURTHER ANALYSIS OF SRTM OUTPUTS

4.1.1.1. In response to PCC's Relevant Representation, this section contains analysis of the SRTM outputs and demonstrates how the SRTM is robust in its estimates of the temporary impacts of construction works on the A2030 Eastern Road. It also details how the consequential redistribution of traffic diverting away from the works has been robustly assessed across the wider highway network.

4.2. TRAFFIC REDISTRIBUTION WITHIN THE SRTM

4.2.1.1. The Relevant Representation made by PCC (RR-185, received 19th February 2020) states that assessment does not *"account for cumulative residual impacts of traffic merging to pass-by works or diverting away from works*. *It is noted that SRTM does make an assumption as to the redirection of traffic however it does not accurately predict vehicle movements at a microscopic level and as a consequence, the overall impacts of the works are likely to be greater/wider than anticipated."*

4.2.1.2. As noted in Section 2 of this Technical Note, and as was agreed in the TA Scoping Note (Appendix A of ES Appendix 22.1, APP-448), the temporary impact of redistributed traffic diverting away from works was assessed within the TA on a macroscopic scale using the SRTM modelling.

4.2.1.3. An important part of the functionality of the SRTM is that it makes routing choices for vehicles on the basis of the Generalised Cost of each available route, in line with guidance set out by WebTAG Unit 3.1 Highway Assignment Modelling (DfT, 2020), which states that:

"the basis for route choice in a highway assignment model should be generalised cost, defined as follows:

Generalised cost = (time) + (vehicle operation cost per km x distance / value of time) + (road user charges / value of time)".

4.2.1.4. These generalised costs applied within the SRTM differ according to journey purposes with, for example, business trips attracting a higher cost (based on value of time and vehicle operating costs) than leisure trips. Thus delays due to congestion are incorporated into drivers' route choice. Route choice is then calculated such that no vehicle can reduce their generalised cost of travel without increasing the cost of travel for another vehicle. This is known as equilibrium.

4.2.1.5. When the TM locations are introduced within the 2026 DS scenarios, the resultant changes in capacity and journey time along the Onshore Cable Route change generalised costs for all trips using that road, meaning that the optimum route between origin and destination may change. Where this occurs, vehicles reassign across alternative routes for every relevant origin and destination pair until a new equilibrium is found. This therefore shows how the SRTM has robustly considered the reassignment effects of TM required to facilitate construction of the Onshore Cable Route in the highway across the wider highway network within Portsmouth.

4.2.1.6. The applicant considers this is appropriate for the assessment of construction works for the Onshore Cable Route, which, while temporary, will be in place for a number of weeks. Drivers will therefore be able to consider the impacts of TM on their whole journeys prior to commencement, allowing them to plan accordingly. This is substantially different to the impact of road traffic accidents or emergency roadworks which occur without notice and do not allow drivers to make alternative choices, such as traveling at different times, re-assigning to different routes or using alternative modes of transport.

4.2.1.7. In line with the agreed methodology which is set out in the TA Scoping Note (Appendix A of ES Appendix 22.1, APP-448), the temporary impacts of identified traffic redistribution have been fully and robustly assessed within the TA at an individual junction / TM location level using industry standard junction capacity assessment software (Junctions 9 / LinSig).

4.3. SRTM TRAFFIC DATA ANALYSIS

4.3.1.1. This section provides a summary of SRTM data outputs for the following links along the A2030 Eastern Road:

- **Link 1**: Between A27 and Anchorage Road (ATC Site 1);
- **Link 2**: Between Anchorage Road and Airport Service Road;
- **Link 3**: Between Airport Service Road and Burrfield Road (TM Site) (ATC Site 2);
- **Link 4**: Between Burrfield Road and Tangier Road (ATC Site 3);
- **Link 5**: Between Tangier Road and Hayling Avenue; and
- **Link 6**: Between Hayling Avenue and Eastern Avenue.

4.3.1.2. At Link 3 the assessed TM reduces the capacity by approximately 50% for a 100m section, thereby reducing the throughput of traffic at this location. As detailed below the TM assessed within the DS scenario leads to:

1. A reduction in average link speed as a direct impact of the TM reducing link capacity, which leads to an increase in overall journey times along the A2030 Eastern Road (leading to an increase in generalised costs);

2. A reduction in traffic flows along A2030 Eastern Road as traffic redistributes across the wider highway network (as a result of the increase in generalised costs of using this route).

4.3.2. AVERAGE SPEED AND JOURNEY TIMES ON THE A2030 EASTERN ROAD

4.3.2.1. This section provides an assessment of the temporary impact of the TM on the link speeds and journey times on the A2030 Eastern Road in order to demonstrate how they have been assessed within the SRTM (Link 3).

Average Link Speed Analysis

AM Peak

4.3.2.2. The average speed reductions estimated for the A2030 between Airport Service Road and Burrfields Road in the AM peak are shown in Table 8.

Table 8 - Average Link Speeds on A2030 Between Airport Service Road and Burrfields Road AM peak (all speeds in KM per hour)

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	SB	Change from DM	NB	Change from DM
Link 3 - Between Airport Service Road and Burrfields Road (TM location)	39	41	23	-18	11	-28

4.3.2.3. As can be seen in Table 8, there is a decrease in link speed at the TM Site on Link 3 in the DS2 scenario when compared to the DM, with this link seeing a reduction in speed of 28 km/hr. This equates to a maximum decrease in traffic speeds of approximately 78%, which is a direct result of the reduction in capacity and subsequent traffic congestion on this link due to the TM.

4.3.2.4. The data set out in Table 8 also shows that the southbound closures modelled in the DS1 scenario result in a reduction in link speed in the AM peak on the southbound carriageway. This is a direct result of the reduced capacity and subsequent traffic congestion at this location. In this scenario traffic speeds drop by a maximum of 18km/hr, equating to an approximate decrease of 44%.

PM Peak

Table 9 - Average Link Speeds on A2030 Between Airport Service Road and Burrfields Road PM peak (all speeds in KM per hour)

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB (kph)	SB (kph)	SB	Change from DM	NB	Change from DM
Link 3 - Between Airport Service Road and Burrfields Road (TM location)	40	43	6	-37	19	-21

4.3.2.5. In the PM peak hour in the DS1 scenario, the southbound carriageway sees temporary impacts in link speed as a result on the proposed TM at Link 3, due to the reduction in capacity and subsequent traffic congestion at this section. At the TM site, link speeds decrease by 37km/hr from a DM of 43 km/hr to the 6 km/hr, equating to an 86% decrease in link speeds.

4.3.2.6. The results in Table 9 identify a decrease in link speed in the PM peak hour in the DS2 scenario for the northbound carriageway on Link 3, as a direct result of the assessed TM and consequential reduced capacity leading to traffic congestion. With the northbound lane closures modelled in the DS2 scenario there is a 21 km/hr (53%) decrease in link speed at the TM site.

4.3.2.7. In each scenario these reductions in link speed result in increased journey times and in turn, the redistribution of traffic away from the A2030 Eastern Road. This is detailed in the traffic flow assessments shown in Section 4.3.3 below. In both directions and in both peak hours, these results show that the SRTM has robustly assessed the impact on traffic speeds as a result of the TM located between Airport Service Road and Burrfields Road.

Journey Time Analysis

4.3.2.8. Taking account of the decrease in average link speeds discussed above, an assessment has been completed of journey time temporary impacts for A2030 Eastern Road. This provides further evidence of how the SRTM robustly assesses the direct temporary impacts of the construction works on the A2030 Eastern Road and the consequential traffic redistribution of traffic diverting away from this route.

4.3.2.9. This journey time data has been extracted directly from the SRTM and reflects the time taken for a vehicle to travel on A2030 Eastern Road between the junction with Anchorage Road and the junction with Tangier Road. This includes the location at which TM was modelled on the A2030 Eastern Road within the SRTM.

AM Peak Hour

4.3.2.10. A summary of AM peak hour journey times (JT) is provided in Table 10 in minutes and seconds (MM:SS).

Table 10 - Journey time data for A2030 Eastern Road between Anchorage Road and Tangier Road in AM peak

	DM JT (MM:SS)	DS1 (southbound lane closure)		DS2 (northbound lane closure)	
		JT (MM:SS)	Change from DM (MM:SS)	JT (MM:SS)	Change from DM (MM:SS)
Northbound	01:57	01:59	+00:02	03:51	+01:54
Southbound	01:21	01:58	+00:37	01:26	+00:05

4.3.2.11. The results set out in Table 10 demonstrate modelled increases in journey times in the DS scenarios when compared to the DM in the AM peak hour on the carriageways which are temporarily impacted by TM lane closures in each respective scenario. In the DS1 scenario the southbound journey time increased by 37 seconds whilst in the DS2 scenario the northbound journey time approximately doubles from two minutes to just under four minutes. These increases in journey time reflect the reductions in average link speeds caused by reduced capacity and traffic congestion at the location of the assessed TM (Link 3). The combination of these factors leads to traffic diverting away from the construction works on the A2030 Eastern Road as detailed in Section 4.3.3.

PM Peak Hour

4.3.2.12. A summary of PM peak hour journey times (JT) is provided in Table 11 in minutes and seconds (MM:SS).

Table 11 - Journey time data for A2030 Eastern Road between Anchorage Road and Tangier Road in PM peak

	DM JT (MM:SS)	DS1 (southbound lane closure)		DS2 (northbound lane closure)	
		JT (MM:SS)	Change from DM (MM:SS)	JT (MM:SS)	Change from DM (MM:SS)
Northbound	01:46	01:46	±00:00	02:37	+00:51
Southbound	01:24	05:32	+04:08	01:29	+00.05

4.3.2.13. Table 11 demonstrates that the highest increase in journey times seen for the A2030 Eastern Road between Anchorage Road and Tangier Road were seen on the southbound carriageway in DS1 scenario. This journey time saw an increase equating to approximately four minutes. These increases in journey time reflect the reductions in average link speeds caused by reduced capacity and traffic congestion at the location of the assessed TM (Link 3). The combination of these factors leads to traffic diverting away from the construction works on the A2030 Eastern Road as detailed in Section 4.3.4.

4.3.3. SRTM TRAFFIC FLOWS ON A2030 EASTERN ROAD

4.3.3.1. Further to the assessment of link speeds and journey times, this Section contains further detailed analysis of the changes in traffic flow which occur on A2030 Eastern Road in the DS scenarios as a result of traffic redistributing away from the A2030 Eastern Road. This redistribution of traffic away from the works occurs as a result of decreased link speeds and increased journey times, brought about by the reduced capacity and traffic congestion at the location of the assessed TM as reported above.

4.3.3.2. The traffic flows for each of the modelled scenarios, described in Table 2 of this Technical Note, are set out in Table 12 and Table 13 below.

Table 12 - SRTM Traffic flows for A2030 Eastern Road in AM peak hour (Veh/hr)

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	SB	Change from DM	NB	Change from DM
Link 1 - Between A27 and Anchorage Road	2,091	2,125	2,035	-90	2,045	-46
Link 2 - Between Anchorage Road and Airport Service Road	1,632	1,695	1,568	-127	1,294	-338
Link 3 - Between Airport Service Road and Burrfields Road (TM location)	1,651	1,655	1,360	-295	1,234	-417
Link 4 - Between Burrfields Road and Tangier Road	1,637	1,396	1,235	-161	1,536	-101
Link 5 - Between Tangier Road and Hayling Avenue	1,509	1,357	1,203	-154	1,475	-34
Link 6 - Between Hayling Avenue and Eastern Avenue	1,414	1,276	1,155	-121	1,382	-32

4.3.3.3. A summary of the temporary impacts of the modelled TM single lane closures on traffic flows on their respective carriageways in the AM peak is as follows:

- DS1 (Southbound closure): Maximum decrease in traffic of 295 vehicles (18%) on southbound carriageway between Airport Service Road and Burrfields Road; and
- DS2 (Northbound closure): Maximum decrease in traffic of 417 vehicles (25%) on northbound carriageway between Airport Service Road and Burrfields Road.

4.3.3.4. As expected, the most prominent reductions in traffic flow are in the immediate vicinity of the modelled TM on the link between Airport Service Road and Burrfields Road, although significant reductions in traffic flow are also shown on links either side. For example, in the DS1 scenario Link 2 experiences a reduction in traffic flow of 7.5% while Links 4 and 5 experience a traffic flow of approximately 11%. Overall, changes in traffic flows between the DM and DS scenarios become less prominent with distance from the proposed TM as would be expected.

4.3.3.5. The changes in traffic flows reflect the reassignment of traffic away from the modelled TM, resultant traffic congestion and increased journey times and shows how the SRTM robustly assesses the wider scale impacts of the construction works on A2030 Eastern Road.

Table 13 – SRTM Traffic flows for A2030 Eastern Road in PM peak hour (Veh/hr)

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	SB	Change from DM	NB	Change from DM
Link 1 - Between A27 and Anchorage Road	2,230	2,172	1,933	-239	2,188	-42
Link 2 - Between Anchorage Road and Airport Service Road	1,615	2,252	1,819	-433	1,473	-142
Link 3 - Between Airport Service Road and Burrfields Road (TM location)	1,463	2,247	1,548	-699	1,164	-299
Link 4 - Between Burrfields Road and Tangier Road	1,240	2,239	1,603	-636	1,188	-52
Link 5 - Between Tangier Road and Hayling Avenue	1,053	2,034	1,549	-485	1,053	0

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	SB	Change from DM	NB	Change from DM
Link 6 - Between Hayling Avenue and Eastern Avenue	1,068	1,807	1,471	-336	1,048	-20

4.3.3.6. A summary of the temporary impacts of the modelled TM single lane closures on traffic flows on their respective carriageways in the PM peak is as follows:

- DS1 (Southbound closure): Maximum decrease in traffic of 699 vehicles (31%) on southbound carriageway between Airport Service Road and Burrfields Road; and
- DS2 (Northbound closure): Maximum decrease in traffic of 299 vehicles (20%) on northbound carriageway between Airport Service Road and Burrfields Road.

4.3.3.7. As with the AM peak, the changes in traffic flow seen in the PM peak are also most prominent in the immediate vicinity of the modelled TM of the link between Airport Service Road and Burrfields Road, although again there are significant reductions in traffic flow on links either side of the modelled TM. This occurs to the greatest degree in the DS1 scenario, where the southbound TM lane closure leads to a reduction in traffic flow of at least 200 vehicles and 11-28% on all Links along the A230 Eastern Road. The wider scale northbound flows in the DS2 scenario are less sensitive to change, although still reduce by 4% on Link 4 upstream the modelled TM and 9% on Link 2 downstream of the modelled TM.

4.3.3.8. As with the AM peak, the changes in traffic flows reflect the reassignment of traffic away from the modelled TM, resultant traffic congestion and increased journey times and shows how the SRTM robustly assesses the wider scale impacts of the construction works on A2030 Eastern Road.

4.3.4. SRTM TRAFFIC REASSIGNMENT

4.3.4.1. As noted above, traffic flows along the A2030 Eastern Road reduce as a result of traffic reassigning away from the reduced speeds, increased traffic congestion and increased journey times (resulting in increased generalised costs) caused by the modelled TM lane closure.

4.3.4.2. In relation to this reassignment, Table 62 of the TA (Examination Library Reference: APP-448) included a link capacity assessment of any links within Sections 7, 8, 9 and 10 of the Onshore Cable Route that met following criteria:

- The percentage change in traffic flow on a link increased by 10% or more;
- The increase in hourly vehicle numbers was greater than 60 (one per minute); and
- The volume to capacity ratio increased by 10%.

4.3.4.3. The contents of Table 62 of the TA have been summarised for reference in Table 14, in order to highlight how the SRTM has robustly estimated traffic reassignment across the wider highway network.

Table 14 - Summary of Link Capacity Assessments Across Wider Study Area

Link / Road Name	Highest Rise in Traffic Flow (vehicles per hour)	Maximum V/C	Highest Rise in V/C
A2030 Winston Churchill Avenue	DS1 PM: 75	DS1 PM: 91%	DS1 PM: 10%
A288 Copnor Road	DS1 PM: 200	DS1 PM: 93%	DS1 PM 27%
A288 Southsea Terrace	DS1 PM: 96	DS1 PM: 29%	DS1 PM: 11%
Airport Service Road	DS2 AM: 133 DS1 PM: 57 DS2 PM: 156	DS2 AM: 50% DS1 PM: 20% DS2 PM: 62%	DS2 AM: 23% DS1 PM: 13% DS2 PM: 35%
Anchorage Road	DS 2 AM: 177	DS2 AM: 82%	DS2 AM: 21%
Aylesbury Road	DS1 PM: 145	DS1 PM: 62%	DS1 PM: 18%
B2154 Elm Grove	DS1 PM: 77	DS1 PM: 87%	DS1 PM: 12%
Burrfields Road	DS2 AM: 176	DS2 AM: 79%	DS2 AM: 22%
Derby Road	DS1 PM: 82	DS1 PM: 92%	DS1 PM: 12%
Dundas Lane	DS1 PM: 263 DS2 AM: 338 DS2 PM: 246	DS1 PM: 50% DS2 AM: 39% DS2 PM: 50%	DS1 PM: 19% DS2 AM: 18% DS2 PM: 19%
Gladys Avenue	DS1 PM: 63	DS1 PM: 102%	DS1 PM: 11%
Lyndhurst Road	DS1 PM: 69	DS1 PM: 18%	DS1 PM: 13%
M275	DS2 PM: 221	DS2 PM: 22%	DS2 PM: 12%
New Road East	DS1 PM: 94	DS1 PM: 67%	DS1 PM: 24%

Link / Road Name	Highest Rise in Traffic Flow (vehicles per hour)	Maximum V/C	Highest Rise in V/C
Paulsgrove Road	DS1 PM: 165	DS1 PM: 58%	DS1 PM: 17%
Pink Road / Langley Road	DS1 PM: 71	DS1 PM: 44%	DS1 PM: 12%
Quartremaine Road	DS2 AM: 285	DS2 AM: 32%	DS2 AM: 13%
Shearer Road	DS1 PM: 117	DS1 PM: 63%	DS1 PM: 14%
Torrington Road	DS1 PM: 78	DS1 PM: 64%	DS1 PM: 15%
Williams Road	DS1 PM: 130 DS2 AM: 234 DS2 PM: 89	DS1 PM: 73% DS2 AM: 90% DS2 PM: 65%	DS1 PM: 19% DS2 AM: 29% DS2 PM: 11%

4.3.4.4. Table 14 shows the extent to which the SRTM has reassigned traffic across the wider highway network as a result of the modelled TM included in each of the DS scenarios. For example, the increases in traffic flows on Winston Churchill Avenue, Elm Grove, Derby Road, Gladys Avenue, Southsea Terrace and Torrington Road highlight the east to west reassignment of traffic across the city, with the M275 as the western strategic corridor to / from Portsea Island experiencing an expected increase in traffic flow as a result of the construction works.

4.3.4.5. Furthermore, increases in traffic flow on A288 Copnor Road, Anchorage Road, Burrfields Road, Dundas Lane, Quartremaine Road and Williams Road highlight the more local distribution of traffic away from the modelled TM on A2030 Eastern Road.

4.3.4.6. Overall, this demonstrates how the SRTM has estimated the level of traffic reassignment that will occur across the wider highway network as result of the TM required to facilitate construction works along A2030 Eastern Road.

4.3.4.7. Further to this, it should again be noted that the TA has completed a detailed analysis of these temporary impacts, based on an agreed scope and methodology of assessment, through the completion of local junction capacity assessments and link assessments where appropriate.

4.4. SUMMARY OF SRTM DATA ANALYSIS

4.4.1.1. This section has provided further analysis of the SRTM outputs for A2030 Eastern Road in respect of how modelled TM temporarily impacts upon link speeds and journey times, decreases traffic flow and leads to a reassignment of traffic across the wider highway network. In doing so, this section has also provided a specific response to the comments made by PCC, demonstrating how the SRTM accounts for "*cumulative residual impacts of traffic merging to pass-by works or diverting away from works*".

4.4.1.2. The Applicant also maintains the position that the local junction capacity and link based assessments undertaken in the TA, using the SRTM traffic flows which account for the reassignment of traffic away from the works, robustly assess the temporary impacts on the wider highway network in the assessed scenarios.

5. SUPPLEMENTARY CAPACITY ASSESSMENT OF A2030 EASTERN ROAD

5.1.1.1. Further to PCCs Relevant Representation (Examination Library Reference: RR-185) and discussion relating to this at a subsequent meeting held on 12/03/20, this section includes a supplementary assessment of temporary impacts of TM required to facilitate construction of the Onshore Cable Route on the A2030 Eastern Road adjacent to Milton Common. This further assessment of temporary impacts has been undertaken at the request of PCC.

5.1.1.2. These assessments, the location of which is identified on Figure 8 below, are additional to the agreed scope for the TA and include an assessment of the A2030 Eastern Road / Tangier Road traffic signal junction using the industry standard traffic signal junction modelling software LinSig. This additional assessment uses modelling inputs which separately simulate a single lane closure in each direction as a result of Traffic Management through the junction.

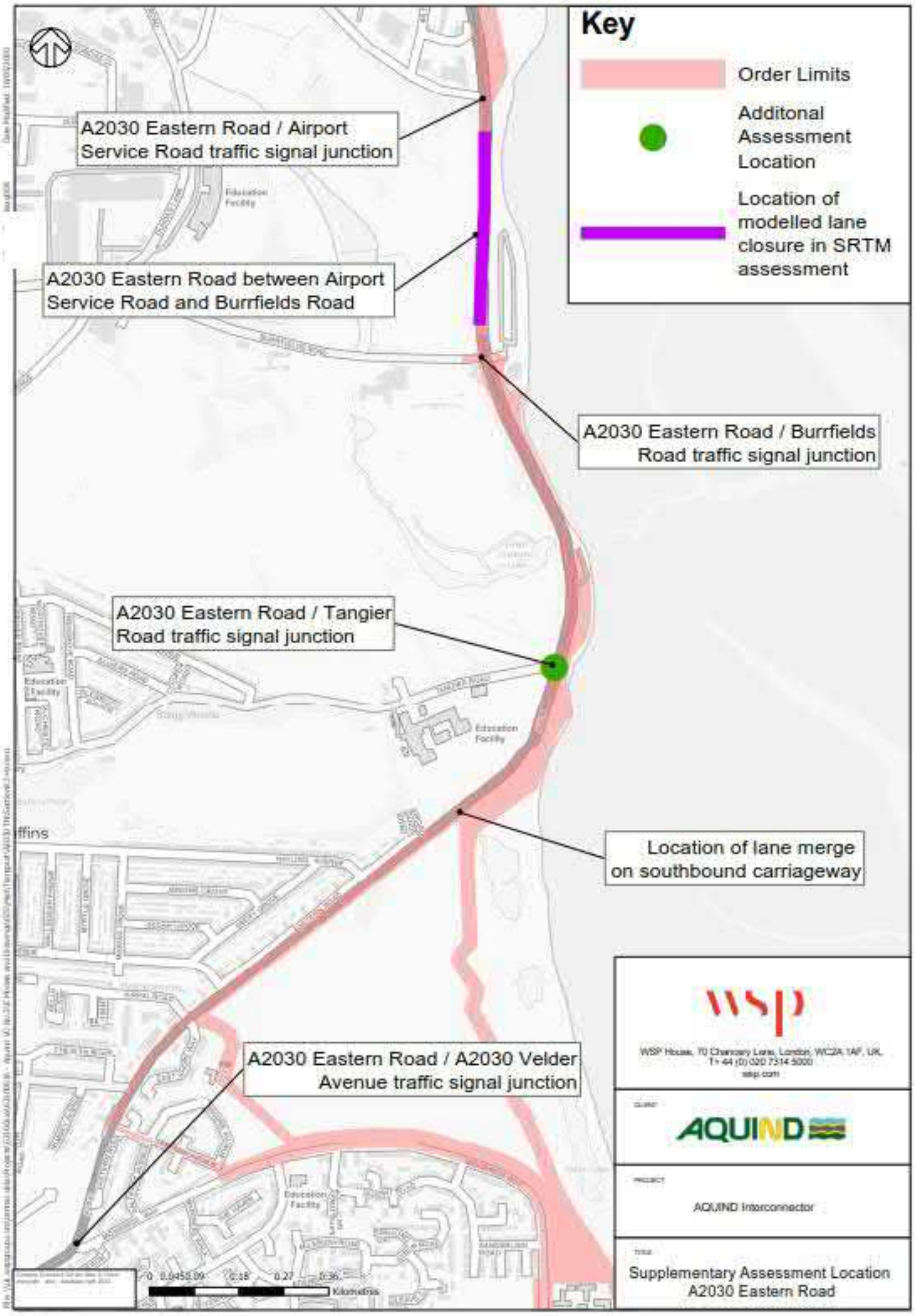
5.1.1.3. It should be noted that these supplementary capacity assessments to the TA have been undertaken at the specific request of PCC, and that they follow the same methodology agreed and subsequently applied in the TA (Examination Library Reference: APP- 448) insofar that:

- Traffic flows have been calculated from the SRTM DM and DS scenarios used to assess the temporary impacts of the TM within the TA; and
- These traffic flows have been combined with local junction capacity model assessments and link assessments to consider the implications of the SRTM modelling at a detailed level.

5.1.1.4. . Whilst the results of this supplementary assessment may demonstrate a worsening of results at the Eastern Road / Tangier Road traffic signal junction than reported in the TA, this modelled localised impact is to be expected. This is because the use of LinSig model represents a limited and fixed assessment, which while it includes assumptions on traffic flow reductions resulting from redistribution of traffic away from the works, is not designed to fully represent the equilibrium position that would occur between traffic queues / delays and use of alternative routes as demonstrated within the SRTM.

5.1.1.5. The LinSig modelling should therefore be viewed as a forecast of worst-case queueing that may occur at the A2030 Eastern Road / Tangier Road traffic signal junction, while noting that in such an event, traffic would most likely divert onto alternative routes to avoid the works. The TA has previously considered the implications of traffic reassigning away from A2030 Eastern Road as a consequence of the Onshore Cable Route construction.

Figure 8 - Supplementary Assessment Location



5.1.1.6. The completion of a junction capacity assessment at the A2030 Eastern Road / Tangier Road traffic signal junction is considered to represent a worst-case assessment adjacent to Milton Common, taking account of the existing carriageway layout and options available for the Onshore Cable Route within this section of the Order Limits. This is because all options for the construction of the Onshore Cable Route for the A2030 Eastern Road (as identified in Section 2.3.6) will result in a lane closure being implemented at the A2030 Eastern Road / Tangier Road traffic signal junction whereas:

- If Option 1 for the construction of the Onshore Cable Route is used, the A2030 Eastern Road carriageway in both directions will only be impacted for up to 300m south of the junction and where the southbound carriageway already merges from two lanes to one lane. This means that any impact in the southbound direction will be similar to the existing situation;
- If Option 2 or Option 3 for the construction of the Onshore Cable Route are used there will be little impact on the capacity of the A2030 Eastern Road southbound carriageway south of the lane merge, due to both options re-providing this lane as a contraflow on the northbound side of the carriageway. An assessment of this northbound lane closure is also most robust at the A2030 Eastern Road / Tangier Road traffic signal junction, where capacity will be further reduced due to opposing traffic signal stages.

5.1.1.7. As with other assessments of the impacts of traffic management on the A2030 Eastern Road the results of the supplementary junction capacity assessments should be viewed in the context of being a short-term and temporary situation.

5.2. CALCULATION OF TRAFFIC FLOWS FOR SUPPLEMENTARY ASSESSMENTS

5.2.1.1. In order to model the most realistic traffic flows with the TM in place, manual calculations have been undertaken to produce new DS1 and DS2 flows for the A2030 Eastern Road /Tangier Road traffic signal junction.

5.2.1.2. This has been completed because the direct use of the SRTM DS1 and DS2 traffic flows would already account for traffic reassignment away from the TM assessed within the SRTM between Airport Service Road and Burrfields Road.

5.2.1.3. The new DS1 and DS2 traffic flows have been calculated using the following steps:

1. The DS1 and DS2 link flows have been extracted from the SRTM for where the TM was assessed between Airport Service Road and Burrfields Road;
2. The percentage reduction in traffic flow between each of the DS1 / DS2 and DM scenarios has been calculated; and

3. This percentage reduction in traffic flows identified at step 2 has been applied to the DM flows at the A2030 Eastern Road / Tangier Road traffic signal junction to identify a DS1 and DS2 scenario. This has been completed only for traffic heading northbound or southbound along the A2030 Eastern Road, with all other turning movements remaining as with the DM scenario.

5.2.1.4. The calculation of new DS traffic flows for the AM and PM peaks is detailed in Table 15 and Table 16 below:

Table 15 - Calculation of New DS Scenarios, Traffic Flows AM Peak

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	NB	SB	NB	SB
Step 1 – Traffic Flows between Airport Service Road and Burrfields Road (TM location)	1,651	1,655	1,572	1,360	1,234	1,620
Step 2 – Calculate % Change in Traffic Flow	N/A	N/A	-4.8%	-17.8%	-25.3%	-2.1%
Step 3 – Calculate A2030 Eastern Road / Tangier Road Traffic Flows	1,515	1,396	1,443	1,147	1,132	1,367

Table 16 - Calculation of New DS Scenarios, Traffic Flows PM Peak

Section of A2030 Eastern Road	DM		DS1 – Southbound Closures		DS2 – Northbound Closure	
	NB	SB	NB	SB	NB	SB
Step 1 – Traffic Flows between Airport Service Road and Burrfields Road (TM location)	1,463	2,247	1,189	1,548	1,164	2,200
Step 2 – Calculate % Change in Traffic Flow	N/A	N/A	-18.7%	-31.1%	-20.4%	-2.1%
Step 3 – Calculate A2030 Eastern Road / Tangier Road Traffic Flows	1,060	2,239	861	1,542	843	1,542

5.2.1.5. These traffic flows have been taken forward for use within the supplementary capacity assessments included in Section 5.3.

5.3. SUPPLEMENTARY CAPACITY ASSESSMENT OF A2030 EASTERN ROAD / TANGIER ROAD TRAFFIC SIGNAL JUNCTION

5.3.1.1. The impact of temporary TM on the operation of the A2030 Eastern Road / Tangier Road signal-controlled junction has been assessed using LinSig.

5.3.1.2. LinSig models provide an indication of how modelled junctions are likely to operate when subjected to specified traffic flows. Outputs of LinSig models include Degree of Saturation (DoS) as a percentage, Mean Maximum Queue length (MMQ) in PCUs for each approach, and the average delay per vehicle on each approach recorded in seconds.

5.3.1.3. LinSig models can also be used to provide a measure of the junction’s total overall reserve capacity (PRC) as a percentage of its total capacity.

5.3.1.4. When reviewing the PRC of a signalised junction the following should be considered:

- A positive figure indicates the junction operates with reserve capacity;
- A negative figure higher than -10% (i.e. - 5%) suggests that the junction would be broadly at capacity; and
- A negative figure lower than -10% (for example – 15%) indicates that the junction cannot accommodate the demand.

5.3.1.5. For DoS, the recognised thresholds can be categorised as follows:

- Less than 90%: Any queues that have built up will be able to disperse during the relevant stage in each cycle;
- 90-100%: Indicates that an arm is close to its theoretical capacity and any queue that has built up does not fully clear within each cycle; and
- More than 100%: Indicates an arm is over its theoretical capacity and significant queues are likely as a result.

5.3.1.6. The assessment has involved modelling the following junction layouts:

- Existing layout;
- TM on the southbound carriageway (closure of a southbound lane on A2030 Eastern Road) with manually calculated 'DS1' traffic flows; and
- TM on the northbound carriageway (closure of a northbound lane on Eastern Road) with manually calculated 'DS2' traffic flows.

5.3.2. DM A2030 EASTERN ROAD / TANGIER ROAD TRAFFIC SIGNAL JUNCTION

5.3.2.1. Modelling results for the A2030 Eastern Road / Tangier Road traffic signal junction for the DM scenario were included as Table 99 of the TA. Table 99 of the TA is recreated below for ease of reference.

Table 17 - A2030 Eastern Road / Tangier Road Tangier Signal Junction DM Scenario (recreation of Table 99 of the TA)

Arm	AM Peak			PM Peak		
	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)
A2030 Eastern Road N (ahead)	51.3%	13	12	80.0%	21	27
A2030 Eastern Road S (ahead/left)	69.1%	24	19	56.8%	27	13

A2030 Eastern Road S (ahead)	69.1%	24	19	56.9%	27	13
Tangier Road (left/right)	40.9%	52	4	40.9%	42	5
	PRC = 30.2%			PRC = 7.6%		

5.3.2.2. As can be seen from the results presented, all approaches of the junction are able to operate within their theoretical capacities in the DM scenario.

5.3.3. DS1 - TEMPORARY WORKS SOUTHBOUND

5.3.3.1. The DS1 scenario involves the closure of a southbound lane on the A2030 Eastern Road through the A2030 Eastern Road / Tangier Road traffic signal junction. This has been modelled using LinSig software and has involved the removal of the southbound nearside lane entry and exit arms on A2030 Eastern Road, thereby reducing the capacity of the southbound direction by 50%.

Table 18 – A2030 Eastern Road / Tangier Road Traffic Signal Junction Lane Closure Southbound (DS1)

Arm	AM Peak			PM Peak		
	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)
A2030 Eastern Road N (ahead / right)	85.4%	25	32	112.8%	257	153
A2030 Eastern Road S (ahead/left)	65.8%	23	18	39.9%	18	9
A2030 Eastern Road S (ahead)	65.8%	23	18	39.9%	18	9
Tangier Road (left/right)	40.9%	52	5	56.3%	55	7
	PRC = 5.2%			PRC = -25.3%		

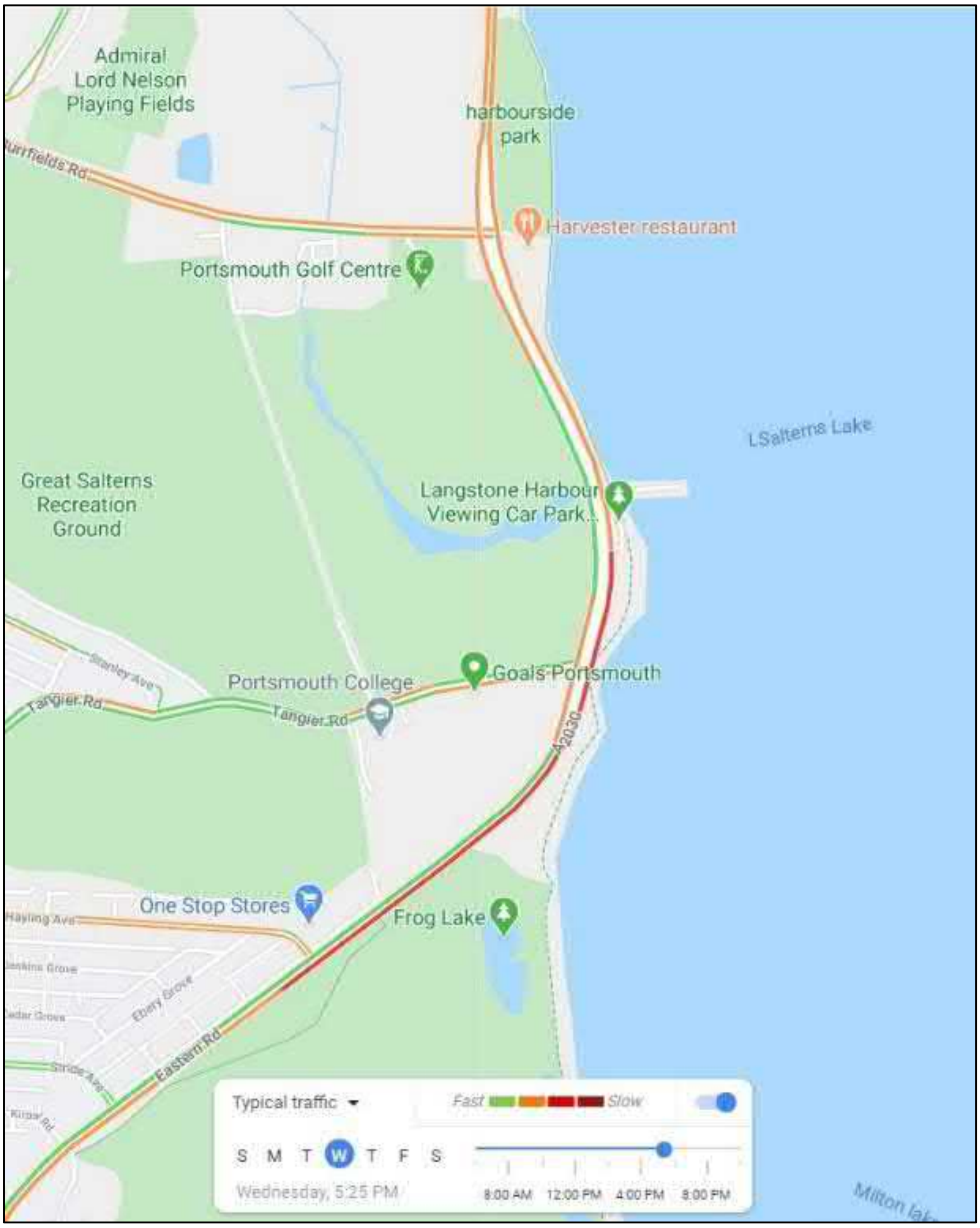
5.3.3.2. Table 18 shows that in the DS1 scenario the junction will operate within capacity in the AM peak, but over capacity in the PM peak, reflecting the higher levels of traffic flow in the southbound direction in the PM peak. The delay in the southbound direction in the PM peak equates to over four minutes per vehicle with a queue length of just over 150 vehicles, which is the equivalent of approximately 900m and would extend back through the A2030 Eastern Road / Burrfields Road traffic signal junction. It is noted that this delay reported in the LinSig for the A2030 Eastern Road southbound is similar to the increase in journey times experienced in the DS1 scenario PM peak with the southbound TM Lane closure in place between Airport Service Road and Burrfields Road. This shows that the SRTM modelling is robust.

5.3.3.3. It is noted however that in the PM peak, under current traffic conditions, it is not uncommon for traffic to queue through this junction in the southbound direction as a result of the lane merge further south. This is corroborated by various different sources including site visits on 26/02/2019 and 18/09/2019 and by Google Maps typical traffic conditions shown in Figure 9 below.

5.3.3.4. This shows that on a 'typical' Wednesday at 5:25pm there are traffic delays (due to congestion) on the southbound carriageway of the A2030 Eastern Road at the location of the lane merge, with this situation continuing through the A2030 Eastern Road / Tangier Road traffic signals and as far as the Langstone Harbour Viewing car park. North of this location, traffic flows are categorised as orange, indicating that it is not free-flow conditions on the A2030 Eastern Road, which continues through the A2030 Eastern Road / Burrfields Road traffic signal junction.

5.3.3.5. Whilst not shown on Figure 9, in the southbound direction the orange category of traffic extends to just north of the A2030 Eastern Road / Anchorage Road traffic signal junction. Using Google Maps, all other weekdays except Friday show a similar level of traffic congestion in the southbound direction on the A2030 Eastern Road.

Figure 9 - Typical Traffic Conditions on A2030 Eastern Road in PM Peak



Source: Google maps (2020)[2]

[2] Google Maps (2020) https://www.google.com/maps/@50.8130315,-1.0584471,14.75z/data=!5m1!1e1 Accessed 20th May 2020

5.3.4. DS2 - TEMPORARY WORKS NORTHBOUND

5.3.4.1. The DS2 scenario involves the closure of a northbound lane on the A2030 Eastern Road through the A2030 Eastern Road / Tangier Road traffic signal junction.

Table 19 – Eastern Road / Tangier Road Traffic Signals Lane Closure Northbound (DS2)

Arm	AM Peak			PM Peak		
	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)	Deg Sat (%)	Av. Delay per PCU (s/pcu)	Mean Max Queue (PCU)
A2030 Eastern Road N (ahead / right)	50.1%	12	12	79.5%	20	27
A2030 Eastern Road S (ahead/left)	51.8%	15	12	83.7%	28	25
A2030 Eastern Road S (ahead)	103.4%	123	68	84.5%	37	27
Tangier Road (left/right)	40.9%	52	5	46.6%	47	6
	PRC = -14.9%			PRC = 6.5%		

5.3.4.2. Table 19 shows that the junction will operate over capacity in the AM peak but within capacity in the PM peak when modelled with a closure of one northbound lane through the junction. On the A2030 Eastern Road northbound carriageway the average delay per vehicle in the AM peak is just over two minutes, with a queue length of approximately 400m. This queue would extend back to the A2030 Eastern Road priority junction with Sword Sands Road, which provides access to a residential car park. The estimated queue should not therefore have a detrimental effect on the operation of this junction.

5.3.4.3. The delay of just over two minutes reported in the LinSig outputs for the A2030 Eastern Road northbound in the AM peak is similar to the increase in journey times experienced in the DS2 scenario AM peak with the northbound TM Lane closure in place between Airport Service Road and Burrfields Road. The similarities between the LinSig modelling and the journey time data set out in Section 4.3 helps to demonstrate the robustness of the SRTM modelling undertaken.

5.3.4.4. In comparison with the DM scenario, the results in Table 19 represent a worsening of conditions on the A2030 Eastern Road in the northbound direction, as would be expected with the implementation of the temporary TM lane closure. In comparison to the DM results present in Table 17, the A2030 Eastern Road northbound approach experiences an increase in queue length of 48 vehicles (288m) and an increase in average delay of 99 seconds in this scenario.

5.3.5. SUMMARY OF JUNCTION CAPACITY ASESSMENT AT A2030 EASTERN ROAD / TANGIER ROAD

5.3.5.1. It can be seen from Table 18 and 19 that the temporary closure of a northbound or southbound lane on Eastern Road at the junction with Tangier Road will result in the junction operating over its theoretical capacity with significant queues forecast as a result in the southbound direction in the PM peak where traffic management is located on the southbound lane (DS1), and in the northbound direction in the AM peak where traffic management is located on the northbound lane (DS2). This is expected as the junction is designed to serve the current level of traffic and the impact of TM will inherently lower the operational capacity of the junction, albeit on a temporary basis.

5.3.5.2. In the DS1 scenario (southbound closures) however, it is noted that the delays experienced in the southbound direction in the PM peak hour, where the junction is predicted to operate over capacity, are not uncommon for PM peak hour conditions along the A2030 Eastern Road as a result of the merge of the southbound carriageway from two lanes to one lane south of the A2030 Eastern Road / Tangier Road traffic signal junction. The driver experience is therefore likely to be similar to the existing conditions where some degree of traffic congestion is present along much of the A2030 Eastern Road southbound corridor, due to the TM replicating and relocating the existing merge from two lanes to one lane.

5.3.5.3. In the DS2 scenario in the AM peak, the LinSig modelling shows the junction operating over capacity and an increase in delay and queues in comparison with the DM scenario for the A2030 Eastern Road northbound approach. These queues, however, can be accommodated without having a detrimental impact on the wider highway network because there are no major upstream junctions that would be impacted by this temporary congestion. Reported delays are similar to those journey times increases highlighted by the SRTM in DS2 scenario as discussed in Section 4.3.2.

5.3.5.4. In reference to PCC's Relevant Representation, this supplementary assessment provides an additional assessment of the impacts of construction works and associated TM being located on the A2030 Eastern Road between Tangier Road and Eastern Avenue. This supplementary assessment has been undertaken through the completion of junction capacity assessments at the A2030 Eastern Road / Tangier Road traffic signal junction. The junction of A2030 Eastern Road / Tangier Road is the location at which traffic flows are highest between Tangier Road and Eastern Avenue and where TM would have the greatest impact on existing highway capacity within this section (as discussed in Paragraph 5.1.1.6).

5.3.5.5. A comparison of the results of the assessments that have been undertaken on the impacts of TM between Airport Service Road and Burrfields Road and those at the junction of with Tangier Road, show similar results in terms of traffic delay and journey time changes on A2030 Eastern Road. It needs to be considered that there will only ever be a single instance of TM on the A2030 Eastern Road at any one time, therefore there will not be greater cumulative effects of more than one TM location. These cumulative effects have been assessed through use of the SRTM, as detailed within Section 4 of this TN, considering the traffic implications arising from the works across Portsmouth as a whole.

5.3.5.6. The results of the supplementary modelling which has been undertaken at the junction of A2030 Eastern Road / Tangier Road provides similar results to those reported in Section 4 of this TN, and also contained in the submitted TA / ES. This validates that the assessment of the A2030 Eastern Road completed in the TA and using the SRTM is robust and representative.

6. CONCLUSION

6.1.1.1. In summary, this TN has provided a response to the queries set out by PCC in their Relevant Representation (Examination Library Reference: RR-185, received 19th February 2020), as summarised below.

"The traffic modelling has been carried out in line with the scoping note previously submitted to and agreed by the LHA."

6.1.1.2. This statement is agreed, with the Applicant maintains the position that the methodology agreed with PCC represents a robust assessment of the cumulative temporary impacts of the proposals.

"In line with this approach, the Applicant has attempted to replicate a "worst case" scenario."

6.1.1.3. The methodology of assessment used within SRTM was agreed with PCC as part of pre-application discussions and as included in the Transport Assessment Scoping Note and SRTM Coding Note (Examination Library Reference: APP-448, Appendix A).

6.1.1.4. The review of baseline traffic data has shown that observed traffic flows and volume to capacity ratios on the A2030 Eastern Road within the Order Limits where the proposed Onshore Cable Route works will be undertaken are highest at the location which will be the most impacted by the proposed TM, between Airport Service Road and Burrfields Road.

6.1.1.5. On this basis, and in the context of observed traffic flows, it can be confirmed that the TA has assessed the worst-case scenario for the A2030 Eastern Road, through the inclusion in the SRTM of TM located between Airport Service Road and Burrfields Road.

"However, the modelling does not cover a possible cable route along the A2030 between Tangier Road and Eastern Avenue"

6.1.1.6. A part of this TN, an assessment has been completed of the impacts of construction works and associated TM being located on the A2030 Eastern Road between Tangier Road and Eastern Avenue. The results of this assessment shows similar results in terms of traffic delay and journey time changes to the TM scenario assessed within the SRTM between Airport Service Road and Burrfields Road. Given that there will only ever be a single instance of TM on the A2030 Eastern Road at any one time there will not be greater cumulative effects of more than one TM location. The further assessment in this TN validates that the assessment of the A2030 Eastern Road completed in the TA and using the SRTM is robust and representative.

“nor does it account for cumulative residual impacts of traffic merging to pass-by works or diverting away from works. It is noted that SRTM does make an assumption as to the redirection of traffic however it does not accurately predict vehicle movements at a microscopic level and as a consequence, the overall impacts of the works are likely to be greater/wider than anticipated.”

6.1.1.7. Analysis contained within Section 4 of the TN of the SRTM outputs for A2030 Eastern Road show how the modelled TM temporarily impacts upon link speeds and journey times, decreases traffic flow and leads to a reassignment of traffic across the wider highway network.

6.1.1.8. The Applicant also maintains the position that the local junction capacity and link based assessments undertaken in the TA, using the SRTM traffic flows which account for the reassignment of traffic away from the works, robustly assess the temporary impacts on the wider highway network in the assessed scenarios.

6.1.1.9. Accordingly, it remains the view of the Applicant that the highway implications of the Onshore Cable Route construction have been satisfactorily assessed and it is not necessary to undertake a microscopic assessment of the overall impacts of the works upon the Highway Network.

Appendix 1 – Email Correspondence with PCC

From: Williams, Chris
Sent: 21 July 2019 22:06
To: Aquind@portsmouthcc.gov.uk
Cc: Pacey, Darren; Rich, Louise; Temerko, Vladimir; Glukhovskoy, Kirill; Haddrell, Kath
Subject: RE: Aquind Interconnector - SRTM Coding Note

Hi Steven,

Further to my email and updated Coding Note sent on the 12th July, we assume that there are no further comments with our approach and therefore we will start the SRTM model run this week as programmed. If this is not the case please let me know as soon as possible.

Regards,
Chris

Chris Williams *BSc (Hons) MSc MCIHT*
Associate

Regus House, George Curl Way
Southampton
SO18 2RZ

wsp.com

From: Williams, Chris
Sent: 12 July 2019 17:49
To: Aquind@portsmouthcc.gov.uk
Cc: Pacey, Darren; Louise Rich; Temerko, Vladimir; Glukhovskoy, Kirill; Haddrell, Kath;
Subject: Aquind Interconnector - SRTM Coding Note

Hi Steven,

Please find attached an updated copy of our SRTM Coding Note for the Aquind Interconnector project, taking account of discussions at the meeting on Wednesday 3rd July and the formal response provided by PCC today. We assume the proposed coding and scope of modelling is now agreed and intend to start the SRTM model runs as soon as possible in order to keep to programme for the DCO. Therefore if you have any further comments please let me know as soon as possible and by the latest of Friday 19th July.

Regards,
Chris

Chris Williams *BSc (Hons) MSc MCIHT*

Associate

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Appendix 2 – SRTM Technical Note

SRTM DATA ANALYSIS

DATE:	12 September 2019	**CONFIDENTIALITY:**	Confidential
SUBJECT:	SRTM Data Analysis		
PROJECT:	AQUIND Interconnector Ltd	**AUTHOR:**	Stacey Gander
CHECKED:	Lucy Jones	**APPROVED:**	Chris Williams

INTRODUCTION

This Technical Note (TN) provides a summary of the results of the strategic traffic modelling undertaken to assess the impacts of the proposed traffic management associated with the installation of the AQUIND Interconnector. The TN provides analysis of the impact of the AQUIND proposals on the 22 junctions identified for assessment within the Transport Assessment (TA) within the TA Scoping Note, which is included in Appendix A for reference. The junctions identified within the TA Scoping Note have been agreed with Portsmouth City Council (PCC) and Hampshire County Council (HCC). Alongside analysis of the 22 junctions identified within the TA Scoping Note, this TN also provides analysis of the impacts of the AQUIND proposals across the wider road network, this in order to identify any additional junctions which may require further assessment within the TA and associated Traffic Management Strategy (TMS).

TRAFFIC MODELLING METHODOLOGY

The impacts of the traffic management proposals associated with AQUIND on the wider road network have been modelled using the Solent Sub-Regional Transport Model (SRTM). The outputs of the SRTM provide information regarding changes in both traffic flow and vehicular delay, alongside a volume/capacity (V/C) assessment for each link in the model. This TN focuses on an assessment of the changes in traffic flow and V/C, this as these factors are key indicators that define the scope of further assessment to be undertaken in the Transport Assessment and EIA Transport Chapter.

The SRTM modelled the impacts of the proposed traffic management across six scenarios. The assessed scenarios are as follows:

1. 2026 DM AM Peak Period;
2. 2026 DM PM Peak Period;
3. 2026 DS Scenario 1 AM Peak Period;
4. 2026 DS Scenario 1 PM Peak Period;
5. 2026 DS Scenario 2 AM Peak Period; and
6. 2026 DS Scenario 2 PM Peak Period.

This TN will provide a comparative analysis of each Do Something (DS) scenario with its corresponding Do Minimum (DM) scenario for each identified junction within the study area. Two DS scenarios have been tested for completeness and to allow flexibility in the approach to traffic management.

The 2026 DS Scenario 1 (DS1) refers to a situation whereby traffic management to facilitate the construction of the Proposed AQUIND Interconnector is in place on northbound lanes along the Proposed Route.

The 2026 DS Scenario 2 (DS2) refers to a situation whereby traffic management to facilitate the construction of the Proposed AQUIND Interconnector is in place on southbound lanes along the Proposed Route.

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For reference, the following locations are anticipated to have Traffic Management in place as part of the cable installation:

- Shuttle working traffic signals on B2150 Hambledon Road between Soake Road and Closewood Road;
- Temporary traffic signal operation of the B2150 / Maurepas Way roundabout in Waterlooville;
- Shuttle working traffic signals on the A3 London Road between Poppy Fields and Ladybridge roundabout;
- Single lane closure on Havant Road between Farlington Avenue and Eastern Road;
- Single lane closure on A2030 Eastern Road between Airport Service Road and Burrfields Road; and
- Shuttle working traffic signals on Henderson Road between Bransbury Park and Fort Cumberland Road.

STUDY AREA AND SCOPE OF ASSESSMENT

The study area of this TN (appended to this Technical Note) includes the 5km radius from the extent of the Proposed Cable Route. This study area covers areas of highway network under the jurisdiction of HCC, PCC and Highways England (HE). For reference, the administrative boundary between the two authorities is located just north of the B2177 Portsdown Hill Road.

For ease of reference, the study area has been subdivided into five smaller areas to help identify key roads where traffic could re-route, and to ease quantification of changes in flow, this as to determine the extent of the impact. Each zone contains a core list of roads that through traffic could use. The five zones are as follows:

- **West of Waterlooville**: this covers the predominately rural area to the west of the Waterlooville and includes Denmead, Anmore and Furzeley Corner.
- **Waterlooville**: this encapsulates the urban area stretching across Horndean, Lovedean, Cowplain, Wecock Farm, the town centre, Stakes, Purbrook, Crookhorn and Widley.
- **East of Waterlooville:** this includes the A3(M) and some key roads / junctions that link the motorway with Havant.
- **Cosham, Drayton and Farlington:** situated south of the administrative boundary with Hampshire County Council and north of the A27 Havant Bypass / M27.
- **Portsea Island:** all links on the island of Portsea, which included the vast majority of the city of Portsmouth and its associated road network.

SUMMARY OF TRAFFIC REDISTRIBUTION

For the most part, the SRTM modelling has shown that there will be a decrease in traffic along the proposed cable route. The reductions in traffic flow at the assessed Traffic Management locations are as follows:

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B2150 Hambledon Road between Soake Road and Closewood Road

		Actual Flow (PCU)					
Link	Direction	AM			PM		
		DM	DS1	DS2	DM	DS1	DS2
B2150 Hambledon Road	Northbound	834	719	719	851	660	660
	Southbound	676	534	535	926	671	675

B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue roundabout

	Actual Flow (PCU)					
Approach	AM			PM		
	DM	DS1	DS2	DM	DS1	DS2
B2150 Hambledon Road	975	735	741	1315	868	869
A3 Maurepas Way (east)	1342	800	797	1620	742	740
A3 Maurepas Way (east)	772	474	471	916	534	530
Houghton Avenue	It is proposed that for the duration of works this arm will be closed to all traffic on both the entry and exit arms.					

A3 London Road between Poppy Fields and Ladybridge Road roundabout

		Actual Flow (PCU)					
Link	Direction	AM			PM		
		DM	DS1	DS2	DM	DS1	DS2
A3 London Road	Northbound	1086	608	620	947	514	514
	Southbound	842	451	448	970	563	559

Havant Road between Farlington Avenue and A2030 Eastern Road

		Actual Flow (PCU)					
Link	Direction	AM			PM		
		DM	DS1	DS2	DM	DS1	DS2
Havant Road	Eastbound	987	724	723	977	829	829
	Westbound	913	580	591	804	622	619

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A2030 Eastern Road between Airport Service Road and Burrfields Road

		Actual Flow (PCU)					
Link	Direction	AM			PM		
		DM	DS1	DS2	DM	DS1	DS2
A2030 Eastern Road	Northbound	1651	1573	1234	1433	1190	1164
	Southbound	1656	1361	1620	2247	1549	2200

Henderson Road

		Actual Flow (PCU)					
Link	Direction	AM			PM		
		DM	DS1	DS2	DM	DS1	DS2
Henderson Road	Eastbound	147	137	137	246	235	238
	Westbound	303	266	263	179	109	108

Detailed below is an explanation of the key diversion routes that the SRTM modelling has highlighted for each of the five sections within the Study Area.

West of Waterlooville

In the rural areas, the forecasted redistribution of traffic reflects the limited availability of roads for traffic to divert onto without involving a circuitous diversion. The vast majority of roads are unclassified, narrow single lane roads. Their limited carriageway width makes them unsuitable for high volumes of two-way traffic as this would involve drivers regularly having to give and take. This stop-start nature hinders journey times and acts as a deterrent for redistributing traffic. As such, the SRTM forecast suggests that diverting traffic is likely to be concentrated across a core set of routes. These are as follows:

- Furzeley Road – Newlands Lane – Purbrook Heath Road;
- Closewood Road – Newlands Lane – Purbrook Heath Road; and
- Anmore Road – Broadway Lane – Day Lane – Lovedean Lane.

The first two of these routes are known 'rat-runs' currently used by local traffic travelling between Denmead and Cosham. Newlands Lane is generally wide enough to support two-way traffic. Essentially, it cuts the corner offering a shorter route for traffic to access the A3 London Road corridor without travelling through central Waterlooville (thus avoiding three roundabout junctions and two signal controlled junctions). The use of Furzeley Road or Closewood road as part of this diversion will largely depend upon the location of the traffic management. It is anticipated that when traffic management is in place along the section of the B2150 Hambledon Road between Forest Road and Darnel Road, traffic will be diverting via Furzeley Road.

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Closewood Road is likely to be used when traffic management is in place along the sections of the B2150 Hambledon Road close to Waterlooville Town Centre.

Anmore Road provides access onto Broadway Lane, Day Lane and ultimately Lovedean Lane. Subsequently, it offers an alternative for vehicles travelling between Denmead and Horndean. It is likely that this route will be used when traffic management is in place on the section of the B2150 Hambledon Road between Forest Road and Darnel Road.

Waterlooville

Within Waterlooville, the forecasted diversion routes are slightly more complex owing to the larger proportion of nodes and traffic generators. Primarily the following diversion routes have been identified:

Roads linking B2150 Hambledon Road and A3 London Road:

- Sunnymead Drive – Milton Road – Hart Plain Avenue; and
- Sunnymead Drive – Milton Road – Silvester Road;

Roads linking A3 London Road to B2150 Hulbert Road:

- Highfield Avenue – Ferndale;
- Highfield Avenue – Stratford Road; and
- Park Lane – Tempest Avenue.

Roads offering an alternative to the A3 London Road Corridor:

- Friendstaple Road – Stakes Hill Road – Crookhorn Lane;
- Rockville Drive – Stakes Hill Road – Crookhorn Lane;
- Stirling Avenue – Hurstville Drive – Elizabeth Road – Westbrook Grove – Park Avenue;
- Mill Road; and
- Shaftesbury Avenue.

The corridors identified above have been disaggregated according to roads they link between to reflect the routes they are likely to be substituting for. However, it should be noted that in reality there is likely to be an element of fluidity and routes may be less defined. For example, these routes are likely to overlap with one another as drivers use different sections of each depending upon their particular trip. Additionally, it is possible that some of these diversion routes could amalgamate to form larger routes. Nevertheless, they are reflective of the major diversion routes that are anticipated to be used by vehicles when traffic management is in place along the B2150 Hambledon Road and A3 London Road corridors.

East of Waterlooville

The SRTM forecasts indicate a broad increase in traffic of between 0-10% across all assessed scenarios for both carriageways between Junction 2 and Junction 5 of the A3 (M). Notably there are increases at

Junctions 2 and 3. This suggests that traffic is travelling further along the A3(M) and redistributing onto the next junction along. In the PM peak this is predicted to be most pronounced with northbound traffic turning left onto the B2149 Dell Piece West. Furthermore, it's likely that some local traffic from Waterlooville is redistributing onto the A3(M).

Cosham, Farlington and Drayton

In the Cosham area, traffic is primarily forecast to diverting onto the following routes:

- B2177 Portsdown Hill Road – between the roundabout near to Southwick and the B2177 Bedhampton Road
- Evelegh Road;
- A2030 Havant Road;
- Grove Road – South Road;
- Grove Road – Station Road;
- Grove Road – Lower Drayton Lane;
- Fitzherbert Road; and
- Evelegh Road.

The routes via Grove Road and Fitzherbert Road are likely to experience an increase in traffic from the A2030 Eastern Road, the A2030 Havant Road and Havant Road avoiding traffic management at the intersection of these roads. Conversely, the increases in traffic along the A2030 Havant Road, Evelegh Road and the B2177 Portsdown Hill Road are anticipated to be the impact of traffic management on Farlington Avenue.

On Portsea Island, traffic redistribution is forecast to be most pronounced in the Anchorage Park / Copnor area along:

- Airport Service Road;
- Dundas Lane;
- Quartremaine Road;
- Burrfields Road / Stubbington Avenue; and
- The A288 Copnor Road Corridor between Norway Road and the A2030 Velder Avenue.

This is explained by the fact that the only set of traffic management along key radial roads into and out of Portsmouth will be along the A2030 Eastern Road between the junctions with Burrfields Road and Tangier Road. The diversion route highlighted above offers the only real alternative to drivers seeking to access areas on the eastern side of Portsmouth. By contrast, the M275 despite its motorway status, is not a feasible alternative as its primarily serves Portsmouth City Centre and the ports. The extra distance, coupled with the requirement to undertake a city journey means it does not offer any journey time savings.

METHODOLOGY AND SELECTION OF JUNCTIONS FOR ASSESSMENT

For the purpose of this assessment, a junction-based approach was undertaken. Firstly, all junctions of classified and / or key distributor roads within the designated 5km study area were identified. A list of 85 junctions was compiled to be taken forward for further assessment, the list and plan of 85 junctions can be found in Appendix B. This list of 85 junctions was inclusive of the 22 listed within the TA Scoping Note.

Following the identification of the junctions to be taken forward for assessment, an analysis of the change in traffic flow through these junctions was undertaken. The basis of this assessment was a comparison between the traffic flow on each arm of the identified junctions in the DM scenario with those in the DS scenarios. Junctions which experienced a greater than 10% increase in traffic flow on any entry or circulatory arm in the DS compared to the DM were taken forward for further assessment. Of the 85 junctions that were initially identified, 50 were taken forward for the next step of assessment.

The SRTM outputs for the 50 junctions that experienced a greater than 10% increase in traffic flow on an entry arm were then further assessed in order to determine if the approach/exit arms were still able to operate within theoretical capacity in all of the DS scenario, using the V/C outputs. In junction modelling terms a V/C value of less than 100% shows that a junction is working within capacity and a V/C of over 100% indicates that a junction is over capacity. Junctions comprising of links that had V/C of less than 100% in all DS scenarios (i.e. operating within capacity with the Aquind construction in place) were then also subsequently discounted from any further assessment.

Of the 50 junctions identified in step one as experiencing a 10% or greater increase in traffic flow on any entry or circulatory arm, 39 were still able to operate within their theoretical capacity in all DS scenarios. The table below provides a summary of how of the 22 junctions included within the TA Scoping Note, performed against this test.

Junction	Over 10% increase on any on entry or circulatory arm?	Over 100% V/C in any DS scenario?
B2150 Hambledon Road / Milton Road / Elettra Avenue roundabout	x	x
B2150 Hambledon Road / Aston Road traffic signal junction (Wellington Retail Park)	✓	x
B2150 Hambledon Road / A3 Maurepas Way / Houghton Avenue roundabout	x	x
A3 Maurepas Way / A3 London Road / Rockville Drive (Forest End Roundabout)	✓	x
Rocksville Drive / Stakes Hill Road traffic signal junction	✓	x
A3 London Road / Ladybridge Road roundabout	x	✓

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Stakes Road / Stake Hill Road / Purbrook Way / Crookhorn Lane roundabout	✓	x
Stakes Hill Road / Friendstaple Road roundabout	✓	x
Hulbert Road / Friendstaple Road / Tempest Avenue roundabout	✓	✓
A3 Maurepas Way / A3 London Road / B2150 Hulbert Road (Hulbert Road Roundabout)	x	x
Purbrook Way / College Road priority junction	✓	x
A2030 / Farlington Avenue / A2030 Eastern Road / Havant Road traffic signal junction	✓	x
A2030 Eastern Road / Grove Road and A2030 Eastern Road / Fitzherbert Road traffic signal junction	x	x
A2030 Eastern Road / Anchorage Road traffic signal junction	✓	x
A2030 Eastern Road / Airport Service Road traffic signal junction	✓	✓
A2030 Eastern Road / Burrfields Road traffic signal junction	x	✓
A2030 Velder Avenue / Milton Road traffic signal junction	x	✓
Burrfields Road/ Copnor Road traffic signal junction	✓	x
Norway Road / Copnor Road traffic signal junction	x	✓
Milton Road / St Mary's Road roundabout	✓	x
A27 Western Road / A3 London Road / A397 Northern Road / M27 (Portsbridge Roundabout)	x	✓
A3 Mile End Road / Church Street / Hope Street / Commercial Road roundabout	x	✓

The table shows that only two junctions met both tests based on the SRTM outputs, with a summary of results provided below for these locations. All junctions will be subject to further assessment within the Transport Assessment.

Hulbert Road / Friendstaple Road Roundabout / Tempest Avenue

The junction saw an increase in traffic flow of over 10% on one entry arm, the Friendstaple Road entry. This highest increase was in the AM Peak in the DS2 Scenario, in which the DS traffic flow was 79.01% (197 vehicles) higher than the DM scenario.

This junction also saw had several links which had V/C of over 100%, two of which were also over capacity in the DM. The two links which are not forecast to be over capacity in the DM, but are in the PM peak in both DS1 and DS2 are the Friendstaple Road entry and exit of this junction. Both the entry and exit of the Friendstaple Road arm go from being within their theoretical capacities in the PM peak in the DM scenario to exceeding them in the DS1 and DS2 scenarios. The highest V/C experienced of a link that was not already over capacity was 103.23% on the Friendstaple Road entry in DS1, this compared to a forecast V/C of 83.62% on this link in the PM peak in the DM.

A2030 Eastern Road / Airport Service Road Traffic Signal Junction

This junction saw an increase in traffic flow on just on entry arm, the Airport Service Road arm. This arm saw a maximum increase in actual traffic flow of 155.44% (57 vehicles), which was seen in the AM peak in the DS2 scenario.

This junction did see increases in V/C on two links, one in the AM and one in PM peaks respectively from below 100% V/C to being over capacity. The largest increase was seen on the A2030 Eastern Road (south) approach to the junction, which increased from a V/C 42.29% in the AM peak in the DM scenario, to 102.37% in the DS2 scenario in the same time period.

ADDITIONAL JUNCTIONS MEETING ASSESSMENT CRITERIA

Further to those junctions identified within the TA Scoping Note a further nine junctions have been identified as meeting the criteria for assessment as below:

1. A2030 Eastern Road / Tangier Road Traffic Signal Junction;
2. Stubbington Avenue / A2047 / Gladys Avenue / Angerstein Road;
3. Junction 2, A3 (M);
4. Junction 3, A3 (M);
5. Dell Piece West / A3 Portsmouth Road / Catherington Lane;
6. A2030 Eastern Road / Hayling Avenue;
7. B2177 Portsdown Hill Road / Maylands Road / B2177 Bedhampton Road / B2177 Bedhampton Hill;
8. A3 Southampton Road / A3 London Road / Spur Road/ Havant Road; and
9. Burrfields Road / Moneyfield Avenue / Dundas Lane.

This TN includes further assessment of each of these junctions in turn, set out in the zones presented in the Study Area chapter above.

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SRTM JUNCTION RESULTS REVIEW

West of Waterlooville

No identified within this zone met the criteria for assessment.

Waterlooville

Two junctions within this zone met the criteria for further assessment, these junctions are as follows:

- Dell Piece West / A3 Portsmouth Road / Catherington Lane; and
- Hulbert Road / Friendstaple Road Roundabout / Tempest Avenue.

Dell Piece West / A3 Portsmouth Road / Catherington Lane

This junction saw an increase in traffic flow of over 10% on only one entry arm, the B2149 Dell Piece West entry. This arm saw and increase in PM peak traffic flow of 10.02% (99 vehicles) in the DS1 scenario when compared to the DM. Further analysis of the SRTM data suggests that the majority of these additional vehicles are routing via the Hazelton Way exit of this junction, which saw a 98 vehicle increase in traffic flow.

Further to this, when assessing the links that comprise this junction, one had V/C of over 100% in the AM peak in DS1 and DS2. However it is noteworthy that all arms which are forecast to be over 100% in the DS scenarios are also forecast to be over 100% in the DM, and variations between the DM and either DS scenarios are less than 1% for all overcapacity links.

East of Waterlooville

Three junctions within this zone met the criteria for further assessment, these junctions are as follows:

- B2177 Portsdown Hill Road / Maylands Road / B2177 Bedhampton Road / B2177 Bedhampton Hill;
- Junction 2, A3 (M); and
- Junction 3, A3 (M).

B2177 Portsdown Hill Road / Maylands Road / B2177 Bedhampton Road / B2177 Bedhampton Hill

This junction saw an increase in traffic flow of over 10% on only one arm, the B2177 Portsdown Hill Road entry. This arm saw and increase in AM peak traffic flow of 38.57% (121 vehicles) in the DS1 scenario when compared to the DM, and 41.58% (131 vehicles) in the DS2.

When assessing the links that comprise this junction, two had V/C of over 100% in the AM / PM peak in DS1 and DS2. However, it should be noted the links which are forecast to be over capacity in the DS scenarios at this junction are also forecast to be over capacity in the DM scenario, and as such are not wholly attributable to the AQUIND proposals.

SRTM DATA ANALYSIS

DATE:	12 September 2019	**CONFIDENTIALITY:**	Confidential
SUBJECT:	SRTM Data Analysis		
PROJECT:	AQUIND Interconnector Ltd	**AUTHOR:**	Stacey Gander
CHECKED:	Lucy Jones	**APPROVED:**	Chris Williams

Junction 2, A3 (M)

In the PM peak, in both the DS1 and DS2 scenarios, approach / circulatory links that comprise this junction saw an increase in traffic flow of over 10%. This highest increase in traffic flow was seen in DS1 in the PM peak, and was an increase in traffic flow of 14.46% (159 vehicles) when compared to the DM on the A3(M) northbound off-slip. Further analysis of this junction suggests that these vehicles are routing via the B2149 Dell Piece West exit of this junction, which sees a corresponding increase in traffic flow of 141 vehicles.

This junction also has two links which are forecast to operate over capacity in one or more DS scenarios, however it should be noted that all arms which are forecast to be over 100% in the DS scenarios are also forecast to be over 100% in the DM, and thus the capacity issues on these links cannot be wholly attributable to the AQUIND proposals. Variations between the DM and DS scenarios are less than 3% for all overcapacity links at this junction, and the largest increase is seen on the westbound carriageway of Dell Piece East, which increase from 106.85% in the DM in the AM peak, to 108.26% in the DS1 scenario in the same time period.

Junction 3, A3 (M)

In the PM peak, in both the DS1 and DS2 scenarios, the Hulbert Road approaches to this junction saw an increase in traffic flow of over 10%. This highest increase in traffic flow was seen on the Hulbert Road approach, which saw an increase in traffic in DS2 of 50.38% (72 vehicles) in the PM peak when compared to the DM.

This junction also has four links which are forecast to operate over capacity in one or more DS scenario. It should be noted that all arms which are forecast to be over 100% in the DS scenarios are also forecast to be over capacity in the DM scenario. Variations between the DM and either DS scenarios are less than 2% for all over capacity links, with the largest increase on an over capacity link at thins junction being seen on the westbound carriageway of Hulbert Road. This link increased from a V/C of 108.97% in the PM peak in the DM scenario, to a V/C of 109.97% in the DS1 scenario in the PM peak.

Cosham, Drayton and Farlington

Spur Road Roundabout - A3 Southampton Road / A3 London Road / Spur Road/ Havant Road

This junction saw an increase in traffic of over 10% on one entry arm in one scenario. This entry arm was Spur Road, in the DS1 scenario in the PM peak, with this link seeing an increase of 14.74% (97 vehicles). Further analysis of the SRTM data suggests that these vehicles are exiting the junction via the A397 Northern Road exit, which sees a corresponding increase in actual traffic flow of 96 vehicles in the associated DS scenario.

In the PM peak, one link is forecast to operate over capacity at this junction in both the DS1 and DS2. However, again it should be noted that this link was also over capacity in the DM scenario. In this case, the overcapacity junction saw a decrease in V/C in both DS scenario when compared to the DM. The V/C for the link in the PM peak is forecast to be 101.07%, whilst DS1 and DS2 are forecast to be 100.96% and 101.1% respectively.

Portsea Island

A2030 Eastern Road / Hayling Avenue

At this junction, only one approach arm was forecast to see an increase in actual traffic flow of over 10% in any of the DS scenarios. This link is the Hayling Avenue approach of this junction, which saw an increase of over 10% in the PM peak in both DS1 and DS2. The highest increase was of 52.22% (72 vehicles) and was seen in the DS1 scenario in the PM peak. Further analysis of the SRTM suggests that these vehicles are exiting the junction at the A2030 Eastern Road (north) arm, which see a corresponding increase in actual traffic flow of 81 vehicles.

In the DS2 scenario in the PM peak, this junction had one link which was operating over 100% V/C. However, again it should be noted that this link was also over capacity in the DM scenario, and saw a decrease in V/C in both DS scenario when compared to the DM. In the PM peak in the DM scenario, this link is forecast to have a V/C of 102.24%, whereas in the DS1 and DS2 scenarios in the PM peak the same link is forecast to have V/C values of 65.68% and 102.01% respectively.

A2030 Eastern Road / Tangier Road Traffic Signal Junction

This junction saw an increase in traffic flow of over 10% on just one entry arm, in one scenario. This was the Tangier Road entry, which saw an increase of 10.2% (14 vehicles) in the DS1 scenario in the AM peak.

In the PM, in the DS2 scenario, this junction had one link which was operating over capacity. However, again it should be noted that this link was also over capacity in the DM scenario, and saw a decrease in V/C in both DS scenarios when compared to the DM. In the PM peak the DM scenario is forecast to see 102.24% V/C on the overcapacity link, whereas in the DS1 and DS2 scenarios this link is forecast to operate at 65.68% and 102.01% V/C respectively.

Stubbington Avenue / A2047 / Gladys Avenue / Angerstein Road

This junction saw an increase in traffic flow of over 10% on just one link, in one scenario. This approach was the Gladys Avenue entry, which saw an increase of 11.16% (63 vehicles) in the DS1 scenario in the PM peak.

This junction also has three links which are forecast to operate over capacity in one or more DS scenarios. Once more it should be noted that the majority of arms which are forecast to be over 100% in the DS scenarios are also forecast to be over capacity in the DM scenario. Variations between the DM and either DS scenarios are less than 5% for all overcapacity links at this junction, and the highest increase which is forecast is on A2047 London Road arm, which increased from a forecast V/C of 96.8% in the PM peak in the DM scenario, to a forecast 101.45% V/C in the DS1 scenario in the same time period.

SRTM DATA ANALYSIS

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Burrfields Road / Moneyfields Avenue / Dundas Lane

This junction saw and increase in traffic flow of over 10% on several entry arms in one or more of the DS scenarios. The highest increase was seen on the Dundas Lane entry which saw an increase of 150.68% (334 vehicles) in the PM peak in the DS1 scenario when compared to the DM. Further analysis of the SRTM outputs suggests that this additional traffic is exiting this junction via either Burrfields Road, which sees a corresponding increase in exiting traffic or 128 vehicles, or via the Dundas Lane exit, which see an increase in exiting traffic of 263 vehicles.

The only DS scenario to be forecast to have overcapacity links is the DS1 scenario in the PM peak. In this scenario, two links are forecast to be overcapacity, the Dundas Lane entry and the Burrfields Road exit. Of these two links, the Dundas Lane entry is also forecast to operate overcapacity in the DM scenario in the PM peak, with the V/C for this link increasing from 100.4% in the DM to 101.4% in DS1. The Burrfield Road exit sees a higher increase in V/C in the PM peak, increasing from 54.55% in the DM, to 100.8% in DS1.

PROPOSED NEXT STEPS

It is proposed that following this initial assessment, that the Transport Assessment will go on to further assess the impact of the proposals at the identified junctions in detail, looking into delay and further V/C assessments. The further analysis undertaken in the Transport Assessment will help to inform the mitigation set out in both the Traffic Management Strategy and the Construction Traffic Management Plan as to further minimise the impact of the proposals.

SRTM DATA ANALYSIS

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APPENDIX A – TRANSPORT ASSESSMENT SCOPING NOTE

AQUIND Limited

AQUIND INTERCONNECTOR UK

Draft Transport Assessment Scoping Note

AQUIND Limited

AQUIND INTERCONNECTOR UK

Draft Transport Assessment Scoping Note

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

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Signature				
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Signature				
Authorised by	Darren Pacey	Darren Pacey	Darren Pacey	
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1 INTRODUCTION

1.1.1. This report details the scope of the Transport Assessment to be undertaken in support of an application to be made to the Secretary of State for a Development Consent Order (DCO) for the AQUIND Interconnector project. This report sets out the tasks necessary to ensure the Transport Assessment adheres to all relevant guidance, and that any analysis undertaken is sufficiently robust to allow for informed decision making in respect to the future DCO submission.

1.1.2. Following the first round of consultation in January 2018, a statutory consultation was held between Wednesday 27th February 2019 and Monday 29th April 2019 where the Preliminary Environmental Information Report (PEIR) and other consultation documentation was consulted on.

1.1.3. The scope of the assessment was refined taking into account discussions with both Hampshire County Council (HCC) and Portsmouth City Council (PCC) and feedback received following the statutory consultation.

1.1.4. In summary, the following feedback was received from HCC and PCC on the scope and methodology of assessment.

HAMPSHIRE COUNTY COUNCIL

- Details are required of the Converter Station site access for agreement in principle. Designs should be accompanied by relevant vehicle speeds, vehicles tracking, visibility splays and a Road Safety Audit;
- Construction worker trip distribution requires reworking from PEIR assumptions to ensure these are robust;
- Confirmation of construction traffic number is required and how this is used for assessment purposes;
- Confirmation of operational stage trip generation is required;
- Forecasts of future year traffic should include vehicle trips from the West of Waterlooville MDA;
- The study area should be expanded from the PEIR to include assessment of the impact on the adjoining road network as a result of traffic re-routing;
- Further analysis is required of impacts associated with installation of the Cable Route;
- Clarification is required from the HCC NRSWA team regarding traffic sensitivity along the route and how the assessment of links will be completed within the TA;
- Detailed Traffic Management plans are required for the Onshore Cable Route;
- Proposed junction improvements at Ladybridge Roundabout should be taken into account;
- The Personal Injury Accident Data should be updated, and analysis completed to review whether there are patterns of accidents that would be exacerbated by the construction process;
- An assessment is required on the impact to public transport services along the route; and
- A detailed Construction Traffic Management Plan should be provided for each specific aspect of the works.

PORTSMOUTH CITY COUNCIL

- Traffic modelling should assess wider and cumulative impacts associated with installation of the Onshore Cable Route;
- An assessment of abnormal loads is required, accounting for the proposed route between Ferryport and joint bay location;

- A detailed Construction Traffic Management Plan (CTMP) will be required, with a tailored CTMP for each phase detailing the Traffic Management requirements; and
- A full set of Traffic Management drawings will be required.

1.1.5. This scoping report has been prepared in accordance with the Planning Practice Guidance (PPG) (DCLG, March 2014) entitled 'Travel Plans, Transport Assessments and Statements in Decision Taking'.

1.2 DEVELOPMENT PROPOSALS

1.2.1. AQUIND Interconnector is a proposed High Voltage subsea and underground electric power transmission link between the South Coast of England and Normandy in France being promoted by AQUIND Limited (AQUIND). It will have a nominal power capacity of 2,000 MW. To enhance the security of supply the scheme will be implemented as two separate symmetrical monopoles ("poles") each of 1,000 MW.

1.2.2. By linking the British and French electric power grids, the Project will help make energy markets more efficient, improve security of supply and enable greater flexibility. The Project supports the European Commission's aim to create an integrated European energy market and for meeting the EU's energy policy objectives for affordable, secure and sustainable energy.

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

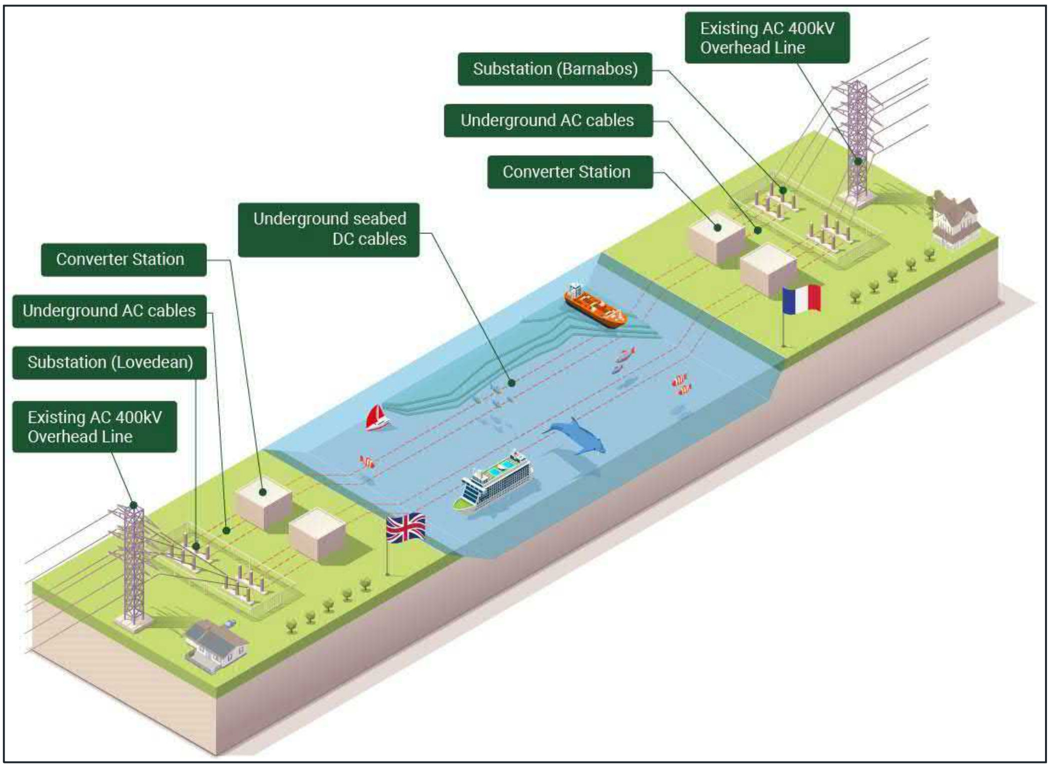
1.2.4. The elements located onshore in England and within the UK marine area are referred to as the Proposed Development. These have been recognised by the Secretary of State for Business Energy and Industrial Strategy as a Nationally Significant Infrastructure Project (NSIP) for which development consent is required under the Planning Act 2008. AQUIND propose to make an application for a Development Consent Order (DCO) to the Secretary of State to seek the necessary authorisation for the construction and operation of the Proposed Development.

1.2.5. The basic components of the Proposed Development are:

- four HVDC marine cables required to connect the UK elements of the overall project with the elements in France;
- Landfall in Eastney (works to connect the onshore HVDC underground cables to the marine HVDC cables, comprising two underground chambers to house the cable joints, known as transmission joints);
- four underground HVDC onshore cables to be installed in pairs from a landfall in Eastney to a proposed new converter station in Lovedean, Hampshire (Converter Station). Each pair is referred to as a circuit (Circuit) and will also include one fibre optic cable in each;
- A proposed Converter Station in Lovedean, Hampshire (required to convert electricity between HVDC and HVAC, consisting of a mix of buildings and outdoor electrical equipment, internal roads and car parking); and
- Underground high voltage Alternating Current (AC) cables to be installed in two circuits, each consisting of three HVAC cables and one fibre optic cable to be installed between National Grid's Lovedean substation and the converter station for onward transmission to the national electricity network.

1.2.6. The main elements of the Proposed Development can be seen in Figure 1-1.

Figure 1-1 - Main project elements



2 TRANSPORT ASSESSMENT SCOPE

2.1 INTRODUCTION

2.1.1. A comprehensive Transport Assessment (TA) will be prepared in support of the DCO submission, inclusive of the elements detailed within this section. This section outlines the parameters and methodology to be used in assessing the development proposals.

2.2 PLANNING POLICY

2.2.1. Planning policy documents, at both a national and local level, will be reviewed and summarised as appropriate.

2.2.2. The review of the relevant planning policy and guidance will seek to demonstrate the Proposed Development's compliance with local, regional and national transport and planning development objectives.

NATIONAL PLANNING POLICY

2.2.3. The following national planning policy documents will be reviewed within the TA:

- Overarching National Policy Statement for Energy (EN-1), Department of Energy and Climate Change, July 2011; and
- National Planning Policy Framework, 2018.

LOCAL PLANNING POLICY

2.2.4. Furthermore, the following local policy documents will be reviewed:

- The Portsmouth Plan, Portsmouth's Core Strategy, PCC, 2012;
- Portsmouth Local Transport Plan 3, PCC, 2011;
- Hampshire Local Transport Plan, HCC, 2011;
- Havant Borough Council Core Strategy, 2011;
- Draft Havant Borough Council Local Plan 2036, published for consultation from 08/01/2018 – 16/02/2018;
- Winchester District Local Plan Part 1, Joint Core Strategy, 2013;
- Submission Local Plan, Winchester District Local Plan Part 2: Development Management and Site Allocations, 2016; and
- East Hampshire District Local Plan: Joint Core Strategy, Adopted June 2014.

2.3 STUDY AREA

2.3.1. The study area for this assessment is proposed to be inclusive of the Converter Station, the Onshore Cable Corridor, and the proposed routing options for construction traffic to each component of the project, as well as any adjoining / parallel roads likely to be impacted by construction, for example, diversionary traffic routes. The final Onshore Cable Corridor and study area will be decided upon following the review and full consideration of consultation responses received.

2.3.2. For the purpose of assessment, the route will be split into two sections: the Onshore Cable Corridor (including proposed routing options for construction traffic to each component of the project, as well as any adjoining / parallel roads likely to be impacted); and the proposed construction and operational access route for the Converter station. All roads contained within the study area fall under the control of Hampshire County Council (HCC), Portsmouth City Council (PCC) or Highways England (HE).

2.4 EXISTING CONDITIONS

STUDY AREA DESCRIPTION

2.4.1. The TA will contain a comprehensive review of the existing conditions in the study area, including a description of all links included. The description will include highway provisions, as well as descriptions of public transport, pedestrian and cyclists, and where appropriate, equestrian provision for all links that form part of the cable route or access route to the Converter Station, plus other major links impacted by the development proposals.

2.4.2. Within the review of the existing conditions of the study area, a review of any Public Rights of Way (PRoW) which are likely to be impacted by the Proposed Development will also be undertaken.

EXISTING TRAFFIC FLOW

Traffic Count Surveys

2.4.3. A series of 34 Automated Traffic Count (ATC) surveys were undertaken in June 2018 at various locations across the study area. The locations of these traffic surveys are set out as follows:

- **Fort Cumberland Road** between the junctions with Gibralter Road and Henderson Road;
- **Bransbury Road** between the junctions with Eastney Farm Road and Minstead Road;
- **A288 Milton Road** between the junctions with Milton Park Avenue and Postbrooke Road;
- **A2030 Velder Avenue** between the junctions with Euston Road and Moorings Way;
- **A2030 Eastern Road** between the junctions with Tangier Road and Burfields Road;
- **A2030 Eastern Road** between the junctions with Anchorage Road and A27 Havant Bypass;
- **A2030 Eastern Road** between the junctions with A27 Havant Bypass and Grove Road;
- **A2030 Eastern Road** between the junctions with Fitzherbert Road and A2030 Havant;
- **Farlington Avenue** between the junctions with Solent Road and Sea View Road;
- **B2177 Portsdown Hill Road** between the junctions with Hilltop Crescent and A3 London Road;
- **Boundary Way** between the junctions with B2177 Portsdown Hill Road and A3 London Road;
- **A3 London Road** between junctions with Boundary Way and Oakhurst Gardens;
- **A3 London Road** between the junctions with Blossom Drive and Park Road;
- **A3 London Road** between the junctions with Milk Lane and Corbett Road;
- **A3 Maurepas Way** between the junctions with A3 London Road and B2150 Hambledon Road;
- **B2150 Hambledon Road** between the junctions with Aston Road and Silverthorne Way;
- **B2150 Hambledon Road** between the junctions with Charlesworth Drive and Sickle Way;
- **B2150 Hambledon Road** between the junctions with Close wood Road and Soake Road;
- **Moorings Way** between the junctions with Salterns Avenue and Mariners Walk;
- **B2177 Portsdown Hill Road** between the junctions with New Down Lane and Dellcrest Path;
- **Birkdale Avenue** between the junctions with Farlington Avenue and Troon Crescent;
- **Mill Road** between the junctions with Hambledon Road and Anmore Road;
- **London Road** between the junctions with A3 London Road and B2177 Portsdown Hill Road;
- **B2150 Hambledon Road** between the junctions with Mill Road and Maple Drive;
- **Anmore Road** between the junctions with Soake Road and Edney's Lane;
- **Milton Road** between the junctions with Jubilee Road and Tennyson Crescent;
- **Lovedean Lane** between the junctions with Woodbury Grove and Gypsy Lane;
- **Day Lane** between junctions with Broadway Lane and Lovedean Lane;

- **Martin Avenue** between the junctions with B2150 Hambledon Road and Anmore Road;
- **B2149 Dell Piece West** between the A3 (M) Junction 2 and the junction with Lakesmere Road;
- **A3 Portsmouth Road** between the junctions with Keydell Avenue and Hazleton Way;
- **Lovedean Lane** between the junctions with Milton Road and Parklands Avenue;
- **Lovedean Lane** between the junctions with Hinton Manor Lane and Roads Hill; and
- **Chalton Lane** between the junctions with Green Lane and A3.

2.4.4. Additional traffic surveys will be commissioned to be undertaken in June 2019. The additional surveys will be undertaken in order to gain a more comprehensive overview of the baseline traffic environment both along the Onshore Cable Corridor, constructions routes, and adjoining / parallel roads.

- **Additional Automated Traffic Counts**:
  - **Broadway Lane** between the junction with Day Lane and Lovedean substation;
  - **Soake Road** between the junction with B2150 Hambledon Road and the junction with Anmore Road;
  - **A3** between Maurepas Way and Hulbert Road;
  - **Ladybridge Road** between the junction with A3 London Road and the junction with Stakes Road;
  - **Fitzherbert Road** between A2030 Eastern Road and access road into Sainsbury's and B&M retail park;
  - **Evelegh Road** between the junction with Farlington Avenue and the junction with Galt Road;
  - **Anchorage Road** between Eastern Road and the junction with Robinson Way;
  - **Airport Service Road** between Robinson Way and Dundas Lane;
  - **A2030 Eastern Road** between Airport Service Road and Burfield Road;
  - **Burfields Road** between Dundas Lane and A2030 Eastern Road;
  - **Locksway Road** between Ironbridge Road and Furze Lane;
  - **Ironbridge Lane** between Locksway Road and Tideway Gardens; and
  - **Kingsley Road** between Ironbridge Road and Tideway Gardens.
- **Additional Manual Classified Turning Counts:**
  - Hambledon Road / Milton Road roundabout;
  - Hambledon Road / Aston Road (Wellington Retail Park) traffic signal junction;
  - Hambledon Road / A3 / A3 Maurepas Way roundabout;
  - A3 London Road / Ladybridge Road roundabout;
  - A2030 /Farlington Avenue / A2030 Eastern Road / Havant Road traffic signal junction;
  - A2030 Eastern Road / Grove Road and A2030 Eastern Road / Fitzherbert Road traffic signal junction;
  - A2030 Eastern Road / Anchorage Road traffic signal junction;
  - A2030 Eastern Road / Burfields Road traffic signal junction; and
  - A2030 Eastern Road / Airport Service Road traffic signal junction.

PERSONAL INJURY ACCIDENT DATA

2.4.5. Personal Injury Accidents (PIA) data will be collected for the most recent five-year period for all links and junctions that form part of the study area**.** A review of this PIA data will be undertaken, and analysis will identity the location of any clusters of accidents which may be sensitive to increases in traffic or HGV flow, or any other existing highways safety issues which may be impacted by development traffic.

2.5 CONVERTER STATION CONSTRUCTION TRAFFIC ASSUMPTIONS

2.5.1. For the Convertor Station, the peak in construction is anticipated to occur in 2022 during enabling works and building of the foundations and structure of the main convertor buildings. During this time it is anticipated that there will be the following construction traffic movements to / from the convertor station:

- 45 HGV two-way construction traffic movements per day (90 in total);
- 55 non-HGV two-way construction traffic movements per day (110 in total); and
- 150 staff working on-site at the convertor station.

2.5.2. A classification of HGV types will be provided within the TA.

2.5.3. At this stage, it is assumed that all construction traffic movements will take place between 07:00 and 19:00 Monday to Friday, spread evenly throughout the day but with HGVs avoiding the peak hours of 08:00 - 09:00 and 17:00-18:00 as would be prescribed by the Construction Traffic Management Plan (CTMP). It is anticipated that all construction traffic movements will travel to and from the site via the following route:

- B2149 Dell Piece West between Junction 2, A3 (M) and A3 Portsmouth Road;
- A3 Portsmouth Road between the junction with B2149 Dell Piece West / Catherington Lane and the junction with Lovedean Lane;
- Lovedean Lane between the junction with A3 Portsmouth Road and the junction with Day Lane;
- Day Lane; and
- Broadway Lane between the junction with Day Lane and Lovedean Substation.

2.5.4. Where analysis is undertaken of construction traffic, it will be assumed that arrivals and departures are spread equally though the day, excluding the peak hours where traffic movements will be prohibited. This means that construction vehicle movements will take place over 10-hours, and with all decimals rounded up to the next whole number. This is shown on **Table 2-1** below

Table 2-1 – Construction Traffic Movements

	Arrivals per Hour	Departures per Hour	Total
HGV Construction Traffic	5	5	100 (rounded from 90)
Non-HGV Construction Traffic	6	6	120 (rounded from 110)
TOTAL	11	11	220 (rounded from 200)

2.5.5. This method of assessment is considered robust as it overestimates the number of construction vehicles associated with the Proposed Development.

SWEPT PATH ANALYSIS

2.5.6. The TA will include swept path analysis of construction traffic using the route described above, including Abnormal Indivisible Loads (AILs) associated with the development proposals. This will identify locations which may require temporary alteration to cater for construction traffic and additional traffic management measures that may be required to accommodate AIL trips.

CONSTRUCTION WORKERS

2.5.7. Construction workers are proposed to arrive on-site at 07:00 and 11:00 and depart at 15:00 and 19:00. Construction worker shift start / finish times will be spread throughout this period and will avoid the peak hours on the surrounding highway network (e.g. shifts of 07:00 – 15:00 and 11:00 – 19:00).

2.5.8. In the pre-application discussions with HCC, concerns were raised regarding the application of general traffic pattern data to forecast trip generation, distribution or parking requirements. At HCC's request, a revised assessment has been undertaken into the travel patterns which are likely to occur at the Converter Station in respect to the specific and specialist nature of the works being undertaken. For the purposes of conducting a robust assessment of the likely impact of travel of construction staff to and from the proposed converter station, the revised assessment includes an assumed vehicle occupancy rate of 1.0 for staff, and an assumption that all staff will travel to the site via private car.

2.5.9. At peak construction it is estimated that a maximum of 150 employees will be working on the converter station on a single day, thus resulting in 150 trips both to and from the site. The total 300 daily trips have been distributed across the local and strategic road network using data from the 2011 Census dataset *"WU03EW – Location of usual residence and place of work by method of travel to work (MSOA level)"*. This dataset was used to determine the likely home location of construction staff working on the proposed converter station. Construction staff trips were then assigned to the road network using the most appropriate route from their home location to the converter station site. The resultant trip assignment on the local highway network is set out in **Table 2-2**.

Table 2-2 – Converter station construction staff trips (local road network only)

Route to Proposed Converter Station	Percentage of trips (%)	Total trips (two way)
A3(M) Junction 2 - B2149 Dell Piece West - A3 Portsmouth Road - Lovedean Lane - Day Lane - Broadway Lane	34.82%	104
B2150 Hambledon Road - Soake Road - Anmore Lane - Broadway Lane	11.28%	34
East Meon Road - South Lane - Downhouse Road - Lovedean Lane - Day Lane - Broadway Lane	5.76%	17
A3 Junction with Chalton Lane - Chalton Lane - South Lane - Downhouse Road - Lovedean Lane - Day Lane - Broadway Lane	14.89%	45
Hyden Farm Lane - Old Mill Lane - Unnamed Road towards Broadway Lane - Broadway Lane	5.36%	16
Southwick Road - B2150 Hambledon Road - Anmore Road - Anmore Lane - Broadway Lane	3.04%	9
Shoot Hill - Unnamed Road between Shoot Hill and Forest Road - Forest Road - Southwick Road - B2150 Hambledon Road - Anmore Road - Anmore Lane - Broadway Lane	4.75%	14
Milton Road - Lovedean Lane - Day lane - Broadway Lane	11.85%	36

A3 London Road - Lovedean Lane - Day Lane - Broadway Lane	5.68%	17
Corhampton Lane - A32 warnford Road - B2150 - B2150 Hambledon Road - Anmore Road - Anmore Lane - Broadway Lane	2.56%	8
Total	**100%**	**300**

2.5.10. The TA will contain an assessment of the impact of these trips on the local road network through the methodology outlined in Section 2.9.

2.6 CONVERTER STATION ACCESS JUNCTION

2.6.1. A feasibility level design will be completed for the converter station access for submission to HCC. The access junction will be within the vicinity of the Day Lane / Broadway junction, although the exact location is still to be determined. The feasibility design will be subject to the relevant swept path and visibility splay assessments. Once the feasibility design has been submitted to HCC for comment, it will also be subject to an independent Stage 1 Road Safety Audit.

2.6.2. Once operational, it is anticipated that the converter station access will be gated with access required only a few times per month for maintenance purposes.

2.7 CABLE ROUTE CONSTRUCTION TRAFFIC ASSUMPTIONS

2.7.1. The installation of the onshore underground cables will also generate construction traffic movements which will impact upon the study area and may interact with construction traffic movements associated with the convertor station. It is assumed that the HVDC cables will be installed along the Onshore Cable Corridor in 100m sections between Landfall and Convertor Station with it being possible, due to the length of the route, that a number of sections are constructed at the same time.

2.7.2. From a construction traffic point of view it is anticipated that each 100m installation section will generate the following construction traffic movements:

- 4 two-way HGV movements (8 in total) per day outside of peak hours of 08:00-09:00 and 17:00-18:00;
- 2 two-way LGV movements carrying personnel / equipment to site (4 in total) per day; and
- There will be 6-8 construction workers per gang, who will travel to site via LGVs listed above from the nearest site compound.

2.7.3. While construction site compound locations are yet to be confirmed, at this stage it is assumed that there will be two sites located along the cable route as follows:

- At the Lovedean convertor station; and
- West of Eastern Road on the Anchorage Park industrial estate.

2.7.4. It is assumed that all construction traffic movements originate from the nearest construction compound and that construction workers are routed to these locations using the fastest route from the strategic road network.

2.7.5. For trip generation purposes and to provide a robust assessment it will be assumed that there are six coinciding cable installation sections taking place at peak construction (three per construction compound). It will also be assumed for trip generation purposes that the location is each gang is the same as that within the SRTM modelling scenarios discussed in Section 2.9 and for non-through routes not included within the SRTM an estimate of construction traffic will be estimated assuming a gang is located at the furthest point from adjoining access routes.

2.8 TRAFFIC MANAGEMENT STRATEGY

2.8.1. The TA will contain a draft Traffic Management Strategy (TMS) for the HVDC onshore cable installation process. The draft TMS will be completed for each section of the Onshore Cable Corridor and expand upon the traffic management proposals set out in **Table 1-6** of Chapter 21 of the submitted PEIR.

2.8.2. The traffic management proposals for the cable route will be derived in accordance with the construction methodology, a preliminary version of which is located at Chapter 3 of the PEIR and is to be refined prior to submission of the application for the DCO, and guidelines contained with the Traffic Signs Manual Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Solutions – Part 1: Design (DfT, 2009).

2.8.3. In summary, it is assumed that for each cable trench:

- the cable installation will take place in 100m sections and at a rate of 18-30m per day, therefore taking approximately five working days to complete each section and requiring a maximum 150m working length;
- the construction corridor width will generally be 4-6m wide on carriageway, although this can be reduced to 3m at local pinch points if required;
- construction on footway will require 2m on footway / verge and 3m on carriageway to allow for access by construction vehicles; and
- Entirely off-carriageway works, including vehicle access, can only be accommodated where a minimum of 16m is available to provide for a haul road and storage of materials.

2.8.4. Where one cable trench is installed at a time at any given point of the cable route, traffic management requirements can be summarised as follows in order of impact on traffic:

- Footway works with no impact on the carriageway;
- Footway works requiring single-lane closure of carriageway which maintains two-way traffic flow or maintains at least one lane in each direction;
- On-carriageway works requiring single-lane closure of carriageway which maintains two-way traffic flow or maintains at least one lane in each direction;
- On-carriageway works requiring single-lane closure and temporary shuttle working traffic signals; and
- On-carriageway works requiring full closure for vehicle access.

2.8.5. The Traffic Management Strategy will also provide details of the following:

- The type of traffic management required for the for each stage of construction along the entirety of the Onshore Cable Corridor;
- Management of deliveries;
- Proposed timing of works in terms of start / finish times (day or night) and specific restrictions are required on sensitive links;
- Duration of works;
- How access to private properties will be managed on a link by link basis;
- Proposed diversion routes where road closures are required;
- Identification of affected PRoW, footways and cycle routes and proposed diversions where appropriate; and
- Identification of affected pedestrian crossings and bus stops.

2.8.6. This list is not exhaustive and further information will be required within the TMS as appropriate.

2.9 ASSESSMENT METHODOLOGY

2.9.1. The Transport Assessment will assess the impacts of the Proposed Development on users of the transport network defined by the study area. The impact assessment will focus on the construction phases of the project, split into converter station and cable route aspects.

TRAFFIC ASSESSMENT

2.9.2. The traffic assessment section will focus on the impacts of the cable installation process and will be directly related to the Traffic Management Strategy produced for each section of the route. This will include a consideration of primary impacts along the Onshore Cable Corridor itself and secondary impacts resulting from traffic distribution during construction works. In response to consultation feedback received from HCC and PCC key locations along the cable route will be assessed using the Solent Transport Sub-Regional-Transport-Model (SRTM).

Scope of SRTM Transport Modelling

2.9.3. The SRTM will be used to asses a realistic worst-case scenario based upon the anticipated construction methodology for the onshore cable route, which will use up to six construction gangs for the Onshore Cable Route. This means that six locations along the Onshore Cable Route could have traffic management employed on them at the same time and therefore this will be assessed using the SRTM. To assess the impacts along the entirety of the route the following locations will include cable installation construction and Traffic Management within the SRTM:

- Shuttle working traffic signals on B2150 Hambledon Road between Soake Road and Closewood Road;
- Single lane closure on B2150 Hambledon Road between Ashton Road (Wellington Retail Park) and Silverthorne Way;
- Shuttle working traffic signals on the A3 London Road between Poppy Fields and Ladybridge roundabout;
- Single lane closure on Havant Road between Farlington Avenue and Eastern Road;
- Single lane closure on A2030 Eastern Road between Airport Service Road and Burfields Road; and
- Shuttle working traffic signals on Bransbury Road between Bransbury Park and Fort Cumberland Road.

2.9.4. Due to lane closure of dual-carriageway links taking place independently for each direction, a full assessment of these locations requires the following scenarios to be run:

1. All locations with Northbound lane closure on Eastern Road between Airport Service Road and Burfields Road and Northbound lane closure on Hambledon Road between Ashton Road and Silverthorne Way; and
2. All locations with Southbound lane closure on Eastern Road between Airport Service Road Burfields Road and Southbound closure on Hambledon Road between Ashton Road and Silverthorne Way.

2.9.5. Each of these scenarios will be assessed for the AM, Inter-peak and PM peak hours using the SRTM forecast year of 2026. This will provide a robust assessment of impacts, using traffic flows which are higher than those that would be anticipated during the construction period of 2022.

2.9.6. The following outputs will be extracted from the SRTM for each of the assessed scenarios:

- Traffic flow changes along the cable route and on adjacent corridors / junctions;
- V/C (capacity) assessments at key junctions as defined below; and
- Journey times changes for key routes as defined below.

2.9.7. This will allow a detailed assessment to be completed at locations along the route and along parallel / adjoining road where the greatest impacts are anticipated. Below are details of V/C and journey time assessments that will be completed for each location.

- Hambledon Road / Milton Road roundabout;
- Hambledon Road / Ashton Road traffic signal junction (Wellington Retail Park);
- Hambledon Road / A3 / Maurepas Way roundabout;
- Maurepas Way / A3 London Road roundabout;
- Rocksville Drive / Stakes Hill Road traffic signal junction;
- A3 London Road / Ladybridge road roundabout;
- Stakes Road / Stake Hill Road / Purbrook Way roundabout;
- Stakes Hill Road / Friendstaple Road roundabout;
- Hulbert Road / Friendstaple Road roundabout;
- A3 / Hulbert Road roundabout;
- Purbrook Way / College Road;
- A2030 /Farlington Avenue / A2030 Eastern Road / Havant Road traffic signal junction;
- A2030 Eastern Road / Grove Road and A2030 Eastern Road / Fitzherbert Road traffic signal junction;
- A2030 Eastern Road / Anchorage Road traffic signal junction;
- A2030 Eastern Road / Airport Service Road traffic signal junction;
- A2030 Eastern Road / Burfields Road;
- A2030 Velder Avenue / Milton Road traffic signal junction;
- Burfields Road Copnor Road traffic signal junction;
- Norway Road / Copnor Road traffic signal junction;
- Milton Road / St Mary;s Road roundabout;
- A27 / A3 Portsbridge roundabout; and
- A3 Mile End Road / Church Street / Hope Street / Commercial Road roundabout.

2.9.8. Journey time assessments will be provided for routes between the A27 / M27 and Portsmouth City Centre via:

- A2030 Eastern Road;
- Copnor Road;
- A3 Northern Parade; and
- M275.

2.9.9. Journey time assessments will also be provided for routes between Cosham / Purbrook and Waterlooville / Denmead via:

- The A3 London Road;
- Stakes Road and Stakes Hill Road;
- Portsdown Hill Road, Crookhorn Lane and Stakes Hill Road; and
- A27 and A3(M).

2.9.10. All outputs will be presented within the TA with and without installation of the Onshore Cable Route for comparison purposes.

Shuttle Working Traffic Signal Assessments

2.9.11. Further to use of the SRTM, an assessment will be completed of links where it is anticipated that shuttle working temporary traffic signals will be required to control opposing traffic flow due to lane closures. At present, it is estimated that this type of traffic management will be required on the following links:

- Hambledon Road in Waterlooville;
- Sections of the A3 London Road in Purbrook and Widley;
- Portsdown Hill Road and the link between A3 London Road and Portsdown Hill Road;
- Farlington Avenue in Farlington;
- Moorings Way, Furze Lane, Locksway Road and Kingsley Road in Milton; and
- Bransbury Road and Fort Cumberland Road in Eastney.

2.9.12. The operation of these traffic signals during the AM, PM and Interpeak hour will be assessed using traffic flows derived from the SRTM (where available) and Linsig traffic signal software to calculate the estimated queue lengths and delay at each location. This analysis will also feed into journey time and traffic reassignment estimates discussed below.

Link Capacity Assessments

2.9.13. Where traffic management measures are proposing lane closures of dual-carriageway links, an assessment of link capacity will be completed using DMRB Volume 5 Section 1 Part 3 – TA79/99. This will be completed for the AM, PM and Interpeak hour using traffic flows derived from the SRTM where available. At present, it is estimated that lane closures will be required on the following links:

- Hambledon Road between Milton Road and A3 Maurepas Way;
- A3 Maurepas Way between Hambledon Road and A3 London Road;
- Havant Road between Farlington Avenue between Farlington Avenue and A2030 Eastern Road;
- A2030 Eastern Road between Havant Road and Fitzherbert Road; and
- A2030 Eastern Road between Airport Service Road and Milton Common.

2.9.14. These assessments will highlight where links are anticipated to be approaching or operating over capacity during each of the assessed peak hours.

WALKING AND CYCLING ASSESSMENT

2.9.15. The walking and cycling assessment will mainly focus on installation of the Onshore Cable Corridor but will also consider access to and from the Converter Station. This will include the following topics:

- Details of footways and pedestrian crossing point closures and identification of suitable diversions and alternative provision;
- Details of impacted cycle routes and identification of suitable diversions and alternative provision; and
- Impacts to Public Rights of Way, including temporary / permanent closures and diversions where these may be required.

2.9.16. These aspects will be assessed on the basis of the most probable construction method, noting that these may change once detailed design stages have been completed.

PUBLIC TRANSPORT ASSESSMENT

2.9.17. A number of bus routes and services will be impacted by the cable installation process. The TA will assess the impacts to bus services and bus stops along the route, provide estimated delays and identify diversion routes where these may be required. At this stage, it is estimated that the most significant impacts will be on the Star bus service that operates between Waterlooville and Portsmouth and the route 13 that runs through Moorings Way, Furze Lane and Locksway Road in Milton.

FUTURE YEAR TRAFFIC SCENARIOS

2.9.18. Future year traffic flows will be derived from the SRTM where links are assessed using this model. However, where links are not included in the SRTM a combination of TEMPRO and committed developments will be used to estimate base traffic flows in 2022.

Tempro Growth Factors

2.9.19. TEMPRO Version 7.2 has been used calculate growth factors to be applied to baseline traffic flows in order to estimate 2022 future year flows. Growth factors have been calculated for the AM peak (07:00 – 10:00), interpeak (10:00 – 16:00) and PM peak (16:00 – 19:00) periods, as well as for the average weekday. The growth factors were calculated for car trips only, from NTM AF15 Dataset, and taken as an average from the geographic regions of Havant and Portsmouth. The resultant growth factors for the 2018 and 2019 survey data are set out in **Table 2-3**.

Table 2-3 – TEMPRO Growth Factors

	TEMPRO Growth Factor (2018 – 2022)		
	Havant	Portsmouth	Average
AM Peak (07:00 – 10:00)	1.062	1.070	1.066
Interpeak (10:00 – 16:00)	1.062	1.066	1.064
PM Peak (16:00 – 19:00)	1.058	1.065	1.061
Average Weekday	1.059	1.065	1.062
	TEMPRO Growth Factor (2019 – 2022)		
	Havant	Portsmouth	Average
AM Peak (07:00 – 10:00)	1.047	1.057	1.052
Interpeak (10:00 – 16:00)	1.047	1.054	1.051
PM Peak (16:00 – 19:00)	1.044	1.054	1.049
Average Weekday	1.045	1.054	1.049

Committed Development Traffic Flows

2.9.20. In addition to the application of TEMPRO growth factors, estimated trip generation related to major committed developments within the vicinity of the study area will also be included in future year traffic flows. These include:

- St James Hospital, Milton (Plot 1): 107 units; and
- West of Waterlooville MDA: 1,617 units out of 2,550 units due to be completed by 2022, which accounts for phases 1-7 and part of phase 8.

2.9.21. For the West of Waterlooville MDA, the trip generation will be based upon the anticipated net increase in dwellings between the completion of the traffic surveys and 2022.

2.10 DRAFT CONSTRUCTION TRAFFIC MANAGEMENT PLAN

2.10.1. The TA will contain a draft Construction Traffic Management Plan (CTMP), which will detail the management proposals put forward to mitigate the impact of construction traffic for both the converter station and the onshore underground cable installation. Whilst the CTMPs required will be tailored to specific aspects of the construction of the proposed Development, the draft CTMP contained within the TA will contain the principles to be taken forward for each site specific CTMP. The draft CTMP will contain details of the following aspects of construction traffic management:

- Construction traffic routing;
- Construction site operational hours;
- The parking of construction vehicles and site operatives;
- The loading and unloading of plant, materials and waste management
- Public highway and traffic management signage;
- Embargoed routes for construction traffic;
- Vehicle access and egress arrangements for construction site(s);
- The provision of wheel washing facilities and other works required to mitigate the impact of construction vehicles on the highway network;
- Management of abnormal loads;
- Management of hazardous loads; and
- Emergency routes.

2.11 OPERATIONAL TRAFFIC

2.11.1. Given the nature of the proposed scheme as HVDC underground cables and convertor station, it is not anticipated that the proposed scheme will impact upon the current function of highway network once operational. Some minor traffic increases may be experienced in the vicinity of the convertor station; however, this is unlikely to extend beyond occasional servicing and thus the TA will not offer further analysis of the impact of the operational phase of the proposed developing.

2.12 MITIGATION MEASURES

2.12.1. The TA will outline the mitigation which is proposed to offset the impacts of both construction traffic and onshore underground cable installation. It is proposed that the impacts of construction traffic on the road network primarily be mitigated through the use of Construction Traffic Management Plans (CTMP) and that the impacts of onshore underground cable installation be mitigated using Traffic Management Strategy (TMS). Due to the temporal impact of impacts associated with the construction process, it is not anticipated that mitigations will include highway improvement / capacity schemes.

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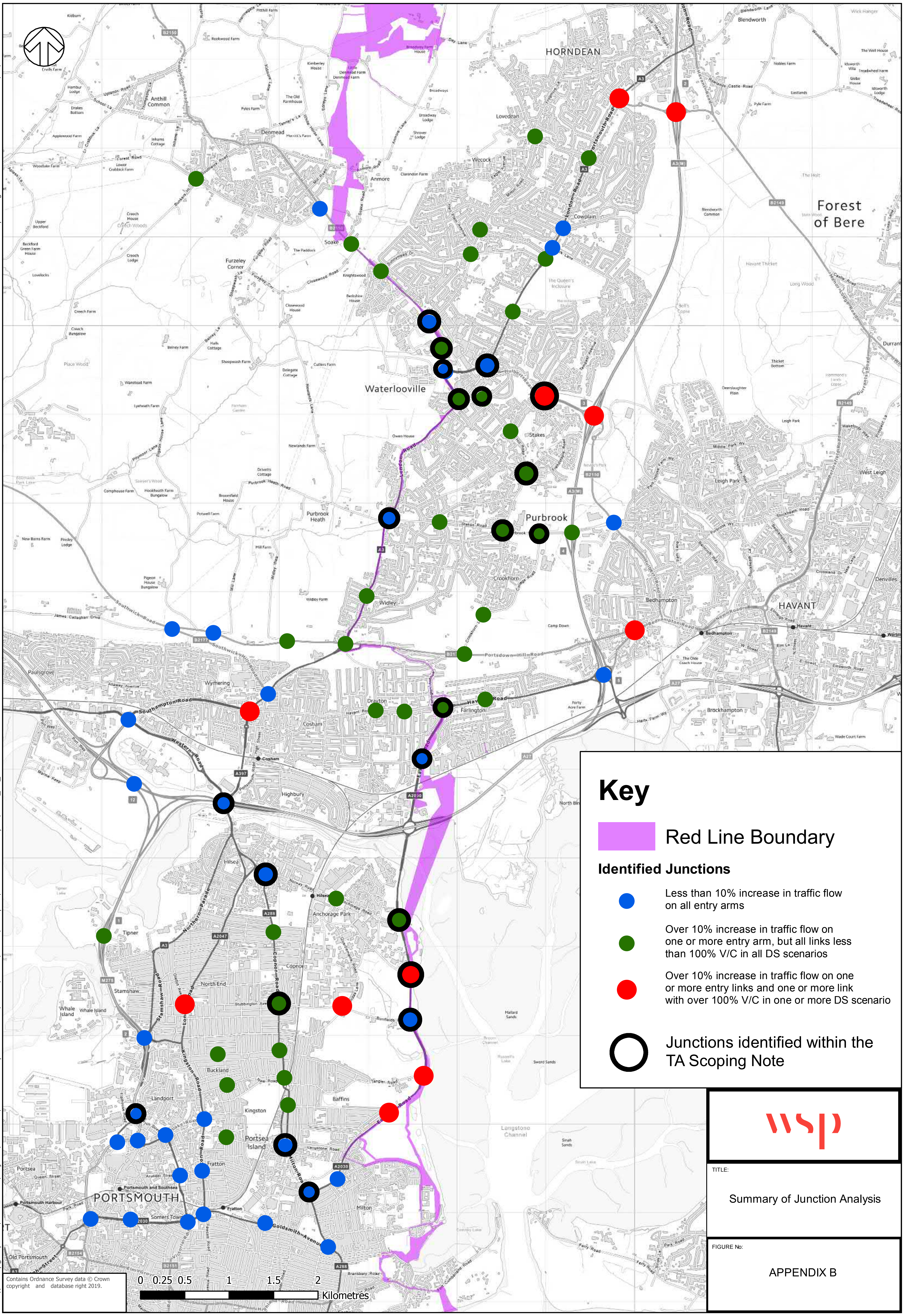
APPENDIX B – JUNCTIONS ASSESSED

Date Modified: 12/09/2019

Drawn By: uksxg008



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TITLE:

Summary of Junction Analysis

FIGURE No:

APPENDIX B

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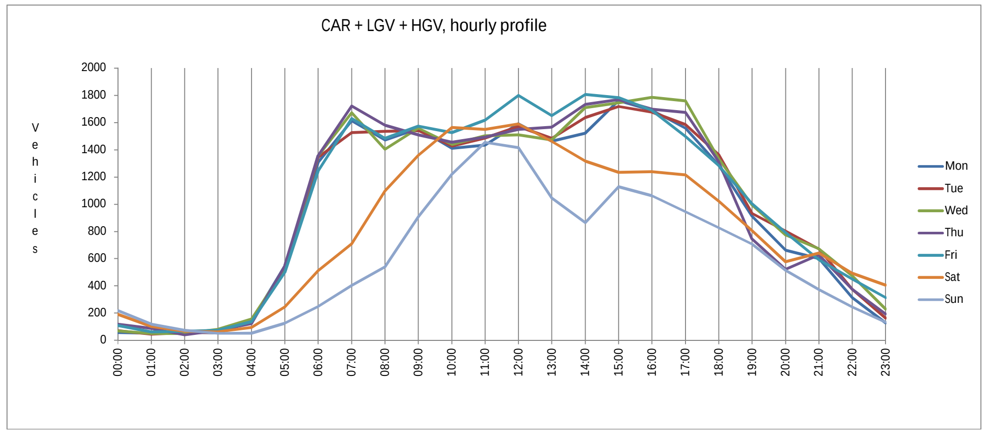
Appendix 3 – A2030 Eastern Road / A2030 Velder Avenue Traffic Survey Outputs

DIRECTION Northbound

A2030 Eastern Road, Portsmouth North of Anchorage Road

TIME	ALL MODES Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	58	71	69	118	108	191	217
01:00	53	44	51	89	62	103	118
02:00	59	57	50	40	66	66	74
03:00	54	57	80	73	74	63	51
04:00	141	140	157	124	138	94	52
05:00	546	508	526	547	499	245	125
06:00	1307	1346	1354	1357	1243	512	249
07:00	1614	1527	1673	1721	1631	709	404
08:00	1473	1535	1403	1580	1485	1099	540
09:00	1557	1541	1560	1510	1573	1358	908
10:00	1410	1428	1440	1456	1527	1564	1220
11:00	1435	1486	1503	1493	1617	1551	1454
12:00	1592	1570	1510	1551	1800	1590	1415
13:00	1463	1483	1472	1567	1652	1463	1046
14:00	1522	1637	1709	1734	1807	1317	864
15:00	1761	1718	1746	1769	1782	1234	1128
16:00	1690	1677	1785	1699	1689	1239	1062
17:00	1559	1584	1759	1674	1497	1215	945
18:00	1286	1365	1333	1312	1283	1022	827
19:00	912	934	994	744	1004	805	707
20:00	663	803	772	522	793	577	514
21:00	602	671	672	628	591	642	373
22:00	313	375	474	374	451	493	245
23:00	129	164	229	195	315	405	132
TOTAL	23199	23721	24321	23877	24687	19557	14670

TIME	5-Day Ave.	7-Day Ave.
00:00	85	119
01:00	60	74
02:00	54	59
03:00	68	65
04:00	140	121
05:00	525	428
06:00	1321	1053
07:00	1633	1326
08:00	1495	1302
09:00	1548	1430
10:00	1452	1435
11:00	1507	1506
12:00	1605	1575
13:00	1527	1449
14:00	1682	1513
15:00	1755	1591
16:00	1708	1549
17:00	1615	1462
18:00	1316	1204
19:00	918	871
20:00	711	663
21:00	633	597
22:00	397	389
23:00	206	224
TOTAL	23961	22005



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
15:15	15:30	16:00	15:30	15:30	11:30	11:30
15:30	15:15	15:45	15:45	15:00	11:45	11:45
15:45	16:00	15:30	16:15	15:15	10:30	11:15
15:45	17:15	16:15	17:00	12:00	10:45	11:00
16:30	15:45	16:45	15:15	12:00	12:00	10:45

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	15.8%	15.9%	15.5%	15.2%	15.3%	9.2%	7.4%

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	1495	19.2%	21.0	26.4
Weekday PM Peak 17:00-18:00	1615	9.5%	24.9	31.2
Weekday Inter-Peak 13:00-	1605	17.6%	36.7	43.1
Busiest Off-Peak Flow (09:00-	1807	20.5%	40.1	45.9
Ave. Off-Peak Flow (09:00-16:00)	1582	18.2%	37.6	43.6
24Hr AADT	22005	13.8%	40.5	47.3
24Hr AAWT	23961	15.5%	39.0	45.8
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	1807	-	-	-
Average Sat-Sun	17114	8.0%	44.3	50.9
AAWT 00:00-06:00	932	24.4%	46.0	54.9
8hr Weekday 23:00-07:00	2460	21.8%	45.7	53.9
12hr Weekday 07:00-19:00	18843	16.2%	32.6	38.6
16hr Weekday 07:00-23:00	21501	13.9%	35.7	41.8
18hr Weekday 06:00-00:00	23029	13.9%	36.7	42.8

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	46	61	59	103	95	189	206	12	10	10	15	13	14	11
01:00	39	35	35	67	39	100	105	14	9	16	22	23	12	13
02:00	47	39	27	25	49	66	61	12	18	23	15	17	11	13
03:00	45	36	60	51	54	61	41	9	21	20	22	20	9	10
04:00	102	103	123	90	96	92	46	39	37	34	34	42	21	6
05:00	465	409	427	426	398	241	118	81	99	99	121	101	42	7
06:00	1050	1079	1078	1077	972	506	222	257	267	276	280	271	91	27
07:00	1295	1215	1333	1496	1296	699	368	319	312	340	225	335	107	36
08:00	1172	1254	1098	1330	1184	1084	502	301	281	305	250	301	157	38
09:00	1231	1235	1237	1182	1285	1346	843	326	306	323	328	288	159	65
10:00	1128	1117	1140	1167	1223	1543	1119	282	311	300	289	304	153	101
11:00	1144	1185	1219	1196	1310	1538	1353	291	301	284	297	307	146	101
12:00	1313	1279	1231	1277	1513	1577	1306	279	291	279	274	287	154	109
13:00	1214	1249	1180	1279	1384	1448	965	249	234	292	288	268	126	81
14:00	1267	1342	1453	1430	1511	1305	793	255	295	256	304	296	96	71
15:00	1475	1436	1483	1515	1534	1218	1069	286	282	263	254	248	103	59
16:00	1514	1469	1662	1514	1489	1229	986	176	208	123	185	200	84	76
17:00	1387	1428	1597	1530	1361	1204	881	172	156	162	144	136	78	64
18:00	1174	1245	1200	1202	1177	1012	774	112	120	133	110	106	76	53
19:00	847	862	927	681	922	795	664	65	72	67	63	82	43	43
20:00	610	745	719	485	744	573	479	53	58	53	37	49	33	35
21:00	567	632	639	589	549	640	347	35	39	33	39	42	40	26
22:00	280	349	429	350	426	489	219	33	26	45	24	25	27	26
23:00	121	150	207	183	291	403	118	8	14	22	12	24	17	14
TOTAL	19533	19954	20563	20245	20902	19358	13585	3666	3767	3758	3632	3785	1799	1085

TIME	5-Day Ave.	7-Day Ave.
00:00	14.2%	10.1%
01:00	28.1%	20.6%
02:00	31.3%	25.8%
03:00	27.2%	24.2%
04:00	26.6%	24.6%
05:00	19.1%	18.1%
06:00	20.4%	19.7%
07:00	18.7%	17.9%
08:00	19.2%	17.6%
09:00	20.3%	17.7%
10:00	20.5%	17.1%
11:00	19.6%	16.2%
12:00	17.6%	15.0%
13:00	17.4%	15.0%
14:00	16.7%	14.7%
15:00	15.2%	13.3%
16:00	10.4%	9.6%
17:00	9.5%	8.9%
18:00	8.8%	8.4%
19:00	7.6%	7.1%
20:00	7.0%	6.8%
21:00	5.9%	6.0%
22:00	7.7%	7.5%
23:00	7.8%	7.0%
TOTAL	15.5%	13.8%

50	AVERAGE SPEED						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	46.4	46.7	46.0	46.7	47.1	47.2	47.6
01:00	45.8	45.2	44.5	44.4	44.2	48.5	40.9
02:00	46.6	45.6	45.6	45.0	46.8	48.4	47.9
03:00	47.7	46.0	47.0	46.3	47.3	46.8	49.6
04:00	47.1	44.1	44.9	45.2	45.3	46.9	49.4
05:00	47.0	46.4	47.0	46.9	46.3	45.7	47.3
06:00	42.9	42.5	42.4	42.3	42.7	45.6	47.8
07:00	22.8	21.5	21.3	19.3	28.2	45.6	46.7
08:00	25.9	15.1	13.5	13.3	37.0	42.5	45.8
09:00	38.5	38.2	37.5	38.4	37.9	41.4	43.8
10:00	39.5	39.2	39.0	38.5	38.6	39.9	42.3
11:00	40.1	39.2	38.8	38.3	39.0	39.6	40.7
12:00	39.0	38.4	38.9	38.8	28.4	37.9	40.4
13:00	39.0	39.1	38.6	38.6	37.9	39.4	42.8
14:00	38.7	38.2	32.5	37.8	36.4	39.9	43.4
15:00	38.3	38.4	37.6	30.9	29.3	41.8	42.6
16:00	14.7	13.4	14.9	12.3	36.0	41.8	43.1
17:00	14.1	28.5	18.2	23.0	40.5	41.9	43.8
18:00	41.5	41.3	41.6	42.2	41.9	43.0	44.1
19:00	44.0	43.1	43.1	44.5	43.3	43.5	44.7
20:00	45.8	44.7	44.4	45.6	44.5	44.3	46.2
21:00	45.8	44.9	44.8	44.2	44.9	44.2	47.2
22:00	46.6	46.7	45.0	46.5	45.0	44.3	46.6
23:00	46.6	48.6	45.1	46.9	46.2	44.9	48.5
TOTAL	39.4	38.9	38.0	38.1	40.6	43.5	45.1

TIME	5-Day Ave.	7-Day Ave.
00:00	46.6	46.8
01:00	44.8	44.8
02:00	45.9	46.6
03:00	46.9	47.2
04:00	45.3	46.1
05:00	46.7	46.6
06:00	42.5	43.7
07:00	22.6	29.3
08:00	21.0	27.6
09:00	38.1	39.4
10:00	39.0	39.6
11:00	39.1	39.4
12:00	36.7	37.4
13:00	38.6	39.3
14:00	36.7	38.1
15:00	34.9	37.0
16:00	18.2	25.2
17:00	24.9	30.0
18:00	41.7	42.2
19:00	43.6	43.7
20:00	45.0	45.1
21:00	44.9	45.1
22:00	45.9	45.8
23:00	46.7	46.7
TOTAL	39.0	40.5

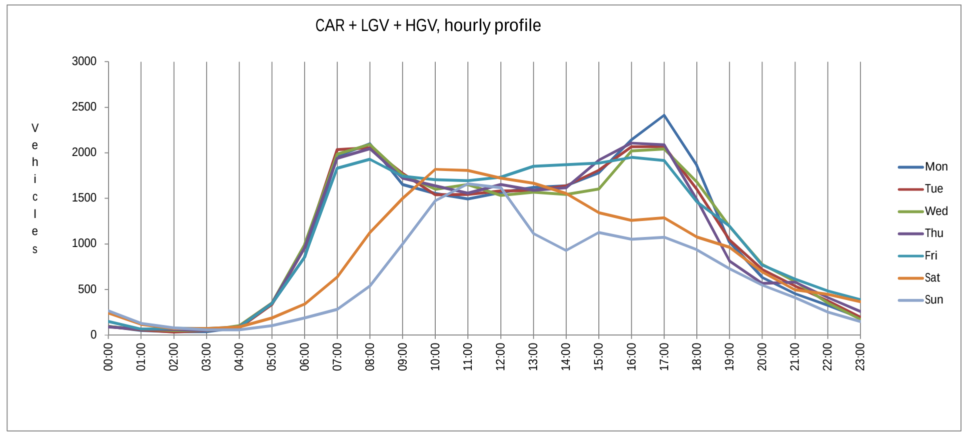
50	85TH PERCENTILE SPEEDS						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	57.5	54.5	53.4	53.3	56.3	53.2	54.4
01:00	58.3	50.0	55.1	51.2	54.4	57.0	53.2
02:00	60.1	55.0	55.9	56.7	58.7	57.5	58.6
03:00	57.5	54.9	56.6	55.1	55.3	55.8	60.4
04:00	56.0	52.9	54.7	52.8	54.7	56.2	54.7
05:00	52.7	52.7	53.8	53.9	53.0	53.0	54.2
06:00	48.9	47.7	47.8	47.7	48.6	52.0	55.6
07:00	27.3	27.3	27.7	24.7	35.3	51.8	53.0
08:00	32.3	20.6	18.4	18.4	42.5	48.3	51.7
09:00	44.1	43.8	43.8	43.9	43.3	46.7	49.7
10:00	44.7	45.1	44.4	44.3	44.0	45.3	47.7
11:00	45.9	45.4	44.6	44.3	44.4	44.8	46.2
12:00	44.8	44.2	44.9	44.5	37.1	43.0	46.2
13:00	44.8	44.5	44.5	44.5	43.7	44.3	48.4
14:00	44.2	43.5	40.7	43.4	43.0	45.1	49.2
15:00	44.1	43.8	43.9	38.9	38.9	47.2	48.8
16:00	21.4	20.8	21.4	15.8	42.8	47.3	48.7
17:00	21.0	36.4	23.8	28.6	46.2	47.7	49.9
18:00	47.4	46.9	47.7	47.6	47.0	48.7	50.1
19:00	49.7	48.8	49.1	50.9	49.6	49.5	51.6
20:00	51.8	50.8	50.4	53.0	50.7	50.8	51.4
21:00	51.9	51.3	50.8	50.2	51.5	49.5	53.8
22:00	53.6	53.4	51.6	53.5	51.3	50.5	53.6
23:00	53.5	56.3	52.6	53.1	52.9	50.7	55.9
TOTAL	46.4	45.4	44.9	44.6	47.7	49.8	51.9

TIME	5-Day Ave.	7-Day Ave.
00:00	55.0	54.7
01:00	53.8	54.2
02:00	57.3	57.5
03:00	55.9	56.5
04:00	54.2	54.5
05:00	53.2	53.3
06:00	48.1	49.8
07:00	28.5	35.3
08:00	26.4	33.2
09:00	43.8	45.0
10:00	44.5	45.1
11:00	44.9	45.1
12:00	43.1	43.5
13:00	44.4	45.0
14:00	43.0	44.2
15:00	41.9	43.7
16:00	24.4	31.1
17:00	31.2	36.2
18:00	47.3	47.9
19:00	49.6	49.9
20:00	51.3	51.3
21:00	51.1	51.3
22:00	52.7	52.5
23:00	53.7	53.6
TOTAL	45.8	47.3

DIRECTION Southbound

TIME	ALL MODES Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	96	92	92	89	149	241	265
01:00	51	59	64	65	67	118	128
02:00	38	33	52	62	76	74	79
03:00	38	50	51	52	72	72	60
04:00	86	80	104	94	90	91	59
05:00	344	337	354	349	346	188	105
06:00	857	959	992	958	855	341	190
07:00	1961	2037	1985	1940	1832	637	282
08:00	2098	2058	2092	2047	1930	1125	538
09:00	1652	1776	1758	1722	1744	1498	998
10:00	1555	1540	1599	1638	1705	1819	1473
11:00	1496	1543	1653	1559	1695	1806	1659
12:00	1566	1584	1535	1654	1735	1722	1618
13:00	1622	1586	1567	1591	1854	1667	1114
14:00	1640	1639	1545	1618	1871	1555	931
15:00	1779	1812	1604	1918	1887	1345	1127
16:00	2141	2068	2023	2107	1950	1259	1053
17:00	2413	2069	2041	2088	1917	1287	1073
18:00	1864	1600	1680	1488	1463	1077	935
19:00	1019	1045	1194	813	1197	964	729
20:00	636	721	780	568	768	694	551
21:00	454	541	587	583	613	496	408
22:00	324	375	355	414	484	449	251
23:00	190	199	175	257	388	369	150
TOTAL	25920	25803	25882	25674	26688	20894	15776

TIME	5-Day Ave.	7-Day Ave.
00:00	104	146
01:00	61	79
02:00	52	59
03:00	53	56
04:00	91	86
05:00	346	289
06:00	924	736
07:00	1951	1525
08:00	2045	1698
09:00	1730	1593
10:00	1607	1618
11:00	1589	1630
12:00	1615	1631
13:00	1644	1572
14:00	1663	1543
15:00	1800	1639
16:00	2058	1800
17:00	2106	1841
18:00	1619	1444
19:00	1054	994
20:00	695	674
21:00	556	526
22:00	390	379
23:00	242	247
TOTAL	25993	23805



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
17:00	07:30	07:30	16:45	16:30	10:15	11:30
17:15	07:15	07:45	16:30	07:30	10:30	11:00
16:45	17:00	07:15	17:00	16:15	10:45	11:15
16:30	07:45	08:00	07:30	17:00	10:00	11:45
17:30	16:30	17:00	16:15	16:45	09:45	10:45

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	13.3%	13.1%	12.9%	13.1%	12.5%	6.9%	5.9%

Busiest day of the week	Fri
Maximum flow on any day	2413
Average Mon-Fri flow	25993
Average Sat-Sun flow	18335

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	2045	13.7%	37.9	44.1
Weekday PM Peak 17:00-18:00	2106	9.3%	35.0	42.7
Weekday Inter-Peak 13:00-	1615	15.0%	41.3	46.8
Busiest Off-Peak Flow (09:00-	1918	17.7%	42.7	48.2
Ave. Off-Peak Flow (09:00-16:00)	1664	16.2%	41.4	46.9
24Hr AADT	23805	11.5%	44.2	50.4
24Hr AAWT	25993	13.0%	43.6	49.9
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	2413	-	-	-
Average Sat-Sun	18335	6.3%	45.8	51.9
AAWT 00:00-06:00	706	19.2%	47.5	54.8
8hr Weekday 23:00-07:00	1872	17.0%	47.2	54.1
12hr Weekday 07:00-19:00	21427	14.0%	40.2	46.2
16hr Weekday 07:00-23:00	24121	12.0%	41.8	47.8
18hr Weekday 06:00-00:00	25287	11.8%	42.3	48.2

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	81	81	80	81	129	238	249	15	11	12	8	20	17	16
01:00	42	44	50	52	51	118	114	9	15	14	13	16	15	14
02:00	31	24	41	44	58	72	76	7	9	11	18	18	13	3
03:00	33	37	34	38	55	72	52	5	13	17	14	17	16	8
04:00	71	64	83	78	70	91	50	15	16	21	16	20	15	9
05:00	309	291	313	303	309	185	94	35	46	41	46	37	26	11
06:00	770	832	876	837	744	331	173	87	127	116	121	111	42	17
07:00	1700	1793	1754	1721	1629	626	255	261	244	231	219	203	101	27
08:00	1807	1785	1847	1744	1646	1109	500	291	273	245	303	284	117	38
09:00	1382	1493	1465	1470	1484	1483	922	270	283	293	252	260	118	76
10:00	1283	1286	1325	1370	1424	1809	1391	272	254	274	268	281	128	82
11:00	1258	1289	1385	1322	1424	1789	1568	238	254	268	237	271	138	91
12:00	1345	1322	1287	1414	1494	1709	1537	221	262	248	240	241	116	81
13:00	1365	1334	1320	1294	1552	1653	1046	257	252	247	297	302	113	68
14:00	1321	1358	1267	1321	1577	1543	879	319	281	278	297	294	85	52
15:00	1487	1517	1345	1582	1638	1323	1066	292	295	259	336	249	76	61
16:00	1844	1808	1778	1856	1721	1248	1005	297	260	245	251	229	80	48
17:00	2157	1880	1844	1917	1750	1268	1012	256	189	197	171	167	53	61
18:00	1740	1501	1563	1383	1354	1065	897	124	99	117	105	109	51	38
19:00	957	986	1126	756	1132	951	691	62	59	68	57	65	46	38
20:00	600	671	739	532	724	686	517	36	50	41	36	44	28	34
21:00	427	502	553	551	575	490	382	27	39	34	32	38	15	26
22:00	297	342	325	392	457	443	230	27	33	30	22	27	21	21
23:00	167	178	155	242	366	366	132	23	21	20	15	22	19	18
TOTAL	22474	22418	22555	22300	23363	20668	14838	3446	3385	3327	3374	3325	1449	938

HGV PERCENTAGES

TIME	5-Day Ave.	7-Day Ave.
00:00	12.7%	9.5%
01:00	21.9%	16.9%
02:00	24.1%	18.6%
03:00	25.1%	21.9%
04:00	19.4%	18.1%
05:00	11.8%	11.8%
06:00	12.2%	12.0%
07:00	11.9%	11.9%
08:00	13.7%	12.9%
09:00	15.7%	13.8%
10:00	16.8%	13.6%
11:00	16.0%	13.0%
12:00	15.0%	12.2%
13:00	16.5%	13.8%
14:00	17.7%	14.8%
15:00	15.9%	13.6%
16:00	12.5%	11.1%
17:00	9.3%	8.5%
18:00	6.8%	6.3%
19:00	5.9%	5.6%
20:00	6.0%	5.7%
21:00	6.1%	5.7%
22:00	7.1%	6.8%
23:00	8.4%	7.9%
TOTAL	13.0%	11.5%

50	AVERAGE SPEED						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	46.0	45.9	47.2	47.1	47.1	46.8	46.0
01:00	46.0	46.4	47.3	46.6	46.1	46.9	45.3
02:00	46.6	47.6	48.9	51.0	46.6	48.5	47.6
03:00	48.8	47.4	47.0	49.7	47.7	47.4	47.8
04:00	47.3	48.2	47.7	48.3	47.0	47.9	47.8
05:00	47.0	47.8	48.3	48.0	48.5	49.3	47.1
06:00	45.3	45.1	46.2	45.7	46.1	48.1	48.4
07:00	37.9	36.0	36.7	34.9	40.5	47.2	48.2
08:00	38.3	37.4	35.7	38.1	39.9	45.9	46.2
09:00	41.7	40.1	41.1	41.0	41.0	44.1	45.4
10:00	41.5	41.0	41.4	41.4	40.7	41.9	43.7
11:00	42.0	40.3	41.6	42.0	41.6	40.7	42.5
12:00	41.7	41.6	42.0	41.0	40.4	41.2	42.9
13:00	41.9	41.2	41.4	42.2	41.0	42.0	44.8
14:00	41.6	41.5	41.5	42.7	40.5	43.0	45.9
15:00	42.4	42.1	42.0	41.7	41.2	45.2	45.8
16:00	37.4	38.4	36.7	37.4	42.4	44.7	46.3
17:00	34.5	33.9	38.0	25.8	43.1	44.2	46.2
18:00	41.0	42.7	43.3	45.6	45.1	45.9	46.5
19:00	46.4	45.8	46.3	46.6	45.7	45.5	46.7
20:00	47.0	47.0	46.7	47.5	46.1	46.6	47.0
21:00	47.2	47.2	46.9	48.0	46.3	46.0	47.2
22:00	47.2	46.5	45.7	46.4	46.1	45.6	46.5
23:00	47.1	47.6	46.5	46.7	46.2	46.3	45.8
TOTAL	43.5	43.3	43.6	43.6	44.0	45.4	46.1

TIME	5-Day Ave.	7-Day Ave.
00:00	46.7	46.6
01:00	46.4	46.3
02:00	48.1	48.1
03:00	48.1	48.0
04:00	47.7	47.7
05:00	47.9	48.0
06:00	45.7	46.4
07:00	37.2	40.2
08:00	37.9	40.2
09:00	41.0	42.0
10:00	41.2	41.6
11:00	41.5	41.5
12:00	41.3	41.5
13:00	41.5	42.0
14:00	41.5	42.4
15:00	41.9	42.9
16:00	38.5	40.5
17:00	35.0	37.9
18:00	43.5	44.3
19:00	46.2	46.1
20:00	46.8	46.8
21:00	47.1	46.9
22:00	46.4	46.3
23:00	46.8	46.6
TOTAL	43.6	44.2

50	85TH PERCENTILE SPEEDS						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	53.7	52.1	54.4	54.3	53.5	53.5	52.5
01:00	52.1	55.6	54.6	54.4	53.7	52.0	51.9
02:00	54.9	57.3	54.9	64.2	52.8	56.9	55.8
03:00	53.0	55.8	57.3	57.2	52.8	55.0	54.0
04:00	52.2	55.3	54.7	55.6	54.7	54.8	57.9
05:00	53.8	54.2	54.7	54.7	54.7	56.0	53.4
06:00	50.5	50.1	51.5	51.8	52.4	54.8	54.5
07:00	44.4	43.0	43.4	42.2	46.7	52.9	54.6
08:00	44.2	43.8	42.6	44.2	45.8	51.3	52.1
09:00	47.1	45.7	46.7	46.0	46.6	49.3	51.2
10:00	46.7	46.8	46.6	46.5	46.5	47.5	49.3
11:00	47.2	45.9	46.7	47.6	46.9	46.5	48.7
12:00	47.0	46.7	47.2	46.6	46.5	46.6	48.8
13:00	47.1	46.2	47.2	47.5	46.7	47.6	50.5
14:00	47.2	47.3	46.9	48.2	46.9	48.1	51.4
15:00	47.4	47.3	47.9	47.4	47.1	50.6	51.6
16:00	44.1	45.2	44.9	44.9	48.4	50.0	52.3
17:00	41.5	43.1	45.2	34.9	48.6	49.5	51.5
18:00	46.9	48.7	49.0	51.4	50.5	51.7	52.2
19:00	52.4	51.4	51.6	52.5	51.6	51.4	52.8
20:00	53.1	53.0	52.0	53.3	52.0	52.3	52.9
21:00	53.8	53.1	52.7	54.3	51.9	51.6	53.1
22:00	53.6	53.1	51.7	52.6	52.1	51.1	52.6
23:00	54.4	54.4	51.2	52.9	52.5	51.6	52.6
TOTAL	49.5	49.8	49.8	50.2	50.1	51.3	52.4

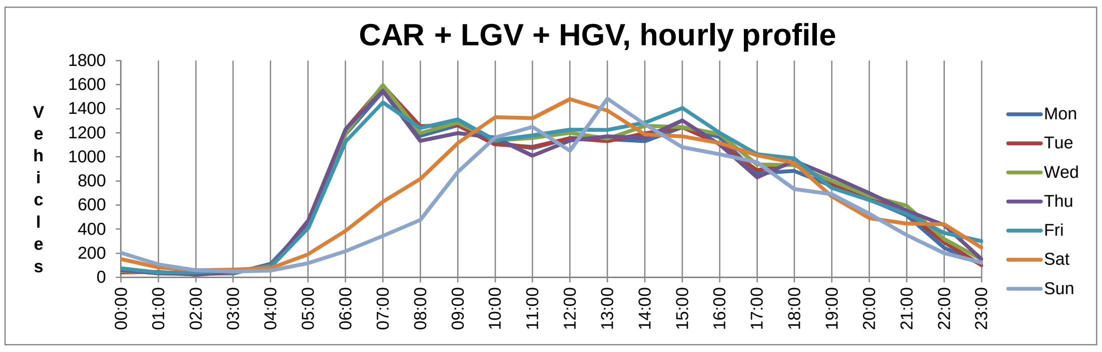
TIME	5-Day Ave.	7-Day Ave.
00:00	53.6	53.4
01:00	54.1	53.5
02:00	56.8	56.7
03:00	55.2	55.0
04:00	54.5	55.0
05:00	54.4	54.5
06:00	51.2	52.2
07:00	43.9	46.7
08:00	44.1	46.3
09:00	46.4	47.5
10:00	46.6	47.1
11:00	46.9	47.1
12:00	46.8	47.0
13:00	46.9	47.5
14:00	47.3	48.0
15:00	47.4	48.5
16:00	45.5	47.1
17:00	42.7	44.9
18:00	49.3	50.0
19:00	51.9	51.9
20:00	52.7	52.6
21:00	53.1	52.9
22:00	52.6	52.4
23:00	53.0	52.8
TOTAL	49.9	50.4

ATC summary information

Site Location	A2030 Eastern Road (Burrfields Road (S) to Airport Service Road (N))
Start Date of Survey Period	09/07/2019
End Date of Survery Period	15/07/2019
Client	WSP
Survey Company Name	Intelligent Data Collection
Location	[Click for location]

DIRECTION 1 Northbound

	Mean Car, LGV & HGV flows						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	62	40	49	59	74	150	203
01:00	31	45	36	35	40	82	109
02:00	29	23	30	24	40	58	58
03:00	31	42	39	44	56	64	47
04:00	110	84	92	82	82	77	55
05:00	441	469	450	462	405	192	117
06:00	1190	1228	1196	1229	1126	384	218
07:00	1546	1592	1597	1551	1454	628	345
08:00	1177	1256	1199	1133	1241	817	477
09:00	1265	1265	1285	1198	1312	1116	876
10:00	1121	1104	1137	1161	1138	1330	1162
11:00	1072	1084	1157	1012	1180	1323	1250
12:00	1158	1155	1199	1136	1227	1481	1051
13:00	1148	1130	1153	1171	1225	1386	1485
14:00	1132	1195	1259	1161	1286	1188	1271
15:00	1247	1248	1248	1303	1406	1171	1080
16:00	1166	1110	1190	1103	1201	1114	1023
17:00	862	890	937	832	1021	1015	956
18:00	883	944	933	968	987	950	734
19:00	760	778	801	838	743	671	689
20:00	647	667	677	700	643	492	529
21:00	515	536	595	555	528	446	351
22:00	246	291	319	434	370	440	202
23:00	109	100	151	150	301	248	122
TOTAL	17948	18276	18729	18341	19086	16823	14410



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
06:30	06:30	06:45	06:30	06:45	12:00	13:00
06:45	06:45	06:30	06:45	06:30	11:45	12:45
07:00	07:00	07:00	07:00	07:00	12:15	13:15
06:15	06:15	06:15	06:15	15:00	11:30	13:30
07:15	07:15	07:15	15:15	14:45	12:30	13:45

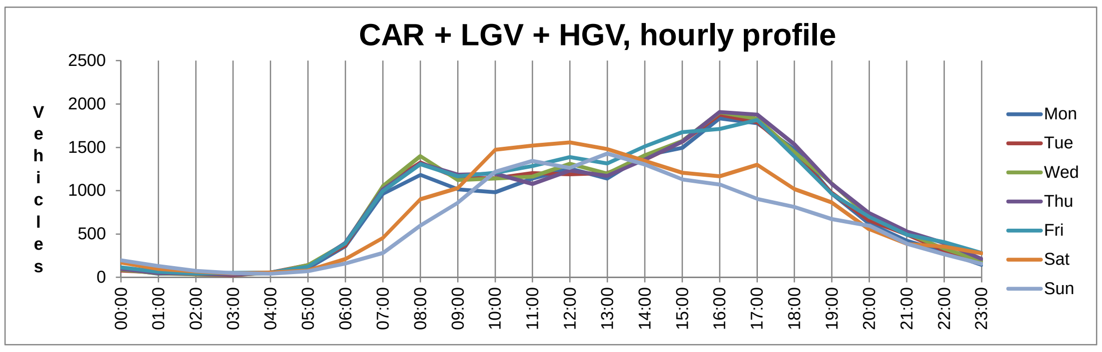
Maximum flow on any day	1597
Average Mon-Fri flow	18476
Average Sat-Sun flow	15617

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% LGV	15.2%	15.4%	15.6%	15.1%	15.2%	8.5%	6.2%
% HGV	2.1%	2.0%	1.8%	2.0%	1.8%	0.6%	0.3%

	Mean car flows							Mean LGV flows							Mean HGV flows						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	57	34	46	56	68	148	195	4	5	2	2	6	2	8	1	1	1	1	0	0	0
01:00	28	36	32	27	34	77	106	2	5	4	7	5	4	2	1	4	0	1	1	1	1
02:00	26	21	23	17	30	51	55	1	1	4	3	6	6	2	2	1	3	4	4	1	1
03:00	22	37	33	39	48	56	46	8	2	2	2	6	6	1	1	3	4	3	2	2	0
04:00	92	59	69	62	64	68	53	16	23	22	17	15	6	1	2	2	1	3	3	3	1
05:00	332	349	343	346	299	159	104	103	112	99	106	100	29	12	6	8	8	10	6	4	1
06:00	886	887	859	895	808	294	195	294	327	329	322	310	83	20	10	14	8	12	8	7	3
07:00	1243	1294	1290	1261	1143	512	301	282	274	295	270	281	106	42	21	24	12	20	30	10	2
08:00	957	1016	983	925	988	692	427	189	217	186	180	226	115	48	31	23	30	28	27	10	2
09:00	1000	1011	1008	962	1034	971	809	224	199	238	198	239	133	63	41	55	39	38	39	12	4
10:00	914	871	917	942	896	1198	1092	165	191	192	179	205	123	64	42	42	28	40	37	9	6
11:00	843	888	924	820	944	1189	1178	181	163	198	153	207	130	69	48	33	35	39	29	4	3
12:00	936	949	986	887	981	1352	997	190	177	169	202	207	123	54	32	29	44	47	39	6	0
13:00	949	927	961	950	1006	1279	1384	173	167	171	186	185	99	97	26	36	21	35	34	8	4
14:00	898	991	1029	945	1056	1108	1184	194	170	201	188	203	74	85	40	34	29	28	27	6	2
15:00	1001	1017	995	1080	1166	1081	1008	219	204	221	208	217	86	70	27	27	32	15	23	4	2
16:00	985	901	983	899	1018	1029	949	164	196	190	184	164	81	69	17	13	17	20	19	4	5
17:00	776	774	838	731	903	945	921	80	105	94	94	113	67	34	6	11	5	7	5	3	1
18:00	825	869	845	874	902	886	693	51	71	85	89	82	61	38	7	4	3	5	3	3	3
19:00	680	698	729	766	697	639	640	76	79	68	69	43	31	45	4	1	4	3	3	1	4
20:00	597	599	616	642	604	465	494	46	63	58	54	34	26	35	4	5	3	4	5	1	0
21:00	471	498	533	516	506	430	333	41	38	58	33	19	16	17	3	0	4	6	3	0	1
22:00	231	267	292	410	358	417	191	14	21	26	22	10	21	10	1	3	1	2	2	2	1
23:00	103	90	141	139	288	238	117	5	10	10	9	10	10	3	1	0	0	2	3	0	2
TOTAL	14852	15083	15475	15191	15841	15284	13472	2722	2820	2922	2777	2893	1438	889	374	373	332	373	352	101	49

DIRECTION 2 Southbound

	Mean Car, LGV & HGV flows						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	99	78	89	97	115	171	198
01:00	41	55	44	50	64	98	130
02:00	40	34	36	41	45	66	76
03:00	31	22	30	31	51	45	50
04:00	51	56	48	57	55	56	41
05:00	104	141	141	114	123	79	73
06:00	360	366	393	400	391	211	160
07:00	963	1050	1052	1016	997	455	282
08:00	1182	1325	1400	1315	1306	902	598
09:00	1016	1146	1124	1184	1168	1032	860
10:00	984	1146	1140	1198	1209	1471	1218
11:00	1141	1205	1163	1077	1283	1521	1343
12:00	1255	1188	1311	1232	1389	1557	1261
13:00	1141	1204	1198	1169	1316	1481	1428
14:00	1408	1359	1405	1357	1508	1344	1302
15:00	1495	1564	1571	1566	1675	1208	1129
16:00	1835	1878	1904	1909	1712	1168	1070
17:00	1780	1791	1832	1877	1816	1298	903
18:00	1481	1424	1442	1534	1395	1020	813
19:00	969	975	1083	1079	965	866	674
20:00	620	653	695	740	699	556	595
21:00	423	492	508	530	491	386	390
22:00	292	308	330	396	406	356	266
23:00	146	175	188	212	283	279	157
TOTAL	18857	19635	20127	20181	20462	17626	15017



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
16:15	16:30	16:30	16:15	17:00	11:45	11:30
16:30	16:15	16:15	16:30	17:15	12:00	12:45
16:00	16:00	16:45	16:00	16:45	11:30	13:00
16:45	16:45	16:00	16:45	17:30	12:30	13:15
17:00	15:45	17:00	17:00	15:15	12:15	13:30

Maximum flow on any day	1909
Average Mon-Fri flow	19852
Average Sat-Sun flow	16322

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% LGV	15.2%	14.6%	15.8%	14.9%	14.9%	8.5%	6.3%
% HGV	2.1%	1.7%	1.6%	1.7%	1.7%	0.6%	0.3%

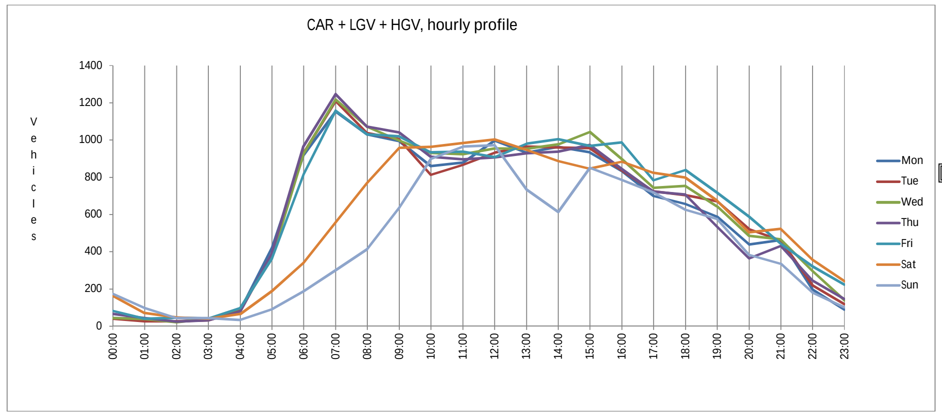
	Mean car flows							Mean LGV flows							Mean HGV flows						
TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	92	70	85	90	107	160	191	6	8	4	7	8	10	7	1	0	0	0	0	1	0
01:00	36	48	37	44	59	94	124	4	6	6	5	4	3	6	1	1	1	1	1	1	0
02:00	35	29	29	38	40	56	73	5	4	3	2	5	9	3	0	1	4	1	0	1	0
03:00	28	19	27	23	44	41	47	1	2	3	5	6	4	3	2	1	0	3	1	0	0
04:00	41	33	28	40	34	40	34	7	23	18	12	17	10	6	3	0	2	5	4	6	1
05:00	74	92	97	76	88	62	57	27	38	38	34	30	12	14	3	11	6	4	5	5	2
06:00	282	265	279	290	284	178	132	65	87	98	91	86	24	23	13	14	16	19	21	9	5
07:00	683	807	764	759	705	372	246	249	219	265	223	253	71	32	31	24	23	34	39	12	4
08:00	869	1042	1089	1024	990	757	558	267	251	276	257	280	131	37	46	32	35	34	36	14	3
09:00	772	933	890	931	933	909	798	202	177	205	210	198	113	59	42	36	29	43	37	10	3
10:00	772	919	926	974	979	1332	1140	168	181	192	196	195	131	72	44	46	22	28	35	8	6
11:00	926	1006	932	910	1040	1362	1268	170	164	211	144	211	151	73	45	35	20	23	32	8	2
12:00	1042	997	1087	1033	1175	1420	1182	178	165	196	172	187	135	79	35	26	28	27	27	2	0
13:00	926	1005	985	939	1075	1353	1339	188	173	187	204	219	122	84	27	26	26	26	22	6	5
14:00	1137	1119	1120	1110	1240	1218	1227	233	211	250	226	242	124	73	38	29	35	21	26	2	2
15:00	1211	1284	1276	1250	1388	1110	1051	258	259	269	291	267	94	74	26	21	26	25	20	4	4
16:00	1524	1523	1534	1561	1372	1080	1004	298	342	359	332	328	85	63	13	13	11	16	12	3	3
17:00	1565	1556	1586	1634	1563	1210	839	213	223	240	239	244	85	63	2	12	6	4	9	3	1
18:00	1341	1282	1287	1383	1260	968	769	126	137	147	144	130	51	43	14	5	8	7	5	1	1
19:00	865	897	973	1001	899	808	626	101	75	102	72	60	58	46	3	3	8	6	6	0	2
20:00	573	595	642	668	666	527	559	46	55	47	63	30	27	34	1	3	6	9	3	2	2
21:00	393	452	464	489	456	370	367	29	40	40	40	33	14	23	1	0	4	1	2	2	0
22:00	275	287	315	374	392	339	243	14	20	15	20	13	16	19	3	1	0	2	1	1	4
23:00	139	165	180	197	270	268	147	7	10	6	14	11	10	9	0	0	2	1	2	1	1
TOTAL	15601	16425	16632	16838	17059	16034	14021	2862	2870	3177	3003	3057	1490	945	394	340	318	340	346	102	51

DIRECTION 1 Northbound

A2030 Eastern Road, Portsmouth - Between Burrfields Road and Tangier Road

TIME	ALL MODES Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	43	40	42	66	82	163	173
01:00	40	27	38	43	40	70	98
02:00	24	27	21	25	44	47	42
03:00	35	30	39	30	41	40	43
04:00	87	81	96	79	97	65	34
05:00	422	387	367	393	364	189	91
06:00	920	929	927	967	816	341	188
07:00	1153	1210	1217	1247	1157	557	300
08:00	1030	1037	1070	1071	1030	770	414
09:00	993	1004	997	1039	1020	957	635
10:00	860	813	929	910	933	962	898
11:00	878	866	923	896	937	983	964
12:00	997	931	954	905	907	1003	972
13:00	932	965	952	928	980	947	733
14:00	962	959	976	937	1004	887	614
15:00	933	955	1044	972	968	846	851
16:00	834	837	897	843	986	883	785
17:00	699	724	743	722	783	823	718
18:00	657	703	752	706	838	797	625
19:00	588	671	642	534	716	673	575
20:00	439	520	484	365	588	504	383
21:00	462	461	465	431	442	523	335
22:00	197	219	298	245	322	357	181
23:00	90	119	139	146	223	243	101
TOTAL	14275	14515	15012	14500	15318	13630	10753

TIME	5-Day Ave.	7-Day Ave.
00:00	55	87
01:00	38	51
02:00	28	33
03:00	35	37
04:00	88	77
05:00	387	316
06:00	912	727
07:00	1197	977
08:00	1048	917
09:00	1011	949
10:00	889	901
11:00	900	921
12:00	939	953
13:00	951	920
14:00	968	906
15:00	974	938
16:00	879	866
17:00	734	745
18:00	731	725
19:00	630	628
20:00	479	469
21:00	452	446
22:00	256	260
23:00	143	152
TOTAL	14724	14000



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
06:30	06:45	06:30	06:45	07:00	11:30	11:30
06:45	07:00	06:30	06:30	06:45	11:30	11:30
07:00	06:30	07:00	07:00	07:15	12:00	11:15
06:15	07:15	07:15	07:15	06:30	12:15	11:00
08:45	06:15	07:30	06:15	07:30	11:15	12:00

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	9.7%	10.1%	9.8%	9.5%	9.2%	6.4%	5.9%

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	1048	9.9%	27.2	40.2
Weekday PM Peak 17:00-18:00	734	8.0%	24.1	37.6
Weekday Inter-Peak 13:00-14:00	939	10.7%	25.9	39.1
Busiest Off-Peak Flow (09:00-	1044	11.7%	28.3	41.0
Ave. Off-Peak Flow (09:00-16:00)	947	10.7%	26.5	39.4
24Hr AADT	14000	8.7%	32.1	44.4
24Hr AAWT	14724	9.6%	31.6	44.0
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	1247	-	-	-
Average Sat-Sun	12192	6.0%	33.2	45.3
AAWT 00:00-06:00	630	12.1%	41.9	53.0
8hr Weekday 23:00-07:00	1685	11.1%	40.2	51.6
12hr Weekday 07:00-19:00	11221	9.9%	26.1	39.2
16hr Weekday 07:00-23:00	13039	8.8%	27.3	40.3
18hr Weekday 06:00-00:00	14094	8.7%	28.1	41.0

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	38	40	39	64	77	158	167	5	0	3	2	5	7	6
01:00	39	25	33	36	34	68	91	1	2	5	7	6	7	7
02:00	23	23	14	20	40	47	39	1	4	7	5	4	4	3
03:00	33	25	34	29	34	39	37	2	5	5	1	7	2	6
04:00	67	69	81	69	80	61	32	20	12	15	10	17	9	2
05:00	370	335	322	344	318	185	86	52	52	45	49	46	15	5
06:00	816	809	829	842	724	336	169	104	120	98	125	92	29	19
07:00	1027	1074	1088	1117	1038	548	282	126	136	129	130	119	50	18
08:00	923	935	964	977	922	761	383	107	102	106	94	108	68	31
09:00	894	891	896	938	920	949	597	99	113	101	101	100	71	38
10:00	760	701	819	820	827	954	839	100	112	110	90	106	75	59
11:00	794	755	832	801	827	977	916	84	111	91	95	110	56	48
12:00	886	841	847	798	819	990	909	111	90	107	107	88	75	63
13:00	838	874	845	823	881	935	692	94	91	107	105	99	64	41
14:00	867	870	876	838	910	877	586	95	89	100	99	94	62	28
15:00	830	839	931	867	871	842	808	103	116	113	105	97	45	43
16:00	738	751	816	764	893	874	742	96	86	81	79	93	50	43
17:00	651	661	673	674	720	812	680	48	63	70	48	63	45	38
18:00	619	647	692	666	803	786	586	38	56	60	40	35	43	39
19:00	562	634	605	504	669	667	545	26	37	37	30	47	20	30
20:00	413	495	449	343	561	499	358	26	25	35	22	27	25	25
21:00	434	434	446	417	415	520	307	28	27	19	14	27	28	28
22:00	183	211	283	235	311	355	173	14	8	15	10	11	15	8
23:00	88	114	132	138	211	242	95	2	5	7	8	12	9	6
TOTAL	12893	13053	13546	13124	13905	13482	10119	1382	1462	1466	1376	1413	874	634

TIME	5-Day Ave.	7-Day Ave.
00:00	5.5%	4.6%
01:00	11.2%	9.7%
02:00	14.9%	12.0%
03:00	11.4%	10.8%
04:00	16.8%	15.6%
05:00	12.6%	11.9%
06:00	11.8%	11.5%
07:00	10.7%	10.3%
08:00	9.9%	9.5%
09:00	10.2%	9.3%
10:00	11.7%	10.2%
11:00	10.9%	9.2%
12:00	10.7%	9.5%
13:00	10.4%	9.3%
14:00	9.9%	8.9%
15:00	11.0%	9.4%
16:00	9.9%	8.6%
17:00	8.0%	7.1%
18:00	6.3%	6.1%
19:00	5.6%	5.1%
20:00	5.6%	5.6%
21:00	5.1%	5.4%
22:00	4.5%	4.4%
23:00	4.7%	4.6%
TOTAL	9.6%	8.7%

50 TIME	AVERAGE SPEED Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	42.6	43.3	40.2	40.7	38.8	37.3	35.8
01:00	41.7	43.0	40.7	39.1	42.3	42.8	40.5
02:00	46.2	43.8	43.6	42.3	40.9	46.8	44.2
03:00	45.3	45.2	44.4	44.8	43.3	42.6	45.6
04:00	42.0	39.9	40.7	42.9	42.5	43.7	42.9
05:00	38.8	40.7	40.4	38.8	39.3	39.6	40.9
06:00	32.6	32.3	30.1	33.0	33.2	37.5	41.6
07:00	28.6	28.1	27.7	28.2	26.8	34.0	36.8
08:00	27.7	26.3	27.9	28.0	26.0	28.5	35.5
09:00	27.2	26.2	28.0	27.4	24.6	26.4	27.8
10:00	26.0	25.5	28.3	26.5	26.9	25.4	28.1
11:00	27.4	26.9	26.9	25.8	26.3	27.1	27.2
12:00	25.7	26.3	25.6	26.2	25.9	26.4	25.9
13:00	25.6	27.5	26.1	26.6	26.6	25.8	29.7
14:00	26.5	26.0	27.7	25.6	25.5	25.8	29.1
15:00	26.9	27.6	27.0	26.2	25.0	26.8	27.3
16:00	25.1	26.1	25.6	24.7	24.4	28.2	28.0
17:00	23.0	24.4	24.0	24.0	25.1	25.8	28.2
18:00	22.2	24.4	24.8	23.6	26.9	29.7	27.7
19:00	23.5	28.5	27.2	30.8	28.2	30.4	28.7
20:00	29.0	30.4	28.2	32.1	29.9	31.0	32.4
21:00	31.3	30.0	31.6	29.9	29.7	30.6	32.2
22:00	37.3	34.5	33.0	34.6	33.7	33.1	39.4
23:00	42.1	38.4	37.3	38.0	33.8	34.0	40.9
TOTAL	31.8	31.9	31.5	31.7	31.1	32.5	34.0

TIME	5-Day Ave.	7-Day Ave.
00:00	41.1	39.8
01:00	41.3	41.4
02:00	43.4	44.0
03:00	44.6	44.5
04:00	41.6	42.0
05:00	39.6	39.8
06:00	32.2	34.3
07:00	27.9	30.0
08:00	27.2	28.5
09:00	26.7	26.8
10:00	26.7	26.7
11:00	26.7	26.8
12:00	25.9	26.0
13:00	26.5	26.8
14:00	26.2	26.6
15:00	26.5	26.7
16:00	25.2	26.0
17:00	24.1	24.9
18:00	24.4	25.6
19:00	27.6	28.2
20:00	29.9	30.4
21:00	30.5	30.8
22:00	34.6	35.1
23:00	37.9	37.8
TOTAL	31.6	32.1

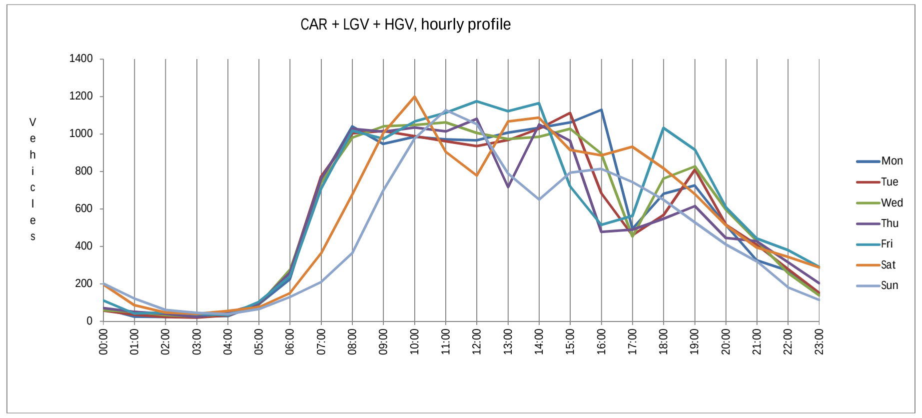
50 TIME	85TH PERCENTILE SPEEDS Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	48.6	52.7	50.4	50.8	51.6	47.2	46.7
01:00	59.8	51.1	51.7	48.0	56.2	55.3	49.3
02:00	-	-	59.2	-	51.6	51.2	50.4
03:00	60.3	55.0	56.2	-	51.4	52.6	60.3
04:00	52.7	47.7	51.0	52.3	51.0	53.3	52.1
05:00	51.6	52.1	52.2	51.2	51.8	50.8	51.6
06:00	47.5	46.3	45.3	46.4	47.8	48.3	52.5
07:00	42.1	41.0	40.7	40.9	40.7	47.6	47.8
08:00	40.6	39.6	41.0	41.2	38.8	42.1	48.5
09:00	39.3	39.4	38.9	39.4	37.5	40.6	41.4
10:00	39.0	39.2	41.0	39.7	40.1	39.6	41.3
11:00	40.4	40.0	39.1	38.3	39.3	40.1	41.3
12:00	38.0	40.1	38.9	39.2	39.3	38.9	39.9
13:00	39.1	40.1	40.0	39.3	39.2	37.1	43.8
14:00	39.6	39.4	39.7	39.0	38.3	39.3	43.4
15:00	40.3	40.7	39.7	39.6	38.1	40.8	40.6
16:00	38.6	39.4	39.6	38.6	36.3	41.2	41.2
17:00	36.9	38.4	36.3	38.1	38.4	39.9	43.2
18:00	35.1	37.9	38.6	36.5	40.6	43.5	41.1
19:00	37.4	42.2	40.7	43.4	42.2	43.8	42.4
20:00	42.1	43.5	42.8	44.7	42.5	43.4	44.3
21:00	43.7	43.5	44.0	42.0	42.3	44.1	45.4
22:00	48.2	46.8	44.5	46.2	45.4	43.2	47.1
23:00	52.0	48.1	48.1	47.0	44.6	44.2	53.1
TOTAL	44.0	43.7	44.1	42.8	43.5	44.5	46.2

TIME	5-Day Ave.	7-Day Ave.
00:00	50.8	49.7
01:00	53.4	53.1
02:00	55.4	53.1
03:00	55.7	55.9
04:00	50.9	51.4
05:00	51.8	51.6
06:00	46.6	47.7
07:00	41.1	43.0
08:00	40.2	41.7
09:00	38.9	39.5
10:00	39.8	40.0
11:00	39.4	39.8
12:00	39.1	39.2
13:00	39.5	39.8
14:00	39.2	39.8
15:00	39.7	40.0
16:00	38.5	39.3
17:00	37.6	38.7
18:00	37.7	39.0
19:00	41.2	41.7
20:00	43.1	43.3
21:00	43.1	43.6
22:00	46.2	45.9
23:00	48.0	48.2
TOTAL	44.0	44.4

DIRECTION 1 Southbound

TIME	ALL MODES Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	68	56	59	70	112	197	202
01:00	24	34	49	49	42	85	122
02:00	23	22	33	40	46	47	60
03:00	26	20	25	23	37	40	45
04:00	28	31	42	47	33	55	38
05:00	90	90	89	93	104	75	65
06:00	224	262	275	259	239	150	130
07:00	755	775	742	763	709	364	210
08:00	1041	1004	981	1028	1017	677	365
09:00	947	1016	1041	1012	975	1005	700
10:00	984	988	1048	1034	1066	1199	977
11:00	971	960	1062	1013	1113	905	1128
12:00	966	936	1005	1081	1175	778	1054
13:00	1007	968	972	717	1122	1066	788
14:00	1033	1030	984	1051	1165	1087	649
15:00	1061	1112	1028	964	721	914	794
16:00	1130	684	894	477	515	886	814
17:00	494	460	453	489	563	932	744
18:00	681	568	763	548	1032	818	649
19:00	725	811	827	615	917	679	528
20:00	514	516	596	444	609	513	411
21:00	325	408	429	427	442	393	319
22:00	270	279	258	316	380	344	181
23:00	141	153	138	204	291	287	114
TOTAL	13528	13183	13793	12764	14425	13496	11087

TIME	5-Day Ave.	7-Day Ave.
00:00	73	109
01:00	40	58
02:00	33	39
03:00	26	31
04:00	36	39
05:00	93	87
06:00	252	220
07:00	749	617
08:00	1014	873
09:00	998	957
10:00	1024	1042
11:00	1024	1022
12:00	1033	999
13:00	957	949
14:00	1053	1000
15:00	977	942
16:00	740	771
17:00	492	591
18:00	718	723
19:00	779	729
20:00	536	515
21:00	406	392
22:00	301	290
23:00	185	190
TOTAL	13539	13182



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
16:00	15:15	15:30	14:15	12:30	10:00	11:00
15:45	14:45	11:15	14:30	12:15	10:15	10:45
15:30	15:00	11:30	14:45	12:00	09:45	11:15
15:15	14:30	11:00	12:00	12:45	09:30	11:30
14:30	14:15	11:45	11:45	14:15	13:45	10:30

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	10.7%	11.2%	10.6%	11.2%	9.7%	6.0%	5.4%

Busiest day of the week	Fri
Maximum flow on any day	1199
Average Mon-Fri flow	13539
Average Sat-Sun flow	12292

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	1014	14.2%	40.2	46.2
Weekday PM Peak 17:00-18:00	492	17.7%	7.0	9.7
Weekday Inter-Peak 13:00-14:00	1033	9.6%	40.8	46.4
Busiest Off-Peak Flow (09:00-	1175	12.0%	41.8	47.8
Ave. Off-Peak Flow (09:00-16:00)	1009	10.9%	39.5	45.2
24Hr AADT	13182	9.3%	40.3	46.9
24Hr AAWT	13539	10.7%	39.3	45.8
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	1199	-	-	-
Average Sat-Sun	12292	5.6%	42.7	49.8
AAWT 00:00-06:00	301	13.9%	46.2	54.4
8hr Weekday 23:00-07:00	738	12.9%	45.9	53.8
12hr Weekday 07:00-19:00	10779	12.0%	33.5	38.9
16hr Weekday 07:00-23:00	12800	10.2%	36.0	41.7
18hr Weekday 06:00-00:00	13238	10.1%	37.0	42.9

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	63	54	54	68	105	195	197	5	2	5	2	7	6	5
01:00	22	34	43	43	37	85	108	2	0	6	6	5	7	14
02:00	21	19	29	36	42	46	59	2	3	4	4	4	6	1
03:00	22	15	20	16	34	40	42	4	5	5	7	3	3	3
04:00	19	21	32	37	25	55	34	9	10	10	10	8	7	4
05:00	78	74	76	82	94	75	58	12	16	13	11	10	8	7
06:00	201	224	233	220	206	147	118	23	38	42	39	33	11	12
07:00	643	665	641	659	615	361	193	112	110	101	104	94	49	17
08:00	884	845	870	879	875	671	334	157	159	111	149	142	54	31
09:00	835	890	917	894	855	998	651	112	126	124	118	120	69	49
10:00	879	882	919	923	963	1195	917	105	106	129	111	103	94	60
11:00	880	867	953	904	993	894	1065	91	93	109	109	120	55	63
12:00	870	840	913	973	1072	767	999	96	96	92	108	103	52	55
13:00	912	866	872	627	1003	1057	749	95	102	100	90	119	69	39
14:00	905	905	878	933	1040	1077	619	128	125	106	118	125	50	30
15:00	938	988	896	848	641	900	759	123	124	132	116	80	44	35
16:00	1034	595	798	395	440	875	775	96	89	96	82	75	51	39
17:00	395	374	368	391	495	924	710	99	86	85	98	68	35	34
18:00	608	489	681	489	969	807	623	73	79	82	59	63	39	26
19:00	690	773	789	578	869	672	501	35	38	38	37	48	37	27
20:00	492	491	566	421	582	505	395	22	25	30	23	27	24	16
21:00	305	383	412	416	424	387	306	20	25	17	11	18	18	13
22:00	258	264	250	303	365	337	170	12	15	8	13	15	11	11
23:00	130	144	127	197	277	283	107	11	9	11	7	14	11	7
TOTAL	12084	11702	12337	11332	13021	13353	10489	1444	1481	1456	1432	1404	810	598

HGV PERCENTAGES

TIME	5-Day Ave.	7-Day Ave.
00:00	5.8%	4.2%
01:00	9.6%	9.7%
02:00	10.4%	8.7%
03:00	18.3%	13.7%
04:00	26.0%	20.6%
05:00	13.3%	12.5%
06:00	13.9%	12.8%
07:00	13.9%	13.5%
08:00	14.2%	13.0%
09:00	12.0%	10.6%
10:00	10.8%	9.6%
11:00	10.2%	8.9%
12:00	9.6%	8.6%
13:00	10.6%	9.2%
14:00	11.4%	9.7%
15:00	11.8%	9.9%
16:00	11.8%	9.7%
17:00	17.7%	12.1%
18:00	9.9%	8.3%
19:00	5.0%	5.1%
20:00	4.7%	4.6%
21:00	4.5%	4.4%
22:00	4.2%	4.2%
23:00	5.6%	5.2%
TOTAL	10.7%	9.3%

50 TIME	AVERAGE SPEED Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	43.9	44.4	46.3	47.0	44.7	44.1	43.8
01:00	43.9	46.1	45.1	46.0	45.5	46.1	43.5
02:00	45.5	46.8	46.1	48.0	45.9	47.7	46.8
03:00	44.9	46.0	44.1	48.5	47.9	46.4	43.8
04:00	44.7	46.7	46.3	48.1	46.3	43.3	49.3
05:00	46.6	47.0	47.5	46.5	48.9	46.8	46.2
06:00	46.1	46.1	46.7	46.9	46.4	47.2	47.2
07:00	43.3	42.9	43.6	43.5	43.9	46.3	47.3
08:00	40.7	40.6	36.3	41.0	42.6	42.9	44.1
09:00	41.7	40.0	40.6	40.6	40.6	42.2	43.1
10:00	40.4	39.9	40.0	40.5	41.5	39.6	41.0
11:00	40.9	40.4	40.5	41.0	41.1	23.0	40.9
12:00	40.2	40.7	41.0	40.3	41.8	17.9	40.3
13:00	40.8	40.2	39.8	41.8	37.3	35.8	42.9
14:00	40.7	40.5	39.8	40.8	40.2	40.8	42.7
15:00	40.5	38.5	40.9	29.4	17.3	41.9	41.9
16:00	29.5	13.8	20.8	5.9	8.2	42.6	42.4
17:00	6.0	7.0	6.3	6.7	9.1	41.2	42.6
18:00	11.8	12.0	18.1	12.8	39.4	42.5	43.8
19:00	42.3	42.0	42.8	44.1	42.5	42.4	44.0
20:00	44.5	45.0	44.1	44.8	43.8	44.9	44.4
21:00	43.5	43.8	43.5	45.5	43.2	43.4	45.1
22:00	44.7	44.0	43.2	43.8	43.0	43.2	43.9
23:00	44.0	43.9	44.5	44.0	44.0	43.6	43.4
TOTAL	39.6	39.1	39.5	39.0	39.4	41.5	43.9

TIME	5-Day Ave.	7-Day Ave.
00:00	45.2	44.9
01:00	45.3	45.2
02:00	46.4	46.7
03:00	46.2	45.9
04:00	46.4	46.4
05:00	47.3	47.1
06:00	46.4	46.6
07:00	43.4	44.4
08:00	40.2	41.2
09:00	40.7	41.2
10:00	40.5	40.4
11:00	40.8	38.2
12:00	40.8	37.5
13:00	40.0	39.8
14:00	40.4	40.8
15:00	33.3	35.8
16:00	15.6	23.3
17:00	7.0	17.0
18:00	18.8	25.8
19:00	42.7	42.9
20:00	44.4	44.5
21:00	43.9	44.0
22:00	43.7	43.7
23:00	44.1	43.9
TOTAL	39.3	40.3

50 TIME	85TH PERCENTILE SPEEDS Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	50.8	50.6	55.5	55.8	53.1	50.9	50.7
01:00	-	54.1	52.4	52.6	51.2	53.0	50.9
02:00	-	-	56.1	60.3	53.4	58.6	53.8
03:00	-	-	-	-	53.9	55.8	52.4
04:00	-	-	52.7	56.5	-	54.3	59.2
05:00	52.2	57.3	56.2	56.3	56.9	55.4	52.8
06:00	53.5	53.5	54.0	54.0	53.9	54.9	53.0
07:00	48.9	49.0	49.8	50.2	49.5	54.3	54.3
08:00	46.3	46.2	44.2	46.7	47.6	48.3	50.9
09:00	46.8	45.4	47.0	45.8	46.5	47.8	49.8
10:00	45.8	45.5	45.3	47.0	47.6	45.2	47.3
11:00	46.2	45.3	46.4	46.3	46.4	34.7	46.2
12:00	45.2	46.4	47.2	45.9	47.3	28.8	46.6
13:00	46.4	45.9	45.9	47.8	44.3	43.0	49.0
14:00	46.3	46.4	46.0	46.8	46.5	46.9	48.8
15:00	46.3	45.2	46.5	35.7	22.7	48.3	48.0
16:00	37.9	20.1	25.5	7.0	13.3	48.6	48.9
17:00	7.2	10.5	8.0	8.9	14.0	47.5	48.5
18:00	17.9	16.7	23.0	17.2	45.7	48.0	49.5
19:00	48.7	48.6	48.8	50.5	48.3	48.2	49.9
20:00	50.7	51.4	50.1	50.7	49.3	51.8	50.3
21:00	51.3	50.0	50.2	52.2	49.0	50.0	51.5
22:00	52.0	51.2	49.3	50.2	49.4	49.6	51.3
23:00	51.5	50.5	49.8	50.4	50.2	49.9	51.0
TOTAL	44.6	44.3	45.6	45.0	45.2	48.9	50.6

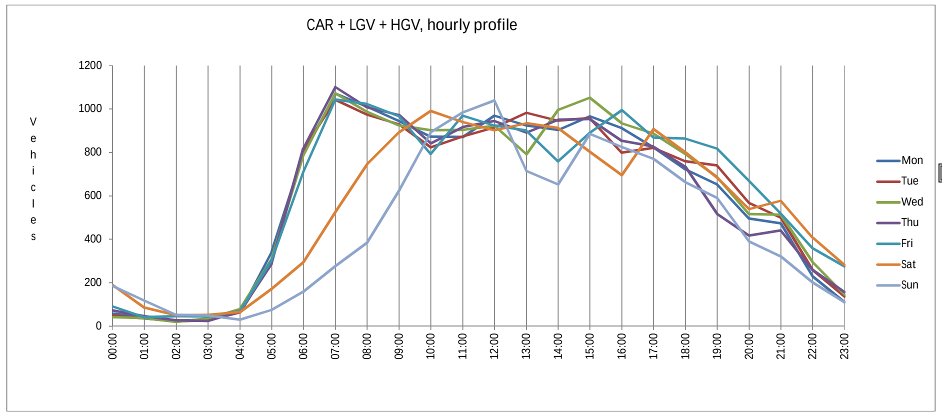
TIME	5-Day Ave.	7-Day Ave.
00:00	53.2	52.5
01:00	52.6	52.4
02:00	56.6	56.4
03:00	53.9	54.0
04:00	54.6	55.7
05:00	55.8	55.3
06:00	53.8	53.8
07:00	49.5	50.8
08:00	46.2	47.2
09:00	46.3	47.0
10:00	46.2	46.2
11:00	46.1	44.5
12:00	46.4	43.9
13:00	46.1	46.0
14:00	46.4	46.8
15:00	39.3	41.8
16:00	20.8	28.8
17:00	9.7	20.6
18:00	24.1	31.1
19:00	49.0	49.0
20:00	50.4	50.6
21:00	50.5	50.6
22:00	50.4	50.4
23:00	50.5	50.5
TOTAL	45.8	46.9

DIRECTION Northbound

A2030 Velder Avenue, Portsmouth

TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	ALL MODES						
00:00	57	49	41	72	91	190	185
01:00	43	35	36	46	41	86	118
02:00	25	22	19	27	46	50	52
03:00	29	27	35	24	44	52	49
04:00	65	63	79	67	69	64	30
05:00	342	298	309	288	305	172	75
06:00	792	814	786	819	712	295	159
07:00	1070	1042	1073	1101	1044	526	277
08:00	1011	974	987	1008	1023	745	384
09:00	945	930	923	973	967	893	625
10:00	872	824	901	841	793	991	892
11:00	871	873	903	917	970	940	984
12:00	970	915	922	944	924	901	1039
13:00	923	982	791	891	900	934	715
14:00	903	946	996	950	759	912	653
15:00	967	957	1052	953	890	803	886
16:00	912	799	934	853	995	696	825
17:00	824	820	887	826	868	907	770
18:00	722	759	793	733	863	800	663
19:00	653	740	686	517	817	684	590
20:00	495	567	515	417	669	539	391
21:00	473	500	512	440	518	578	321
22:00	230	259	296	259	360	408	201
23:00	110	137	146	158	275	282	110
TOTAL	14304	14332	14622	14124	14943	13448	10994

TIME	5-Day Ave.	7-Day Ave.
00:00	62	98
01:00	40	58
02:00	28	34
03:00	32	37
04:00	69	62
05:00	308	256
06:00	785	625
07:00	1066	876
08:00	1001	876
09:00	948	894
10:00	846	873
11:00	907	923
12:00	935	945
13:00	897	877
14:00	911	874
15:00	964	930
16:00	899	859
17:00	845	843
18:00	774	762
19:00	683	670
20:00	533	513
21:00	489	477
22:00	281	288
23:00	165	174
TOTAL	14465	13824



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
06:45	06:45	06:45	06:45	06:45	10:15	11:45
07:00	07:00	07:00	07:00	07:00	10:30	12:00
08:15	06:30	14:45	06:30	07:00	10:45	11:30
06:30	13:15	14:45	07:15	07:15	10:00	12:15
08:30	08:15	08:15	07:30	06:30	09:45	11:15

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	6.1%	6.2%	5.7%	6.0%	5.5%	3.6%	3.4%

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	1001	5.5%	25.8	30.6
Weekday PM Peak 17:00-18:00	845	3.7%	26.6	30.7
Weekday Inter-Peak 13:00-14:00	935	6.4%	25.6	29.9
Busiest Off-Peak Flow (09:00-	1052	7.3%	26.5	30.5
Ave. Off-Peak Flow (09:00-16:00)	915	6.7%	25.4	29.8
24Hr AADT	13824	5.3%	27.8	32.4
24Hr AAWT	14465	5.9%	27.6	32.3
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	1101	-	-	-
Average Sat-Sun	12221	3.4%	28.3	32.6
AAWT 00:00-06:00	539	9.0%	30.6	36.3
8hr Weekday 23:00-07:00	1489	8.2%	30.3	35.7
12hr Weekday 07:00-19:00	10992	6.0%	25.8	30.2
16hr Weekday 07:00-23:00	12976	5.3%	26.3	30.6
18hr Weekday 06:00-00:00	13926	5.3%	26.6	30.9

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	52	49	39	70	85	186	183	5	0	2	2	6	10	2
01:00	42	33	34	42	38	83	110	1	2	2	4	3	5	8
02:00	24	18	14	22	44	50	50	1	4	5	5	2	3	2
03:00	27	23	31	24	42	51	47	2	4	4	0	2	1	2
04:00	55	54	69	56	62	59	28	10	9	10	11	7	7	2
05:00	304	265	285	263	279	169	73	38	33	24	25	26	8	2
06:00	735	740	717	730	644	290	145	57	74	69	89	68	23	14
07:00	997	960	993	1033	968	521	263	73	82	80	68	76	35	14
08:00	949	918	941	954	968	737	363	62	56	46	54	55	50	21
09:00	878	849	866	907	895	892	593	67	81	57	66	72	50	32
10:00	810	766	838	777	736	987	862	62	58	63	64	57	37	30
11:00	808	802	842	853	899	934	952	63	71	61	64	71	28	32
12:00	897	870	861	880	869	897	1014	73	45	61	64	55	26	25
13:00	862	915	748	819	854	930	685	61	67	43	72	46	31	30
14:00	850	898	932	889	717	904	633	53	48	64	61	42	30	20
15:00	907	879	985	893	843	803	869	60	78	67	60	47	15	17
16:00	849	740	882	813	947	690	797	63	59	52	40	48	10	28
17:00	801	786	854	790	837	902	751	23	34	33	36	31	20	19
18:00	696	736	772	721	837	796	647	26	23	21	12	26	26	16
19:00	629	718	666	500	799	680	573	24	22	20	17	18	21	17
20:00	478	552	496	402	644	533	377	17	15	19	15	25	19	14
21:00	452	485	499	430	502	575	306	21	15	13	10	16	14	15
22:00	222	253	283	255	350	407	196	8	6	13	4	10	7	5
23:00	107	134	140	153	269	281	106	3	3	6	5	6	8	4
TOTAL	13431	13443	13787	13276	14128	13357	10623	873	889	835	848	815	484	371

TIME	5-Day Ave.	7-Day Ave.
00:00	4.8%	3.9%
01:00	6.0%	6.1%
02:00	12.2%	9.0%
03:00	7.5%	5.8%
04:00	13.7%	12.8%
05:00	9.5%	8.7%
06:00	9.1%	9.0%
07:00	7.1%	6.9%
08:00	5.5%	5.6%
09:00	7.2%	6.7%
10:00	7.2%	6.0%
11:00	7.3%	6.0%
12:00	6.4%	5.3%
13:00	6.4%	5.7%
14:00	5.9%	5.2%
15:00	6.5%	5.3%
16:00	5.8%	5.0%
17:00	3.7%	3.3%
18:00	2.8%	2.8%
19:00	3.0%	3.0%
20:00	3.4%	3.4%
21:00	3.1%	3.1%
22:00	2.9%	2.6%
23:00	2.8%	2.9%
TOTAL	5.9%	5.3%

30 TIME	AVERAGE SPEED Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	29.9	30.0	29.2	30.8	29.8	29.8	30.5
01:00	31.3	30.5	29.8	29.3	31.2	32.3	31.1
02:00	31.3	30.5	31.9	29.0	32.4	32.5	32.5
03:00	30.7	31.3	29.4	32.7	31.3	31.3	31.2
04:00	30.4	29.1	30.1	31.4	30.3	31.1	31.2
05:00	30.5	31.3	29.7	30.8	31.4	31.6	31.9
06:00	29.4	29.2	29.3	29.7	30.2	31.0	30.5
07:00	26.4	26.4	26.5	26.3	27.3	29.0	30.0
08:00	25.8	25.8	25.7	26.1	25.8	27.9	29.0
09:00	25.2	25.5	26.0	24.7	25.4	26.9	27.0
10:00	25.8	25.8	25.7	25.4	25.1	25.3	26.0
11:00	26.5	25.6	25.2	25.2	25.3	25.0	26.0
12:00	25.7	26.2	24.8	25.7	25.6	24.8	25.9
13:00	25.5	25.8	25.6	25.5	25.6	25.4	27.2
14:00	25.6	25.6	25.3	24.4	24.8	26.1	26.8
15:00	25.4	25.1	24.7	25.5	25.3	27.5	26.5
16:00	26.7	26.0	25.4	26.5	25.0	27.2	25.9
17:00	26.7	26.8	26.1	26.8	26.6	27.2	26.5
18:00	27.1	26.1	27.5	27.9	26.0	26.7	26.4
19:00	27.4	26.8	26.8	27.4	27.5	26.8	27.5
20:00	28.0	27.0	28.0	28.4	27.5	27.6	28.5
21:00	28.0	27.5	27.0	27.6	27.2	26.3	28.5
22:00	29.1	28.4	28.2	28.4	27.9	27.0	29.2
23:00	31.3	30.0	28.6	29.3	28.8	28.6	30.2
TOTAL	27.9	27.6	27.3	27.7	27.6	28.1	28.6

TIME	5-Day Ave.	7-Day Ave.
00:00	29.9	30.0
01:00	30.4	30.8
02:00	31.0	31.4
03:00	31.1	31.1
04:00	30.2	30.5
05:00	30.7	31.0
06:00	29.5	29.9
07:00	26.6	27.4
08:00	25.8	26.6
09:00	25.3	25.8
10:00	25.6	25.6
11:00	25.6	25.5
12:00	25.6	25.5
13:00	25.6	25.8
14:00	25.1	25.5
15:00	25.2	25.7
16:00	25.9	26.1
17:00	26.6	26.6
18:00	26.9	26.8
19:00	27.2	27.2
20:00	27.8	27.9
21:00	27.5	27.4
22:00	28.4	28.3
23:00	29.6	29.5
TOTAL	27.6	27.8

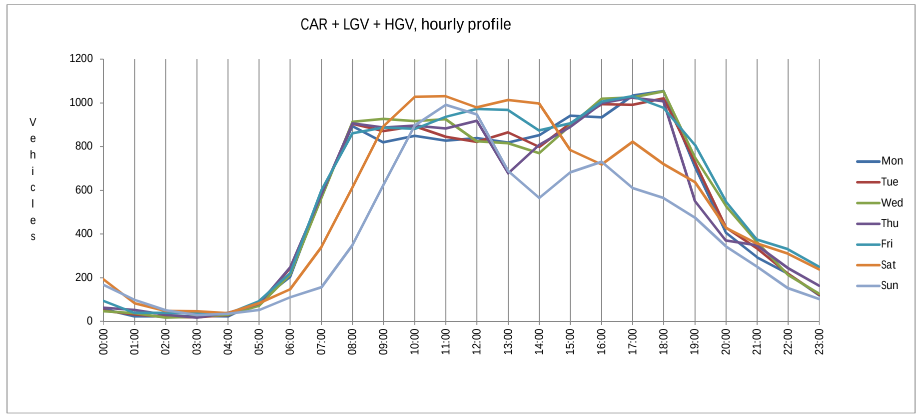
30 TIME	85TH PERCENTILE SPEEDS Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	34.7	34.4	33.5	36.5	36.0	34.3	35.5
01:00	38.0	36.5	32.3	32.3	36.3	38.0	35.7
02:00	-	-	36.5	-	41.9	36.6	37.3
03:00	39.0	-	38.1	-	35.4	38.9	37.5
04:00	37.0	33.9	36.1	36.6	35.4	36.2	-
05:00	35.0	36.2	34.7	35.6	35.9	35.8	35.8
06:00	33.8	34.0	33.4	34.1	34.6	35.2	34.7
07:00	31.7	31.2	31.5	31.1	32.1	33.2	34.0
08:00	30.4	30.7	30.7	30.3	30.9	32.5	33.4
09:00	30.1	29.6	30.0	29.4	30.4	31.5	31.2
10:00	29.7	29.4	29.6	29.6	29.5	30.1	30.0
11:00	30.1	29.5	29.5	29.8	29.6	29.6	30.2
12:00	29.8	30.3	29.1	30.3	30.1	29.6	30.4
13:00	29.8	29.7	29.7	30.1	29.6	29.9	31.0
14:00	30.0	29.8	29.9	29.4	29.2	30.4	30.9
15:00	30.5	29.6	29.5	30.2	30.0	31.7	30.6
16:00	31.2	30.1	30.0	31.0	29.8	31.5	30.4
17:00	31.0	30.6	30.3	30.8	30.9	31.4	30.0
18:00	31.4	30.1	31.2	31.8	30.0	30.7	30.3
19:00	31.5	30.7	31.0	32.1	31.4	30.8	31.4
20:00	31.7	31.2	31.7	32.3	31.5	31.2	32.0
21:00	32.1	31.4	31.2	31.5	30.7	30.1	32.2
22:00	33.2	32.0	31.8	31.7	31.3	30.3	33.3
23:00	35.6	34.5	33.1	33.5	32.4	31.8	34.6
TOTAL	32.5	31.6	31.8	31.8	32.3	32.5	32.7

TIME	5-Day Ave.	7-Day Ave.
00:00	35.0	35.0
01:00	35.1	35.6
02:00	39.2	38.1
03:00	37.5	37.8
04:00	35.8	35.8
05:00	35.5	35.6
06:00	33.9	34.2
07:00	31.5	32.1
08:00	30.6	31.3
09:00	29.9	30.3
10:00	29.6	29.7
11:00	29.7	29.8
12:00	29.9	29.9
13:00	29.8	30.0
14:00	29.7	29.9
15:00	29.9	30.3
16:00	30.4	30.6
17:00	30.7	30.7
18:00	30.9	30.8
19:00	31.3	31.3
20:00	31.7	31.7
21:00	31.4	31.3
22:00	32.0	31.9
23:00	33.8	33.6
TOTAL	32.3	32.4

DIRECTION Southbound

TIME	Mon	Tue	Wed	Thu	Fri	Sat	Sun
	ALL MODES						
00:00	56	48	45	61	94	192	167
01:00	22	31	37	51	38	82	98
02:00	22	19	17	30	38	47	50
03:00	23	18	21	17	35	45	28
04:00	22	28	29	38	36	37	34
05:00	91	80	70	79	92	82	51
06:00	202	242	213	246	220	146	110
07:00	580	574	564	581	601	340	155
08:00	894	904	913	905	860	613	349
09:00	819	871	926	887	887	892	624
10:00	849	892	916	895	880	1027	897
11:00	826	844	924	882	936	1030	991
12:00	838	820	824	918	972	979	947
13:00	818	864	815	677	967	1012	687
14:00	852	798	769	808	873	997	564
15:00	941	905	895	890	905	784	681
16:00	933	994	1019	998	1005	718	730
17:00	1033	991	1024	1024	1030	822	609
18:00	1054	1021	1052	1007	978	719	564
19:00	706	729	750	551	808	638	475
20:00	404	430	528	370	548	428	343
21:00	293	334	363	347	374	356	251
22:00	219	217	212	244	330	309	151
23:00	119	122	126	163	249	238	101
TOTAL	12616	12776	13052	12669	13756	12533	9657

TIME	5-Day Ave.	7-Day Ave.
00:00	61	95
01:00	36	51
02:00	25	32
03:00	23	27
04:00	31	32
05:00	82	78
06:00	225	197
07:00	580	485
08:00	895	777
09:00	878	844
10:00	886	908
11:00	882	919
12:00	874	900
13:00	828	834
14:00	820	809
15:00	907	857
16:00	990	914
17:00	1020	933
18:00	1022	914
19:00	709	665
20:00	456	436
21:00	342	331
22:00	244	240
23:00	156	160
TOTAL	12974	12437



TOP 5 busiest hours

Mon	Tue	Wed	Thu	Fri	Sat	Sun
18:00	17:30	18:00	16:30	17:45	11:00	11:00
17:15	18:00	18:15	16:30	16:30	10:30	10:45
17:30	17:45	17:45	17:00	17:30	10:00	10:45
17:45	16:15	16:45	16:15	17:15	09:45	11:45
17:00	16:30	17:30	17:30	17:00	10:45	11:45

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
% HGV	8.5%	9.0%	9.2%	8.7%	8.6%	6.0%	6.9%

Busiest day of the week	Fri
Maximum flow on any day	1054
Average Mon-Fri flow	12974
Average Sat-Sun flow	11095

	Flow	% HGVs	Ave. Speed	85th %ile speed
Weekday AM Peak 08:00-09:00	895	11.1%	25.4	29.5
Weekday PM Peak 17:00-18:00	1020	7.6%	25.0	29.9
Weekday Inter-Peak 13:00-14:00	874	8.4%	25.2	29.7
Busiest Off-Peak Flow (09:00-	972	9.7%	26.4	30.6
Ave. Off-Peak Flow (09:00-16:00)	868	9.1%	25.2	29.6
24Hr AADT	12437	8.1%	28.2	32.9
24Hr AAWT	12974	8.8%	28.0	32.6
Busiest Day	Fri	-	-	-
Maximum Hourly Flow	1054	-	-	-
Average Sat-Sun	11095	6.3%	28.6	33.2
AAWT 00:00-06:00	258	18.2%	32.0	37.2
8hr Weekday 23:00-07:00	638	16.1%	31.7	36.6
12hr Weekday 07:00-19:00	10584	9.1%	25.3	29.8
16hr Weekday 07:00-23:00	12336	8.4%	26.1	30.6
18hr Weekday 06:00-00:00	12716	8.6%	26.7	31.0

TIME	CAR / LGV + PCL / MCL Mon	Tue	Wed	Thu	Fri	Sat	Sun	HGV Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	49	46	39	58	79	189	154	7	2	6	3	15	13	13
01:00	17	30	31	43	34	82	81	5	1	6	8	4	8	17
02:00	19	18	15	23	34	46	44	3	1	2	7	4	6	6
03:00	16	13	16	13	29	45	26	7	5	5	4	6	5	2
04:00	13	23	19	29	29	36	28	9	5	10	9	7	5	6
05:00	74	58	50	63	79	81	42	17	22	20	16	13	10	9
06:00	180	211	185	210	189	141	92	22	31	28	36	31	16	18
07:00	498	510	472	528	524	336	138	82	64	92	53	77	37	17
08:00	776	810	825	806	764	603	313	118	94	88	99	96	58	36
09:00	736	773	834	806	813	883	574	83	98	92	81	74	71	50
10:00	781	802	819	807	797	1017	837	68	90	97	88	83	56	60
11:00	758	762	849	800	854	1022	936	68	82	75	82	82	62	55
12:00	771	749	751	839	894	969	898	67	71	73	79	78	45	49
13:00	758	795	735	605	866	997	644	60	69	80	72	101	54	43
14:00	763	714	704	749	801	976	528	89	84	65	59	72	46	36
15:00	855	827	803	820	834	769	630	86	78	92	70	71	31	51
16:00	855	923	933	929	940	707	694	78	71	86	69	65	23	36
17:00	968	919	937	949	943	807	581	65	72	87	75	87	42	28
18:00	1002	949	983	938	889	710	526	52	72	69	69	89	41	38
19:00	669	680	700	509	765	631	442	37	49	50	42	43	42	33
20:00	387	396	490	340	518	423	317	17	34	38	30	30	23	26
21:00	279	307	341	327	348	348	230	14	27	22	20	26	19	21
22:00	211	201	201	230	312	304	136	8	16	11	14	18	20	15
23:00	113	108	115	152	237	235	95	6	14	11	11	12	20	6
TOTAL	11548	11624	11847	11573	12572	12357	8986	1068	1152	1205	1096	1184	753	671

HGV PERCENTAGES

TIME	5-Day Ave.	7-Day Ave.
00:00	10.9%	8.8%
01:00	13.4%	13.4%
02:00	13.5%	12.7%
03:00	23.7%	17.7%
04:00	26.1%	22.4%
05:00	21.4%	19.3%
06:00	13.2%	13.1%
07:00	12.7%	12.3%
08:00	11.1%	10.7%
09:00	9.7%	9.2%
10:00	9.6%	8.5%
11:00	8.8%	7.8%
12:00	8.4%	7.3%
13:00	9.2%	8.1%
14:00	9.0%	7.9%
15:00	8.8%	8.0%
16:00	7.5%	6.7%
17:00	7.6%	7.0%
18:00	6.9%	6.7%
19:00	6.2%	6.3%
20:00	6.5%	6.5%
21:00	6.4%	6.4%
22:00	5.5%	6.0%
23:00	6.9%	7.0%
TOTAL	8.8%	8.1%

30 TIME	AVERAGE SPEED Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	31.2	30.7	32.5	32.0	32.3	30.0	31.3
01:00	32.9	31.3	32.5	31.2	30.9	32.8	31.3
02:00	32.1	32.4	32.9	32.0	32.9	34.3	33.0
03:00	31.1	32.4	33.2	34.4	32.7	32.0	31.0
04:00	30.6	32.2	31.1	32.2	32.7	33.6	34.4
05:00	32.0	30.9	31.1	31.6	32.9	32.0	31.1
06:00	30.8	30.8	30.3	31.6	31.3	31.5	30.9
07:00	27.6	27.6	28.6	27.9	28.3	31.0	31.2
08:00	25.5	25.3	25.8	25.1	25.4	27.6	29.8
09:00	25.7	24.7	25.4	24.6	24.7	26.2	27.5
10:00	25.1	24.5	25.3	24.9	24.0	23.8	25.7
11:00	25.7	24.9	25.4	25.4	24.5	23.4	24.6
12:00	25.4	26.0	25.5	24.5	24.7	19.7	24.7
13:00	26.0	26.1	26.1	26.4	25.1	22.1	27.6
14:00	25.4	26.3	26.1	25.6	25.5	25.1	28.1
15:00	24.0	24.2	24.2	24.7	24.6	25.8	27.6
16:00	24.6	24.5	24.8	24.4	25.2	24.4	26.7
17:00	25.1	24.9	25.5	24.5	25.1	26.6	27.6
18:00	24.8	23.7	25.2	25.0	24.6	26.3	28.1
19:00	26.5	27.4	27.5	27.7	26.6	27.5	28.6
20:00	28.3	28.5	29.2	28.8	27.6	29.7	29.2
21:00	29.5	29.0	28.9	29.1	28.1	28.7	28.9
22:00	30.5	30.8	29.3	29.7	29.3	29.8	29.3
23:00	31.1	31.2	31.7	30.9	29.6	29.9	30.4
TOTAL	28.0	27.9	28.2	28.1	27.8	28.1	29.1

TIME	5-Day Ave.	7-Day Ave.
00:00	31.7	31.4
01:00	31.8	31.8
02:00	32.4	32.8
03:00	32.7	32.4
04:00	31.7	32.4
05:00	31.7	31.6
06:00	31.0	31.0
07:00	28.0	28.9
08:00	25.4	26.4
09:00	25.0	25.5
10:00	24.8	24.7
11:00	25.2	24.8
12:00	25.2	24.4
13:00	25.9	25.6
14:00	25.8	26.0
15:00	24.4	25.0
16:00	24.7	24.9
17:00	25.0	25.6
18:00	24.6	25.4
19:00	27.1	27.4
20:00	28.5	28.8
21:00	28.9	28.9
22:00	29.9	29.8
23:00	30.9	30.7
TOTAL	28.0	28.2

30 TIME	85TH PERCENTILE SPEEDS Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00	37.2	37.8	36.9	38.3	36.5	34.7	35.9
01:00	-	32.9	37.3	36.5	34.9	37.5	36.5
02:00	-	-	-	-	34.6	38.7	35.8
03:00	-	37.7	-	-	40.3	39.2	-
04:00	-	-	-	39.9	-	39.7	46.2
05:00	37.1	37.2	36.0	36.0	38.5	37.4	36.0
06:00	34.1	34.4	33.9	35.5	35.5	35.4	34.9
07:00	31.4	31.3	32.2	32.0	32.1	35.7	36.4
08:00	29.5	29.5	30.1	29.3	29.3	31.6	34.0
09:00	29.5	28.9	29.3	29.3	29.8	30.2	31.3
10:00	29.3	29.4	29.3	29.1	28.9	29.1	30.1
11:00	29.4	29.4	29.7	29.5	29.0	28.1	28.9
12:00	29.7	30.2	30.0	29.3	29.2	26.5	29.8
13:00	30.1	30.3	30.6	30.2	30.1	27.5	32.1
14:00	29.8	30.0	30.1	29.9	30.2	29.5	32.7
15:00	28.5	28.7	29.1	29.2	30.1	30.3	31.5
16:00	29.4	29.7	29.6	29.4	30.0	30.0	30.8
17:00	30.0	29.8	29.9	29.8	30.2	30.7	31.5
18:00	29.2	28.9	29.9	29.6	29.3	30.6	32.1
19:00	31.2	31.5	31.8	32.1	31.0	31.7	32.6
20:00	32.3	32.9	33.2	33.4	32.0	33.5	34.2
21:00	33.7	32.7	33.7	33.2	32.5	33.4	32.8
22:00	34.8	35.0	34.3	34.5	33.9	33.9	33.3
23:00	34.3	35.2	36.7	35.2	33.0	33.3	34.3
TOTAL	31.5	32.0	32.1	32.3	32.2	32.8	33.6

TIME	5-Day Ave.	7-Day Ave.
00:00	37.3	36.7
01:00	35.4	35.9
02:00	34.6	36.3
03:00	39.0	39.1
04:00	39.9	41.9
05:00	36.9	36.9
06:00	34.7	34.8
07:00	31.8	33.0
08:00	29.5	30.5
09:00	29.4	29.8
10:00	29.2	29.3
11:00	29.4	29.1
12:00	29.7	29.2
13:00	30.3	30.1
14:00	30.0	30.3
15:00	29.1	29.6
16:00	29.6	29.8
17:00	29.9	30.3
18:00	29.4	30.0
19:00	31.5	31.7
20:00	32.8	33.1
21:00	33.1	33.1
22:00	34.5	34.2
23:00	34.9	34.6
TOTAL	32.6	32.9