AQUIND Limited

AQUIND INTERCONNECTOR

Day Lane Technical Note

The Planning Act 2008

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

Document Ref: 7.9.29

PINS Ref.: EN020022

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PINS REF.: EN020022

DOCUMENT: 7.9.29

DATE: 15 FEBRUARY 2021

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DOCUMENT

Document	7.9.29 Day Lane Technical Note
Revision	003
Document Owner	WSP
Prepared By	Stacey Gander
Date	15 February 2021
Approved By	Chris Williams
Date	15 February 2021

Aquind Interconnector - Revised HGV Construction Management Strategy for Day Lane

DATE:	15 February 2021	**CONFIDENTIALITY:**	Public
SUBJECT:	Revised HGV management strategy for Day Lane		
PROJECT:	Aquind Interconnector	**AUTHOR:**	Stacey Gander
CHECKED:	Chris Williams	**APPROVED:**	Chris Williams

INTRODUCTION

This Technical Note sets out a revised management strategy for the movement of Heavy Goods Vehicles (HGVs) on Day Lane as part of the construction stage of the Aquind Interconnector proposals. This revised strategy replaces that which was previously included in Section 3.4 of the Supplementary Transport Assessment (STA) (REP1-142).

The revised strategy has been produced in response to comments set out in Appendix 1 of Hampshire County Council's (HCC) Deadline 3 submission entitled "*Further submission including highways comments on matters raised at Deadline 2 and other matters*" (REP3-023) and on-going discussions between the Applicant and HCC. The topic of HGV management on Day Lane was also included in Question 3D on the Agenda for Issue Specific Hearing 2 (ISH2) (EV-012(a)) put forward by the Examining Authority (ExA), and was consequently discussed in ISH2 (EV-032, EV-033, EV-034, EV-035).

HCC also included additional comments regarding traffic management on Day Lane in the Deadline 5 submission entitled "*Deadline 5 Submission - Submission with updates from the Highway Authority and Lead Local Flood Authority*" (REP5-080) and in their Deadline 6 submission "*Written Summary of Oral Submission" (REP6-078) which provided a specific review of the proposed approach to the management of traffic associated with the construction of the Converter Station*.

The document has been updated to reflect discussions held with Hampshire County Council as highway authority responsible for Day Lane together with comments received at Deadline 7.

The revised strategy has also been included within an updated version of the Framework Construction Traffic Management Plan (CTMP) (REP6-032), submitted at Deadline 6, and therefore is secured via Requirement 17 of the Development Consent Order (DCO) (REP3-003).

A Stage 1 Road Safety Audit (RSA) has been completed for the proposed access junction that will serve the Converter Station during construction and operation as well as the proposed amendments to Day Lane. This Audit has been submitted to HCC in draft for their review in order to allow the RSA Decision Log to be completed, who have confirmed to the Applicant their acceptance of the approach to deal with the issues identified.

CONSTRUCTION TRAFFIC NUMBERS ON DAY LANE

All construction vehicles travelling to the Converter Station Area will travel via Day Lane and will gain access via the junction of Day Lane / Broadway Lane. The Applicant is proposing to complete upgrades to this junction to facilitate construction traffic, and the proposals are set out in full in Section 3.3. of the STA (REP1-142).

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The anticipated number of construction vehicles travelling to and from the Converter Station Area via Day Lane has been set out in Section 22.4.6. of Chapter 22 of the Environmental Statement (APP-137), as well as in Table 10 of the STA (REP1-142), and Chapter 15 of the ES Addendum (REP1-138). The anticipated number of HGV and LGV movements, as set out by associated construction activity, have been replicated below for ease of reference.

Table 1: Estimated construction related traffic accessing the Converter Station Area via Day Lane per day at peak construction

Construction Activity	Estimated HGVs		Estimated LGVs	
	Two-way	Total	Two-way	Total
Converter Station Area	43	86	0	0
Cable Route (for 6 gangs all using Converter Station Area as main compound)	24	48	12	24
Landfall (using Converter Station Area as main compound)	4	8	2	4
TOTAL	**71**	**142**	**14**	**28**

The construction traffic numbers set out in Table 1 are maximum values for daily traffic at peak construction. These maximum peak daily traffic flows have been fully assessed in Chapter 22 of the Environmental Statement (APP-137), and Chapter 15 of the Environmental Statement Addendum (REP1-139). The maximum number of HGV movements per day is referenced within Section 3.1 of the updated Framework CTMP (REP6-032) which will be submitted at Deadline 8 and an amendment will be made to Requirement 17 of the draft Development Consent Order (REP7-013) to clearly secure this.

The timing of construction vehicle movements is dependent upon which construction activity the vehicle is associated with, and their respective working hours. Timing of movements are set out in Section 3.2. of the STA (REP1-142) and have been summarised below for reference.

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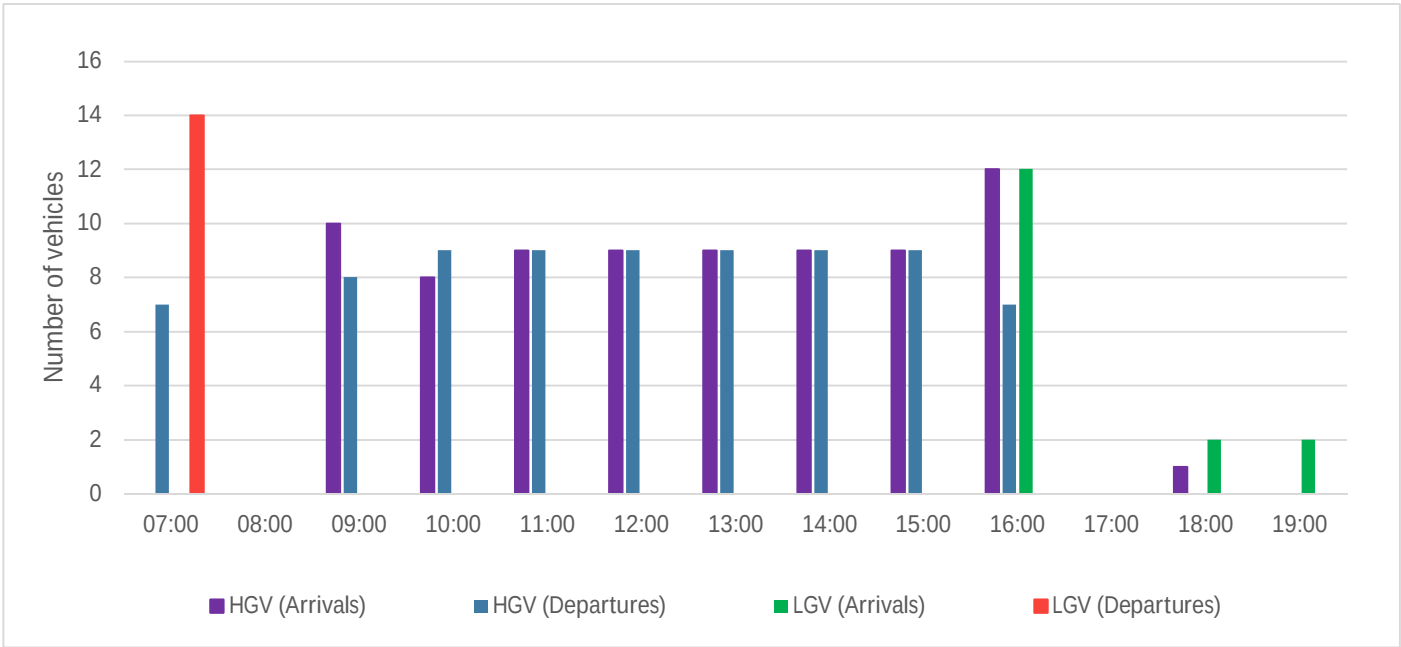
Table 2: Estimated construction traffic movement timings to and from the Converter Station Area via Day Lane

Construction Activity	Estimated HGV timings		Estimated LGV timings	
	Arrivals	Departures	Arrivals	Departures
Converter Station Area	09:00 – 17:00	09:00 – 17:00	N/A	N/A
Cable Route (for 6 gangs all using Converter Station Area as main compound)	09:00 – 17:00	07:00 – 08:00, 09:00 – 16:00	16:00 – 17:00	07:00 – 08:00
Landfall (using Converter Station Area as main compound)	07:00 – 08:00, 09:00 – 17:00, 18:00 – 19:00	07:00 – 08:00, 09:00 – 17:00	18:00 – 19:00	07:00 – 08:00

Using the traffic movement numbers set out in Table 1 and the movement timings set out in Table 2, the daily profile of estimated construction related traffic movements using Day Lane at peak construction has been derived. This daily profile is set out in Figure 1.

Figure 1: Typical daily profile of maximum construction vehicle arrivals and departures at Converter Station Area during peak construction



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Both Table 2 and Figure 1 show no construction traffic movements in the AM or PM peak hours of 08:00 – 09:00 and 17:00 – 18:00 in reflection of the HGV management strategy set-out in the Framework CTMP (REP6-032). As is noted in paragraph 3.2.1.8. of the STA (REP1-142), there is a possibility that up to 12 LGV movements will occur in the PM peak as a result of construction workers travelling back to the Converter Station Area from the Onshore Cable Corridor (2 LGV's per cable gang). For the purpose of the worst-case assessment undertaken in the STA (REP1-142) and ES Addendum (REP1-139), all 12 LGVs travelling back to the Converter Station Area were added to the PM peak assessments. However, for the specific assessment of Day Lane undertaken in this Technical Note, the worst-case scenario is not additional movements in the peak hours, but concentration of movement numbers during a shorter time span. As such, for the purpose of this assessment, it is assumed that the 12 LGV's arriving at the Converter Station Area from the Onshore Cable Corridor at the end of the working day arrive between 16:00 and 17:00.

The daily profile set out in Figure 1 suggests a maximum of 18 HGV movements on Day Lane in any one hour prior to the implementation of any further management.

Reduction in HGV Flows

All construction traffic numbers set out in this section represent a worst-case scenario in peak construction and provides an estimate of the number of vehicle movements should no further management efficiencies or logistical measures likely to be introduced by the Contractor as identified in Section 3.7 of the Framework CTMP (REP6-032). These measures include the maximising of loads to reduce vehicle trips, reusing aggregate delivery HGVs and waste removal and consolidation of deliveries. In relation to HGVs associated with the Onshore Cable Route, the potential for a reduction in HGV numbers is noted through the following:

- For assessment purposes it has been assumed that each Onshore Cable Route construction location generates four individual two-way HGV movements in relation to the delivery of materials and removal of waste from each site. It is envisaged however that HGVs would in reality deliver materials to multiple construction locations at the start of each day through consolidation of deliveries as part of the journey. This will also apply to the collection of waste, given it is unlikely for an HGV to return to the Converter Station only partly laden if other construction locations need collections to be made.
- As noted by the Applicant as part of the Framework CTMP (REP6-032) and the Applicant's Transcript for Oral Submissions for Compulsory Acquisition Hearing 1 (REP5-034) temporary laydown areas will be provided within the Order Limits to facilitate construction of the Onshore Cable Route. In relation to this:
  - The working corridors to be located within the Order Limits have been appropriately sized taking into account the need to accommodate sufficient space for the storage of ducts and other materials which are to be used for the purpose of installing the cables, effectively providing laydown areas within the construction working corridor;

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  - For Onshore Cable Route construction activities in more constrained locations, for instance within the highway, or on open space land where the working corridor is narrower to minimise impacts, the area required for plant and materials will all be contained within the working corridor, and construction will proceed on a linear basis with laydown and storage areas moving along with the work front;
  - More specifically, this will involve delivery of cement bound sand (CBS), ducts and protective tiles to the areas of construction, which will then be set aside at a lay-down and drop-off area contained within the working corridor. Material would then be transferred from the lay-down location within the working corridor to the point of work within the corridor using smaller plant on-site within the working corridor. This would not involve any additional vehicle movements, with the smaller plant remaining inside the confines of the working corridor as the linier route progresses
  - The materials will be replenished from the main compound on a daily basis or as and when required for such items as CBS and removal of spoil.
- The estimated number of HGV movements provided within this note reflects the peak period of construction, during the first 6-9 months of the construction programme. After this point, HGV construction traffic associated with the Converter Station will reduce, therefore reducing the overall HGV traffic flow on Day Lane further.

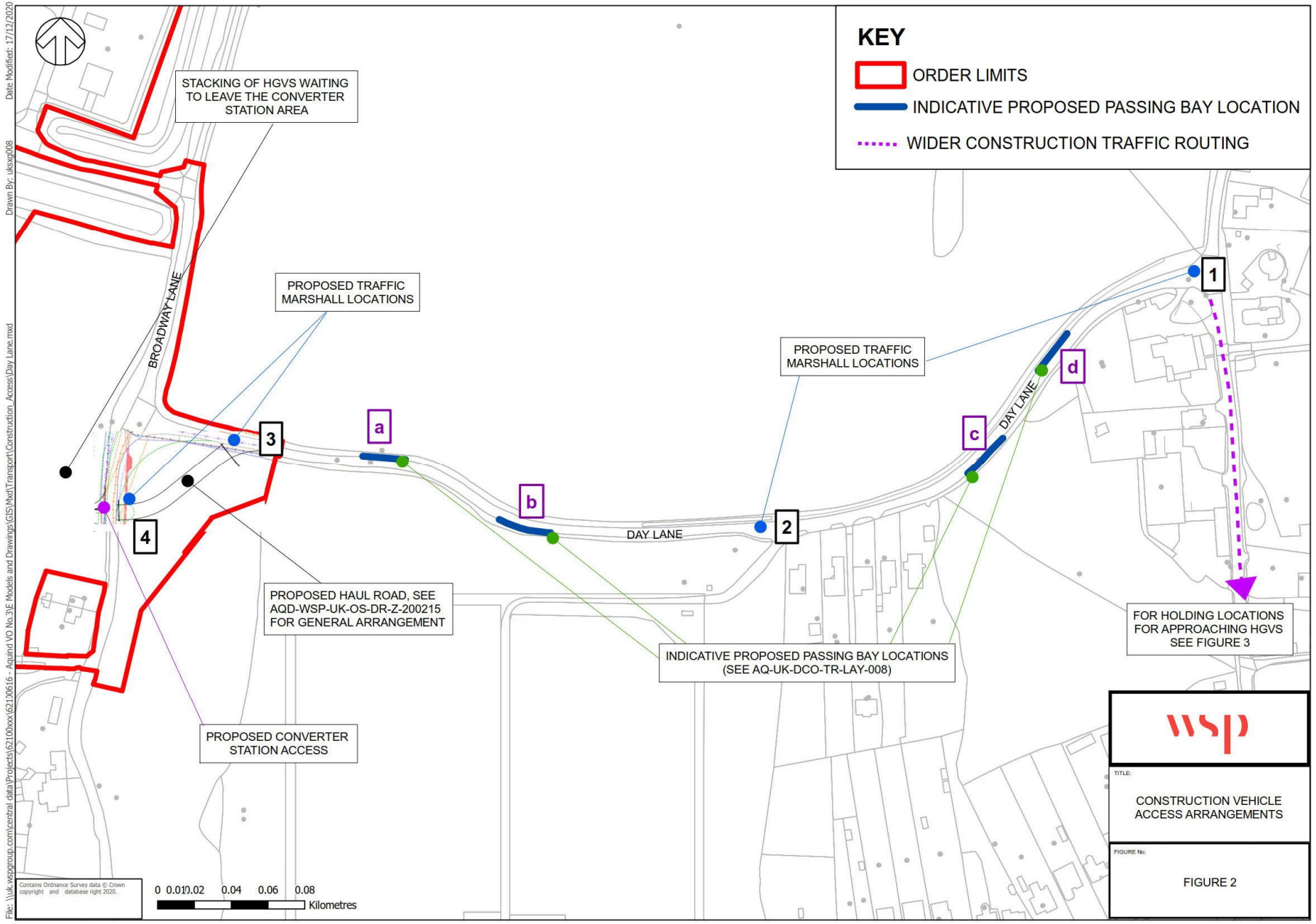
REVISED MANAGEMENT STRATEGY FOR HGV TRAFFIC DURING THE CONSTRUCTION PERIOD

Following discussions with HCC, the Applicant is proposing an amended strategy for the management of construction traffic on Day Lane. The amended strategy uses three main methods of construction vehicle management for mitigating the impacts of movements of such vehicles. These three methods are as follows:

- Introduction of passing bays on Day Lane;
- Strategic management of arrivals and departures of HGVs; and
- Use of banksmen and traffic marshals to control traffic on Day Lane.

A plan contextualising these three methods of construction traffic management on Day Lane has been included in Figure 2 for reference, and each is discussed further in turn.

Figure 2: Construction vehicle access arrangements



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Passing Bays

As can be seen in Figure 2, four passing bays are proposed to be implemented on Day Lane to ensure the safe passing of vehicles on this link. The indicative locations of these passing bays are set out in drawing No. AQ-UK-DCO-TR-LAY-008 which is attached to this Technical Note.

The siting of the proposed passing bays was informed by a site visit which was undertaken to Day Lane on 24th November 2020. Photos of proposed passing bay locations a, b and d have been included below for reference. An image from google maps street view (Google, 2020) has been included for proposed passing bay c.

- **Proposed passing bay a)**

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- **Proposed passing bay b)**

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- **Proposed passing bay c)**

[1] ***Image: Google (2020)***

[1] Image: Google (2020) 'Street View – Day Lane.' Access online: https://www.google.com/maps/@50.9145067,-1.0305403,3a,75y,174.24h,88.99t/data=!3m6!1e1!3m4!1sY1spl7hJoV4QJp1QOzQCYA!2e0!7i13312!8i6656 (18/12/2020)

- **Proposed passing bay d)**

As can be seen in the images included, there is sufficient verge space in each location to allow for provision of passing bays without the need to undertake clearance of hedgerows or trees. It has been agreed with HCC that it may be necessary to construct additional carriageway on both sides of Day Lane in order to provide sufficient width to allow a car and HGV to pass one another, whilst ensuring tree root protection

zones are not compromised. The final form of the passing bays will take will therefore be determined at the detailed design stage.

Swept path analysis has been undertaken for all four of the proposed passing bays on Day Lane and can be seen in drawing No. AQ-UK-DCO-TR-LAY-009, which is also attached to this Technical Note. The swept path analysis was undertaken using two 10.2m tipper HGVs travelling in opposing directions on Day Lane at the same time. The swept path analysis undertaken demonstrates that through the use of the proposed passing bays, the two 10.2m tippers HGVs can pass one another without conflict. Whilst the proposed management strategy prevents any two project-related HGV's meeting one another on Day Lane, the proposed passing bays ensure any construction related HGV's do not conflict with any other general traffic travelling on Day Lane. This includes the prevention of a conflict in an instance in which a construction related HGV is travelling on Day Lane at the same time a non-project related HGV. For the purposes of completeness, swept path analysis has also been undertaken to assess potential conflicts between a 10.2m tipper and a large car. This analysis is included in drawing No. AQ-UK-DCO-TR-LAY-010, which is also attached to this Technical Note, and demonstrates that through the use of the proposed passing bays conflicts between the two vehicle types in question can be successfully avoided.

As with the proposed upgrades to the junction of Day Lane / Broadway Lane, a Stage 1 RSA has been undertaken for the proposed passing bays on Day Lane. The outcome of the RSA is summarised below: -

- Use of traffic marshals to prevent the risk of rear shunts between HGVs entering the haul road and general traffic using Day Lane or Broadway Lane;;
- Suitable profiling of any land required for visibility purposes will be required and dealt with at the detailed design stage; and
- Prevent left turning into the Converter Station, to be enforced by a Traffic Regulation Order.

A Designers Response to the RSA has been prepared and has been circulated to HCC, who have confirmed their acceptance of the alterations to the access strategy. A revised drawing has been prepared which indicates the necessary elements to reflect the outcomes of the RSA.

It should also be noted that HCC have requested that the speed limit of Day Lane be amended to 30 mph during the construction period, the extent of which can be seen in drawing AQ-UK-DCO-TR-LAY-011-A, which is attached to this document. A TRO to this effect has been secured through the draft Development Consent Order.

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Strategic management of arrivals and departures

This section describes the management strategy for the arrival and departures of HGVs to the Converter Station Area. This will be in place throughout the construction period unless agreed with Hampshire County Council that an alternative approach can be implemented.

MANAGEMENT OF ALL HGVS EXITING THE CONVERTER STATION AREA

HGVs exiting the Converter Station Area will be controlled, with vehicles only permitted to leave the site at 20 minute intervals in order to reduce the potential for conflicts with general traffic and arriving HGVs. It is proposed that this will be controlled by banksman / traffic marshal located at the exit of the Converter Station Area. At peak construction, this will involve the stacking of HGVs and them exiting the site in convoy as described below.

In order to ensure the exiting convoy does not conflict with the arrival of HGVs, all banksmen and traffic marshals will be made aware by radio contact when a convoy is to be released.

Peak Construction Period

As is stated in the traffic flow section of this Technical Note, 71 HGVs will depart from the Converter Station Area via Day Lane during a typical working day in peak construction (including HGV's associated with construction activities associated with the Converter Station Area, the Onshore Cable Corridor and Landfall). This equates to approximately nine HGV movements travelling eastbound on Day Lane every hour. It is proposed that during peak construction, the banksman / traffic marshal located at the exit of the Converter Station Area manage HGV exits from the site, allowing vehicles to leave only in a convoy of three HGVs. Once three HGVs are ready to leave, all three vehicles are released together in a convoy travelling eastbound on Day Lane.

This methodology would mean the time in which Day Lane is occupied by HGV movements exiting the site would reduce from approximately one instance every seven minutes, to one instance every twenty minutes.

Non-Peak Construction

Whilst the stacking of HGVs and use of three vehicle convoys will not be required after the peak of construction it is proposed that HGVs would still be held on-site and allowed to depart the Converter Station Area at 20-minute intervals. This will ensure that potential conflict with arriving HGVs and other traffic is controlled throughout the construction period.

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MANAGEMENT OF HGVS ARRIVING AT THE CONVERTER STATION AREA ASSOCIATED WITH CONSTRUCTION OF THE CONVERTER STATION

In terms of HGV arrivals, their management will be dealt with by way of a requirement to pre-book an arrival time at the Converter Station Area and 'check-in' on approach to confirm that availability. This will allow HGV arrivals to be coordinated in order to avoid times when HGVs will be departing.

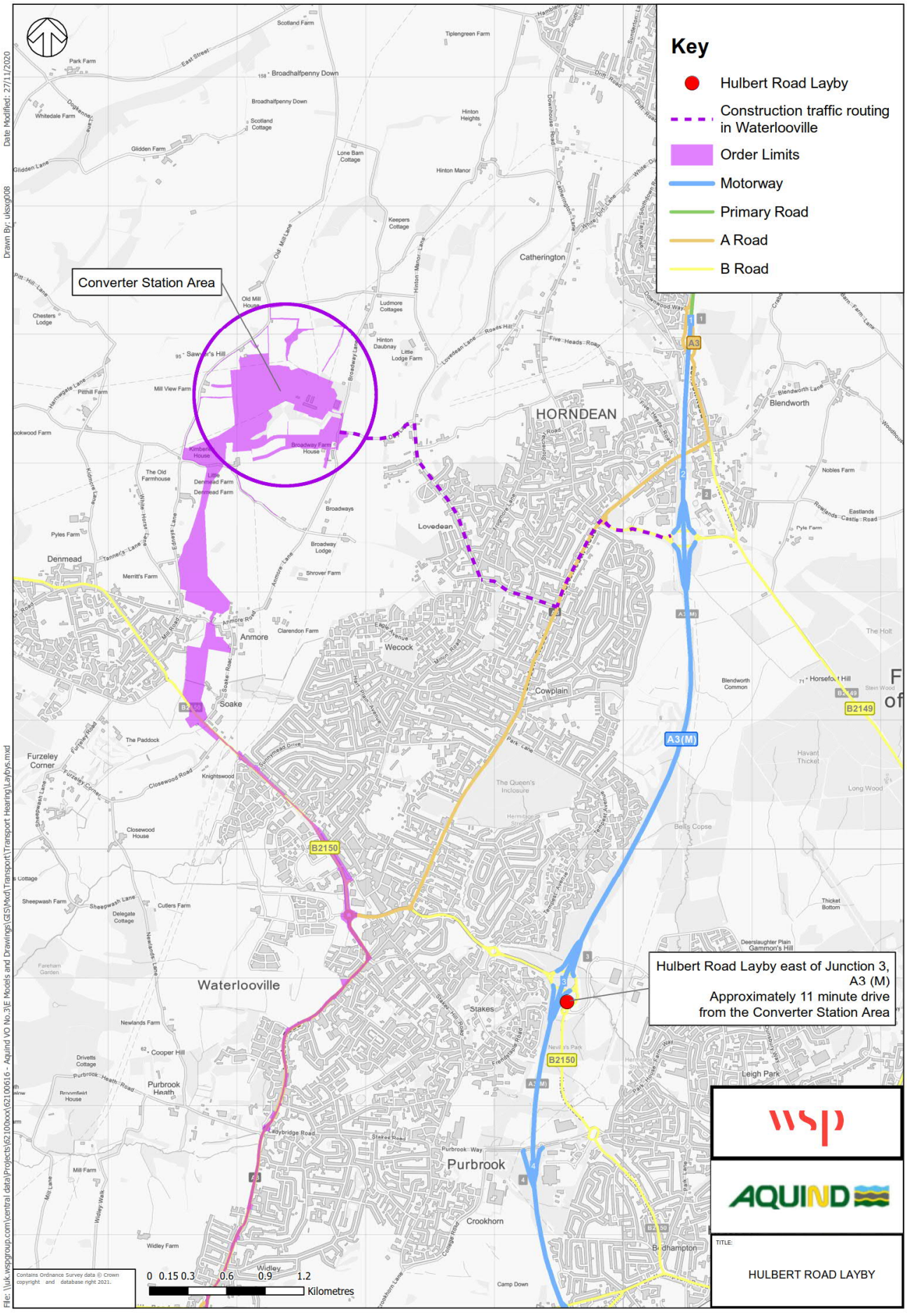
As has been agreed with HCC, any HGVs which are travelling to the Converter Station Area will be permitted to wait on the northern Layby on Hulbert Road, to the immediate east of Junction 3, A3 (M). This layby forms part of the local road network and therefore is under the jurisdiction of HCC as the relevant Local Highway Authority and is located an approximately 11 minute drive from the Converter Station Area via the permitted HGV routing in Waterlooville. The use of the layby for the management of inbound HGVs will require a temporary parking suspension notice to be applied in order to ensure this area is available for relevant construction traffic and would be secured by Article 16 of the draft Development Consent Order and would apply for the duration of the construction programme of the Proposed Development.

It has been requested by HCC that it will be necessary for the layby at Hulbert Road to be barriered off to physically enforce the suspension and for the area to be manned during hours of operation.

It would be the responsibility of the Applicant to enforce the parking suspension of the Hulbert Road laybys; compliance of the suspension of the laybys will be monitored through the Travel Plan.

The location of the Hulbert Road layby in relation to the Converter Station Area is set out in Figure 3.

Figure 3: Identified HGV Check In Areas



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The waiting layby on Hulbert Road can accommodate up to four waiting HGVs at any one time. As with departures from the Converter Station Area, it is anticipated that at peak construction there will be 43 HGV movements travelling westbound on Day Lane associated with construction of the Converter Station. It is proposed that HGVs will pull into the pre-identified layby shown in Figure 3 in order to 'check-in' with the banksmen at the Converter Station Area ahead of their arrival slot. This process will be monitored and enforced through measures contained within Sections 8.5 and 8.6 of the Framework CTMP (REP6-032).

At peak construction arriving vehicles will travel from the Hulbert Road layby to the Converter Station Area in convoys of three, accompanied by escort vehicles. The convoys of HGVs will be given authorisation by the traffic marshals / banksman to leave the layby on Hulbert Road and access the Converter Station Area via the authorised route only if vehicles are not due to exit the Converter Station Area. Once this authorisation has been given, no HGVs will be permitted to leave the Converter Station Area until the dispatched HGVs have arrived. Should the arriving HGVs be likely to conflict with a departing convoy, the approaching HGVs will be held at their check-in point until the departing HGVs have cleared the banksman at the eastern end of Day Lane. This will eliminate the potential for conflicting HGV movements to occur on Day Lane.

At non-peak construction periods, whilst it may not be practicable for HGVs to travel in three vehicle convoys due to the lower number of arrivals per day, all HGVs will still be subject to the same check-in procedure and will be accompanied to the Converter Station Area by an escort vehicle. This management strategy will ensure that HGVs arriving at the Converter Station can be scheduled to avoid times when departing HGVs are leaving. At the same time, if HGVs are known to be arriving at the Converter Station Area, departing HGVs can be held on site until such as the incoming HGVs have arrived.

Whilst HGVs are travelling to/from the Converter Station Area along Day Lane, general background traffic will be held at the access, using "Stop/Go" boards. This strategy can also be used on Lovedean Lane at the junction of Day Lane / Lovedean Lane. Adopting this strategy will ensure that the free flow of traffic is maintained for the travelling public, whilst allowing for a flexible approach to traffic management when there is the need to control movement and allowing a procedure to be able to deal with any unforeseen circumstances that may arise.

As requested by HCC, whilst travelling along Day Lane under escort, HGV's would be limited to a speed of 15 mph.

MANAGEMENT OF HGVS ARRIVING AT THE CONVERTER STATION AREA ASSOCIATED WITH CONSTRUCTION OF THE ONSHORE CABLE ROUTE

Alongside the HGV's approaching the Converter Station Area which are discussed above and are associated with construction in the Area itself, HGV's will also be arriving at the Converter Station Area

from both the Onshore Cable Corridor (24 HGV's daily), and Landfall (4 HGV's daily). The travel of these HGV's will be also be actively manged through contact with the Converter Station Area and will be required to visit the Hulbert Road layby in order to travel to the compound under escort. Once reaching the Hulbert Road layby, these vehicles may form part of the three vehicle convoy with other HGVs associated with construction of the Converter Station. This approach has been agreed with HCC and their arrival in this way will ensure such vehicles do not conflict with other HGVs exiting or arriving as well as with general traffic. These vehicles will also travel along Day Lane at a speed limited to 15 mph.

It should be noted that it will not be necessary for LGV's associated with the construction of the Onshore Cable Route to travel along Day Lane under escort.

Use of Banksmen and Traffic Marshals

The proposed location of banksmen and traffic marshals on Day Lane is set out in Figure 2, this has remained largely unaltered from that which was proposed within the STA (REP1-142). Minor amendments have been made to the positioning of the banksman / traffic marshal location number 2 from the Day Lane arm of the junction of Day Lane / Lovedean Lane, to the Lovedean Lane arm of this junction. Whilst the locations of the banksmen / traffic marshals on Day Lane remains mostly unchanged, the implementation of the proposed passing bays, as well as further discussions with HCC and the implementation of further strategic management of HGV arrivals and departures has resulted in updated proposal for their roles. The proposals for the roles of the banksmen / traffic marshals on Day Lane set out in this TN supersede that which is included in Section 3.4. of the STA submitted at Deadline 1.

- **Location 1**: Will use STOP/GO boards to halt general traffic on Lovedean Lane at the Day Lane / Lovedean Lane junction for the time period between a convoy of HGV's being released from the Converter Station Area and when these vehicles exit Day Lane at this junction;
- **Location 2**: Will coordinate with Locations 3 and 4 to prevent the release of a convoy of HGV's from the Converter Station Area when a resident of the private properties on Day Lane has left their property and is travelling westbound on Day Lane with the potential to collide with such convoy. Banksman 2 will also warn residents wishing to exit should a convoy of HGV's already have been released from the haul road which has yet to have passed the property in question. Preference will always be given to residents wishing to leave their properties over the exit of an HGV convoy, with residents only being held should a convoy already have been released when they wish to depart;
- **Location 3**: Will use STOP/GO boards to temporarily halt vehicles travelling eastbound on Day Lane prior to the proposed haul road access in order to allow a convoy of HGV's to exit safely; and

- **Location 4**: 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 (or convoy of such vehicles) is travelling across the highway between the Converter Station Area entrance and the haul road.

All banksmen / traffic marshals will remain in contact with one another at all times via telecommunication devices as to ensure a coordinated approach to HGV management on Day Lane.

It will be required that the gate at the western end of the haul road used to access the Converter Station must be opened first in order to allow unimpeded access. This will prevent any HGVs from queuing back from the haul road onto Day Lane.

Capacity Assessment: Lovedean Lane

In Post Meeting Note Agenda Item 3d (point 4) of HCC's Deadline 6 submission entitled *'Written Summary of Oral Submission'* (REP6-078), the LHA expressed concerns regarding the overall delays that could impact upon other road users at that junction of Lovedean Lane / Day Lane as a result of the proposed traffic management. In order to address these concerns, the Applicant has undertaken a capacity assessment for this junction, accounting for the proposed traffic management measures.

In order to simulate the proposed use of STOP/GO boards, the junction of Lovedean Lane / Day Lane has been modelled with all three arms operating under signal control within LinSig junction modelling software.

As is set out above, it is proposed that STOP boards will be used to halt traffic on Lovedean Lane in both directions of travel in order to prevent conflicts occurring with HGVs exiting the site via Day Lane. The STOP boards will prevent vehicles entering Day Lane and travelling westbound along the link at the same time as an HGV convoy has been released and is travelling eastbound.

As is set out above, given the proposed convoying of the nine HGV's forecast per hour in groups of three means that general traffic on Lovedean Lane will only be halted once every 20 minutes. Vehicles will be held on Lovedean Lane for a typical maximum duration of approximately 90 seconds, whilst the convoy of departing HGVs travel along Day Lane. This reflects the likely time it would take for the group of HGV's to travel from the Converter Station to Lovedean Lane. Given the length of Day Lane between the Converter Station and Lovedean Lane of 600 metres and assuming a conservative average speed of 20 mph, the journey time for HGV's would amount to marginally over one minute. As such, the junction has been assessed using a cycle time of 20 minutes (1,200 seconds), with a fixed green time on the Day Lane approach of 90 seconds.

In order to undertake this capacity assessment, traffic flows for Lovedean Lane were taken for the Interpeak period from an average of the two Do Something (DS) scenarios of the SRTM outputs. As the proposed construction traffic management strategy prevents other construction vehicles approaching Day

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Lane when a convoy of HGV's has been released from the Converter Station Area, no construction traffic has been added to the Lovedean Lane approaches. The modelled traffic flows for Lovedean Lane are set out in Table 3.

Table 3: Modelled traffic flows - Lovedean Lane, 2026

	Hourly Interpeak Traffic Flow (vehicles) (Average DS)
Lovedean Lane (northbound)	144
Lovedean Lane (southbound)	173

The traffic flows set out in Table 3 suggest a typical arrival rate of approximately 2-3 vehicles a minute in both directions on Lovdean Lane at the junction with Day Lane. The results of the capacity modelling undertaken for this junction are set out in Table 4, the full LinSig outputs have been attached to this Technical Note.

Table 4: Capacity assessment output - Lovedean Lane / Day Lane

Approach	Interpeak (Average DS)		
	Degree of Saturation (%)	Mean Maximum Queue (PCU)	Delay (seconds / PCU)
Lovedean Lane (northbound)	8.0	4	5
Lovedean Lane (southbound)	10.0	5	5
	Cycle Time: 1,200s Overall PRC: 799.8%		

As can been seen from the results set out in Table 4, it is forecast that there will be maximum queues of between 4-5 PCU shown on Lovedean Lane during the 90 seconds that traffic is halted on these arms. This broadly aligns with the vehicle arrival rate for these approaches which is discussed above. The junction modelling outputs forecast a delay of five seconds per vehicle during the interpeak hour modelled. This level of delay is minor and would not cause material inconvenience for general traffic travelling through the junction, particularly as this circumstance would only take place up to three times per hour.

VIEWPORT 1

FOR SWEPT PATH ANALYSIS DETAILS SEE VIEWPORT 1 OF DRAWING AQ-UK-DCO-TR-LAY-009

5.8 5.6 5.4 5.3 1.1m VERGE 0.8m VERGE 0.9m VERGE 5.4 5.5 5.5

PROPOSED PASSING BAY

2.2m VERGE 5.4 5.4 1.2m VERGE

0.5m VERGE 1m VERGE 5.4 5.4 5.4 5.3 5.5 2m VERGE

PROPOSED PASSING BAY

FOR SWEPT PATH ANALYSIS DETAILS SEE VIEWPORT 2 OF DRAWING AQ-UK-DCO-TR-LAY-009

FOR CONTINUATION SEE VIEWPORT 2

VIEWPORT 2

5.7

PROPOSED PASSING BAY 5.6 5.6 5.6

FOR SWEPT PATH ANALYSIS DETAILS SEE VIEWPORT 4 OF DRAWING AQ-UK-DCO-TR-LAY-009

FOR SWEPT PATH ANALYSIS DETAILS SEE VIEWPORT 3 OF DRAWING AQ-UK-DCO-TR-LAY-009

PROPOSED PASSING BAY

FOR CONTINUATION SEE VIEWPORT 1

5.8 5.4

NOTES:

DO NOT SCALE

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. THE DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL REVENANT DOCUMENTATION.
3. ALL PASSING BAY DIMENSIONS ARE 0.5m WIDTH BY 20m LENGTH PLUS 5m ENTRY AND EXIT TAPERS. THE FINAL LOCATION AND DIMENSIONS OF THESE PASSING BAYS WILL BE DETERMINED DURING DETAILED DESIGN TO ENSURE THAT IMPACTS TO TREES AND HEDGEROWS ARE AVOIDED
4. ORDINARY WATER COURSE CONSENTS TO BE OBTAINED AS NECESSARY AT THE DETAILED DESIGN STAGE
5. DETAILS OF CARRIAGEWAY EDGING TO BE PROVIDED AT DETAILED DESIGN STAGE
6. CONSIDERATION OF 45 DEGREE LOAD LINE TO BE CONSIDERED AT DETAILED DESIGN STAGE
7. TIE IN DETAIL TO EXISTING CARRIAGEWAY TO BE PROVIDED AT DETAILED DESIGN STAGE

KEY:

HIGHWAY BOUNDARY

PROPOSED AREA OF NEW CARRIAGEWAY TO PROVIDE NEW VEHICLE PASSING BAY

REV	DATE	BY	DESCRIPTION	CHK	APP
B	11/02/2021	AVI	ADDITIONAL NOTES ADDED	SG	CW
A	16/12/2020	AVI	FIRST ISSUE	SG	CW

DRAWING STATUS: S2 - FOR INFORMATION

wsp

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wsp.com

CLIENT: AQUIND

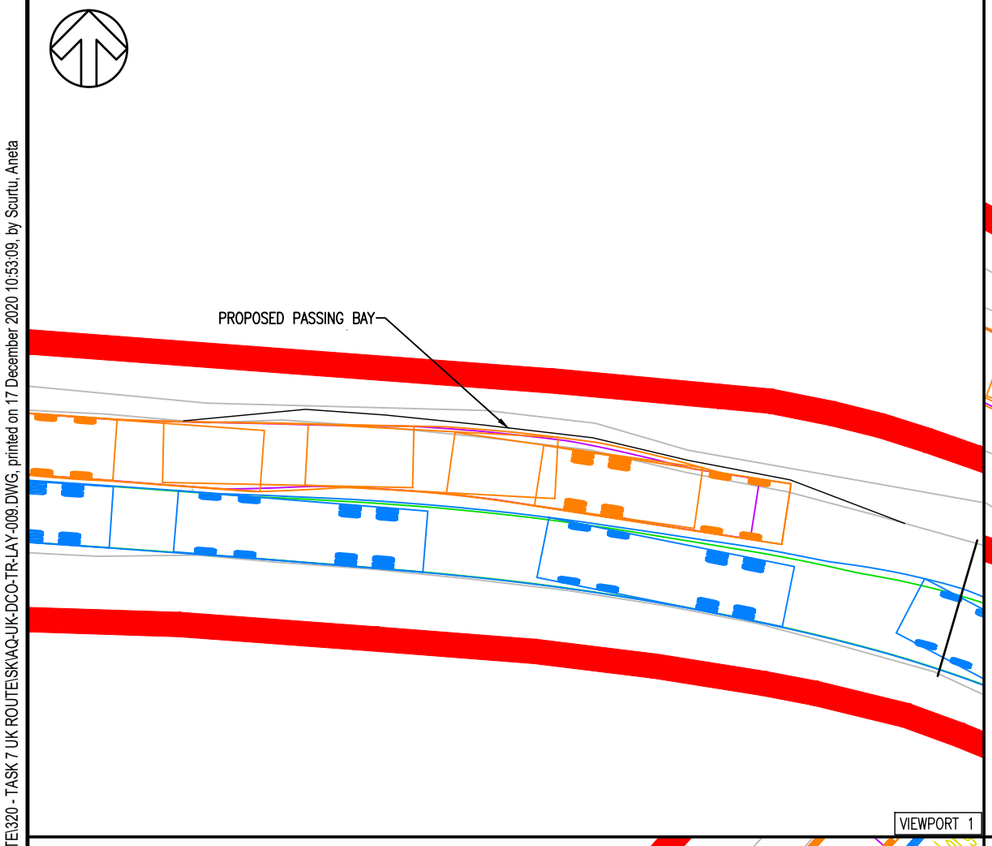
ARCHITECT: -

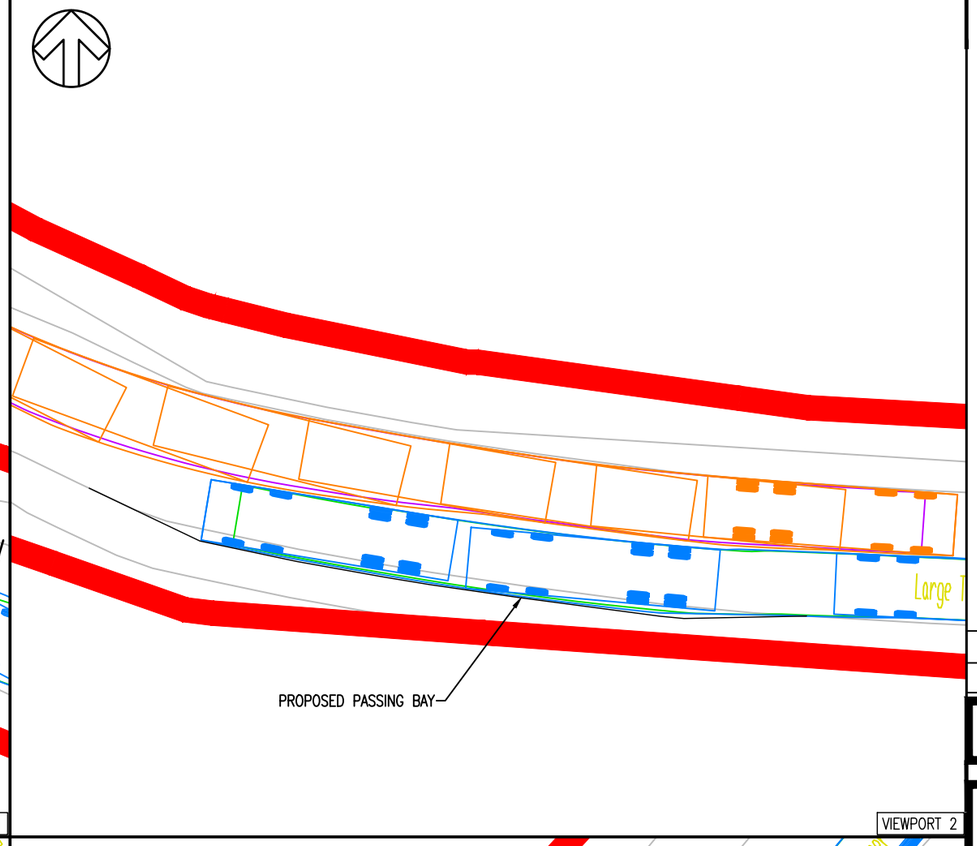
PROJECT: AQUIND

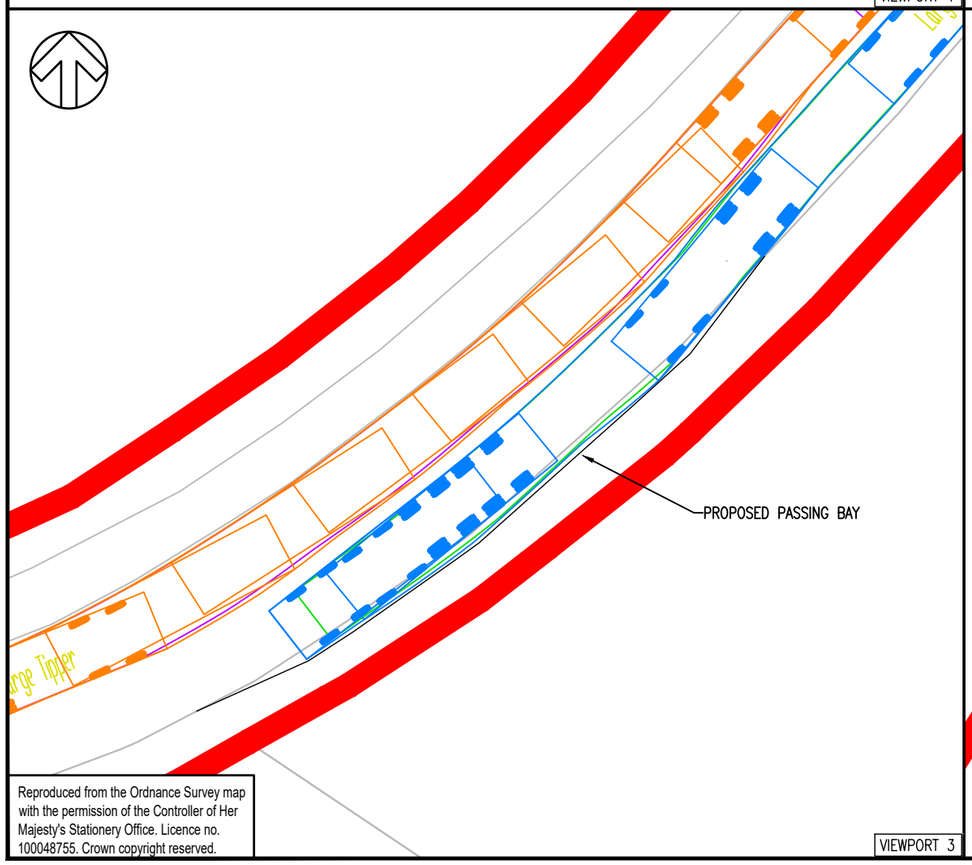
TITLE: DAY LANE PROPOSED PASSING BAYS

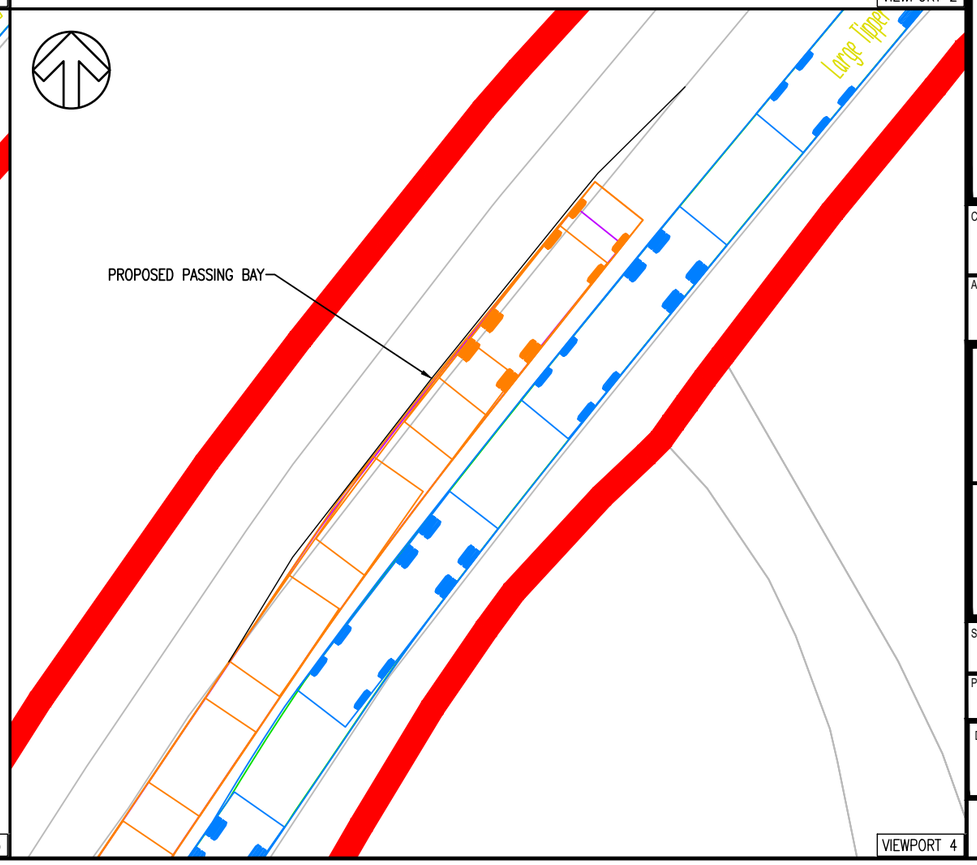
SCALE @ A3:	CHECKED:		APPROVED:
1:1000	SG		CW
PROJECT No:	DESIGNED:	DRAWN:	DATE:
62100616	AVI	AVI	February 21

DRAWING No: AQ-UK-DCO-TR-LAY-008 REV: B





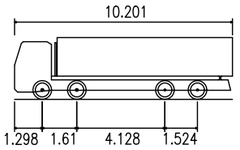




DO NOT SCALE

NOTES:

1. ALL VEHICLES ARE TRACKED AT A DESIGN SPEED OF 5mph.
2. ALL SWEPT PATHS WERE TRACKED USING A LARGE TIPPER, VEHICLE PROFILE SHOWN BELOW (DIMENSIONS IN METRES):



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

VEHICLE TRACKING KEY:

- EASTBOUND VEHICLE
- EASTBOUND VEHICLE WHEELS
- WESTBOUND VEHICLE
- WESTBOUND VEHICLE WHEELS

ADDITIONAL ITEMS:

- HIGHWAY BOUNDARY

REV	DATE	BY	DESCRIPTION	CHK	APP
A	16/12/2020	AVI	FIRST ISSUE	SG	CW

DRAWING STATUS: S2 - FOR INFORMATION

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wsp.com

CLIENT: AQUIND

ARCHITECT: -

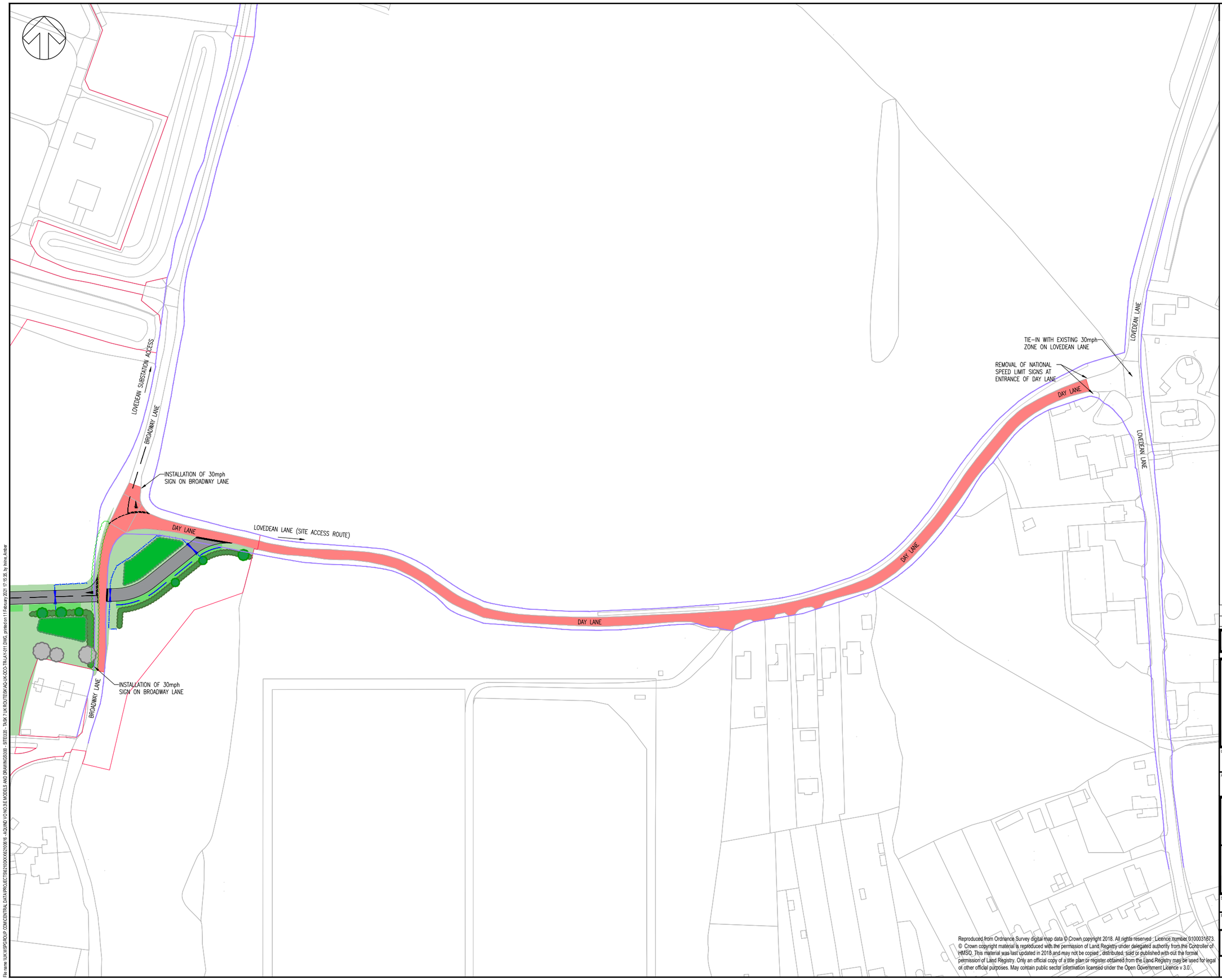
PROJECT: AQUIND

TITLE:
DAY LANE
PROPOSED PASSING BAYS SWEPT PATH ANALYSIS

SCALE @ A3:	CHECKED:	APPROVED:
1:250	SG	CW

PROJECT No:	DESIGNED:	DRAWN:	DATE:
62100616	AVI	AVI	December 20

DRAWING No:	REV:
AQ-UK-DCO-TR-LAY-009	A



DO NOT SCALE

KEY

- DEVELOPMENT CONSENT ORDER BOUNDARY
- HIGHWAY BOUNDARY / ASSUMED HIGHWAY BOUNDARY
- PROPOSED FENCING
- PROPOSED GATE
- EXTENT OF PROPOSED 30mph ZONE

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
A	11/02/2021	AVI	FIRST ISSUE	SG	CW

DRAWING STATUS: S2 - FOR INFORMATION

wsp
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T+ 44 (0) 2380 101 700
wsp.com

CLIENT: AQUIND

ARCHITECT: -

SITE/PROJECT: AQUIND Interconnector

TITLE: EXTENT OF PROPOSED TEMPORARY 30mph SPEED LIMIT ZONE ON DAY LANE AND BROADWAY LANE

SCALE @ A1:	CHECKED:	APPROVED:
1:1000	SG	CW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
62100616	SG	AVI	February 21

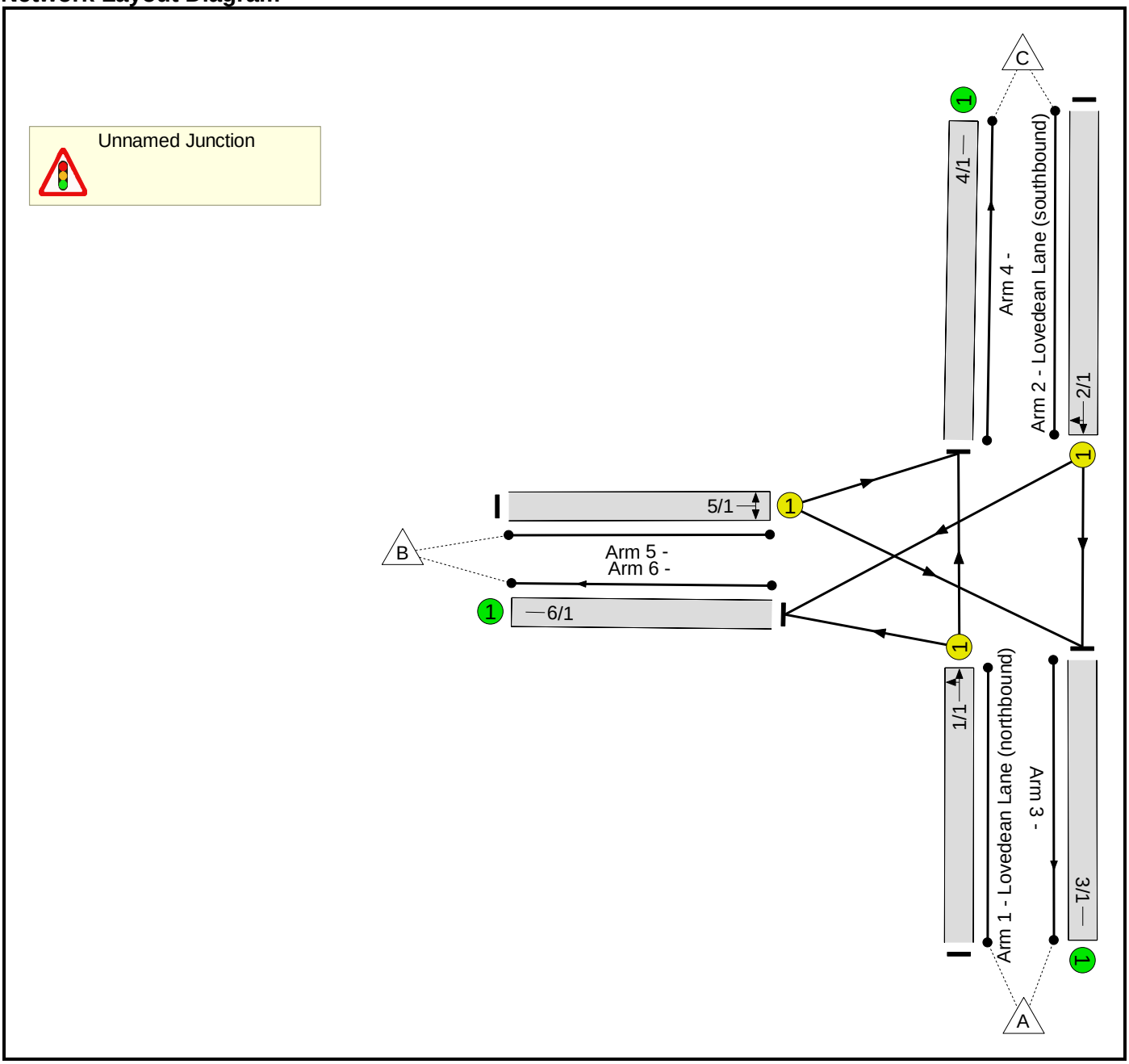
DRAWING No: AQ-UK-DCO-TR-LAY-011 REV: A

Full Input Data And Results

User and Project Details

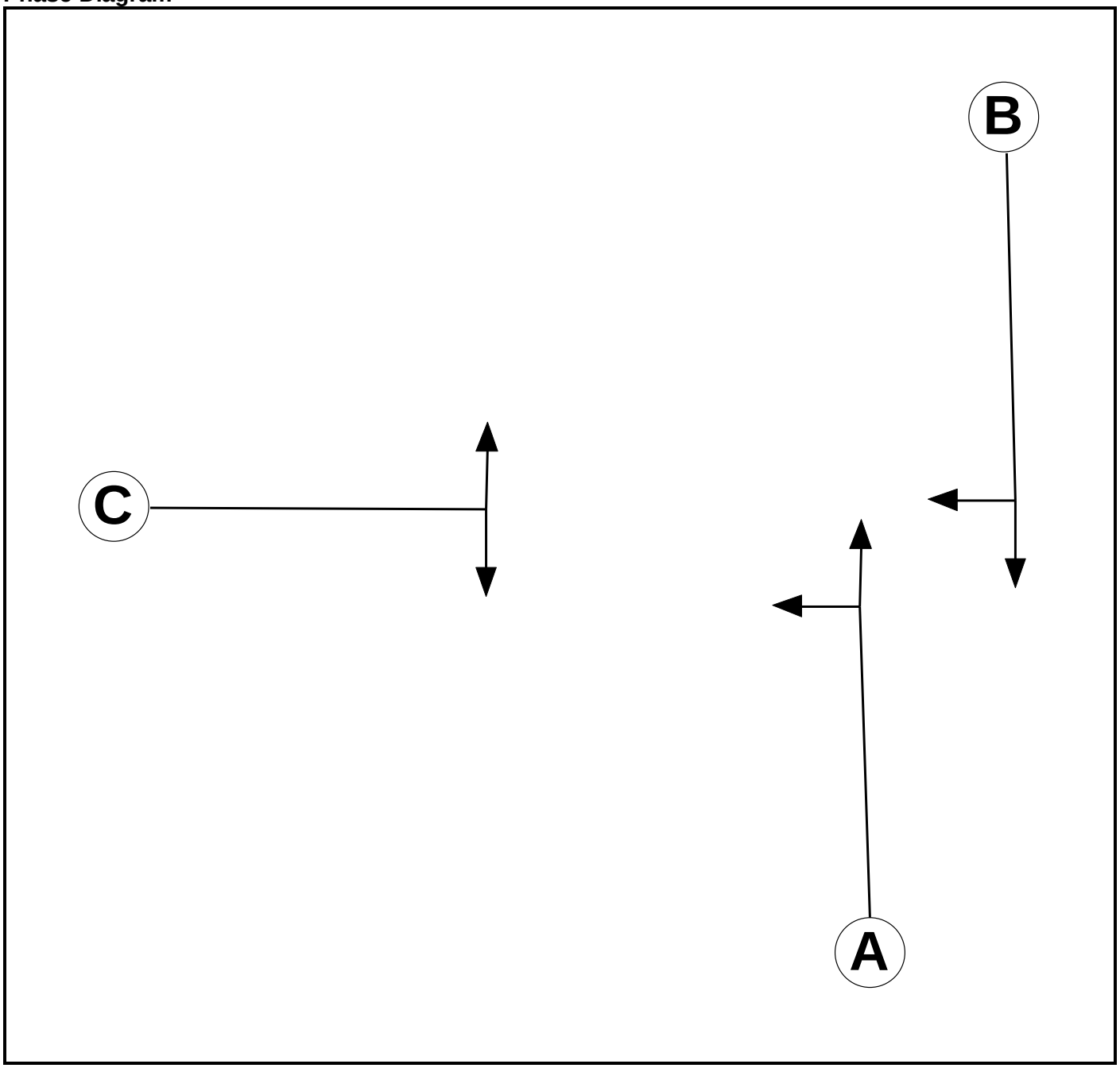
Project:	
Title:	
Location:	
Additional detail:	
File name:	Lovedean Lane Day Lane.lsg3x
Author:	
Company:	
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7

Full Input Data And Results

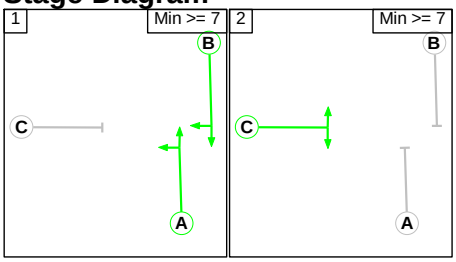
Phase Intergreens Matrix

	Starting Phase			
Terminating Phase		A	B	C
	A		-	-
	B	-		-
	C	-	-	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage		
From Stage		1	2
	1		2
	2	2	

Full Input Data And Results

Give-Way Lane Input Data

Junction: Unnamed Junction
There are no Opposed Lanes in this Junction

Full Input Data And Results

Lane Input Data

Junction: Unnamed Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (Lovedean Lane (northbound))	U	A	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 4 Ahead	Inf
											Arm 6 Left	Inf
2/1 (Lovedean Lane (southbound))	U	B	2	3	60.0	Geom	-	2.60	0.00	Y	Arm 3 Ahead	Inf
											Arm 6 Right	Inf
3/1	U		2	3	60.0	Inf	-	-	-	-	-	-
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U	C	2	3	60.0	Geom	-	3.25	0.00	Y	Arm 3 Right	Inf
											Arm 4 Left	Inf
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'Average DS IP'	10:00	11:00	01:00	

Scenario 1: 'Average DS IP' (FG1: 'Average DS IP', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	0	144	144
	B	0	0	0	0
	C	173	0	0	173
	Tot.	173	0	144	317

Traffic Lane Flows

Lane	Scenario 1: Average DS IP
Junction: Unnamed Junction	
1/1	144
2/1	173
3/1	173
4/1	144
5/1	0
6/1	0

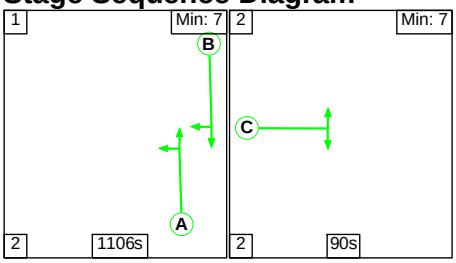
Full Input Data And Results

Lane Saturation Flows

Junction: Unnamed Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (Lovedean Lane (northbound))	3.25	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1940	1940
				Arm 6 Left	Inf	0.0 %		
2/1 (Lovedean Lane (southbound))	2.60	0.00	Y	Arm 3 Ahead	Inf	100.0 %	1875	1875
				Arm 6 Right	Inf	0.0 %		
3/1	Infinite Saturation Flow						Inf	Inf
4/1	Infinite Saturation Flow						Inf	Inf
5/1	3.25	0.00	Y	Arm 3 Right	Inf	0.0 %	1940	1940
				Arm 4 Left	Inf	0.0 %		
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'Average DS IP' (FG1: 'Average DS IP', Plan 1: 'Network Control Plan 1')

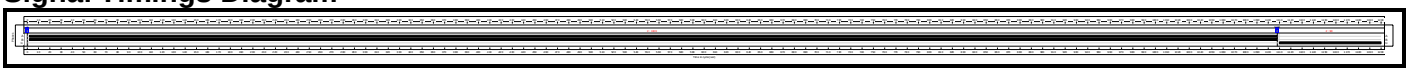
Stage Sequence Diagram



Stage Timings

Stage	1	2
Duration	1106	90
Change Point	0	1108

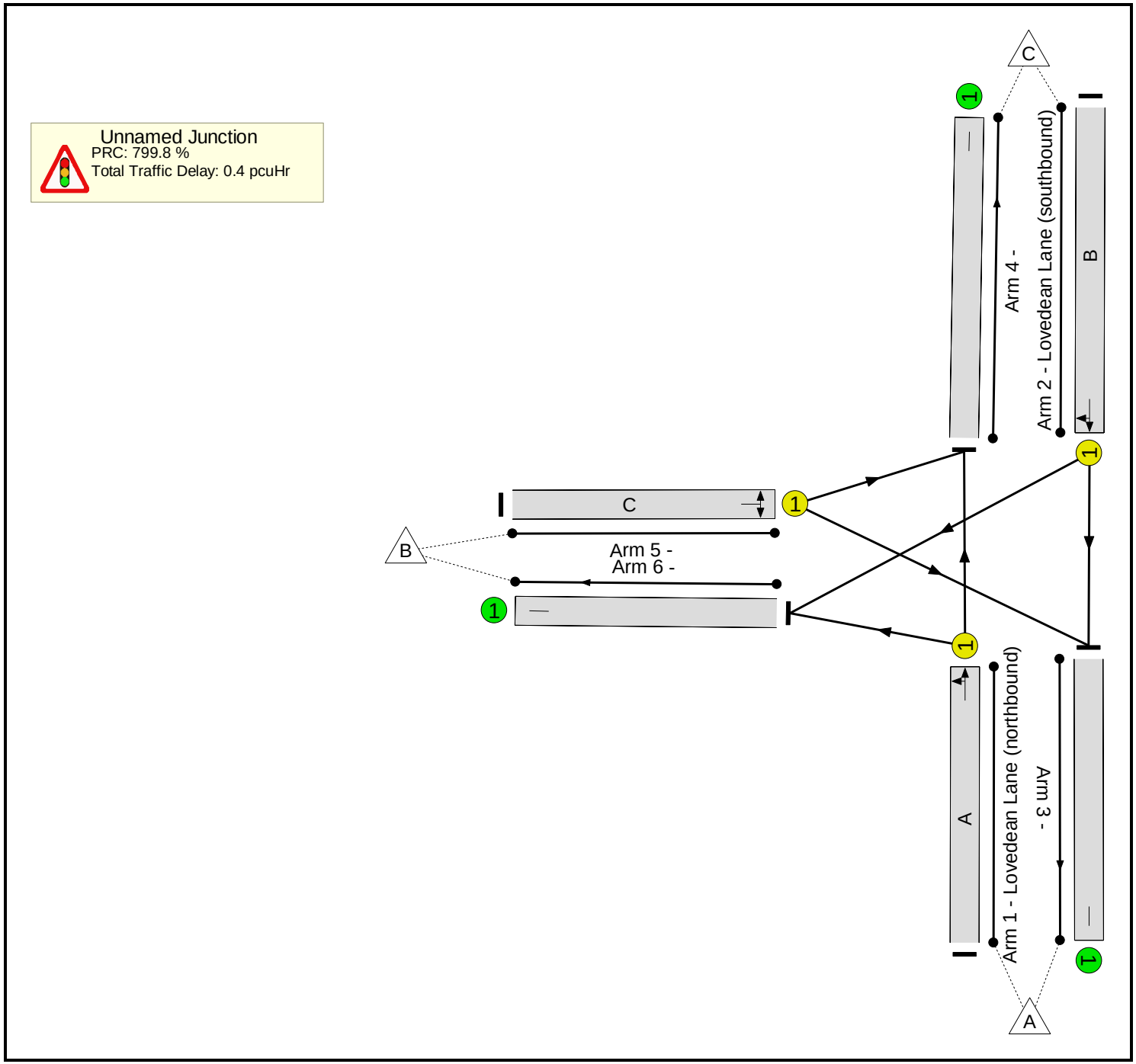
Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram

Full Input Data And Results



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**10.0%**
Unnamed Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**10.0%**
1/1	Lovedean Lane (northbound) Ahead Left	U	N/A	N/A	A		1	1106	-	144	1940	1790	8.0%
2/1	Lovedean Lane (southbound) Ahead Right	U	N/A	N/A	B		1	1106	-	173	1875	1730	10.0%
3/1		U	N/A	N/A	-		-	-	-	173	Inf	Inf	0.0%
4/1		U	N/A	N/A	-		-	-	-	144	Inf	Inf	0.0%
5/1	Right Left	U	N/A	N/A	C		1	90	-	0	1940	147	0.0%
6/1		U	N/A	N/A	-		-	-	-	0	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**0**	**0**	**0**	**0.3**	**0.1**	**0.0**	**0.4**	**-**	**-**	**-**	**-**
Unnamed Junction	**-**	**-**	**0**	**0**	**0**	**0.3**	**0.1**	**0.0**	**0.4**	**-**	**-**	**-**	**-**
1/1	144	144	-	-	-	0.2	0.0	-	0.2	5.0	4.0	0.0	4.0
2/1	173	173	-	-	-	0.2	0.1	-	0.2	5.1	4.9	0.1	5.0
3/1	173	173	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/1	144	144	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	0	0	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 799.8 Total Delay for Signalled Lanes (pcuHr): 0.45 Cycle Time (s): 1200
PRC Over All Lanes (%): 799.8 Total Delay Over All Lanes(pcuHr): 0.45